

**CITY OF MONROE - GENERAL SERVICES COMMITTEE
CITY HALL CONFERENCE ROOM
300 W. CROWELL STREET, MONROE, NC 28112
Thursday, March 7, 2024 - 4:00 PM**

**AGENDA
www.monroenc.org**

1. Minutes of General Services Committee Meeting of January 4, 2024
2. Downtown Monroe Master Plan Rough Draft
3. Downtown Food Truck Ordinance Discussion
4. Outside Agency Funding Requests for Fiscal Year 2025 Budget
5. Monroe Country Club Ballroom/Simulator
6. Pension Contribution Cap Policy
7. Fiscal Year 2024 Audit Contract for City of Monroe
8. Temporary Use Permit for Special Events in Downtown Monroe – Spring Fest and Monroe’s Popup Event
9. Reallocation of Funding for Bearskin Creek Stream Restoration and Ellen Fitzgerald Center Projects
10. Discuss City Hall Renovation/Replacement
11. Budget Amendment Vaccine Mini Grant
12. Budget Amendment American Rescue Plan Act (ARPA) Funding
13. Budget Amendment Senior Center General Purpose Funding
14. Upset Bid/Property Acquisition Discussion

Other Items



**CITY OF MONROE
GENERAL SERVICES COMMITTEE MEETING**

City Hall Conference Room
300 W. Crowell Street
Monroe, NC 28112
January 4th, 2024 4:00 PM

MINUTES

Present: Committee Member Julie Thompson (Chairwoman), Committee Member Gary Anderson

Absent: Committee Member Surluta Anthony

Staff: Mark Watson, City Manager; Lisa Hollowell, Assistant to the City Manager; Lisa Strickland, Finance Director; Ashley Ivey, Assistant Finance Director; Angela Duncan, Senior Budget Analyst; Lisa Kerner, Grants Administrator; Ryan Jones, Director of Parks & Recreation; Terry Sholar, Senior Staff Attorney; Rob Miller, Director of Energy Services; Anna Shova, Accountant I.

Visitor(s): Robert Yanacsek, Citizen.

The General Services Committee met in the City Hall Conference Room at 4:00 p.m. on January 4th, 2024. A quorum was present. Chairwoman Julie Thompson presided.

Item 1. Minutes of General Services Committee Meeting of September 7, 2023

The minutes from the September 7, 2023 General Services Committee meeting were presented for the Committee's approval.

Committee Member Anderson moved to approve the minutes of the General Services Committee Meeting of September 7, 2023.

Chairwoman Thompson seconded the motion, which unanimously passed with the following votes:

AYES: Chairwoman Thompson, Committee Member Anderson

NAYS: None

Item 2. Minutes of General Services Committee Meeting of October 5, 2023

The minutes from the October 5, 2023 General Services Committee meeting were presented for the Committee's approval.

Committee Member Anderson moved to approve the minutes of the General Services Committee Meeting of October 5, 2023.

Chairwoman Thompson seconded the motion, which unanimously passed with the following votes:

AYES: Chairwoman Thompson, Committee Member Anderson

NAYS: None

Item 3. Pinedell Avenue Property Update.

Ryan Jones, Director of Parks and Recreation presented a quick update on the Pinedell Avenue property.

The staff came up with a camp program that will offer a variety of lessons to the students throughout the summer. Programs are offered in partnership with City of Monroe Stormwater, Environmental Educator, Parks and Recreation staff, and the Union County Cooperative Extension. More partners may be added at a later date to provide certain expertise related to the program lesson plan. Programs will be offered to Beyond the Bell Summer Camp students on a weekly basis throughout the summer. Lesson plans will continue monthly through the fall months.

Ryan Jones, recommended that the existing structure at the property, the pier and the zip line tower, to get repaired and they are currently taking care of that. He also mentioned he is requesting for approval in FY25 budget to include the repair of the pier condition which will allow safe accessibility to the pond for the people with disabilities.

Staff is currently working with Water Resources and the City Manager to find the cause and resolve some water control issues that are making consistently higher levels than it is supposed to be. Also, it was noticed a tremendous amount of vegetation growth in back side that needs to be cleaned out. Staff will be working with Energy Services to clear that out.

No action required. For informational purposes only.

Item 4. Budget Ordinance to Accept Transportation Reserve Fund Grant

Finance Director, Lisa Strickland, presented a budget ordinance that is necessary to accept a Transportation Reserve Fund Grant.

The North Carolina Department of Transportation has allocated funds in the amount of \$6,000,000 from the Transportation Reserve Fund for the Charlotte-Monroe Executive Airport to construct an air traffic control tower.

The North Carolina Department of Transportation has allocated funds in the amount of \$6,000,000 for the Charlotte-Monroe Executive Airport to construct an air traffic control tower. Authorizing legislation has provided this funding through the state legislature for the purposes of construction of an air traffic control tower and other related capital improvements. A Budget Ordinance is needed in order to establish a capital project.

Staff requests General Services provide a favorable recommendation to City Council to approve the Budget Ordinance and authorize the City Manager to execute any and all documents related to this grant.

Committee Member Anderson moved to accept the recommendation and forward to full Council for approval of the proposed budget ordinance to accept Transportation Reserve Fund Grant.

Chairwoman Thompson seconded the motion, which unanimously passed with the following votes:

AYES: Chairwoman Thompson, Committee Member Anderson

NAYS: None

Item 5. Energy Services DOE Grid Resilience Grant Application with Electricities

Robert Miller, Director of Energy Services presented information about a joint application to the Department of Energy (DOE) Grid Resilience and Innovation Partnership (GRIP) program with other members of Electricities. Details are outlined below.

The City of Monroe will jointly apply for grant funding with other cities in North Carolina that are all members of Electricities. The grant funding will be used for the planning, engineering, materials, equipment, and labor to install Advanced Meter Infrastructure (AMI) for the Electric Division. This includes network that can be utilized by the Water Resources department and the Natural Gas division. This project will provide real time

information to our utility personnel and customers. This will allow our utility to respond more appropriately and in real time to our customers' changing demands and unplanned outages due to the increasing extreme weather.

As part of the application, the City will be responsible for the following:

- Partner with ElectriCities through the remainder of the application and contracting processes;
- Procurement and installation of the meters proposed for our utility;
- Comply with the various U.S. Department of Energy requirements for expenditure of GRIP funds particularly with regard to community benefits and good quality jobs; and
- Provide the estimated \$1,375,000 cost share for the City's \$5,500,000 estimated project cost.

As part of the joint application, the City does not have any responsibilities for other applicants. Staff requests that the General Services Committee approve the City Manager to execute the grant application documents per the requirements of City of Monroe policy FA-14. If the grant is approved, Staff will request City Council approval for the receipt of funding.

Committee Member Anderson motioned to approve the proposed joint application joint application to the Department of Energy (DOE) Grid Resilience and Innovation Partnership (GRIP) program with other members of ElectriCities.

Chairwoman Thompson seconded the motion, which unanimously passed with the following votes:

AYES: Chairwoman Thompson, Committee Member Anderson

NAYS: None

NAYS: None

There being no further business the meeting adjourned at 4:12 p.m.

Committee Chairwoman, Julie Thompson



STAFF REPORT

TO: General Services Committee

VIA: Mark Watson, City Manager

DATE: February 1, 2024

FROM: Matthew Black, Downtown Director

PREPARED BY: Matthew Black, Downtown Director

SUBJECT: Downtown Master Plan Rough Draft

SUMMARY STATEMENT

McAdams Inc. has submitted the Downtown Monroe Rough Draft for review.

REVIEW

McAdams has submitted the preliminary version of the downtown master plan for a comprehensive review. The document signals a proactive approach to shaping the future landscape of the downtown area. While the report acknowledges the submission, it also underscores that a thorough and meticulous review process is anticipated, emphasizing the gravity of the content within the master plan. There will be a detailed examination of these documents on a later date.

RECOMMENDATION

No recommendations are required.

Attachment(s):
Downtown Master Plan Rough Draft and Supportive Documents



DRAFT - JANUARY 2024

DOWNTOWN MONROE MASTER PLAN

MONROE, North Carolina

**“WHAT MONROE HAS IS CHARACTER.
WHAT IT NEEDS IS LIFE.”**

- Anonymous Resident Input - Public Engagement Session - February 2023

ACKNOWLEDGMENTS



CITY OF MONROE

Administration

Mark Watson | City Manager (Current)
Lisa Hollowell | Assistant to the City Manager
Brian Borne | City Manager (Previous)

Downtown Department

Matthew Black | Downtown Director

Planning + Development Department

Lisa Stiwinter | Planning + Development Director
Keri Mandler, AICP, CZO | Senior Planner

Mayor + City Council

Marion Holloway | Mayor
Gary Anderson | Mayor Pro-Tem
Freddie Gordon | Council Member
James Kerr | Council Member
Lynn Keziah | Council Member
Julie Thompson | Council Member

CONSULTANT TEAM

McAdams | Design Lead

Dan Lambert | Project Manager
Alexandria Bunker | Designer
Grayson Maughan | Planner
Austin Bowman | Planner
Michael Duval | Civil Project Manager
Luke Johnson | Civil Designer

Nealon Planning

Meg Nealon | President / Principal Planner

Maurer Architecture

Laurie Jackson | Partner, Architect

Rose Associates.

Kathleen Rose | President / CEO



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MAPS

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INTRODUCTION

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HISTORICAL CONTEXT

COMPREHENSIVE PLANNING PURPOSE + PROCESS

PURPOSE OF THE DOWNTOWN MASTER PLAN

DOWNTOWN MASTER PLAN UPDATE STUDY AREA

D
O
W
D

CENTER

THE DRIFTERS 4/23
JOE BOB BRIGGS 4/30

The OASIS SANDWICH SHOP

OASIS
SANDWICH SHOP
Established 1953

Coca-Cola



Building upon the first Monroe Downtown Master Plan, adopted in 2008, the prior Downtown Master Plan sought to accomplish four goals:

- 1. SERVE AS A GUIDE FOR FUTURE DEVELOPMENT IN THE DOWNTOWN AREA.**
- 2. COUNTERACT THE IMPACT OF LOST RETAIL.**
- 3. REVITALIZE THE HISTORIC CORE.**
- 4. MAKE DOWNTOWN MONROE AN EXCITING DESTINATION**

This plan is intended to update and reevaluate the City of Monroe 's 2008 Downtown Master Plan. The Master Plan evaluates the boundary of the downtown area and acknowledges the positive changes to the site plan area over the past 15 years. Changes such as economic development, streetscape design, revitalization, preserving architecture, pedestrian friendly development, as well as marketing and recruitment are a direct result of identified goals of the 2008 Downtown Master Plan. This current plan looks at addressing areas such as establishing urban design guidelines, identifying development opportunity sites, and includes a review of the City's current land use regulatory structure, updated regulatory mechanisms, and the continued development for public spaces, public art, character districts, and multi-modal transportation. This plan offers consideration for the current positioning of the downtown area within the regional market, and how Downtown Monroe can grow through transition to the proposed concepts and goals of this Downtown Master Plan. To continue to support the vibrancy and rapid growth of Downtown Monroe, this updated Master Plan will continue to guide the planning and development of downtown for years to come.



COMMUNITY CONTEXT

HISTORICAL CONTEXT

Monroe was founded in 1843 as a planned settlement. The first Board of County Commissioners, appointed by the General Assembly, selected an area in the center of Union County as the county seat, and Monroe was incorporated that year. It was named for James Monroe, the country's fifth president. It became a trading center for the agricultural areas of the Piedmont region, which cultivated primarily tobacco.

As with many of North Carolina's historic downtowns, it suffered decline and decay over recent past decades. In 2007 the City of Monroe put forth a public solicitation for a Downtown Master Plan which was completed and adopted in 2008.

COMPREHENSIVE PLANNING PURPOSE + PROCESS

Comprehensive planning provides the information the City requires to make informed, equitable, and responsible decisions for meeting diverse community needs. Some of the reasons for pursuing a comprehensive planning process include the following:

PROVIDE A STRUCTURE FOR EVALUATING NEEDS AND SETTING PRIORITIES.

CAPTURE THE STATUS OF DOWNTOWN MONROE AT A MOMENT IN TIME

CREATES A VISION FOR THE FUTURE

IDENTIFIES STEPS TO ACHIEVE THAT VISION.

GUIDE THE DEPARTMENT'S DECISIONS AND PRIORITIES FOR THE NEXT 10-15 YEARS.



PURPOSE OF THE DOWNTOWN MASTER PLAN

This plan is based on robust community and staff engagement and data-driven recommendations determined through an analytical approach. From the initial inventory and analysis through the recommendations and action and implementation plan, the project team engaged stakeholders and acknowledged local, regional and national recreation needs and trends, demographic shifts and agency performance. The project team studied existing conditions, plans, and regulations to evaluate the overall successes and challenges to better serve the Monroe community. Finally, the project team alongside City staff developed a plan that prioritizes recommendations to improve Downtown Monroe to meet the needs of its community.

This 2023 Downtown Master Plan includes the following components:

- › **Introduction.** The project team reviewed the planning context of the City's Downtown Master Plan to understand past planning efforts and the Department's evolution. Comprehensive plans, specific park master plans and long-range urban planning were reviewed to gain a comprehensive understanding of the plans that guide the growth and development of the City's Downtown. It is the goal of this plan that the recommendations presented herein will be seamlessly integrated with City's plans.
- › **Process to develop the plan.** The plan process consists of gathering and reviewing existing data and plans, engaging City Staff, stakeholders, and the public to establish values, wishes, and to identify issues that need addressing through the plan's recommendations. Identifying strategies, recommendations, and opportunity sites, concepts can be derived to show the possibilities for downtown through implementation of the plan.
- › **Key Terminology.** Adding terms to the initial terms defined in the first Downtown Master Plan, terms have been added or updated to better inform readers of the material provided in this document.
- › **Existing Conditions, Opportunities, + Constraints.** Visioning allows Department staff to develop a future direction for the Department and each of its component parts. The visioning session results in vision statements for each of the plan elements that informs the creation of goals and



objectives. Each of this plan's goals, objectives and action items are in service to achieving this vision.

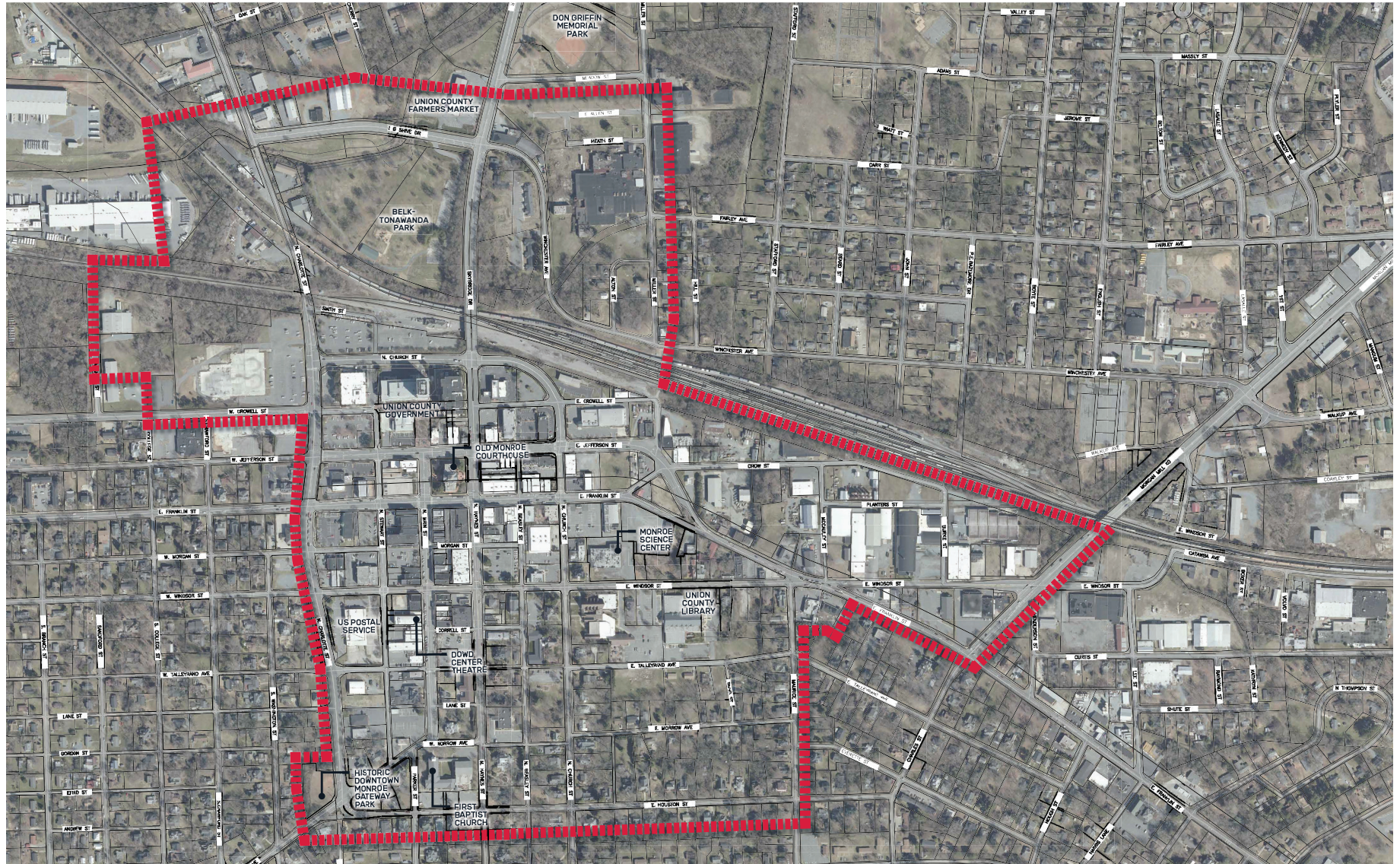
- ▶ **The Monroe Master Plan.** The project team created a vision for the Downtown Monroe area. This vision focused on the following elements:
 - Land Use
 - Transportation
 - Open Space + Greenways
 - Urban Design
 - Character + Cultural Resources
 - Market + Economic Development
- ▶ **Recommendations + Implementation Strategies.** The recommendations and prioritized implementation plan provide a framework to guide future development, programming, and operation improvements within the downtown area of Monroe. It is structured to guide decision making for Department policy. Each recommendation is further prioritized as short term (1-3 years), mid-term (3-7 years) or long-term (7-10+). Criteria for recommendation prioritization vary based on the context and criteria may range from land availability to financial implications but are firmly rooted in community preferences.



▲ 2008 Monroe Downtown Master Plan/City of Monroe



DOWNTOWN MASTER PLAN UPDATE STUDY AREA



2024 Monroe Downtown Master Plan Update Study Area/City of Monroe

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PROCESS TO DEVELOP THE PLAN

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INTRODUCTION

RESEARCH

PUBLIC PARTICIPATION





In order to fully understand the existing state of downtown Monroe, the design team utilized a multi-faceted process of familiarizing themselves with Monroe and it's downtown. This included a staff-led discussion and "walkabout" to gather information about specific sites and interacting community dynamics. Through means of stakeholder interviews, the team was able to get feedback from city staff and other relevant stakeholders, as well as speaking directly to the community through community engagement sessions such as public informational meetings, interviews, charette workshops, and at-event pop-ups.

RESEARCH

RELEVANT PLANNING DOCUMENTS

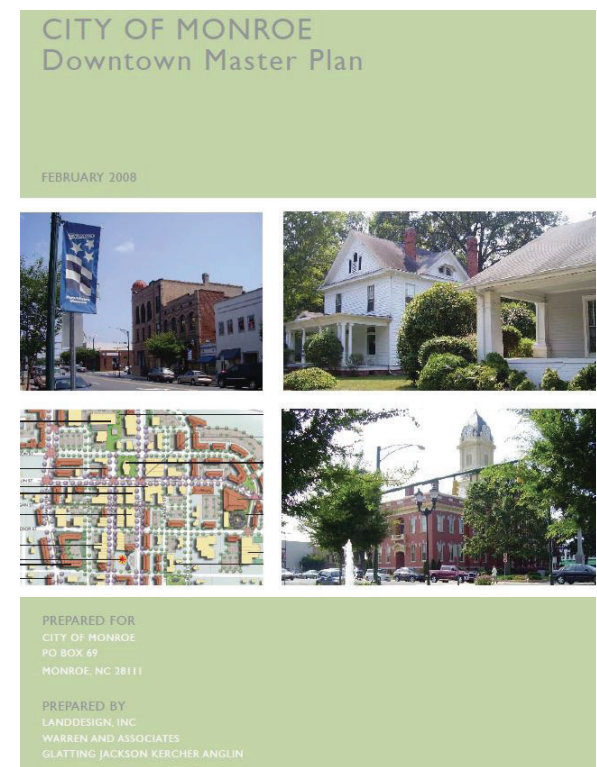
In the past 15 years, several local agencies and organizations have undertaken planning studies in Monroe to consider planning, infrastructure, transportation, and quality of life issues and needs. Integral to this master plan is the coordination and integration of those prior and recent planning efforts and goals specifically related to Downtown Monroe. The following sections summarize overarching goals and objectives of these plans and recognize common planning themes while minimizing redundancies in recommendations.

City of Monroe: Downtown Master Plan (2008)

Completed in 2008, the Downtown Master Plan was the first master plan effort in order to counteract the impact of lost retail, to revitalize the Downtown area as well as its historic core to become a destination for the community.

Key master plan elements include:

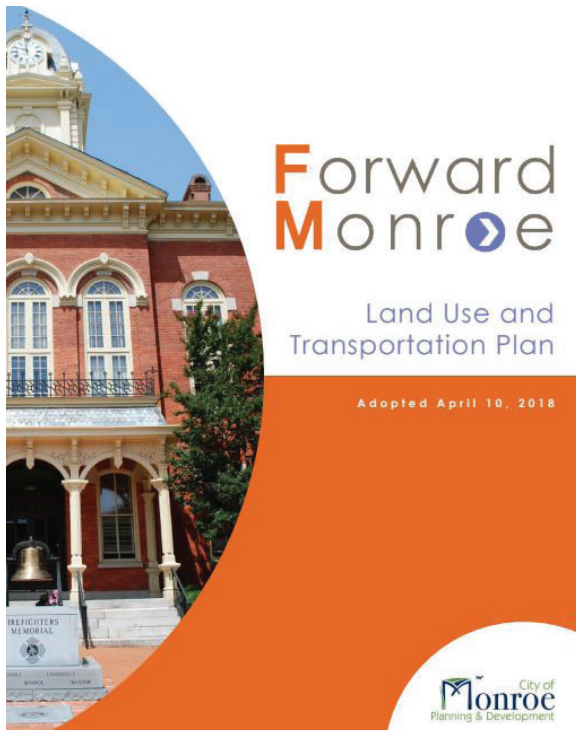
- Defining the study area for the master plan
- Planning process of research, analysis and feedback from stakeholders
- Address trends, opportunities and limitations facing Monroe
- Actionable recommendations in six key areas: land use, transportation, open space, urban design, character and cultural resources and market position





Forward Monroe: Land Use and Transportation Plan (2018)

Completed in 2018 the Monroe Land Use and Transportation Plan the City's outline for development, provides growth strategies, and direction for future land use and transportation decisions. The plan responds to existing challenges, future needs, and prepares the Monroe community for future growth. The plan encompasses the whole of Monroe, including small area plans, land development regulations, capital projects, and other programs and services.



Key master plan elements include:

- Land Use
 - One of the key character areas focused on in the Land Use and Transportation plan included the downtown area, "...which embraces a vision for downtown growth, development, and redevelopment." Other areas that include downtown are the Traditional Development and Community Corridor character areas.
- Transportation
 - Needs found: parking, traffic improvements, sidewalks
 - Prioritization of corridors or intersections within or along the Downtown area and gateway
 - "Connections—especially those on foot or by bike –between downtown and the city's oldest residences are a key consideration for the vitality of the center city.

RELATED CODES + ORDINANCES

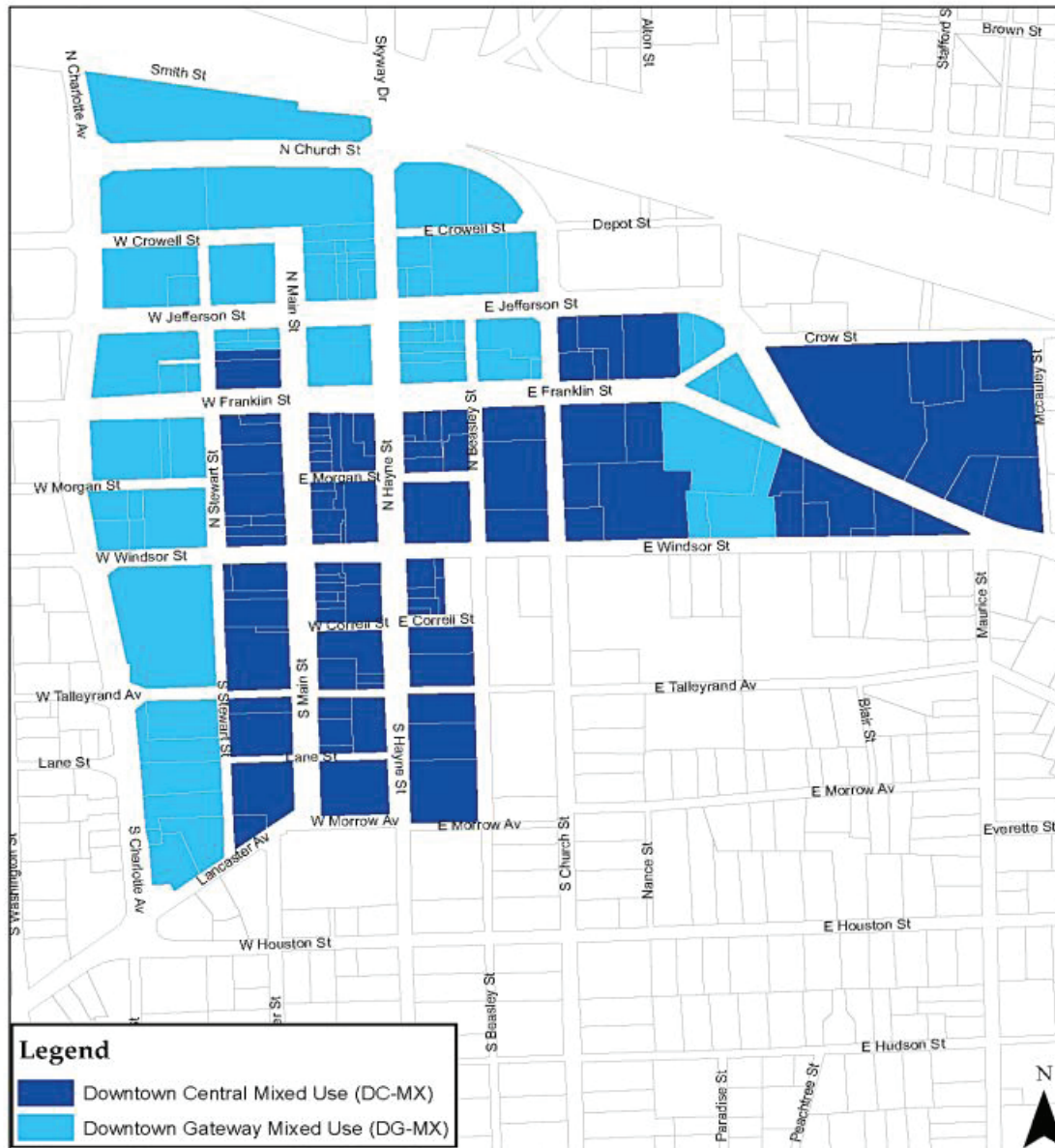
Within the introduction of the Monroe Unified Development Ordinance (UDO) section 1.1.2.K, the UDO states that an object is to: "Maintain the character of areas within the City, including commercial corridors, downtown, and suburban and traditional neighborhoods." As of the current UDO, the transition to new zoning districts include, DC-MX (Downtown Central

Mixed-Use) and DG-MX (Downtown Gateway Mixed-Use). Both zoning districts are defined as:

"Mixed-use districts. The mixed-use districts intend to allow for a mixture of uses with varying development standards to promote compact, walkable, urban environments." [1.3.2.E Zoning Districts -Purpose and Intent]

For development, Downtown Central and Downtown Gateway Mixed-Use districts broken into standards of general applicability. Downtown Central Mixed-Use District (DC-MX) has the purpose and intent of advancing and implementing the Downtown Master Plan as well as the plan's character area, section 5.4.A. In these areas increased density and the use of mixed-use zoning district incentives help to create an urban environment with high quality development that has mixed-use as a feature.

Downtown Gateway Mixed-Used District (DG-MX) in 5.4.B. states the purpose and intention of the. Key aspects stated were implementing character area and advancing the Downtown Master Plan; allowing intense mixtures of use as well as permit increased densities through the use of mixed-use zoning district incentives; and regulating development for the DG-MX district per the standards.



Within the Monroe UDO, section 5.10 Mixed-Use Zoning District Incentives, indicates that the city encourages development and redevelopment of mixed-use zoning districts through “certain public benefits and create a more dynamic public realm, density bonuses may be permitted...”. Subsection D states for Streetscape Enhancements states: “Incentives for streetscape enhancements shall be limited to the DC-MX and DG-MX districts. Streetscape enhancements shall be defined as items which increase the design quality of the street and its visual character by implementing the Downtown Master Plan Section 5.4: Urban Design, including a continuation of sidewalks with large trees and landscaping, wider planting strip (8 feet to 10 feet), uniform lighting with decorative lamps and other street furniture.” Then subsection E continues by adding the category of greenspace, “Additional greenspace shall be defined as publicly accessible greenspace that exceeds the required open space for the respective mixed-use zoning district Monroe UDO 161 development...” This subsection continues to list the calculations for the open space and the requirements within the DG-MX district, as well as the bonus



PUBLIC PARTICIPATION

Public participation for the master plan was done in the form of community engagement, which is an essential part of any planning process. The most effective plans are firmly rooted in the realities and vision of the community that created them. Such visionary documents influence recommendations for development of future development, programs, and services. The community engagement approach for the current plan included a combination of input from community members and City of Monroe staff.

The City and project team designed the public engagement process to maximize the amount of input and feedback from community members, the Downtown Advisory Board, and Monroe staff. The process was intended to be equitable and inclusive, offering a variety of input opportunities and methods for all community members to have a comfortable platform for expressing their input.

KICK OFF MEETING

Date: June 16, 2022

Attendees: 12

Starting the engagement process, the Design Team met to review with City staff the beginning of the master planning effort for Downtown Monroe. Introductions of the design team and the various group met in order to start the process.



Walk-about site visit / McAdams

Agenda Items:

- Project Background
- Project Initiation + Analysis
- Community Engagement
- Placemaking
- Implementation
- Master Plan Document
- Scheduling
- Walk-About Site Visit of Downtown

During the kickoff meeting, the design team and City of Monroe staff discussed the master plan document and how the document should proceed from draft to final document with various steps and reviews they envisioned would take place during the process. The document would need to be compilation of

the results from all previous efforts, existing conditions and having the document's production of representative graphics to match the content with a "more lively and seen" document. Agenda items discussed included the need for past and existing documents to be reviewed by the design team, including the Future Land Plan, 2018, the previous 2012 Downtown Master Plan and its maps, as well as the updated UDO, and in progress parking plan. The master plan's project initiation and analysis was broken into accounting of assets both present and future. Areas such as civil infrastructure analysis, market analysis and economic development, transportation analysis, architectural resource analysis were highlighted by the design team. During the course of the



▲ An example of existing Main Street streetscape in Monroe / McAdams



meeting, a staff member mentioned wanting to have a final condense document and map to pass out to the community that, “there’s a lot of time in between master plans want to account for potential growth of the downtown area.”

Community Engagement for the master plans was broken down into identifying interested parties and what efforts would be made for engagement. Interested parties were further broken into groupings such as city staff and other relevant city agencies, property and business owners, and private sectors organizations and influencers who could lend information to the master plan. From recent engagement efforts, the team wanted to look at past public feedback to ensure duplicate work did not occur. The team wanted to use stakeholder interviews to gain better community representation. Adding public meetings and presentations for the general public to experience a workshop environment, as well as a charrette workshop with stakeholders and the public. With a public pop-up informal event hosted by McAdams “(to) meet people where they’re at” and showing up with something unexpected (where people are at) to get a reaction to information/ideas. Final ideas discussed for community engagement included an advisory committee meetings and online survey(s).





Placemaking would be analyzed in the master plan in areas of land use analysis, character areas, cultural resources, and public spaces. From there the analysis would result urban design concepts, focusing on subarea planes, streetscape concept(s), open space concept(s), and identify targets for implementation. The design team discussed recommendations and strategies of using a reality-based planning review, policy recommendations, having the need to review policy language in order to implement suggestions set forth in the plan, how funding discussions and strategies would help to get the implementation elements implemented as they are suggested in the master plan. The implementation chapter, City staff mentioned they wanted the master plan document to suggest items of change to “make it real” and “something (that) we want to do... but how do we get it done.” With recommendations made in the master plan, the design team emphasized the importance of having an action plan which would target investments, creating a priority ranking (short, interim, and long-term action items). With the need for the City of Monroe to reassess study area and decide whether to include a larger area that could be the future Downtown border.

Prior to the end of the meeting, the design team and city staff concluded the kickoff meeting with the scheduling and timeline of the master plan document. After the kickoff meeting,



a City Representatives and the Consultant Team completed a walk-about to review the downtown area. During the walk-about, the consultant team documented various important buildings and areas within Downtown Monroe as they gained feedback about recent improvements and changes made in the downtown area, trends that the downtown area was experiencing, key locations to be aware of, and community response and attitude towards various changes.

Walk-about highlights include:

- Most trees in the downtown area are gingko. As trees die, City of Monroe has been replacing them with gingko as they are available. Franklin though, has a variety of Cherry.

- There is a pilot “parklet” program at 107 S Main St. which uses 2 parking spaces to create an outdoor seating space. The town has had mixed responses to this. Some feel like it’s “too industrial” and don’t like that it takes up two parking spaces. This pilot program started during the COVID pandemic and remains in this location.
- Dowd Centre Theatre has recently been renovated and is now a multi-cultural center. Hosts performances – school performances, bands, private and public events, gymnastics, body building competitions.
- Local Downtown events
 - East Frank hosts drag shows
 - Music on Main, 4th Friday of the month (not in winter) Shuts down Main from Windsor to City Hall. Businesses close down during this event. Beach music is very popular. There is also a local latinx band.
 - Car cruise, 2nd Friday of the month (not in winter). Shuts down blocks as well Businesses close down during this.
 - These type of events usually have 5-6 food trucks
- More people commute into Monroe than out because of being the county seat



- › Many of the residents commute to Charlotte
- › Monroe has one of the largest downtowns (land mass wise) in North Carolina it's over a million square feet
- › The Senior Center is going to be re-purposed as a city facility
- › Gateway Park was finished in 2017
- › Science Center and Stewart projects are both brownfields.
- › The Stewart project is currently in the works.
- › Local vendors for store fronts, usually boutiques are the anchors
- › June and July are slow months for business in downtown area
- › Smart poles wanted in the downtown area for wifi, music. Franklin St currently has music.
- › Downtown is empty on Sundays and Mondays when most things are closed
- › Desire for downtown for charging stations for electric car



CHRISTMAS TREE LIGHTING

Date: December 3, 2022

Public input provides a foundation for understanding and responding to the parks and recreation needs of a community. An effective master plan is the result of a collaborative effort that solicits and incorporates input from citizens. This exercise was conducted as a means of understanding public sentiment towards Downtown Monroe and what the community would like to see in the next 10-15 years for Downtown. To understand the prioritization of community needs, the Project Manager posed nine community value examples to receive participant feedback on. A major component of the Downtown Master Plan is understanding what the community desires from its streets and connectivity of Downtown, the Project Manager suggested six items to receive feedback to inform the proposed Master Plan of Downtown Monroe. And finally asking participants about the future of Downtown Monroe, the Project Manager suggested eight items for feedback on to better inform the design elements for the next 10-15 years for Downtown Master Plan.

Approximately 47 participants people participated in the input exercise. Participants were provided the opportunity to reflect and comment on Downtown Monroe's existing





provision of parks and leisure services, to develop an understanding of what the Village's first comprehensive systemwide parks and recreation master plan should include, to establish goals for the next 10-15 years, and to contemplate where funds should be allocated.

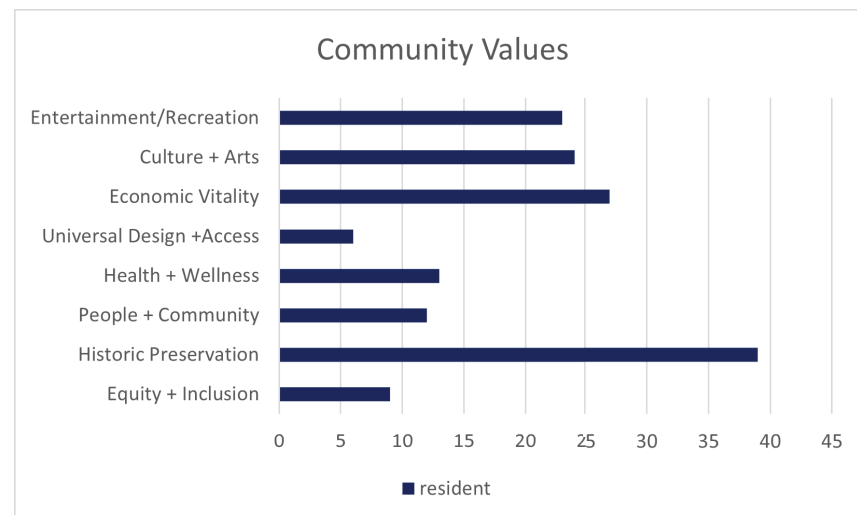
COMMUNITY VALUES

Community values help inform the Project Manager during the planning process and provide valuable information with respect to what participants regard what issues to prioritize so as to accomplish the community's needs. Based on responses from participants at the event, Monroe's community values reflect the things that are important and resonate with community members. Participants were asked to select their top three community values they hold for their community. Described as community values that guild the planning process and inform prioritization of community needs.

Out of 153 responses the top three community values selected by participants were: (1) historic preservation, (2) economic vitality, and (3) culture and arts.

STREETS + CONNECTIVITY

Participants were asked to select their top three streets and connectivity proposed choices they desire for the streets of Monroe Downtown. The input board stated to participants that:





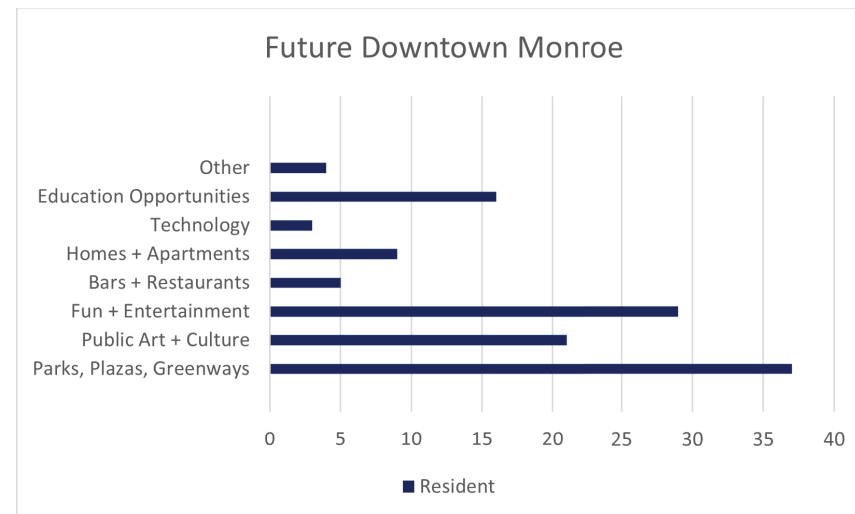
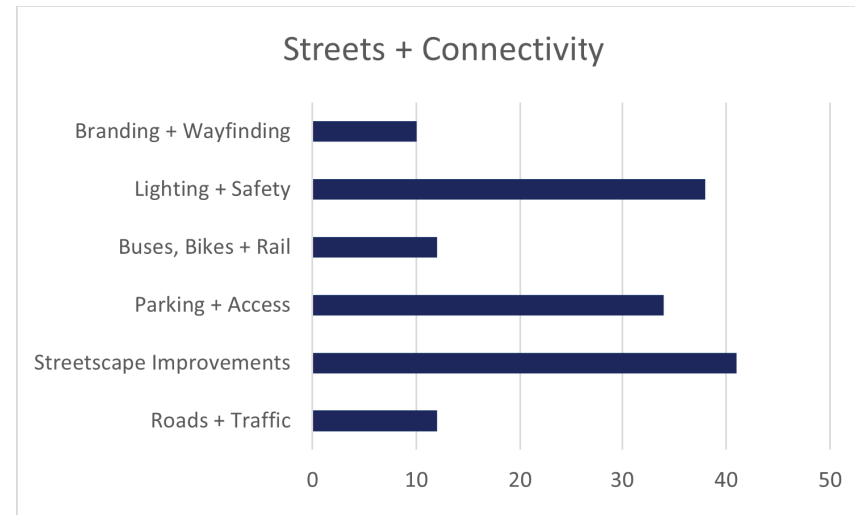
“Downtown streets are an important part of what makes a town thrive. Access to Downtown businesses and activities for cars and pedestrians must be convenient to be successful. Which elements do you think are most in need of improvement in Downtown Monroe’s streets?”

Out of 147 responses the top three streets and connectivity choices were: (1) Streetscape improvements, (2) lighting and safety, and (3) parking and access.

FUTURE DOWNTOWN MONROE

With the intention for this Master Plan to address the future of Downtown Monroe, the Project Manager poised the third and final input board to participants for what they would like to see accomplished in Downtown. The board asked participants to select their top three choices for what they would like to see in Downtown Monroe. Poised as “a variety of elements can make a downtown a special place that is desirable to visit. Which elements would you like to see updated or added to Downtown Monroe?”

Out of 124 responses, the top three choices selected for future of Downtown Monroe were: (1) parks, plazas, greenways, (2) fun and entertainment, and (3) public art and culture.





DOWNTOWN OPEN HOUSE

Date: December 15, 2022

The Downtown Open House was a public engagement effort in which the Project Team presented information gathered to date for the Master Plan and gave opportunity for participant input on the needs and issues facing downtown Monroe. The design team directed participants in a series of exercises to obtain feedback about the current Downtown area and elicit recommendations from the community to include in and help guide the direction of the new Downtown master plan.

Key topics covered in the public information presentation:

- Introducing the downtown master plan design team
- Project purpose + plan process
- Downtown plan study area
- Existing conditions
- Market analysis
- Next steps

INPUT SESSION FEEDBACK

The responses received from the attendees at the Downtown Open House fell into the following categories:



Design team introducing the next master plan iteration / McAdams

RESTAURANTS + BARS

The vast majority of participants indicated a desire for there to be more restaurant and bar options that are open more often, with emphasis on dinner, Saturday + Sunday hours. Many emphasized that they would prefer that these be sit down venues that have bars in them rather than just bars with no restaurant component. There were requests for “white tablecloth restaurants”, a “sports bar”, a bakery “as much for the divine scents as for the product”, a dedicated coffee house, an ice cream shoppe “like good ol’ Dairy Queen”, more ethnic food options, and specialty food locales that serve cocktails such as a Kava bar. People liked the establishment of the new social district with one participant declaring it “awesome”.

ENTERTAINMENT OPTIONS

People are hungry for more reasons to come downtown and spoke out about several things that would make them do so. Many believe that performing arts are a big draw that isn’t taken advantage of and the Dowd Theater is sadly underutilized. They believe that stronger programming of the theater, along with open availability to acts wishing to use it, all paired with better marketing would make it the true downtown gem that many see as its potential. Others believe a new Community Theater would be a better answer. Participants mentioned inclusion of comedy and improv at the Dowd as an option. Some mentioned use of the gallery in the theater for “more than show posters”, proffering art shows and juried competitions as an option. They also liked the new science



center but wanted more retail options for shopping.

PROGRAMMING + EVENTS

Many folks see the existing downtown civic facilities as useful, but underutilized. Additional programming was mentioned as a big draw downtown. Some mentioned utilizing the amphitheater at Belk-Tonawanda Park for outdoor concerts and activities, improving on the already successful farmer's market, holding downtown running races on big days such as a Fircracker Run on the 4th of July, a remembrance run on 9/11, and a Turkey Trot on Thanksgiving. Pop-Up Mini Markets, both indoor and outdoor, were a consistent idea for exploring, and a few more specific but intriguing ideas include a ghost tour, ladies night out, and storefront decorating contests during certain seasons or for specific events. What was also asked for was better coordination of these events so as not to have multiple events on the same night with a series of "dead days" in between where nothing is happening.

Other great programming ideas include:

- Open-Play Board Games + Cornhole
- Downtown Volunteer Days
- Food Truck Days
- Beer Yoga (Yes...Beer Yoga)
- PRIDE Celebrations
- More Festivals!! (Halloween, Spring, Art, Music, BBQ, Beer, etc.)



PEDESTRIAN ENVIRONMENT + SAFETY

Several things were mentioned as being big positives for Downtown Monroe of late, one of which was the continuation of efforts to beautify downtown with the additions of hanging floral baskets on lamp posts and flowerpots in front of businesses and offices. Folks like the “bones” of downtown and believe these little touches add the character and life that make it special and enhance that existing architectural beauty. What was not appreciated was making permanent the “parklet” installation on Main Street that was originally an experiment on what can be done within the footprint of a simple parking space in the pedestrian zone of Main Street’s streetscape. The addition of seating was a good idea. The temporary and “too industrial” look of the installation itself does not show the best possible appearance and quality in the streetscape as citizens asked if it could be “more historic + charming”. One respondent went as far as to recommend that Main Street itself be closed off to vehicular traffic becoming a pedestrian promenade with outdoor eating and sidewalk shopping opportunities.

Safety for pedestrians was of primary concern for participants. Slowing traffic down, improved crossings, and safer sidewalks were all mentioned as being highly desirable.



▲ Downtown Open House Workshop participants awaiting the presentation and to give their input. / McAdams

TRAFFIC, TRANSPORTATION + PARKING

As is the case with most communities, the perception among participants is that there is insufficient parking. They recommended using City property to add convenient and more locations for lots. Other traffic concerns mentioned were better signing of the “Wrong Way” on the one-way pair of Franklin and Jefferson Streets. Transit also made the wish list with requests both for extension of the future Silver Line Lynx Light Rail spur and a bus to downtown Monroe rather than to the mall.

BEAUTIFICATION EFFORTS + PUBLIC ART

The art community in Monroe was well represented at this and all public input events for the Downtown Master Plan. As mentioned

earlier, folks like the recent additions of flower baskets and planters along Main Street, but the requests and ideas for prominent public art were aplenty. Several mentioned that the City needs an art center to have maker spaces, attend workshops, have juried shows and lectures, and to serve as a draw, bringing artists back to Monroe that have been lost to nearby towns with thriving art scenes.

Public Art that was requested be considered in the downtown shared space included sculptures, murals, and continued efforts at beautification through flowers, fresh paint, and improved or restored building facades.



Recent sculpture installation downtown. / McAdams

PARKS, GREENWAY TRAILS + CONNECTIVITY

Attendees agreed that the heart of a successful downtown lies in the ability for a safe, enjoyable pedestrian experience. Connectivity was a big theme with several asking for better walking paths to the recently renovated Belk-Tonawanda Park and clear sidewalk definitions on blocks where they are interrupted or narrow. Specific ideas for non-vehicle enhancements included an expanded pedestrian zone on Main Street, Franklin Street and Jefferson Street through streetscape enhancements, bike paths and easily accessible bike racks, a safe bike + pedestrian bridge and gateway on Hayne Street at the skybridge, and even an enhanced "RiverWalk area along Bearskin Creek. Overall, participants wanted more ways to get downtown safely and to walk or ride around downtown without fear of major danger.

REDEVELOPMENT + RENOVATION

Monroe's residents are well-informed as to those elements that would turn their downtown into a thriving, desirable place to be. Ideas were shared that included renovating derelict buildings into condos and mixed-uses, actively participating in the North Carolina Main Streets program, using code enforcement to condemn and "fix-up" nuisance or neglected properties, implementing a startup rent control to allow businesses to begin and establish before raising rents to market value, redeveloping and revising the former police station property, aid in the preservation of historic properties, encourage infill development, establish incentivizing grants for redevelopment, investigate changes to the height limits for downtown development, build "boutique" hotel and/or apartments to increase desirability of living downtown, redevelop the old Joffre hotel site (gravel parking lot across from the Courthouse Square), reuse city owned buildings that have functioned as storage, and establish guidelines to facilitate quality building rather than "factory built" apartments or condos. All in all, these insightful ideas are very feasible means to the establishment of a lively and economically-viable downtown.



MISCELLANEOUS OTHER IDEAS POSITED

In addition to the above, the following ideas were shared by participants for consideration:

- Establish prominent marketing on Highway 74 to bring people downtown rather than bypassing.
- Consider incentive rezoning to move offices (law offices in particular) out of high value retail storefronts.
- Monroe needs a role model to emulate and should consider a number of other communities with recently revived downtowns.
- Code of ordinances should be revisited to be in keeping with desired business additions.
- City should establish a permitting liaison to help new businesses achieve approvals and find resources.
- Create a positive culture that supports change achieved with creativity.
- Establish memorable gateways at the main entrances to downtown.
- Create a sense of place and a series of identifiable downtown districts.

This summarizes the input received at the December 15, 2022 public engagement session. Many of these concepts can be found in the recommendations and/or in the DNA of this Master Plan document.

Redeveloped Monroe Hardware Building. / McAdams



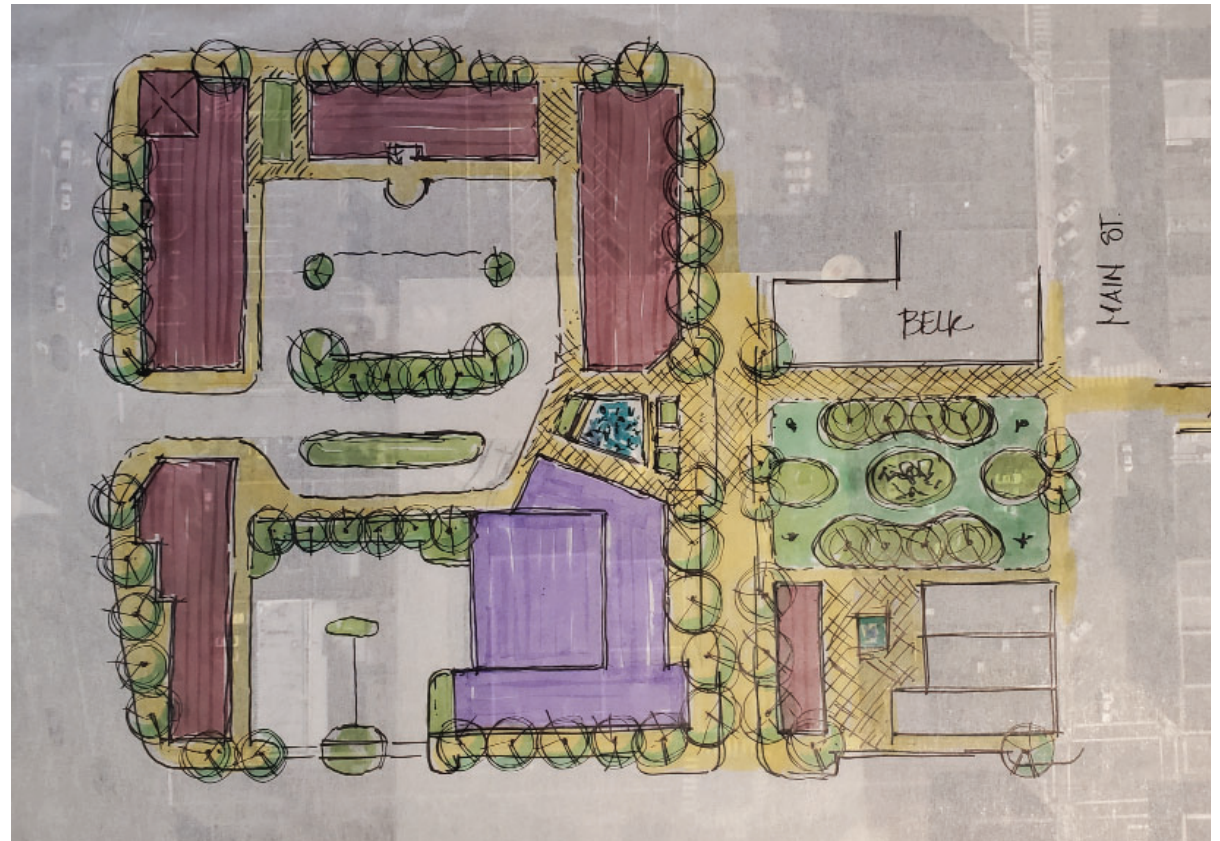
CHARETTE SESSION

Date: February 15-16, 2023

In February of 2023, a series of public charrette sessions were held to put form to some of the ideas that were beginning to take shape from the project team's analysis of existing conditions, public and stakeholder engagement, and City Staff and Leadership input. The charrettes were focused on developing preliminary conceptual plans for a series of "Opportunity Sites" within the study area. The intention is to treat these sites, chosen for their redevelopment capacity, potential, and strategic locations, as the canvas for catalytic change downtown over the next decade and beyond. Here are some of the sites studied and some of the concepts that came from the charrette sessions.

200-300 BLOCKS OF WEST MORGAN STREET + CLOSURE OF STEWART STREET

This opportunity site currently contains a public parking lot between Main Street and Stewart Street, a private parking lot and law office (Lewis R. Fisher, PA - 305 West Franklin Street), the Family Video building and associated parking (216 North Charlotte Avenue), the Frontier Communications Store and offices, and a series of historic commercial storefronts facing West Windsor Street (47K Marketplace, Moments Hair Gallery) and the Auto Plus auto parts store (fronting West Morgan Street).



Charrette sketch produced during the public workshop / McAdams [REPLACE WITH NEW GRAPHIC]

Ideas for this block that were explored include:

- Closure of West Morgan Street and North Stewart Street to through traffic, turning both into pedestrian promenades.
- Conversion of the public parking lot at Morgan Street into a Public Park
- Redevelopment of existing buildings into mixed use including residential, retail, restaurant and office uses.
- Expansion of shared use parking
- Opportunities for outdoor market vendors



HOTEL JOFFRE SITE

The site located immediately west of the historic Union County Courthouse square was the location of the historic Hotel Joffre, built in 1918 which was torn down in 1996. The site has been an unimproved parking lot since and is prime real estate for a redevelopment opportunity.

The site offers great frontage along Main Street and a spectacular view of the courthouse grounds. It is also prime real estate at festival time when this section of Main Street is often closed to accommodate the festivities.



Historic Hotel Joffre before demolition / McAdams



Charrette sketch produced during the public workshop / McAdams [REPLACE WITH NEW GRAPHIC]

Ideas studied for this opportunity site include:

- Conversion of North Stewart Street from a through street to a woonerf style drive access + pedestrian alleyway, easily closed off from traffic during events and festivals or even permanently if so decided at a later date.
- 4 story mixed-use building on the corner of Franklin and Main harkening back to when the Hotel Joffre held that space.
- Realigned shared use parking.
- Possible additional mixed use or restaurant, retail, or office building north of The Bottle Factory venue at 302-304 West Franklin Street.



EAST DOWNTOWN GATEWAY

FRANKLIN + JEFFERSON CONFLUENCE

The opportunity present at the eastern gateway to downtown involves a strategic realignment of the intersection of the City's two parallel one way streets, Jefferson Street and Franklin Street. Currently, when traveling from east to west, the two roads diverge creating an awkward series of road intersections and an unfortunate dead space between the two that offers little possibility for meaningful redevelopment. With the recent opening of the science center, this area is growing in prominence as a destination and a more legible road pattern may be crucial to future success of the science center and of the adjacent district.

✓ Charrette sketch produced during the public workshop / McAdams [REPLACE WITH NEW GRAPHIC]



Ideas for this site that were explored include:

- Realignment of Jefferson Street to meet Franklin at a traditional, perpendicular intersection.
- Alignment of the new intersection with the entrance to the science center.
- Redevelopment of the lots between Franklin and Jefferson to create a commercial village setting where restaurants, bars, and smaller retail shops can coexist with second and third story residential or office opportunities.
- Shared use of the science center parking during non-operating hours.
- Building facades that maintain the character of adjacent mill and warehouse buildings.
- Incorporated possibility of both streets becoming two-way traffic, better accommodating traffic flow through downtown and giving opportunity for expanded visibility to business along each corridor as travelers see their storefronts "in both directions". EAST DOWNTOWN GATEWAY

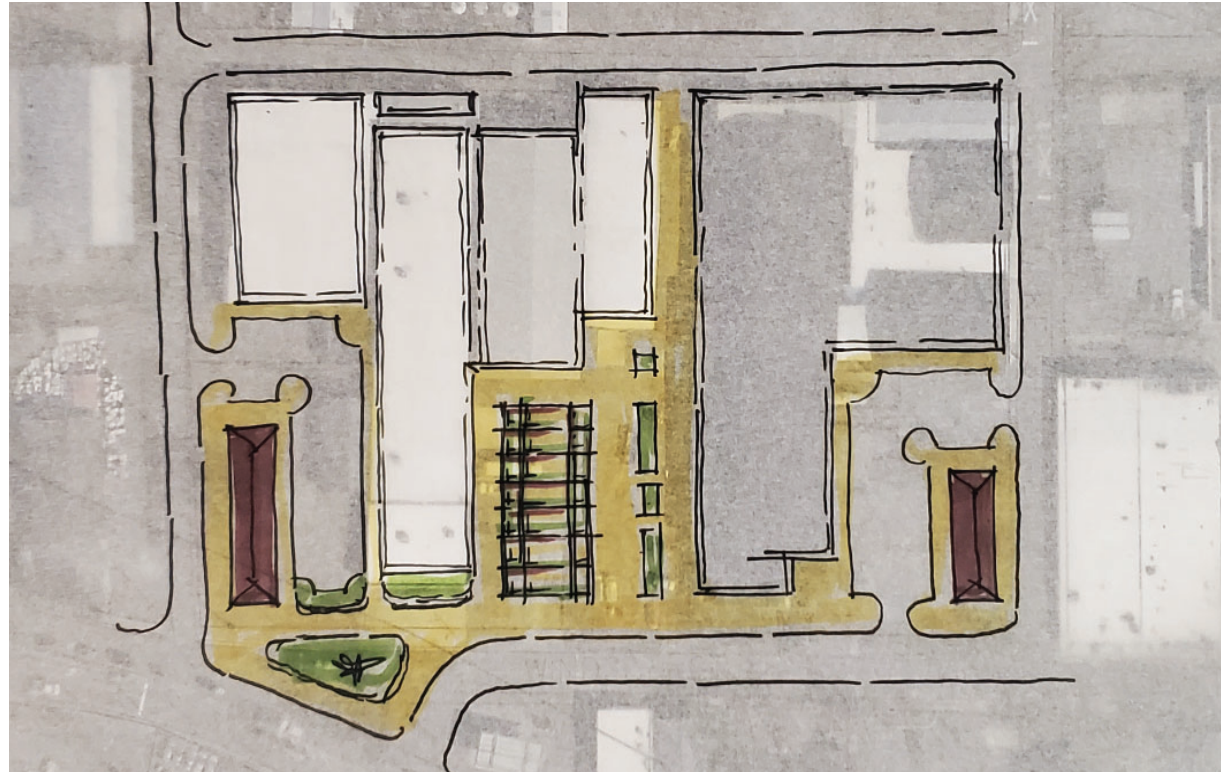


THE WAREHOUSE DISTRICT

On the eastern edge of downtown there are a series of former mill and warehouse buildings that could be prime candidates for adaptive re-use developments. Conversion of these formerly industrial spaces will clean up the appearance of downtown to visitors coming through town from the east while maintaining the character elements that define Monroe's past industry and economy and maintain connection to the history of this unique place.



Sampling of Warehouse District character / McAdams



Charrette sketch produced during the public workshop / McAdams [REPLACE WITH NEW GRAPHIC]

Ideas for this site that were explored include:

- Realignment of East Windsor Street to meet Franklin at a traditional, perpendicular intersection.
- Incorporation of a centralized market plaza or biergarten space that serves both private commercial marketplace amenity and public gathering functions.
- Incorporation of "maker spaces" small enough to be affordably rented by craftspeople and artists so that they may have a space for creation and for selling of their products while establishing themselves in the community and economy.
- Incorporation of a "food hall" within the larger warehouse space.
- Integration of limited parking, encouraging walking, bike or other modes of transportation to the site, reducing the impact of cars on the pedestrian experience in the district.



MAIN STREET STREETScape + CENTRAL PARK

Main Street has always been the heart of a thriving downtown Monroe. The businesses that line it are in need of an alluring pedestrian environment that invites patrons and visitors to stay a while, get out and walk the length of Main, stopping in multiple businesses along the way, eating, drinking, and buying the goods that keep Monroe's economy alive and kicking. The pedestrian environment along Main Street is not a bad one, however, there is a grand opportunity in expanding sidewalks to offer room for outdoor dining, sidewalk shopping, and unexpected moments of discovery such as coming across a particularly talented busker or the latest and greatest local food truck. Spaces for sitting and for gathering, and a larger space for civic function and fun festivals are all things that make for a thriving street. Main Street through downtown Monroe is ready for a look at those ideas that would take it from a good street to a great street.

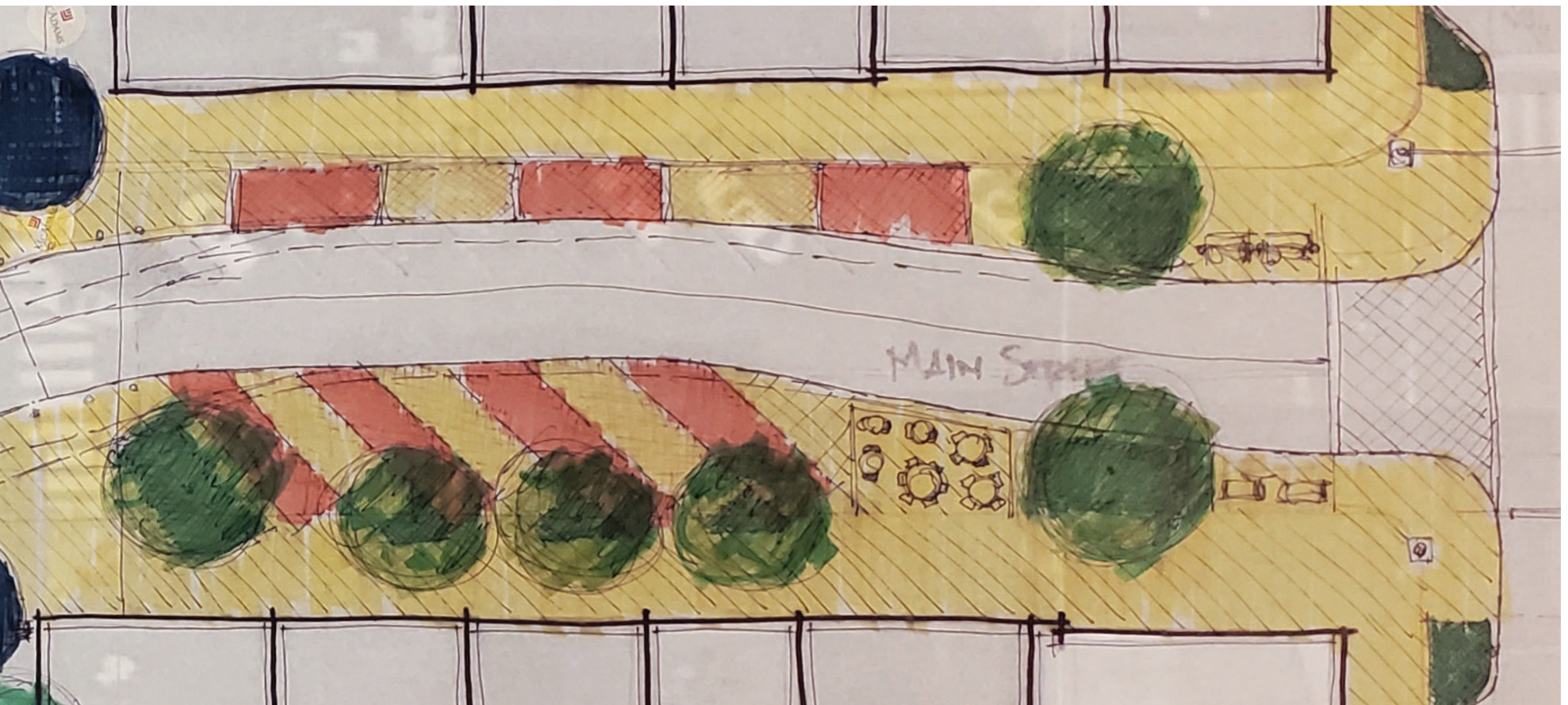
✓ Charrette sketch produced during the public workshop / McAdams [REPLACE WITH NEW GRAPHIC - DIFFERENT DESIGN]





Ideas for Main Street that were explored include:

- › Widening of sidewalks where feasible without removing significant number of parking spaces.
- › Addition of opportunities for seating and outdoor dining.
- › Inclusion of local public art in the streetscape.
- › Redevelopment of the public parking lot at Morgan into a central civic park including an amphitheater for outdoor performances.
- › Inclusion of creative market spaces such as a series of leasable converted containers or recreational vehicles upfit to allow commercial use.
- › Dedicated space for food trucks and festival crowds.
- › Possibility of closing the street to through traffic for events and festivals.
- › Creative use of the ground plane + materials for defining parking spaces, slowing traffic, and creating unique and useful pedestrian spaces.



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KEY TERMINOLOGY

IN THIS CHAPTER

INTRODUCTION

TERMINOLOGY





For the reader's reference, this section provides key terminology to further understand the various terms used by the project team throughout the Monroe Downtown Master Plan. These terms have been expanded upon throughout the report, each term has been listed here and is briefly summarized for the reader's understanding:

Advisory Committee The Advisory Committee was comprised of the City manager, Assistant Manager, Council members and the Downtown Director. This committee guided the process to create the Downtown Master Plan.

Stakeholders A variety of landowners, developers, agency representatives and others from Monroe who were able to enhance the research by providing an additional layer of information regarding local issues and opportunities.

Development Scenarios A method used to communicate the spirit of the Downtown plan by illustrating the result of putting the policies into action.

Goals Value-based statements that are not necessarily measurable. For the purpose of this plan, they express an ideal future condition.

Recommendations More specific, measurable statements of desired outcomes rather than goals.

Strategies Rules or courses of action that indicate how the goals and objectives of the plan should be realized.

Level of Service (LOS) is a quantitative measure used to determine how much access residents have to the offerings of Monroe's Downtown via means of walking, biking, driving, and forms of public transportation.

Green Streets Urban greenways where roads are retrofitted with pedestrian amenities such as continuous sidewalks, trees, benches and crosswalks to give pedestrians priority over vehicular traffic.

Chicane Street increase the amount of public space available on a corridor and can be activated using benches, bicycle parking, and other amenities. National Association of City Transportation Officials states an optional aspect for chicanes within the urban street design guide "may be designed using a return angle of 45 degrees, or a more gradual taper and transition, resulting in an S-shaped roadway."

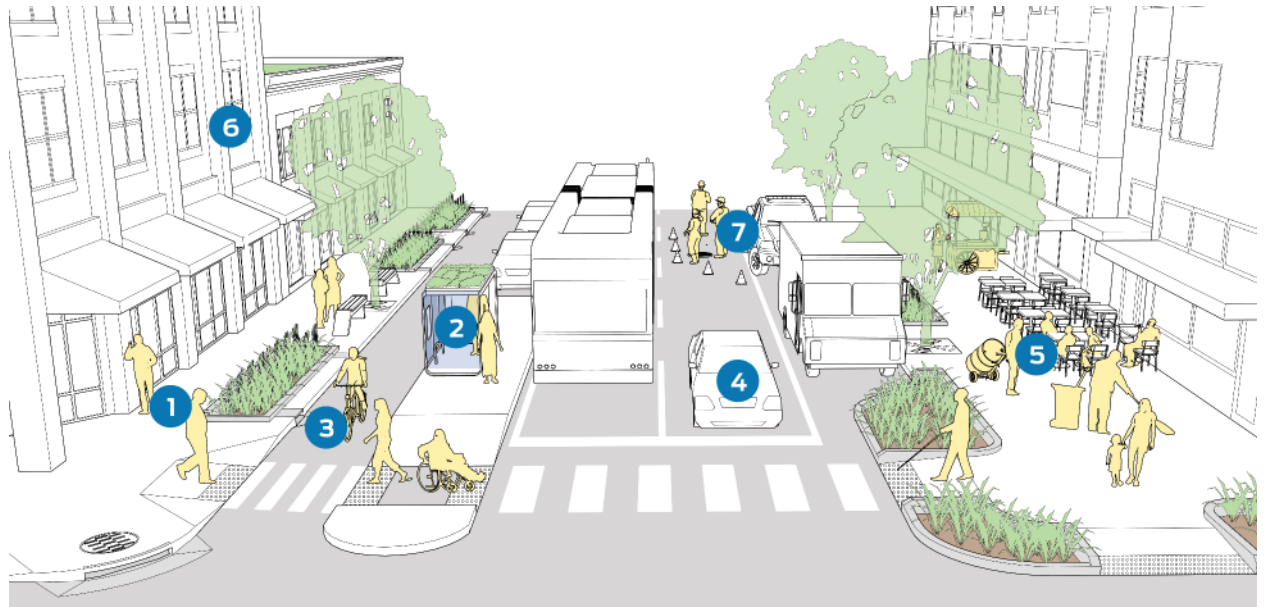


◀ Downtown Monroe's Main Street / McAdams



Complete Streets defined by the U.S. Department of Transportation, streets (that are) designed and operated to enable safe use and support mobility for all users. Those include people of all ages and abilities, regardless of whether they are traveling as drivers, pedestrians, bicyclists, or public transportation riders.

These policies are often set at the state, regional and local levels (routinely supported by roadway design guidelines). Depending on the community context will dictate how the complete streets approaches various elements like: sidewalks, bicycle lanes, bus lanes, public transportation stops, crossing opportunities, median islands, accessible pedestrian signals, curb extensions, modified vehicle travel lanes, streetscape, and landscape treatments



▲ Complete Streets: Defined / National Association of City Transportation Officials



Woonerf a concept of a traffic calmed road shared by both pedestrian and vehicular traffic. A woonerf is a living street, as originally implemented in the Netherlands and in Flanders. Techniques include shared space, traffic calming measures, and low speed limits. Zones for vehicles and pedestrians are often only differentiated by ground plane materials in a woonerf setting.



Charette a brainstorming, creative, intensive, in-person workshop to bring out ideas, discuss their pros and cons, and to put form to possible solutions that work for the problems or situations at hand. Charettes are often a great way to take public ideas and show them how they can be implemented or to show why they might not succeed.



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EXISTING CONDITIONS, OPPORTUNITY + CONSTRAINTS

IN THIS CHAPTER

INTRODUCTION

LAND USE + ZONING

DEVELOPMENT OPPORTUNITIES

HISTORIC ARCHITECTURE

REAL ESTATE + MARKET ANALYSIS

TRAFFIC, TRANSPORTATION + PARKING

PUBLIC SPACES + STREETSCAPES

ENVIRONMENTAL CONSTRAINTS

INFRASTRUCTURE, STORMWATER + UTILITIES





INTRODUCTION

In this chapter the existing conditions for downtown Monroe's were reviewed and categorized as opportunities and constraints. Understanding the opportunities and constraints allows the design team to make informed recommendations for a more successful and thriving downtown Monroe which represents the current Monroe while embracing new changes that are tailored to Monroe and its surrounding community.

These categories include:

- › Land uses
- › Zoning analysis
- › Development opportunities
- › Historic architecture
- › Building inventory analysis
- › Real estate and market analysis
- › Traffic, transportation + parking analysis
- › Public spaces + streetscape analysis
- › Environmental constraints
- › Infrastructure

Based on the discoveries the design team made through the categorization for opportunities and constraints, those discoveries directly influenced the creation of the Downtown Master Plan.

LAND USE ANALYSIS

[In progress]

ZONING ANALYSIS

[In progress]



DEVELOPMENT OPPORTUNITIES

Various development opportunities were considered by the design team

Areas of development reviewed by the design team for the charrette workshop included:

- › Hotel to Court [W. Jefferson St. to E. Franklin St.]
- › E. Franklin St. [E. Franklin St. and N. Beasley St.]
- › Main St. [W. Jefferson St. to W. Windsor St.]
- › Warehouse District [E. Franklin St. to E. Windsor and Crow St.]
- › Coco Cola [E. Franklin St. to W. Windsor St.]
- › Dead block [W. Jefferson St. to E. Franklin St.]
- › The Old Police Station [E. Franklin St. and N. Church St.]
- › Triangle [Crow St. and E. Windsor St.]
- › City of Monroe Property [E. Franklin St. to Crow St.]



HISTORIC ARCHITECTURE IN DOWNTOWN MONROE

INVENTORY + ASSESSMENT

The City of Monroe has many historic architectural resources, with two National Register historic districts located in and around the downtown area as well as several historic properties individually listed on the National Register of Historic Places.

Administered by the National Park Service, the National Register of Historic Places is a federal program that works in partnership with state governments to identify buildings, objects, sites, and districts worthy of preservation for their significance in American history, architecture, archaeology, and culture. An individual property or district's listing on the National Register is primarily honorary in nature.

There are no obligations or restrictions placed on property owners as a result of listing on the National Register unless the owner seeks a federal benefit such as a grant or tax credit. For private owners, the benefit of being listed on the NR is the first step in eligibility for federal and/or state tax credits that can be claimed against the cost of a certified rehabilitation of a historic property. These credits are generally referred to as Historic Tax Credits (HTC). National Register nominations facilitate preservation planning, historic tax credit applications, preservation easement donations and state environmental review. In terms of environmental review, all federal actions are reviewed by the state for their potential effects on properties that are listed in or eligible for listing in the National Register. Per the National Park Service, more than 96,000 properties listed (as of the end of 2020) in the National Register represent 1.8 million contributing resources – buildings, sites, districts, and objects – across the United States. See Appendix for more information.

NATIONAL REGISTER OF HISTORIC PLACES; SUMMARY OF HISTORIC DISTRICTS

MONROE DOWNTOWN HISTORIC DISTRICT (UN0648)

The Monroe Downtown Historic District, listed in 1988 on the National Register of Historic Places, is located in the downtown core of the city. This district encompasses the Old Union County Courthouse and approximately six block of commercial buildings to the west and south. There are a total of thirty-five resources in the NR historic district, with twenty-five contributing buildings and nine non-contributing buildings. The district has one contributing object, the Confederate Monument on the Old Union County Courthouse square. The Old Union County Courthouse was previously listed on the National Register as an individual property. The period of significance for the district is 1874 – ca. 1935, which is the time period during which most of the original construction and development in the district occurred.

The Downtown Historic District is significant in the area of commerce, including both financial institutions and specialty stores. The district is representative of the development of the City as a southcentral piedmont railroad hub and cotton exchange from the coming of the railroad in 1874 to the early years of the Depression. There are also significant figures who played important roles in the growth of the city and the region, such as the Belk Brothers, who are associated with several buildings in the district. The Monroe Hardware Company, also associated with multiple buildings in the



district, was an important regional business founded in Monroe in the 1880s and one of the largest employers in the Carolinas by 1919. Architecture is also an area of significance in that the Downtown Historic District contains many well-preserved examples of eclectic late-Victorian commercial buildings as well as buildings of unusual sophistication for a small Southern town, namely the Old Union County Courthouse. While many buildings have been altered, there is integrity of design, setting, materials, workmanship and feeling both individually and as an ensemble.

MONROE RESIDENTIAL HISTORIC DISTRICT (UN0717)

While not part of the Monroe Downtown Master Plan study area, it is of note that there is second National Register Historic District located in the downtown vicinity. The Monroe Residential Historic District is approximately sixty-eight blocks southeast, south and west of the central business district. There are three hundred and eighty-one contributing resources in the Monroe Residential Historic District. The NR nomination is the basis for the South Monroe Local Historic Overlay District, of which the east end was locally designated in 1984. The local district was expanded to include properties on the west side in 2008. The entire area was listed to the National Register in 1988.

THE STUDY LIST AND THE STATEWIDE ARCHITECTURAL SURVEY PROGRAM

There are also two historic properties in the downtown area that have been included on the North Carolina Study List, which is a preliminary step in the review of potential National Register nominations by the NC State Historic Preservation Office. The Study List identifies properties and districts that are likely to be eligible for the National Register and is another useful tool for local preservation planning. Inclusion on the Study List acknowledges the potential significance of districts and properties before formal nomination to the National Register and may motivate preservation activity at the local level.

The two properties included on the Study List as individual entries are the Lathan Brothers Building at 202-204 E. Franklin St. and the Henderson-Snyder Building at 232-238 E. Franklin St. Inclusion in the Study List is not a guarantee of eligibility for a National Register nomination. As time passes, properties may require reevaluation due to neglect or changes made to the building.

There are many properties in and around the downtown area that have been surveyed as part of North Carolina's statewide architectural survey program. An architectural survey is the initial step in recognizing and preserving historic resources across the state. Many properties located in Monroe's historic mill villages have been previously surveyed and warrant further investigation to determine possible eligibility or inclusion in the National Register.

The potential for the use of historic tax credits can be a catalyst for redevelopment, as seen at the Piedmont Buggy Factory adjacent to Monroe Cotton Mill. The Piedmont Buggy Factory was individually listed on the National Register in 2004 and is an excellent example of preservation and adaptive reuse. The project utilized historic tax credits and is being repurposed as residential lofts. This site is also a Union County Landmark, designated in 2016.



BUILDING INVENTORY ANALYSIS

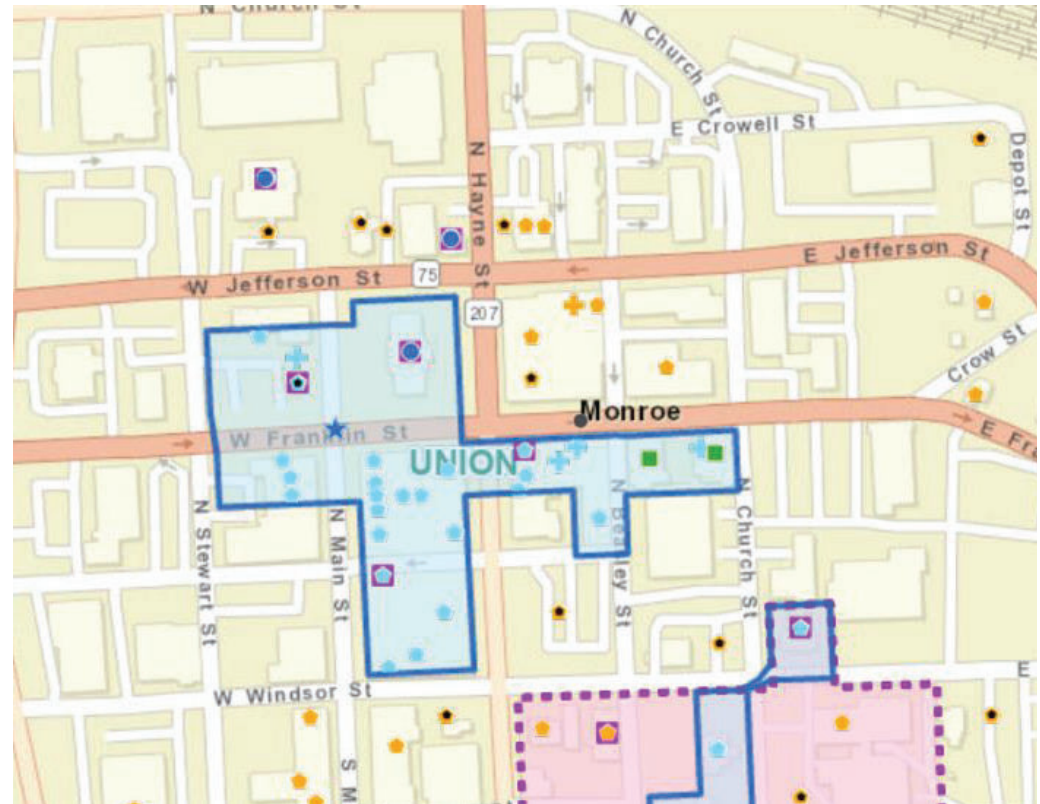
HISTORIC DISTRICT

The Monroe Downtown Historic District is comprised of 35 resources; there are 25 contributing buildings and 1 contributing object, the Confederate Monument on the west side of the Old Union County Courthouse Plaza. There are 9 buildings that are deemed non-contributing resources to the historic district. As of 1987, the contributing resources retain integrity for the historic district's period of significance, 1874 - ca. 1935. National Register (NR) criteria for evaluation:

The quality of significance in American history, architecture, archaeology, and culture is present in districts. Sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association, and:

- A. That are associated with events that have made significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or
- C. That embody the distinctive characteristic of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction, or
- D. That have yielded, or may be likely to yield, information important in prehistory or history.

For the National Register nomination, Monroe's Downtown historic district resources are significant based on Criteria A and C, falling into areas of significance; Architecture + Commerce.



▲ HPOWEB 2.0 National Registry Historic District Map / NC SHPO + Maurer Architecture

FACTS

- ▶ Total of 35 resources in the NR HD: 25 contributing buildings and 1 contributing object; 9 buildings non-contributing
- ▶ 1- number of contributing resources previously listed in the National Register: Old Union County Courthouse
- ▶ Area: Old Union County Courthouse and approximately six blocks of commercial buildings to the west and south
- ▶ Period of significance: 1874 - ca. 1935
- ▶ 1987 nomination



FUNCTIONS OR USE

- › Commerce/financial institutions
- › Commerce/specialty store
- › Government/courthouse
- › Domestic/hotel (Hotel Joffre demolished)

DESCRIPTION

- › Classical Revival
- › Italianate
- › Late Victorian Eclectic

AREAS OF SIGNIFICANCE

- › Architecture
- › Commerce

NATIONAL REGISTER OF HISTORIC PLACES

Per the 1987 nomination, the 26 contributing and 9 non-contributing properties make up the surviving historic commercial core of the City of Monroe prior to 1935. The district is significant in the area of Commerce, due to the growth and development of the City as a railroad hub and cotton exchange from 1874 to the early years of the Depression. Two important figures to the City's history are W.H. and J.M. Belk, they established in 1888 one of the South's most successful retailing networks starting the company out of Monroe. Monroe Hardware Company was founded in 1888, became an important regional business due to the company becoming one of the largest employers in the Carolinas by 1919.

The district is also significant in the area of architecture as there are well-preserved examples of the late Victorian masonry commercial buildings typical of many piedmont North Carolina city centers. Additionally, Downtown Monroe has several more sophisticated structures atypical for a small city at the turn of the Century. While



▲ National Registry Historic District Aerial Map / NC SHPO + Maurer Architecture

many buildings in this district have been altered, there still remains an integrity of design, setting, materials, and workmanship and feeling both individually and as an ensemble.



**INDIVIDUALLY-LISTED NATIONAL REGISTER PROPERTIES IN THE DOWNTOWN
MONROE HISTORIC DISTRICT VICINITY:**

- United States Post Office
- Monroe City Hall
- Union County Courthouse

✓ Individually Listed National Register Properties/ NC SHPO + *Maurer Architecture*



✓ Critical Resources in National Register Historic District/ NC SHPO + *Maurer Architecture*

CRITICAL RESOURCES IN NR HD:

- Bank of Union
- Secrest Building
- Monroe Hardware Co. Building
- Monroe Hardware Co. Warehouse
- Belk Building
- Belk Store
- English Drug Company Building



FIVE POINTS DISTRICT

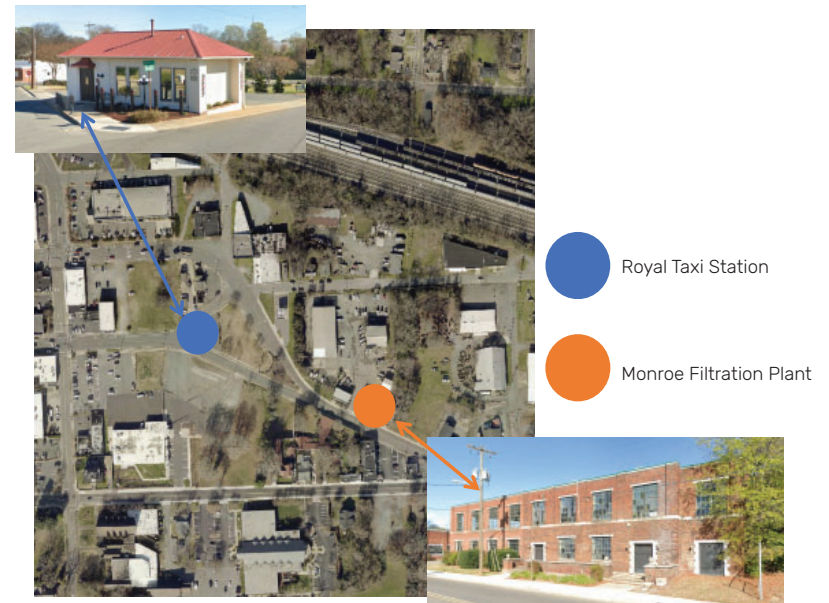
Opportunity Sites; National Registration (NR) surveyed properties:

Royal Taxi Station

Some modifications have been made to the building's exterior, however, it retains some integrity of form and siting. This building is not included in the Downtown Monroe NR Historic District but warrants further study.

Monroe Filtration Plant

Owned by the City; this building is an excellent candidate for adaptive reuse. The façade could be studied for precedent form and appropriate materiality for new construction in this area (Site 4). The exterior still retains some integrity of form and siting. This building is not included in the Downtown Monroe NR Historic District but warrants further study.





REAL ESTATE + MARKET ANALYSIS

EXISTING CONDITIONS + CONSTRAINTS

WHAT WE DISCOVERED

The perception to the casual passerby is that not much has changed in Monroe. The City of Monroe, and its downtown has faced much adversity since 2008:

- › 2008 Great Recession
- › 2022 Pandemic (Covid-19)
- › Highway 74 and the opening of the Monroe Bypass, diverting traffic and business activity away from downtown
- › Administrative instability due to turnover of city staff and elected officials

Despite this perception, much has evolved from the 2008 plan and many of the recommendations and strategies have been implemented. However, it has been a slow process. Since the 2008 Downtown Plan's completion, the following has occurred:

- › The newly adopted UDO (Unified Development Ordinance) addressed many land use issues.
- › Incentive grants have been created, sparking renovations to downtown homes and buildings.
- › The addition of street art, sculpture gardens, and directional signage.
- › Rehab of several historic buildings.
- › Arts, Science & Cultural Assets have expanded and new ones are pending completion and opening.

While the downtown has seen changes, the city has continued to grow, however at a much slower pace since the 2008 plan was completed:

CITY OF MONROE, NC	US CENSUS TOTAL POPULATION	% GROWTH
2000	27,388	-
2010	32,797	19.75%
2020	34,575	5.42%
2021 (EST.)	34,888	0.90%



In 2018 the Forward Monroe Land Use Plan followed, and highlighted six areas that included a vibrant downtown and healthy neighborhoods:



Arts and
Culture



Downtown



Economic
Vitality



Historic
Preservation



Neighborhoods



Parks and
Open
Space



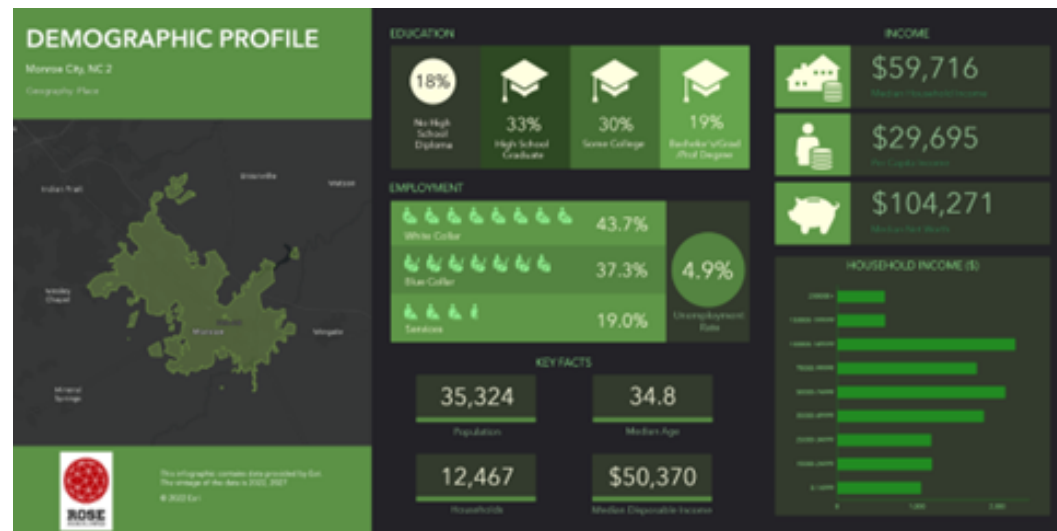
Transportation

And when comparing this data with the downtown and surrounding trade areas (by drive-time), some differences began to emerge.

We discover that Downtown is younger, more diverse, less affluent, less educated, and slower growing than the city, County and surrounding areas.

Monroe is the government and cultural center of Union County. Monroe is also now a manufacturing hub, having what is reported to be the largest concentration of aerospace industries in the state. It is part of the fast-growing Charlotte metropolitan area, the largest metropolitan area in North Carolina, according to the state's office of management and budget.

Since 2008, Downtown Monroe has made great strides in creating a place that includes the new Science Center, Dowd Center Theatre, and new restaurants and breweries. After years of stagnation, it is now coming to life in a new way and must create its identity to compete with other communities around the Charlotte region.



City of Monroe Demographic Profile/Rose Associates



When considering these elements, one must consider how current and future visitors and occupants experience the downtown:

- › As a current or future business in downtown
- › As a current or future resident in Monroe
- › As a current or future tourist or visitor to downtown
- › As a developer or investor in the downtown
- › As a Monroe resident or elected official as an ambassador for your city and the downtown as the centerpiece of your community.

COMMERCIAL REAL ESTATE USES

Our review of the commercial real estate inventory highlights the challenges and opportunities for commercial real estate within the market. Data from Costar as of July, 2022 indicates a robust multifamily apartment market, with smaller inventories of office and retail space based on vacancy rates. When compared to other markets around the Charlotte Region, the data demonstrates the County's competitive position as a more affordable option for an apartment or commercial space. However, the market is constrained by broader economic cycles, the amount of available inventory, and local regulatory and infrastructure limitations.

✓ Real Estate Inventory and Pricing/CoStar July 2022

UNION COUNTY HIGHLIGHTS	MULTI-FAMILY	OFFICE	RETAIL
INVENTORY	3,244 UNITS	2,716,000 SF	10,977,000 SF
12 MONTH NET ABSORPTION	457 (+8.4%) UNITS	14,200 SF	127,100 SF
VACANCY RATE	10.5% (-2.2%)	4% (-0.5%)	3% (-1.1%)
MARKET RENT PER UNIT	\$1,485 (+8.4%)	\$22.31 /SF (+2.6%)	\$19.62/SF (+10.7%)
MARKET SALE PER UNIT	\$213/SF (+16.5%)	\$201/SF (+4.5%)	\$200/SF (+7.4%)
MARKET CAP RATE	4.6% (-0.19%)	7% (-0.7%)	6.9% (-0.14%)
UNDER CONSTRUCTION	616 UNITS	90,700 SF	0 SF



ISSUES + OPPORTUNITIES

The review of prior plans, interviews with staff and stakeholders, and analysis of the data reveals both issues and opportunities regarding real estate and economic development positioning.

ISSUES

Our findings revealed that the **regional economic drivers** include the Manufacturing and Healthcare Industries. However, the concentration of these jobs and investments are in areas outside of the downtown.

Downtown's **old perceptions** about its vibrancy and success had inhibited growth and progress, exacerbated by vacant properties at key intersections along its primary corridors.

The housing stock is **aging**, and many properties remain **dormant** or neglected.

There is some notable **disparity** between current market rents and construction/renovation costs which limit investment. Incentives have been the key to downtown renovation and revitalization.

This issue of **housing affordability** figures prominently with aging housing stock and the cost burden of vulnerable populations.

There is a growing **arts and science ecosystem** developing in Monroe that often collaborates, however, it is disjointed in its structures and marketing and communications.

Many key players, both public and private, function independently rather than collaboratively.

OPPORTUNITIES

Review of the data, previous plans, existing conditions and market dynamics leads us to opportunities that fall into four key focus areas for the Monroe

DOWNTOWN PLAN:

These are further discussed throughout the plan; however, some notable Opportunities include:

- Wayfinding signage at Gateways/ Edges
- Housing is key – strengthen existing single-family neighborhoods with revitalization and add new additional affordable housing options for small households.
- Enhance STEAM (Science, Technology, Engineering, Arts & Math) to expand creative placemaking & tourism while building the small business and entrepreneurial base and growing arts community.



- Aside from incentives, create penalties for building neglect (e.g., code enforcement; demolition by neglect ordinance) which erodes values and market confidence.
- Consider additional program funding grants through the expansion of the existing Municipal Service District (MSD) to include targeted districts.
- Embrace and celebrate downtown diversity, both racial/ethnic and cultural, through festivals, attractions, and restaurants.
- Attract regional attention through an aggressive Marketing Plan and budget to include bridging the digital divide through expansion of broadband in the downtown.
- Public-private partnerships between government, organizations and local business will be needed to fuel private investment and facilitate growth.

✓ Studied Intersections/Ramey Kemp Associates/DRMP



TRAFFIC, TRANSPORTATION + PARKING ANALYSIS

After thorough study of peak hour traffic at a number of downtown intersections for potential of traffic improvements, the project team has a number of significant findings regarding the environment for traffic, transit, and parking within the downtown core.





The primary traffic dilemma in Downtown Monroe involves the volume of traffic utilizing each direction of the one-way pair of Jefferson Street and Franklin Street. The necessary connection that needs to be made at each end of the east-west axis through town leads to awkward intersections, backed-up queues, and spillback along some roadways. For the sake of this master plan, most downtown streets were studied for possibility of a road diet and both Franklin and Jefferson were studied for conversion to two-way traffic. Also, a realignment of Jefferson at its eastern terminus into a three-legged intersection was also considered. Additional issues identified through the traffic analysis include the backups at Charlotte Highway and Franklin Street, peak hour queue backups at Hayne Street and Church Street, and peak hour queue backups on eastbound Franklin Street at Hayne Street that back up through the Main Street intersection.

The results of the analysis were promising. Where potential road diets are concerned, the north-south travel collectors, Charlotte Highway and Hayne Street both proved too highly used to justify a road diet on either. Short block lengths would lead to additional congestion with the reduced capacity. Church Street seems to be the best candidate for a traditional road diet. For the one-way to two-way conversion of Franklin and Jefferson Streets, the modeling of that scenario, both converted, led to improved traffic operations including a more direct route for westbound traffic, a concentration of traffic onto Franklin which makes it easier to plan for and control with signal timing and speed limit measures, and the intersection of Charlotte Highway and Franklin would become greatly improved with the lateral jog maneuver to get from Jefferson back to Franklin via Charlotte Highway for westbound traffic no longer necessary. Reduced traffic on Jefferson allows for some of its signalized intersections be reduced to stop controlled. It also allows for additional streetscape improvements that favor pedestrian travel over vehicular on Jefferson. Details of the report including traffic data and model results can be found in the Appendix to this document.

PUBLIC SPACES + STREETSCAPES ANALYSIS

Downtown Monroe has the gift of many sizeable streets with significant character to create the framework for a strong network of pedestrian streetscape improvements and overall beautification. Main Street, Hayne Street, Jefferson Street and Franklin Street all show potential for streetscape improvements, particularly if traffic patterns are changed on Jefferson and Franklin from one-way traffic back to bidirectional. Streetscape improvements could improve pedestrian safety through traffic calming measures and reduction in crossing lengths at intersections. Added shade can reduce the heat island effect and make for a more comfortable experience for pedestrians and aid in reducing air conditioning costs for adjacent businesses.

What downtown has in excess in streetscape potential, it has far less in functional public spaces. Recent improvements to Belk-Tonawanda Park and the conversion of Morgan Street and its adjacent property into the Morgan-Windsor Alley has begun to show the City's renewed focus on quality public spaces. The plaza at the north terminus of Main Street in front of the Union County office building and court complex is a traditional space in terms of materials and arrangement and, while beautiful, does not serve the needs of the City for a larger, programmable civic space. Small pocket parks and larger parks at the outskirts of downtown do not function as that "beating heart" for downtown. The City needs a centralized gathering space for future expanded event programming.



ENVIRONMENTAL CONSTRAINTS

Downtown Monroe is highly urbanized and has been for decades. Standard environmental concerns do not come into play, however, manmade environmental issues such as asbestos and lead paint are prevalent in construction from many of the periods in which Downtown Monroe experienced strong growth trends. Most renovation or redevelopment projects within the downtown core will require some level of hazardous material abatement and or mitigation. Stormwater runoff must be treated to the same standard as new construction for any reuse or redevelopment projects and stormwater infrastructure within the downtown core is being upgraded in segments as opportunities for improvements arise, primarily as a part of other project construction efforts.

INFRASTRUCTURE: STORMWATER & UTILITIES

Revitalization of Downtown Monroe is not solely dependent on a vibrant streetscape or vertical construction. At its very foundation is the infrastructure needed to support growth. Stormwater and utilities must adequately serve the current infrastructure but allow for future growth and demand. Monroe has experienced inadequacies firsthand through capacity issues and system failure with age, leading to several recent sewer improvement projects being necessary. Without adequate utilities in place development cannot and will not occur. As capital improvement projects begin these systems must be overhauled and included as part of every project.

This section will identify the existing conditions within Downtown Monroe. It will provide both short- and long-term solutions for infrastructure needs that are traditional and non-traditional using today's best practices. Recommendations will prepare Monroe to grow for the foreseeable future and will help create a more self-sustaining and adaptable system over time.

SECTION COMPONENTS

- Existing Conditions:
 - Understanding existing utility conditions starts with a good survey, GIS, research, and analysis. An in-depth look at downtown's current infrastructure shows numerous issues and inadequacy.
- Proposed Treatment:
 - Industry standards and best practices are highlighted to provide Monroe with a range of treatment options both above and below ground.

EXISTING CONDITIONS

Over time, parts of Downtown Monroe's network of stormwater and utility facilities have been replaced due to associated roadway work, capital improvement projects, or critical repairs. The nature of these improvements has created a system with uneven capacity, differing standards of construction and material, and an incongruous layout. This project presents a great opportunity to lay the groundwork for improvements that will allow for easier maintenance and more regular repair cycles while also providing relief to the downstream conditions for a greater range of storm events. The Monroe stormwater network is comprised of collection and conveyance facilities such as inlets, manholes, and pipes that collect stormwater runoff from impervious area within the roadway corridors and then convey it to flood control and/or stormwater quality facilities or directly to local outfalls.



Outfalls can be minor or major drainageways such as streams, creeks, wetlands, or rivers. For stormwater networks along roadways, stormwater is collected by inlets and conveyed in pipes until outfall. The main conveyance pipes are typically called trunk lines. This conveyance and stormwater network can also be described as hydraulics. Hydrology encompasses stormwater catchments or the area draining to a source such as inlet, water quality feature, or detention facility. A minor catchment describes the area draining to a specific inlet and the major catchment, a specific outfall. Detention facilities are used to reduce peak flows, defined for this project by the 10-year and 100-year design storms, and are placed at points along or at the end of the conveyance facilities.

EXISTING CATCHMENTS

The Downtown area seems to rely heavily on flow along gutters. Many major and minor thoroughfares do not have any catch basins for multiple blocks. Given that the majority of the downtown area is impervious with little green space, this is not ideal. The lack of intermediate detention facilities apparent before the vast majority of downtown precipitation gets routed to Bearskin Creek to the north means that Bearskin Creek flooding over its banks has been observed to be a frequent occurrence, and the lack of treatment facilities means that almost all trash and pollutants collected in the downtown area ends up being routed to the creek.

There are 5 main drainage basin areas in Downtown Monroe. The central basin consists of the four city blocks around the Franklin St. and Hayne St. intersection, surrounded by N. Main St. on the west, W. Jefferson St. on the north, N. Beasley St. on the east, and E. Morgan St. on the south. There is very little area within this basin that is not impervious. This area slopes down from all sides to catch basins at each corner, then makes its way to the stormwater trunk line starting at N. Beasley St. and flowing east. This line does not follow a thoroughfare, but runs between city blocks underneath the existing police station and near the Monroe Science Center on its way to W. Jefferson St. It eventually turns to run north, crossing Crow St. about halfway between Depot St. and McCauley St., then runs underneath the railroad until it exits via a culvert on the northern side of Winchester Ave into open channel flow, flowing overland through ditches until it joins Bearskin Creek to the north. This line is mostly likely not in good repair since there appears to be an ongoing or recently completed repair at the catch basin on the southern side of Winchester Ave.

The western drainage basin area is heavily influenced by Bearskin Creek to the north and the surrounding topography. W. Jefferson St. serves as the primary divider to the south, and N. Charlotte Ave. serves as the primary storm drainage route to the west while also acting as the primary ridgeline keeping most of the drainage to the immediate west of the downtown area out of the pipeline along N. Charlotte Ave. From those two ridgelines, the topography falls to Bearskin Creek on the north side of Belk-Tonawanda Park. This area is largely impervious as well, with very little green space. There are multiple disassociated storm systems within this area, with multiple outfalls into Bearskin Creek, but the primary outfall appears to be at the intersection of N. Charlotte Ave and I.B. Shive Dr. This storm drainage system encompasses most of the downtown area, extending from north to south and only excluding the central basin described above.

The southern drainage basin consists largely of a residential area with significantly lower levels of impervious area. The storm drainage systems in this area are mostly disconnected and serve as local routes to bring stormwater from clusters of houses to areas where they can outfall into overland flow.



EXISTING CONVEYANCE AND WATER QUALITY

There are little to no water quality facilities apparent in downtown Monroe. Some small disassociated systems around the outskirts of the downtown area outfall into grass channels that may offer some treatment during small storm events, but the majority of the impervious area of downtown flows directly into pipes through curb inlets and thence to Bearskin Creek. The pipe systems appear to be adequately sized for the current needs, since flooding at inlets has not been observed. Better collection facilities, more inlets, and more extensive pipe systems could be useful however, as overground flow along streets and gutters can be deeper than ideal during heavy precipitation events. Many roof leaders outlet through the curb into the gutter, which adds significantly to the flow in the gutters. This happens often where a storm pipe does not exist along said thoroughfare, which is a common situation. The most common collection structures are grated inlets. There do not appear to be many broken grates, but many are bent significantly due to repeated traffic and should be expected to require replacement or repair soon.

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AFTER PREVIOUS CHAPTER/
SECTION



THE MONROE DOWNTOWN MASTER PLAN

IN THIS CHAPTER

INTRODUCTION

THE MASTER PLAN

ESTABLISHMENT OF DISTRICTS

LAND USE

TRANSPORTATION

OPEN SPACE + GREENWAYS

URBAN DESIGN

CHARACTER + CULTURAL RESOURCES

MARKET + ECONOMIC DEVELOPMENT





Introduction

THE MASTER PLAN

After developing a thorough understanding of existing conditions, hearing and processing the public's input, expressed values, and vision for Downtown Monroe, a Master Plan has taken shape. In this section, we delve in to what that Master Plan entails, from the Community Values that were identified through the public engagement process to Future Land Use and Zoning, to the understanding of Opportunity Sites for development or redevelopment, to a review of the City established ordinance and code language. The result is an ability to put form into the summary, recommendations, and proposed implementation strategies to bring these plan elements into fruition.

COMMUNITY VALUES

Recent trends in the direction of Downtown Monroe paired with the sentiments of stakeholders and the public led to the development of a series of guiding values for this Downtown Master Plan.

ENRICH QUALITY OF LIFE + CREATE MEMORABLE EXPERIENCES

CELEBRATE CULTURE + CREATIVITY

PRESERVE + CELEBRATE HISTORIC RESOURCES

ENHANCE THE LOCAL ECONOMY THROUGH ENTREPRENEURISM

EMPHASIZE TOURISM + ATTRACTION OF VISITOR DOLLARS



THE MASTER PLAN

Looking at the longer term development of the physical fabric of Downtown Monroe in keeping with the findings of this Master Plan process, the Master Plan Map on the following page is a representation of what could be. None of the recommended measures is “set in stone”, however, the intent of this plan is legitimate and will be the guiding document for decisions related to future designation of capital project outlays and for guidance in incentivizing a similar resultant buildout to what is shown here. The implementation and action items offered by this Master Plan are to be used as a pathway to future growth and economic success of Downtown Monroe. The represented infill mixed uses, improved pedestrian environs, expanded open space network, civic spaces, future parking solutions, and overall direction are the motivating factor for City policy implementation for the next 10-15 years and beyond.

Here is a summary sampling what is represented to accomplish each of the established Community Values for the Master Plan:

ENRICH QUALITY OF LIFE + CREATE MEMORABLE EXPERIENCES

Incorporation of an expanded network of active and passive open spaces, improved pedestrian connectivity and spaces through additional road and alley conversions, addition of entertainment business options and varied recreational uses, and the addition of multi-purpose programmable civic spaces all attain the goals behind this community value.

CELEBRATE CULTURE + CREATIVITY

Addition of places for public art, incorporation of mural art, addition of venues and programming of existing venues for performing arts, and the establishment of affordable “maker spaces” have been incorporated into the thinking of the location and scale of infill development and redevelopment.

PRESERVE + CELEBRATE HISTORIC RESOURCES

Expansion of the National Historic Registry inventory to protect additional historic structures, the addition of incentive programs for careful adaptive reuse of existing building inventory and for beautification and preservation measures in existing historic structures as well as incorporation of history as a major draw for future tourism.

ENHANCE LOCAL ECONOMY THROUGH ENTREPRENEURISM

Use of mixed-use in redevelopment to establish a range of available commercial and “maker spaces” to help burgeoning businesses to get a foothold and establish without oppressive overhead costs. Also through expansion of market-style programming throughout the year garnering sales opportunities and exposure for up and coming new businesses and established downtown businesses alike.

EMPHASIZE TOURISM + ATTRACTION OF VISITOR DOLLARS

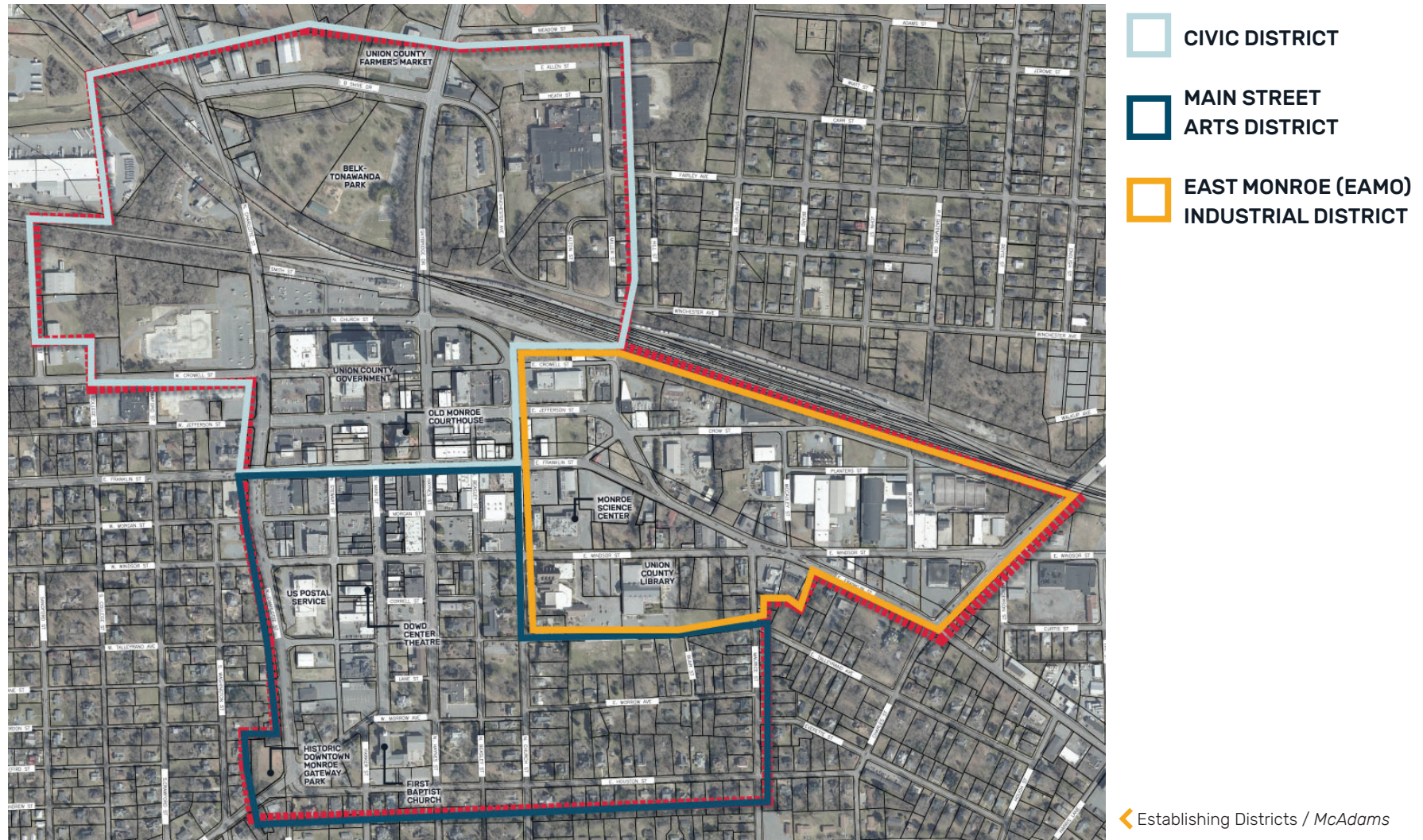
Inclusion of lodging accommodations, emphasis on encouraging restaurants and bars to make Downtown Monroe their home, marketing the attractions, programming, and historic significance of Downtown Monroe in a concerted effort to bring outside visitors downtown.





ESTABLISHMENT OF DISTRICTS

Studying Downtown Monroe and its opportunities, it does not take long to see that there are truly a collection of three districts forming that could be better identified and marketed using their unique characteristics to establish a sense of place, a sense of pride for residents and businesses in each district, and to help inform guiding principles for the City in the future form and uses of each of those districts.



Establishing Districts / McAdams



LAND USE

Downtown Monroe has a well established commercial core with a central civic campus and a surrounding community of historic homes. mostly single-family with little multi-family available apart from a handful of recent adaptive reuse projects. Several redevelopment opportunity sites were defined in the planning process and, paired with the Market + Real Estate research done, infill options have been included with a variety of uses, but overwhelmingly mixed-use in nature to expand downtown housing options and to offer the types of commercial retail, restaurant, and entertainment options that were most frequently identified as the preferred path to revitalization and future economic success of downtown. The addition of a boutique hotel starts to offer opportunities for the pursuit of outside tourism dollars that include an extended stay in the heart of downtown rather than on the outskirts along the Highway 74 corridor.

[MAP IN PRODUCTION]



TRANSPORTATION

The traffic, transportation + parking analysis delivered some interesting and intriguing options for consideration within the Master Plan. The best options involve a road diet on Church Street, reversion of Franklin Street and Jefferson Street to two-way traffic, the termination of Jefferson's eastern end at a perpendicular, signalized intersection across from the entrance to the Science Center, and the consolidation of surface parking within certain areas into structured parking as infill development opportunities, business and event successes multiply, and residency increase and vacancy rates decrease. Parking structures offer easily controlled and maintained event parking, they free up surface lots for additional redevelopment opportunity in the future, and over longer time frames can even be considered as a possible means of income for the City.

[MAP IN PRODUCTION]



OPEN SPACE + GREENWAYS

Expanded open space opportunities, connections to regional greenway trails through expanded trails and sidewalk systems, opportunities along the rail corridor and even in the heart of downtown within each district offer tremendous potential to establish and expand a thriving and healthy public park and recreation system and brings a lot of green to an already beautiful City.





URBAN DESIGN

Downtown opportunity sites, streetscapes, and repurposed streets and civic spaces offer a large amount of opportunity for strong urban design gestures that celebrate and enhance the culture and character of downtown. With the amazing inventory of quality historic architecture as a backdrop, and with revisited vehicular traffic patterns, downtown Monroe's potential for an incredible and memorable pedestrian and visitor experience is unmatched. Incorporation of publically accessible spaces within all infill development and with large scale renovations should be an emphasis within downtown policy and ordinance revisions. Public Private Partnerships must be the backbone of planning, design, and permitting to ensure a strong pedestrian experience, incorporation of public art, and integration into the strong fabric and vernacular of Downtown Monroe must be the driver for all projects within the downtown core.

The following Opportunity Sites show the most promise and are what has been studied in both public engagement efforts and since with the project teams urban designers to develop strong options for these spaces.

THE HOTEL JOFFRE SITE

(Site bounded by Jefferson, Main, Franklin, and Stewart Streets)

MAIN STREET PARKING LOT TO THE FAMILY VIDEO SITE

(Site bounded by Charlotte Avenue, Franklin, Main, and Windsor Streets)

JEFFERSON + FRANKLIN EAST GATEWAY INTERSECTION

(Site bounded by Jefferson, Crow, Franklin and Church Streets)

EAST MONROE INDUSTRIAL DISTRICT SITE

(Site bounded by the rail corridor, Crow Street, McCauley Street, Franklin Street, and Morgan Mill Road)

MAIN STREET STREETSCAPE + PARKING LOT

(Site along Main Street from Franklin Street to Windsor Street or even expanded to Talleyrand Street + including the parking lot at Morgan Street)

Plans for possible redevelopment of each of these sites can be found on the pages to follow.



THE HOTEL JOFFRE SITE

(Site bounded by Jefferson, Main, Franklin, and Stewart Streets)

The plan shown incorporates a boutique hotel on the site where the Hotel Joffre used to stand. Conversion of Stewart Street to a woonerf style pedestrian plaza that still allows vehicular access to parking is shown along with mixed-use retail at the existing buildings that surround the Hotel Joffre site. Retail would be encouraged at ground level in the hotel building.





MAIN STREET PARKING LOT TO THE FAMILY VIDEO SITE

(Site bounded by Charlotte Avenue, Franklin, Main, and Windsor Streets)

The plan shown redevelops the Family Video site into a mixed use retail + residential development with a strong public open space connection to a newly developed park space where the public lot at Morgan Street used to reside. Spaces between existing buildings and new public plazas are arranged to host public art and to be used for multipurpose programming.





JEFFERSON + FRANKLIN EAST GATEWAY INTERSECTION

(Site bounded by Jefferson, Crow, Franklin and Church Streets)

The plan shown redevelops the realignment of Jefferson Street to where its new terminus aligns with the entrance to the Science Center at a new signalized intersection in a landscaped boulevard alignment. Crow Street and the adjacent industrial area are more easily accessible and no longer disconnected. New mixed use with retail, restaurant, office and residential components address the streets on the perimeter with centralized parking on a lot that can become structured parking in the future as the area gains businesses and popularity.







MAIN STREET SREETSCAPE + PARKING LOT

(Site along Main Street from Franklin Street to Windsor Street + including the parking lot at Morgan Street)

The plan shown includes a major traffic calming measure and streetscape arrangement known as a chicane where the street meanders through the space. This creates valuable pockets of sidealk space for outdoor dining, seating opportunities, room for sidewalk sales, and room for impromptu experiences such as street performers or food carts. While the chicane option is a dramatic change, it improves pedestrian safety, enhances the pedestrian environment, and creates opportunity for business presence in the outdoor, street-level space. The entire space is designed to be barrier free with parking identified by changes in ground plane material and safety being established through use of removable bollards, light and sign posts, site furnishings, planters, and street trees. The intention is that this block could easily be cordoned off for events and festivals quickly and easily without sacrificing concepts of universal accessibility.

The parking lot at Morgan Street has, in this concept, been converted to a civic green amphitheater space with an opportunity for small-scale, leasible vendor or food truck space adressing Main Street.

An additional, traditional streetscape plan for Main Street has been developed as well and can be found in the page that follows.





CHARACTER AND CULTURAL RESOURCES

[In progress]



[MARKET] REAL ESTATE + ECONOMIC DEVELOPMENT

TOURISM

Tourism is widely regarded as a key sector for economic development. It creates jobs, increases the wealth of an area, and often leads to improvements and investment in the community through shopping, dining and recreation. Tourism also provides an economic stimulus by allowing for diversification of employment and income potential. All of these factors can contribute to the downtown experience.

Prior to the pandemic, the U.S. travel industry experienced 10 straight years of growth. In early 2020, tourism had become the world's third-largest export industry generating \$1.7 trillion in revenues as of 2018. However, the tourism industry is vulnerable to disruptions, as evidenced by the impact of the COVID-19 pandemic. An estimated \$500 billion loss in travel spending resulting from the pandemic has cost the U.S. \$1.1 trillion in economic output, according to the United States Travel Association. A 2021 American Hotel and Lodging Association Report estimates that the COVID-19 pandemic had eliminated more than 10 years of job growth in the accommodations sector, however, this industry is in full recovery mode while struggling to fill jobs.

The tourism industry is comprised of various sectors that house, feed, transport, and entertain visitors. Each sector covers a broad range, providing a distinct variety of goods and services. While separate from one another, they can often overlap and work in conjunction to create one complete and comprehensive hospitality experience. There are five primary sectors within the tourism industry: 1) lodging; 2) transportation; 3) entertainment, recreation and activities; 4) food & beverage; and 5) retail.

A cultural asset as “something of value to a particular population, community, or group because of its unique contribution to the cultural, artistic, creative, economic, historic, and/or social expressions and fabric of that community. Cultural assets can be tangible such as cultural or heritage sites, products, or facilities. Intangible cultural assets could include events, activities, expertise, support networks, community and cultural knowledge, and heritage, language, organizations, and icons.”

~ Americans for the Arts

Union County ranked 38th in total spending among the 100 North Carolina Counties in 2020 and 2021. Spending grew 37.6% year over year, led by food & beverage (\$62.62m) followed by transportation (\$36.55m), lodging (\$30.34m), recreation (\$12.72m) and retail (\$12.72m) for total spending of \$161.81 million dollars.

There are nine limited-service hotels in Monroe, primarily located along the Highway 74 corridor, with no hotels in or adjacent to the downtown. A collective effort to market the attractions, events, shops and restaurants in downtown to hotel guests would help elevate the number and length of visits.

One area of note are the cultural and historic features of the downtown which should be highlighted. There is a growing arts, culture and science ecosystem, including the city, non-profit organizations and education institutions in Monroe which should be a key theme of the downtown plan.

The Dowd Theatre and new Science Center will provide educational, arts and cultural experiences



for all ages. There is a growing collection of local artists, and its historic districts feature both commercial and residential structures that have broad historical appeal.

Further details are included in Character + Cultural Resources section of the Plan.

ENTREPRENEURISM

The Ewing Marion Kauffman Foundation is a private, nonpartisan foundation that promotes entrepreneurship and is considered a foremost authority. Kauffman released guidelines for creating a vibrant entrepreneurial ecosystem.

Kauffman Guidelines for Creating Vibrant Entrepreneurial Ecosystems

- Avoid startup monoculture. Create your own recipe by connecting existing ingredients in the community to construct an environment conducive to new business creation rather than building or acquiring them in an attempt to copy what another city has done.
- Convene entrepreneurs and organizations to facilitate learning between entrepreneurs across industries and sectors. Understand that actors often play multiple roles in an ecosystem.
- Encourage diverse participation in the ecosystem by actively including





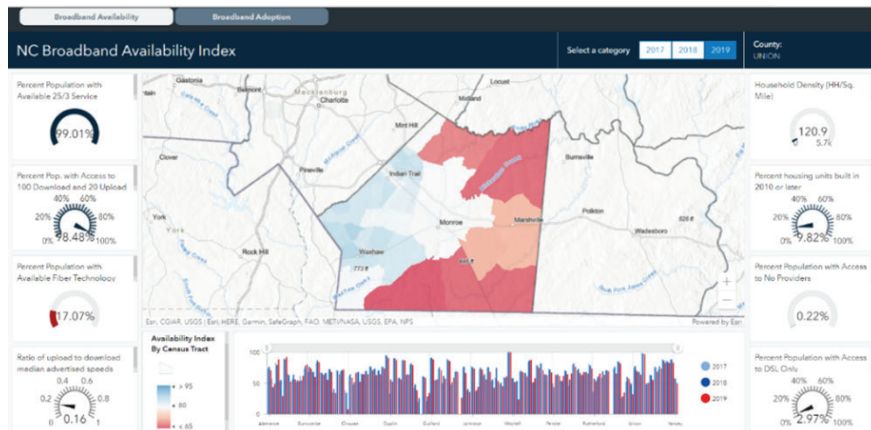
women, minorities, and immigrants.

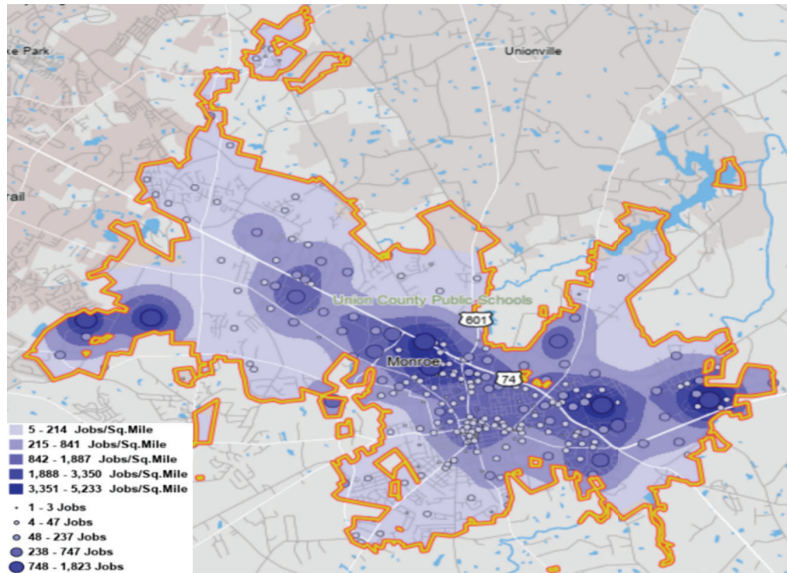
- Strengthen local education and increase graduation rates.
- Listen to local entrepreneurs to understand what works for them and what doesn't.
- Improve business licensing and permitting processes by streamlining requirements and making the process easy to navigate, with the intent to level the playing field with incumbents who know the ropes and new small business owners and entrepreneurs.
- Champion local entrepreneurs, and the ecosystem as a whole, both within your city and externally by publicly celebrating entrepreneurial success.
- Measure, measure, measure. Map your ecosystem, take inventory of your assets, and then develop metrics to measure the impact of policies. Make adjustments as necessary.

BROADBAND

Broadband is an important part of the infrastructure for this sector. The map below highlights the level of availability in Union County, with lower broadband availability in the city of Monroe, and little in eastern Union County. Limited free Wi-Fi is available thru the Union County library which has a branch located in downtown. Limited internet connectivity constrains the market for most types of development.

Source: NC Broadband Map (arcgis.com)

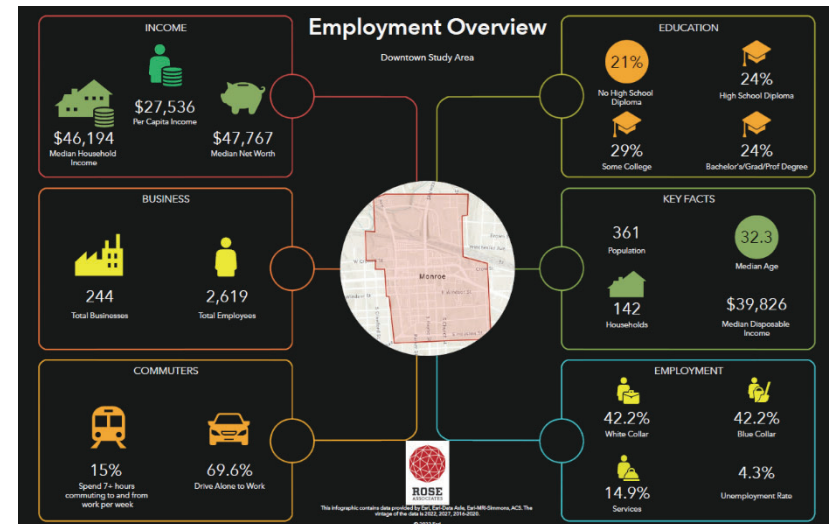
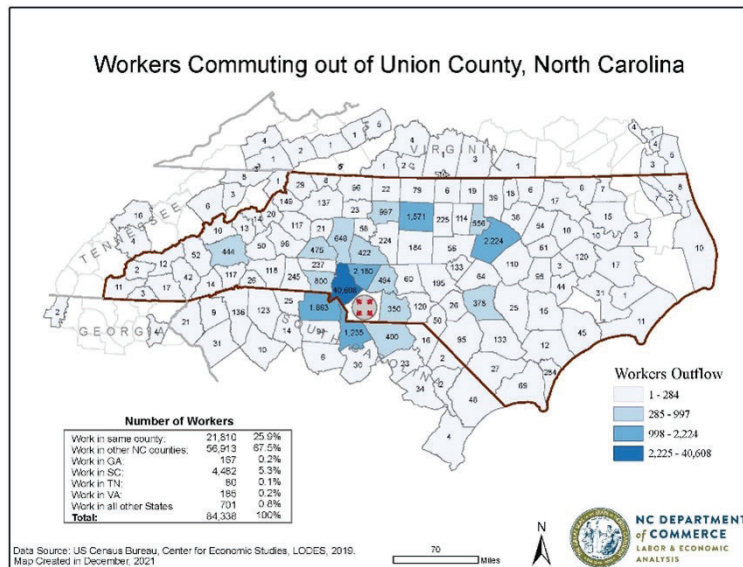




WORKFORCE

The concentration of jobs in Monroe are located outside of the downtown and more of Union County's residents are commuting outside of the County for employment:

There are currently 244 business and approximately 2,600 employees working in the downtown, compared to a population of 361 who live here. Therefore, a large percentage of downtown businesses are dependent on the daytime population of workers, and those visiting or traveling through the area.





WORKSPACE

A vibrant entrepreneurial ecosystem results in demand for workspaces that support new business ventures. These are supported by office and retail space. The offerings in and around the downtown area are limited and include a diversity of product type, quality, size and price range.

The cost to construct and finish new space will result in lease rates which would be possibly three times higher than current lease rates which creates challenges for businesses which may wish to locate in downtown. The most competitive strategy would be to support renovations of existing buildings to keep costs consistent with market rents and build rental rates over time as growth continues.

The dynamics of “work from home” (WFH) as a result of the pandemic have changed the face of the office market. The conversion of office space into apartments, and offering alternative live-work environments, along with broadband access will be important considerations for downtown vibrancy. Efforts should include bringing local residents and employees, and visitors to the downtown to support restaurants and retail business, beyond “9 to 5” daytime hours.



Downtown Monroe Real Estate for Lease / Sale						
	Address	Status	Floor/Suite	Land/Acres	Available Space	Price
OFFICE FOR LEASE and SALE						
2	501 E. Franklin Street	Office for Lease	Floor 1		6,365 SF	\$9.40/SF
5	1251 Stafford Street	Ex Office for Lease			87 SF	\$48.28/sf
8	200-214 E Jefferson Street	Office for Lease			4,860 total within 4 suites	\$11/SF annual
1	305 South Charlotte Avenue	Flex/R&D For Sale		0.42 acres	3,705 SF	\$599,000
RETAIL FOR SALE OR LEASE						
3	100-120 E Sunset Drive	Retail for Lease	Floor 1		15,109 SF within 2 spaces	negotiable
10	201 N. Main Street	Retail for Lease			10,000	\$17/SF
6	305 E. Philfer Street	Retail for Sale	Building	2.7 acres	9,120 SF	\$1,350,000
LAND FOR SALE						
4	Myers Street	Land for Sale		1 acre		\$185,000
7	E Sunset Drive	Land for Sale		2.6 acres		\$1,390,000
9	O Johnson St/Crowell Street	Land for Sale		3.73 acres		\$349,000

Source: Catylist, CoStar, Rose Associates



RESIDENTIAL HOUSING

As of July 2022, US Census estimates that 56,753 new privately owned housing units have been approved in North Carolina at an estimated value of \$13.4 million, second behind only Florida for the entire Southeast region. Union county is among the 31 Counties in North Carolina to enjoy strong housing growth, influenced by the strong Charlotte Region.

UNION COUNTY

According to the U.S. Department of Housing and Urban Development (HUD), there were 1,718 new single-family permits issued in Union County from January through July 2022. Sales of existing single family homes totaled 611 for the same period. And there were five multifamily projects permitted totaling an additional 616 apartment units. Based on current estimated job and population growth, county demand for new housing totals between 248-645 units annually.

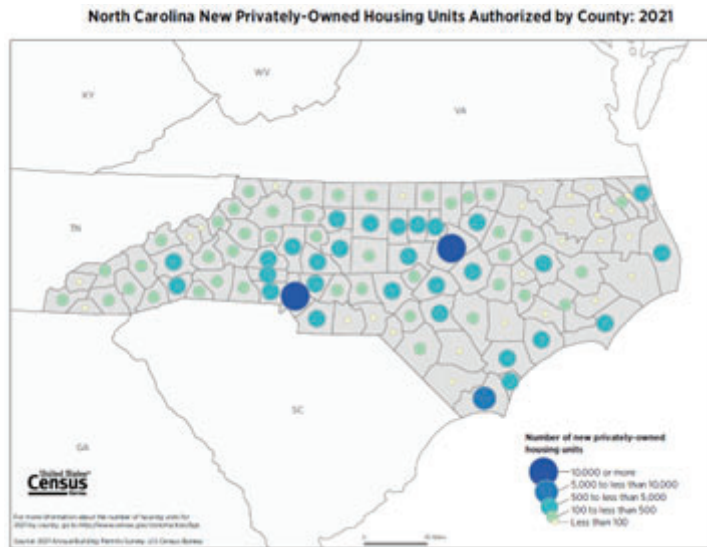
According to the Canopy Realtor Association MLS (multiple listing service), the median home sales price for Union County in July was \$472,815, up 23.3% year over year.

CITY OF MONROE

In Monroe, the median home sales price for the same period was \$397,000, up 29.4% year over year.

According to the U.S. Department of Housing and Urban Development (HUD), a household is “cost-burdened” if it spends more than 30% of income on housing. Based on the average sales price of a home in Monroe, the household income threshold to afford a home based on current interest rates is \$105,360. The 2022 estimated average household income in Monroe is \$82,796, with only 28% of households above the threshold. This results in nearly 70% of Monroe residents being “cost burdened”. The result is that many working here cannot afford to live in Monroe, increasing average commute times (a.k.a. “drive until you qualify”).



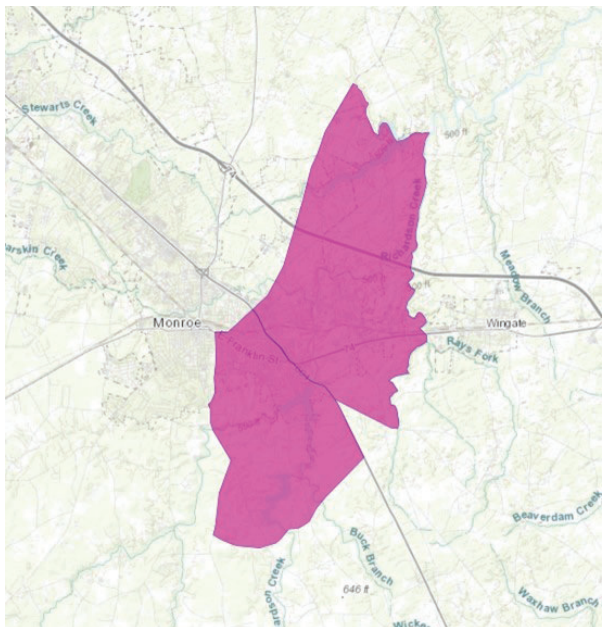


A program with the potential to attract investment capital into low-income areas was created by federal tax legislation, known as The Tax Cuts and Jobs Act (H.R.1). North Carolina Opportunity Zones will offer qualified investors certain tax benefits when they invest unrealized capital gains into these areas. Many of these finance structures have facilitated affordable housing developments in areas that qualify. Monroe has two qualified opportunity zones:

Opportunity Zone ID: 37179020602 includes portions of the downtown.

Within the downtown, there are 50.9% owner occupied housing units, 35.2% renter occupied housing units and 13.9% of the homes are vacant or unoccupied. A competitive advantage of the downtown is its water and sewer capacity, and an existing inventory of historic homes in the surrounding neighborhoods. A program to encourage home renovation and ownership would assist in rehabilitating vacant and neglected homes.

The quality and choice of schools may constrain the housing market in downtown for





families with school age children. Within the district that serves the downtown, schools are not well rated for performance. Union County has a School of Choice program in the event families want to send their children to higher performing schools or are committed to home schooling. School district maps source: Facilities / Current Attendance Maps (ucps.k12.nc.us)

Opportunities to provide housing that attracts a target market of young professionals and families, empty nesters and seniors who seek a walkable downtown environment, or who wish to live close to their business should be considered.

The strategy for downtown housing should include:

- **Collaboration** between City and County housing and education programs
- **Preservation** of historic single-family homes surrounding downtown
- **Creation** of new (smaller) downtown multi-family housing units (for sale/rent):
 - Townhomes
 - Apartments
 - Patio Homes
 - Accessory Dwelling Units (ADUs)





QUALITY OF LIFE

Quality of Life is a subjective term, depending on each perspective.

For existing or relocating residents, this includes childcare and education, access to parks and recreation facilities, accessible shopping and a vibrant arts, culture and entertainment scene. Altogether these make up the culture of a community, and such experience that a place creates, all of which promotes health and well-being.

For major employers, it includes an educated workforce that can find the desired housing and lifestyle within a reasonable commuting distance. Educational resources for job training and workforce development are critical. The path begins with strong K-12 schools. With industrial manufacturing and healthcare being the leading industries in Union County, assets that support science, technology, engineering and math (STEM) can strengthen career opportunities.

Many of these qualities should be integrated into a seamless experience for those living, working and visiting the downtown. Connecting people and places are what create a resilient environment.

Marketing your quality of life is crucial. Forbes reported in 2017 that “Millennials want a better everything.” Years later, that remains true and other generations are joining them. People demand better working conditions, better living environments and communities that meet their lifestyle needs. In response, businesses are also searching for locations that meet their needs and the needs of their employees, making it more critical than ever to market your community’s quality of life. The assets, events and opportunities in the downtown should be highlighted, celebrated and communicated in a cohesive and comprehensive marketing plan to a broad regional audience to help in recruiting business and investment in downtown Monroe.

QUALITY OF LIFE		
ECONOMIC	SOCIAL	PHYSICAL
EDUCATION	GOVERNANCE	HOUSING
INCOME	HEALTH + PUBLIC SAFETY	PARKS + RECREATION
JOB OPPORTUNITIES	COMMUNITY	INFRASTRUCTURE
BUSINESS ENVIRONMENT	ARTS, CULTURE + ENTERTAINMENT	VISUAL QUALITY

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RECOMMENDATIONS + IMPLEMENTATION STRATEGIES

IN THIS CHAPTER

INTRODUCTION

GENERAL

LAND USE

TRANSPORTATION

OPEN SPACE + GREENWAYS

URBAN DESIGN

CHARACTER + CULTURAL RESOURCES

MARKET POSITION





INTRODUCTION

This plan's vision and recommendations result directly from an extensive information gathering process involving community input, staff input, analysis of existing conditions, and future needs and trends for the City of Monroe. Recommendations suggested in this chapter are prioritized action items, divided by short-term, mid-term, long-term or ongoing. The action items receiving higher priority are those supported by significant community input or are items that have been delayed or postponed in the past but have significant bearing on accomplishing the recommendations of this plan. Each action item indicates a responsible party to foster accountability within the City. Priority items or projects may change or evolve into new possibilities over the ten-year planning horizon based on community needs or other related opportunities.

Recommendations for implementation to the Downtown Monroe area based on findings from the master plan focus on actionable items for City Staff to complete within the planning horizon for Monroe:

- > Land Use
- > Historic Architecture
- > Transportation
- > Open Space + Greenways
- > Urban Design
- > Character + Cultural Resources
- > Market Position



Hendersonville Main Street

LAND USE

The following recommendations within the Downtown core should be established to achieve the goals of this Master Plan:

1. Build on recent success, strengthening the core of downtown by encouraging additional investment that will increase the vibrancy of downtown and increase the viability of downtown as a business location.
2. Explore opportunities to create a civic anchor in downtown. This may be a performing arts center designed to support an array of civic, educational, and entertainment programming. Not limited to municipal use, this facility should be pursued in partnership with other entities that could help maximize its use. The facility should draw visitors and residents to the downtown area, which will help increase business in surrounding shops, restaurants, breweries. By locating such facility a block off Main Street, it could serve to expand the footprint of downtown's activity center.
3. Modify Main Street to make better use of the street right-of-way as a high-quality public space. Consider changes to on-street parking and sidewalk configurations that create ample space for streetscape enhancements (i.e., more plantings and furnishings that make the environment more comfortable for pedestrians) and for expanded dining areas and merchandise display space so the overall usable floor area of restaurants and shops can be expanded by "spilling out" onto wide sidewalks.
4. Improve Stewart Street to become a more pedestrian friendly space for the 2 blocks between _____ and _____. While vehicular access should be maintained, the pedestrian should take priority. Specialty pavers, planters, and other streetscape elements can combine to signal the intended use of the street as a public space. The redesign of the street should consider temporary closures to host special events. [insert picture of a woonerf]



5. Encourage residential development in downtown, as additional residents will help bolster downtown activity on nights and weekends.
6. Facilitate the development of townhomes, lofts, apartments and condominiums (stacked flats)...
7. Maximize the potential in the areas designated as opportunity zones
8. Low-income community opportunity zone (Federal)
9. Opportunity Zone (NC)
10. Assist property owners in upfitting upper floors of existing commercial buildings to accommodate residential units...
11. Building permits... rehab code



12. Grants

13. Support the addition of accessory dwelling units to expand the range of housing options in the center of Monroe.

14. Promote the adaptive reuse of existing buildings, particularly on the east side of downtown. Minor modifications to buildings could be sufficient to effectively house makerspaces, coworking spaces, and other employments activities.

15. Make infill development an easy solution to meeting demand... reduced parking requirements...??

16. Address the edges to simultaneously reinforce them as strong transitions into the downtown area, and use infill development and gateway features the mark the entrances.

17. Create seamless connections to the flanking neighborhoods, strengthening their sense of connection to and ownership of downtown...

18. Explore options for future structured parking. While there is ample parking in the downtown area today, the need for public parking should increase over time as the downtown becomes a vibrant destination for residents of Monroe and Union County and for visitors from points beyond. Such parking should be contemplated with private sector partners when warranted. A public-private partnership could result in parking solutions that satisfy the requirements for a specific development proposal while also delivering parking capacity to meet a public need. Identifying and reserving sites in the near term will ensure suitable locations are maintained for future use. Parcels currently owned by the City should be among the targeted properties.



19. Treat streets as linear parks.
20. Redesign Main Street Plaza into a more usable, more easily programmable space.
21. Consider the potential redevelopment of the government center to accommodate a new collection of buildings of efficiently house City and County functions and make a stranger statement at this northern end of Main Street.
22. Development an intricate system of public spaces to expand the amenities in downtown...
23. Prepare a public realm master plan
24. Work with private property owners...
25. Require POPOS to expand the system while minimizing the City's burden – and standardize the details to signal such spaces are open to the public. Meet open space requirements with publicly-accessible spaces, but must follow standards to achieve such credit.
26. Align the standards of the code to implement the plan...
27. Promote downtown as _____, an identity and brand that _____. Working with Downtown Monroe and local merchants...
28. Increase programming in the downtown...



29. Kids activities

30. Seasonal events

31. Events that reinforce the identity/brand

32. Consider three key districts in the downtown to enhance the experience of the place, and reinforce the theme of each district by directing related development to locations within each. [\[insert image of the 3 districts mapped conceptually\]](#)

33. Expand the historic district and align with it a local historic district (overlay). [\[insert map from Laurie\]](#)



HISTORIC ARCHITECTURE IN DOWNTOWN MONROE

PRESERVE PLANNING + DEVELOPMENT

Monroe's downtown includes many historic structures, some of which are listed on the National Register of Historic Places. The Monroe Downtown Historic District was nominated to the National Register in 1987 and there are many buildings that could now be eligible for inclusion based on a fifty year eligibility benchmark. For example the buildings along S. Main St such as Dowd Center Theatre at 120 S. Main and Kimbrell's Bootery Store at 100 S. Main, Holloway's Music Store at 107 S. Main and Monroe Service Station at 101 W. Windsor St. are all likely candidates for inclusion in an updated Monroe Downtown Historic District nomination.

NR nominations are not set in stone and can be revisited over time. Amendments can take the form of technical changes, adding new criteria, new areas or new periods of significance. NR district boundaries can also be revised, to exclude resources no longer contributing or to include those that have become eligible since 1988, the year that the Monroe Downtown Historic District was nominated to the National Register. There is also an opportunity to add additional information to existing National Register nominations as it relates to underrepresented communities and a more inclusive history of Monroe. Not only can amendments to existing National Register nominations be made to address previously undocumented histories, new nominations can provide an opportunity for engagement with the local community.

For example, the historic Monroe Cotton Mill and the Monroe Cotton Mill Village dating to the 1890s as well as the North Monroe/New Town Community and the Icemorlee Cotton Mill and mill houses (ca. 1890) are all significant historic resources that currently lack representation.

ENGAGE + EDUCATE

There is consensus among the planning documents prepared for the city over the last decades as well as among the citizenry of Monroe; the historic resources of the downtown areas are a valued asset and should be protected as part of future land planning and development. Any future regulation or action taken on the part of local government to protect historic resources will always be dependent on public support. The opportunities identified here can be realized in the shorter term and focus on the carrots in a 'carrot and stick' approach to coalition building around the value of Monroe's built history.

ENGAGEMENT

There is opportunity to increase awareness about the importance of historic preservation through outreach within historic neighborhoods. It is especially important to engage diverse communities and consider historic significance of properties important to diverse constituencies. The National Register of Historic Places is not an exhaustive list of all properties that have historic value. There are many historic resources of value beyond the boundaries of the National Register Districts. There is the opportunity to establish programs that honor individual resources and neighborhoods at the local level, and to engage the community in the process.

An approach that does not overemphasize the focus on architectural history will be beneficial in identifying social and cultural significance important to the city's past and its diverse communities. Alternate approaches to research such as oral history, folklore and ethnography, and informational websites with social media components may be necessary. Cultivate new partnerships with allied entities and organizations that have a focus on or peripheral interest in historic preservation and the humanities, such as the Union County Public Library, the Union County Heritage Room, Carolinas Genealogical Society, the Union County NAACP and the North Carolina African American Heritage Commission.

Further, we recommend a comprehensive survey of the cultural, ethnic and architectural historic resources of Monroe beyond the existing National Register district, as identified by the community and documented by an outside partner/consultant. The survey can be used to establish additional NR eligible properties for future designation or inclusion on the Study List,







the precursor to NR nomination if not already in the Historic Preservation Office database. The survey can also be used as a reference for general preservation planning. It is important to engage a diverse range of community members during the survey process, especially those not well represented in the historical record.

EDUCATION

Opportunities exist in the public sector and among private citizens for education about the importance of preservation and protecting our valuable historic resources. There is a misperception about the regulations associated with listing on the National Register of Historic Places and about the differences between a National Register Historic District and a Local Historic Overlay District. Educating leaders and constituents about the benefits of both can help to build the awareness and support needed to eventually pass regulatory protections for historic properties in the form of zoning overlay districts.

Educating the community about successful historic preservation projects and the tax benefits associated with them is another way to demonstrate 'preservation in action' on the ground. There are several properties that have been successfully rehabilitated in Monroe, through which the owners were able to utilize federal and state income tax credits. These property owners could be strong supporters of current and future preservation initiatives on the local level. Consider developing case studies of local preservation as a redevelopment catalyst.

In addition to the economic benefits, highlighting successful adaptive reuse projects at the local level is another way to educate the community about the environmental sustainability principles inherent in historic preservation. Adaptive reuse is preservation, and preservation is adaptive reuse. Continue to foster job creation and economic development through historic preservation by demonstrating the return on investment from successful rehabilitation and reuse projects.

Information garnered from the comprehensive survey or other community engagement efforts can be the basis for memorialization of resources (in the form of signage) and as the jumping off point for additional research in areas needing further study, such as Monroe's significant Civil Rights history. As a Certified Local Government (CLG) since 1986, Monroe is eligible for funding and technical assistance to implement these concepts.

INCENTIVIZATION

HISTORIC TAX CREDIT

There are opportunities for both economic and social incentives in promoting local preservation. In updating the existing National Register nominations and seeking designation of Study List properties/proposed districts, the city can foster community pride around the history of Monroe and its built environment. Listing on the National Register is honorary, in that it provides recognition of unique historic and architectural character of those properties nominated. Listing alone does not place restrictions on a property owner, nor does it necessarily preserve a property in perpetuity. However, listing on the National Register can potentially provide owners with Federal and/or State tax credits for the certified rehabilitation of commercial properties. See Appendix for additional information on Federal and State historic tax credits.

LOCAL LANDMARK DESIGNATION

We also recommend focus on the designation of local landmarks in the downtown core. Historic landmark designation is a powerful tool in the preservation toolkit, providing recognition and the financial incentive to protect Monroe's historic properties. Owners of landmarks are eligible to apply for an annual 50% property tax deferral as long as the property's important historic features are maintained. There are also some teeth to this regulation, in that recapture penalties may apply if the owner destroys the property or damages its historic value. Many local landmarks designated in Union County are residential properties, such as the Ramsay-Fairley House and the Ashcraft-Garren House, both of which were listed in 2018. The Piedmont Buggy Factory was also listed as a Union County Landmark in 2018. The Union County Historic Preservation Commission oversees the designation of Historic Landmarks within the county and the approval process for any changes proposed to landmark properties.



ECONOMIC DEVELOPMENT INCENTIVES

Monroe has already implemented economic development incentive assistance such as the Façade Improvement Program, Downtown Pronto and Mixed Use Development Incentives Grant to promote the preservation and reuse of historic buildings. The Residential Incentive Grant can be an especially powerful tool for bringing upper level residential uses to the historic downtown. There are opportunities to further expand upon these programs and market them to community members.

MAIN ST. AMERICA

Downtown Monroe is also a Main Street America accredited community, which promotes preservation-based economic development. Continue to utilize the resources available to program members to 'recognize, revitalize, preserve and promote the historic, cultural, social and economic significance of Monroe's Downtown'.

PRESERVATION AWARDS & RECOGNITION

The establishment of a Preservation Awards program would recognize successful projects and individuals who contribute to the stewardship of our historic built environment. An awards program could be administered by the Monroe Historic District Commission or in partnership with an affiliated entity. Preservation awards are often given for different types of projects such as rehabilitation, adaptive reuse, and restoration, as well as awards of merit for leadership in the field of historic preservation.

REGULATE + REINTERPRET

REGULATION

As a longer term goal, consider creating an additional local historic district for the downtown commercial area through historic district overlay zoning. The purpose of doing so is to protect and preserve its special character from unmanaged change as development pressures continue to grow. The South Monroe Historic District, based on the National Register Monroe Residential Historic District (UN0717), is a successful model already in place. Monroe has established a local Historic Preservation Commission and a Certificate of Appropriateness (COA) permit procedure for any development affecting the exterior of a building within the local historic residential district. The COA process for the local residential historic district is currently overseen by two members of City of Monroe planning staff. The Union County Historic Preservation Commission oversees the designation of Historic Landmarks and the approval process for any changes to landmark properties.

A local historic district overlay district zoning designation is prepared in coordination with the State Office of Historic Preservation and is often based on a National Register Historic District. The zoning designation provides an oversight mechanism to preserve the integrity of historic buildings and the district as a whole through design review (COA) of proposed alterations, additions and new construction within the district. Local historic overlay district zoning may be the most effective way to protect the historic resources that remain in the downtown area, as it is a regulatory process with 'teeth'. This process will likely take several years to implement, and community engagement is an essential component of local designation from start to finish.

REINTERPRETATION

The interpretation of the meaning and value of the Confederate Monument on the grounds of the Old Union County Courthouse is the obligation of the community. An opportunity for reinterpretation exists, for the monument itself in terms of its symbology but also for the cultural landscape of the public space that holds the monument. Representation of the full



historical narrative of Monroe's past that includes Reconstruction, Jim Crow segregation and the Civil Rights movement is needed. Inclusive and thoughtful consideration of the history represented by the monument in what is arguably Monroe's most important public space is required for greater understanding and acknowledgement of our complex past. Many communities across the country have grappled with these questions or are undertaking this work now; there are resources available to provide guidance and support throughout the process.

SUMMARY OF HISTORIC ARCHITECTURE OPPORTUNITIES

- > Update the National Register nominations and seek designation of Study List properties/proposed districts
- > Promote Adaptive Reuse
- > Engage diverse communities and consider historic significance of properties important to diverse constituencies
- > Highlight Monroe's unique history of entrepreneurship and how it provides connections to the built environment that include Belk's Building and Monroe Hardware Company
- > Educate the public and create new stakeholders
- > Increase awareness of the importance of historic preservation through outreach within historic neighborhoods
- > Use social media as educational tool; update City's website to include more preservation resources and information about historic tax credits
- > Strengthen relationships with local non-profits and preservation minded organizations

TRANSPORTATION

RECOMMENDED TRAFFIC, TRANSPORTATION + PARKING ACTIONS

The following recommendations for action items derived from the analysis and modeling of various favored options from the public and stakeholders as well as those of City Staff and prior approved plan documents have been recommended for implementation by the City of Monroe:

CONVERT JEFFERSON STREET TO TWO-WAY TRAFFIC

(Entire length from Charlotte Avenue to its terminus at Franklin Street)

CONVERT FRANKLIN STREET TO TWO-WAY TRAFFIC

(From the current end of two-way travel at Charlotte Avenue to its continuation at Jefferson Street)

REALIGN JEFFERSON + FRANKLIN EAST GATEWAY INTERSECTION

(Terminate Jefferson Street at a controlled intersection perpendicular to Franklin Street. See Urban Design section for proposed alignment.)

SUBJECT CHURCH STREET TO A “ROAD DIET”

(Reduce Church Street to a 3-Lane profile from Charlotte Avenue to Jefferson Street – Dedicate the gained width to a dedicated bike lane)

CLOSE SECTIONS OF STEWART STREET + CREATE PEDESTRIAN CORRIDORS

(Consider closing of or limited vehicular access to Stewart Street between Jefferson Street and Windsor Street to eliminate “cut through” trips)

CONSTRUCT ROUNDABOUT AT FRANKLIN STREET + WINDSOR STREET INTERSECTION

(Incorporate Franklin Street, Windsor Street, McCauley Street, and Maurice Street to simplify traffic movements and reduce conflicts)

PLAN FOR + BUILD STRUCTURED PARKING IN MULTIPLE LOCATIONS

(Identify high use areas for concentration of widely dispersed surface parking lots into structures, freeing sites for sale and/or redevelopment)

PLAN FOR REVISED SIGNAL TIMING OR EVEN REDUCED NUMBER OF SIGNALS BASED ON CHANGES ABOVE

(Improve levels of service on Franklin, Jefferson, and streets that connect to them by reducing frequency and length of stop times)



INFRASTRUCTURE: STORMWATER + UTILITIES

Typically, an analysis of pre- vs. post-construction runoff would provide a starting guideline for goals. For this project, because the drainage basins are made up primarily of impervious surfaces, the goal should be to provide the maximum water detention feasible. Water quality facilities should be included in detention calculations for a fully representative model and should be part of the overall strategy to reduce peak runoff.

Further creative ways to cut down on the impervious area of the downtown should be encouraged in future developments, both private and public. The City should replace the current impermeable stamped asphalt at pedestrian crossings with permeable pavers, and structural firelane soil and grass should be used in place of gravel parking, firelanes, or maintenance alleyways behind buildings. Options to treat runoff from impervious roof areas should be promoted as well, with options such as reverse trench drains proving to be effective at treating runoff.

STORMWATER NETWORK UPGRADES

While stormwater network upgrades will occur in concert with future downtown infrastructure improvements, the City should assess what drainage lines will need to be replaced to avoid system failure and what upgrades, additions, or relocations could create opportunities for adding detention and water quality systems to the existing storm drainage infrastructure. Making these upgrades in an early phase will allow flexibility to make future system improvements and variation in treatment facility types. Stormwater pipes downstream of proposed detention and treatment facilities should be replaced if it will assist with the facilities operation.

MAINTENANCE REQUIREMENTS

Non-traditional stormwater systems are not inexpensive and require additional maintenance from qualified personnel. It is essential that water quality and detention facilities are maintainable by City employees and financially sustainable as more are added. Installing a uniform and consistent system will help ease maintenance needs, especially from a planting



perspective. Green infrastructure should be included in each phase to meet water quality requirements to the maximum extent possible while still being viable long-term solutions. The maintenance of these facilities will be crucial to the overall performance of each element. Additional trained personnel will be needed to ensure each facility continues to function after the implementation is complete.

If needed, the City should amend the stormwater ordinance to help with long-term maintenance of the water quality and detention facilities designed as part of future downtown infrastructure improvements. Consideration of more stringent water quality and quantity controls will reduce the amount of future runoff.

UTILITIES

The following are the known utility providers in the project vicinity:

Water & Sewer: City of Monroe

Telecommunication: Spectrum, Frontier, Windstream

Gas: City of Monroe

Power: City of Monroe

Subsurface utility location services by a qualified and experienced company should be retained prior to improvements in the downtown area. This is a critical step in the improvement process and should be a part of any project that has any subsurface work. It will streamline the project design and construction to know exactly what utilities exist in the project area, and can lead to significant savings as opposed to finding utilities once construction has begun. This information should be shared with the GIS department of the City of Monroe so they can keep an up to date database. This provision should be written into code such that all private and public developments are required to perform subsurface utility location in the area directly affected by the development.

WATER AND SEWER

The City of Monroe is the sole provider of water and sewer to the downtown area. This should be used as an opportunity to streamline the process when upgrades to water or sewer services are deemed necessary. The City should upgrade facilities that do not comply with current standards. Where abandoned utilities are found, the City should either remove or plug and fill abandoned lines with flowable fill. During roadway changes, the City should take the opportunity to upgrade sewer and water services to a best practice layout and to remove obsolete utilities to avoid future patchwork repairs.

POWER AND TELECOMMUNICATION

Power and telecommunication lines are typically overhead once outside the downtown area. In some cases, roadway work that impacts poles may require coordination with the utility provider or funding its undergrounding.

OPEN SPACE + GREENWAYS

[In progress]

URBAN DESIGN

[In progress]

CHARACTER + CULTURAL RESOURCES

THE NATIONAL REGISTER + BEYOND

The Monroe Downtown Historic District was nominated in 1987, since the nomination was prepared many changes have occurred. The National Register, however is a living document and does not represent an exhaustive history of a place; nominations can be amended to make technical changes, add new areas or periods of significance, revisit boundaries and update contributing status. Amendments to existing National Register nominations can be made and new nominations can be addressed to previously undocumented histories.

We recommend that the City initiates a resurvey of the National Register district as well as areas previously documented during the initial NR survey which were not deemed eligible for inclusion at the time. These areas include the historic Monroe Cotton Mill and the Monroe Cotton Mill Village dating to the 1890s as well as the North Monroe/New Town Community and the Iceemorlee Cotton Mill and mill houses (ca. 1890). The Monroe Cotton Mill is within the Downtown Master Plan Study Area, as is a portion of the Monroe Cotton Mill Village.

✓ Iceemorlee Cotton Mills, 1987



The Piedmont Buggy Factory was individually listed on the National Register in 2004, it is an excellent example of preservation and adaptive reuse. The project utilized historic tax credits and is being repurposed as residential lofts. This site is also a Union County Landmark, designated in 2016.

Monroe Cotton Mills is not listed in the National Register of Historic Places, nor is the Historic Mill Village to the west. Both areas were previously surveyed and warrant additional study to determine possible eligibility or inclusion in the National Register. The potential to use historic tax credits can be utilized as a catalyst for redevelopment to this property, similar to the adjacent Piedmont Buggy Factory.

Dowd Center Theatre, 120 S. Main St.

Another example of adaptive reuse outside of the National Register Historic District is the Dowd Center Theatre on the 100 block of S. Main St. This area is not included in the Downtown Monroe Historic District (southern boundary seen in blue); this area should be resurveyed for a potential increase in the historic district boundary adding additional resources along S. Main St.

Kimbrell's Bootery Store, 100 S. Main St.

This location was previously surveyed, but is not located in the Downtown Monroe NR Historic District. The area just south of the existing NR HD boundaries (shown in blue) should be resurveyed for a potential historic district boundary increase.

[Insert graphic]

Holloway's Music Store, 107 S. Main St.

This location was previously surveyed, but is not located in the Downtown Monroe NR Historic District. The area south of the existing NR HD boundaries (shown in blue) should be resurveyed for a potential historic district boundary increase.

Monroe Service Station, 101 W. Windsor St.

Another adaptive reuse opportunity, located outside of the National Register Historic District, is the Monroe Service Center site. This area is not included in the Downtown Monroe Historic District but the site still holds historic value. The building was constructed in 1960 and sits on 0.169 acres in the downtown core. The area south of the existing NR HD boundaries (shown in



▲ Piedmont Buggy Factory



▲ Hatley's Skating Rink



▲ 1318 Concord Ave

blue) should be resurveyed for a potential historic district boundary increase.

The National Register; Additional Resources Outside of the Study Area

In 2019, a Historic Structures survey report was prepared as part of a Section 106 review process for the proposed replacement of Bridge No. 34 on Concord Ave over US 74. Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies to consider the effects on historic properties of projects they carry out, assist, fund, permit, license, or approve throughout the country. If a federal or federally-assisted project has the potential to affect historic properties, a Section 106 review will take place. Two historic resources were identified during the Section 106 review as being eligible for the National Register of Historic Places: Hatley's Skating Rink and the Concord Ave Stone Bungalows, a proposed NR Historic District in the Benton Heights neighborhood. Our recommendation is to initiate the nomination process for these historic resources to be added to the National Register.



RECOMMENDATIONS

EDUCATE

Further, we recommend a comprehensive survey of the cultural, ethnic and architectural historic resources of Monroe beyond the National Register district, as identified by the community and documented by an outside partner/consultant. The survey can be used to establish additional NR eligible properties for future designation or inclusion on the Study List, the precursor to NR nomination if not already in the Historic Preservation Office database.

The survey can be used as a reference for general preservation planning, the basis for memorialization of resources (in the form of signage) and as the jumping off point for additional research and documentation of areas needing further study, such as Monroe's significant Civil Rights history. It is important to engage a diverse range of community members during the survey process, especially those not well represented in the historical record.

An approach that does not overemphasize the focus on architectural history will be beneficial in identifying social and cultural significance important to the City's past and its diverse communities. Alternate approaches to research such as oral history, folklore and ethnography, and informational websites with social media components may be necessary. Cultivate new partnerships with allied entities and organizations that have a focus on or peripheral interest in historic preservation and the humanities, such as the Union County Public Library, the Union County Heritage Room, Carolinas Genealogical Society, the Union County NAACP and the North Carolina African American Heritage Commission.

INCENTIVIZE

Monroe has in place many financial incentives to encourage development of the downtown area and preservation of the existing fabric. Continue to focus on marketing these financial incentives to community members.

Downtown Monroe is also a Main Street America accredited community, which promotes preservation-based economic development. Continue to utilize the resources available to program members to 'recognize, revitalize, preserve and promote

the historic, cultural, social and economic significance of Monroe's Downtown'.

Continue to foster job creation and economic development through historic preservation by demonstrating the return on investment from successful rehabilitation and reuse projects.

Consider developing case studies of local preservation as a redevelopment catalyst.

Consider the creation of a preservation award to recognize successful rehabilitation and reuse projects.

REGULATE

As a long-term goal, consider creating an additional local historic district for the downtown commercial area through historic district overlay zoning. The purpose of doing so is to protect and preserve its special character from unmanaged change as development pressures continue to grow. The South Monroe Historic District is a successful model already in place, with the Historic District Commission and City of Monroe staff processing Certificate of Appropriateness applications and coordinating with Union County on the designation of Historic Landmarks.

As support for the creation of an additional area of protection for historic resources is cultivated, we recommend focus on the designation of Historic Landmarks in the downtown core. Historic Landmark designation is a powerful tool in the preservation toolkit, providing recognition and the financial incentive to protect Monroe's historic properties. Owners of landmarks are eligible to apply for an annual 50% property tax deferral as long as the property's important historic features are maintained. There are some teeth to this regulation, in that recapture penalties may apply if the owner destroys the property or damages its historic value.



REAL ESTATE + ECONOMIC DEVELOPMENT

DEVELOPMENT DEMAND

Five land uses and product types were identified to support the key focus areas. The estimated capacity considers a targeted capture rate of county demand within the downtown over a ten-year period, based on estimated job and population growth.

[Insert graphic]

STRATEGY MATRIX

In an effort to integrate and link the existing anchor assets identified in the downtown, a primary theme evolved:

STEAM (Science, Technology, Engineering, Arts and Math)

According to the Institute for Arts Integration, “STEAM Education is an approach to learning that uses Science, Technology, Engineering, the Arts and Mathematics as access points for guiding student inquiry, dialogue, and critical thinking.” This educational foundation is what supports workforce development for job growth and economic development, leading to investment. The anchor assets identified in the downtown form the core what could be future Districts:

The historic Courthouse is a destination that brings history and commerce together near the government center.

The Dowd Center Theatre is a destination that brings arts, culture and entertainment to the core of the downtown.

The Monroe Science Center will be a destination that will feature science, engineering and math to this knowledge and learning center of downtown, across from the library in the Five Points area.

[Insert graphic]

[insert Matrix pdf here]

MEASURING SUCCESS

The success of any plan is dependent on market forces and market cycles.

MARKET FORCES

Market forces include both external and internal forces. External forces include such things as natural or man-made disasters and the broader geopolitical climate, as well as the national economy. Internal forces include more localized factors that are influenced by state and local public policy. The identification of capital improvement projects to provide a catalyst for private investment can be measured by fiscal impacts. Fiscal impacts are based upon reasonable assumptions that reflect state and local economic factors, such as local tax revenues. Tax valuations for the purposes of tax assessment are based upon mass appraisal practices which take these factors into consideration and impacts revenues. Since 2018, construction costs have risen dramatically and many housing markets have seen dramatic upward shifts in value, both in for sale and for lease residential real estate. Commercial markets generally follow the housing market, so long as construction costs can be justified by occupancy costs, including market rental rates and property taxes. When the market rates are not commensurate with the cost to construct new product or occupancy costs, the market cycle of supply and demand is impacted.

MARKET CYCLES

Real estate markets are reflection of national, state and local economies. They are also influenced by costs of capital, wages and construction. Each of these factors into a complex prism of demand and supply, much of which can be measured or quantified. The market metrics gathered during the market analysis assist in determining appropriate land uses and product types as well as what phase the local market may be experiencing. Based on the data collected during the market analysis phase, the Monroe market appears to be in the expansion phase. The housing market leads local market cycles, as rising rental rates and median home price increases have fueled homes sales and new construction. In commercial real estate, market vacancies are low. However, new construction is somewhat limited compared to other markets, as rent pressures have not yet



met the test to warrant new construction in certain sectors.

In order to establish a baseline and track progress, the series of data points as shown in the table below are those that the city should create and track annually using a simple spreadsheet model.

Regular communication and collaboration between all departments will assist in tracking these metrics and provide year over year changes for targeted growth.

[Insert Metrics table]

SUMMARY OF FINDINGS

[In progress]

REMOVE PAGE
PRIOR TO COMPILING - INSERT
AFTER PREVIOUS CHAPTER/
SECTION



RECOMMENDATIONS + IMPLEMENTATION STRATEGIES

IN THIS CHAPTER

INTRODUCTION

GENERAL

LAND USE

TRANSPORTATION

OPEN SPACE + GREENWAYS

URBAN DESIGN

CHARACTER + CULTURAL RESOURCES

MARKET POSITION





INTRODUCTION

This plan's vision and recommendations result directly from an extensive information gathering process involving community input, staff input, analysis of existing conditions, and future needs and trends for the City of Monroe. Recommendations suggested in this chapter are prioritized action items, divided by short-term, mid-term, long-term or ongoing. The action items receiving higher priority are those supported by significant community input or are items that have been delayed or postponed in the past but have significant bearing on accomplishing the recommendations of this plan. Each action item indicates a responsible party to foster accountability within the City. Priority items or projects may change or evolve into new possibilities over the ten-year planning horizon based on community needs or other related opportunities.

Recommendations for implementation to the Downtown Monroe area based on findings from the master plan focus on actionable items for City Staff to complete within the planning horizon for Monroe:

- > Land Use
- > Historic Architecture
- > Transportation
- > Open Space + Greenways
- > Urban Design
- > Character + Cultural Resources
- > Market Position



LAND USE

Hendersonville Main Street

The following recommendations within the Downtown core should be established to achieve the goals of this Master Plan:

1. Build on recent success, strengthening the core of downtown by encouraging additional investment that will increase the vibrancy of downtown and increase the viability of downtown as a business location.
2. Explore opportunities to create a civic anchor in downtown. This may be a performing arts center designed to support an array of civic, educational, and entertainment programming. Not limited to municipal use, this facility should be pursued in partnership with other entities that could help maximize its use. The facility should draw visitors and residents to the downtown area, which will help increase business in surrounding shops, restaurants, breweries. By locating such facility a block off Main Street, it could serve to expand the footprint of downtown's activity center.
3. Modify Main Street to make better use of the street right-of-way as a high-quality public space. Consider changes to on-street parking and sidewalk configurations that create ample space for streetscape enhancements (i.e., more plantings and furnishings that make the environment more comfortable for pedestrians) and for expanded dining areas and merchandise display space so the overall usable floor area of restaurants and shops can be expanded by "spilling out" onto wide sidewalks.
4. Improve Stewart Street to become a more pedestrian friendly space for the 2 blocks between _____ and _____. While vehicular access should be maintained, the pedestrian should take priority. Specialty pavers, planters, and other streetscape elements can combine to signal the intended use of the street as a public space. The redesign of the street should consider temporary closures to host special events. [insert picture of a woonerf]



5. Encourage residential development in downtown, as additional residents will help bolster downtown activity on nights and weekends.
6. Facilitate the development of townhomes, lofts, apartments and condominiums (stacked flats)...
7. Maximize the potential in the areas designated as opportunity zones
8. Low-income community opportunity zone (Federal)
9. Opportunity Zone (NC)
10. Assist property owners in upfitting upper floors of existing commercial buildings to accommodate residential units...
11. Building permits... rehab code



12. Grants

13. Support the addition of accessory dwelling units to expand the range of housing options in the center of Monroe.

14. Promote the adaptive reuse of existing buildings, particularly on the east side of downtown. Minor modifications to buildings could be sufficient to effectively house makerspaces, coworking spaces, and other employments activities.

15. Make infill development an easy solution to meeting demand... reduced parking requirements...??

16. Address the edges to simultaneously reinforce them as strong transitions into the downtown area, and use infill development and gateway features the mark the entrances.

17. Create seamless connections to the flanking neighborhoods, strengthening their sense of connection to and ownership of downtown...

18. Explore options for future structured parking. While there is ample parking in the downtown area today, the need for public parking should increase over time as the downtown becomes a vibrant destination for residents of Monroe and Union County and for visitors from points beyond. Such parking should be contemplated with private sector partners when warranted. A public-private partnership could result in parking solutions that satisfy the requirements for a specific development proposal while also delivering parking capacity to meet a public need. Identifying and reserving sites in the near term will ensure suitable locations are maintained for future use. Parcels currently owned by the City should be among the targeted properties.



19. Treat streets as linear parks.
20. Redesign Main Street Plaza into a more usable, more easily programmable space.
21. Consider the potential redevelopment of the government center to accommodate a new collection of buildings of efficiently house City and County functions and make a stranger statement at this northern end of Main Street.
22. Development an intricate system of public spaces to expand the amenities in downtown...
23. Prepare a public realm master plan
24. Work with private property owners...
25. Require POPOS to expand the system while minimizing the City's burden – and standardize the details to signal such spaces are open to the public. Meet open space requirements with publicly-accessible spaces, but must follow standards to achieve such credit.
26. Align the standards of the code to implement the plan...
27. Promote downtown as _____, an identity and brand that _____. Working with Downtown Monroe and local merchants...
28. Increase programming in the downtown...



29. Kids activities

30. Seasonal events

31. Events that reinforce the identity/brand

32. Consider three key districts in the downtown to enhance the experience of the place, and reinforce the theme of each district by directing related development to locations within each. [\[insert image of the 3 districts mapped conceptually\]](#)

33. Expand the historic district and align with it a local historic district (overlay). [\[insert map from Laurie\]](#)



HISTORIC ARCHITECTURE IN DOWNTOWN MONROE

PRESERVE PLANNING + DEVELOPMENT

Monroe's downtown includes many historic structures, some of which are listed on the National Register of Historic Places. The Monroe Downtown Historic District was nominated to the National Register in 1987 and there are many buildings that could now be eligible for inclusion based on a fifty year eligibility benchmark. For example the buildings along S. Main St such as Dowd Center Theatre at 120 S. Main and Kimbrell's Bootery Store at 100 S. Main, Holloway's Music Store at 107 S. Main and Monroe Service Station at 101 W. Windsor St. are all likely candidates for inclusion in an updated Monroe Downtown Historic District nomination.

NR nominations are not set in stone and can be revisited over time. Amendments can take the form of technical changes, adding new criteria, new areas or new periods of significance. NR district boundaries can also be revised, to exclude resources no longer contributing or to include those that have become eligible since 1988, the year that the Monroe Downtown Historic District was nominated to the National Register. There is also an opportunity to add additional information to existing National Register nominations as it relates to underrepresented communities and a more inclusive history of Monroe. Not only can amendments to existing National Register nominations be made to address previously undocumented histories, new nominations can provide an opportunity for engagement with the local community.

For example, the historic Monroe Cotton Mill and the Monroe Cotton Mill Village dating to the 1890s as well as the North Monroe/New Town Community and the Icemorlee Cotton Mill and mill houses (ca. 1890) are all significant historic resources that currently lack representation.

ENGAGE + EDUCATE

There is consensus among the planning documents prepared for the city over the last decades as well as among the citizenry of Monroe; the historic resources of the downtown areas are a valued asset and should be protected as part of future land planning and development. Any future regulation or action taken on the part of local government to protect historic resources will always be dependent on public support. The opportunities identified here can be realized in the shorter term and focus on the carrots in a 'carrot and stick' approach to coalition building around the value of Monroe's built history.

ENGAGEMENT

There is opportunity to increase awareness about the importance of historic preservation through outreach within historic neighborhoods. It is especially important to engage diverse communities and consider historic significance of properties important to diverse constituencies. The National Register of Historic Places is not an exhaustive list of all properties that have historic value. There are many historic resources of value beyond the boundaries of the National Register Districts. There is the opportunity to establish programs that honor individual resources and neighborhoods at the local level, and to engage the community in the process.

An approach that does not overemphasize the focus on architectural history will be beneficial in identifying social and cultural significance important to the city's past and its diverse communities. Alternate approaches to research such as oral history, folklore and ethnography, and informational websites with social media components may be necessary. Cultivate new partnerships with allied entities and organizations that have a focus on or peripheral interest in historic preservation and the humanities, such as the Union County Public Library, the Union County Heritage Room, Carolinas Genealogical Society, the Union County NAACP and the North Carolina African American Heritage Commission.

Further, we recommend a comprehensive survey of the cultural, ethnic and architectural historic resources of Monroe beyond the existing National Register district, as identified by the community and documented by an outside partner/consultant. The survey can be used to establish additional NR eligible properties for future designation or inclusion on the Study List,







the precursor to NR nomination if not already in the Historic Preservation Office database. The survey can also be used as a reference for general preservation planning. It is important to engage a diverse range of community members during the survey process, especially those not well represented in the historical record.

EDUCATION

Opportunities exist in the public sector and among private citizens for education about the importance of preservation and protecting our valuable historic resources. There is a misperception about the regulations associated with listing on the National Register of Historic Places and about the differences between a National Register Historic District and a Local Historic Overlay District. Educating leaders and constituents about the benefits of both can help to build the awareness and support needed to eventually pass regulatory protections for historic properties in the form of zoning overlay districts.

Educating the community about successful historic preservation projects and the tax benefits associated with them is another way to demonstrate 'preservation in action' on the ground. There are several properties that have been successfully rehabilitated in Monroe, through which the owners were able to utilize federal and state income tax credits. These property owners could be strong supporters of current and future preservation initiatives on the local level. Consider developing case studies of local preservation as a redevelopment catalyst.

In addition to the economic benefits, highlighting successful adaptive reuse projects at the local level is another way to educate the community about the environmental sustainability principles inherent in historic preservation. Adaptive reuse is preservation, and preservation is adaptive reuse. Continue to foster job creation and economic development through historic preservation by demonstrating the return on investment from successful rehabilitation and reuse projects.

Information garnered from the comprehensive survey or other community engagement efforts can be the basis for memorialization of resources (in the form of signage) and as the jumping off point for additional research in areas needing further study, such as Monroe's significant Civil Rights history. As a Certified Local Government (CLG) since 1986, Monroe is eligible for funding and technical assistance to implement these concepts.

INCENTIVIZATION

HISTORIC TAX CREDIT

There are opportunities for both economic and social incentives in promoting local preservation. In updating the existing National Register nominations and seeking designation of Study List properties/proposed districts, the city can foster community pride around the history of Monroe and its built environment. Listing on the National Register is honorary, in that it provides recognition of unique historic and architectural character of those properties nominated. Listing alone does not place restrictions on a property owner, nor does it necessarily preserve a property in perpetuity. However, listing on the National Register can potentially provide owners with Federal and/or State tax credits for the certified rehabilitation of commercial properties. See Appendix for additional information on Federal and State historic tax credits.

LOCAL LANDMARK DESIGNATION

We also recommend focus on the designation of local landmarks in the downtown core. Historic landmark designation is a powerful tool in the preservation toolkit, providing recognition and the financial incentive to protect Monroe's historic properties. Owners of landmarks are eligible to apply for an annual 50% property tax deferral as long as the property's important historic features are maintained. There are also some teeth to this regulation, in that recapture penalties may apply if the owner destroys the property or damages its historic value. Many local landmarks designated in Union County are residential properties, such as the Ramsay-Fairley House and the Ashcraft-Garren House, both of which were listed in 2018. The Piedmont Buggy Factory was also listed as a Union County Landmark in 2018. The Union County Historic Preservation Commission oversees the designation of Historic Landmarks within the county and the approval process for any changes proposed to landmark properties.



ECONOMIC DEVELOPMENT INCENTIVES

Monroe has already implemented economic development incentive assistance such as the Façade Improvement Program, Downtown Pronto and Mixed Use Development Incentives Grant to promote the preservation and reuse of historic buildings. The Residential Incentive Grant can be an especially powerful tool for bringing upper level residential uses to the historic downtown. There are opportunities to further expand upon these programs and market them to community members.

MAIN ST. AMERICA

Downtown Monroe is also a Main Street America accredited community, which promotes preservation-based economic development. Continue to utilize the resources available to program members to 'recognize, revitalize, preserve and promote the historic, cultural, social and economic significance of Monroe's Downtown'.

PRESERVATION AWARDS & RECOGNITION

The establishment of a Preservation Awards program would recognize successful projects and individuals who contribute to the stewardship of our historic built environment. An awards program could be administered by the Monroe Historic District Commission or in partnership with an affiliated entity. Preservation awards are often given for different types of projects such as rehabilitation, adaptive reuse, and restoration, as well as awards of merit for leadership in the field of historic preservation.

REGULATE + REINTERPRET

REGULATION

As a longer term goal, consider creating an additional local historic district for the downtown commercial area through historic district overlay zoning. The purpose of doing so is to protect and preserve its special character from unmanaged change as development pressures continue to grow. The South Monroe Historic District, based on the National Register Monroe Residential Historic District (UN0717), is a successful model already in place. Monroe has established a local Historic Preservation Commission and a Certificate of Appropriateness (COA) permit procedure for any development affecting the exterior of a building within the local historic residential district. The COA process for the local residential historic district is currently overseen by two members of City of Monroe planning staff. The Union County Historic Preservation Commission oversees the designation of Historic Landmarks and the approval process for any changes to landmark properties.

A local historic district overlay district zoning designation is prepared in coordination with the State Office of Historic Preservation and is often based on a National Register Historic District. The zoning designation provides an oversight mechanism to preserve the integrity of historic buildings and the district as a whole through design review (COA) of proposed alterations, additions and new construction within the district. Local historic overlay district zoning may be the most effective way to protect the historic resources that remain in the downtown area, as it is a regulatory process with 'teeth'. This process will likely take several years to implement, and community engagement is an essential component of local designation from start to finish.

REINTERPRETATION

The interpretation of the meaning and value of the Confederate Monument on the grounds of the Old Union County Courthouse is the obligation of the community. An opportunity for reinterpretation exists, for the monument itself in terms of its symbology but also for the cultural landscape of the public space that holds the monument. Representation of the full



historical narrative of Monroe's past that includes Reconstruction, Jim Crow segregation and the Civil Rights movement is needed. Inclusive and thoughtful consideration of the history represented by the monument in what is arguably Monroe's most important public space is required for greater understanding and acknowledgement of our complex past. Many communities across the country have grappled with these questions or are undertaking this work now; there are resources available to provide guidance and support throughout the process.

SUMMARY OF HISTORIC ARCHITECTURE OPPORTUNITIES

- > Update the National Register nominations and seek designation of Study List properties/proposed districts
- > Promote Adaptive Reuse
- > Engage diverse communities and consider historic significance of properties important to diverse constituencies
- > Highlight Monroe's unique history of entrepreneurship and how it provides connections to the built environment that include Belk's Building and Monroe Hardware Company
- > Educate the public and create new stakeholders
- > Increase awareness of the importance of historic preservation through outreach within historic neighborhoods
- > Use social media as educational tool; update City's website to include more preservation resources and information about historic tax credits
- > Strengthen relationships with local non-profits and preservation minded organizations

TRANSPORTATION

RECOMMENDED TRAFFIC, TRANSPORTATION + PARKING ACTIONS

The following recommendations for action items derived from the analysis and modeling of various favored options from the public and stakeholders as well as those of City Staff and prior approved plan documents have been recommended for implementation by the City of Monroe:

CONVERT JEFFERSON STREET TO TWO-WAY TRAFFIC

(Entire length from Charlotte Avenue to its terminus at Franklin Street)

CONVERT FRANKLIN STREET TO TWO-WAY TRAFFIC

(From the current end of two-way travel at Charlotte Avenue to its continuation at Jefferson Street)

REALIGN JEFFERSON + FRANKLIN EAST GATEWAY INTERSECTION

(Terminate Jefferson Street at a controlled intersection perpendicular to Franklin Street. See Urban Design section for proposed alignment.)

SUBJECT CHURCH STREET TO A “ROAD DIET”

(Reduce Church Street to a 3-Lane profile from Charlotte Avenue to Jefferson Street – Dedicate the gained width to a dedicated bike lane)

CLOSE SECTIONS OF STEWART STREET + CREATE PEDESTRIAN CORRIDORS

(Consider closing of or limited vehicular access to Stewart Street between Jefferson Street and Windsor Street to eliminate “cut through” trips)

CONSTRUCT ROUNDABOUT AT FRANKLIN STREET + WINDSOR STREET INTERSECTION

(Incorporate Franklin Street, Windsor Street, McCauley Street, and Maurice Street to simplify traffic movements and reduce conflicts)

PLAN FOR + BUILD STRUCTURED PARKING IN MULTIPLE LOCATIONS

(Identify high use areas for concentration of widely dispersed surface parking lots into structures, freeing sites for sale and/or redevelopment)

PLAN FOR REVISED SIGNAL TIMING OR EVEN REDUCED NUMBER OF SIGNALS BASED ON CHANGES ABOVE

(Improve levels of service on Franklin, Jefferson, and streets that connect to them by reducing frequency and length of stop times)



INFRASTRUCTURE: STORMWATER + UTILITIES

Typically, an analysis of pre- vs. post-construction runoff would provide a starting guideline for goals. For this project, because the drainage basins are made up primarily of impervious surfaces, the goal should be to provide the maximum water detention feasible. Water quality facilities should be included in detention calculations for a fully representative model and should be part of the overall strategy to reduce peak runoff.

Further creative ways to cut down on the impervious area of the downtown should be encouraged in future developments, both private and public. The City should replace the current impermeable stamped asphalt at pedestrian crossings with permeable pavers, and structural firelane soil and grass should be used in place of gravel parking, firelanes, or maintenance alleyways behind buildings. Options to treat runoff from impervious roof areas should be promoted as well, with options such as reverse trench drains proving to be effective at treating runoff.

STORMWATER NETWORK UPGRADES

While stormwater network upgrades will occur in concert with future downtown infrastructure improvements, the City should assess what drainage lines will need to be replaced to avoid system failure and what upgrades, additions, or relocations could create opportunities for adding detention and water quality systems to the existing storm drainage infrastructure. Making these upgrades in an early phase will allow flexibility to make future system improvements and variation in treatment facility types. Stormwater pipes downstream of proposed detention and treatment facilities should be replaced if it will assist with the facilities operation.

MAINTENANCE REQUIREMENTS

Non-traditional stormwater systems are not inexpensive and require additional maintenance from qualified personnel. It is essential that water quality and detention facilities are maintainable by City employees and financially sustainable as more are added. Installing a uniform and consistent system will help ease maintenance needs, especially from a planting



perspective. Green infrastructure should be included in each phase to meet water quality requirements to the maximum extent possible while still being viable long-term solutions. The maintenance of these facilities will be crucial to the overall performance of each element. Additional trained personnel will be needed to ensure each facility continues to function after the implementation is complete.

If needed, the City should amend the stormwater ordinance to help with long-term maintenance of the water quality and detention facilities designed as part of future downtown infrastructure improvements. Consideration of more stringent water quality and quantity controls will reduce the amount of future runoff.

UTILITIES

The following are the known utility providers in the project vicinity:

Water & Sewer: City of Monroe

Telecommunication: Spectrum, Frontier, Windstream

Gas: City of Monroe

Power: City of Monroe

Subsurface utility location services by a qualified and experienced company should be retained prior to improvements in the downtown area. This is a critical step in the improvement process and should be a part of any project that has any subsurface work. It will streamline the project design and construction to know exactly what utilities exist in the project area, and can lead to significant savings as opposed to finding utilities once construction has begun. This information should be shared with the GIS department of the City of Monroe so they can keep an up to date database. This provision should be written into code such that all private and public developments are required to perform subsurface utility location in the area directly affected by the development.

WATER AND SEWER

The City of Monroe is the sole provider of water and sewer to the downtown area. This should be used as an opportunity to streamline the process when upgrades to water or sewer services are deemed necessary. The City should upgrade facilities that do not comply with current standards. Where abandoned utilities are found, the City should either remove or plug and fill abandoned lines with flowable fill. During roadway changes, the City should take the opportunity to upgrade sewer and water services to a best practice layout and to remove obsolete utilities to avoid future patchwork repairs.

POWER AND TELECOMMUNICATION

Power and telecommunication lines are typically overhead once outside the downtown area. In some cases, roadway work that impacts poles may require coordination with the utility provider or funding its undergrounding.

OPEN SPACE + GREENWAYS

[In progress]

URBAN DESIGN

[In progress]

CHARACTER + CULTURAL RESOURCES

THE NATIONAL REGISTER + BEYOND

The Monroe Downtown Historic District was nominated in 1987, since the nomination was prepared many changes have occurred. The National Register, however is a living document and does not represent an exhaustive history of a place; nominations can be amended to make technical changes, add new areas or periods of significance, revisit boundaries and update contributing status. Amendments to existing National Register nominations can be made and new nominations can be addressed to previously undocumented histories.

We recommend that the City initiates a resurvey of the National Register district as well as areas previously documented during the initial NR survey which were not deemed eligible for inclusion at the time. These areas include the historic Monroe Cotton Mill and the Monroe Cotton Mill Village dating to the 1890s as well as the North Monroe/New Town Community and the Iceemorlee Cotton Mill and mill houses (ca. 1890). The Monroe Cotton Mill is within the Downtown Master Plan Study Area, as is a portion of the Monroe Cotton Mill Village.

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This location was previously surveyed, but is not located in the Downtown Monroe NR Historic District. The area just south of the existing NR HD boundaries (shown in blue) should be resurveyed for a potential historic district boundary increase.

[Insert graphic]

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blue) should be resurveyed for a potential historic district boundary increase.

The National Register; Additional Resources Outside of the Study Area

In 2019, a Historic Structures survey report was prepared as part of a Section 106 review process for the proposed replacement of Bridge No. 34 on Concord Ave over US 74. Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies to consider the effects on historic properties of projects they carry out, assist, fund, permit, license, or approve throughout the country. If a federal or federally-assisted project has the potential to affect historic properties, a Section 106 review will take place. Two historic resources were identified during the Section 106 review as being eligible for the National Register of Historic Places: Hatley's Skating Rink and the Concord Ave Stone Bungalows, a proposed NR Historic District in the Benton Heights neighborhood. Our recommendation is to initiate the nomination process for these historic resources to be added to the National Register.



RECOMMENDATIONS

EDUCATE

Further, we recommend a comprehensive survey of the cultural, ethnic and architectural historic resources of Monroe beyond the National Register district, as identified by the community and documented by an outside partner/consultant. The survey can be used to establish additional NR eligible properties for future designation or inclusion on the Study List, the precursor to NR nomination if not already in the Historic Preservation Office database.

The survey can be used as a reference for general preservation planning, the basis for memorialization of resources (in the form of signage) and as the jumping off point for additional research and documentation of areas needing further study, such as Monroe's significant Civil Rights history. It is important to engage a diverse range of community members during the survey process, especially those not well represented in the historical record.

An approach that does not overemphasize the focus on architectural history will be beneficial in identifying social and cultural significance important to the City's past and its diverse communities. Alternate approaches to research such as oral history, folklore and ethnography, and informational websites with social media components may be necessary. Cultivate new partnerships with allied entities and organizations that have a focus on or peripheral interest in historic preservation and the humanities, such as the Union County Public Library, the Union County Heritage Room, Carolinas Genealogical Society, the Union County NAACP and the North Carolina African American Heritage Commission.

INCENTIVIZE

Monroe has in place many financial incentives to encourage development of the downtown area and preservation of the existing fabric. Continue to focus on marketing these financial incentives to community members.

Downtown Monroe is also a Main Street America accredited community, which promotes preservation-based economic development. Continue to utilize the resources available to program members to 'recognize, revitalize, preserve and promote

the historic, cultural, social and economic significance of Monroe's Downtown'.

Continue to foster job creation and economic development through historic preservation by demonstrating the return on investment from successful rehabilitation and reuse projects.

Consider developing case studies of local preservation as a redevelopment catalyst.

Consider the creation of a preservation award to recognize successful rehabilitation and reuse projects.

REGULATE

As a long-term goal, consider creating an additional local historic district for the downtown commercial area through historic district overlay zoning. The purpose of doing so is to protect and preserve its special character from unmanaged change as development pressures continue to grow. The South Monroe Historic District is a successful model already in place, with the Historic District Commission and City of Monroe staff processing Certificate of Appropriateness applications and coordinating with Union County on the designation of Historic Landmarks.

As support for the creation of an additional area of protection for historic resources is cultivated, we recommend focus on the designation of Historic Landmarks in the downtown core. Historic Landmark designation is a powerful tool in the preservation toolkit, providing recognition and the financial incentive to protect Monroe's historic properties. Owners of landmarks are eligible to apply for an annual 50% property tax deferral as long as the property's important historic features are maintained. There are some teeth to this regulation, in that recapture penalties may apply if the owner destroys the property or damages its historic value.



REAL ESTATE + ECONOMIC DEVELOPMENT

DEVELOPMENT DEMAND

Five land uses and product types were identified to support the key focus areas. The estimated capacity considers a targeted capture rate of county demand within the downtown over a ten-year period, based on estimated job and population growth.

[Insert graphic]

STRATEGY MATRIX

In an effort to integrate and link the existing anchor assets identified in the downtown, a primary theme evolved:

STEAM (Science, Technology, Engineering, Arts and Math)

According to the Institute for Arts Integration, “STEAM Education is an approach to learning that uses Science, Technology, Engineering, the Arts and Mathematics as access points for guiding student inquiry, dialogue, and critical thinking.” This educational foundation is what supports workforce development for job growth and economic development, leading to investment. The anchor assets identified in the downtown form the core what could be future Districts:

The historic Courthouse is a destination that brings history and commerce together near the government center.

The Dowd Center Theatre is a destination that brings arts, culture and entertainment to the core of the downtown.

The Monroe Science Center will be a destination that will feature science, engineering and math to this knowledge and learning center of downtown, across from the library in the Five Points area.

[Insert graphic]

[insert Matrix pdf here]

MEASURING SUCCESS

The success of any plan is dependent on market forces and market cycles.

MARKET FORCES

Market forces include both external and internal forces. External forces include such things as natural or man-made disasters and the broader geopolitical climate, as well as the national economy. Internal forces include more localized factors that are influenced by state and local public policy. The identification of capital improvement projects to provide a catalyst for private investment can be measured by fiscal impacts. Fiscal impacts are based upon reasonable assumptions that reflect state and local economic factors, such as local tax revenues. Tax valuations for the purposes of tax assessment are based upon mass appraisal practices which take these factors into consideration and impacts revenues. Since 2018, construction costs have risen dramatically and many housing markets have seen dramatic upward shifts in value, both in for sale and for lease residential real estate. Commercial markets generally follow the housing market, so long as construction costs can be justified by occupancy costs, including market rental rates and property taxes. When the market rates are not commensurate with the cost to construct new product or occupancy costs, the market cycle of supply and demand is impacted.

MARKET CYCLES

Real estate markets are reflection of national, state and local economies. They are also influenced by costs of capital, wages and construction. Each of these factors into a complex prism of demand and supply, much of which can be measured or quantified. The market metrics gathered during the market analysis assist in determining appropriate land uses and product types as well as what phase the local market may be experiencing. Based on the data collected during the market analysis phase, the Monroe market appears to be in the expansion phase. The housing market leads local market cycles, as rising rental rates and median home price increases have fueled homes sales and new construction. In commercial real estate, market vacancies are low. However, new construction is somewhat limited compared to other markets, as rent pressures have not yet



met the test to warrant new construction in certain sectors.

In order to establish a baseline and track progress, the series of data points as shown in the table below are those that the city should create and track annually using a simple spreadsheet model.

Regular communication and collaboration between all departments will assist in tracking these metrics and provide year over year changes for targeted growth.

[Insert Metrics table]

SUMMARY OF FINDINGS

[In progress]

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SECTION



APPENDIX

IN THIS CHAPTER

REAL ESTATE MARKET + ECONOMIC DEVELOPMENT REPORT (ROSE ASSOCIATES)

HISTORIC RESOURCES REPORT (MAURER ARCHITECTURE)

TRAFFIC ANALYSIS (RAMEY KEMP ASSOCIATES | DRMP)

Monroe, NC Downtown Plan Update 2022

Real Estate Market + Economic Development



Market Position Report

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- Residential Housing

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- Development Demand

- Strategy Matrix

- Measuring Success

Appendix

Our Role

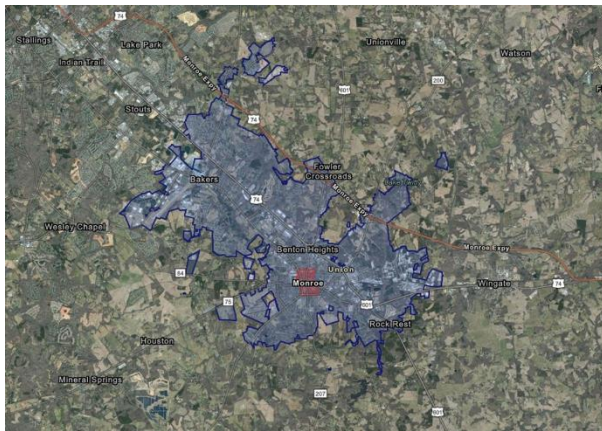
Rose Associates joined the McAdams team in updating the Monroe Downtown Master Plan previously completed in 2008. The goal is to reevaluate the downtown, how it is currently positioned and a path forward to reach its full potential. Our role includes understanding market realities, real estate dynamics and economic development opportunities.

The plan and our recommendations include strategies that are not intended to be rigid and inflexible. Markets evolve and change over time and faster than ever. Our analyses and forecasting of market data includes demographic, economic, employment, tourism, and real estate. It is both art and science. Our work is designed to accommodate a range of market driven opportunities for the downtown over the next 10+ years.



Introduction

Downtown Monroe encompasses an area at the southeastern edge of its municipal boundaries. While the boundaries of the downtown highlight the Municipal Services District (MSD), the area considered to be downtown is slightly larger.



The intention of the plan update is to evaluate prior plans and studies, determine what has been accomplished to date, evaluate the current conditions and plan for its future in the context of a growing and dynamic region. The 2008 Plan included six key areas: land use, transportation, open space urban design, **character and cultural resources**, and **market position/economic development - the focus of our contributions to the Plan team**.

Methodologies: A combination of methodologies is used in developing an understanding of the market realities regarding market position and economic development. We utilize a variety of public and proprietary resources in our analysis. These methodologies include:

Economic Base Analysis is used to understand the regional economy and determine real estate demand. The underlying theme suggests that for every (basic) job that is created, a multiplier effect increases overall employment (both basic and non-basic). Basic employment includes those that export their goods and services outside of the local market, thus expanding local employment. The resulting increase in both population and income within an area benefit from this total job growth. The corresponding growth (or decline) in jobs, population and income correspond to demand for commercial and residential uses of real estate.

Highest & Best Use is used to determine the most appropriate use of land, given the underlying economic base. It is site specific. Highest & Best Use, as defined in *The Dictionary of Real Estate Appraisal*, is:

The reasonably probable and legal use of vacant land or an improved property, which is physically possible, appropriately supported, financially feasible, and that results in the highest value. The four criteria the Highest & Best Use must meet are legal permissibility, physical possibility, financial feasibility and maximum profitability.

Central Place Theory (CPT) is utilized to evaluate commercial feasibility and trade areas. It can also be used for certain types of non-traditional housing, such as senior or student housing, whose locations are dependent upon central places, such as a university or

hospital. The underlying theme of CPT is that the location decision of commercial establishments is driven by rent maximizing forces. That is, providers of goods and services will locate where they believe they can maximize profits. CPT suggests that certain locations are more desirable than others, primarily due to the location of existing businesses that are already attracting customers. This means that there are central places with varying degrees of magnitude that attract such customers. The fundamental theme of CPT is that commercial locations are spatially interdependent, implying that growth is not random, but ordered and rational.

Measuring Success. Understanding market dynamics begins with historical and forecasted data, which leads to strategies for success. The goal of any plan should include implementation, which should in turn be measured to determine when and where to allocate funding for future Capital Improvement Projects (CIP).

KPI (Key Performance Indicators) and ROI (Return On Investment) are measurement tools to gauge how successful the Plan has been in achieving specific goals and objectives. Consider KPI metrics vs. ROI measurement in terms of reading a book. KPIs tell you what happens after each chapter, whereas ROI tells you what happened after the conclusion of the entire story.

KPIs are a forward-looking predictor of end performance, whereas ROI is used as a backward-looking informer of future budget allocation decisions. ROI is a long-term game. While KPIs are incredibly important to help gauge short-term performance and optimization decisions, they shouldn't be confused with ROI.

Data Sources:

- US Census Bureau
- US Bureau of Economic Analysis
- CCIM Site To Do Business
- ESRI
- CoStar
- Canopy Realtor Association
- Rent Café
- VisitNC

Understanding the Market

Existing Conditions + Constraints

Where You've Been

Monroe was founded in 1843 as a planned settlement. The first Board of County Commissioners, appointed by the General Assembly, selected an area in the center of Union County as the county seat, and Monroe was incorporated that year. It was named for James Monroe, the country's fifth president. It became a trading center for the agricultural areas of the Piedmont region, which cultivated primarily tobacco.

As with many of North Carolina's historic downtowns, it suffered decline and decay over recent past decades. In 2007 the City of Monroe put forth a public solicitation for a **Downtown Master Plan** which was completed and adopted in 2008.



"The Monroe Downtown Master Plan reflects a vision for a place where people live, work and play; where restaurants, entertainment venues and shops continually attract residents and visitors...."

2008 Downtown Master Plan

What We Discovered

The **perception** to the casual passerby is that not much has changed in Monroe. The City of Monroe, and its downtown has faced much **adversity** since 2008:

- 2008 Great Recession
- 2022 Pandemic (Covid-19)
- Highway 74 and the opening of the Monroe Bypass, diverting traffic and business activity away from downtown
- Administrative instability due to turnover of city staff and elected officials

Despite this perception, much has evolved from the 2008 plan and many of the recommendations and strategies have been implemented. However, it has been a slow process. Since the 2008 Downtown Plan's completion, the following has occurred:

- The newly adopted UDO (Unified Development Ordinance) addressed many land use issues.
- Incentive grants have been created, sparking renovations to downtown homes and buildings.
- The addition of street art, sculpture gardens, and directional signage.
- Rehab of several historic buildings.
- Arts, Science & Cultural Assets have expanded and new ones are pending completion and opening.

While the downtown has seen changes, the city has continued to grow, however at a much slower pace since the 2008 plan was completed:

City of Monroe, NC	US Census Total Population	% Growth
2000	27,388	~
2010	32,797	19.75% *
2020	34,575	5.42%
2021 (est.)	34,888	0.90%

In 2018 the **Forward Monroe Land Use Plan** followed, and highlighted six areas that included a vibrant downtown and healthy neighborhoods:

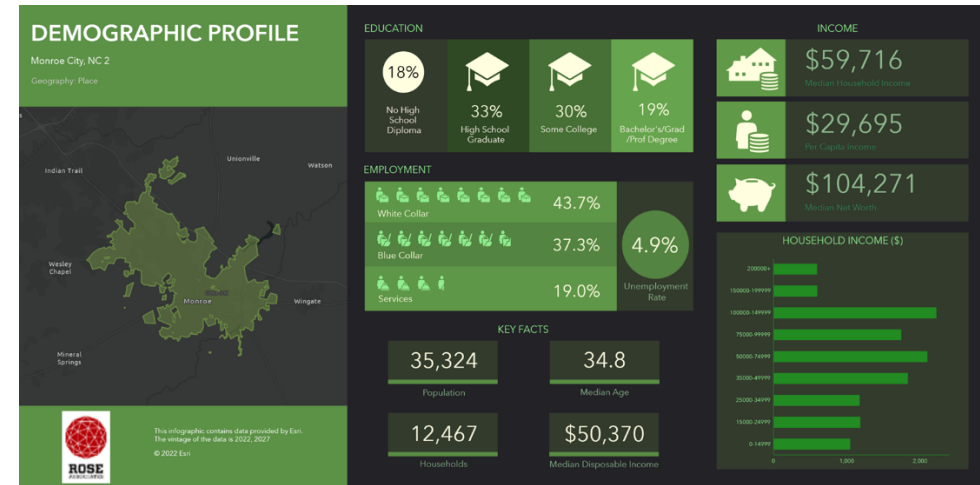


Forward Monroe Land Use Plan

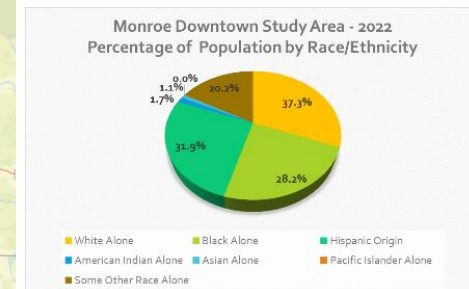
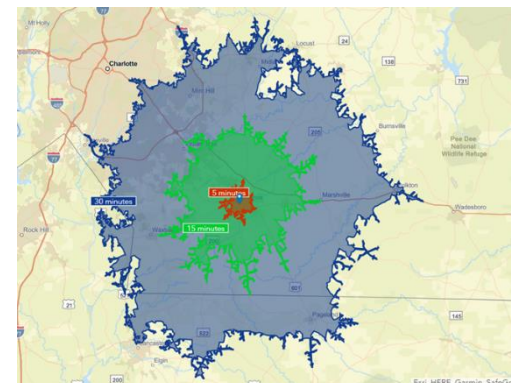
The profile of the City of Monroe indicates a balanced mix of socioeconomic factors that make up its population. Of note is its racial diversity. Over the past few decades, with each U.S. Census, the percentage of City population that is Black has decreased, while the percentage of population that is Hispanic has increased.

And when comparing this data with the downtown and surrounding trade areas (by drive-time), some differences began to emerge.

We discover that Downtown is younger, more diverse, less affluent, less educated, and slower growing than the city, County and surrounding areas.



Site	2022 Total Population	2022-2027 Population: Compound Annual Growth Rate	2022 Median Age	2022 Average Household Income
W Franklin St & N Hayne St, Monroe, North Carolina, 28112 (5 minutes)	13,457	0.34%	32.4	\$66,415
W Franklin St & N Hayne St, Monroe, North Carolina, 28112 (15 minutes)	92,398	0.86%	35.2	\$97,635
W Franklin St & N Hayne St, Monroe, North Carolina, 28112 (30 minutes)	503,231	0.93%	38.6	\$124,652
28112 (Monroe)	27,340	0.72%	39.0	\$87,367
Union County, NC	247,449	1.03%	37.3	\$130,540
North Carolina	10,671,397	0.57%	39.2	\$91,574
USA	335,707,897	0.25%	38.9	\$105,029



Monroe is the **government** and **cultural center** of Union County. Monroe is also now a **manufacturing hub**, having what is reported to be the largest concentration of aerospace industries in the state. It is part of the fast-growing Charlotte metropolitan area, the largest metropolitan area in North Carolina, according to the state's office of management and budget.

Since 2008, Downtown Monroe has made great strides in creating a place that includes the new Science Center, Dowd Center Theatre, and new restaurants and breweries. After years of stagnation, it is now coming to life in a new way and must create its identity to compete with other communities around the Charlotte region.

When considering these elements, one must consider how current and future visitors and occupants experience the downtown:

- As a **current or future business** in downtown
- As a **current or future resident** in Monroe
- As a **current or future tourist or visitor** to downtown
- As a **developer or investor** in the downtown
- As a **Monroe resident or elected official** as an ambassador for your city and the downtown as the centerpiece of your community.

Commercial Real Estate Uses

Our review of the commercial real estate inventory highlights the challenges and opportunities for commercial real estate within the market. Data from Costar as of July, 2022 indicates a robust multifamily apartment market, with smaller inventories of office and retail space based on vacancy rates. When compared to other markets around the Charlotte Region, the data demonstrates the County's competitive position as a more affordable option for an apartment or

commercial space. However, the market is constrained by broader economic cycles, the amount of available inventory, and local regulatory and infrastructure limitations.

Union County Highlights	Multifamily	Office	Retail
Inventory	3,244 Units	2,716,000 SF	10,977,000 SF
12 mo. Net Absorption	457 (+8.4%) Units	14,200 SF	127,100 SF
Vacancy Rate	10.5% (-2.2%)	4 % (-0.5%)	3% (-1.1%)
Market Rent/unit	\$1,485 (+8.4%)	\$22.31/SF (+2.6%)	\$19.62/SF (+10.7%)
Market Sale/unit	\$213/unit (+16.5%)	\$201/SF (+4.5%)	\$200/SF (+7.4%)
Market Cap Rate	4.6% (-0.19%)	7% (-0.7%)	6.9% (-0.14%)
Under Construction	616 units	90,700 SF	0 SF

Market/Submarket Comparisons	Union County	Cabarrus County	South Charlotte	East Charlotte	Greater Charlotte Region
Multifamily Inventory	3,244 units	9,975 units	34,985 units	23,559 units	195,871 units
Multifamily Vacancy	10.5% (-2.2%)	7.1% (+1.6%)	6.3% (0%)	5.7% (-0.2%)	6.5% (-0.3%)
Multifamily Market Rent	\$1,485 (+8.4%)	\$1,505 (+14.8%)	\$1,610 (+14.7%)	\$1,396 (+15.1%)	\$1,594/unit (+14.3%)
Office Inventory	2,716,000 SF	5,225,000 SF	2,904,000 SF	3,409,000 SF	130,681,000 SF
Office Vacancy	4% (-0.5%)	3.2% (-0.8%)	5.5% (+0.1%)	6.6% (+1.7%)	11.6% (+0.7)
Office Market Rent	\$22.31 (+2.6%)	\$27.09 (+3.0%)	\$28.89 (+2.1%)	\$21.94 (+2.4%)	\$30.60 (+2.9%)
Retail Inventory	10,977,000 SF	14,249,000 SF	12,253,000 SF	13,697,000 SF	149,935,000 SF
Retail Vacancy	3% (-1.1%)	2.4% (-0.92%)	2.9% (-1.5%)	3.2% (-1.0%)	3.4% (-0.9%)
Retail Market Rent	\$19.62 (+10.7%)	\$23.95 (+9.5%)	\$28.81 (+9.2%)	\$21.42 (+9.3%)	\$22.60 (+9.8%)

Source: CoStar July 2022

Issues + Opportunities

The review of prior plans, interviews with staff and stakeholders, and analysis of the data reveals both issues and opportunities regarding real estate and economic development positioning.

Issues

Our findings revealed that the **regional economic drivers** include the Manufacturing and Healthcare Industries. However, the concentration of these jobs and investments are in areas outside of the downtown.

Downtown's **old perceptions** about its vibrancy and success had inhibited growth and progress, exacerbated by vacant properties at key intersections along its primary corridors.

The housing stock is **aging**, and many properties remain **dormant** or neglected.

There is some notable **disparity** between current market rents and construction/renovation costs which limit investment. Incentives have been the key to downtown renovation and revitalization.

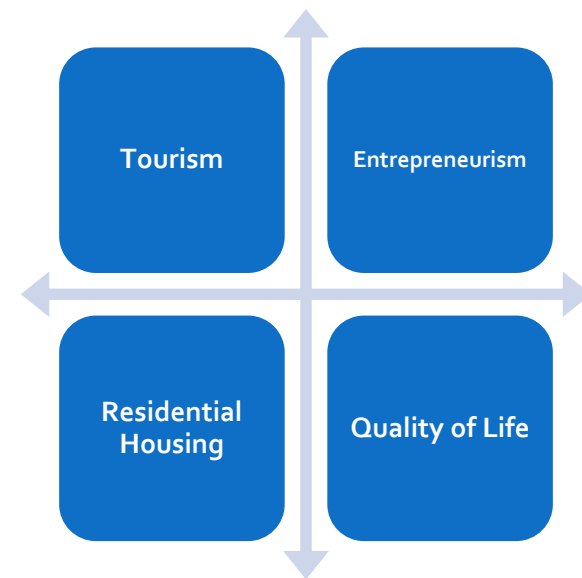
This issue of **housing affordability** figures prominently with aging housing stock and the cost burden of vulnerable populations.

There is a growing **arts and science ecosystem** developing in Monroe that often collaborates, however, it is disjointed in its structures and marketing and communications.

Many key players, both public and private, function independently rather than collaboratively.

Opportunities

Review of the data, previous plans, existing conditions and market dynamics leads us to opportunities that fall into four key focus areas for the Monroe Downtown Plan:



These are further discussed throughout the plan; however, some notable Opportunities include:

- Wayfinding signage at Gateways/ Edges
- Housing is key – strengthen existing single-family neighborhoods with revitalization and add new additional affordable housing options for small households.
- Enhance **STEAM** (Science, Technology, Engineering, Arts & Math) to expand creative placemaking & tourism while building the small business and entrepreneurial base and growing arts community.
- Aside from incentives, create penalties for building neglect (e.g., code enforcement; demolition by neglect ordinance) which erodes values and market confidence.
- Consider additional program funding grants through the expansion of the existing Municipal Service District (MSD) to include targeted districts.
- Embrace and celebrate downtown diversity, both racial/ethnic and cultural, through festivals, attractions, and restaurants.
- Attract regional attention through an aggressive Marketing Plan and budget to include bridging the digital divide through expansion of broadband in the downtown.
- Public-private partnerships between government, organizations and local business will be needed to fuel private investment and facilitate growth.

The Monroe Downtown Master Plan

Tourism

Tourism is widely regarded as a key sector for economic development. It creates jobs, increases the wealth of an area, and often leads to improvements and investment in the community through shopping, dining and recreation. Tourism also provides an economic stimulus by allowing for diversification of employment and income potential. All of these factors can contribute to the downtown experience.

Prior to the pandemic, the U.S. travel industry experienced 10 straight years of growth. In early 2020, tourism had become the world's third-largest export industry generating \$1.7 trillion in revenues as of 2018. However, the tourism industry is vulnerable to disruptions, as evidenced by the impact of the COVID-19 pandemic. An estimated \$500 billion loss in travel spending resulting from the pandemic has cost the U.S. \$1.1 trillion in economic output, according to the United States Travel Association. A 2021 American Hotel and Lodging Association Report estimates that the COVID-19 pandemic had eliminated more than 10 years of job growth in the accommodations sector, however, this industry is in full recovery mode while struggling to fill jobs.

The tourism industry is comprised of various sectors that house, feed, transport, and entertain visitors. Each sector covers a broad range, providing a distinct variety of goods and services. While separate from one another, they can often overlap and work in conjunction to create one complete and comprehensive hospitality experience. There are five primary sectors within the tourism

industry: 1) lodging; 2) transportation; 3) entertainment, recreation and activities; 4) food & beverage; and 5) retail.

Union County ranked 38th in total spending among the 100 North Carolina Counties in 2020 and 2021. Spending grew 37.6% year over year, led by food & beverage (\$62.62m) followed by transportation (\$36.55m), lodging (\$30.34m), recreation (\$12.72m) and retail (\$12.72m) for total spending of \$161.81 million dollars.

There are nine limited-service hotels in Monroe, primarily located along the Highway 74 corridor, with no hotels in or adjacent to the downtown. A collective effort to market the attractions, events, shops and restaurants in downtown to hotel guests would help elevate the number and length of visits.

A cultural asset as “something of value to a particular population, community, or group because of its unique contribution to the cultural, artistic, creative, economic, historic, and/or social expressions and fabric of that community. Cultural assets can be tangible such as cultural or heritage sites, products, or facilities. Intangible cultural assets could include events, activities, expertise, support networks, community and cultural knowledge, and heritage, language, organizations, and icons.”

~ Americans for the Arts

One area of note are the cultural and historic features of the downtown which should be highlighted. There is a growing arts, culture and science ecosystem, including the city, non-profit organizations and education institutions in Monroe which should be a key theme of the downtown plan.



The Dowd Theatre and new Science Center will provide educational, arts and cultural experiences for all ages. There is a growing collection of local artists, and its historic districts feature both commercial and residential structures that have broad historical appeal.

Further details are included in Character + Cultural Resources section of the Plan.

Entrepreneurism

The Ewing Marion Kauffman Foundation is a private, nonpartisan foundation that promotes entrepreneurship and is considered a foremost authority. Kauffman released guidelines for creating a vibrant entrepreneurial ecosystem.

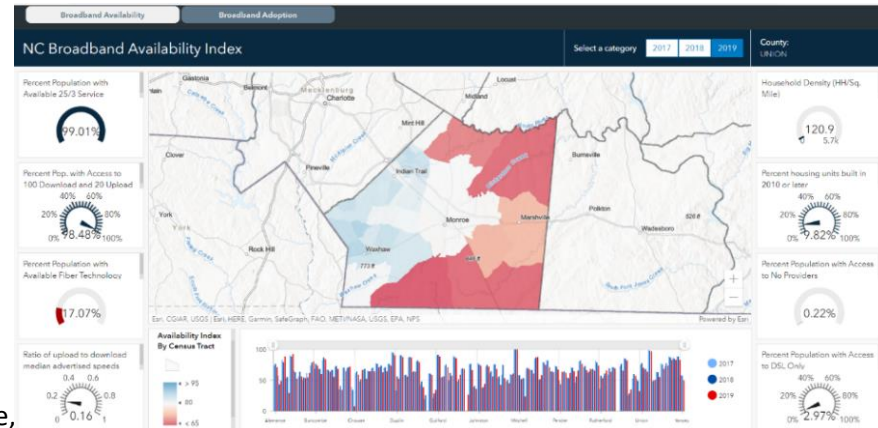
Kauffman Guidelines for Creating Vibrant Entrepreneurial Ecosystems:

- Avoid startup monoculture. Create your own recipe by connecting existing ingredients in the community to construct an environment conducive to new business creation rather than building or acquiring them in an attempt to copy what another city has done.
- Convene entrepreneurs and organizations to facilitate learning between entrepreneurs across industries and sectors. Understand that actors often play multiple roles in an ecosystem.
- Encourage diverse participation in the ecosystem by actively including women, minorities, and immigrants.
- Strengthen local education and increase graduation rates.
- Listen to local entrepreneurs to understand what works for them and what doesn't.
- Improve business licensing and permitting processes by streamlining requirements and making the process easy to navigate, with the intent to level the playing field with incumbents who know the ropes and new small business owners and entrepreneurs.

- Champion local entrepreneurs, and the ecosystem as a whole, both within your city and externally by publicly celebrating entrepreneurial success.
- Measure, measure, measure. Map your ecosystem, take inventory of your assets, and then develop metrics to measure the impact of policies. Make adjustments as necessary.

Broadband:

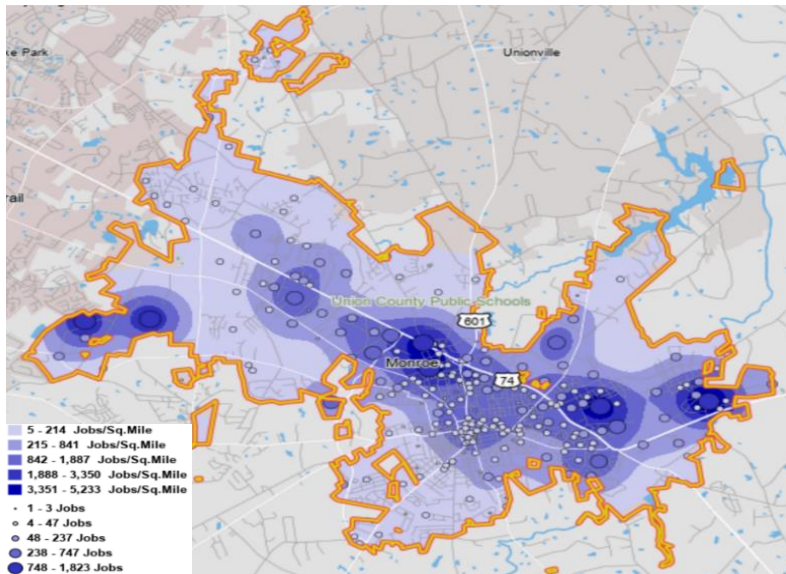
Broadband is an important part of the infrastructure for this sector. The map below highlights the level of availability in Union County, with lower broadband availability in the city of Monroe, and little in eastern Union County. Limited free Wi-Fi is available thru the Union County library which has a branch located in downtown. Limited internet connectivity constrains the market for most types of development.



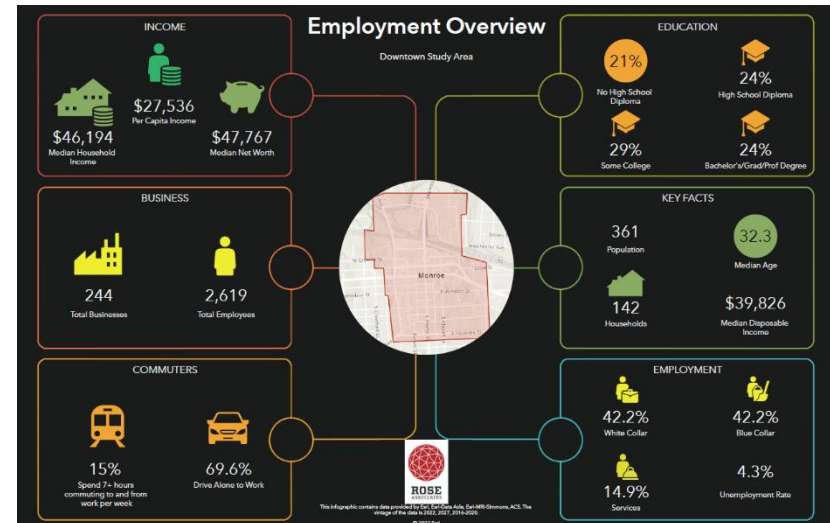
Source: [NC Broadband Map \(arcgis.com\)](https://arcgis.com)

Workforce:

The concentration of jobs in Monroe are located outside of the downtown and more of Union County's residents are commuting outside of the County for employment:

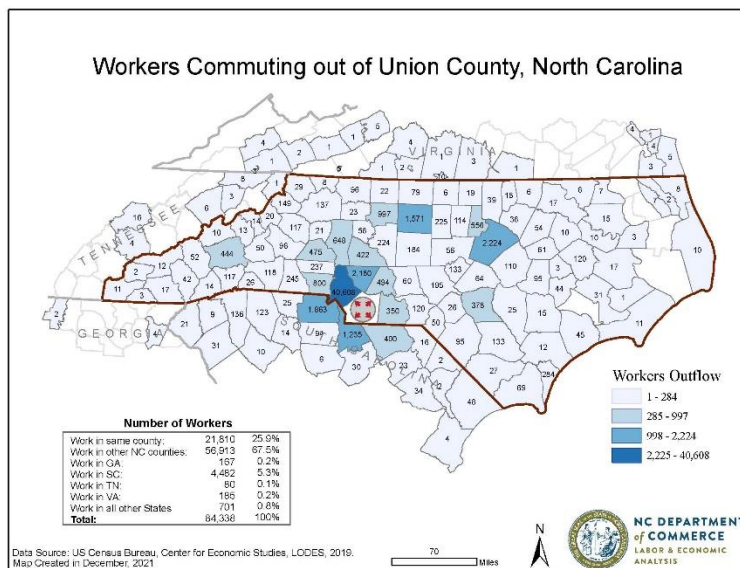


There are currently 244 business and approximately 2,600 employees working in the downtown, compared to a population of 361 who live here. Therefore, a large percentage of downtown businesses are dependent on the daytime population of workers, and those visiting or traveling through the area.



Workspace:

A vibrant entrepreneurial ecosystem results in demand for workspaces that support new business ventures. These are supported by office and retail space. The offerings in and around the downtown area are limited and include a diversity of product type, quality, size and price range.



Downtown Monroe Real Estate for Lease / Sale						
	Address	Status	Floor/Suite	Land/Acres	Available Space	Price
OFFICE FOR LEASE and SALE						
2	501 E Franklin Street	Office for Lease	Floor 1		6,365 SF	\$9.40/SF
5	1251 Stafford Street	Ex Office for Lease			87 SF	\$48.28/sf
8	200-214 E Jefferson Street	Office for Lease			4,860 total within 4 suites	\$11/SF annua
1	305 South Charlotte Avenue	Flex/R&D For Sale		0.42 acres	3,705 SF	\$599,000
RETAIL FOR SALE OR LEASE						
3	100-120 E Sunset Drive	Retail for Lease	Floor 1		15,109 SF within 2 spaces	negotiable'
10	201 N. Main Street	Retail for Lease			10,000	\$17/SF
6	305 E Phifer Street	Retail for Sale	Building	2.7 acres	9,120 SF	\$1,350,000
LAND FOR SALE						
4	Myers Street	Land for Sale		1 acre		\$185,000
7	E Sunset Drive	Land for Sale		26 acres		\$1,390,000
9	0 Johnson St/Crowell Street	Land for Sale		3.73 acres		\$349,000

Source: Catylist, CoStar, Rose Associates

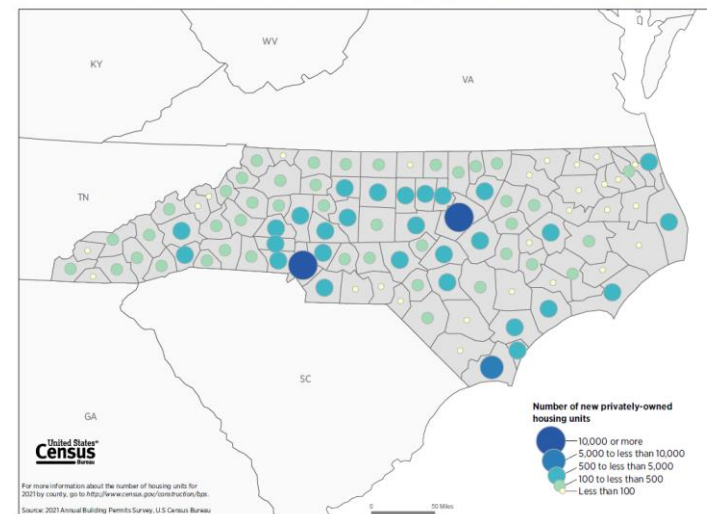
The cost to construct and finish new space will result in lease rates which would be possibly three times higher than current lease rates which creates challenges for businesses which may wish to locate in downtown. The most competitive strategy would be to support renovations of existing buildings to keep costs consistent with market rents and build rental rates over time as growth continues.

The dynamics of "work from home" (WFH) as a result of the pandemic have changed the face of the office market. The conversion of office space into apartments, and offering alternative live-work environments, along with broadband access will be important considerations for downtown vibrancy. Efforts should include bringing local residents and employees, and visitors to the downtown to support restaurants and retail business, beyond "9 to 5" daytime hours.

Residential Housing

As of July 2022, US Census estimates that 56,753 new privately owned housing units have been approved in North Carolina at an estimated value of \$13.4 million, second behind only Florida for the entire Southeast region. Union county is among the 31 Counties in North Carolina to enjoy strong housing growth, influenced by the strong Charlotte Region.

North Carolina New Privately-Owned Housing Units Authorized by County: 2021



Union County

According to the U.S. Department of Housing and Urban Development (HUD), there were 1,718 new single-family permits issued in Union County from January through July 2022. Sales of existing single family homes totaled 611 for the same period. And there were five multifamily projects permitted totaling an additional 616 apartment units. Based on current estimated job and population growth, county demand for new housing totals between 248-645 units annually.

According to the Canopy Realtor Association MLS (multiple listing service), the median home sales price for Union County in July was \$472,815, up 23.3% year over year.

City of Monroe

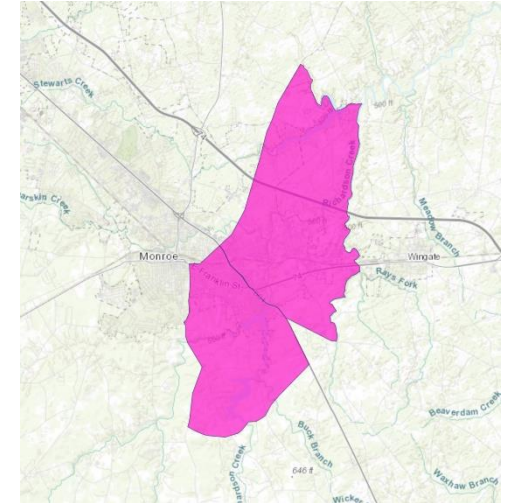
In Monroe, the median home sales price for the same period was \$397,000, up 29.4% year over year.

According to the U.S. Department of Housing and Urban Development (HUD), a household is “cost-burdened” if it spends more than 30% of income on housing. Based on the average sales price of a home in Monroe, the household income threshold to afford a home based on current interest rates is \$105,360. The 2022 estimated average household income in Monroe is \$82,796, with only 28% of households above the threshold. This results in nearly 70% of Monroe residents being “cost burdened”. The result is that many working here cannot afford to live in Monroe, increasing average commute times (a.k.a. “drive until you qualify”).

A program with the potential to attract investment capital into low-income areas was created by federal tax legislation, known as The Tax Cuts and Jobs Act (H.R.1). North Carolina Opportunity Zones will offer qualified investors certain tax benefits when they invest unrealized capital gains into these areas. Many of these finance structures have facilitated affordable housing developments in areas that qualify. Monroe has two qualified opportunity zones:

Opportunity Zone ID: 37179020602 includes portions of the downtown.

Within the downtown, there are 50.9% owner occupied housing units, 35.2% renter occupied housing units and 13.9% of the homes are vacant or unoccupied. A competitive advantage of the downtown is its water and sewer capacity, and an existing inventory of historic homes in the surrounding neighborhoods. A program to encourage home renovation and ownership would assist in rehabilitating vacant and neglected homes.



The quality and choice of schools may constrain the housing market in downtown for families with school age children. Within the district that serves the downtown, schools are not well rated for performance. Union County has a School of Choice program in the event families want to send their children to higher performing schools or are committed to home schooling. School district maps source: [Facilities / Current Attendance Maps \(ucps.k12.nc.us\)](https://ucps.k12.nc.us/Facilities/CurrentAttendanceMaps)

Opportunities to provide housing that attracts a target market of young professionals and families, empty nesters and seniors who seek a walkable downtown environment, or who wish to live close to their business should be considered.

The strategy for downtown housing should include:

- **Collaboration** between City and County housing and education programs
- **Preservation** of historic single-family homes surrounding downtown
- **Creation** of new (smaller) downtown multi-family housing units (for sale/rent):
 - Townhomes
 - Apartments
 - Patio Homes
 - Accessory Dwelling Units (ADUs)

Quality of Life

Quality of Life is a subjective term, depending on each perspective.

For existing or relocating residents, this includes childcare and education, access to parks and recreation facilities, accessible shopping and a vibrant arts, culture and entertainment scene. Altogether these make up the culture of a community, and such experience that a place creates, all of which promotes health and well-being.

For major employers, it includes an educated workforce that can find the desired housing and lifestyle within a reasonable commuting distance. Educational resources for job training and workforce development are critical. The path begins with strong K-12 schools. With industrial manufacturing and healthcare being the leading industries in Union County, assets that support science, technology, engineering and math (STEM) can strengthen career opportunities.

Many of these qualities should be integrated into a seamless experience for those living, working and visiting the downtown. Connecting people and places are what create a resilient environment.

Marketing your quality of life is crucial. *Forbes* reported in 2017 that "Millennials want a better everything." Years later, that remains true and other generations are joining them. People demand better working conditions, better living environments and communities that meet their lifestyle needs. In response, businesses are also searching for locations that meet their needs and the needs of their employees, making it more critical than ever to market your community's quality of life. The assets, events and opportunities in the downtown should be highlighted, celebrated and communicated in a cohesive and comprehensive marketing plan to a broad regional audience to help in recruiting business and investment in downtown Monroe.

Quality of Life		
Economic	Social	Physical
• Education • Income • Job Opportunities • Business Environment	• Governance • Health & Public Safety • Community • Arts, Culture & Entertainment	• Housing • Parks & Recreation • Infrastructure • Visual Quality

Recommendations + Implementation Strategies

Development Demand

Five land uses and product types were identified to support the key focus areas. The estimated capacity considers a targeted capture rate of county demand within the downtown over a ten-year period, based on estimated job and population growth.

Type of Development Demand	Estimated Market Capacity	Targeted Capture (Union County)
Residential	65-160 units	25%
Retail/F & B/Entertain.	184,150 s.f.	10%
Office/Medical	13,345 s.f.	25%
Lodging	25 rooms	10%
Cultural/Civic	20,000 s.f.	50%
<i>Note: assumes supported parking, road improvements and parks/open space</i>		

Strategy Matrix

In an effort to integrate and link the existing anchor assets identified in the downtown, a primary theme evolved:

STEAM (Science, Technology, Engineering, Arts and Math)

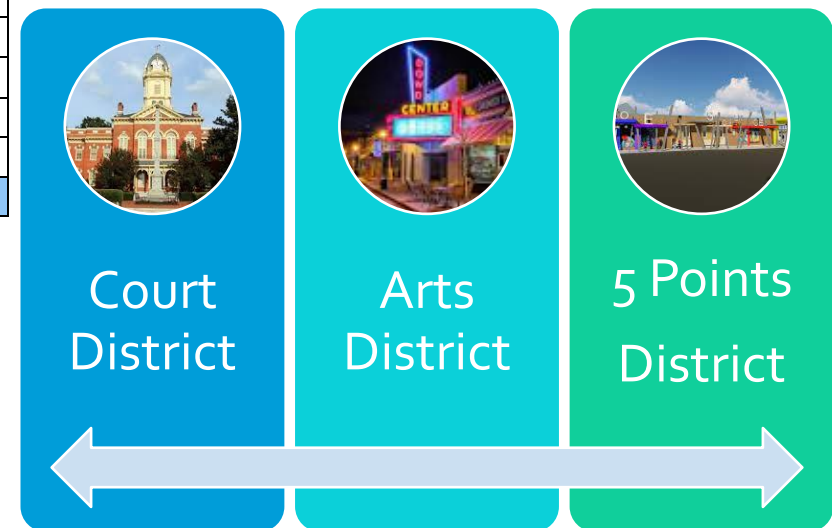
According to the Institute for Arts Integration, “**STEAM Education** is an approach to learning that uses Science, Technology, Engineering, the Arts and Mathematics as access points for guiding student

inquiry, dialogue, and critical thinking.” This educational foundation is what supports workforce development for job growth and economic development, leading to investment. The anchor assets identified in the downtown form the core what could be future Districts:

The historic **Courthouse** is a destination that brings history and commerce together near the government center.

The **Dowd Center Theatre** is a destination that brings arts, culture and entertainment to the core of the downtown.

The **Monroe Science Center** will be a destination that will feature science, engineering and math to this knowledge and learning center of downtown, across from the library in the Five Points area.



Action Item #	Tourism	Housing	Entrepreneurship	Quality of Life
1.	Create an Arts & Culture guide, including those assets focused on STEAM. Facilitate collaboration with arts & science organizations.	Map & document historic homes – expand and support historic district renovations.	Create a Small Business Center to assist start-ups. Provide forms, resources and education for home-based and start-up enterprises.	Encourage placemaking through window displays (vacant storefronts).
2.	Post & promote downtown assets throughout the region to attract visitors.	Create & promote historic home rehab through incentives and add an annual historic homes tour (garden club).	Coordinate with County Small Business Center for funding assistance. SBTDC at UNC Charlotte NC SBTDC	Develop a branding and marketing plan to promote downtown (beyond a logo).
3.	Promote bar, brewery & restaurant offerings.	Discourage blight of homes surrounding downtown through code enforcement.	Create an economic gardening program to cultivate SBE. Utilize toolkits for Economic Gardening: https://economicgardening.org/	Discourage blight of commercial buildings through a “demolition by neglect” ordinance.
4.	Highlight daytrips & weekend itineraries around downtown places and events.	Encourage ADUs and other alternative affordable housing.	Incentivize co-working and maker spaces (upfit grants) to support start-ups and small business.	Coordinate with Hospital & medical community to promote health/wellness (walk with a doc; bikeshare; etc.).
5.	Combine promotions in one place with ease of access and information.	Incentivize townhomes & apartments in downtown, and include amenities such as pocket parks, dog parks and community gardens.	Coordinate with local business and the library to adopt STEAM programs/education path to entrepreneurship.	Coordinate local education with local business to provide career paths after high school (apprentice/internships).
6.	Coordinate other tourism events beyond downtown area, to come to downtown for food & beverage	Work with public, charter and private schools to improve the educational ratings of schools K-8 in partnership with (STEM): NC STEM Center Home - NC STEM Center	Provide opportunities for artist’s creative expression with building murals/art trails throughout downtown.	Coordinate with local organizations to promote multi-language and multi-cultural events.
7.	On all guide/tour maps, provide consistent numbers/labeling for all buildings & homes.	Coordinate with local realtors to provide tours, information and assist in Qualified Opportunity Zone projects: https://public.nccommerce.com/oz/	Facilitate the development of an apprentice and internship program in partnership with local schools and small businesses. ApprenticeshipNC NC Community Colleges	Add family activity areas to the library and new science center. Connect to greenways and parks.
8.	Expand support for local non-profit arts council.	Create affordable housing, including artist lofts, in the downtown to support the local arts community.	Consider creation of arts district and develop an art center which could serve as an incubator for local artists. Americans for the Arts 	Collaborate arts & cultural assets with coordinated marketing. Consider new non-profit to promote and manage arts and cultural assets.

Measuring Success

The success of any plan is dependent on market forces and market cycles.

Market Forces

Market forces include both external and internal forces. External forces include such things as natural or man-made disasters and the broader geopolitical climate, as well as the national economy. Internal forces include more localized factors that are influenced by state and local public policy. The identification of capital improvement projects to provide a catalyst for private investment can be measured by fiscal impacts. Fiscal impacts are based upon reasonable assumptions that reflect state and local economic factors, such as local tax revenues. Tax valuations for the purposes of tax assessment are based upon mass appraisal practices which take these factors into consideration and impacts revenues. Since 2018, construction costs have risen dramatically and many housing markets have seen dramatic upward shifts in value, both in for sale and for lease residential real estate. Commercial markets generally follow the housing market, so long as construction costs can be justified by occupancy costs, including market rental rates and property taxes. When the market rates are not commensurate with the cost to construct new product or occupancy costs, the market cycle of supply and demand is impacted.

Market Cycles

Real estate markets are reflection of national, state and local economies. They are also influenced by costs of capital, wages and construction. Each of these factors into a complex prism of demand and supply, much of which can be measured or quantified. The market metrics gathered during the market analysis assist in determining

appropriate land uses and product types as well as what phase the local market may be experiencing. Based on the data collected during the market analysis phase, the Monroe market appears to be in the expansion phase. The housing market leads local market cycles, as rising rental rates and median home price increases have fueled homes sales and new construction. In commercial real estate, market vacancies are low. However, new construction is somewhat limited compared to other markets, as rent pressures have not yet met the test to warrant new construction in certain sectors.

In order to establish a baseline and track progress, the series of data points as shown in the table below are those that the city should create and track annually using a simple spreadsheet model.

Regular communication and collaboration between all departments will assist in tracking these metrics and provide year over year changes for targeted growth.

Metric	
Commercial Permits New	(#)
Commercial Permits New	(\$)
Commercial Tax Values	(\$)
Retail Vacancy	%
Office Vacancy	%
Industrial Vacancy	%
Hotel Occupancy Tax	(\$)
Retail Sales Tax	(\$)
Business Licenses	(#)
Employment	(#)
Unemployment	%
Residential Permits	(#)
Residential Tax Values	(\$)

Appendix

City of Monroe Community Profile

Downtown Area Community Profile

Downtown Area Employment Overview

Union County Commuting Profile

Canopy Housing Market Report



MONROE DOWNTOWN MASTER PLAN

HISTORIC RESOURCES REPORT





Monroe Downtown Master Plan

- a. Historic Architecture DRAFT
 - i. Inventory / Assessment
 - Inventory of existing historic architectural resources within the study area
 - Summary of the existing historic districts
 - Summary of recommendations for preservation planning and development
 - ii. Opportunities
 - iii. Appendix

Inventory/Assessment

The City of Monroe has many historic architectural resources, with two National Register historic districts located in and around the downtown area as well as several historic properties individually listed on the National Register of Historic Places.

Administered by the National Park Service, the National Register of Historic Places is a federal program that works in partnership with state governments to identify buildings, objects, sites, and districts worthy of preservation for their significance in American history, architecture, archaeology, and culture. An individual property or district's listing on the National Register is primarily honorary in nature. There are no obligations or restrictions placed on property owners as a result of listing on the National Register unless the owner seeks a federal benefit such as a grant or tax credit. For private owners, the benefit of being listed on the NR is the first step in eligibility for federal and/or state tax credits that can be claimed against the cost of a certified rehabilitation of a historic property. These credits are generally referred to as Historic Tax Credits (HTC).

National Register nominations facilitate preservation planning, historic tax credit applications, preservation easement donations and state environmental review. In terms of environmental review, all federal actions are reviewed by the state for their potential effects on properties that are listed in or eligible for listing in the National Register. Per the National Park Service, more than 96,000 properties listed (as of the end of 2020) in the National Register represent 1.8 million contributing resources - buildings, sites, districts, and objects - across the United States. See [Appendix](#) for more information.



National Register of Historic Places; Summary of Historic Districts

Monroe Downtown Historic District (UN0648)

The Monroe Downtown Historic District, listed in 1988 on the National Register of Historic Places, is located in the downtown core of the city. This district encompasses the Old Union County Courthouse and approximately six block of commercial buildings to the west and south. There are a total of thirty-five resources in the NR historic district, with twenty-five contributing buildings and nine non-contributing buildings. The district has one contributing object, the Confederate Monument on the Old Union County Courthouse square. The Old Union County Courthouse was previously listed on the National Register as an individual property. The period of significance for the district is 1874 – ca. 1935, which is the time period during which most of the original construction and development in the district occurred.

The Downtown Historic District is significant in the area of commerce, including both financial institutions and specialty stores. The district is representative of the development of the City as a southcentral piedmont railroad hub and cotton exchange from the coming of the railroad in 1874 to the early years of the Depression. There are also significant figures who played important roles in the growth of the city and the region, such as the Belk Brothers, who are associated with several buildings in the district. The Monroe Hardware Company, also associated with multiple buildings in the district, was an important regional business founded in Monroe in the 1880s and one of the largest employers in the Carolinas by 1919.

Architecture is also an area of significance in that the Downtown Historic District contains many well-preserved examples of eclectic late-Victorian commercial buildings as well as buildings of unusual sophistication for a small Southern town, namely the Old Union County Courthouse. While many buildings have been altered, there is integrity of design, setting, materials, workmanship and feeling both individually and as an ensemble.

Monroe Residential Historic District (UN0717)

While not part of the Monroe Downtown Master Plan study area, it is of note that there is second National Register Historic District located in the downtown vicinity. The Monroe Residential Historic District is approximately sixty-eight blocks southeast, south and west of the central business district. There are three hundred and eighty-one contributing resources in the Monroe Residential Historic District. The NR nomination is the basis for the South Monroe Local Historic Overlay District, of which the east end was locally designated in 1984. The local district was expanded to include properties on the west side in 2008. The entire area was listed to the National Register in 1988.



The Study List and the Statewide Architectural Survey Program

There are also two historic properties in the downtown area that have been included on the North Carolina Study List, which is a preliminary step in the review of potential National Register nominations by the NC State Historic Preservation Office. The Study List identifies properties and districts that are likely to be eligible for the National Register and is another useful tool for local preservation planning. Inclusion on the Study List acknowledges the potential significance of districts and properties before formal nomination to the National Register and may motivate preservation activity at the local level.

The two properties included on the Study List as individual entries are the Lathan Brothers Building at 202-204 E. Franklin St. and the Henderson-Snyder Building at 232-238 E. Franklin St. Inclusion in the Study List is not a guarantee of eligibility for a National Register nomination. As time passes, properties may require reevaluation due to neglect or changes made to the building.

There are many properties in and around the downtown area that have been surveyed as part of North Carolina's statewide architectural survey program. An architectural survey is the initial step in recognizing and preserving historic resources across the state. Many properties located in Monroe's historic mill villages have been previously surveyed and warrant further investigation to determine possible eligibility or inclusion in the National Register.

The potential for the use of historic tax credits can be a catalyst for redevelopment, as seen at the Piedmont Buggy Factory adjacent to Monroe Cotton Mill. The Piedmont Buggy Factory was individually listed on the National Register in 2004 and is an excellent example of preservation and adaptive reuse. The project utilized historic tax credits and is being repurposed as residential lofts. This site is also a Union County Landmark, designated in 2016.

Summary of Recommendations; Preservation planning and development

Monroe's downtown includes many historic structures, some of which are listed on the National Register of Historic Places. The Monroe Downtown Historic District was nominated to the National Register in 1987 and there are many buildings that could now be eligible for inclusion based on a fifty year eligibility benchmark. For example the buildings along S. Main St such as Dowd Center Theatre at 120 S. Main and Kimbrell's Bootery Store at 100 S. Main, Holloway's Music Store at 107 S. Main and Monroe Service Station at 101 W. Windsor St. are all likely candidates for inclusion in an updated Monroe Downtown Historic District nomination.

NR nominations are not set in stone and can be revisited over time. Amendments can take the form of technical changes, adding new criteria, new areas or new periods of significance. NR district boundaries can also be revised, to exclude resources no longer contributing or to include those that have become eligible since 1988, the year that the Monroe Downtown Historic District was nominated to the National Register. There is also an opportunity to add additional information to existing National Register nominations as it relates to underrepresented communities and a more inclusive history of Monroe. Not only can amendments to existing National Register nominations be made to address previously undocumented histories, new nominations can provide an opportunity for engagement with the local community. For example, the historic Monroe Cotton Mill and the Monroe Cotton Mill Village dating to the 1890s as well as the North Monroe/New Town Community and the Icemorlee Cotton Mill and mill houses (ca. 1890) are all significant historic resources that currently lack representation.



Opportunities; Engage, Educate & Incentivize

There is consensus among the planning documents prepared for the city over the last decades as well as among the citizenry of Monroe; the historic resources of the downtown areas are a valued asset and should be protected as part of future land planning and development. Any future regulation or action taken on the part of local government to protect historic resources will always be dependent on public support. The opportunities identified here can be realized in the shorter term and focus on the carrots in a 'carrot and stick' approach to coalition building around the value of Monroe's built history.

Engagement

There is opportunity to increase awareness about the importance of historic preservation through outreach within historic neighborhoods. It is especially important to engage diverse communities and consider historic significance of properties important to diverse constituencies. The National Register of Historic Places is not an exhaustive list of all properties that have historic value. There are many historic resources of value beyond the boundaries of the National Register Districts. There is the opportunity to establish programs that honor individual resources and neighborhoods at the local level, and to engage the community in the process.

An approach that does not overemphasize the focus on architectural history will be beneficial in identifying social and cultural significance important to the city's past and its diverse communities. Alternate approaches to research such as oral history, folklore and ethnography, and informational websites with social media components may be necessary. Cultivate new partnerships with allied entities and organizations that have a focus on or peripheral interest in historic preservation and the humanities, such as the Union County Public Library, the Union County Heritage Room, Carolinas Genealogical Society, the Union County NAACP and the North Carolina African American Heritage Commission.

Further, we recommend a comprehensive survey of the cultural, ethnic and architectural historic resources of Monroe beyond the existing National Register district, as identified by the community and documented by an outside partner/consultant. The survey can be used to establish additional NR eligible properties for future designation or inclusion on the Study List, the precursor to NR nomination if not already in the Historic Preservation Office database. The survey can also be used as a reference for general preservation planning. It is important to engage a diverse range of community members during the survey process, especially those not well represented in the historical record.

Education

Opportunities exist in the public sector and among private citizens for education about the importance of preservation and protecting our valuable historic resources. There is a misperception about the regulations associated with listing on the National Register of Historic Places and about the differences between a National Register Historic District and a Local Historic Overlay District. Educating leaders and constituents about the benefits of both can help to build the awareness and support needed to eventually pass regulatory protections for historic properties in the form of zoning overlay districts.



Educating the community about successful historic preservation projects and the tax benefits associated with them is another way to demonstrate ‘preservation in action’ on the ground. There are several properties that have been successfully rehabilitated in Monroe, through which the owners were able to utilize federal and state income tax credits. These property owners could be strong supporters of current and future preservation initiatives on the local level. Consider developing case studies of local preservation as a redevelopment catalyst.

In addition to the economic benefits, highlighting successful adaptive reuse projects at the local level is another way to educate the community about the environmental sustainability principles inherent in historic preservation. Adaptive reuse is preservation, and preservation is adaptive reuse. Continue to foster job creation and economic development through historic preservation by demonstrating the return on investment from successful rehabilitation and reuse projects.

Information garnered from the comprehensive survey or other community engagement efforts can be the basis for memorialization of resources (in the form of signage) and as the jumping off point for additional research in areas needing further study, such as Monroe’s significant Civil Rights history. As a Certified Local Government (CLG) since 1986, Monroe is eligible for funding and technical assistance to

Incentivization

Historic Tax Credit

There are opportunities for both economic and social incentives in promoting local preservation. In updating the existing National Register nominations and seeking designation of Study List properties/proposed districts, the city can foster community pride around the history of Monroe and its built environment. Listing on the National Register is honorary, in that it provides recognition of unique historic and architectural character of those properties nominated. Listing alone does not place restrictions on a property owner, nor does it necessarily preserve a property in perpetuity. However, listing on the National Register can potentially provide owners with Federal and/or State tax credits for the certified rehabilitation of commercial properties. See [Appendix](#) for additional information on Federal and State historic tax credits.

Local Landmark Designation

We also recommend focus on the designation of local landmarks in the downtown core. Historic landmark designation is a powerful tool in the preservation toolkit, providing recognition and the financial incentive to protect Monroe’s historic properties. Owners of landmarks are eligible to apply for an annual 50% property tax deferral as long as the property’s important historic features are maintained. There are also some teeth to this regulation, in that recapture penalties may apply if the owner destroys the property or damages its historic value. Many local landmarks designated in Union County are residential properties, such as the Ramsay-Fairley House and the Ashcraft-Garren House, both of which were listed in 2018. The Piedmont Buggy Factory was also listed as a Union County Landmark in 2018. The Union County Historic Preservation Commission oversees the designation of Historic Landmarks within the county and the approval process for any changes proposed to landmark properties.



Economic Development Incentives

Monroe has already implemented economic development incentive assistance such as the Façade Improvement Program, Downtown Pronto and Mixed Use Development Incentives Grant to promote the preservation and reuse of historic buildings. The Residential Incentive Grant can be an especially powerful tool for bringing upper level residential uses to the historic downtown. There are opportunities to further expand upon these programs and market them to community members.

Main St. America

Downtown Monroe is also a Main Street America accredited community, which promotes preservation-based economic development. Continue to utilize the resources available to program members to 'recognize, revitalize, preserve and promote the historic, cultural, social and economic significance of Monroe's Downtown'.

Preservation Awards & Recognition

The establishment of a Preservation Awards program would recognize successful projects and individuals who contribute to the stewardship of our historic built environment. An awards program could be administered by the Monroe Historic District Commission or in partnership with an affiliated entity. Preservation awards are often given for different types of projects such as rehabilitation, adaptive reuse, and restoration, as well as awards of merit for leadership in the field of historic preservation.

Opportunities; Regulate & Reinterpret

Regulation

As a longer term goal, consider creating an additional local historic district for the downtown commercial area through historic district overlay zoning. The purpose of doing so is to protect and preserve its special character from unmanaged change as development pressures continue to grow. The South Monroe Historic District, based on the National Register Monroe Residential Historic District (UN0717), is a successful model already in place. Monroe has established a local Historic Preservation Commission and a Certificate of Appropriateness (COA) permit procedure for any development affecting the exterior of a building within the local historic residential district. The COA process for the local residential historic district is currently overseen by two members of City of Monroe planning staff. The Union County Historic Preservation Commission oversees the designation of Historic Landmarks and the approval process for any changes to landmark properties.

A local historic district overlay district zoning designation is prepared in coordination with the State Office of Historic Preservation and is often based on a National Register Historic District. The zoning designation provides an oversight mechanism to preserve the integrity of historic buildings and the district as a whole through design review (COA) of proposed alterations, additions and new construction within the district. Local historic overlay district zoning may be the most effective way to protect the historic resources that remain in the downtown area, as it is a regulatory process with 'teeth'. This process will likely take several years to implement, and community engagement is an essential component of local designation from start to finish.



Reinterpretation

The interpretation of the meaning and value of the Confederate Monument on the grounds of the Old Union County Courthouse is the obligation of the community. An opportunity for reinterpretation exists, for the monument itself in terms of its symbology but also for the cultural landscape of the public space that holds the monument. Representation of the full historical narrative of Monroe's past that includes Reconstruction, Jim Crow segregation and the Civil Rights movement is needed. Inclusive and thoughtful consideration of the history represented by the monument in what is arguably Monroe's most important public space is required for greater understanding and acknowledgement of our complex past. Many communities across the country have grappled with these questions or are undertaking this work now; there are resources available to provide guidance and support throughout the process.

Opportunities; Summary

- Update the National Register nominations and seek designation of Study List properties/proposed districts
- Promote Adaptive Reuse
- Engage diverse communities and consider historic significance of properties important to diverse constituencies
- Highlight Monroe's unique history of entrepreneurship and how it provides connections to the built environment that include Belk's Building and Monroe Hardware Company
- Educate the public and create new stakeholders
- Increase awareness of the importance of historic preservation through outreach within historic neighborhoods
- Use social media as educational tool; update City's website to include more preservation resources and information about historic tax credits
- Strengthen relationships with local non-profits and preservation minded organizations

January 18, 2024

Dan Lambert

McAdams

2100 South Tryon Street, Suite 400

Charlotte, NC

Reference: Monroe Downtown Master Plan

Subject: Traffic Analysis

Dear Mr. Lambert:

DRMP was retained by the Town of Monroe to conduct a study to determine the feasibility of two traffic control alternatives in Downtown Monroe. The first alternative is performing a roadway diet on Church Street, Hayne Street, and Charlotte Avenue. The second alternative converts Jefferson Street and Franklin Street from one-way traffic to two-way traffic between Charlotte Avenue and Church Street. This letter presents the results of the study.

Executive Summary

A study was conducted to assess existing traffic operations at fourteen intersections along Charlotte Avenue, Main Street, Hayne Street, and Church Street in downtown Monroe, North Carolina. Additionally, the anticipated traffic operations at the same intersections were analyzed with a roadway diet on Church Street, Hayne Street, and Charlotte Avenue and two-way traffic flow on Jefferson Street and Franklin Street.

The following intersections were studied and are shown in Exhibit 1 on the following page:

- Charlotte Avenue and Church Street (signal)
- Charlotte Avenue and Jefferson Street (signal)
- Charlotte Avenue and Franklin Street (signal)
- Charlotte Avenue and Windsor Street (stop-controlled)
- Charlotte Avenue/Houston Street and Lancaster Avenue (signal)

- Main Street and Jefferson Street (signal)
- Main Street and Franklin Street (signal)
- Main Street and Windsor Street (signal)
- Skyway Drive/Hayne Street and Church Street (signal)
- Hayne Street and Jefferson Street (signal)
- Hayne Street and Franklin Street (signal)
- Hayne Street and Windsor Street (signal)
- Church Street and Jefferson Street (signal)
- Church Street and Franklin Street (signal)

Traffic counts were collected at these intersections during the morning and afternoon peak periods in September of 2022. These intersections were analyzed under existing conditions – with one-way traffic patterns and existing signalization or stop sign control, as appropriate.

Exhibit 1: Study Intersections



Franklin Street and Jefferson Street are closely spaced which causes spillback along some roadways. The same is true for Hayne Street and Main Street. Eastbound Franklin Street at Charlotte Avenue was identified as being over capacity in existing conditions.

Church Street appears to be the best candidate for a road diet. Charlotte Avenue and Hayne Street have some spillback issues due to the short distance between Franklin Street and Jefferson Street. The Road Diet alternative would reduce capacity in these areas.

The Two-Way Street alternative converts both Franklin Street and Jefferson Street to two-way traffic flow. Converting Franklin Street to two-way traffic flow would provide a more direct route for westbound traffic. Traffic operations are improved at the intersection of Charlotte Avenue and Franklin Street due to rerouting of traffic. As part of this alternative, it was assumed that Jefferson Street would be realigned on the eastern side of downtown and form a three-legged unsignalized intersection with Franklin Street. Jefferson Street would be stop-controlled and is expected to operate at LOS C.

Study Area

The following existing intersections were considered in this study:

- Charlotte Avenue and Church Street (signalized)
- Charlotte Avenue and Jefferson Street (signalized)
- Charlotte Avenue and Franklin Street (signalized)
- Charlotte Avenue and Windsor Street (unsignalized)
- Charlotte Avenue/Houston Street and Lancaster Avenue
- Main Street and Jefferson Street (signalized)
- Main Street and Franklin Street (signalized)
- Main Street and Windsor Street (signalized)
- Skyway Drive/Hayne Street and Church Street (signalized)
- Hayne Street and Jefferson Street (signalized)
- Hayne Street and Franklin Street (signalized)
- Hayne Street and Windsor Street (signalized)
- Church Street and Jefferson Street (signalized)
- Church Street and Franklin Street (signalized)

Data Collection

Existing peak hour traffic volumes were determined based on traffic count data collected at the study intersections in September of 2022, during a typical weekday AM (7:00AM – 9:00AM) and PM (4:00PM – 6:00PM) peak periods. Existing lane configurations (number of traffic lanes on each intersection approach), speed limits, storage capacities, and other intersection and roadway information within the study area are shown in Figure 1 of Appendix A. The 2022 Existing peak hour traffic volumes are shown in Figure 2. Signal timing information was obtained from the Town of Monroe. A copy of the traffic count data and signal information is included in Appendix B and C, respectively.

Roadway Diet Traffic Conversion Methodology

The first alternative assumes road diets on Church Street, Hayne Street, and Charlotte Avenue. The existing lane configurations were modified to include road diets on these roadways. Figure 3 shows the lane configurations with the road diets in place. No changes were made to the peak hour traffic volumes for this alternative.

Two-Way Traffic Conversion Methodology

The second alternative converts Jefferson Street and Franklin Street from one-way traffic to two-way traffic between Charlotte Avenue and Church Street. The existing lane configurations were modified to allow this two-way traffic. Figure 4 shows the lane configurations for this alternative. Some peak hour turn movement volumes were rerouted to account for two-way traffic flow. Figure 5 shows the 2022 two-way street peak hour traffic volumes. Appendix D provides more detail on how traffic volumes were rerouted.

Capacity Analysis

Level-of-service (LOS) and delay are two measures used to determine how well an intersection is operating. Typically, LOS D is acceptable for most area. Some agencies accept LOS E or F in downtown business districts due to limited right-of-way and congestion or to encourage other modes of transportation such as walking, biking or transit.

Study intersections were analyzed using the methodology outlined in the *Highway Capacity Manual* (HCM), 6th Edition published by the Transportation Research Board. Capacity and level of

service are the design criteria for this traffic study. Synchro (Version 11) was used to complete the analyses for all study area intersections. Note that the unsignalized capacity analysis for two-way stop-control does not provide an overall level of service for an intersection; only delay for an approach with a conflicting movement. Refer to Table 1 for HCM levels of service and related average control delay per vehicle for both signalized and unsignalized intersections.

Table 1: Highway Capacity Manual – Levels of Service and Delay

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

All intersections operated at LOS D or better during the 2022 Existing scenario. However, some deficiencies were identified. The road diet alternative is expected to be at least slightly worse than the existing scenario because it in essence reduces capacity at some intersections. The two-way street alternative provides better east-west connectivity, but could negatively affect some intersections. Table 2 summarizes the levels of service at each intersection during the Existing, Road Diet, and Two-Way Streets scenarios. Orange cells indicate the overall delay at an intersection gets worse when compared to the 2022 Existing scenario. Blue indicates no change in overall intersection delay. Green indicates the overall delay at an intersection improves.

Several traffic operation issues were identified in the 2022 Existing scenario. Refer to Appendix E for the 2022 Existing Synchro and SimTraffic reports. The following is a summary of this analysis.

- Charlotte Avenue and Franklin Street
 - The eastbound Franklin Street approach at Charlotte Avenue was over capacity during both peak hours. Maximum queues were reported to be over 1,000 feet.
 - The southbound Charlotte Avenue approach spilled back to Jefferson Street during both peak hours due to the short distance between Franklin Street and Jefferson Street.
- Hayne Street and Church Street
 - The southbound Hayne Street approach had a maximum queue of nearly 750 feet during the PM peak hour.
- Hayne Street and Franklin Street
 - The eastbound Franklin Street approach spilled back to Main Street during the PM peak hour due to the short distance between Hayne Street and Main Street.

Table 2: 2022 Intersection Levels of Service

Intersection	AM Peak Hour			PM Peak Hour		
	Existing	Road Diet	Two-Way Streets	Existing	Road Diet	Two-Way Streets
Charlotte Avenue and Church Street	A	A	A	B	B	A
Charlotte Avenue and Jefferson Street	B	C	A	B	B	B
Charlotte Avenue and Franklin Street	D	D	C	D	D	C
Charlotte Avenue and Windsor Street ¹	C	C	C	C	C	C
Charlotte Avenue and Lancaster Avenue	B	B	B	B	B	B
Main Street and Jefferson Street	A	A	A	A	A	A
Main Street and Franklin Street	B	B	B	B	B	B
Main Street and Windsor Street	A	A	A	A	A	A
Hayne Street and Church Street	C	C	C	C	C	C
Hayne Street and Jefferson Street	B	B	B	B	B	B
Hayne Street and Franklin Street	B	C	B	B	B	B
Hayne Street and Windsor Street	B	B	B	B	B	B
Church Street and Jefferson Street	A	A	A	B	B	B
Church Street and Franklin Street	B	C	B	C	C	D
Franklin Street and Jefferson Street ^{1,2}	-	-	C	-	-	C

1 - Stop-controlled approach LOS.

2 - Realigned Jefferson Street to intersect Franklin Street.

The Road Diet alternative reduces lanes on Church Street, Hayne Street, and Charlotte Avenue. Church Street appears to be the best candidate for a road diet. Charlotte Avenue and Hayne Street have some spillback issues due to the short distance between Franklin Street and Jefferson Street. Refer to Appendix F for the 2022 Road Diet Synchro and SimTraffic reports. The following is a summary of this analysis.

- Charlotte Avenue and Jefferson Street
 - The northbound Charlotte Avenue approach is expected to spill back to Franklin Street during both peak hours due to the short distance between Franklin Street and Jefferson Street. The overall intersection degrades from LOS B to LOS C during the AM peak hour mainly due to the road diet on the northbound approach. The PM peak hour shows marginally improves LOS due to optimized signal timings.
- Charlotte Avenue and Franklin Street
 - This intersection is expected to operate similarly to the 2022 Existing scenario, with long queues on eastbound Franklin Street, and queues that spill back to Jefferson Street on the southbound Charlotte Avenue approach.
- Hayne Street and Church Street
 - The southbound Hayne Street approach had a maximum queue of nearly 750 feet during the PM peak hour of the 2022 Existing scenario. The Road Diet alternative decreases this queue to approximately 550 feet due to more green time being given to the northbound and southbound Hayne Street approaches. A single lane is needed in each direction of Church Street.
- Hayne Street and Jefferson Street
 - The SimTraffic report indicates the northbound Hayne Street approach is expected to spill back to Franklin Street during the PM peak hour. However, a review of the simulation showed vehicles slowing down, but not fully stopping. Queues recovered quickly during green signal phases.
- Hayne Street and Franklin Street
 - The eastbound Franklin Street approach spilled back to Main Street during the AM peak hour due to the short distance between Hayne Street and Main Street. The overall intersection degrades from LOS B to LOS C during the AM peak hour.

The Two-Way Street alternative converts both Franklin Street and Jefferson Street to two-way traffic flow. Currently, vehicles traveling eastbound use Jefferson Street until reaching Charlotte Avenue. Jefferson Street ends approximately 1,700 feet west of Charlotte Avenue. Many vehicles traveling westbound turn left from Jefferson Street onto southbound Charlotte Avenue, and then turn right onto westbound Franklin Street. Converting Franklin Street to two-way traffic flow would provide a more direct route for westbound traffic. As part of this alternative, it was assumed that Jefferson Street would be realigned on the eastern side of downtown and form a three-legged unsignalized intersection with Franklin Street. Refer to Appendix G for the 2022 Two-Way Streets Synchro and SimTraffic reports. The following is a summary of this analysis.

- Charlotte Avenue and Jefferson Street
 - The northbound Charlotte Avenue approach is expected to spill back to Franklin Street during the AM peak hour due to the short distance between Franklin Street and Jefferson Street. The overall intersection improves from LOS B to LOS A during the AM peak hour due to fewer westbound Franklin Street left turns. Marginal overall intersection improvement is expected during the PM peak hour.
- Charlotte Avenue and Franklin Street
 - The eastbound Franklin Street approach had a maximum queue over 1,000 feet during both peak hours of the 2022 Existing scenario. The Two-Way Streets alternative decreases this queue to approximately 675 feet due to rerouted vehicles. The overall intersection improves from LOS D to LOS C during both peak hours due to fewer eastbound Franklin Street throughs and southbound Charlotte Avenue rights.
- Main Street and Franklin Street
 - The SimTraffic report indicates the westbound Franklin Street approach is expected to spill back to Hayne Street during the PM peak hour. However, a review of the simulation showed this occurred only once during the peak hour. Marginal overall intersection improvement is expected during the AM peak hour.
- Hayne Street and Church Street
 - The southbound Hayne Street approach had a maximum queue of nearly 750 feet during the PM peak hour of the 2022 Existing scenario. The Two-Way Streets alternative decreases this queue to approximately 425 feet due to more green time being given to the northbound and southbound Hayne Street approaches.
- Hayne Street and Franklin Street
 - The eastbound Franklin Street approach spilled back to Main Street during both peak hours due to the short distance between Hayne Street and Main Street.
 -

- The SimTraffic report indicates the southbound Hayne Street approach is expected to spill back to Jefferson Street during the PM peak hour. However, a review of the simulation showed vehicles slowing down, but not fully stopping. Queues recovered quickly during green signal phases. The overall intersection remains at LOS B.
- Franklin Street and Jefferson Street
 - This new intersection would be formed by realigning Jefferson Street. Jefferson Street would be stop-controlled and is expected to operate at LOS C.

Conclusions

All intersections operated at LOS D or better during the 2022 Existing scenario. Franklin Street and Jefferson Street are closely spaced which causes spillback along some roadways. The same is true for Hayne Street and Main Street. Eastbound Franklin Street at Charlotte Avenue was identified as being over capacity. This is illustrated in its maximum queue of over 1,000 feet.

The Road Diet alternative reduces lanes on Church Street, Hayne Street, and Charlotte Avenue. Church Street appears to be the best candidate for a road diet. Charlotte Avenue and Hayne Street have some spillback issues due to the short distance between Franklin Street and Jefferson Street. The Road Diet alternative would reduce capacity in these areas.

The Two-Way Street alternative converts both Franklin Street and Jefferson Street to two-way traffic flow. Currently, vehicles traveling eastbound use Jefferson Street until reaching Charlotte Avenue. Jefferson Street ends approximately 1,700 feet west of Charlotte Avenue. Many vehicles traveling westbound turn left from Jefferson Street onto southbound Charlotte Avenue, and then turn right onto westbound Franklin Street. Converting Franklin Street to two-way traffic flow would provide a more direct route for westbound traffic. The eastbound Franklin Street approach had a maximum queue over 1,000 feet during both peak hours of the 2022 Existing scenario. The Two-Way Streets alternative decreases this queue to approximately 675 feet due to rerouted vehicles. The overall intersection improves from LOS D to LOS C during both peak hours due to fewer eastbound Franklin Street throughs and southbound Charlotte Avenue rights. As part of this alternative, it was assumed that Jefferson Street would be realigned on the eastern side of downtown and form a three-legged unsignalized intersection with Franklin Street. Jefferson Street would be stop-controlled and is expected to operate at LOS C.

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

Sincerely,

A handwritten signature in black ink that reads "J. Andrew Eagle". The signature is fluid and cursive, with the first name "J." being more prominent.

J. Andrew Eagle, PE, PTOE

Senior Project Manager

DRMP, Inc.

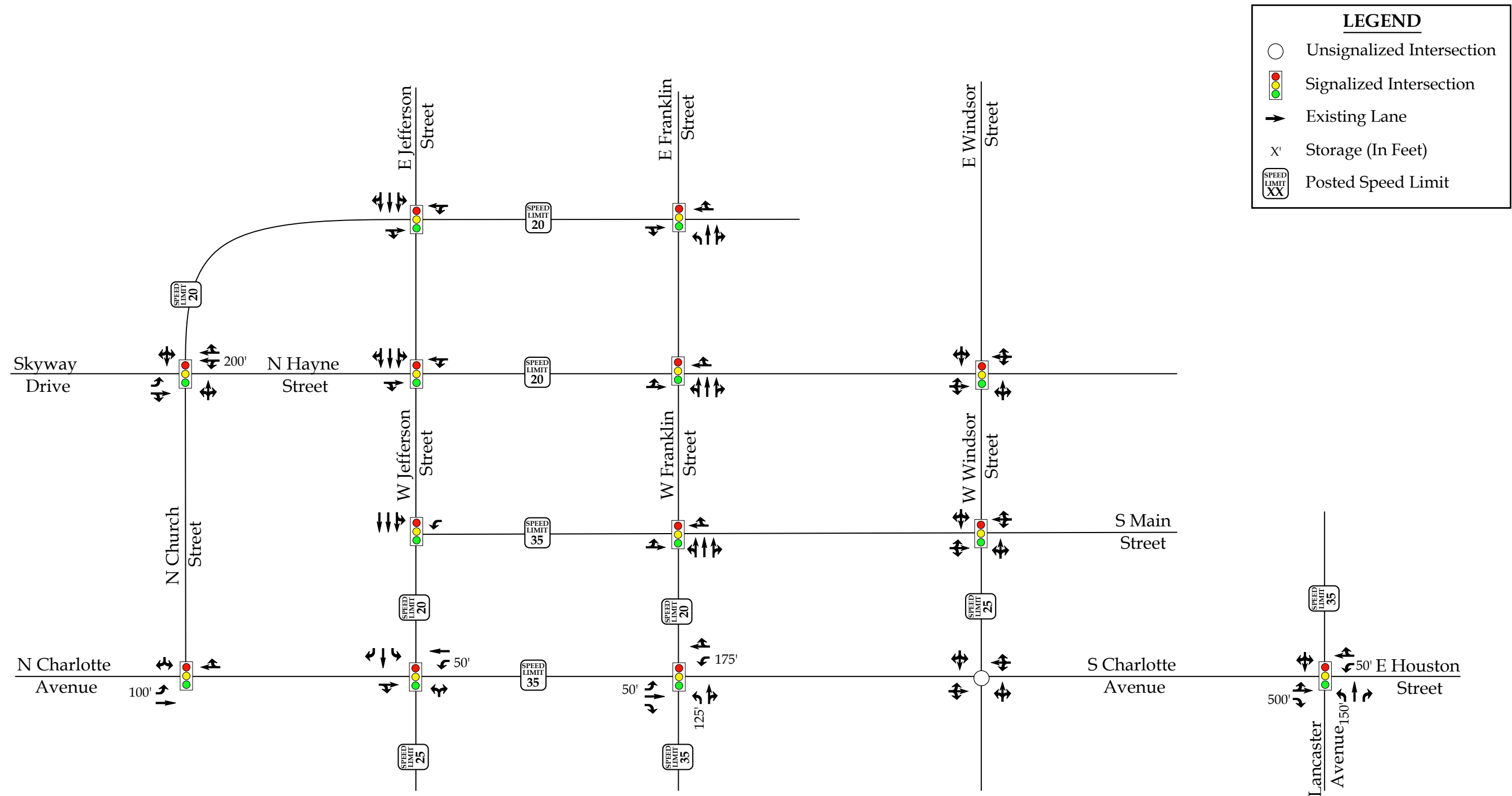
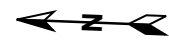
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Attachments: Appendix A – Figures
 Appendix B – Traffic Counts
 Appendix C – Signal Information
 Appendix D – Two-Way Streets Volume Rerouting
 Appendix E – 2022 Existing – Synchro and SimTraffic Reports
 Appendix F – 2022 Road Diet – Synchro and SimTraffic Reports
 Appendix G – 2022 Two-Way Streets – Synchro and SimTraffic Reports

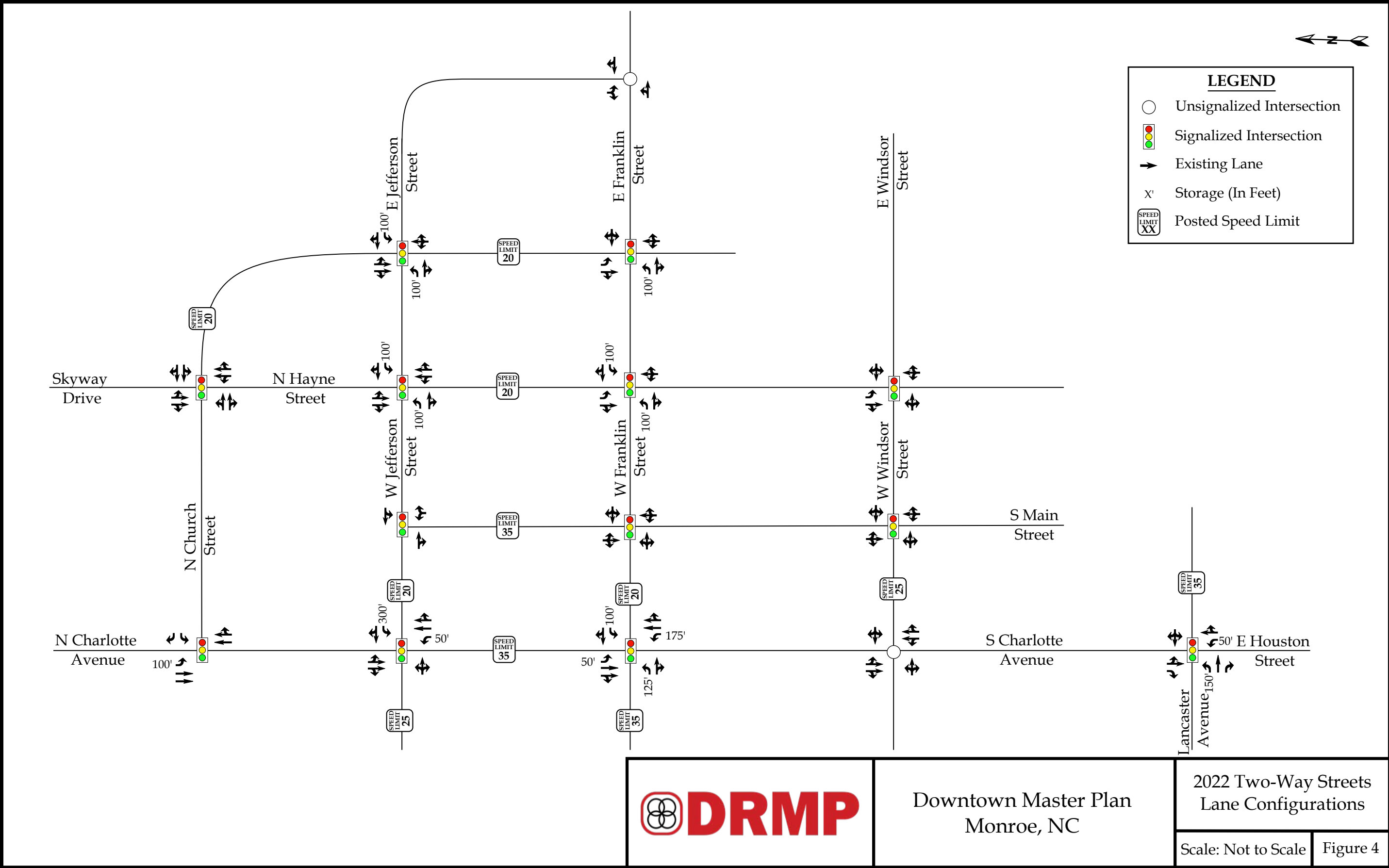
TECHNICAL APPENDIX

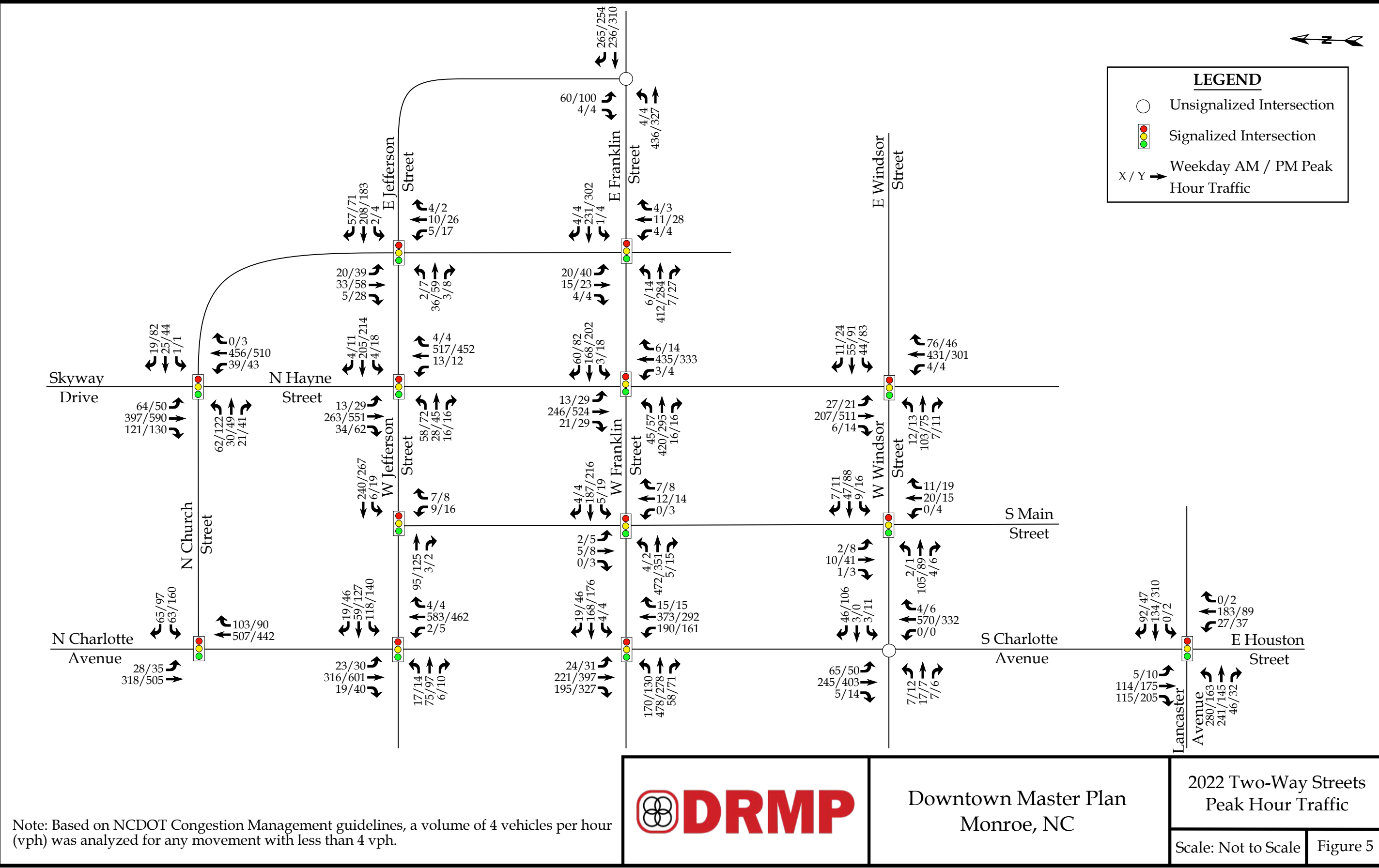
APPENDIX A

FIGURES



	Downtown Master Plan Monroe, NC	2022 Road Diet Lane Configurations	
		Scale: Not to Scale	Figure 3



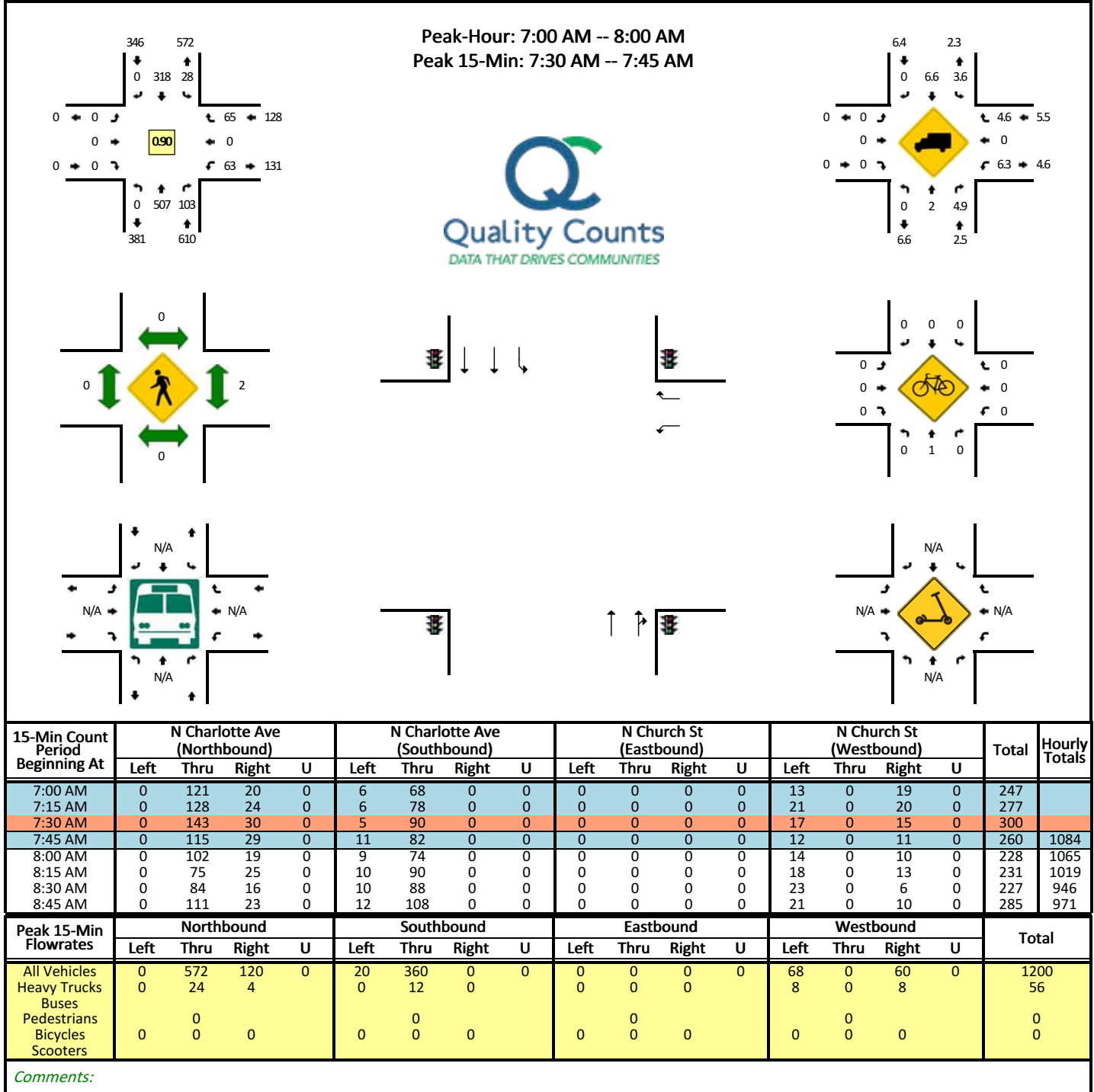


APPENDIX B

TRAFFIC COUNTS

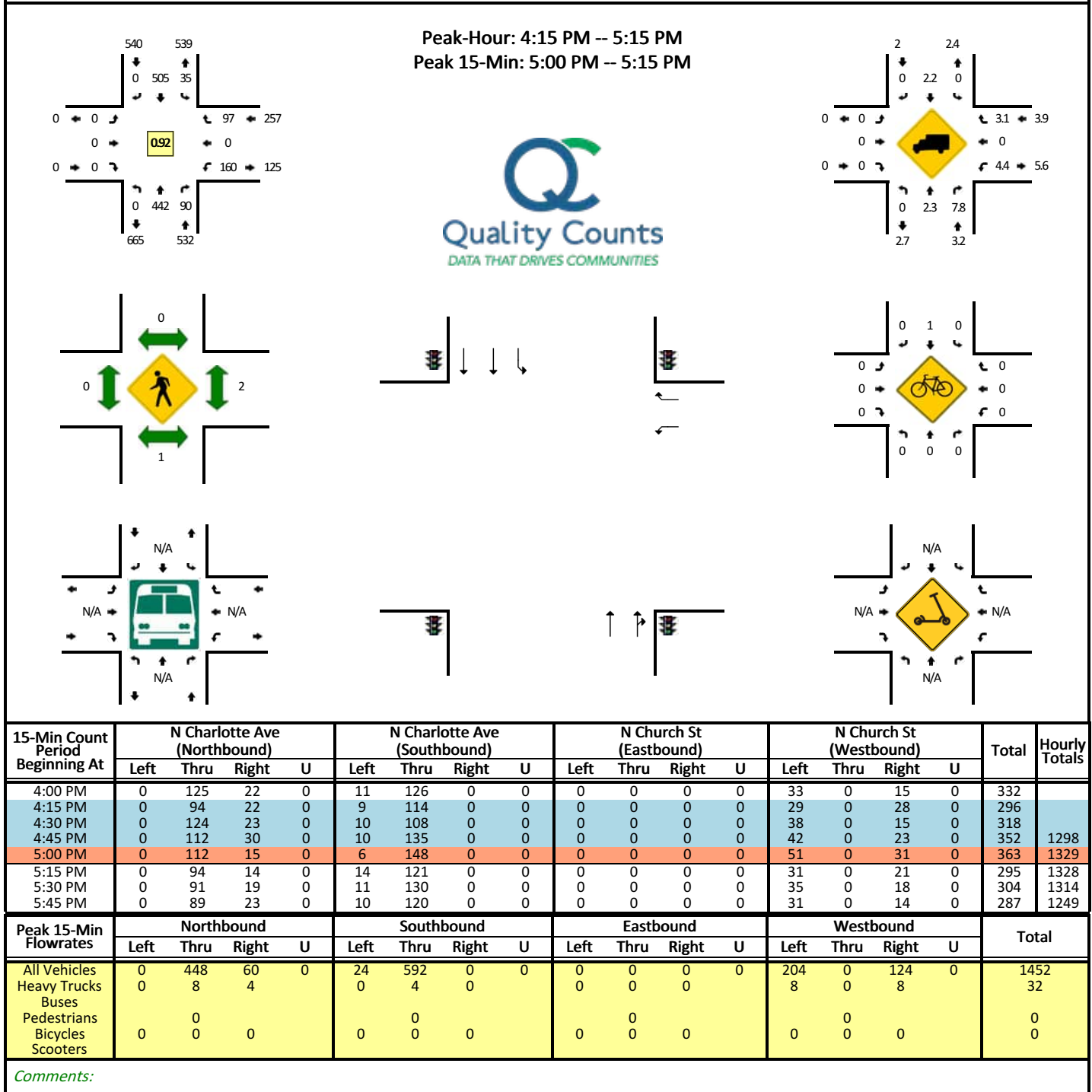
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CITY/STATE: Monroe, NC

QC JOB #: 15912601
DATE: Wed, Sep 14 2022



LOCATION: N Charlotte Ave -- N Church St
CITY/STATE: Monroe, NC

QC JOB #: 15912602
DATE: Wed, Sep 14 2022

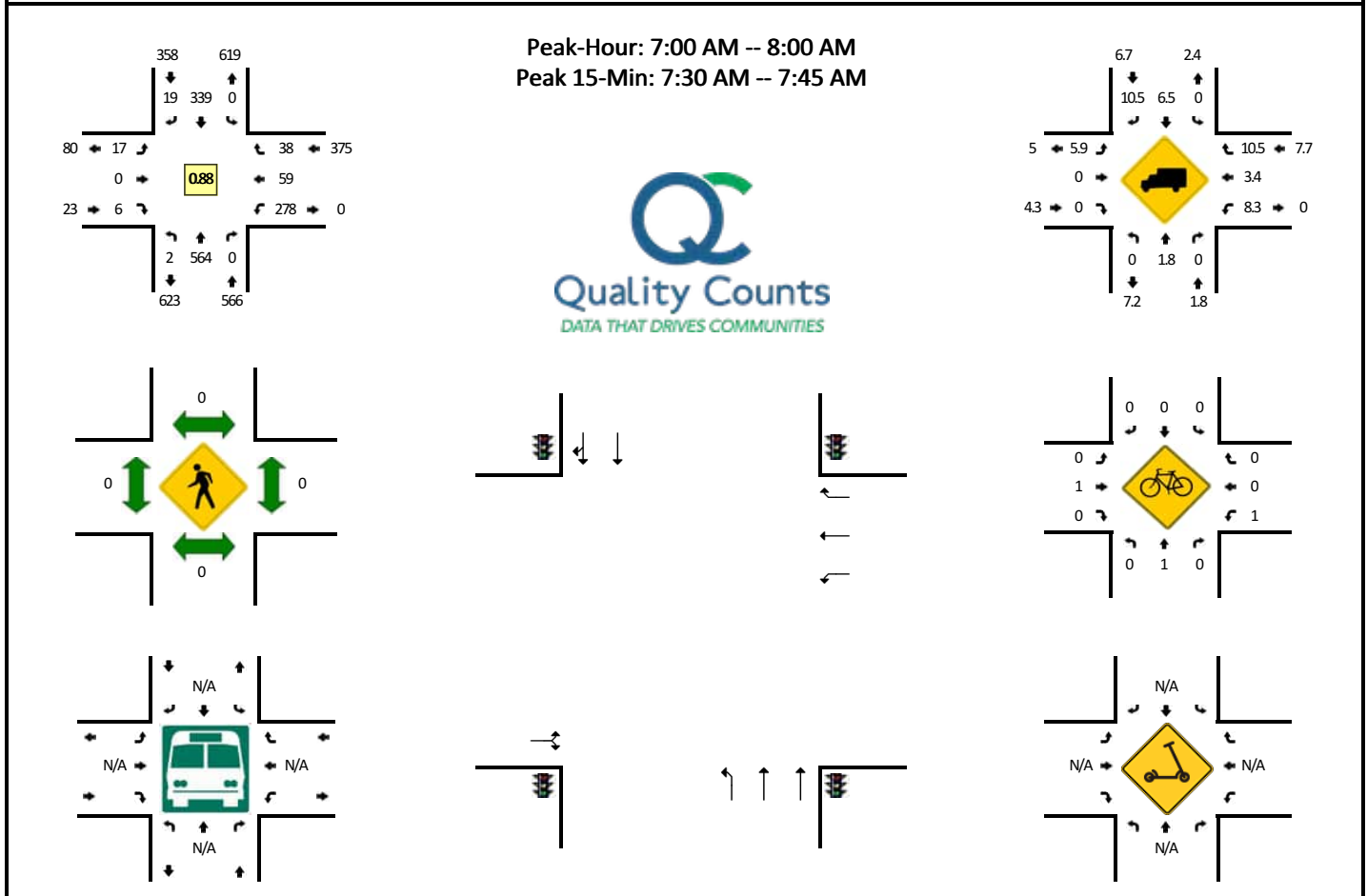


Report generated on 9/23/2022 11:55 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: N Charlotte Ave -- W Jefferson St
CITY/STATE: Monroe, NC

QC JOB #: 15912603
DATE: Wed, Sep 14 2022

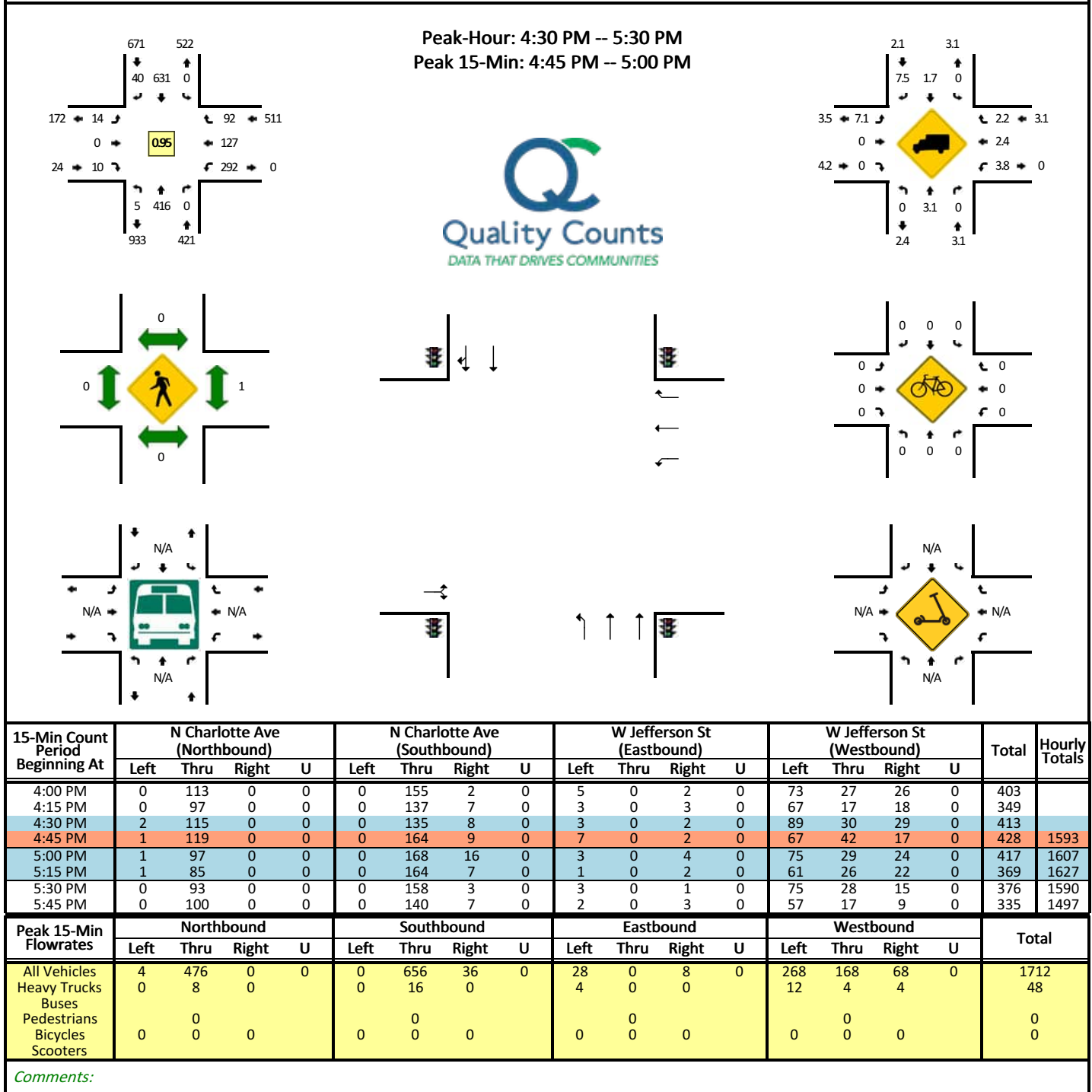


15-Min Count Period Beginning At	N Charlotte Ave (Northbound)				N Charlotte Ave (Southbound)				W Jefferson St (Eastbound)				W Jefferson St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	136	0	0	0	74	3	0	1	0	1	0	58	12	7	0	292	
7:15 AM	0	144	0	0	0	86	8	0	3	0	0	0	66	23	8	0	338	
7:30 AM	1	157	0	0	0	94	2	0	2	0	2	0	90	12	14	0	374	
7:45 AM	1	127	0	0	0	85	6	0	11	0	3	0	64	12	9	0	318	1322
8:00 AM	0	101	0	0	0	85	4	0	5	0	1	0	49	14	18	0	277	1307
8:15 AM	0	88	0	0	0	99	2	0	3	0	2	0	47	5	12	0	258	1227
8:30 AM	1	91	0	0	0	113	4	0	0	0	1	0	48	6	10	0	274	1127
8:45 AM	1	116	0	0	0	116	2	0	1	0	1	0	37	6	23	0	303	1112
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	628	0	0	0	376	8	0	8	0	8	0	360	48	56	0	1496	
Heavy Trucks	0	20	0	0	0	16	0	0	4	0	0	0	16	0	4	0	60	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

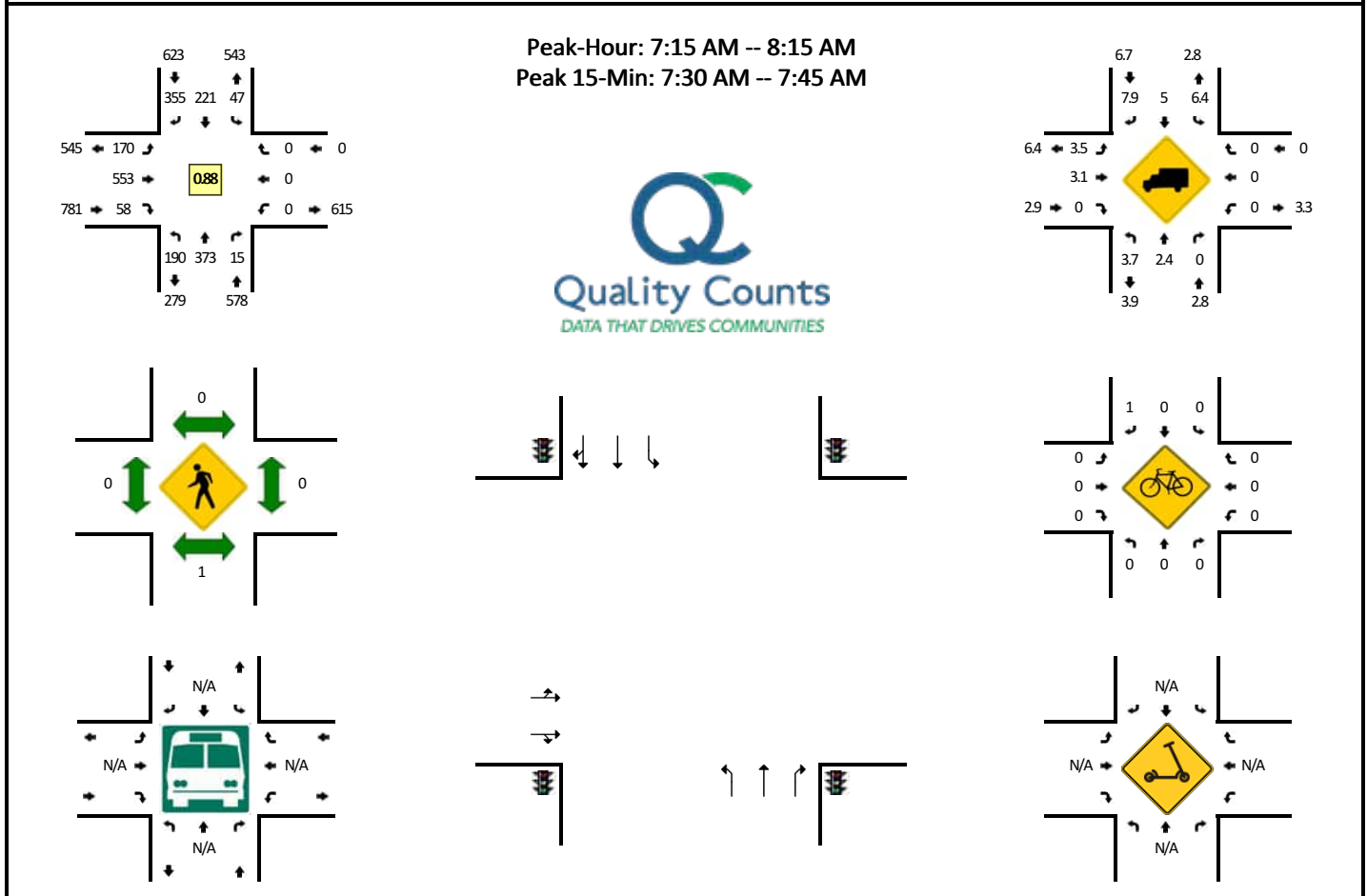
LOCATION: N Charlotte Ave -- W Jefferson St
CITY/STATE: Monroe, NC

QC JOB #: 15912604
DATE: Wed, Sep 14 2022



LOCATION: N Charlotte Ave -- W Franklin St
CITY/STATE: Monroe, NC

QC JOB #: 15912605
DATE: Wed, Sep 14 2022



15-Min Count Period Beginning At	N Charlotte Ave (Northbound)				N Charlotte Ave (Southbound)				W Franklin St (Eastbound)				W Franklin St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	31	96	3	0	6	56	76	0	39	99	12	0	0	0	0	0	418	
7:15 AM	58	108	4	0	7	51	94	0	38	126	16	0	0	0	0	0	502	
7:30 AM	68	103	4	0	15	61	114	0	63	120	17	0	0	0	0	0	565	
7:45 AM	36	91	5	0	15	49	84	0	35	160	14	0	0	0	0	0	489	1974
8:00 AM	28	71	2	0	10	60	63	0	34	147	11	0	0	0	0	0	426	1982
8:15 AM	27	55	2	0	13	58	73	0	29	116	19	0	0	0	0	0	392	1872
8:30 AM	21	61	1	0	12	63	80	0	28	119	14	0	0	0	0	0	399	1706
8:45 AM	24	82	3	0	14	89	54	0	35	100	17	0	0	0	0	0	418	1635
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	272	412	16	0	60	244	456	0	252	480	68	0	0	0	0	0	2260	
Heavy Trucks	4	4	0	0	8	4	28	0	12	8	0	0	0	0	0	0	68	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scoters																		

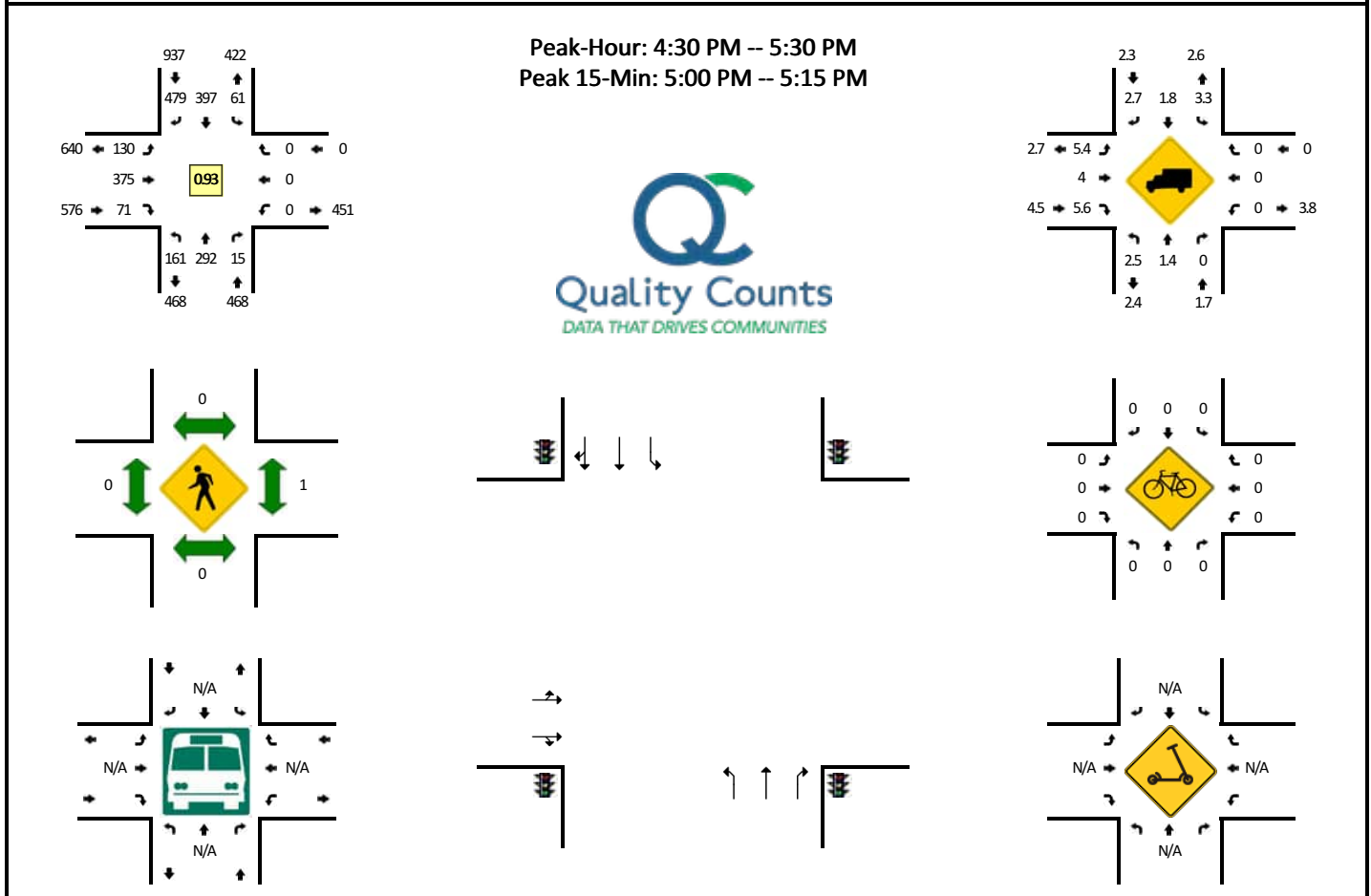
Comments:

Report generated on 9/23/2022 11:55 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: N Charlotte Ave -- W Franklin St
CITY/STATE: Monroe, NC

QC JOB #: 15912606
DATE: Wed, Sep 14 2022

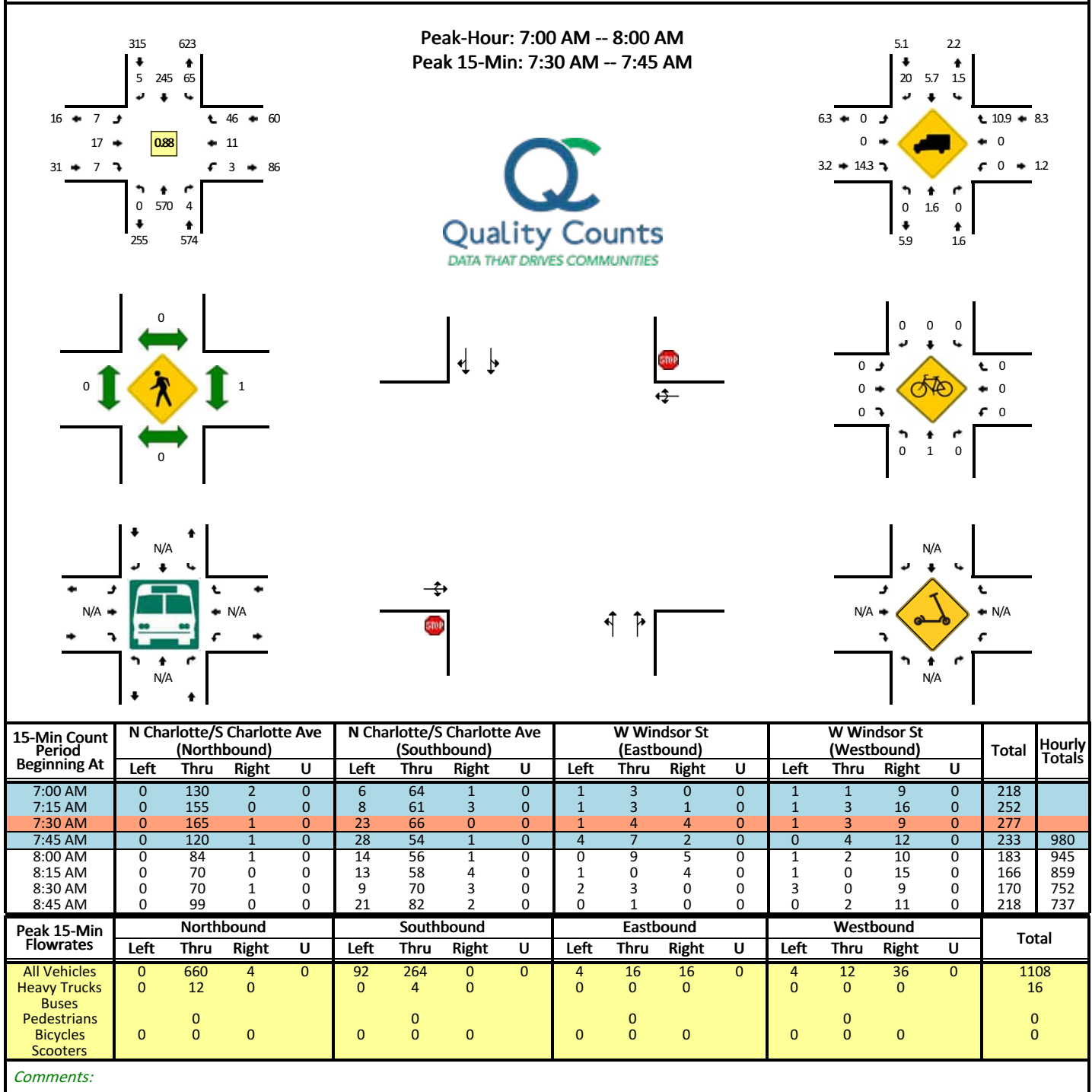


15-Min Count Period Beginning At	N Charlotte Ave (Northbound)				N Charlotte Ave (Southbound)				W Franklin St (Eastbound)				W Franklin St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	34	74	5	0	17	86	121	0	32	87	18	0	0	0	0	0	474	
4:15 PM	29	63	5	0	12	94	99	0	38	96	20	0	0	0	0	0	456	
4:30 PM	48	86	4	0	12	88	132	0	30	83	15	0	0	0	0	0	498	
4:45 PM	33	74	3	0	15	102	115	0	45	85	23	0	0	0	0	0	495	1923
5:00 PM	50	74	1	0	15	106	134	0	27	109	14	0	0	0	0	0	530	1979
5:15 PM	30	58	7	0	19	101	98	0	28	98	19	0	0	0	0	0	458	1981
5:30 PM	30	60	2	0	14	94	117	0	29	97	14	0	0	0	0	0	457	1940
5:45 PM	33	61	2	0	8	100	94	0	40	86	25	0	0	0	0	0	449	1894
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	200	296	4	0	60	424	536	0	108	436	56	0	0	0	0	0	2120	
Heavy Trucks	0	4	0	0	0	0	12	0	8	12	4	0	0	0	0	0	40	
Buses																		
Pedestrians	0	0			0	0			0	0			0	0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		

Comments:

LOCATION: N Charlotte/S Charlotte Ave -- W Windsor St
CITY/STATE: Monroe, NC

QC JOB #: 15912607
DATE: Wed, Sep 14 2022

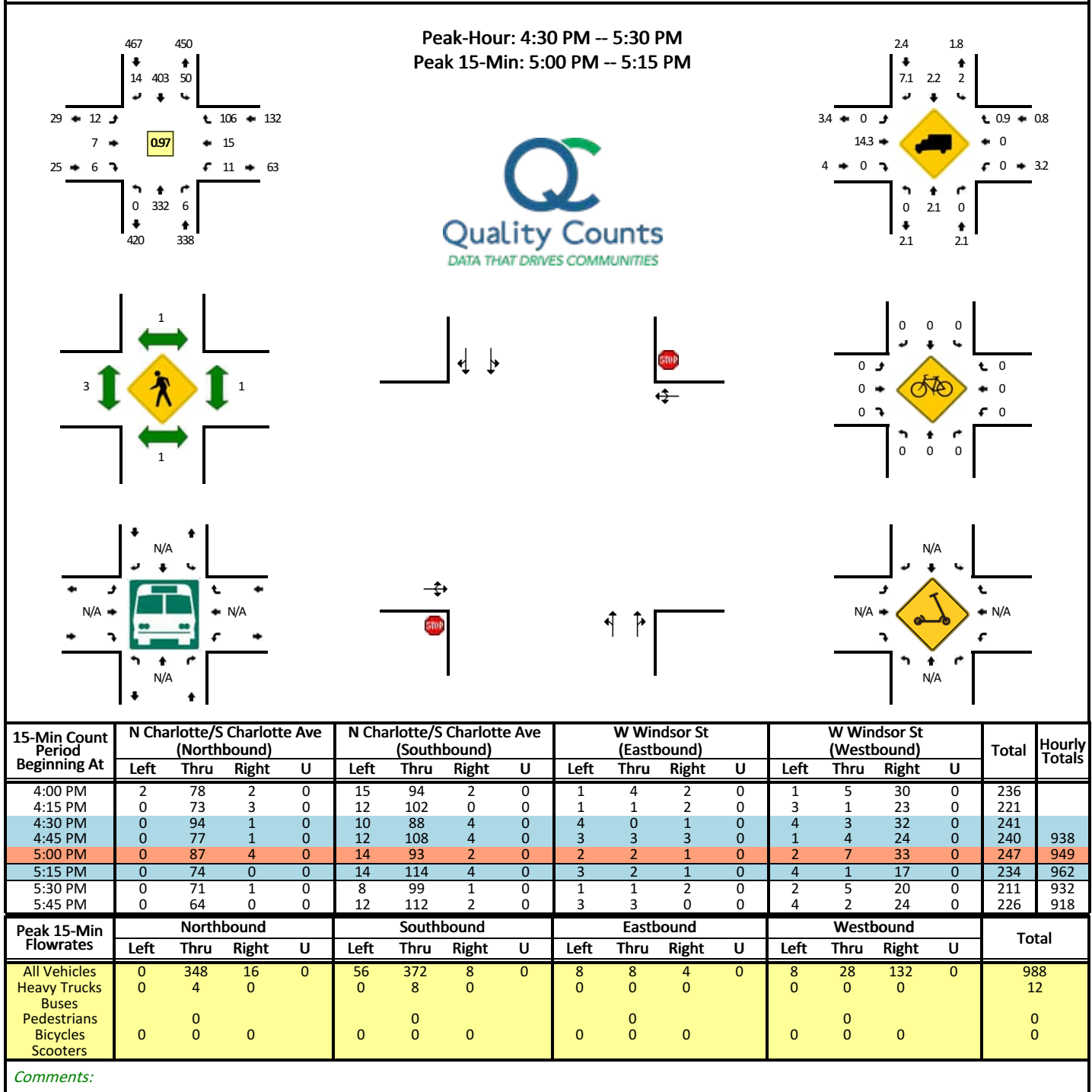


Report generated on 9/23/2022 11:55 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

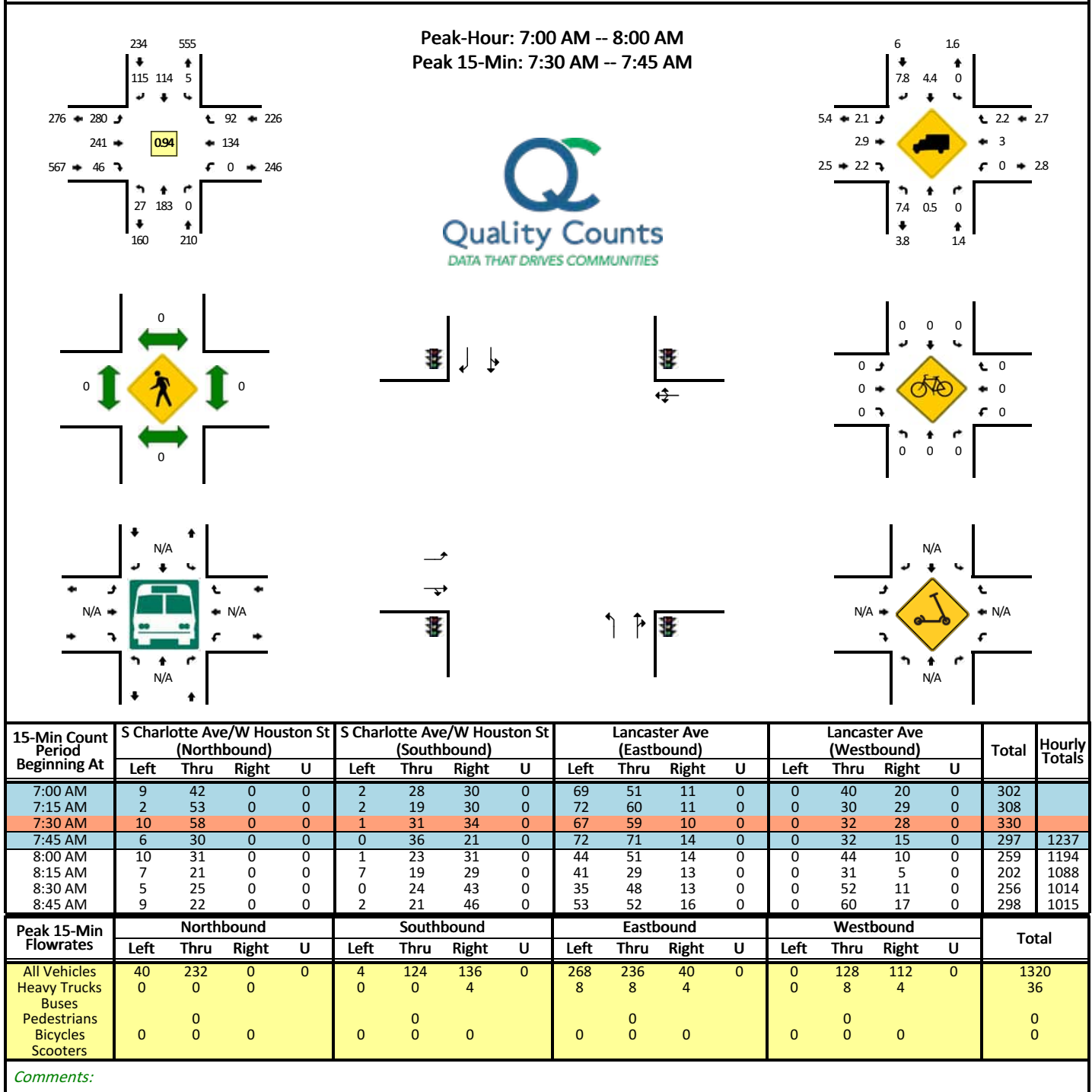
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CITY/STATE: Monroe, NC

QC JOB #: 15912608
DATE: Wed, Sep 14 2022



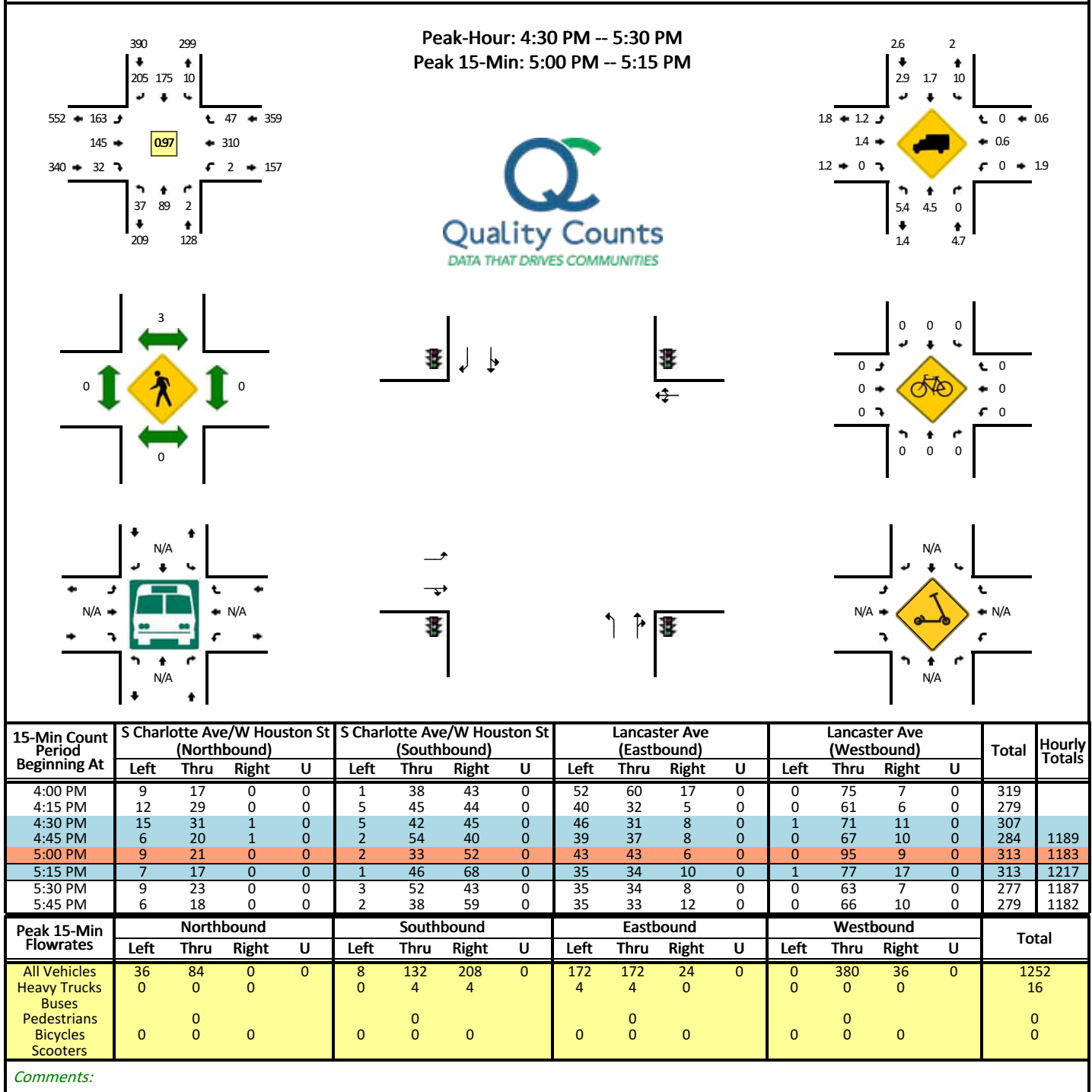
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CITY/STATE: Monroe, NC

QC JOB #: 15912609
DATE: Wed, Sep 14 2022



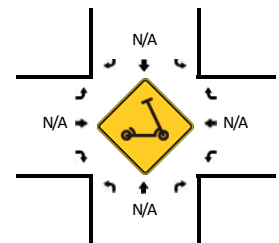
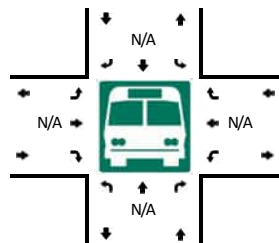
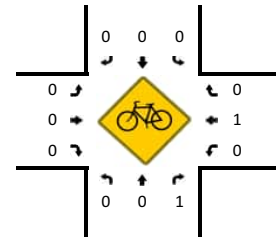
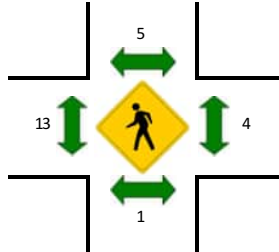
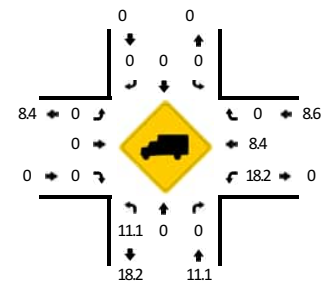
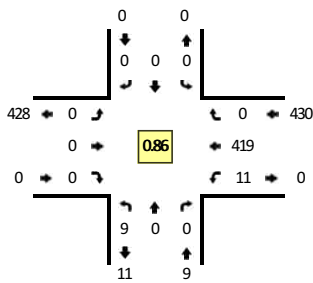
LOCATION: S Charlotte Ave/W Houston St -- Lancaster Ave
CITY/STATE: Monroe, NC

QC JOB #: 15912610
DATE: Wed, Sep 14 2022



LOCATION: N Main St -- W Jefferson St**CITY/STATE:** Monroe, NC**QC JOB #:** 15912611**DATE:** Wed, Sep 14 2022

Peak-Hour: 7:15 AM -- 8:15 AM
 Peak 15-Min: 7:30 AM -- 7:45 AM



15-Min Count Period Beginning At	N Main St (Northbound)				N Main St (Southbound)				W Jefferson St (Eastbound)				W Jefferson St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	78	0	0	79	
7:15 AM	2	0	0	0	0	0	0	0	0	0	0	0	2	102	0	0	106	
7:30 AM	2	0	0	0	0	0	0	0	0	0	0	0	2	124	0	0	128	
7:45 AM	2	0	0	0	0	0	0	0	0	0	0	0	1	99	0	0	102	415
8:00 AM	3	0	0	0	0	0	0	0	0	0	0	0	6	94	0	0	103	439
8:15 AM	5	0	0	0	0	0	0	0	0	1	0	0	4	74	0	0	84	417
8:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	7	74	0	0	82	371
8:45 AM	6	0	0	0	0	0	0	0	0	0	0	0	7	62	0	0	75	344
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	0	0	0	0	0	0	0	0	0	0	0	8	496	0	0	512	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0	0	24	
Buses																		
Pedestrians		0				8				12				4			24	
Bicycles	0	0	4		0	0	0		0	0	0		0	0	0		4	
Scooters																		

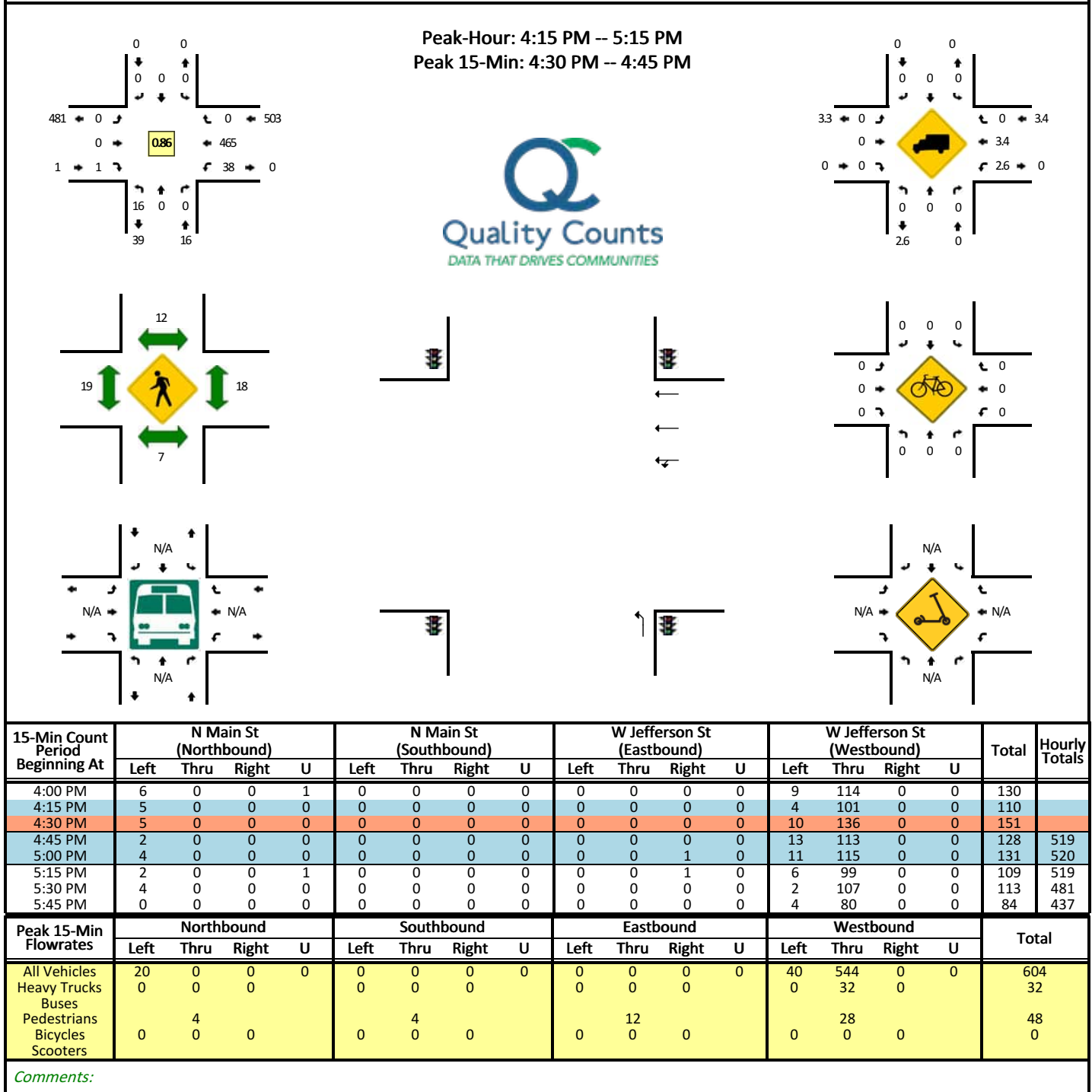
Comments:

Report generated on 9/23/2022 11:55 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

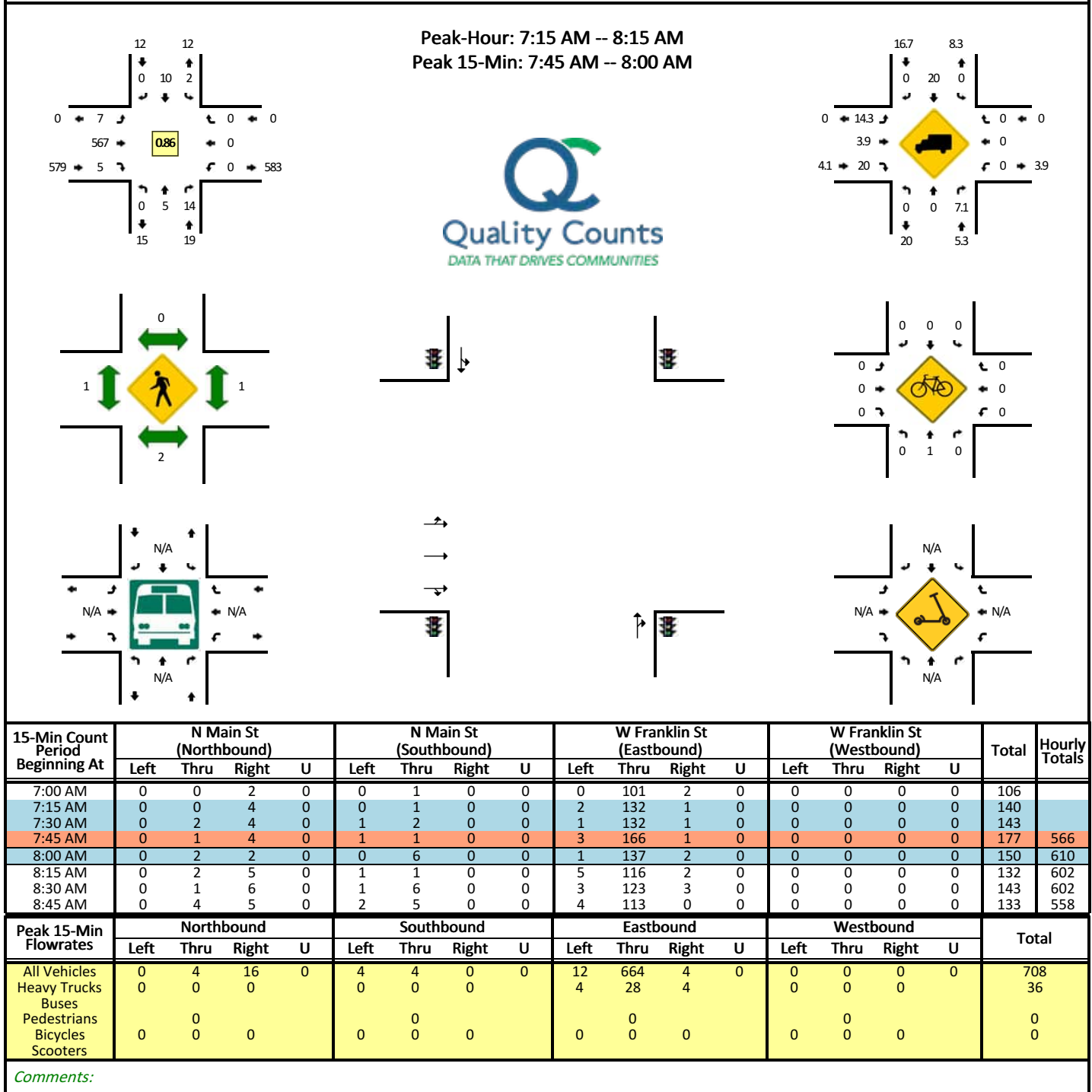
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CITY/STATE: Monroe, NC

QC JOB #: 15912612
DATE: Wed, Sep 14 2022



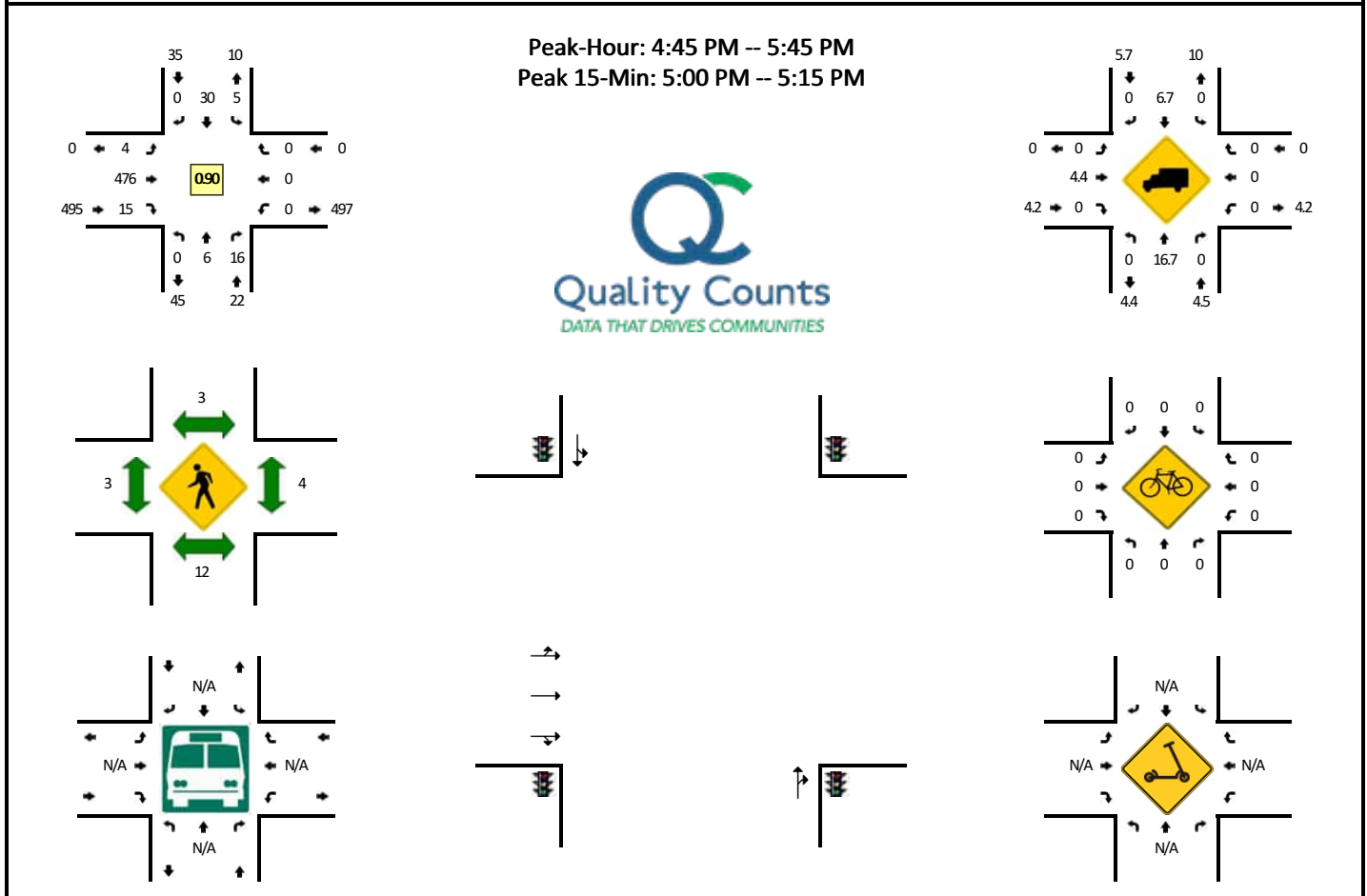
LOCATION: N Main St -- W Franklin St
CITY/STATE: Monroe, NC

QC JOB #: 15912613
DATE: Wed, Sep 14 2022



LOCATION: N Main St -- W Franklin St
CITY/STATE: Monroe, NC

QC JOB #: 15912614
DATE: Wed, Sep 14 2022

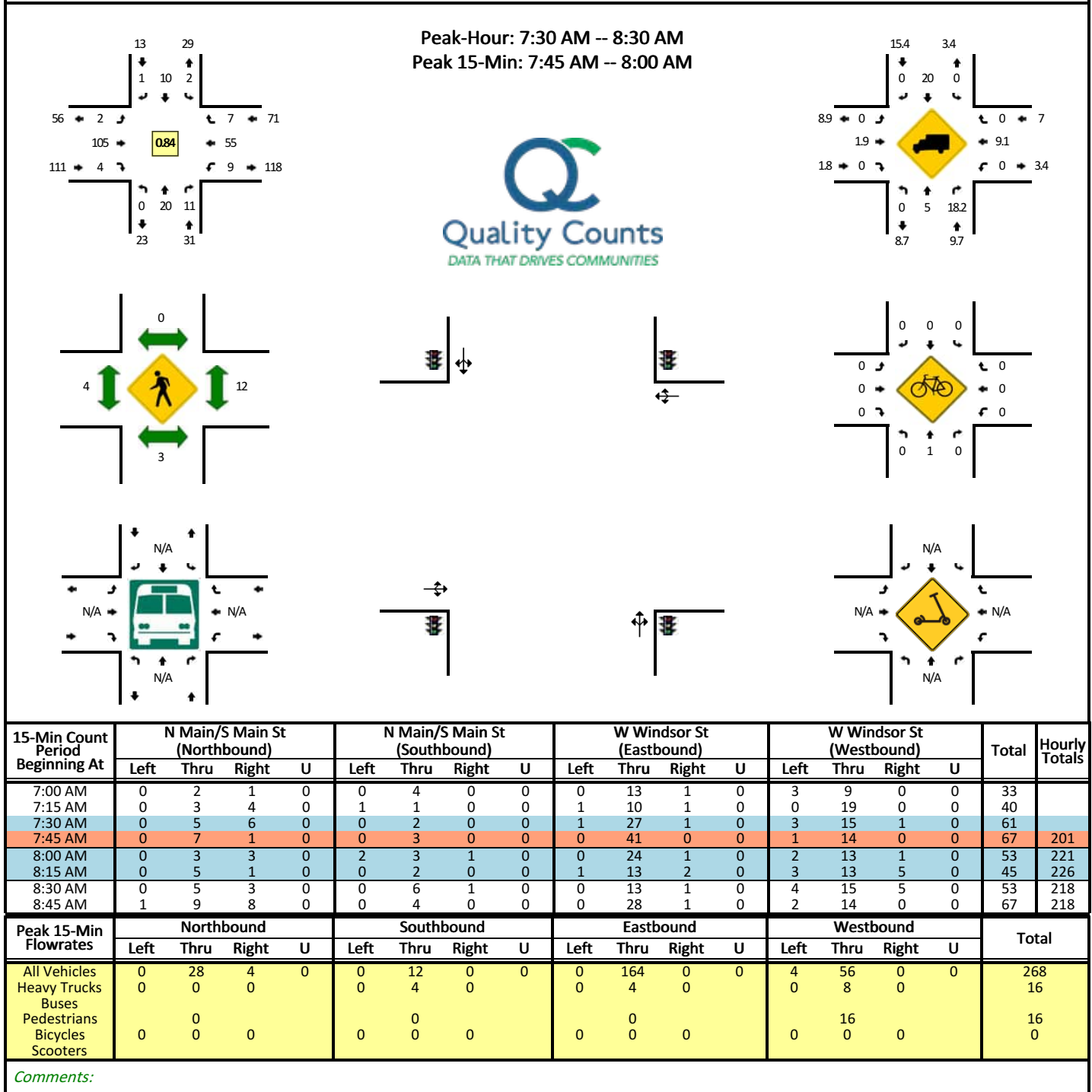


15-Min Count Period Beginning At	N Main St (Northbound)				N Main St (Southbound)				W Franklin St (Eastbound)				W Franklin St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	3	13	0	1	8	0	0	0	101	5	0	0	0	0	0	131	
4:15 PM	0	2	6	0	2	3	0	0	3	112	6	0	0	0	0	0	134	
4:30 PM	0	2	6	0	3	8	0	0	1	97	6	0	0	0	0	0	123	
4:45 PM	0	0	1	0	1	11	0	0	1	114	3	0	0	0	0	0	131	519
5:00 PM	0	1	6	0	3	10	0	0	1	130	3	0	0	0	0	0	154	542
5:15 PM	0	1	7	0	0	7	0	0	2	118	8	0	0	0	0	0	143	551
5:30 PM	0	4	2	0	1	2	0	0	0	114	1	0	0	0	0	0	124	552
5:45 PM	0	0	4	0	1	3	0	0	0	84	7	0	0	0	0	0	99	520
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	4	24	0	12	40	0	0	4	520	12	0	0	0	0	0	616	
Heavy Trucks	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	16	
Buses																		
Pedestrians		12				0				4				8			24	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

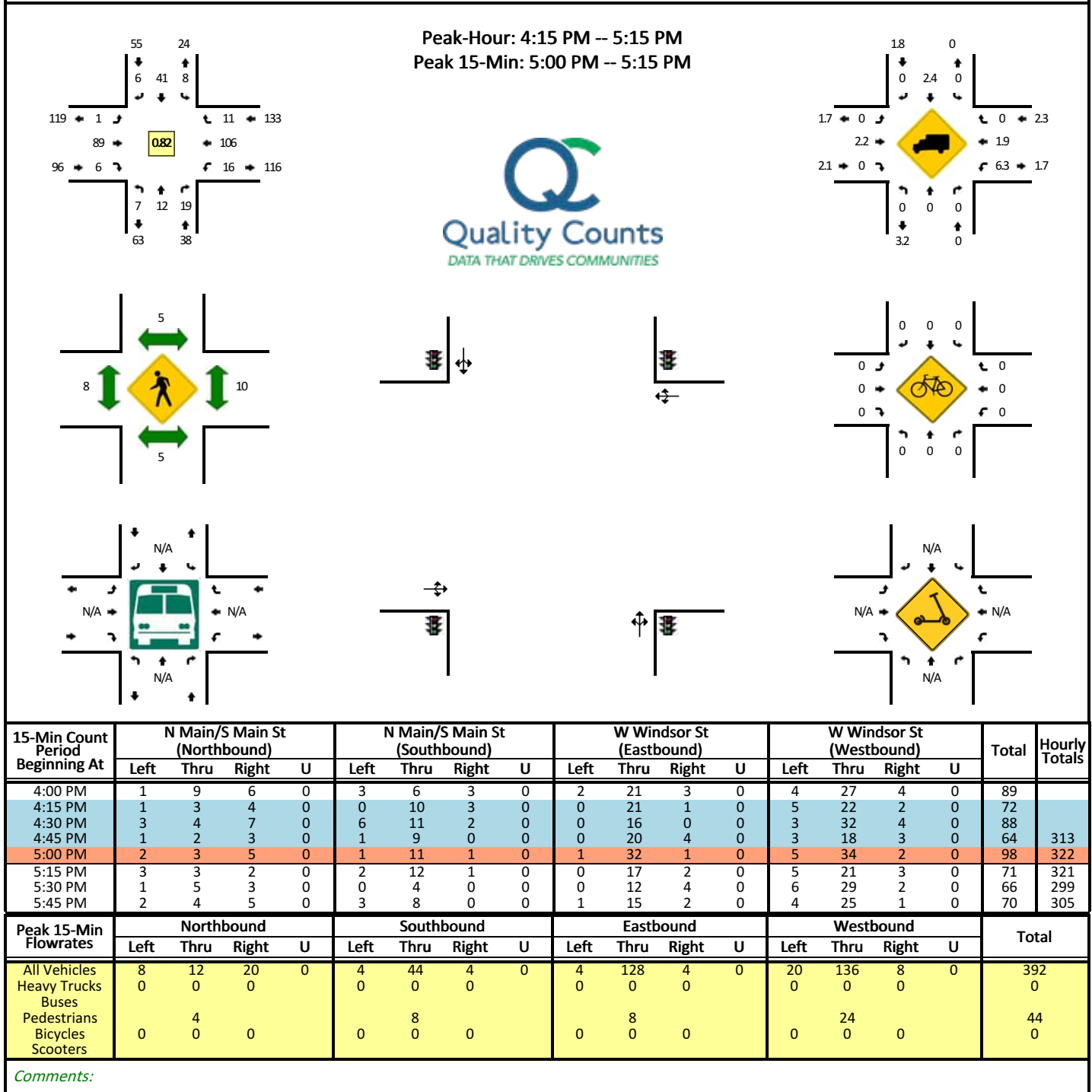
LOCATION: N Main/S Main St -- W Windsor St
CITY/STATE: Monroe, NC

QC JOB #: 15912615
DATE: Wed, Sep 14 2022



LOCATION: N Main/S Main St -- W Windsor St
CITY/STATE: Monroe, NC

QC JOB #: 15912616
DATE: Wed, Sep 14 2022

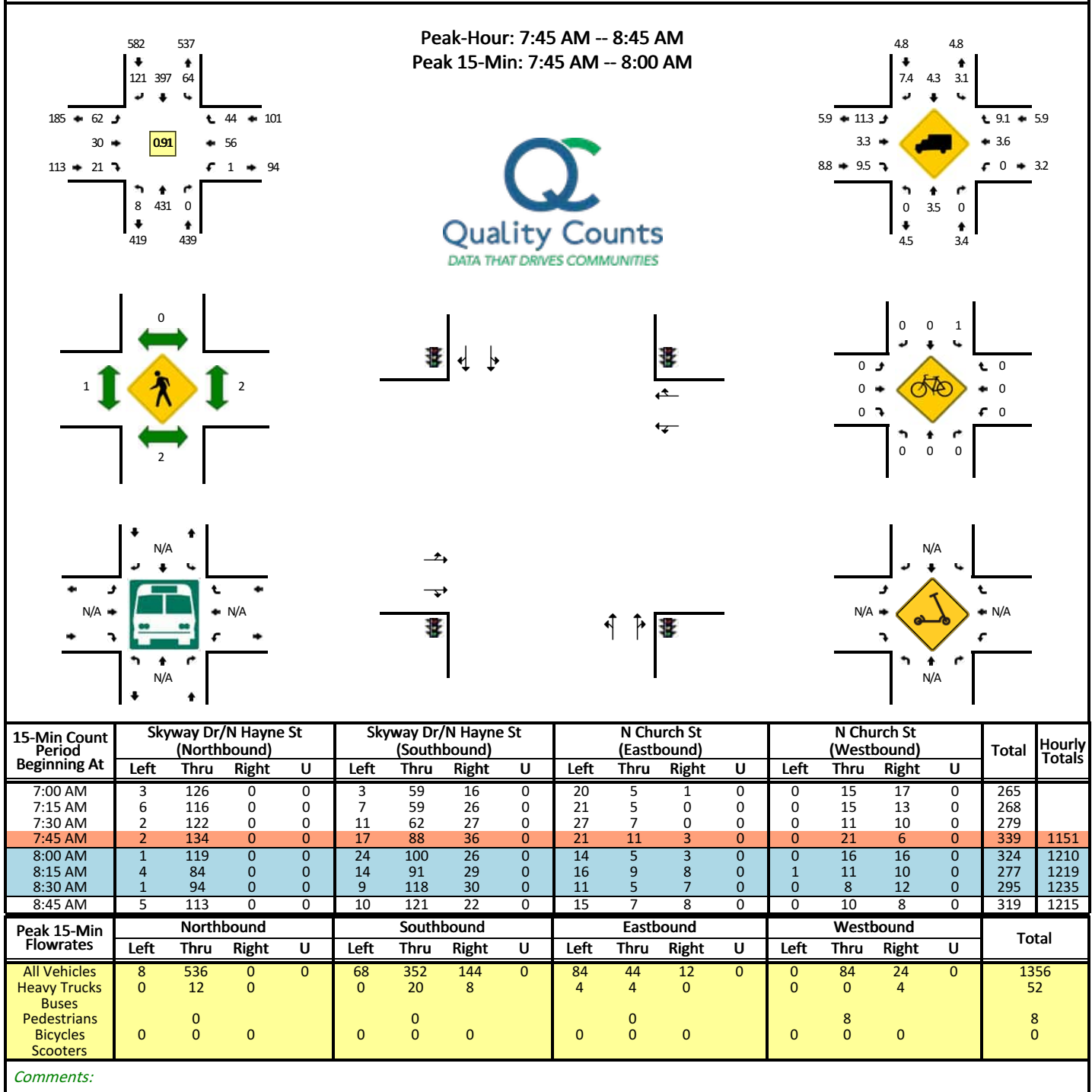


Report generated on 9/23/2022 11:55 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

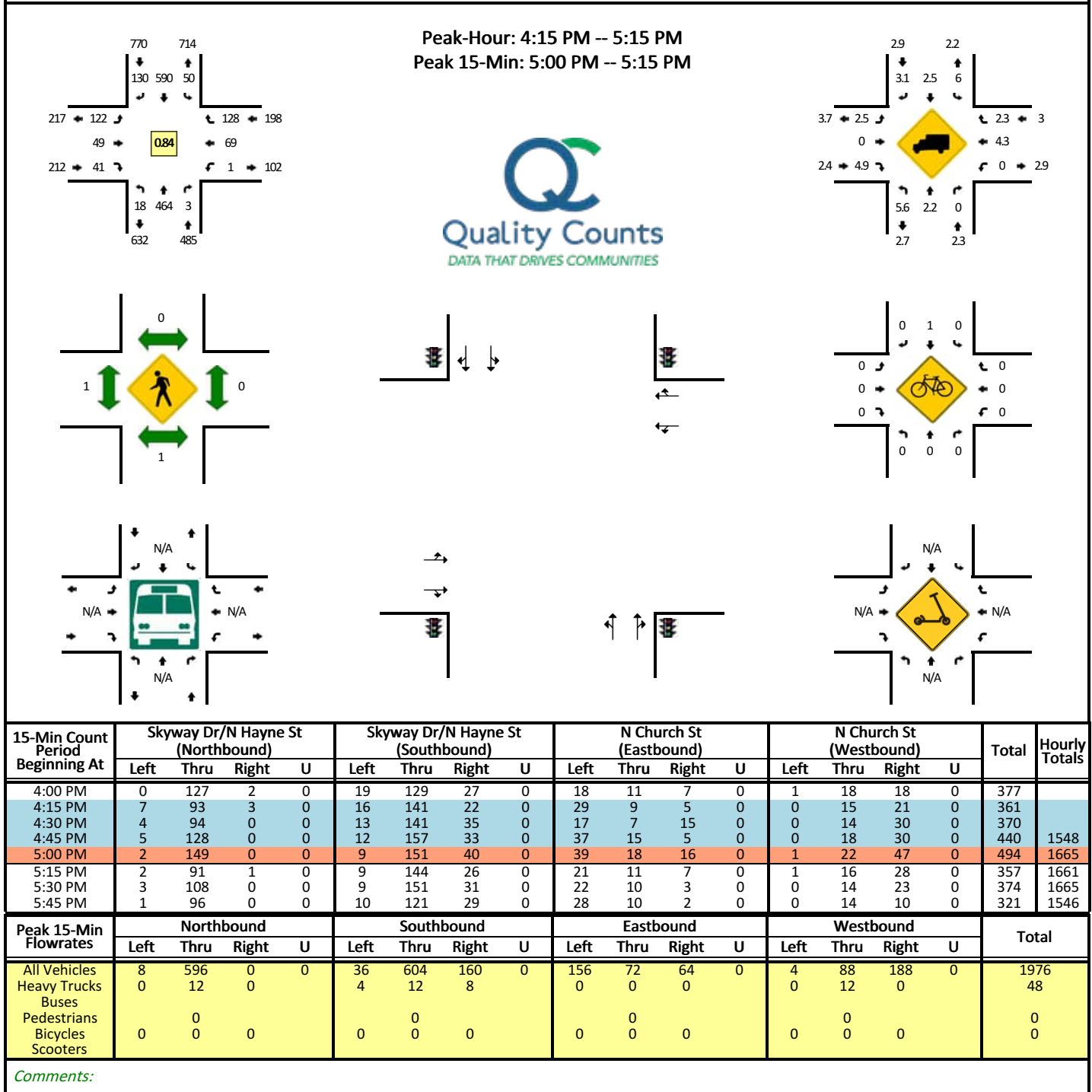
LOCATION: Skyway Dr/N Hayne St -- N Church St
CITY/STATE: Monroe, NC

QC JOB #: 15912617
DATE: Wed, Sep 14 2022



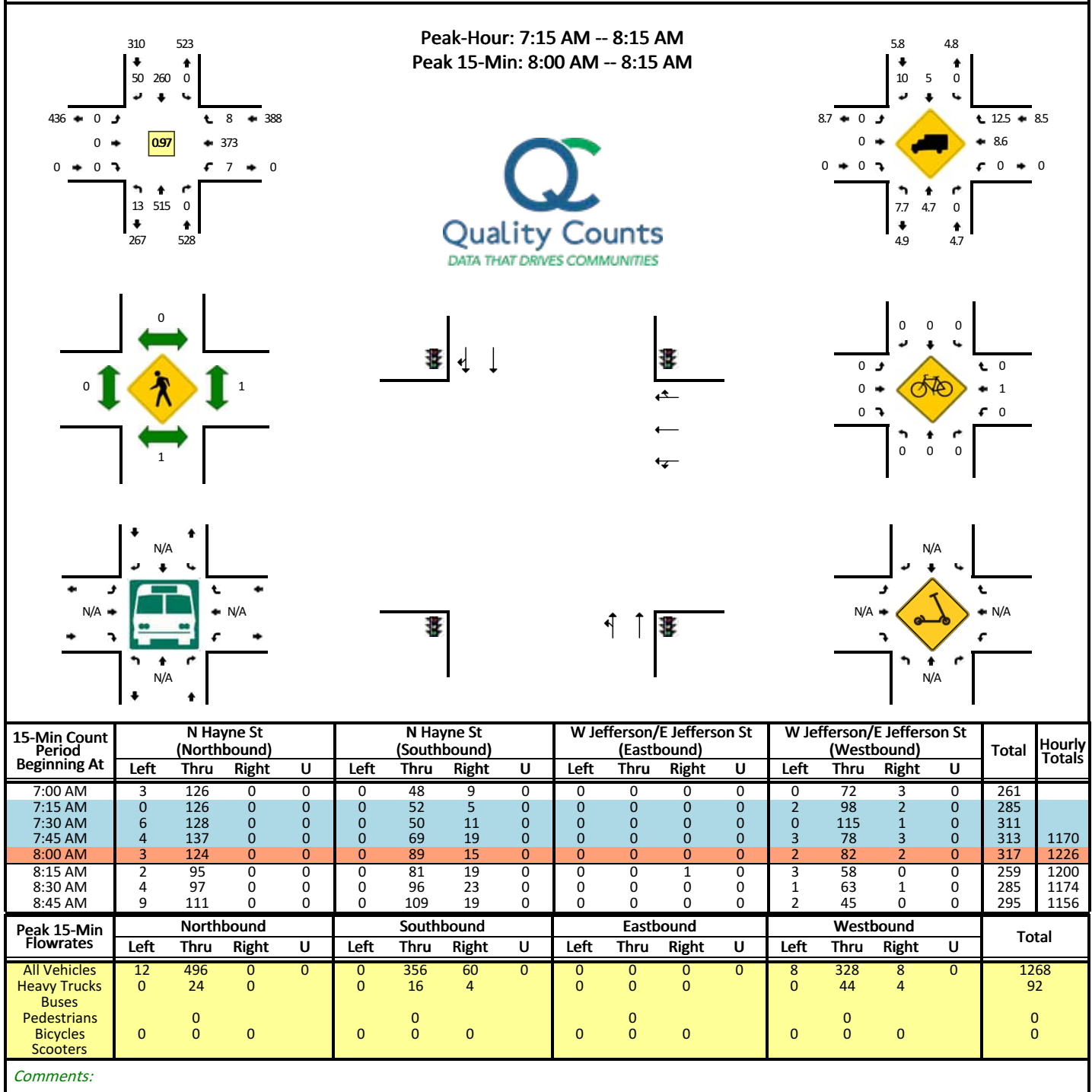
LOCATION: Skyway Dr/N Hayne St -- N Church St
CITY/STATE: Monroe, NC

QC JOB #: 15912618
DATE: Wed, Sep 14 2022



LOCATION: N Hayne St -- W Jefferson/E Jefferson St
CITY/STATE: Monroe, NC

QC JOB #: 15912619
DATE: Wed, Sep 14 2022

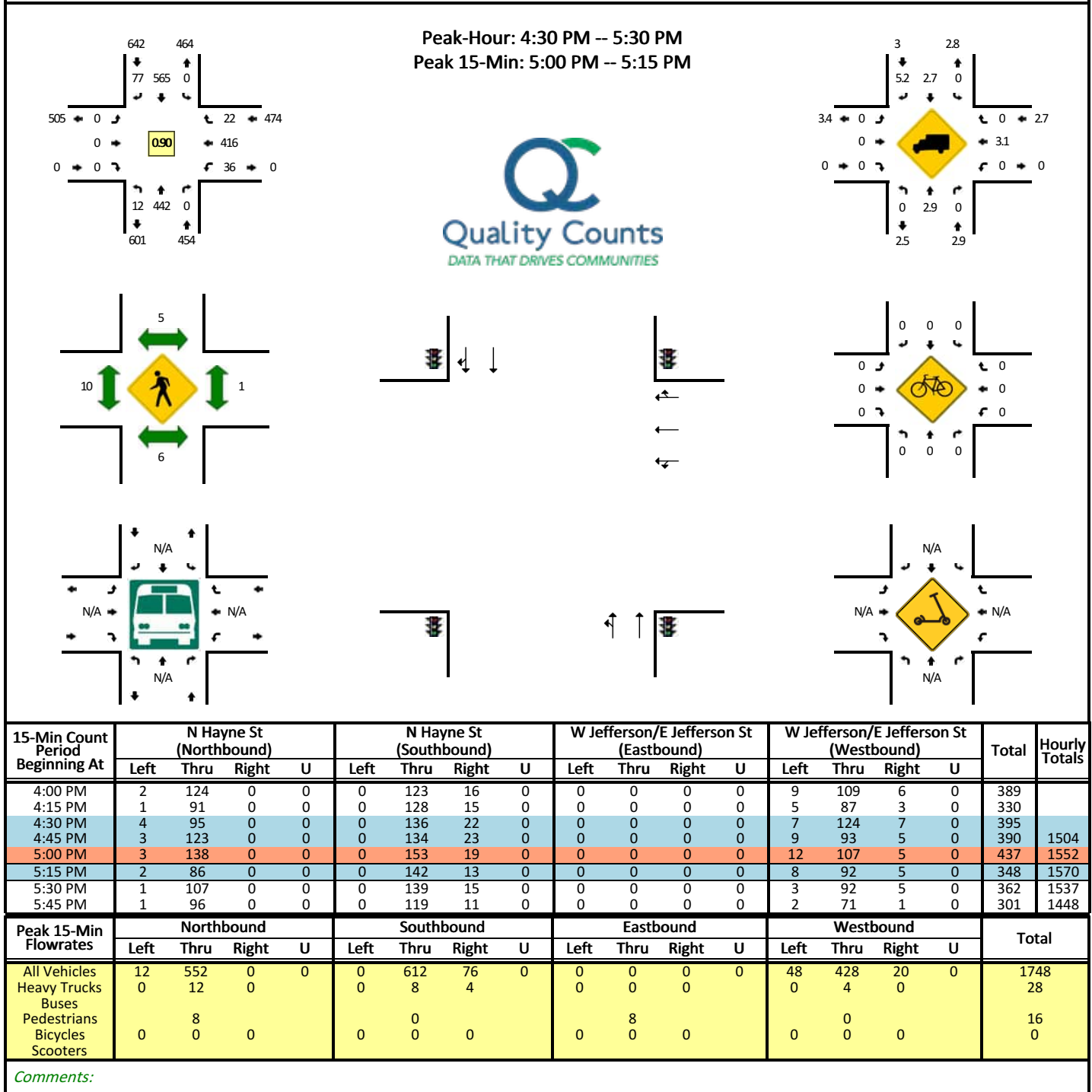


Report generated on 9/23/2022 11:55 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

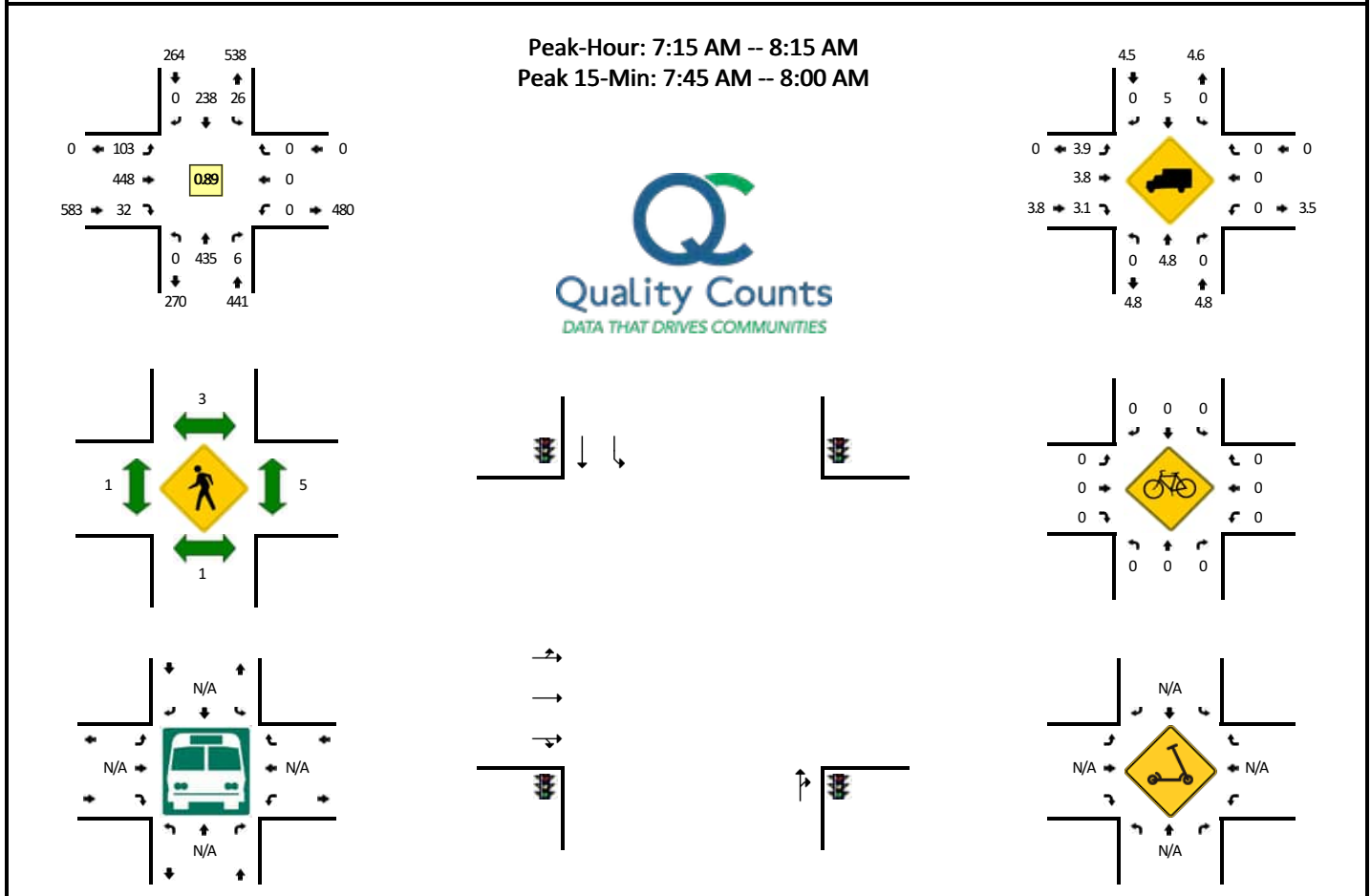
LOCATION: N Hayne St -- W Jefferson/E Jefferson St
CITY/STATE: Monroe, NC

QC JOB #: 15912620
DATE: Wed, Sep 14 2022



LOCATION: N Hayne St -- W Franklin/E Franklin St
CITY/STATE: Monroe, NC

QC JOB #: 15912621
DATE: Wed, Sep 14 2022

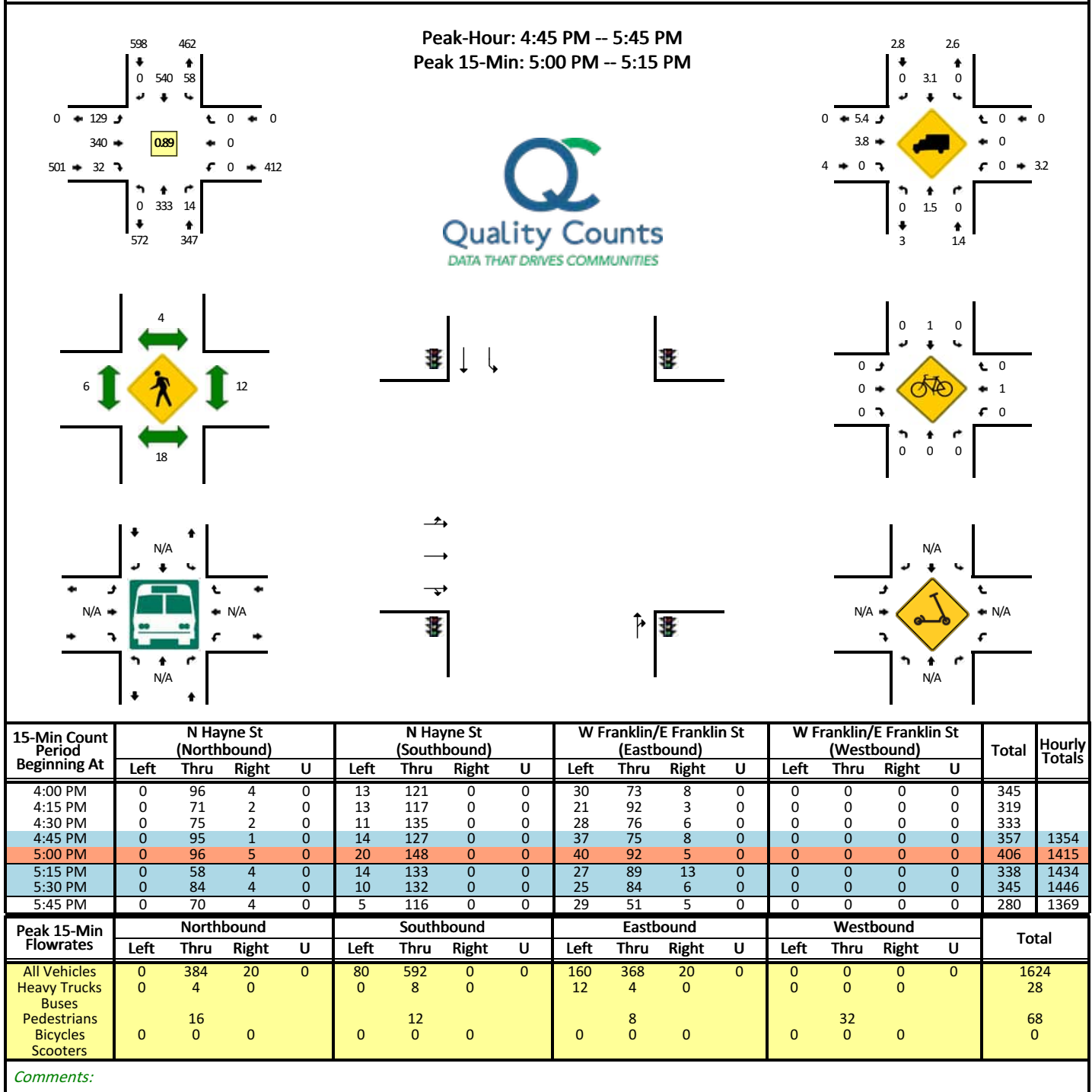


15-Min Count Period Beginning At	N Hayne St (Northbound)				N Hayne St (Southbound)				W Franklin/E Franklin St (Eastbound)				W Franklin/E Franklin St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	105	1	0	1	48	0	0	18	84	1	0	0	0	0	0	258	
7:15 AM	0	104	1	0	6	48	0	0	24	99	8	0	0	0	0	0	290	
7:30 AM	0	113	2	0	3	47	0	0	23	109	3	0	0	0	0	0	300	
7:45 AM	0	115	1	0	8	62	0	0	28	131	16	0	0	0	0	0	361	1209
8:00 AM	0	103	2	0	9	81	0	0	28	109	5	0	0	0	0	0	337	1288
8:15 AM	0	76	4	0	7	75	0	0	22	92	4	0	0	0	0	0	280	1278
8:30 AM	0	74	1	0	8	88	0	0	25	94	8	0	0	0	0	0	298	1276
8:45 AM	0	90	3	0	17	93	0	0	30	83	4	0	0	0	0	0	320	1235
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	460	4	0	32	248	0	0	112	524	64	0	0	0	0	0	1444	
Heavy Trucks	0	20	0	0	0	16	0	0	0	24	0	0	0	0	0	0	60	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	4	0	0	0	4	0	0	0	4	0	0	12	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments:

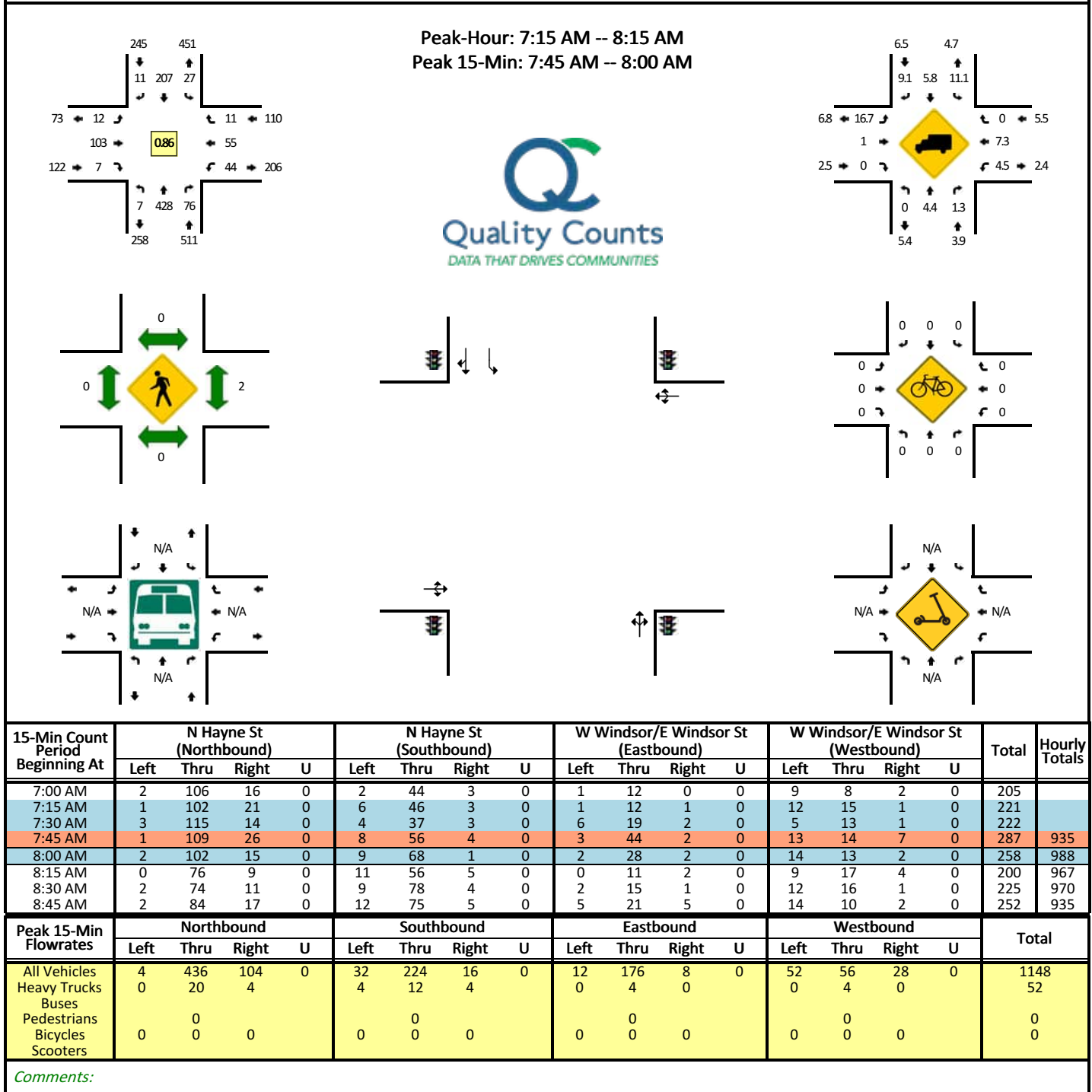
LOCATION: N Hayne St -- W Franklin/E Franklin St
CITY/STATE: Monroe, NC

QC JOB #: 15912622
DATE: Wed, Sep 14 2022



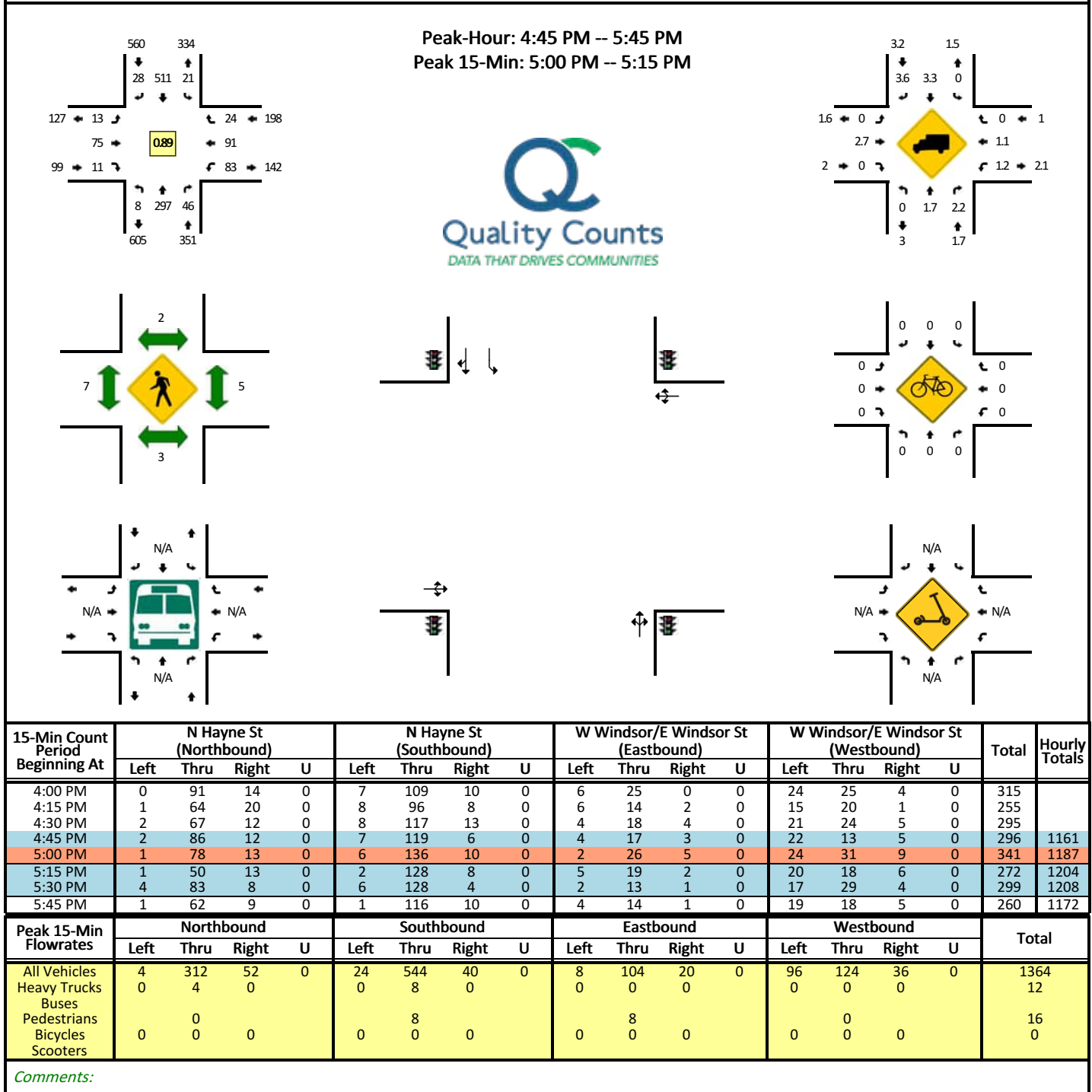
LOCATION: N Hayne St -- W Windsor/E Windsor St
CITY/STATE: Monroe, NC

QC JOB #: 15912623
DATE: Wed, Sep 14 2022



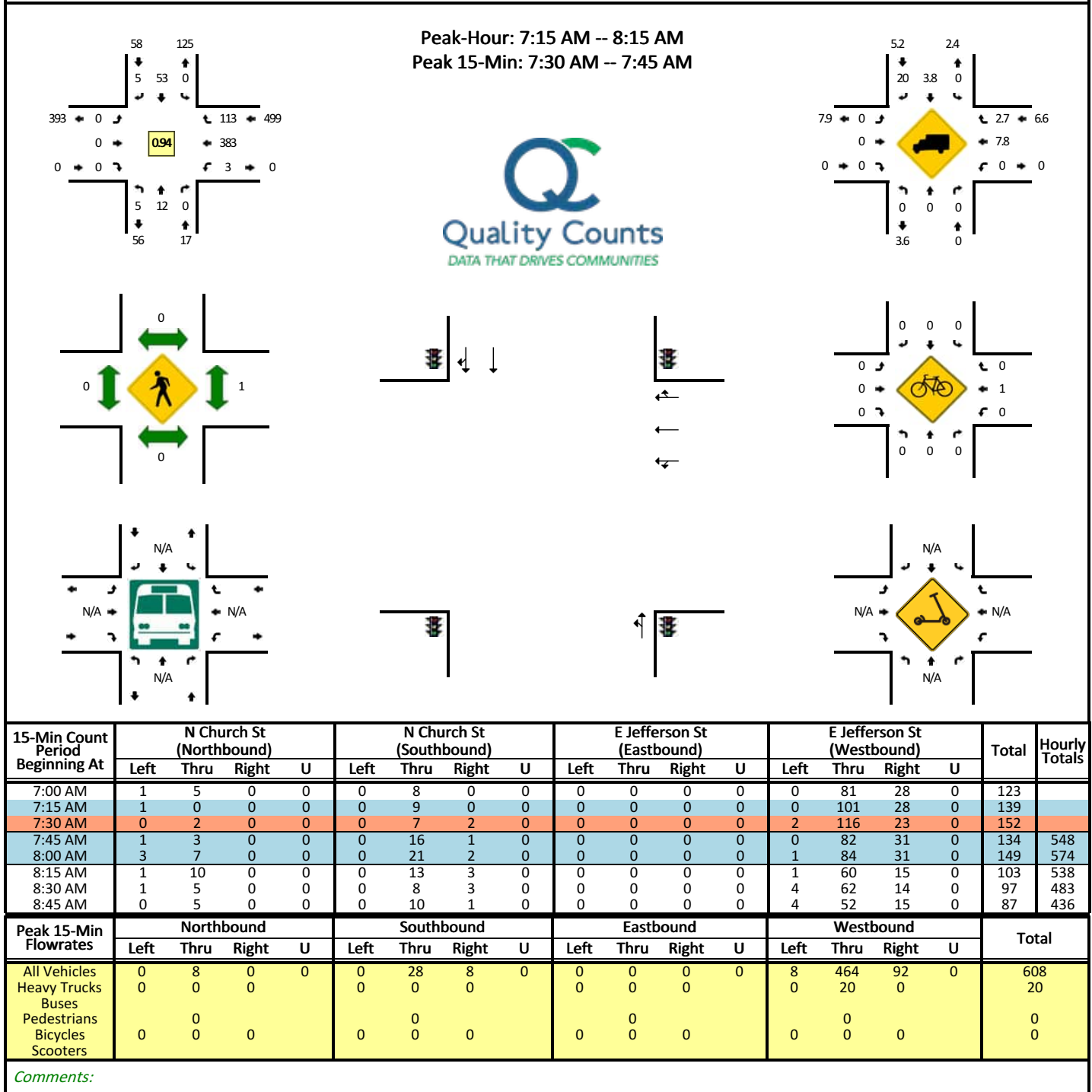
LOCATION: N Hayne St -- W Windsor/E Windsor St
CITY/STATE: Monroe, NC

QC JOB #: 15912624
DATE: Wed, Sep 14 2022



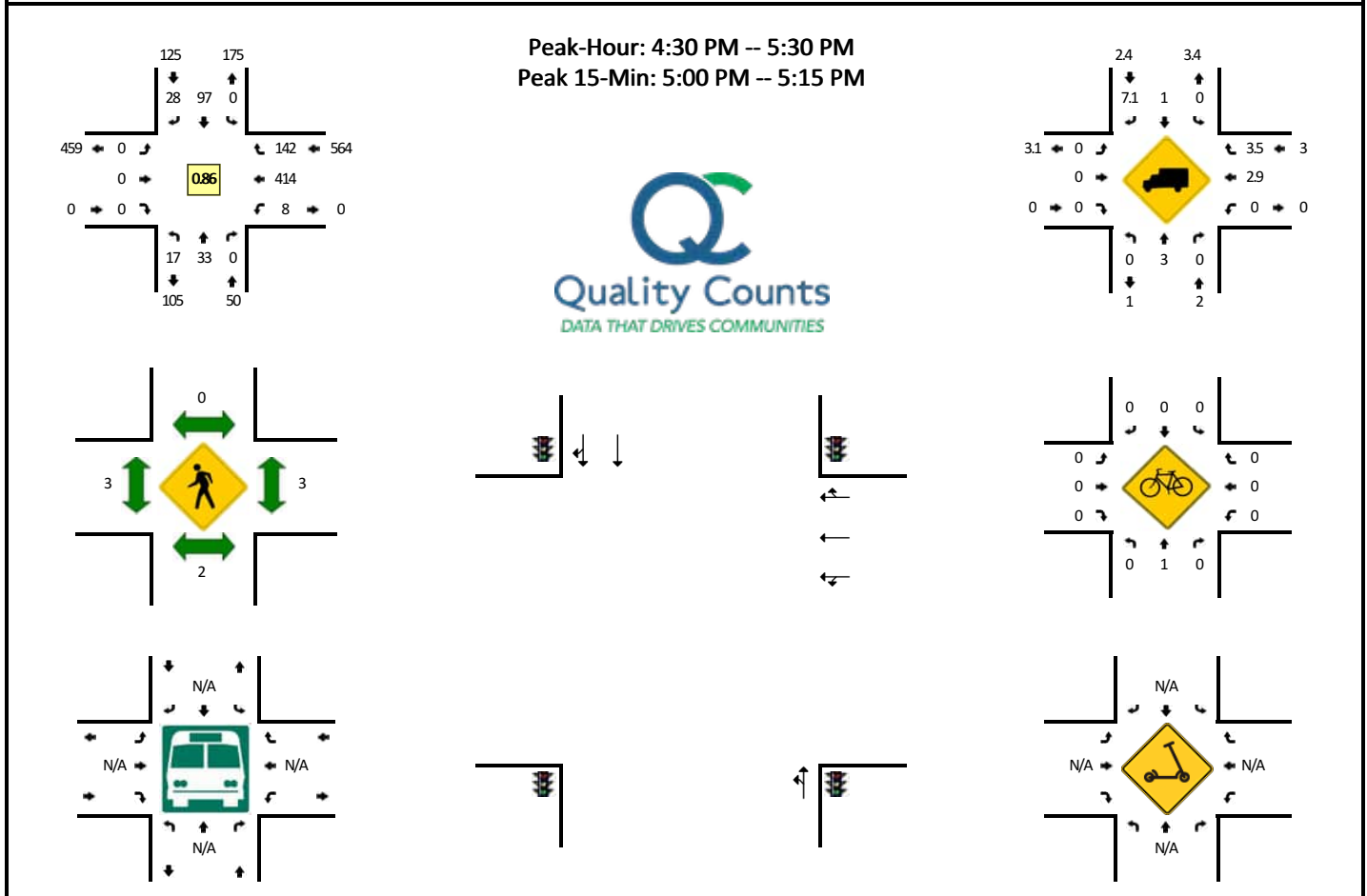
LOCATION: N Church St -- E Jefferson St
CITY/STATE: Monroe, NC

QC JOB #: 15912625
DATE: Wed, Sep 14 2022



LOCATION: N Church St -- E Jefferson St
CITY/STATE: Monroe, NC

QC JOB #: 15912626
DATE: Wed, Sep 14 2022

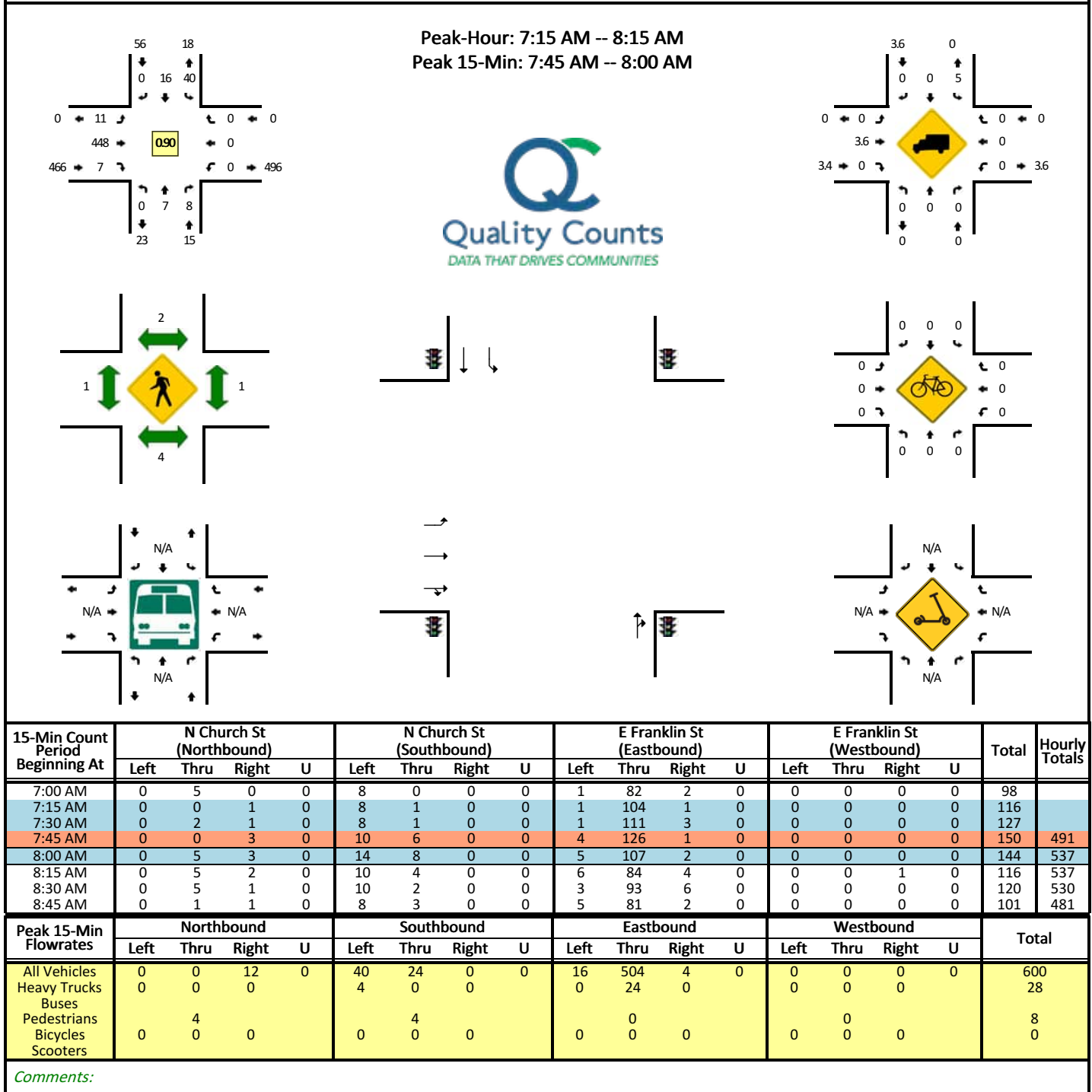


15-Min Count Period Beginning At	N Church St (Northbound)				N Church St (Southbound)				E Jefferson St (Eastbound)				E Jefferson St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	4	0	0	0	22	3	0	0	0	0	0	1	115	24	0	172	
4:15 PM	1	7	0	0	0	19	6	0	0	0	0	0	3	86	30	0	152	
4:30 PM	4	6	0	0	0	18	5	0	0	0	0	0	3	122	32	0	190	
4:45 PM	7	5	0	0	0	25	4	0	0	0	0	0	2	91	37	0	171	685
5:00 PM	4	12	0	0	0	34	13	0	0	0	0	0	3	105	44	0	215	728
5:15 PM	2	10	0	0	0	20	6	0	0	0	0	0	0	96	29	0	163	739
5:30 PM	1	4	0	0	0	17	3	0	0	0	0	0	1	89	31	0	146	695
5:45 PM	1	1	0	0	0	19	6	0	0	0	0	0	2	68	23	0	120	644
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	16	48	0	0	0	136	52	0	0	0	0	0	12	420	176	0	860	
Heavy Trucks	0	0	0	0	0	0	4	0	0	0	0	0	0	4	12	0	20	
Buses																		
Pedestrians		4				0				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

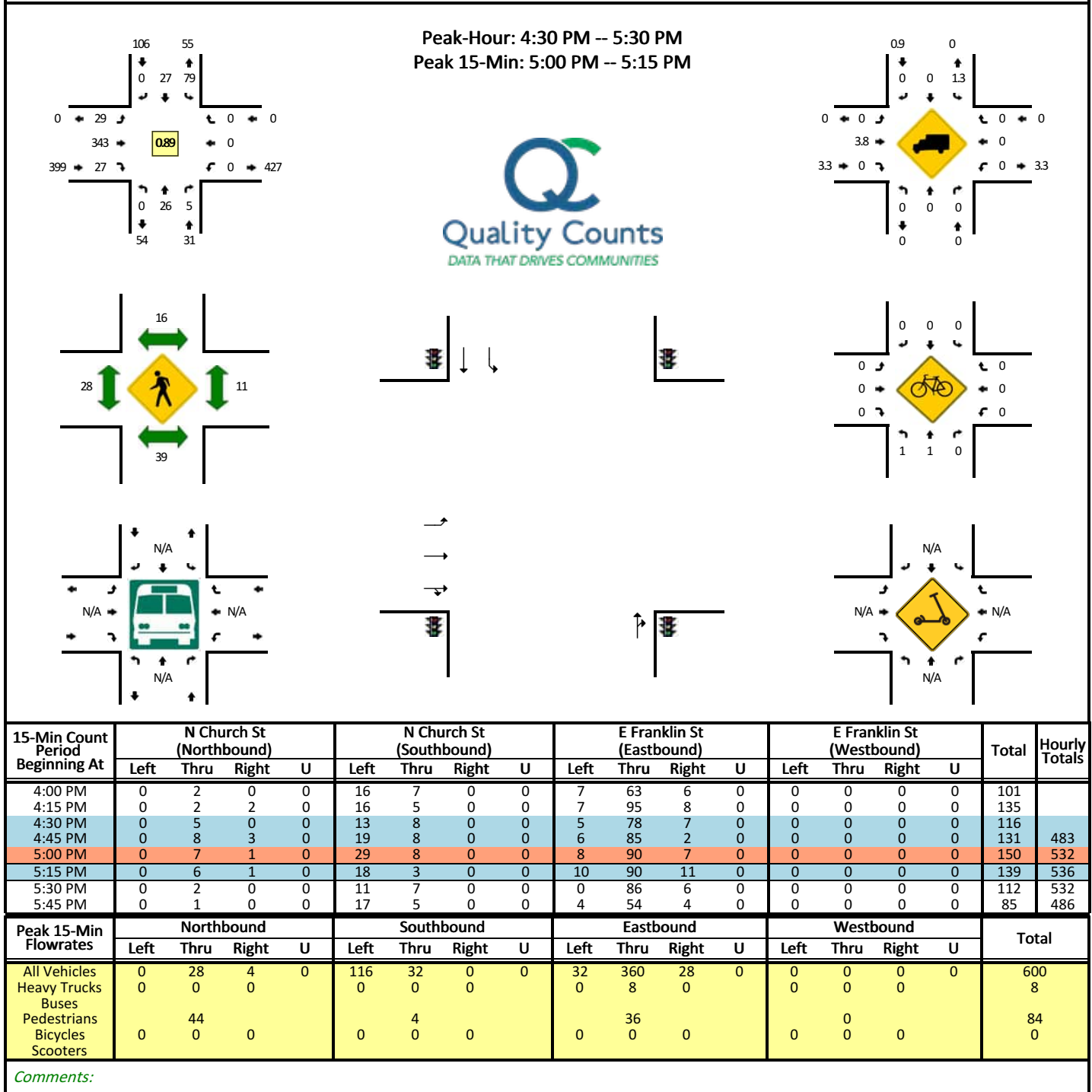
LOCATION: N Church St -- E Franklin St
CITY/STATE: Monroe, NC

QC JOB #: 15912627
DATE: Wed, Sep 14 2022



LOCATION: N Church St -- E Franklin St
CITY/STATE: Monroe, NC

QC JOB #: 15912628
DATE: Wed, Sep 14 2022



APPENDIX C

SIGNAL INFORMATION

NOTES

1. Refer to "Roadway Standard" and "Standard" issued January 2012 and "Standard Specifications for Roads and Structures," dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 6 PED is a dummy PED to facilitate phase 2 leading pedestrian interval.
4. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
5. Pedestrian times are existing.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

DETECTED MOVEMENT
UNDETECTED MOVEMENT (OVERLAP)
UNSIGNALIZED MOVEMENT
PEDESTRIAN MOVEMENT



- | PROPOSED | EXISTING |
|--|--|
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FEATURE	PHASE					
	2	3	4	5	6	8
Min. Green *	35	35	35	25	-	-
Extinction 1 *	0.0	0.0	0.0	0.0	0.0	0.0
Min. Green *	35	35	35	25	-	-
Yellow Clearance	3.1	3.1	3.1	3.0	3.3	-
Red Clearance	2.8	2.8	2.8	3.3	-	-
Red Revert	2.0	2.0	2.0	2.0	2.0	-
Walk 1 *	5	5	5	5	-	-
Don't Walk 1	16	16	16	19	-	-
Advanced Walk *	3	3	3	3	3	3
Second Ped Activation *	-	-	-	-	-	-
Min. Variable Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reductn *	-	-	-	-	-	-
Advanced Gap	-	-	-	-	-	-
Recall Mode	-	-	-	-	-	-
Vehicle Call Memory	-	-	-	-	-	-
Dual Entry	-	-	-	-	-	-
Sanctuary Gap	ON	ON	ON	ON	ON	ON

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

Signal Upgrade

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Ovl, 8-2 - Pedestrian Ovl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Control - Page 1

Page 1 | Page 2 | Page 3 | Page 4

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time Min 2																
Time Extension 2																
Time Max 2																
Soft Recall																
Minimum Recall	2	6														
Maximum Recall 1	2	6	8													
Maximum Recall 2																
Call Non-Act 1																
Call Non-Act 2																
Omit Phase																
Dual Entry																
No Skip																
Added Extension																
Simultaneous Gap	1	2	3	4	5	6	7	8								
Guaranteed Passage																
Green Interval Flash																
Fast Green Flash																
Red Rest																
Backup Protection																
Inhibit Reserve																
Inhibit Max (Coord)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Inhibit Coordination																
Dynamic Max/Max3																
Variable Initial																
Gap Reduction																
Omit Pedestrian																
Time Walk 2																
Time FDWalk 2																
Ped Soft Recall																
Ped Recall	2	6	8													
Rest In Walk	2	6	8													
Modified Rest In Walk																
Ped Reserve																
Flashing Walk																
Advanced Walk	2	6	8													
Delayed Walk																
Ped Yellow Clear																
Ped Red Clear	2	6														
Startup In Green																
Startup In Yellow																
Startup Red Clear																
First Phases																
Startup Calls																
Startup Ped Calls	2	6	8													
Flash Entry	2	6														
Yellow Flash	2	6														
Wag Phases	1	3	6	8												
Wag Overlaps																
Manual Control	1	2	3	4	5	6	7	8								
Manual Control Omit Ped																
Red Detector Lock																
Yellow Detector Lock	2	6														
Active Logic 1 - 16	1	2	3													
Active Logic 17 - 32																
Dynamic/Backup																

- 21 - Phase Control
- 22 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence**
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
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- 7-3 - General Vehicle Detector Settings
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- 9 - Coordination
- A-1 - Standard Preemptions
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- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Sequence - Page 1

Rings	Barrier 1	Barrier 2	Barrier 3	Barrier 4
1	0	2	0	0
2	0	6	0	0
3	0	0	0	0
4	0	0	0	0

Rings	Barrier 5	Barrier 6	Barrier 7	Barrier 8
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0

Phase Directions

1		5		9		13	
2		6		10		14	
3		7		11		15	
4		8		12		16	

- 21 - Phase Control
- 22 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
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- 6-2 - Output Beacon Settings
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- D-3 - Comm Port Configuration
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21 - Phase Control

22 - Dynamic/Backup Control Functions

3 - Phase Timing

4 - Phase Sequence

5 - Inputs

6-1 - Output Assignments

6-2 - Output Beacon Settings

6-3 - Logical I/O Processor

7-1 - Vehicle Detector Assignments

7-2 - Pedestrian Detector Assignments

7-3 - General Vehicle Detector Settings

8-1 - Vehicle Ovl, 8-2 - Pedestrian Ovl Settings

9 - Coordination

A-1 - Standard Preemptions

B - Scheduling

C - User Profiles

D-1 - Set Clock, D-2 - General Comm Config

D-3 - Comm Port Configuration

D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Timing - Page 1

Phase Timing Elements	Phase														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Minimum Green 1	0	10	7	7	7	10	7	7	0	0	0	0	0	0	0
Minimum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-service Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension 1 (Gap 1)	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension 2 (Gap 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Green 1	0	35	30	30	30	35	30	25	0	0	0	0	0	0	0
Maximum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	4.0	3.1	4.0	4.0	4.0	3.1	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance	2.0	2.8	2.0	2.0	2.0	2.8	2.0	3.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1	0	5	0	0	0	5	0	5	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dont Walk 1	0	20	0	0	0	20	0	19	0	0	0	0	0	0	0
Dont Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Advance Time	0.0	5.0	0.0	0.0	0.0	5.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Dont Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max / Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seconds / Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Variable Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
At Flash Frequency (0-25.5 Hz)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1.0														

- 21 - Phase Control
- 22 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
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- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Ovl, 8-2 - Pedestrian Ovl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
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- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Timing - Page 2

Page 1 Page 2 Page 3 Page 4

Phase Timing Elements	Phase														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Minimum Green 1	0	10	7	7	7	10	7	7	0	0	0	0	0	0	0
Minimum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-service Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension 1 (Gap 1)	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension 2 (Gap 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Green 1	0	35	30	30	30	35	30	25	0	0	0	0	0	0	0
Maximum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	4.0	3.1	4.0	4.0	4.0	3.1	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance	2.0	2.8	2.0	2.0	2.0	2.8	2.0	3.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1	0	5	0	0	0	5	0	5	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dont Walk 1	0	20	0	0	0	20	0	19	0	0	0	0	0	0	0
Dont Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Advance Time	0.0	5.0	0.0	0.0	0.0	5.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Dont Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max / Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seconds / Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Variable Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
At Flash Frequency (0-25.5 Hz)	1.0														

- 2.1 - Phase Control
- 2.2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6.1 - Output Assignments
- 6.2 - Output Beacon Settings
- 6.3 - Logical I/O Processor
- 7.1 - Vehicle Detector Assignments
- 7.2 - Pedestrian Detector Assignments
- 7.3 - General Vehicle Detector Settings
- 8.1 - Vehicle Dvl, 8.2 - Pedestrian Dvl Settings
- 9 - Coordination
- A.1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D.1 - Set Clock, D.2 - General Comm Config
- D.3 - Comm Port Configuration
- D.4 - Logging Controls, D.5 - Conflict Monitor

Coordination - Plan 2

Plan 2

Coordination Plan # 2

Cycle length (0-999 sec)	75
Min Transition Cycle (0-999 sec)	55
Max Transition Cycle (0-999 sec)	95

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	35	0	0	0
Act Coord Phase Min Green	0	0	0	0

(0-255)

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	44	0	0	0	44	0	31
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Coordinated Phase	2	6
Float Force Offs		
Hold to Force Off		
Hi Priority Ped		
Dynamic/Backup		

Verify Plan Data

Options:

Split/Timing in percent?	N	%0 = Auto
*Permissive Mode (0-4)	0	1 = Open
Enable Transition Permissive Mode?	N	2 = Manual
Adjust Non-Coordinated Splits?	Y	3 = Window
Cycle Once per Cycle Length?	Y	4 = Walk

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
Overlap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

(0-255 sec)	Vehicle		Pedestrian	
	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 3

Plan 3

Coordination Plan # 3

Cycle length (0-999 sec) 100
Min Transition Cycle (0-999 sec) 80
Max Transition Cycle (0-999 sec) 120

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	80	0	0	0
Act Coord Phase Min Green	0	0	0	0

(0-255)

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	68	0	0	0	68	0	32
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Coordinated Phase	2	6
Float Force Offs		
Hold to Force Off		
Hi Priority Ped		
Dynamic/Backup		

Verify Plan Data

Options:

Split/Timing in percent? N
*Permissive Mode (0-4) 0 *0 = Auto
Enable Transition Permissive Mode? N 1 = Open
Adjust Non-Coordinated Splits? Y 2 = Manual
Cycle Once per Cycle Length? Y 3 = Window
4 = Walk

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
Overlap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

(0-255 sec)	Vehicle		Pedestrian	
	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

- 21 - Phase Control
- 22 - Dynamic/Backup Control Functions
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- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Ovl, 8-2 - Pedestrian Ovl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
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- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Scheduling - Event 1-100

Events #1 - 100 | Events #101 - 200

Event #	Event Type	Event Details	Pri			Start Date		Stop Date		Start Time		Stop Time	
			LMH	MM	DD	MM	DD	MM	DD	HH	MM	HH	MM
1	Coordination Plan	2-1	L			1	1	12	31	0	0	24	0
2	Coordination Plan	3-1	L			1	1	12	31	14	0	19	0
3	None					0	0	0	0	0	0	0	0
4	Coordination Plan	Free	H			11	28	12	1	0	0	24	0
5	Coordination Plan	Free	H			12	24	12	26	0	0	24	0
6	Coordination Plan	Free	H			1	1	1	1	0	0	24	0
7	None					0	0	0	0	0	0	0	0
8	None					0	0	0	0	0	0	0	0
9	None					0	0	0	0	0	0	0	0
10	None					0	0	0	0	0	0	0	0
11	None					0	0	0	0	0	0	0	0
12	None					0	0	0	0	0	0	0	0
13	None					0	0	0	0	0	0	0	0
14	None					0	0	0	0	0	0	0	0
15	None					0	0	0	0	0	0	0	0
16	None					0	0	0	0	0	0	0	0
17	None					0	0	0	0	0	0	0	0
18	None					0	0	0	0	0	0	0	0
19	None					0	0	0	0	0	0	0	0
20	None					0	0	0	0	0	0	0	0
21	None					0	0	0	0	0	0	0	0
22	None					0	0	0	0	0	0	0	0
23	None					0	0	0	0	0	0	0	0
24	None					0	0	0	0	0	0	0	0
25	None					0	0	0	0	0	0	0	0
26	None					0	0	0	0	0	0	0	0
27	None					0	0	0	0	0	0	0	0
28	None					0	0	0	0	0	0	0	0
29	None					0	0	0	0	0	0	0	0
30	None					0	0	0	0	0	0	0	0
31	None					0	0	0	0	0	0	0	0
32	None					0	0	0	0	0	0	0	0
33	None					0	0	0	0	0	0	0	0
34	None					0	0	0	0	0	0	0	0
35	None					0	0	0	0	0	0	0	0
36	None					0	0	0	0	0	0	0	0
37	None					0	0	0	0	0	0	0	0

2 PHASE
PRETIMED
(CITY SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDDT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program a signal for left turn phase if there are no left turn lanes on the "Engineer".
3. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
4. Program pedestrian leads to countdown the flashing "Don't Walk" time interval.
5. Clearance interval timings may be adjusted incrementally until required values are reached.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

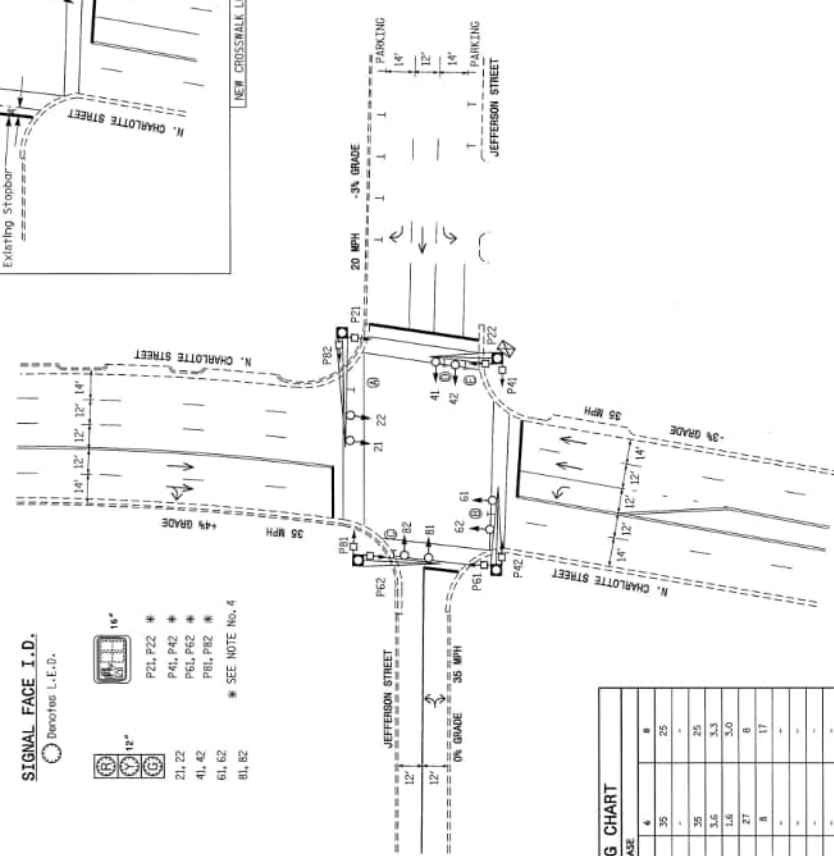
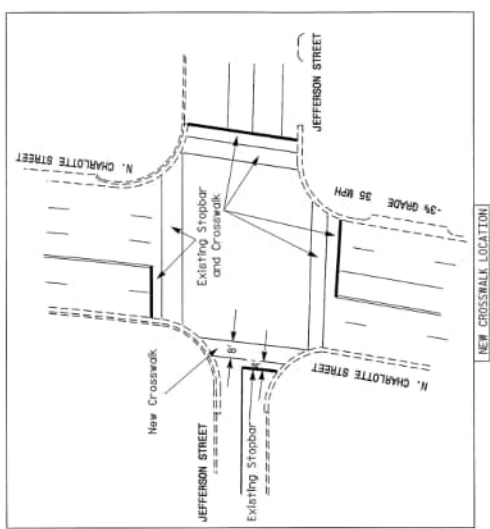
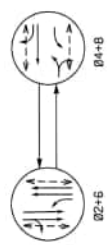


TABLE OF OPERATION		PHASE	
SIGNAL FACE		F L A S H	
		W 2 4 6	R R Y
	31, 22	G	R
	41, 42	R	G
	51, 52	G	R
	61, 62	R	G
	P21, P22	W	W
	P41, P42	W	W
	P61, P62	W	W
	P81, P82	W	W



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

0.



2070L TIMING CHART

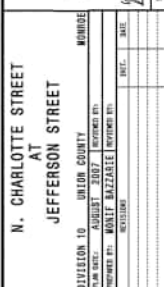
FEATURE	PHASE				
	2	4	6	8	
Max Green 1 *	35	25	35	25	-
Resistor 1 *	-	-	-	-	-
Max Green 1 *	35	25	35	25	-
Yellow Clearance	4.1	5.0	3.6	3.3	-
Red Clearance	1.6	2.4	1.6	2.0	-
Weld 1 *	24	8	27	8	-
Dry 1 Weld 1	11	17	17	17	-
Second Per Activation *	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-
Time before Reduction *	-	-	-	-	-
Time to Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Recall Mode	PED/ MAX RECALL	PED/ MAX RECALL	PED/ MAX RECALL	PED/ MAX RECALL	-
Vehicle Cold Memory	-	-	-	-	-
Door Entry	-	-	-	-	-
Seal/Straps Gap	-	-	-	-	-

* These values may be field adjusted.

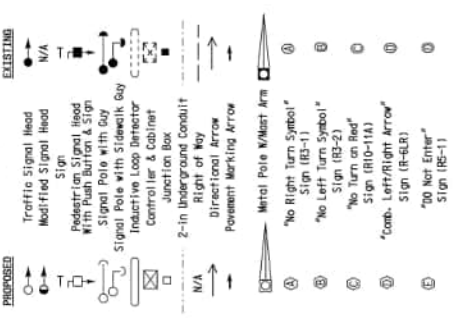
SIGNAL UPGRADE



N. CHARLOTTE STREET
AT
JEFFERSON STREET



LEGEND



- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Ovl, 8-2 - Pedestrian Ovl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Control - Page 1

Page 1 | Page 2 | Page 3 | Page 4

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Time Min 2																	
Time Extension 2																	
Time Max 2																	
Soft Recall																	
Minimum Recall		2			6												
Maximum Recall 1		2		4		6		8									
Maximum Recall 2																	
Call Non-Act 1																	
Call Non-Act 2																	
Omit Phase																	
Dual Entry																	
No Skip																	
Added Extension																	
Simultaneous Gap		1	2	3	4	5	6	7	8								
Guaranteed Passage																	
Green Interval Flash																	
Fast Green Flash																	
Red Rest																	
Backup Protection																	
Inhibit Reserve																	
Inhibit Max (Coord)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Inhibit Coordination																	
Dynamic Max/Max3																	
Variable Initial																	
Gap Reduction																	
Omit Pedestrian																	
Time Walk 2																	
Time FDWalk 2																	
Ped Soft Recall																	
Ped Recall		2		4		6		8									
Rest In Walk		2		4		6		8									
Modified Rest In Walk																	
Ped Reserve																	
Flashing Walk																	
Advanced Walk																	
Delayed Walk																	
Ped Yellow Clear																	
Ped Red Clear																	
Startup In Green		2				6											
Startup In Yellow																	
Startup Red Clear																	
First Phases																	
Startup Calls																	
Startup Ped Calls		2		4		6		8									
Flash Entry		2				6											
Yellow Flash																	
Wag Phases		1		3		6		8									
Wag Overlaps																	
Manual Control		1	2	3	4	5	6	7	8								
Manual Control Omit Ped																	
Red Detector Lock																	
Yellow Detector Lock																	
Active Logic 1 - 16		2				6											
Active Logic 17 - 32																	
Dynamic/Backup																	

21 - Phase Control
22 - Dynamic/Backup Control Functions

3 - Phase Timing

4 - Phase Sequence

5 - Inputs

6-1 - Output Assignments

6-2 - Output Beacon Settings

6-3 - Logical I/O Processor

7-1 - Vehicle Detector Assignments

7-2 - Pedestrian Detector Assignments

7-3 - General Vehicle Detector Settings

8-1 - Vehicle Ovl, 8-2 - Pedestrian Ovl Settings

9 - Coordination

A-1 - Standard Preemptions

B - Scheduling

C - User Profiles

D-1 - Set Clock, D-2 - General Comm Config

D-3 - Comm Port Configuration

D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Sequence - Page 1

Page 1 | Page 2 | Page 3 | Page 4 | Page 5 | Page 6 | Page 7 | Page 8 | Page 9 | Page 10 | Page 11 | Page 12

Rings	Barrier 1	Barrier 2	Barrier 3	Barrier 4
1	0	2	0	0
2	0	6	0	0
3	0	0	0	0
4	0	0	0	0

Rings	Barrier 5	Barrier 6	Barrier 7	Barrier 8
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0

Phase Directions

1		5	9	13
2		6	10	14
3		7	11	15
4		8	12	16

21 - Phase Control
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Phase Timing - Page 1

Page 1 | Page 2 | Page 3 | Page 4

Phase Timing Elements	Phase														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Minimum Green 1	0	35	0	25	0	35	0	25	0	0	0	0	0	0	0
Minimum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-service Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension 1 (Gap 1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension 2 (Gap 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Green 1	0	35	0	25	0	35	0	25	0	0	0	0	0	0	0
Maximum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	4.0	4.1	4.0	3.0	4.0	3.6	4.0	3.3	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance	2.0	1.6	2.0	2.4	2.0	1.6	2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1	0	24	0	8	0	27	0	8	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dont Walk 1	0	11	0	17	0	8	0	17	0	0	0	0	0	0	0
Dont Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Advance Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Dont Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max / Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seconds / Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Variable Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
At Flash Frequency (0-25.5 Hz)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1.0														

- 21 - Phase Control
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Phase Timing - Page 2

Phase Timing Elements	Phase														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Minimum Green 1	0	10	0	7	0	10	0	7	0	0	0	0	0	0	0
Minimum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-service Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension 1 (Gap 1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension 2 (Gap 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Green 1	0	35	0	25	0	35	0	25	0	0	0	0	0	0	0
Maximum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	4.0	4.1	4.0	3.0	4.0	3.6	4.0	3.3	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance	2.0	1.6	2.0	2.4	2.0	1.6	2.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1	0	5	0	5	0	5	0	5	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dont Walk 1	0	11	0	17	0	8	0	17	0	0	0	0	0	0	0
Dont Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Advance Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Dont Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max / Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seconds / Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Variable Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
At Flash Frequency (0-25.5 Hz)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1.0														

- 2.1 - Phase Control
- 2.2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6.1 - Output Assignments
- 6.2 - Output Beacon Settings
- 6.3 - Logical I/O Processor
- 7.1 - Vehicle Detector Assignments
- 7.2 - Pedestrian Detector Assignments
- 7.3 - General Vehicle Detector Settings
- 8.1 - Vehicle Dvl, 8.2 - Pedestrian Dvl Settings
- 9 - Coordination
- A.1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D.1 - Set Clock, D.2 - General Comm Config
- D.3 - Comm Port Configuration
- D.4 - Logging Controls, D.5 - Conflict Monitor

Coordination - Plan 2

Plan 2

Coordination Plan # 2

Cycle length (0-999 sec)	75
Min Transition Cycle (0-999 sec)	55
Max Transition Cycle (0-999 sec)	90

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	28	0	0	0
Act Coord Phase Min Green	0	0	0	0

(0-255)

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	45	0	30	0	45	0	30
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase	2	6														
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

Verify Plan Data

Options:

Split/Timing in percent?	N
*Permissive Mode (0-4)	0
Enable Transition Permissive Mode?	N
Adjust Non-Coordinated Splits?	Y
Cycle Once per Cycle Length?	Y

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
Overlap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

(0-255 sec)	Vehicle		Pedestrian	
	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 3

Plan 3

Coordination Plan # 3

Cycle length (0-999 sec)	100
Min Transition Cycle (0-999 sec)	80
Max Transition Cycle (0-999 sec)	120

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	75	0	0	0
Act Coord Phase Min Green	0	0	0	0

(0-255)

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	55	0	45	0	55	0	45
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Coordinated Phase	2	6
Float Force Offs		
Hold to Force Off		
Hi Priority Ped		
Dynamic/Backup		

Verify Plan Data

Options:

Split/Timing in percent?	N	%0 = Auto
*Permissive Mode (0-4)	0	1 = Open
Enable Transition Permissive Mode?	N	2 = Manual
Adjust Non-Coordinated Splits?	Y	3 = Window
Cycle Once per Cycle Length?	Y	4 = Walk

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
Overlap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

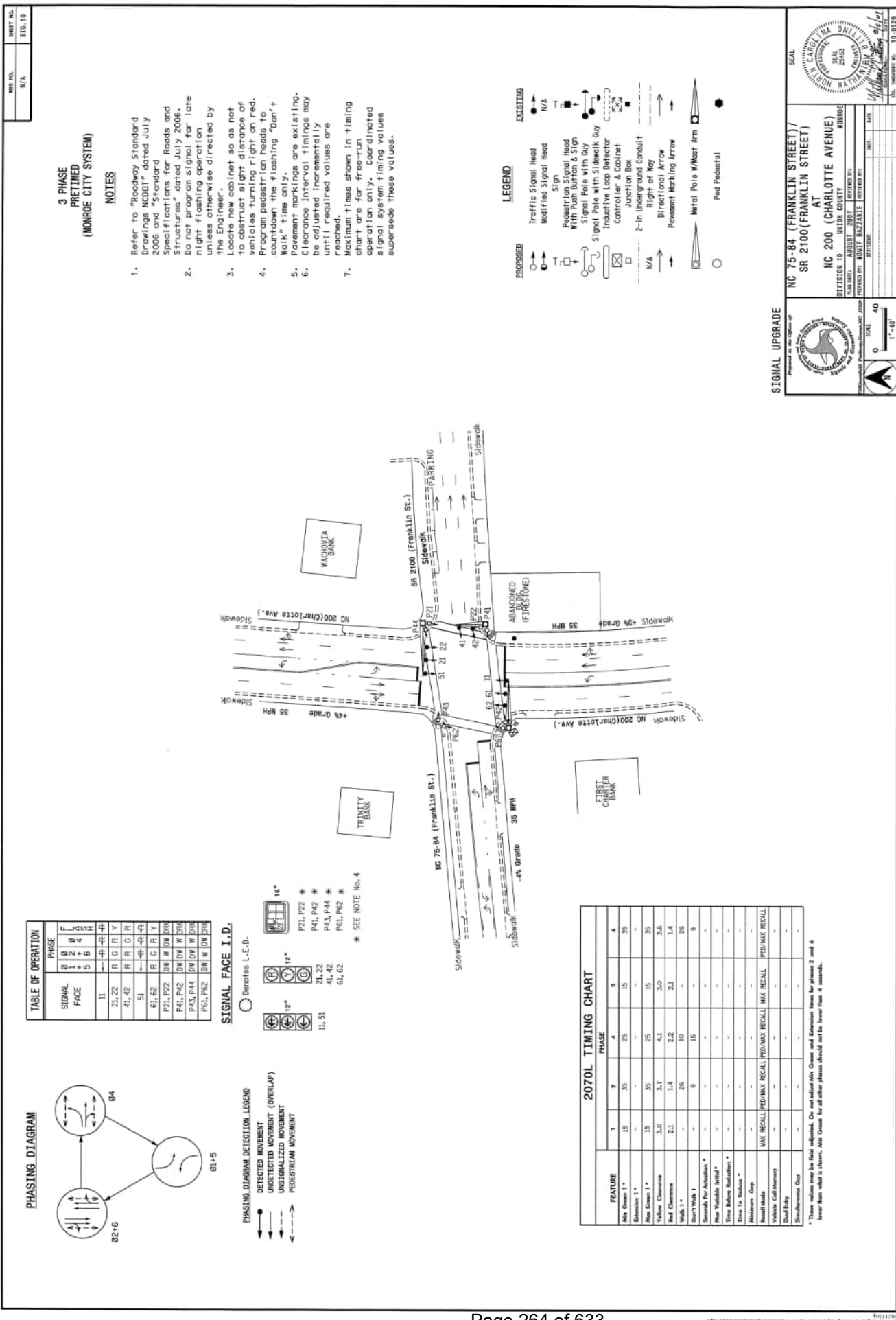
(0-255 sec)	Vehicle		Pedestrian	
	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

- 21 - Phase Control
- 22 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Ovl, 8-2 - Pedestrian Ovl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling**
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Scheduling - Event 1-100

Events #1 - 100 | Events #101 - 200

Event #	Event Type	Event Details	Pri			Start Date		Stop Date		Start Time		Stop Time	
			LMH	MM	DD	MM	DD	MM	DD	HH	MM	HH	MM
1	Coordination Plan	2-1	L			1	1	12	31	0	0	24	0
2	Coordination Plan	3-1	L			1	1	12	31	14	0	19	0
3	None					0	0	0	0	0	0	0	0
4	Coordination Plan	Free	H			11	28	12	1	0	0	24	0
5	Coordination Plan	Free	H			12	24	12	26	0	0	24	0
6	Coordination Plan	Free	H			1	1	1	1	0	0	24	0
7	None					0	0	0	0	0	0	0	0
8	None					0	0	0	0	0	0	0	0
9	None					0	0	0	0	0	0	0	0
10	None					0	0	0	0	0	0	0	0
11	None					0	0	0	0	0	0	0	0
12	None					0	0	0	0	0	0	0	0
13	None					0	0	0	0	0	0	0	0
14	None					0	0	0	0	0	0	0	0
15	None					0	0	0	0	0	0	0	0
16	None					0	0	0	0	0	0	0	0
17	None					0	0	0	0	0	0	0	0
18	None					0	0	0	0	0	0	0	0
19	None					0	0	0	0	0	0	0	0
20	None					0	0	0	0	0	0	0	0
21	None					0	0	0	0	0	0	0	0
22	None					0	0	0	0	0	0	0	0
23	None					0	0	0	0	0	0	0	0
24	None					0	0	0	0	0	0	0	0
25	None					0	0	0	0	0	0	0	0
26	None					0	0	0	0	0	0	0	0
27	None					0	0	0	0	0	0	0	0
28	None					0	0	0	0	0	0	0	0
29	None					0	0	0	0	0	0	0	0
30	None					0	0	0	0	0	0	0	0
31	None					0	0	0	0	0	0	0	0
32	None					0	0	0	0	0	0	0	0
33	None					0	0	0	0	0	0	0	0
34	None					0	0	0	0	0	0	0	0
35	None					0	0	0	0	0	0	0	0
36	None					0	0	0	0	0	0	0	0
37	None					0	0	0	0	0	0	0	0



- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Control - Page 1

Time Min 2	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Time Extension 2			
Time Max 2			
Soft Recall			
Minimum Recall	2	6	2 4 6
Maximum Recall 1	1 2	4 5 6	
Maximum Recall 2			
Call Non-Act 1			
Call Non-Act 2			
Omit Phase			
Dual Entry			
No Skip			
Added Extension			
Simultaneous Gap	1 2 3 4 5 6 7 8		
Guaranteed Passage			
Green Interval Flash			
Fast Green Flash			
Red Rest			
Backup Protection			
Inhibit Reservice			
Inhibit Max (Coord)	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		
Inhibit Coordination			
Dynamic Max/Max3			
Variable Initial			
Gap Reduction			
Omit Pedestrian			
Time Walk 2			
Time FDWalk 2			
Pad Soft Recall			
Pad Recall			
Rest In Walk			
Modified Rest In Walk			
Pad Reservice			
Flashing Walk			
Advanced Walk			
Delayed Walk			
Pad Yellow Clear			
Pad Red Clear			
Startup In Green	2	6	
Startup In Yellow			
Startup Red Clear			
First Phases			
Startup Calls			
Startup Ped Calls	2 4 6		
Flash Entry	2	6	
Yellow Flash			
Wag Phases	1 3 5 7 8		
Wag Overlaps			
Manual Control	1 2 3 4 5 6 7 8		
Manual Control Omit Ped			
Red Detector Lock			
Yellow Detector Lock			
Active Logic 1 - 16	2	6	
Active Logic 17 - 32			
Dynamic/Backup			

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence**
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
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- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Sequence - Page 1

Rings	Barrier 1				Barrier 2				Barrier 3				Barrier 4			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	5	6	0	0	0	0	7	8	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Rings	Barrier 5				Barrier 6				Barrier 7				Barrier 8			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Phase Directions

1		5		9		13	
2		6		10		14	
3		7		11		15	
4		8		12		16	

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Timing - Page 2

Phase Timing Elements	Phase														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Minimum Green 1	7	10	0	7	7	10	0	0	0	0	0	0	0	0	0
Minimum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-service Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension 1 (Gap 1)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension 2 (Gap 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Green 1	15	35	30	25	15	35	30	30	0	0	0	0	0	0	0
Maximum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	3.0	3.7	4.0	4.1	3.0	3.6	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance	2.1	1.4	2.0	2.2	2.1	1.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1	0	5	0	5	0	5	0	0	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dont Walk 1	0	9	0	15	0	9	0	0	0	0	0	0	0	0	0
Dont Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Advance Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Dont Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max / Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seconds / Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Variable Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Air Flash Frequency (0-25.5 Hz)	1.0														

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
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- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 2

Plan 2

Coordination Plan # 2

Cycle length (0-999 sec) 75
Min Transition Cycle (0-999 sec) 55
Max Transition Cycle (0-999 sec) 95

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	45	0	0	0
Act Coord Phase Min Green (0-255)	0	0	0	0

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	15	30	0	30	15	30	0	0
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase	2	6														
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

Verify Plan Data

Options:

Split/Timing in percent? N
*Permissive Mode (0-4) 0
Enable Transition Permissive Mode? N
Adjust Non-Coordinated Splits? Y
Cycle Once per Cycle Length? Y

Active Pages:

Phase Sequence Page (1-12)	2
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
OverLap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

	Vehicle		Pedestrian	
(0-255 sec)	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 3

Plan 3

Coordination Plan # 3

Cycle length (0-999 sec) 100
Min Transition Cycle (0-999 sec) 80
Max Transition Cycle (0-999 sec) 120

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	85	0	0	0
Act Coord Phase Min Green (0-255)	0	0	0	0

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	15	53	0	32	18	50	0	0
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase	2	6														
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

Verify Plan Data

Options:

Split/Timing in percent? N
*Permissive Mode (0-4) 0
Enable Transition Permissive Mode? N
Adjust Non-Coordinated Splits? Y
Cycle Once per Cycle Length? Y

Active Pages:

Phase Sequence Page (1-12)	3
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
OverLap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

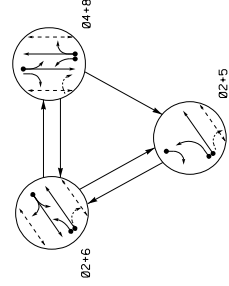
*Applies when "Manual" permissive is selected

	Vehicle		Pedestrian	
(0-255 sec)	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

Scheduling - Event 1-100

[illegible]

PHASING DIAGRAM

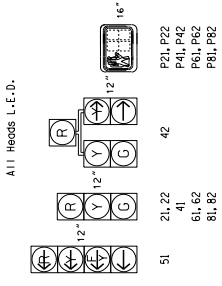


PHASING DIAGRAM DETECTION LEGEND
DETECTED MOVEMENT
UNDIRECTED MOVEMENT (OVERLAP)
UNISIGNALIZED MOVEMENT
PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE
21, 22	G R Y G R Y
41	R R G R Y
42	R R G R Y
51	R R G R Y
61, 62	R R G R Y
81, 82	R R G R Y
P21, P22	W W D W D W
P41, P42	D W D W D W
P61, P62	D W D W D W
P81, P82	D W D W D W

SIGNAL FACE I.D.



OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

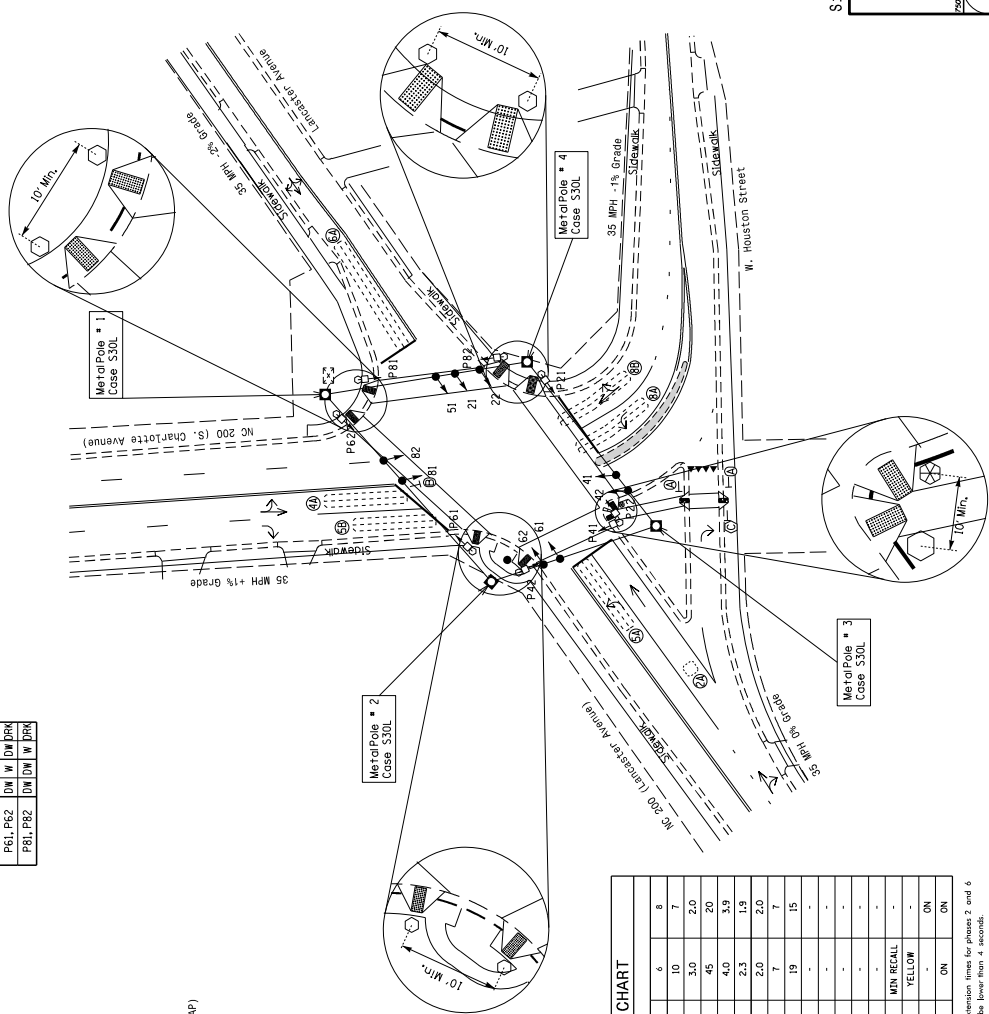
LOOP	INDUCTIVE LOOPS	DETECTOR PROGRAMMING	DETECTOR PROGRAMMING
	LOOP (FT)	STORMA (FT)	TURN (FT)
2A	6X6	70	4
4A	6X40	0	2-4-2
5A	6X40	+3	2-4-2
5B	6X40	0	2-4-2
6A	6X60	0	2-4-2
8A	6X40	+1	2-4-2
8B	6X40	+7	2-4-2

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Enable Backup Protect for phase 2 to allow the controller to clear from phase 2+6 to phase 2+5 by progressing through an all red display.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signal Design Manual and submit a Plan of Record to the Signal Design Section.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to count down the flashing "DON'T WALK" time only.
- Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for distribution location details.
- Pavement markings are existing.

LEGEND

- PROPOSED
- Traffic Signal Head
 - Modified Signal Head
 - Signal
 - Pedestrian Signal Head
 - Signal Pole with Guy
 - Signal Pole with Sidewalk Guy
 - Inductive Loop Detector
 - Controller & Cabinet
 - 2-in Underground Conduit
 - Right of Way
 - Directional Arrow
 - Yield Pavement Markings
 - Metal Strain Pole
 - Type II Signal Pedestal
 - Type I Pedestrian Post
 - "YIELD" Sign (R1-2)
 - Left Arrow "ONLY" Sign (R3-5L)
 - Pedestrian Crossing Sign (W11-2)
 - W Arrow Plaque (W16-1P)
- EXISTING
- Traffic Signal Head
 - Modified Signal Head
 - Signal
 - Pedestrian Signal Head
 - Signal Pole with Guy
 - Signal Pole with Sidewalk Guy
 - Inductive Loop Detector
 - Controller & Cabinet
 - 2-in Underground Conduit
 - Right of Way
 - Directional Arrow
 - Yield Pavement Markings
 - Metal Strain Pole
 - Type II Signal Pedestal
 - Type I Pedestrian Post
 - "YIELD" Sign (R1-2)
 - Left Arrow "ONLY" Sign (R3-5L)
 - Pedestrian Crossing Sign (W11-2)
 - W Arrow Plaque (W16-1P)



OASIS 2070L TIMING CHART

FEATURE	2	4	5	6	8
Min Green 1"	10	7	7	10	7
Extension 1"	3.0	2.0	2.0	3.0	2.0
Max Green 1"	45	20	15	45	20
Yellow Clearance	4.0	3.9	3.0	4.0	3.9
Red Clearance	2.3	1.9	3.1	2.3	1.9
Red Reset	5.0	2.0	2.0	2.0	7
Walk 1"	7	7	7	7	7
Don't Walk 1	18	10	-	19	15
Seconds Per Actuation *	-	-	-	-	-
Max Variable Initial *	-	-	-	-	-
Time Before Recursion *	-	-	-	-	-
Time To Release *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Recall Mode	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	-	YELLOW	-
Dead Entry	-	ON	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON

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

Signal Upgrade

Seal of the State of North Carolina
Seal of the Department of Transportation
Seal of the Division of Highway Design
Seal of the Division of Traffic Engineering

NC 200 (Lancaster Avenue) /
Lancaster Avenue at
NC 200 (S. Charlotte Avenue) /
W. Houston Street

Division 10 Union County
Planned: November 2016
Reviewed By: M. REDDICK
Reviewed By: E. ZILSE

0 30 1"=20'

Seal of the State of North Carolina
Seal of the Department of Transportation
Seal of the Division of Highway Design
Seal of the Division of Traffic Engineering

1/5/2017
1/5/2017
1/5/2017
1/5/2017

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Control - Page 1

Page 1 | Page 2 | Page 3 | Page 4

Time Min 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Time Extension 2																
Time Max 2																
Soft Recall																
Minimum Recall						6										
Maximum Recall 1																
Maximum Recall 2							6	8								
Call Non-Act 1																
Call Non-Act 2																
Omit Phase																
Dual Entry																
No Skip																
Added Extension																
Simultaneous Gap																
Guaranteed Passage																
Green Interval Flash																
Fast Green Flash																
Red Rest																
Backup Protection																
Inhibit Reservice																
Inhibit Max (Coord)																
Inhibit Coordination																
Dynamic Max/Max3																
Variable Initial																
Gap Reduction																
Omit Pedestrian																
Time Walk 2																
Time FDWalk 2																
Pad Soft Recall																
Pad Recall																
Rest In Walk																
Modified Rest In Walk																
Pad Reservice																
Flashing Walk																
Advanced Walk																
Delayed Walk																
Pad Yellow Clear																
Pad Red Clear																
Startup In Green																
Startup In Yellow																
Startup Red Clear																
First Phases																
Startup Calls																
Startup Ped Calls																
Flash Entry																
Yellow Flash																
Wag Phases																
Wag Overlaps																
Manual Control																
Manual Control Omit Ped																
Red Detector Lock																
Yellow Detector Lock																
Active Logic 1 - 16																
Active Logic 17 - 32																
Dynamic/Backup																

- 21 - Phase Control
- 22 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence**
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Phase Sequence - Page 1

Rings	Barrier 1	Barrier 2	Barrier 3	Barrier 4
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0

Rings	Barrier 5	Barrier 6	Barrier 7	Barrier 8
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0

Phase Directions

1		5		9		13	
2		6		10		14	
3		7		11		15	
4		8		12		16	

- 21 - Phase Control
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- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Timing - Page 1

Page 1 | Page 2 | Page 3 | Page 4

Phase Timing Elements	Phase														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Minimum Green 1	0	0	0	0	0	0	20	0	15	0	0	0	0	0	0
Minimum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-service Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension 1 (Gap 1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension 2 (Gap 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Green 1	0	0	0	0	0	35	0	25	0	0	0	0	0	0	0
Maximum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance	2.0	0.0	2.0	2.9	2.0	2.6	2.0	2.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1	0	24	0	14	0	7	0	5	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dont Walk 1	0	0	0	0	0	11	0	11	0	0	0	0	0	0	0
Dont Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Advance Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Dont Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max / Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seconds / Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Variable Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
At Flash Frequency (0-25.5 Hz)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1.0														

- 21 - Phase Control
- 22 - Dynamic/Backup Control Functions
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- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Ovl, 8-2 - Pedestrian Ovl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
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- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Timing - Page 2

Phase Timing Elements	Phase														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Minimum Green 1	0	0	0	0	0	20	0	15	0	0	0	0	0	0	0
Minimum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-service Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension 1 (Gap 1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension 2 (Gap 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Green 1	0	0	0	0	0	35	0	25	0	0	0	0	0	0	0
Maximum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	4.0	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance	2.0	0.0	2.0	2.9	2.0	2.6	2.0	2.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1	0	24	0	14	0	7	0	5	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dont Walk 1	0	0	0	0	0	11	0	11	0	0	0	0	0	0	0
Dont Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Advance Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Dont Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max / Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seconds / Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Variable Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
At Flash Frequency (0-25.5 Hz)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1.0														

- 2.1 - Phase Control
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Coordination - Plan 2

Plan 2

Coordination Plan # 2

Cycle length (0-999 sec)	75
Min Transition Cycle (0-999 sec)	55
Max Transition Cycle (0-999 sec)	95

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	29	0	0	0
Act Coord Phase Min Green	0	0	0	0

(0-255)

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	0	0	0	0	48	0	27
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Coordinated Phase	6
Float Force Offs	
Hold to Force Off	
Hi Priority Ped	
Dynamic/Backup	

Verify Plan Data

Options:

Split/Timing in percent?	N
*Permissive Mode (0-4)	0
Enable Transition Permissive Mode?	N
Adjust Non-Coordinated Splits?	Y
Cycle Once per Cycle Length?	Y

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
Overlap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

(0-255 sec)	Vehicle		Pedestrian	
	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
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- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 3

Plan 3

Coordination Plan # 3

Cycle length (0-999 sec)	100
Min Transition Cycle (0-999 sec)	80
Max Transition Cycle (0-999 sec)	120

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	76	0	0	0
Act Coord Phase Min Green	0	0	0	0

(0-255)

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	0	0	0	0	65	0	35
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Coordinated Phase	6
Float Force Offs	
Hold to Force Off	
Hi Priority Ped	
Dynamic/Backup	

Verify Plan Data

Options:

Split/Timing in percent?	N	%0 = Auto
*Permissive Mode (0-4)	0	1 = Open
Enable Transition Permissive Mode?	N	2 = Manual
Adjust Non-Coordinated Splits?	Y	3 = Window
Cycle Once per Cycle Length?	Y	4 = Walk

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
Overlap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

(0-255 sec)	Vehicle		Pedestrian	
	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

- 21 - Phase Control
- 22 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Ovl, 8-2 - Pedestrian Ovl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling**
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

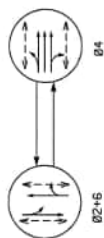
Scheduling - Event 1-100

Events #1 - 100 | Events #101 - 200

Event #	Event Type	Event Details	Pri			Start Date		Stop Date		Start Time		Stop Time	
			LMH	MM	DD	MM	DD	MM	DD	HH	MM	HH	MM
1	Coordination Plan	2-1	L			1	1	12	31	0	0	24	01
2	Coordination Plan	3-1	L			1	1	12	31	14	0	19	02
3	None					0	0	0	0	0	0	0	0
4	Coordination Plan	Free	H			11	28	12	1	0	0	24	01
5	Coordination Plan	Free	H			12	24	12	26	0	0	24	01
6	Coordination Plan	Free	H			1	1	1	1	0	0	24	01
7	None					0	0	0	0	0	0	0	0
8	None					0	0	0	0	0	0	0	0
9	None					0	0	0	0	0	0	0	0
10	None					0	0	0	0	0	0	0	0
11	None					0	0	0	0	0	0	0	0
12	None					0	0	0	0	0	0	0	0
13	None					0	0	0	0	0	0	0	0
14	None					0	0	0	0	0	0	0	0
15	None					0	0	0	0	0	0	0	0
16	None					0	0	0	0	0	0	0	0
17	None					0	0	0	0	0	0	0	0
18	None					0	0	0	0	0	0	0	0
19	None					0	0	0	0	0	0	0	0
20	None					0	0	0	0	0	0	0	0
21	None					0	0	0	0	0	0	0	0
22	None					0	0	0	0	0	0	0	0
23	None					0	0	0	0	0	0	0	0
24	None					0	0	0	0	0	0	0	0
25	None					0	0	0	0	0	0	0	0
26	None					0	0	0	0	0	0	0	0
27	None					0	0	0	0	0	0	0	0
28	None					0	0	0	0	0	0	0	0
29	None					0	0	0	0	0	0	0	0
30	None					0	0	0	0	0	0	0	0
31	None					0	0	0	0	0	0	0	0
32	None					0	0	0	0	0	0	0	0
33	None					0	0	0	0	0	0	0	0
34	None					0	0	0	0	0	0	0	0
35	None					0	0	0	0	0	0	0	0
36	None					0	0	0	0	0	0	0	0
37	None					0	0	0	0	0	0	0	0

2 PHASE
PRETIMED
(CITY SIGNAL SYSTEM)

SIGNAL FACE	PHASE		
	B 5	B 2	F L A S H
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
P21, P22	W	DN	DN
P41, P42	DN	W	DN
P43, P44	DN	W	DN
P61, P62	W	DN	DN



 DETECTED MOVEMENT
 UNDETECTED MOVEMENT (OVERLAP)
 UNSIGNALIZED MOVEMENT
 PEDESTRIAN MOVEMENT

W: WALK
DW: DON'T WALK
DRK: DARK

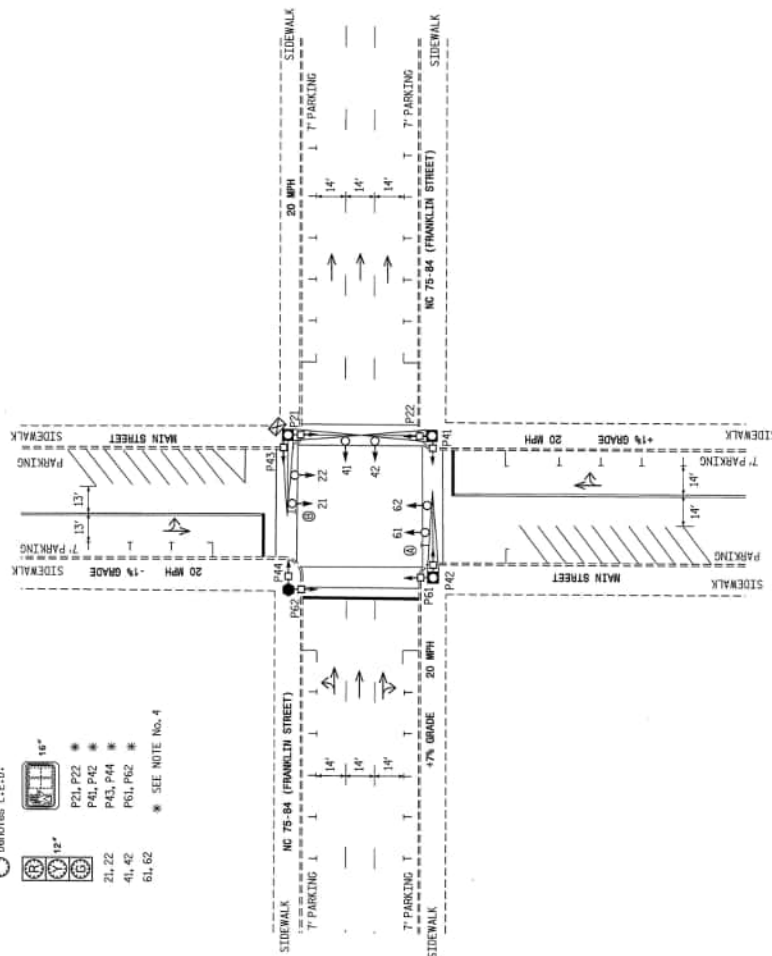
SIGNAL FACE I. D.

⊙ Denotes L.E.D.

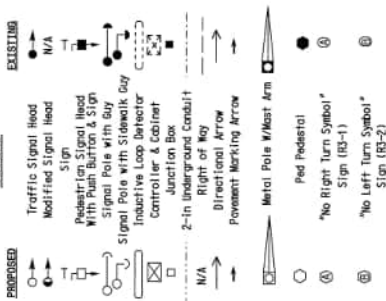


12"					
Y	G				
21, 22	P21, P22	*			
41, 42	P41, P42	*			
61, 62	P43, P44	*			
	P61, P62	*			

* SEE NOTE No. 4



LEGEND



2070L TIMING CHART

FEATURE	PHASE					
	1	2	3	4	5	6
Mix Green 1 *	-	35	25	35	-	-
Extension 1 *	-	-	-	-	-	-
Mix Green 1 *	-	-	-	-	-	-
Yellow Classroom	-	3.0	3.0	3.0	3.0	-
Bud Classroom	-	-	2.8	2.6	2.6	-
Wells 1 *	-	24	14	24	-	-
Dash With 1	-	11	11	11	-	-
Sounds Per Activation *	-	-	-	-	-	-
All Variable Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Revised Mode	-	-	-	-	-	-
Initial Mode	-	-	-	-	-	-
Fixed Cost Memory	-	-	-	-	-	-
Dash Entry	-	-	-	-	-	-
Dash Exit	-	-	-	-	-	-

These values may be field adjusted.

SIGNAL UPGRADE



FRANKLIN STREET
AT
MAIN STREET



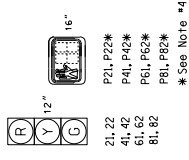
2 Phase
Pre-Timed
Monroe City System

NOTES

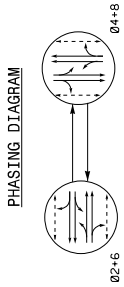
1. Refer to "Roadway Standard Drawings NC001" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
2. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
3. Pavement markings are existing. chart are for free-run operation only. Coordinated signal system timing values supersede these values.

TABLE OF OPERATION	PHASE			
	F L A S H			
	0	1	2	3
SIGNAL	0	1	2	3
FACE	4	5	6	7
	8	9	10	11
	12	13	14	15
	16	17	18	19
	20	21	22	23
	24	25	26	27
	28	29	30	31
	32	33	34	35
	36	37	38	39
	40	41	42	43
	44	45	46	47
	48	49	50	51
	52	53	54	55
	56	57	58	59
	60	61	62	63
	64	65	66	67
	68	69	70	71
	72	73	74	75
	76	77	78	79
	80	81	82	83
	84	85	86	87
	88	89	90	91
	92	93	94	95
	96	97	98	99
	100	101	102	103
	104	105	106	107
	108	109	110	111
	112	113	114	115
	116	117	118	119
	120	121	122	123
	124	125	126	127
	128	129	130	131
	132	133	134	135
	136	137	138	139
	140	141	142	143
	144	145	146	147
	148	149	150	151
	152	153	154	155
	156	157	158	159
	160	161	162	163
	164	165	166	167
	168	169	170	171
	172	173	174	175
	176	177	178	179
	180	181	182	183
	184	185	186	187
	188	189	190	191
	192	193	194	195
	196	197	198	199
	200	201	202	203
	204	205	206	207
	208	209	210	211
	212	213	214	215
	216	217	218	219
	220	221	222	223
	224	225	226	227
	228	229	230	231
	232	233	234	235
	236	237	238	239
	240	241	242	243
	244	245	246	247
	248	249	250	251
	252	253	254	255
	256	257	258	259
	260	261	262	263
	264	265	266	267
	268	269	270	271
	272	273	274	275
	276	277	278	279
	280	281	282	283
	284	285	286	287
	288	289	290	291
	292	293	294	295
	296	297	298	299
	300	301	302	303
	304	305	306	307
	308	309	310	311
	312	313	314	315
	316	317	318	319
	320	321	322	323
	324	325	326	327
	328	329	330	331
	332	333	334	335
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	340	341	342	343
	344	345	346	347
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	356	357	358	359
	360	361	362	363
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	404	405	406	407
	408	409	410	411
	412	413	414	415
	416	417	418	419
	420	421	422	423
	424	425	426	427
	428	429	430	431
	432	433	434	435
	436	437	438	439
	440	441	442	443
	444	445	446	447
	448	449	450	451
	452	453	454	455
	456	457	458	459
	460	461	462	463
	464	465	466	467
	468	469	470	471
	472	473	474	475
	476	477	478	479
	480	481	482	483
	484	485	486	487
	488	489	490	491
	492	493	494	495
	496	497	498	499
	500	501	502	503
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	508	509	510	511
	512	513	514	515
	516	517	518	519
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	588	589	590	591
	592	593	594	595
	596	597	598	599
	600	601	602	603
	604	605	606	607
	608	609	610	611
	612	613	614	615
	616	617	618	619
	620	621	622	623
	624	625	626	627
	628	629	630	631
	632	633	634	635
	636	637	638	639
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	660	661	662	663
	664	665	666	667
	668	669	670	671
	672	673	674	675
	676	677	678	679
	680	681	682	683
	684	685	686	687
	688	689	690	691
	692	693	694	695
	696	697	698	699
	700	701	702	703
	704	705	706	707
	708	709	710	711
	712	713	714	715
	716	717	718	719
	720	721	722	723
	724	725	726	727
	728	729	730	731
	732	733	734	735
	736	737	738	739
	740	741	742	743
	744	745	746	747
	748	749	750	751
	752	753	754	755
	756	757	758	759
	760	761	762	763
	764	765	766	767
	768	769	770	771
	772	773	774	775
	776	777	778	779
	780	781	782	783
	784	785	786	787
	788	789	790	791
	792	793	794	795
	796	797	798	799
	800	801	802	803
	804	805	806	807
	808	809	810	811
	812	813	814	815
	816	817	818	819
	820	821	822	823
	824	825	826	827
	828	829	830	831
	832	833	834	835
	836	837	838	839
	840	841	842	843
	844	845	846	847
	848	849	850	851
	852	853	854	855
	856	857	858	859
	860	861	862	863
	864	865	866	867
	868	869	870	871
	872	873	874	875
	876	877	878	879
	880	881	882	883
	884	885	886	887
	888	889	890	891
	892	893	894	895
	896	897	898	899
	900	901	902	903
	904	905	906	907
	908	909	910	911
	912	913	914	915
	916	917	918	919
	920	921	922	923
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	928	929	930	931
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	936	937	938	939
	940	941	942	943
	944	945	946	947
	948	949	950	951
	952	953	954	955
	956	957	958	959
	960	961	962	963
	964	965	966	967
	968	969	970	971
	972	973	974	975
	976	977	978	979
	980	981	982	983
	984	985	986	987
	988	989	990	991
	992	993	994	995
	996	997	998	999
	1000	1001	1002	1003
	1004	1005	1006	1007
	1008	1009	1010	1011
	1012	1013	1014	1015
	1016	1017	1018	1019
	1020	1021	1022	1023
	1024	1025	1026	1027
	1028	1029	1030	1031
	1032	1033	1034	1035
	1036	1037	1038	1039
	1040	1041	1042	1043
	1044	1045	1046	1047
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	1060	1061	1062	1063
	1064	1065	1066	1067
	1068	1069	1070	1071
	1072	1073	1074	1075
	1076	1077	1078	1079
	1080	1081	1082	1083
	1084	1085	1086	1087
	1088	1089	1090	1091
	1092	1093	1094	1095
	1096	1097	1098	1099
	1100	1101	1102	1103
	1104	1105	1106	1107
	1108	1109	1110	1111
	1112	1113	1114	1115
	1116	1117	1118	1119
	1120	1121	1122	1123
	1124	1125	1126	1127
	1128	1129	1130	1131
	1132	1133	1134	1135
	1136	1137	1138	1139
	1140	1141	1142	1143
	1144	1145	1146	1147
	1148	1149	1150	1151
	1152	1153	1154	1155
	1156	1157	1158	1159
	1160	1161	1162	1163
	1164	1165	1166	1167
	1168	1169	1170	1171
	1172	1173	1174	1175
	1176	1177	1178	1179
	1180	1181	1182	1183
	1184	1185	1186	1187
	1188	1189	1190	1191
	1192	1193	1194	1195
	1196	1197	1198	1199
	1200	1201	1202	1203
	1204	1205	1206	1207
	1208	1209	1210	1211
	1212	1213	1214	1215
	1216	1217	1218	1219

SIGNAL FACE I.D.
All Heads L.E.D.



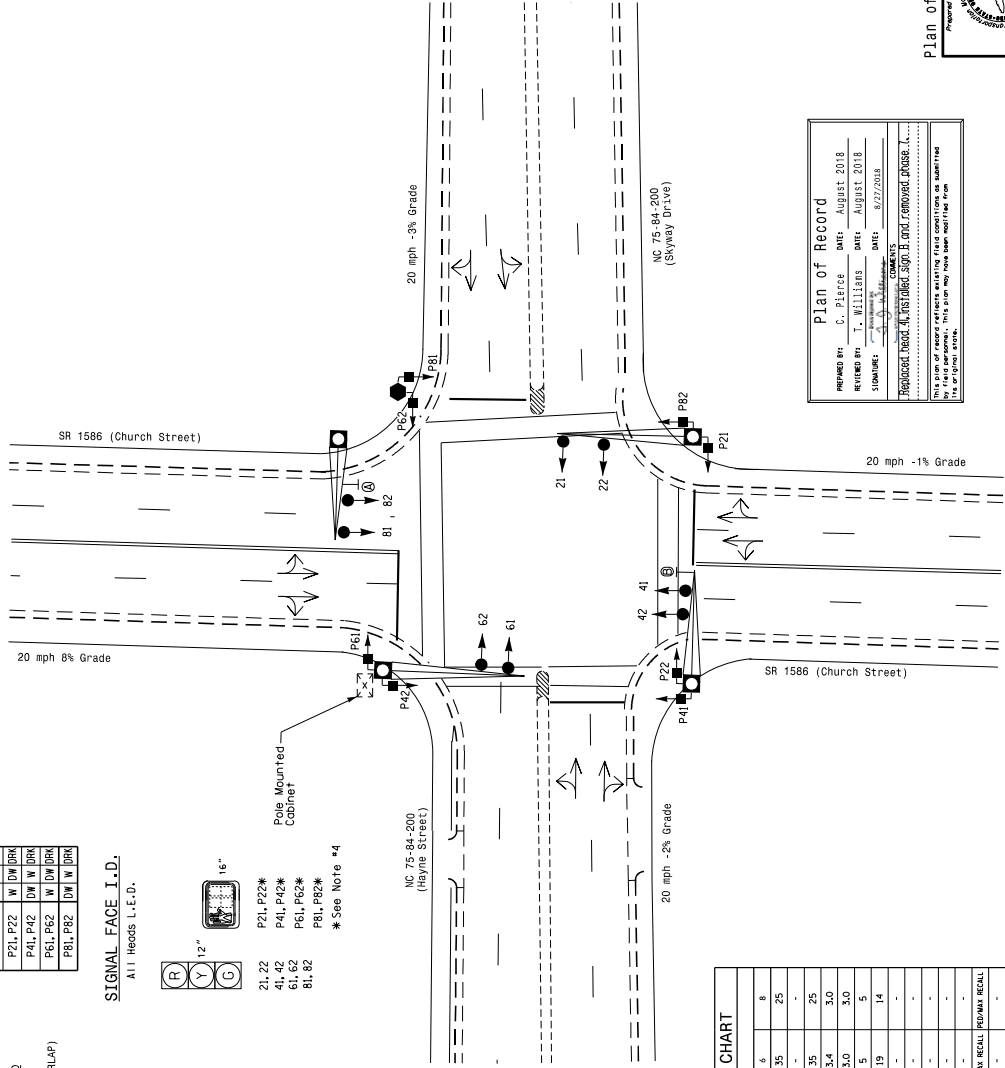
* See Note #4



OASIS 2070 TIMING CHART

FEATURE	2	4	6	8
Min Green 1"	35	25	35	25
Extension 1"	-	-	-	-
Max Green 1"	35	25	35	25
Yellow Clearance	3.5	3.5	3.4	3.0
Red Clearance	3.0	3.0	3.0	3.0
Walk 1"	5	5	5	5
Don't Walk 1"	20	15	19	14
Seconds Per Activation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	-	-	-	-
Vehicle Call Memory	-	-	-	-
Shall Entry	-	-	-	-
Simultaneous Gap	-	-	-	-

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

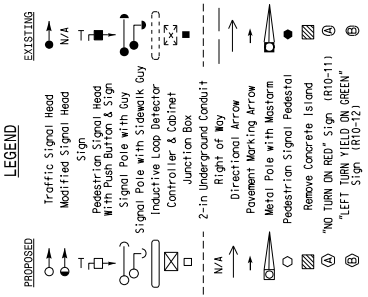


Plan of Record

PREPARED BY: C. Pierce DATE: August 2018
 REVIEWED BY: T. Williams DATE: August 2018
 SIGNATURE: [Signature] DATE: 8/22/2018

Replaced head 4, installed sign 11 and removed phase 1.

This plan of record reflects existing field conditions as submitted by field personnel. This plan may have been modified from the original design.



Plan of Record

NC 75-84-200 (Skyway Drive)
 NC 75-84-200 (Hayne Street)
 at
 SR 1586 (Church Street)

Division 10 MONROE COUNTY
 PROJECT NO. 2018-0001
 SHEET NO. 1 OF 1

DATE: 8/15/2018
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 IN CHARGE BY: [Name]

Scale: 1" = 20'

North Arrow

DOCUMENT NOT COMPLETED
 SIGNATURES COMPLETED

Not a certified document.
 This document originally prepared by [Name] on 8/15/2018.
 This document shall not be considered a certified document.

DATE: 8/15/2018
 DRAWN BY: [Name]
 CHECKED BY: [Name]
 IN CHARGE BY: [Name]

Phase Control - Page 1

Page 1 Page 2 Page 3 Page 4

[illegible][illegible]

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence**
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Sequence - Page 1

Page 1 | Page 2 | Page 3 | Page 4 | Page 5 | Page 6 | Page 7 | Page 8 | Page 9 | Page 10 | Page 11 | Page 12

Rings	Barrier 1				Barrier 2				Barrier 3				Barrier 4			
1	0	2	0	0	0	0	4	0	0	0	0	0	0	0	0	0
2	0	6	0	0	0	0	8	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Rings	Barrier 5				Barrier 6				Barrier 7				Barrier 8			
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Phase Directions

1		5		9		13	
2		6		10		14	
3		7		11		15	
4		8		12		16	

Phase Timing - Page 2

Page 1 Page 2 Page 3 Page 4

Phase Timing Elements

[illegible]

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 2

Plan 2

Coordination Plan # 2

Cycle length (0-999 sec)	75
Min Transition Cycle (0-999 sec)	55
Max Transition Cycle (0-999 sec)	95

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	29	0	0	0
Act Coord Phase Min Green (0-255)	0	0	0	0

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	40	0	35	0	40	0	35
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase	2	6														
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

Verify Plan Data

Options:

Split/Timing in percent?	N
*Permissive Mode (0-4)	0
Enable Transition Permissive Mode?	N
Adjust Non-Coordinated Splits?	Y
Cycle Once per Cycle Length?	Y

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
OverLap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Manual" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

	Vehicle		Pedestrian	
(0-255 sec)	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 3

Plan 3

Coordination Plan # 3

Cycle length (0-999 sec) 100
Min Transition Cycle (0-999 sec) 80
Max Transition Cycle (0-999 sec) 120

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	13	0	0	0
Act Coord Phase Min Green (0-255)	0	0	0	0

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	60	0	40	0	60	0	40
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase	2	6														
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

Verify Plan Data

Options:

Split/Timing in percent?	N
*Permissive Mode (0-4)	0
Enable Transition Permissive Mode?	N
Adjust Non-Coordinated Splits?	Y
Cycle Once per Cycle Length?	Y

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
OverLap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

	Vehicle		Pedestrian	
(0-255 sec)	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

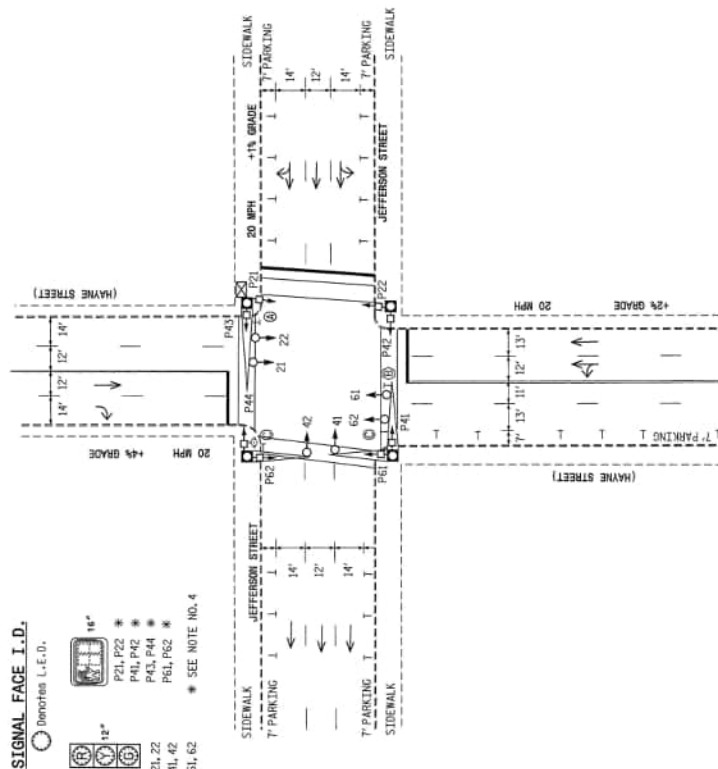
2 PHASE
PRETIMED
(CITY SIGNAL SYSTEM)

SIGNAL FACE	PHASE			
	8	9	1	2
21, 22	G	R	Y	
41, 42	R	G	R	
61, 62	G	R	Y	
P21, P22	W	DM	DM	
P41, P42	DM	W	DM	
P61, P62	DM	W	DM	

W: WALK
DM: DON'T WALK
DK: DARK

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
2. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
3. Pavement markings are existing. Clearance interval timings may be adjusted incrementally until required values are reached.
4. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



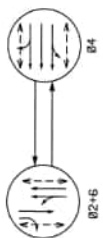
SIGNAL FACE I.D.
O denotes I.E.D.

- 12" P21, P22 *
- 16" P41, P42 *
- 21, 22 P43, P44 *
- 41, 42 P61, P62 *
- 61, 62 * SEE NOTE NO. 4

LEGEND

- PROPOSED
- Traffic Signal Head
 - Modified Signal Head
 - Pedestrian Signal Head With Push Button & Sign
 - Signal Pole with Guy
 - Signal Pole with Sidewalk Bay
 - Inductive Loop Detector
 - Controller & Cabinet
 - Junction Box
 - 2-in Underground Conduit
 - Right of Way
 - Directional Arrow
 - Pavement Marking Arrow
- EXISTING
- Metal Pole V-Mount Arm
 - "No Right Turn Symbol" Sign (R3-1)
 - "No Left Turn Symbol" Sign (R3-2)
 - "No Turn On Red" Sign (R10-11A)

PHASING DIAGRAM



- PHASING DIAGRAM DETECTION LEGEND
- DETECTED MOVEMENT
 - UNDIRECTED MOVEMENT (OVERLAP)
 - UNDIRECTED MOVEMENT
 - PEDESTRIAN MOVEMENT

FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	25	25	35	35
Extension 1 *	35	35	25	35
Max Green 1 *	35	35	25	35
Yellow Clearance	3.0	3.0	3.0	3.0
Red Clearance	2.6	2.6	2.6	2.6
Walk 1 *	11	11	11	11
Don't Walk 1	24	24	24	24
Seconds Per Activation *	11	11	11	11
Also Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Redden *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	-	-	-	-
Vehicle Call Memory	-	-	-	-
Dead Entry	-	-	-	-
Simultaneous Gap	-	-	-	-

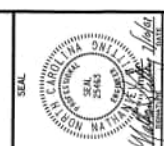
* Times values may be field adjusted.

SIGNAL UPGRADE



HAYNE STREET
AT
JEFFERSON STREET

DIVISION 10 UNION COUNTY
PLAN DATE: JULY 2007
DESIGNED BY: MONT BAZZARIE
CHECKED BY: [Signature]
DATE: [Blank]
SCALE: 1"=30'



Phase Control - Page 1

Time Min 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Time Extension 2																	
Time Max 2																	
Soft Recall																	
Minimum Recall		2			6												
Maximum Recall 1		2	4	6													
Maximum Recall 2																	
Call Non-Act 1																	
Call Non-Act 2																	
Omit Phase																	
Dual Entry																	
No Skip																	
Added Extension																	
Simultaneous Gap		1	2	3	4	5	6	7	8								
Guaranteed Passage																	
Green Interval Flash																	
Fast Green Flash																	
Red Rest																	
Backup Protection																	
Inhibit Reserve																	
Inhibit Max (Coord)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Inhibit Coordination																	
Dynamic Max/Max3																	
Variable Initial																	
Gap Reduction																	
Omit Pedestrian																	
Time Walk 2																	
Time FDWalk 2																	
Ped Soft Recall																	
Ped Recall		2	4	6													
Rest In Walk		2	4	6													
Modified Rest In Walk																	
Pad Reserve																	
Flashing Walk																	
Advanced Walk																	
Delayed Walk																	
Ped Yellow Clear																	
Ped Red Clear																	
Startup In Green		2		6													
Startup In Yellow																	
Startup Red Clear																	
First Phases																	
Startup Calls																	
Startup Ped Calls		2	4	6													
Flash Entry		2		6													
Yellow Flash																	
Wag Phases		1	3		6		8										
Wag Overlaps																	
Manual Control		1	2	3	4	5	6	7	8								
Manual Control Omit Ped																	
Red Detector Lock																	
Yellow Detector Lock																	
Active Logic 1 - 16																	
Active Logic 17 - 32																	
Dynamic/Backup																	

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence**
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Sequence - Page 1

Rings	Barrier 1				Barrier 2				Barrier 3				Barrier 4			
1	0	2	0	0	0	0	4	0	0	0	0	0	0	0	0	0
2	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Rings	Barrier 5				Barrier 6				Barrier 7				Barrier 8			
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Phase Directions

1		5		9		13	
2		6		10		14	
3		7		11		15	
4		8		12		16	

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 2

Plan 2

Coordination Plan # 2

Cycle length (0-999 sec)	75
Min Transition Cycle (0-999 sec)	55
Max Transition Cycle (0-999 sec)	85

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	60	0	0	0
Act Coord Phase Min Green (0-255)	0	0	0	0

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	43	0	32	0	43	0	0
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase	2	6														
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

Verify Plan Data

Options:

Split/Timing in percent?	N
*Permissive Mode (0-4)	0
Enable Transition Permissive Mode?	N
Adjust Non-Coordinated Splits?	Y
Cycle Once per Cycle Length?	Y

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
OverLap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Manual" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

	Vehicle		Pedestrian	
(0-255 sec)	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 3

Plan 3

Coordination Plan # 3

Cycle length (0-999 sec) 100
Min Transition Cycle (0-999 sec) 80
Max Transition Cycle (0-999 sec) 120

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	18	0	0	0
Act Coord Phase Min Green (0-255)	0	0	0	0

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	50	0	50	0	50	0	0
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase	2	6														
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

Verify Plan Data

Options:

Split/Timing in percent? N
*Permissive Mode (0-4) 0
Enable Transition Permissive Mode? N
Adjust Non-Coordinated Splits? Y
Cycle Once per Cycle Length? Y

Active Pages:

Phase Sequence Page (1-12) 1
Phase Timing Page (1-4) 2
Phase Control Page (1-4) 1
OverLap Control Page (1-4) 1
Input Page (1-4) 1
Output Page (1-4) 1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

(0-255 sec)	Vehicle		Pedestrian	
	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

Scheduling - Event 1-100

[illegible]

2 PHASE
PRETIMED
(CITY SIGNAL SYSTEM)

NOTES

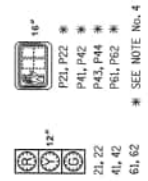
1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
2. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red. Program pedestrian heads to flash when the flashing "Don't Walk" time only.
3. Pavement markings are existing. Clearance interval timings may be adjusted incrementally until required values are reached.
4. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

TABLE OF OPERATION

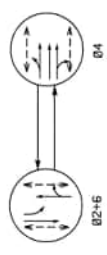
SIGNAL FACE	PHASE
21, 22	GRY
41, 42	GRY
61, 62	GRY
P41, P42	WDM
P43, P44	WDM
P61, P62	WDM

W: WALK
DW: DON'T WALK
DK: DARK

SIGNAL FACE I.D.



PHASING DIAGRAM



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

2070L TIMING CHART

FEATURE	2	4	4
Min Green 1 *	35	25	35
Extension 1 *	-	-	-
Min Green 1 *	35	25	35
Yellow Clearance	3.0	3.0	3.0
Red Clearance	2.6	2.6	2.6
Walk 1 *	25	15	25
Don't Walk 1	10	10	10
Second Per Activation *	-	-	-
Max Variable Initial *	-	-	-
Time To Redout *	-	-	-
Minimum Gap	-	-	-
Redout Mode	-	-	-
Vehicle Call Memory	-	-	-
Dead Entry	-	-	-
Intersection Gap	-	-	-

* These values may be field adjusted.

2-1 - Phase Control
2-2 - Dynamic/Backup Control Functions
3 - Phase Timing
4 - Phase Sequence
5 - Inputs
6-1 - Output Assignments
6-2 - Output Beacon Settings
6-3 - Logical I/O Processor
7-1 - Vehicle Detector Assignments
7-2 - Pedestrian Detector Assignments
7-3 - General Vehicle Detector Settings
8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
9 - Coordination
A-1 - Standard Preemptions
B - Scheduling
C - User Profiles
D-1 - Set Clock, D-2 - General Comm Config
D-3 - Comm Port Configuration
D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Control - Page 1

Page 1 | Page 2 | Page 3 | Page 4

Time Min 2	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		
Time Extension 2			
Time Max 2			
Soft Recall			
Minimum Recall	2 6		
Maximum Recall 1	2 4 6		
Maximum Recall 2			
Call Non-Act 1			
Call Non-Act 2			
Omit Phase			
Dual Entry			
No Skip			
Added Extension			
Simultaneous Gap	1 2 3 4 5 6 7 8		
Guaranteed Passage			
Green Interval Flash			
Fast Green Flash			
Red Rest			
Backup Protection			
Inhibit Reservice			
Inhibit Max (Coord)	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		
Inhibit Coordination			
Dynamic Max/Max3			
Variable Initial			
Gap Reduction			
Omit Pedestrian			
Time Walk 2			
Time FDWalk 2			
Pad Soft Recall			1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Pad Recall		2 4 6	
Rest In Walk		2 4 6	
Modified Rest In Walk			
Pad Reservice			
Flashing Walk			
Advanced Walk			
Delayed Walk			
Pad Yellow Clear			
Pad Red Clear			
Startup In Green		2 6	
Startup In Yellow			
Startup Red Clear			
First Phases			
Startup Calls			
Startup Ped Calls		2 4 6	
Flash Entry		2 6	
Yellow Flash			
Wag Phases		1 3 6 8	
Wag Overlaps			
Manual Control		1 2 3 4 5 6 7 8	
Manual Control Omit Ped			
Red Detector Lock			
Yellow Detector Lock			
Active Logic 1 - 16			
Active Logic 17 - 32			
Dynamic/Backup			

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
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- 4 - Phase Sequence**
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- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Sequence - Page 1

Page 1 | Page 2 | Page 3 | Page 4 | Page 5 | Page 6 | Page 7 | Page 8 | Page 9 | Page 10 | Page 11 | Page 12

Rings	Barrier 1				Barrier 2				Barrier 3				Barrier 4			
1	0	2	0	0	0	0	4	0	0	0	0	0	0	0	0	0
2	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Rings	Barrier 5				Barrier 6				Barrier 7				Barrier 8			
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Phase Directions

1		5		9		13	
2		6		10		14	
3		7		11		15	
4		8		12		16	

2-1 - Phase Control
2-2 - Dynamic/Backup Control Functions
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Phase Timing - Page 1

Phase Timing Elements	Phase														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Minimum Green 1	0	35	0	25	0	35	0	0	0	0	0	0	0	0	0
Minimum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-service Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension 1 (Gap 1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension 2 (Gap 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Green 1	0	35	0	25	0	35	0	0	0	0	0	0	0	0	0
Maximum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance	2.0	2.6	2.0	2.6	2.0	2.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1	0	25	0	15	0	25	0	0	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dont Walk 1	0	10	0	10	0	10	0	0	0	0	0	0	0	0	0
Dont Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Advance Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Dont Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max / Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seconds / Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Variable Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Air Flash Frequency (0-25.5 Hz)	1.0														

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Timing - Page 2

Page 1 Page 2 Page 3 Page 4

Phase Timing Elements	Phase														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Minimum Green 1	0	10	0	7	0	10	0	0	0	0	0	0	0	0	0
Minimum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-service Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension 1 (Gap 1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension 2 (Gap 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Green 1	0	35	0	25	0	35	0	0	0	0	0	0	0	0	0
Maximum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance	2.0	2.6	2.0	2.6	2.0	2.6	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1	0	4	0	5	0	4	0	0	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dont Walk 1	0	10	0	10	0	12	0	0	0	0	0	0	0	0	0
Dont Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Advance Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Dont Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max / Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seconds / Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Variable Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Air Flash Frequency (0-25.5 Hz)	1.0														

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 2

Plan 2

Coordination Plan # 2

Cycle length (0-999 sec) 75
Min Transition Cycle (0-999 sec) 55
Max Transition Cycle (0-999 sec) 95

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	60	0	0	0
Act Coord Phase Min Green (0-255)	0	0	0	0

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	43	0	32	0	43	0	0
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase	2	6														
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

Verify Plan Data

Options:

Split/Timing in percent? N
*Permissive Mode (0-4) 0
Enable Transition Permissive Mode? N
Adjust Non-Coordinated Splits? Y
Cycle Once per Cycle Length? Y

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
OverLap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

	Vehicle		Pedestrian	
(0-255 sec)	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 3

Plan 3

Coordination Plan # 3

Cycle length (0-999 sec) 100
Min Transition Cycle (0-999 sec) 80
Max Transition Cycle (0-999 sec) 120

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	13	0	0	0
Act Coord Phase Min Green (0-255)	0	0	0	0

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	50	0	50	0	50	0	0
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase	2	6														
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

Verify Plan Data

Options:

Split/Timing in percent?	N
*Permissive Mode (0-4)	0
Enable Transition Permissive Mode?	N
Adjust Non-Coordinated Splits?	Y
Cycle Once per Cycle Length?	Y

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
OverLap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

	Vehicle		Pedestrian	
(0-255 sec)	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

100

2 PHASE PRETIMED (CITY SIGNAL SYSTEM)

NOTES

1. Refer to "Roadway Standard Drawings NCDDT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
2. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
3. Pedestrian markings are existing. Crosswalk painted markings may be adjusted incrementally until required values are reached.
4. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

LEGEND

PROPOSED	EXISTING
Traffic Signal Head	N/A
Modified Signal Head	N/A
Signal Pole with Guy	Signal Pole with Guy
Signal Pole with Sidewalk Guy	Signal Pole with Sidewalk Guy
Inductive Loop Detector	Inductive Loop Detector
Controller & Cabinet	Controller & Cabinet
Junction Box	Junction Box
2-in Underground Conduit	2-in Underground Conduit
Right of Way	Right of Way
Directional Arrow	Directional Arrow
Pavement Marking Arrow	Pavement Marking Arrow
Metal Pole with Mast Arm	Metal Pole with Mast Arm
Curved Left Arrow "Only"	Curved Left Arrow "Only"
Sign (R3-SL)	Sign (R3-SL)

TABLE OF OPERATION

SIGNAL FACE	PHASE	
	WALK	DRK
21, 22	G R Y	
41, 42	R G Y	
61, 62	G R Y	
81, 82	R G Y	
P21, P22	W	DRK
P41, P42	W	DRK
P61, P62	W	DRK
P81, P82	W	DRK

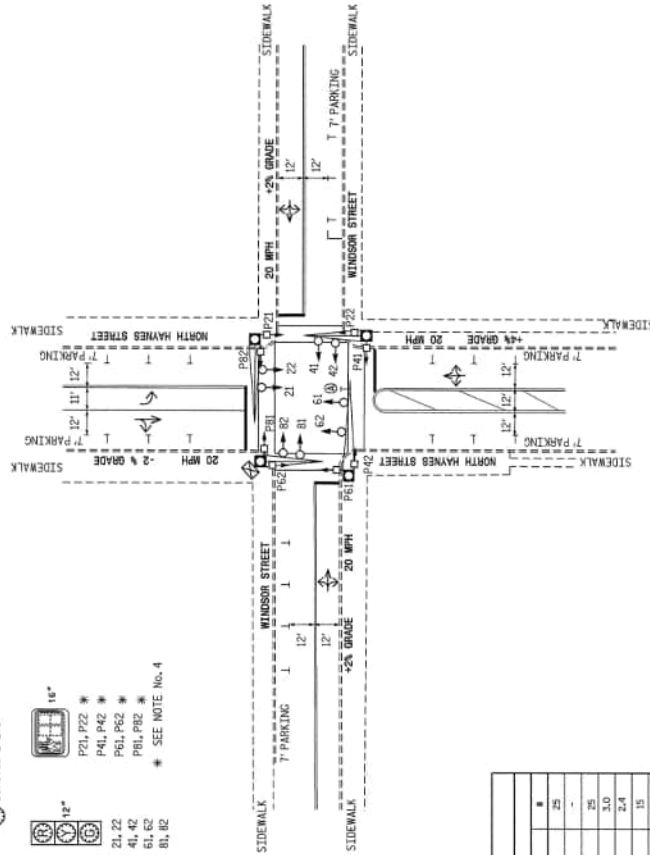
W: WALK
DRK: DON'T WALK
DRK: DARK

SIGNAL FACE I.D.

16"
12"

P21, P22 *	P41, P42 *	P61, P62 *	P81, P82 *
21, 22	41, 42	61, 62	81, 82

* SEE NOTE No. 4

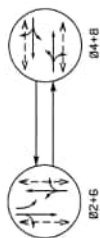


2070L TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green 1"	35	25	35	25
Extension 1"	-	-	-	-
Min Green 1"	35	25	35	25
Yellow Clearance	3.0	3.0	3.0	3.0
Red Clearance	1.5	2.4	1.8	2.4
Walk 1"	50	15	29	15
Don't Walk 1"	5	10	6	10
Summed Per Attention *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Redden *	-	-	-	-
Minimum Gap	-	-	-	-
Roundabouts	-	-	-	-
Vehicle Call Memory	-	-	-	-
Event Entry	-	-	-	-
Interference Gap	-	-	-	-

* These values may be field adjusted.

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDTECTED MOVEMENT (OVERLAP)
- UNDTECTED MOVEMENT
- PEDESTRIAN MOVEMENT

SIGNAL UPGRADE

**NORTH HAYNES STREET
AT
WINDSOR STREET**

DIVISION 10 UNION COUNTY
PLAN DATE: JULY 2007
DESIGNED BY: R. HAYES
DRAWN BY: M. BAZZANI
REVISIONS: 10-0317

SEAL
CAROLYN D. HAYES
SEAL
M. BAZZANI
10-0317

Phase Control - Page 1

Page 1 Page 2 Page 3 Page 4

[illegible][illegible]

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

4 - Phase Sequence

- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
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Phase Sequence - Page 1

Rings	Barrier 1				Barrier 2				Barrier 3				Barrier 4			
1	0	2	0	0	0	0	4	0	0	0	0	0	0	0	0	0
2	0	6	0	0	0	0	8	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Rings	Barrier 5				Barrier 6				Barrier 7				Barrier 8			
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Phase Directions

1		5		9		13	
2		6		10		14	
3		7		11		15	
4		8		12		16	

Phase Timing Elements

[illegible]

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
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- 7-3 - General Vehicle Detector Settings
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- 9 - Coordination
- A-1 - Standard Preemptions
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- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 2

Plan 2

Coordination Plan # 2

Cycle length (0-999 sec)	75
Min Transition Cycle (0-999 sec)	55
Max Transition Cycle (0-999 sec)	95

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	56	0	0	0
Act Coord Phase Min Green (0-255)	0	0	0	0

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	48	0	27	0	48	0	27
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase	2	6														
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

Verify Plan Data

Options:

Split/Timing in percent?	N
*Permissive Mode (0-4)	0
Enable Transition Permissive Mode?	N
Adjust Non-Coordinated Splits?	Y
Cycle Once per Cycle Length?	Y

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
OverLap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

	Vehicle		Pedestrian	
(0-255 sec)	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
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- 9 - Coordination
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- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 3

Plan 3

Coordination Plan # 3

Cycle length (0-999 sec) 100
Min Transition Cycle (0-999 sec) 80
Max Transition Cycle (0-999 sec) 120

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	14	0	0	0
Act Coord Phase Min Green (0-255)	0	0	0	0

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	65	0	35	0	65	0	35
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase	2	6														
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

Verify Plan Data

Options:

Split/Timing in percent?	N
*Permissive Mode (0-4)	0
Enable Transition Permissive Mode?	N
Adjust Non-Coordinated Splits?	Y
Cycle Once per Cycle Length?	Y

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
Overlap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

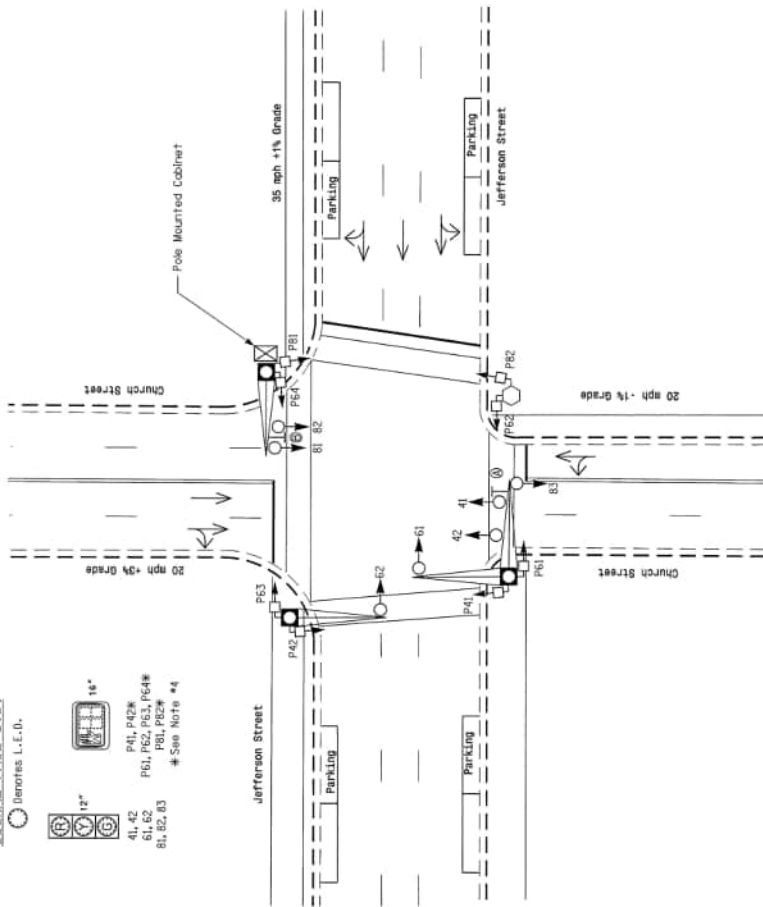
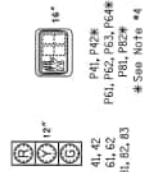
Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

	Vehicle		Pedestrian	
(0-255 sec)	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

W - Walk
DW - Don't + Walk
DK - Dark

○ Denotes L.E.O.



1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
4. Program pedestrian signal to countdown the flashing "Don't Walk" time only.
5. Pavement markings are existing.
6. Clearance interval timings may be adjusted incrementally until required values are achieved.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PROPOSED	EXISTING

FEATURE	2070L TIMING CHART		
	PHASE		
	4	6	8
Mile/Gallon 1 *	25	35	25
Extension 1 *	-	-	-
Mile/Gallon 1 *	35	35	35
Yellow Clearance	3.0	3.0	2.5
Red Clearance	2.4	2.9	2.8
Work 1 *	5	5	5
Don't Walk 1	12	16	12
Second Per Activation *	-	-	-
Alarm Visible Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Round Needs	PERMANENT	PERMANENT	PERMANENT
Vehicle Call Memory	-	-	-
Dead Entry	-	-	-
Minimum Gap	-	-	-

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

Signal Upgrade

			
Prepared in the Office of the Secretary of the Commonwealth of Massachusetts		Prepared in the Office of the Secretary of the Commonwealth of Massachusetts	
Jefferson Street at Church Street		Division 10 Union County Warren	
TAX MAP INCORPORATED IN EXISTING	JULY 2007 MAPS EXISTING	RECORDED IN: BOOKED IN: INDEXED IN: INDEXED IN:	B. BILLING B. BILLING B. BILLING B. BILLING
0		20	
SCALE		1" = 20'	

- 21 - Phase Control
- 22 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvt. 8-2 - Pedestrian Dvt Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Rings	Barrier 1	Barrier 2	Barrier 3	Barrier 4
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0

Rings	Barrier 5	Barrier 6	Barrier 7	Barrier 8
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0

Phase Directions

1	5	9	13
2	6	10	14
3	7	11	15
4	8	12	16

- 21 - Phase Control
- 22 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 61 - Output Assignments
- 62 - Output Beacon Settings
- 63 - Logical I/O Processor
- 71 - Vehicle Detector Assignments
- 72 - Pedestrian Detector Assignments
- 73 - General Vehicle Detector Settings
- 81 - Vehicle Ovl, 82 - Pedestrian Ovl Settings
- 9 - Coordination
- A1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Page 1 | Page 2 | Page 3 | Page 4 |

Phase Timing Elements	Phase															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Minimum Green 1	0	0	0	10	0	10	0	10	0	0	0	0	0	0	0	0
Minimum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-service Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension 1 (Gap 1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension 2 (Gap 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Green 1	0	0	0	25	0	35	0	25	0	0	0	0	0	0	0	0
Maximum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	4.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance	2.0	2.0	2.0	2.4	2.0	2.9	2.0	2.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1	0	0	0	5	0	5	0	5	0	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dont Walk 1	0	0	0	12	0	16	0	12	0	0	0	0	0	0	0	0
Dont Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Advance Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Dont Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max / Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seconds / Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Variable Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
At Flash Frequency (0-25.5 Hz)	1.0															

- 21 - Phase Control
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- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl. 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Page 1 Page 2 Page 3 Page 4

Phase Timing Elements	Phase															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Minimum Green 1	0	0	0	7	0	10	0	7	0	0	0	0	0	0	0	0
Minimum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-service Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension 1 (Gap 1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension 2 (Gap 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Green 1	0	0	0	25	0	35	0	25	0	0	0	0	0	0	0	0
Maximum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	4.0	4.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance	2.0	2.0	2.0	2.4	2.0	2.9	2.0	2.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1	0	0	0	5	0	5	0	5	0	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Don't Walk 1	0	0	0	12	0	16	0	12	0	0	0	0	0	0	0	0
Don't Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Advance Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Don't Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max / Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seconds / Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Variable Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All Flash Frequency (0-25.5 Hz)	1.0															

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle DVI, 8-2 - Pedestrian DVI Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
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- D-4 - Logging Controls, D-5 - Conflict Monitor

Plan 2

Coordination Plan # 2

Cycle length (0-999 sec) 75
Min Transition Cycle (0-999 sec) 75
Max Transition Cycle (0-999 sec) 110

Offset # or Ring:

Offsets (0-999 sec) 1 2 3 4
Act Coord Phase Min Green 16 0 0 0
(0-255) 0 0 0 0

Splits (0-255 sec)

Phase 1 2 3 4 5 6 7 8
Split 0 0 0 27 0 40 0 27
Phase 9 10 11 12 13 14 15 16
Split 0 0 0 0 0 0 0 0

Phase/Function Settings:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Coordinated Phase
Flas Force Offs
Hold To Force Off
Hi Priority Ped
DynamicBackup

Verify Plan Data

Options:

Split/Timing in percent? N
Permissive Mode (0-4) 0 10 = Auto
Enable Transition Permissive Mode? N 1 = Open
Adjust Non-Coordinated Splits? Y 2 = Manual
Cycle Once per Cycle Length? Y 3 = Window
4 = Walk

Active Pages:

Phase Sequence Page (1-12) 1
Phase Timing Page (1-4) 2
Phase Control Page (1-4) 1
Overlap Control Page (1-4) 1
Input Page (1-4) 1
Output Page (1-4) 1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected
Manual Perm 1 End Point (0-255 sec) 0
Manual Perm 2 Start Point (0-255 sec) 0
Manual Perm 2 End Point (0-255 sec) 0

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

(0-255 sec)	Vehicle		Pedestrian	
	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0
Phase 14	0	0	0	0
Phase 15	0	0	0	0
Phase 16	0	0	0	0

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 3

Plan 3

Coordination Plan # 3

Cycle length (0-999 sec) 100
Min Transition Cycle (0-999 sec) 80
Max Transition Cycle (0-999 sec) 120

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	50	0	0	0
Act Coord Phase Min Green (0-255)	0	0	0	0

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	0	0	0	35	0	65	0	35
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Verify Plan Data

Phase/Function Settings:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase						6										
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

Options:

Split/Timing in percent?	N
*Permissive Mode (0-4)	0
Enable Transition Permissive Mode?	N
Adjust Non-Coordinated Splits?	Y
Cycle Once per Cycle Length?	Y

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
OverLap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

	Vehicle		Pedestrian	
(0-255 sec)	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

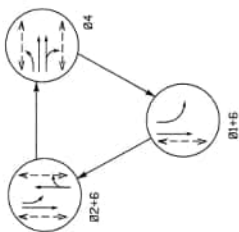
- 2.1 - Phase Control
- 2.2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6.1 - Output Assignments
- 6.2 - Output Beacon Settings
- 6.3 - Logical I/O Processor
- 7.1 - Vehicle Detector Assignments
- 7.2 - Pedestrian Detector Assignments
- 7.3 - General Vehicle Detector Settings
- 8.1 - Vehicle Ovl. 8.2 - Pedestrian Ovl Settings
- 9 - Coordination
- A.1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D.1 - Set Clock, D.2 - General Comm Config
- D.3 - Comm Port Configuration
- D.4 - Logging Controls, D.5 - Conflict Monitor

Scheduling - Event 1-100

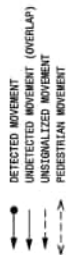
Events #1 - 100 | Events #101 - 200

Event #	Event Type	Event Details	Pri LMH	Start Date DD MM	Stop Date DD MM	Start Time HH MM	Stop Time HH MM	DOW Enabled	Del When Done	Event Groups Assigned
1	Coordination Plan	2-1	L	1 1	12 31	0 0	24 0 0	1 2 3 4 5 6 7	N	1
2	Coordination Plan	3-1	L	1 1	12 31	14 0	19 0 0	2 3 4 5 6	N	1
3	None									
4	Coordination Plan	Free	H	11 28	12 1	0 0	24 0 0	1 2 3 4 5 6 7	N	1
5	Coordination Plan	Free	H	12 24	12 26	0 0	24 0 0	1 2 3 4 5 6 7	N	1
6	Coordination Plan	Free	H	1 1	1 1	0 0	24 0 0	1 2 3 4 5 6 7	N	1
7	None									
8	None									
9	None									
10	None									
11	None									
12	None									
13	None									
14	None									
15	None									
16	None									
17	None									
18	None									
19	None									
20	None									
21	None									
22	None									
23	None									
24	None									
25	None									
26	None									

PHASING DIAGRAM



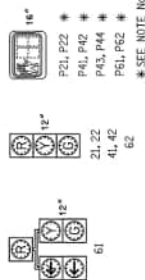
PHASING DIAGRAM DETECTION LEGEND



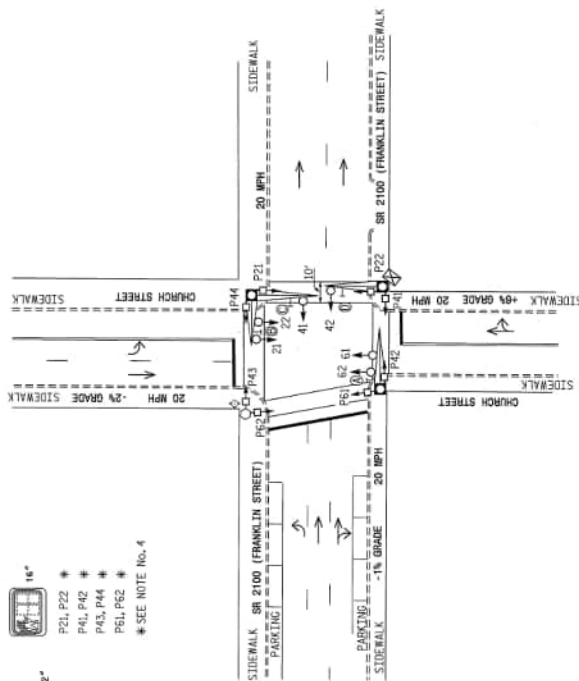
SIGNAL FACE	PHASE			
	1	2	3	4
21, 22	R	G	R	Y
41, 42	R	R	G	R
61	G	G	R	Y
21, 22	DW	W	DW	DRH
41, 42	DW	DRH	W	DW
61	DW	DRH	W	DW

SIGNAL FACE I.D.

Denotes L-E-D.



* SEE NOTE No. 4



FEATURE	PHASE			
	1	2	3	4
Max Green 1 *	15	35	25	35
Extension 1 *	-	-	-	-
Max Green 1 *	15	35	25	35
Yellow Clearance	3.0	3.0	3.0	3.0
Red Clearance	2.0	2.3	2.1	2.4
Walk 1 *	-	25	18	45
Don't Walk 1 *	-	10	7	10
Second Per Activation *	-	-	-	-
Max Vehicle Initial *	-	-	-	-
Time Before Induction *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	-	-	-	-
Vehicle Call Memory	-	-	-	-
Don't Walk	-	-	-	-
Stimulus Gap	-	-	-	-

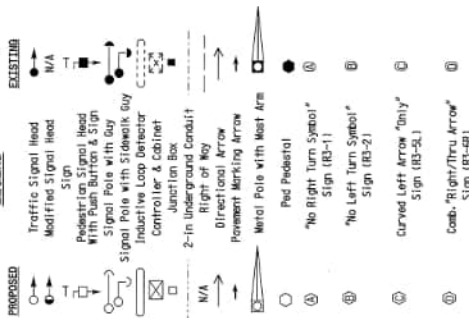
* These values may be field adjusted.

2070L TIMING CHART

3 PHASE PRETIMED (CITY SIGNAL SYSTEM)

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
2. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
3. Pavement markings are existing. Clearance interval timings may be adjusted incrementally until required values are reached.
4. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
5. Repaint stopbars and crosswalk as needed.

LEGEND



SIGNAL UPGRADE

SR 2100 (FRANKLIN STREET) AT CHURCH STREET		DIVISION 10 - NORTH COUNTY PLAN DATE: AUGUST 2007 PREPARED BY: MONTE BAZZARIE REVISION:	
SCALE: 0 30 1"=30'		NORTH	
10-10-2007		10-10-2007	

- 21 - Phase Control
- 22 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence**
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Ovl, 8-2 - Pedestrian Ovl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
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- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
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- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Sequence - Page 1

Rings	Barrier 1				Barrier 2				Barrier 3				Barrier 4			
1	1	2	0	0	0	0	4	0	0	0	0	0	0	0	0	0
2	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Rings	Barrier 5				Barrier 6				Barrier 7				Barrier 8			
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Phase Directions

1		5		9		13	
2		6		10		14	
3		7		11		15	
4		8		12		16	

- 21 - Phase Control
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Phase Timing - Page 1

Page 1 | Page 2 | Page 3 | Page 4

Phase Timing Elements	Phase														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Minimum Green 1	15	35	0	25	0	35	0	0	0	0	0	0	0	0	0
Minimum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-service Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension 1 (Gap 1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension 2 (Gap 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Green 1	15	35	0	25	0	35	0	0	0	0	0	0	0	0	0
Maximum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	3.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance	2.0	2.3	2.0	2.1	2.0	2.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1	0	25	0	18	0	25	0	0	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dont Walk 1	0	10	0	7	0	10	0	0	0	0	0	0	0	0	0
Dont Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Advance Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Dont Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max / Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seconds / Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Variable Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
At Flash Frequency (0-25.5 Hz)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1.0														

- 21 - Phase Control
- 22 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Ovl, 8-2 - Pedestrian Ovl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Phase Timing - Page 2

Page 1 Page 2 Page 3 Page 4

Phase Timing Elements	Phase														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Minimum Green 1	7	10	0	7	0	10	0	0	0	0	0	0	0	0	0
Minimum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Re-service Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extension 1 (Gap 1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension 2 (Gap 2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Green 1	15	35	0	25	0	35	0	0	0	0	0	0	0	0	0
Maximum Green 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Clearance	3.0	3.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance	2.0	2.3	2.0	2.1	2.0	2.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1	0	5	0	5	0	5	0	0	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dont Walk 1	0	10	0	7	0	10	0	0	0	0	0	0	0	0	0
Dont Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Advance Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk Delay Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alternate Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Dont Walk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternate Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max / Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dynamic Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Seconds / Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Variable Initial	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time Before Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
At Flash Frequency (0-25.5 Hz)	1.0														

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 2

Plan 2

Coordination Plan # 2

Cycle length (0-999 sec) 75
Min Transition Cycle (0-999 sec) 70
Max Transition Cycle (0-999 sec) 110

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	18	0	0	0
Act Coord Phase Min Green (0-255)	0	0	0	0

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	15	22	0	38	0	37	0	0
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coordinated Phase	2	6														
Float Force Offs																
Hold to Force Off																
Hi Priority Ped																
Dynamic/Backup																

Verify Plan Data

Options:

Split/Timing in percent? N
*Permissive Mode (0-4) 0 *0 = Auto
Enable Transition Permissive Mode? N 1 = Open
Adjust Non-Coordinated Splits? Y 2 = Manual
Cycle Once per Cycle Length? Y 3 = Window
4 = Walk

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
Overlap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

*Applies when "Manual" permissive is selected

(0-255 sec)	Vehicle		Pedestrian	
	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

- 2-1 - Phase Control
- 2-2 - Dynamic/Backup Control Functions
- 3 - Phase Timing
- 4 - Phase Sequence
- 5 - Inputs
- 6-1 - Output Assignments
- 6-2 - Output Beacon Settings
- 6-3 - Logical I/O Processor
- 7-1 - Vehicle Detector Assignments
- 7-2 - Pedestrian Detector Assignments
- 7-3 - General Vehicle Detector Settings
- 8-1 - Vehicle Dvl, 8-2 - Pedestrian Dvl Settings
- 9 - Coordination
- A-1 - Standard Preemptions
- B - Scheduling
- C - User Profiles
- D-1 - Set Clock, D-2 - General Comm Config
- D-3 - Comm Port Configuration
- D-4 - Logging Controls, D-5 - Conflict Monitor

Coordination - Plan 3

Plan 3

Coordination Plan # 3

Cycle length (0-999 sec)	100
Min Transition Cycle (0-999 sec)	70
Max Transition Cycle (0-999 sec)	110

Offset # or Ring:

	1	2	3	4
Offsets (0-999 sec)	69	0	0	0
Act Coord Phase Min Green	0	0	0	0

(0-255)

Splits (0-255 sec)

Phase	1	2	3	4	5	6	7	8
Split	15	25	0	60	0	40	0	0
Phase	9	10	11	12	13	14	15	16
Split	0	0	0	0	0	0	0	0

Phase/Function Settings:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Coordinated Phase	2	6
Float Force Offs		
Hold to Force Off		
Hi Priority Ped		
Dynamic/Backup		

Verify Plan Data

Options:

Split/Timing in percent?	N	N
*Permissive Mode (0-4)	0	*0 = Auto
Enable Transition Permissive Mode?	N	1 = Open
Adjust Non-Coordinated Splits?	Y	2 = Manual
Cycle Once per Cycle Length?	Y	3 = Window
		4 = Walk

Active Pages:

Phase Sequence Page (1-12)	1
Phase Timing Page (1-4)	2
Phase Control Page (1-4)	1
Overlap Control Page (1-4)	1
Input Page (1-4)	1
Output Page (1-4)	1

Global Manual Permissive windows:

*Applies when "Window" permissive is selected

Manual Permissives by Phase:

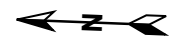
*Applies when "Manual" permissive is selected

(0-255 sec)	Vehicle		Pedestrian	
	Start	Stop	Start	Stop
Phase 1	0	0	0	0
Phase 2	0	0	0	0
Phase 3	0	0	0	0
Phase 4	0	0	0	0
Phase 5	0	0	0	0
Phase 6	0	0	0	0
Phase 7	0	0	0	0
Phase 8	0	0	0	0
Phase 9	0	0	0	0
Phase 10	0	0	0	0
Phase 11	0	0	0	0
Phase 12	0	0	0	0
Phase 13	0	0	0	0

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APPENDIX D

TWO-WAY STREETS VOLUME REROUTING



LEGEND

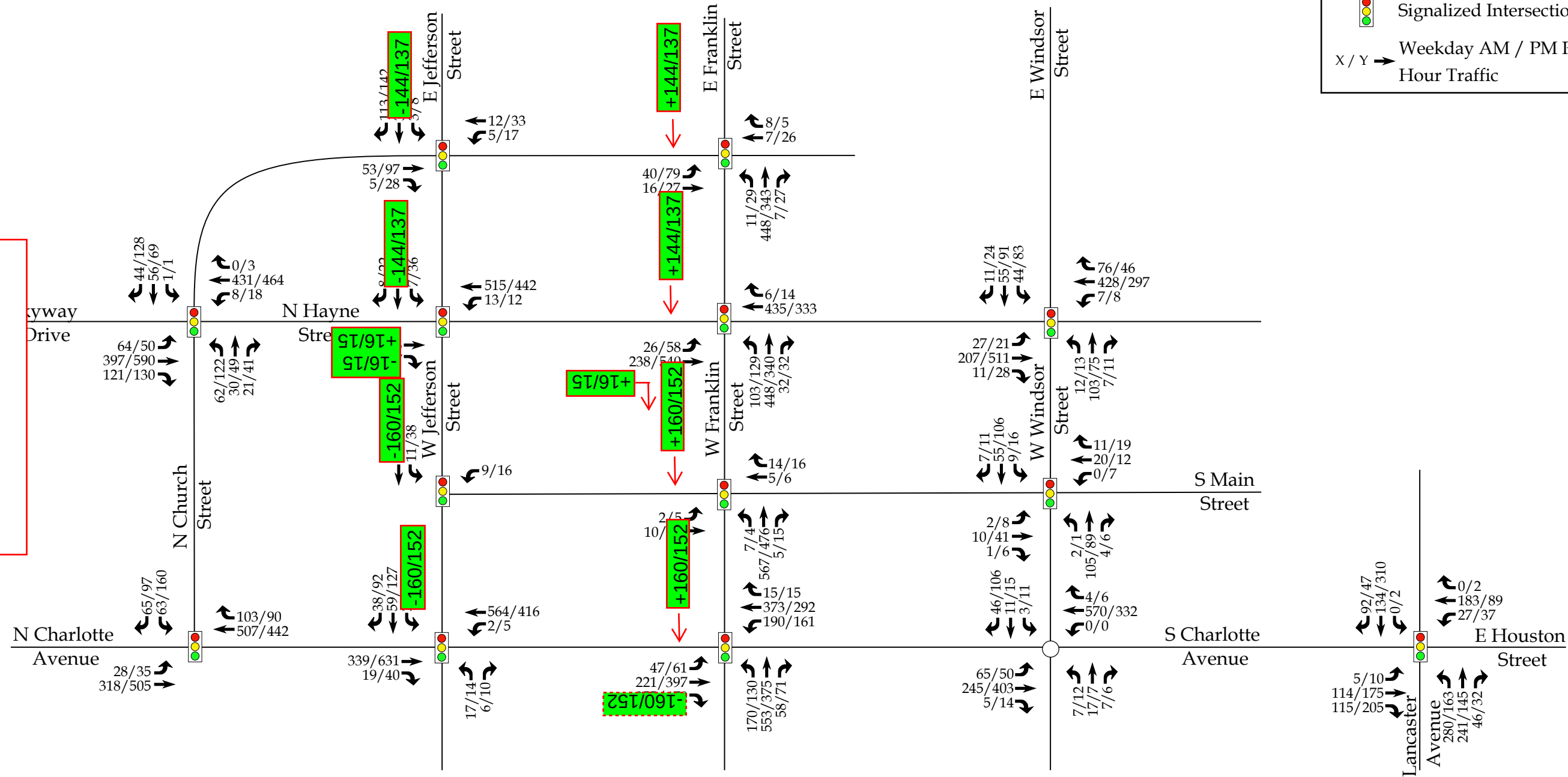
Unsignalized Intersection

Signalized Intersection

X / Y

Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



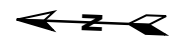
Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.



Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale Figure 2



LEGEND

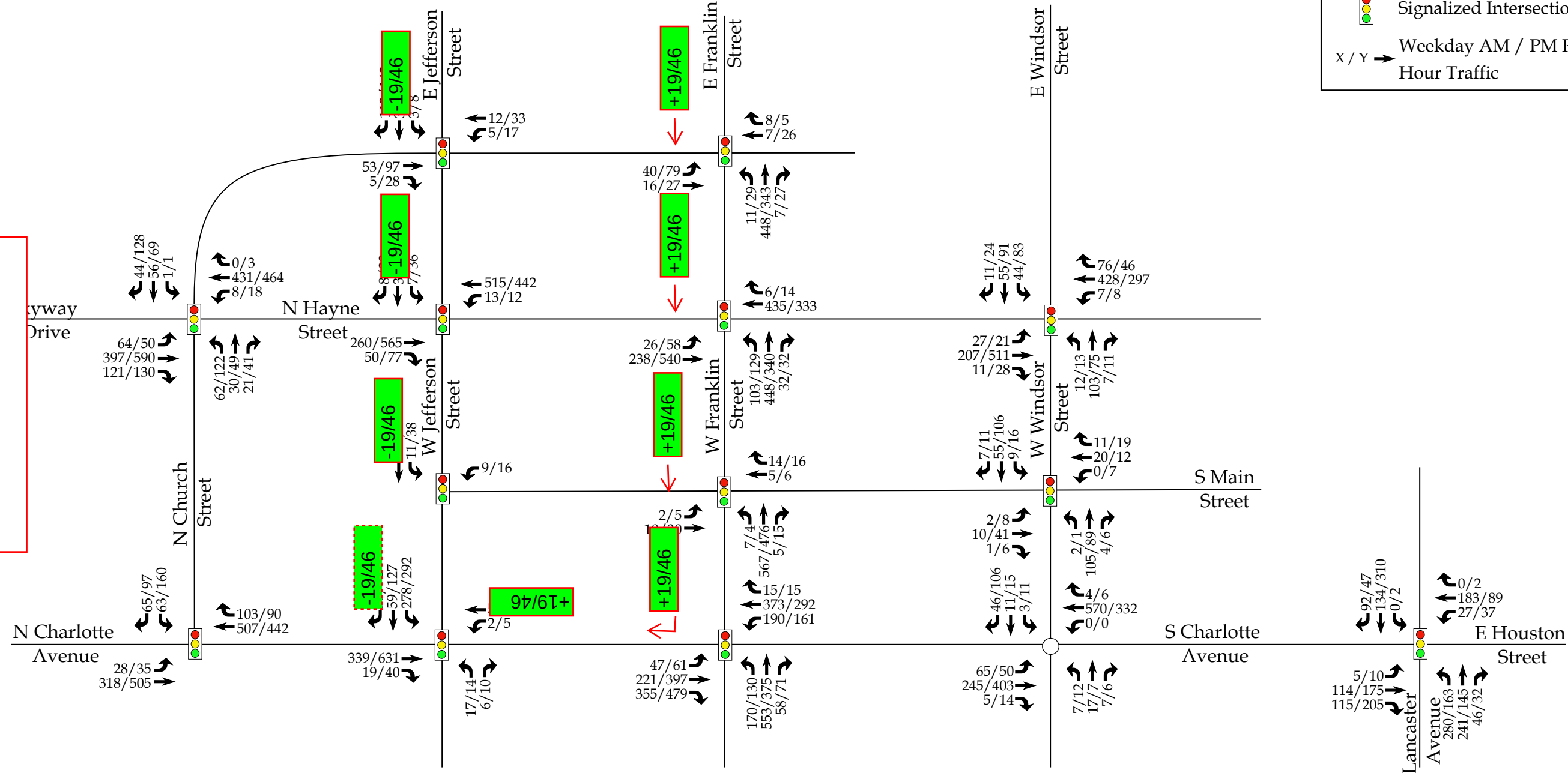
Unsignalized Intersection

Signalized Intersection

X / Y →

Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

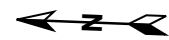


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



LEGEND

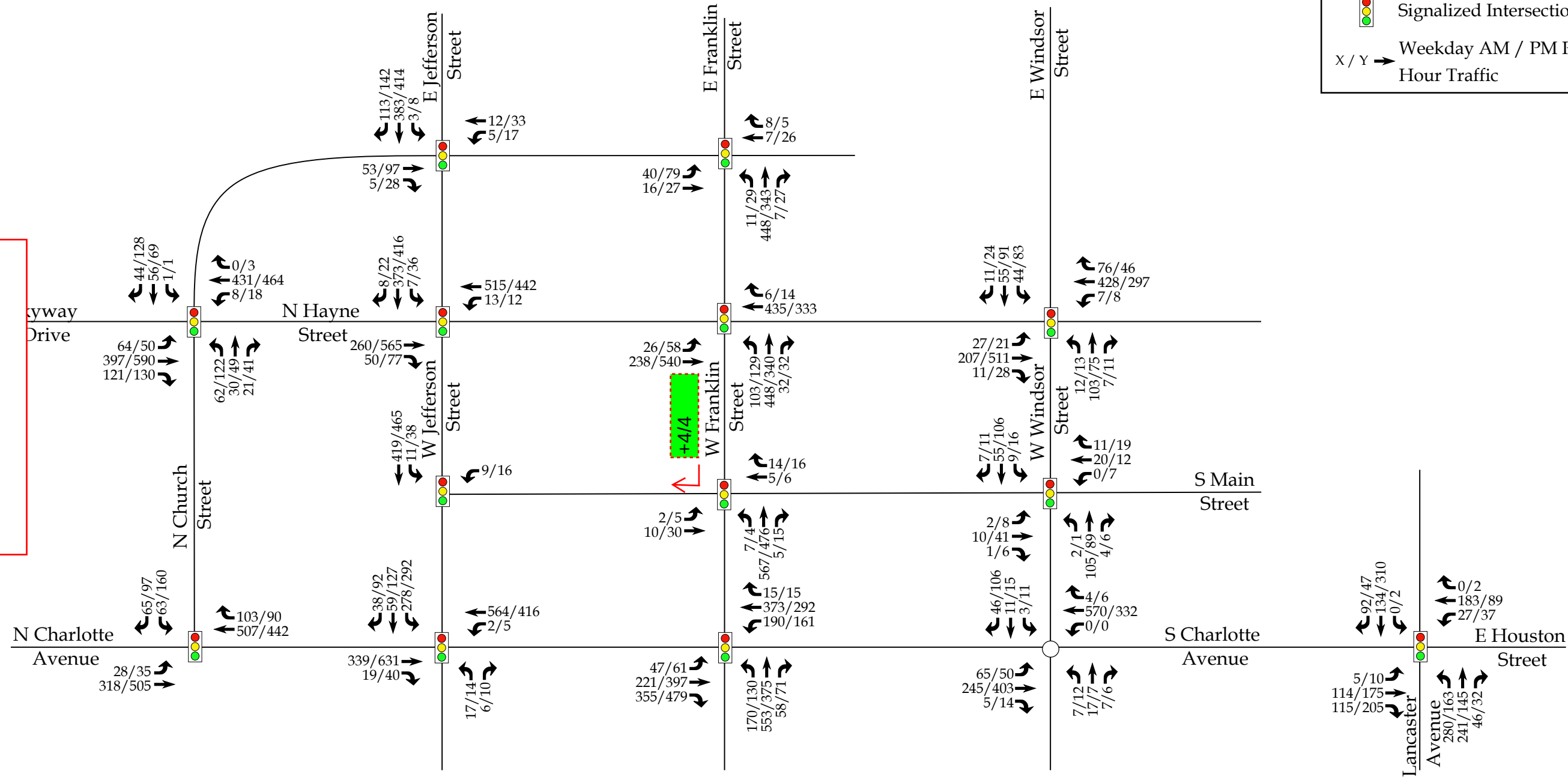
Unsignalized Intersection

Signalized Intersection

X / Y

Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

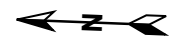


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



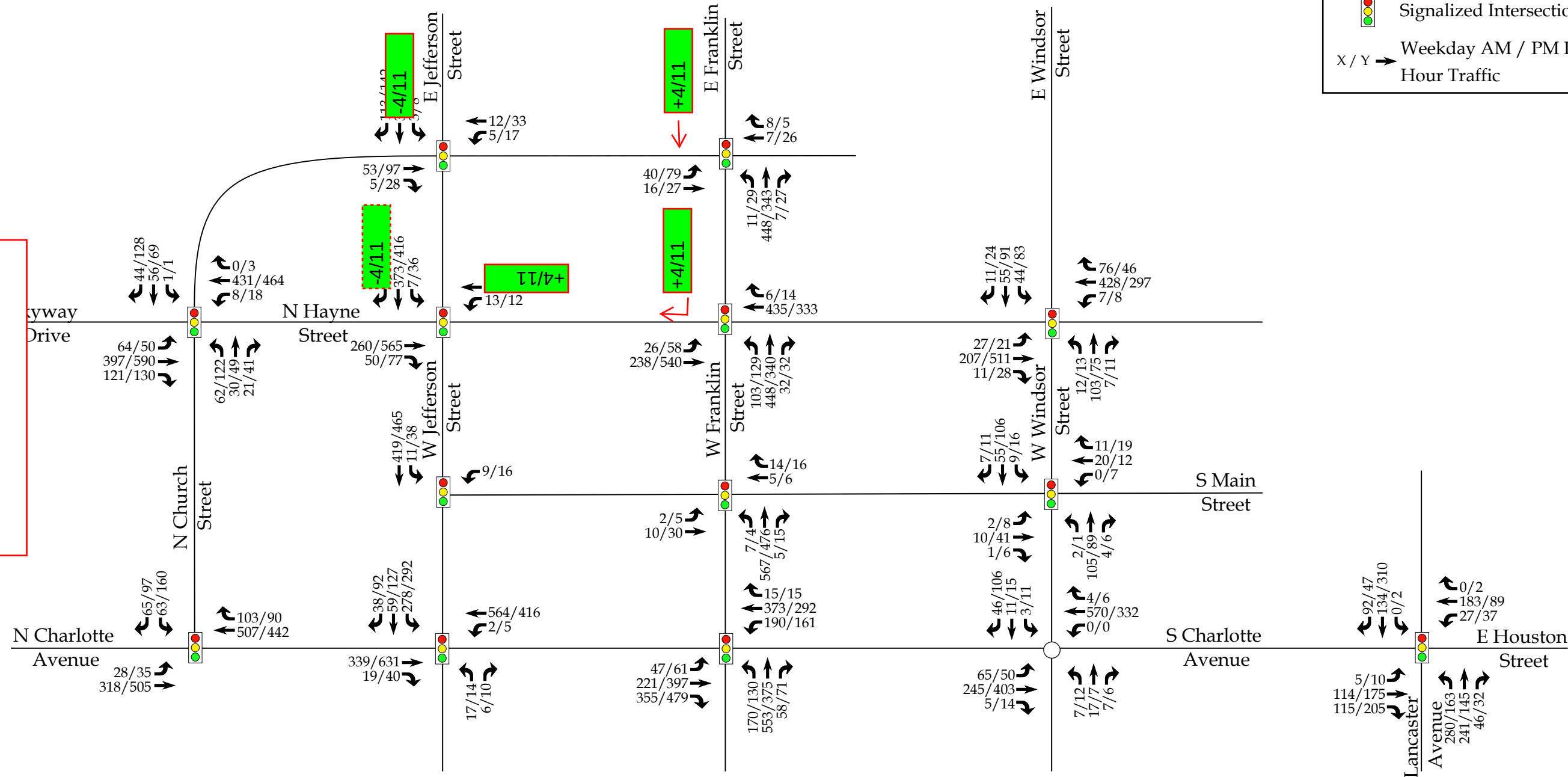
LEGEND

Unsignalized Intersection

Signalized Intersection

X / Y → Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



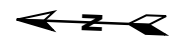
Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.



Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale Figure 2



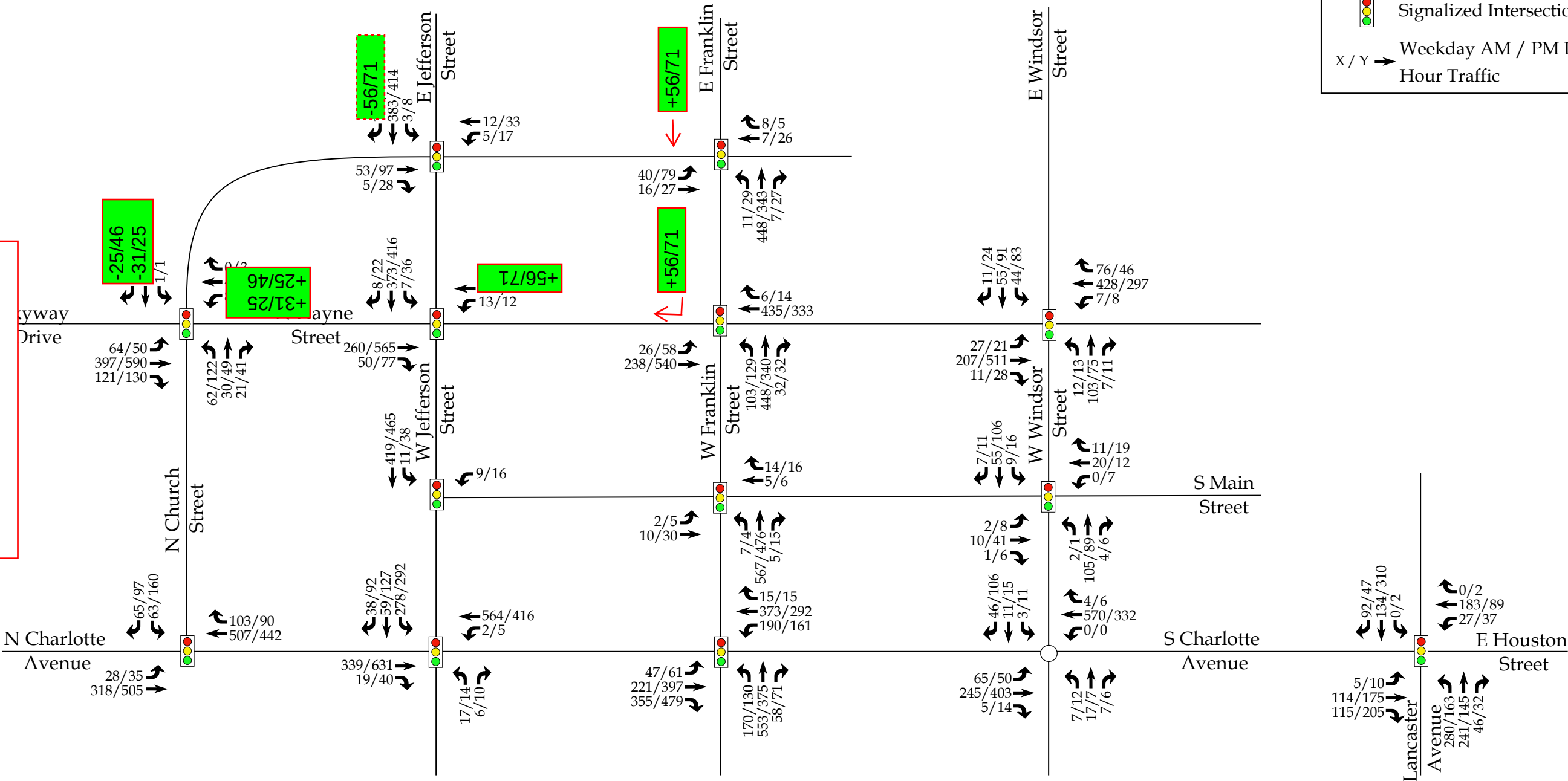
LEGEND

Unsignalized Intersection

Signalized Intersection

X / Y → Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

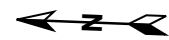


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



LEGEND

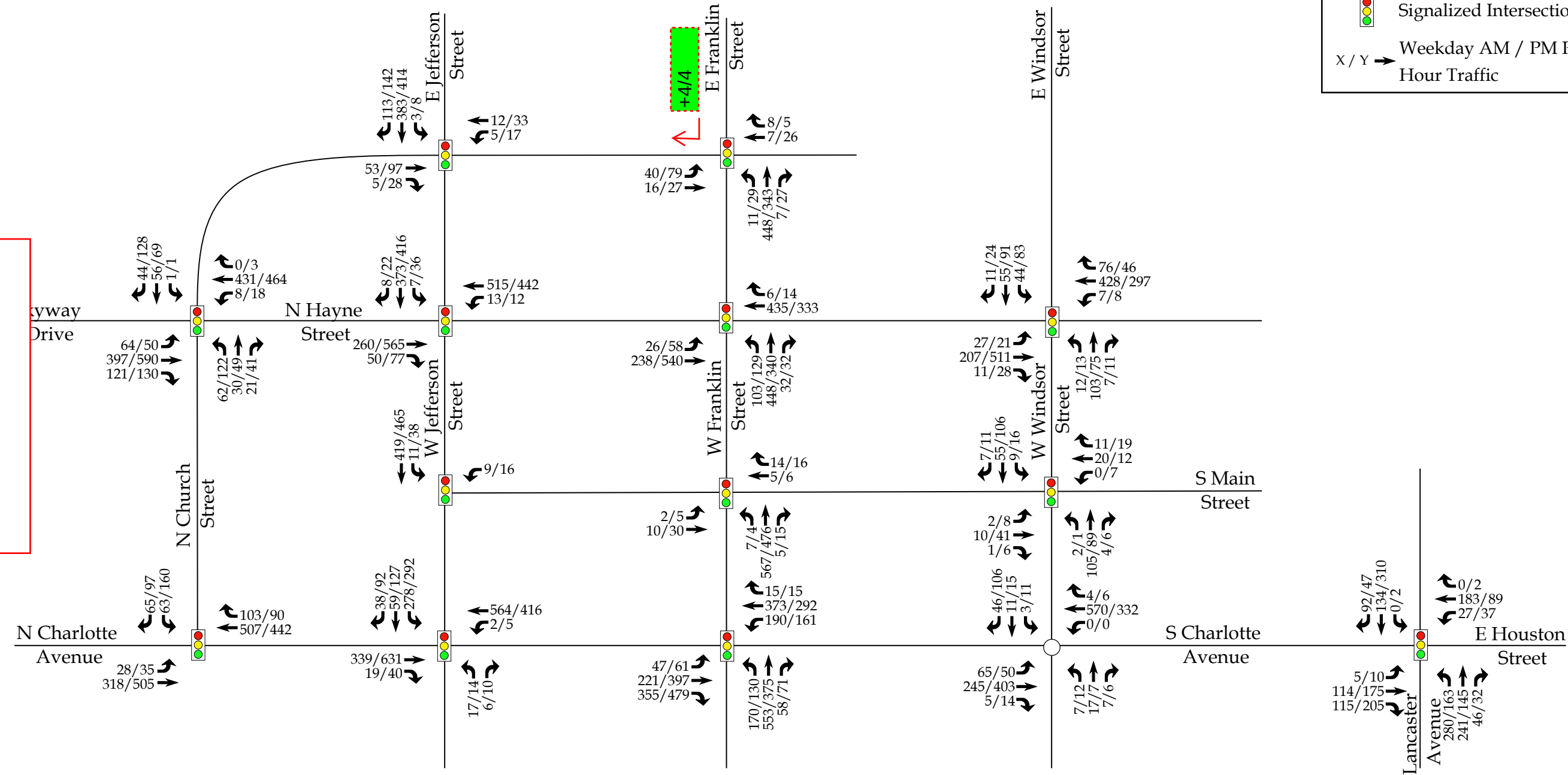
Unsignalized Intersection

Signalized Intersection

X / Y

Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



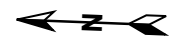
Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.



Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale Figure 2



LEGEND

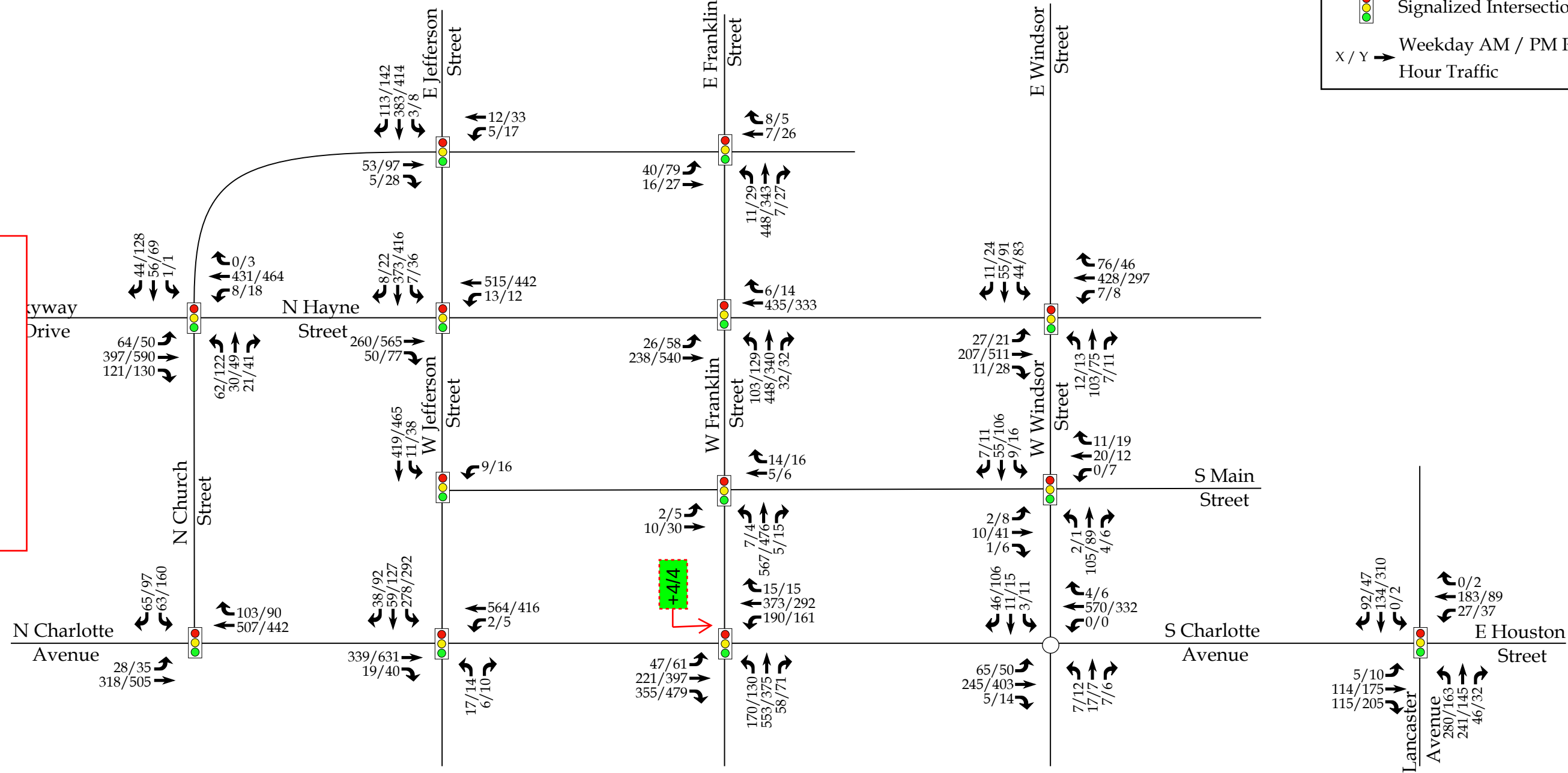
Unsignalized Intersection

Signalized Intersection

X / Y

Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



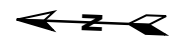
Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.



Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale Figure 2



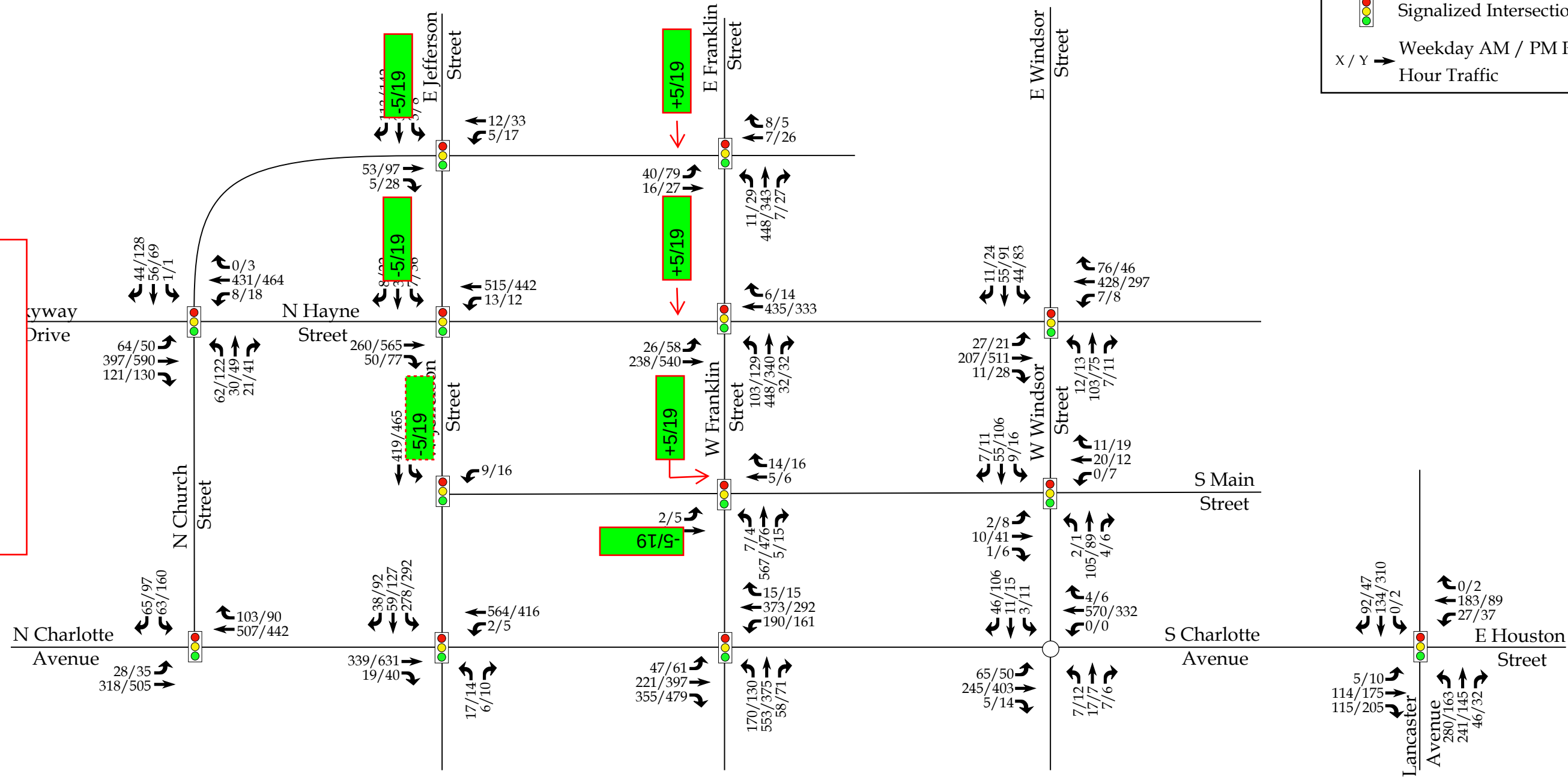
LEGEND

Unsignalized Intersection

Signalized Intersection

X / Y → Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

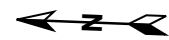


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



LEGEND

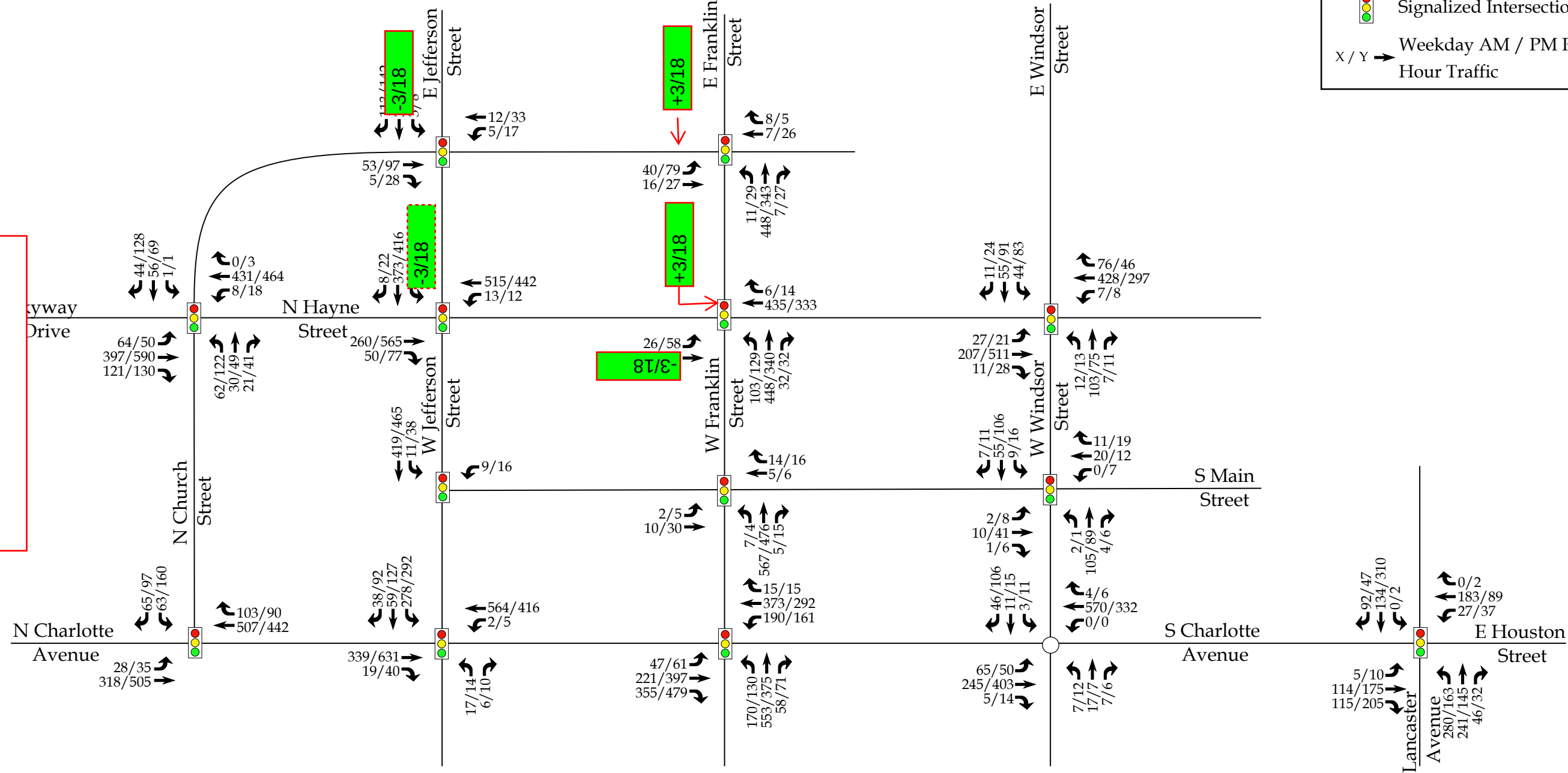
Unsignalized Intersection

Signalized Intersection

X / Y →

Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



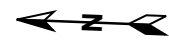
Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.



Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale Figure 2



LEGEND

Unsignalized Intersection

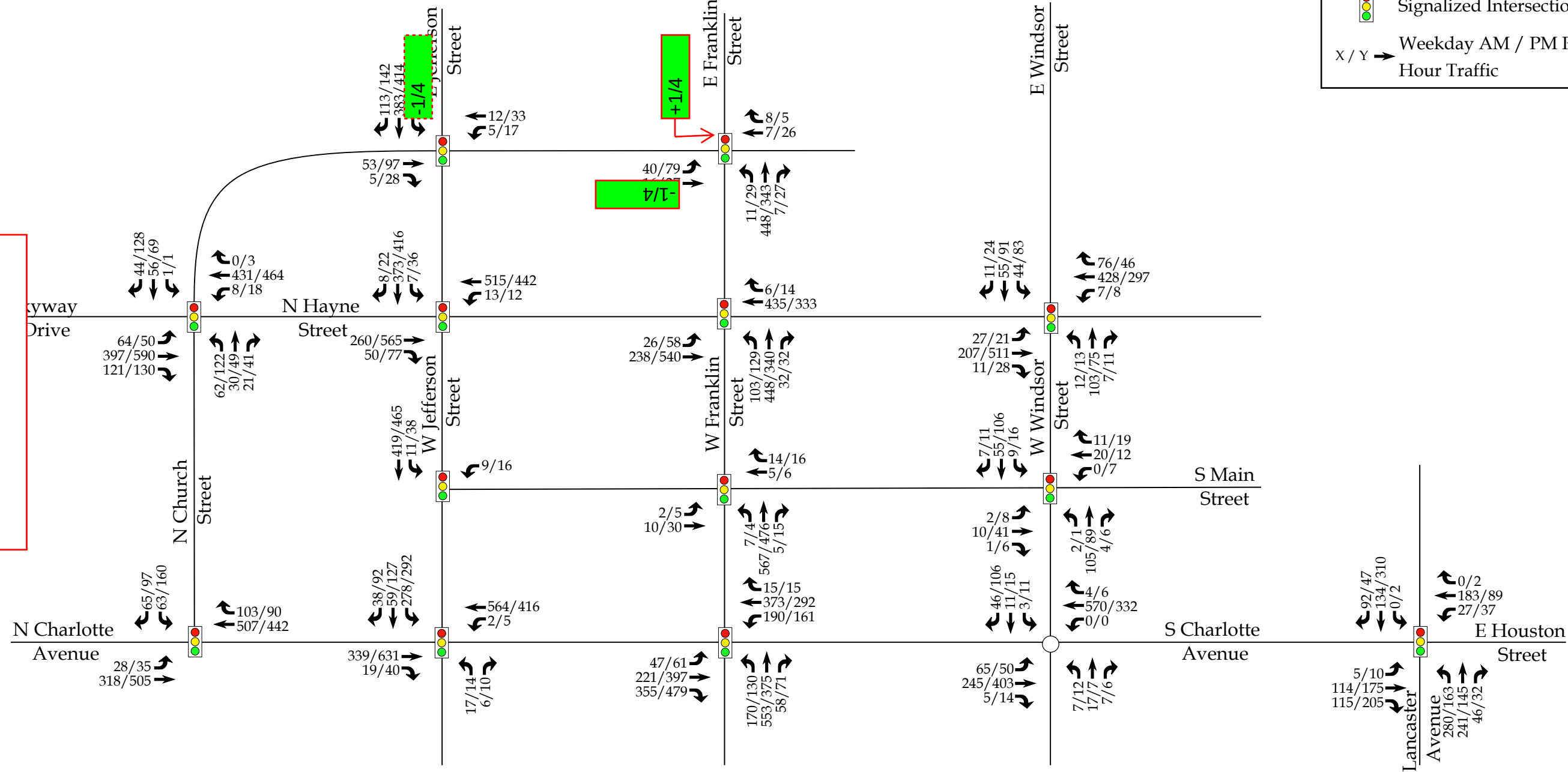
Signalized Intersection

X / Y

→

Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



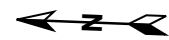
Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.



Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale Figure 2



LEGEND

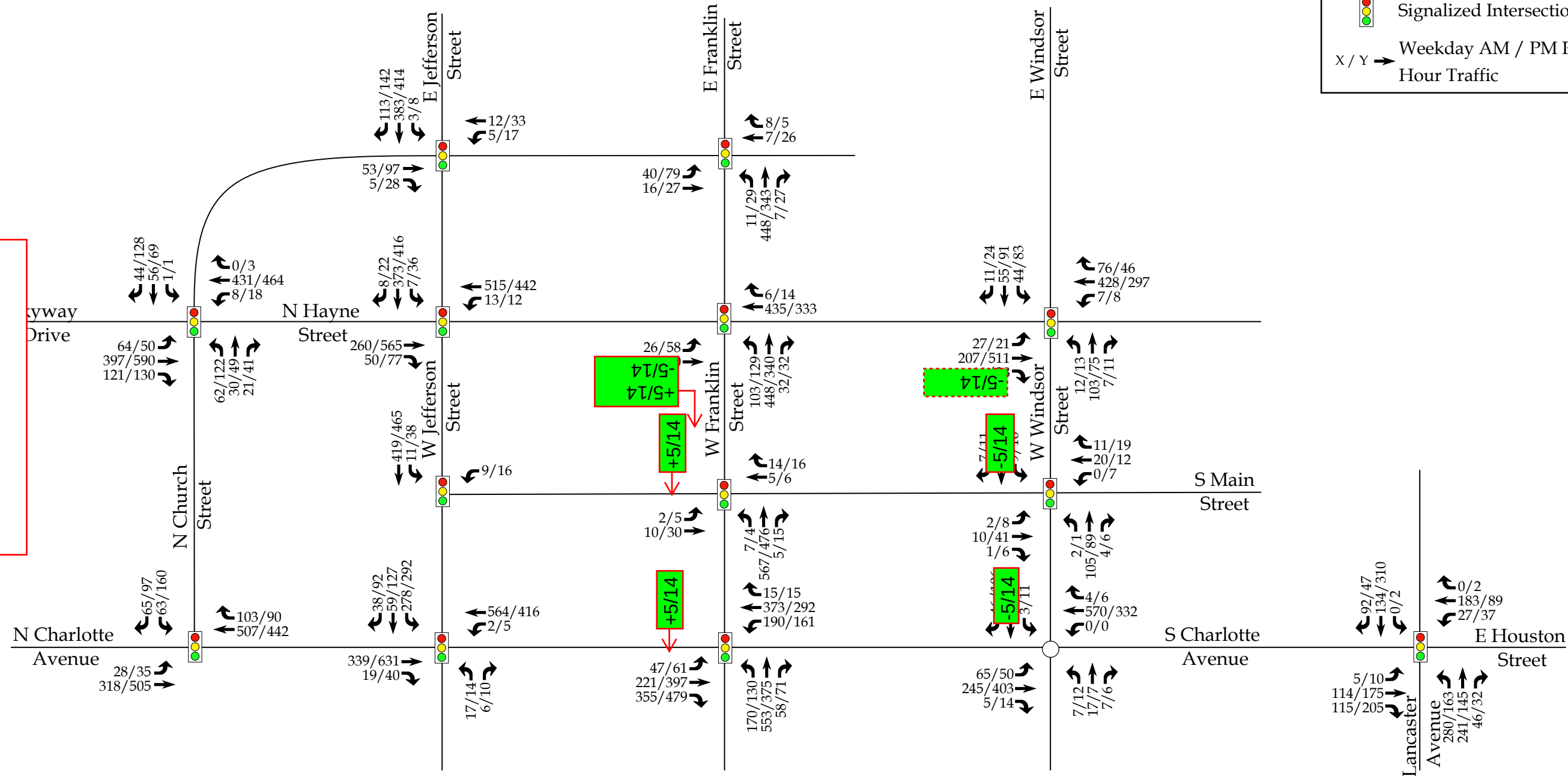
Unsignalized Intersection

Signalized Intersection

X / Y

Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

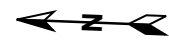


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



LEGEND

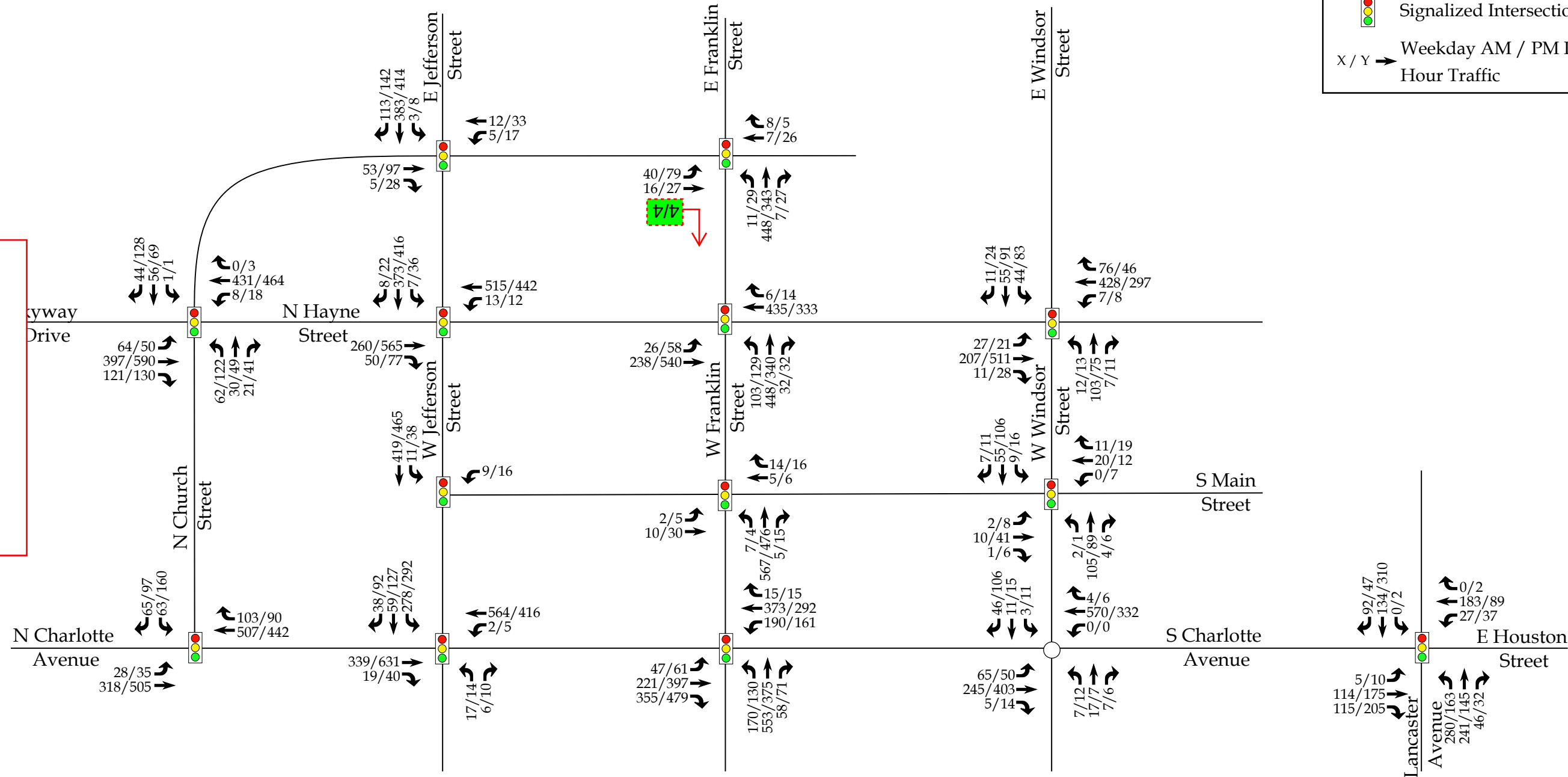
Unsignalized Intersection

Signalized Intersection

X / Y →

Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

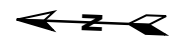


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



LEGEND

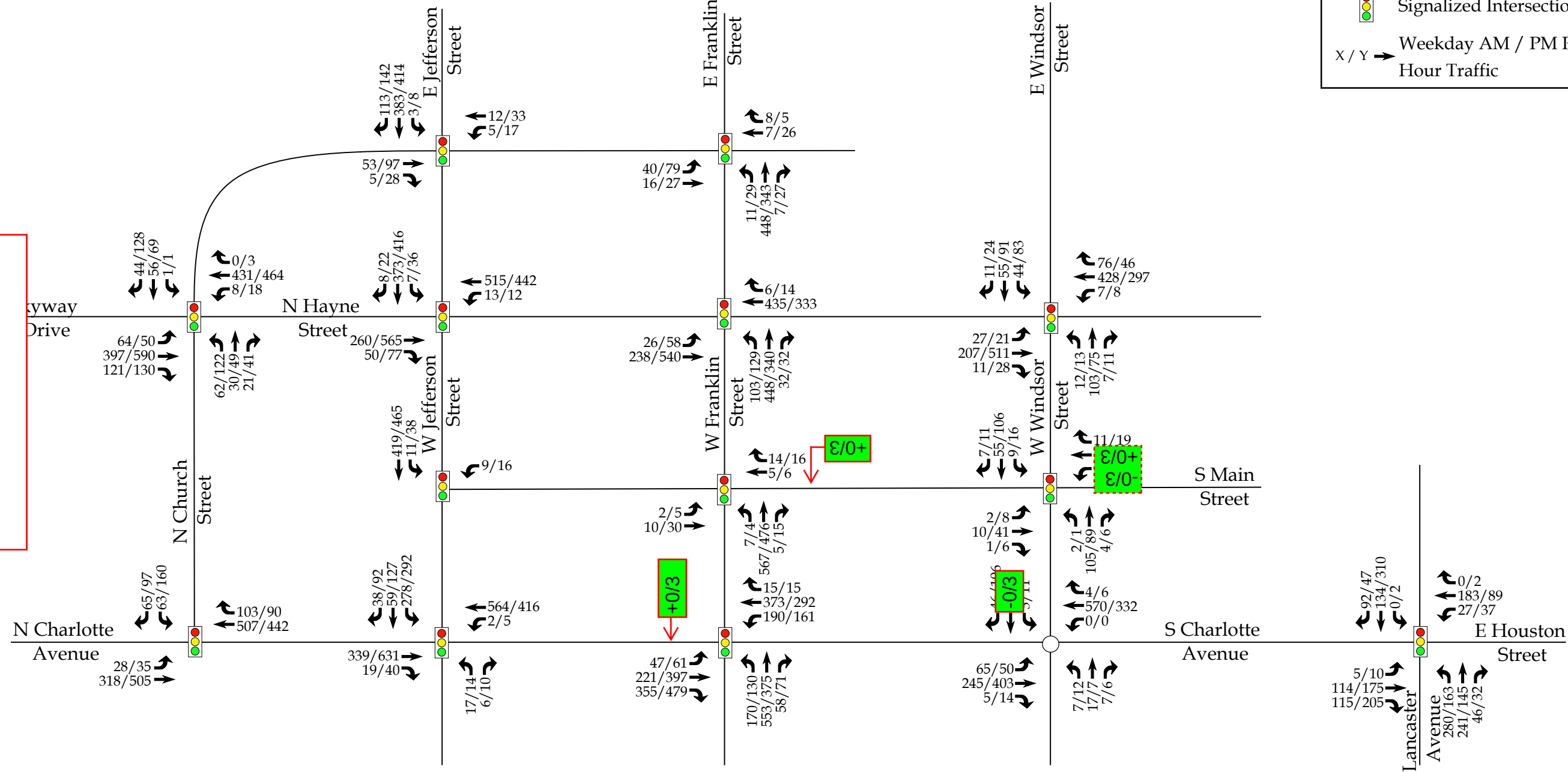
Unsignalized Intersection

Signalized Intersection

X / Y

Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

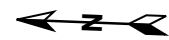


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



LEGEND

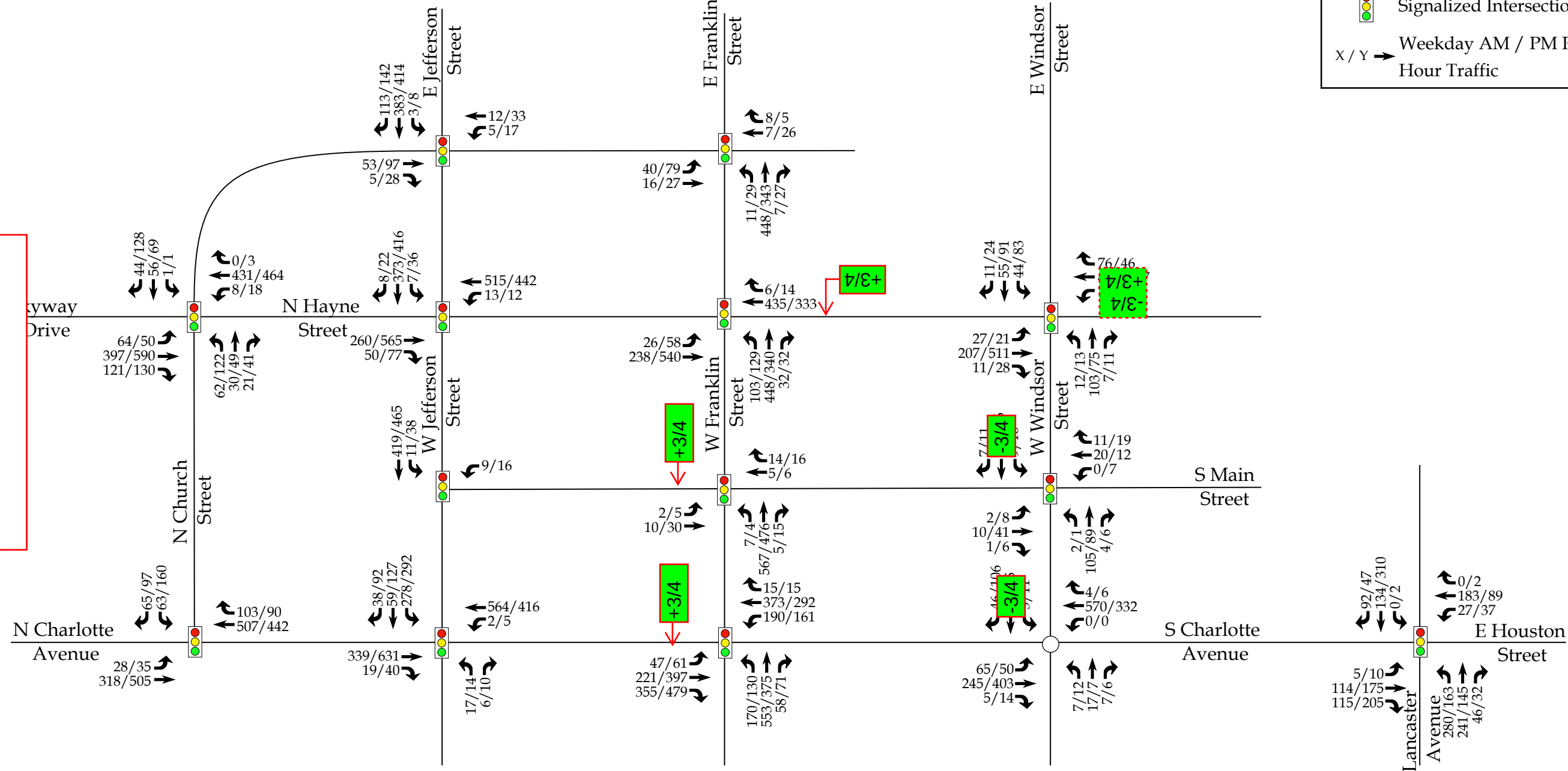
Unsignalized Intersection

Signalized Intersection

X / Y →

Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



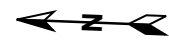
Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.



Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale Figure 2



LEGEND

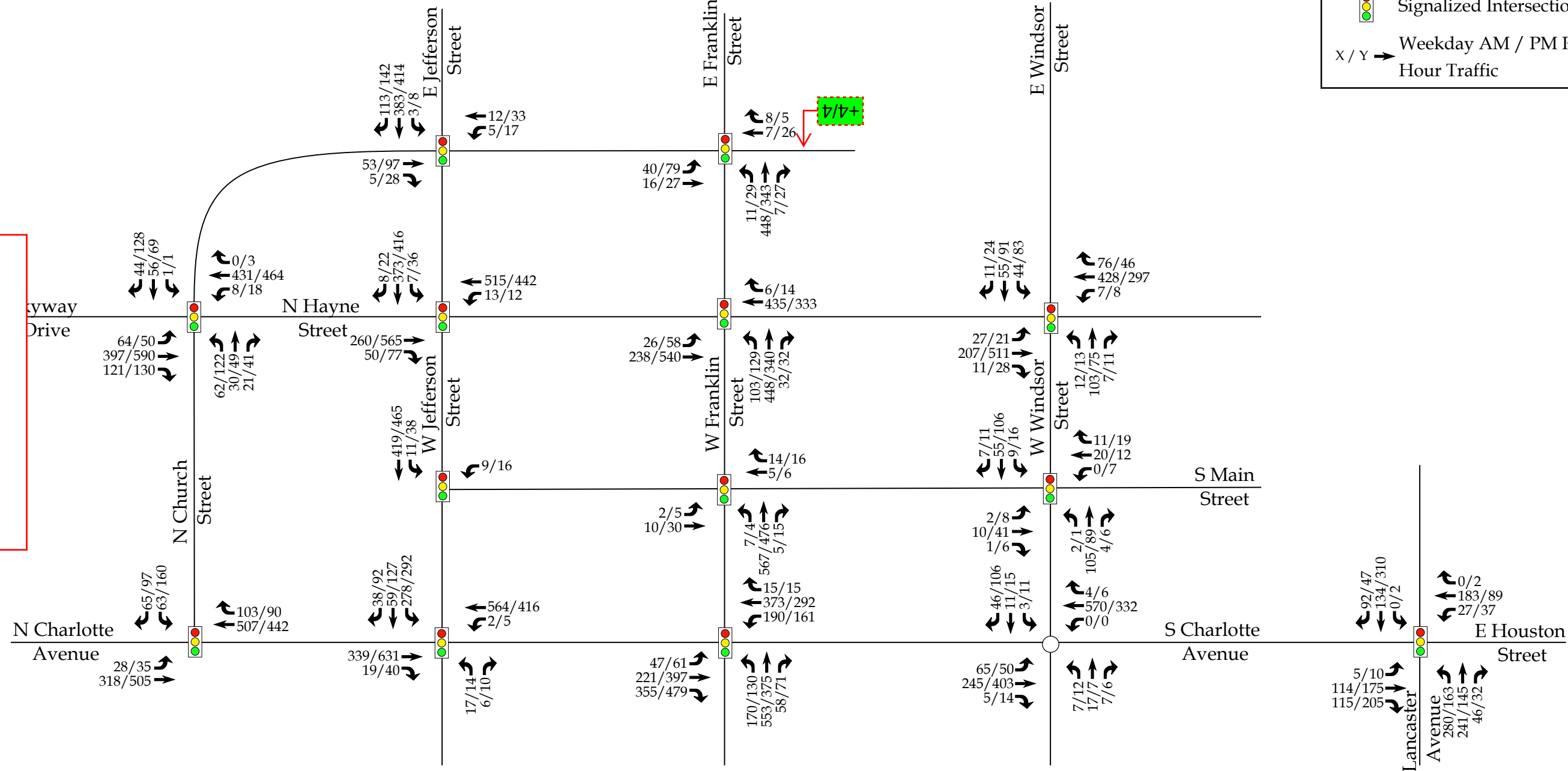
Unsignalized Intersection

Signalized Intersection

X / Y

Weekday AM / PM Peak Hour Traffic

FRANKLIN STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

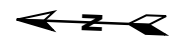


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



LEGEND

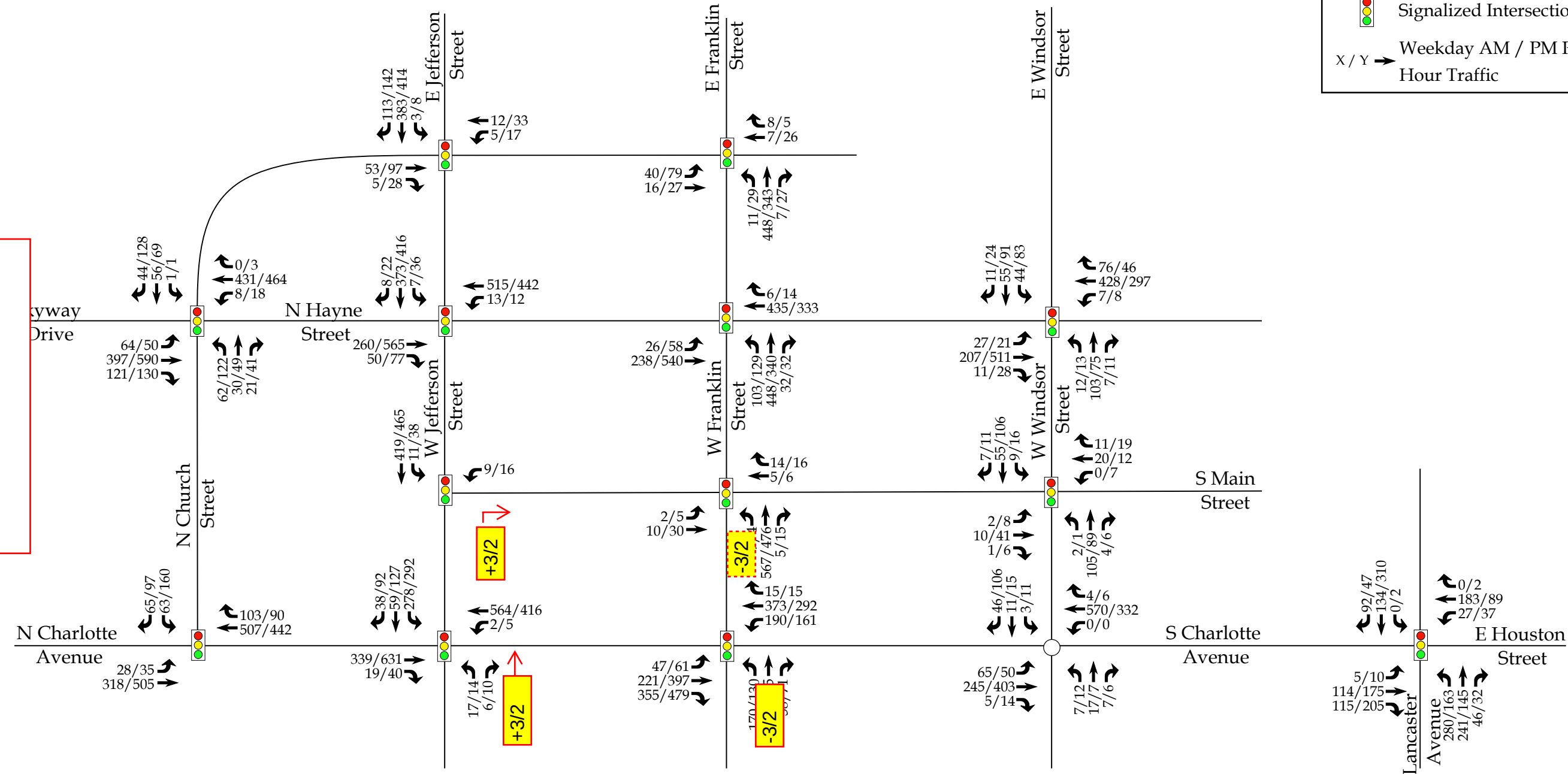
Unsignalized Intersection

Signalized Intersection

X / Y →

Weekday AM / PM Peak Hour Traffic

JEFFERSON STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

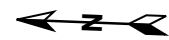


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



LEGEND

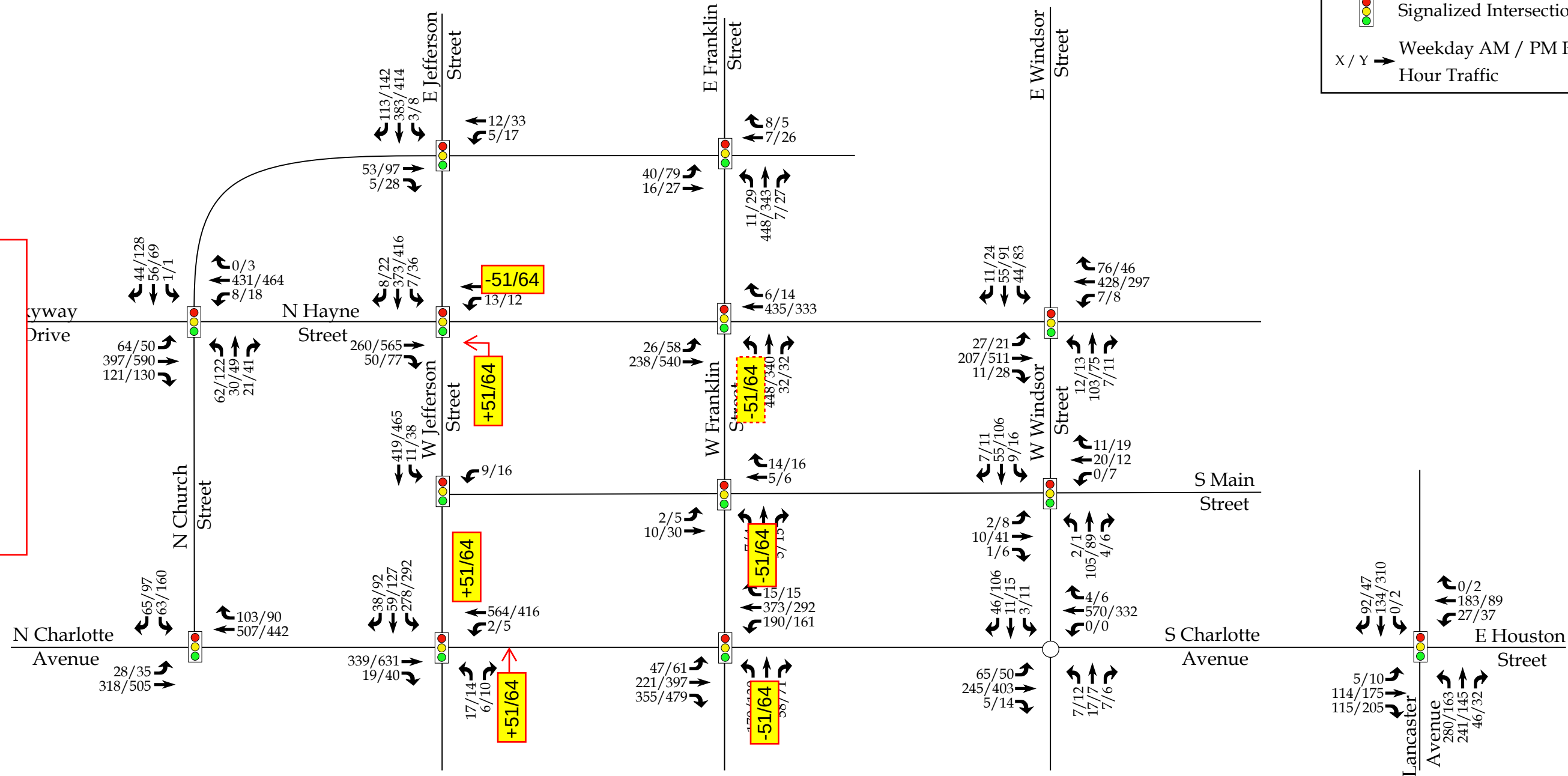
Unsignalized Intersection

Signalized Intersection

X / Y →

Weekday AM / PM Peak Hour Traffic

JEFFERSON STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

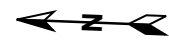


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



LEGEND

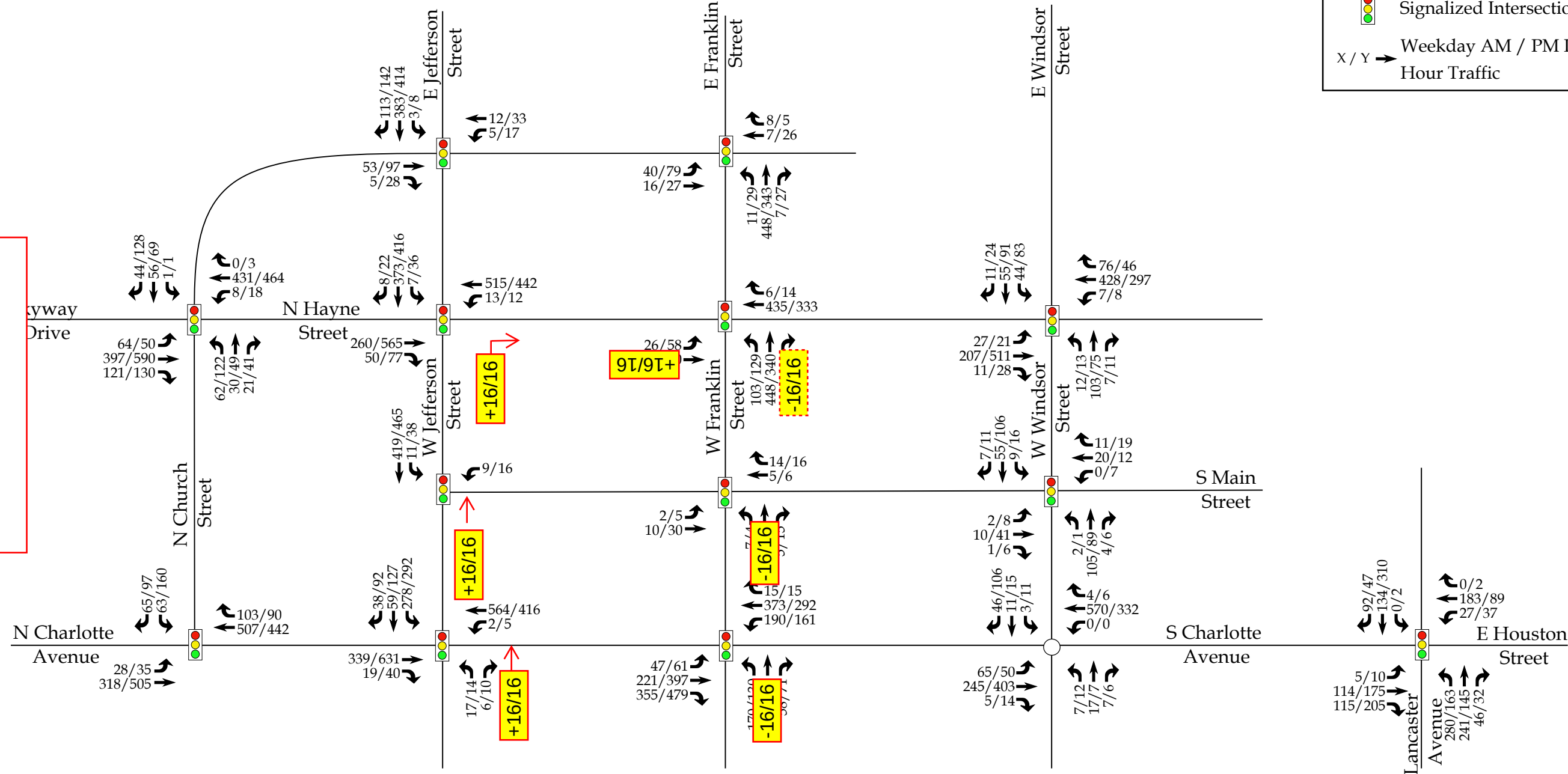
Unsignalized Intersection

Signalized Intersection

X / Y →

Weekday AM / PM Peak Hour Traffic

JEFFERSON STREET
CONVERTED TO TWO-WAY



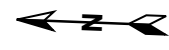
Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.



Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale Figure 2



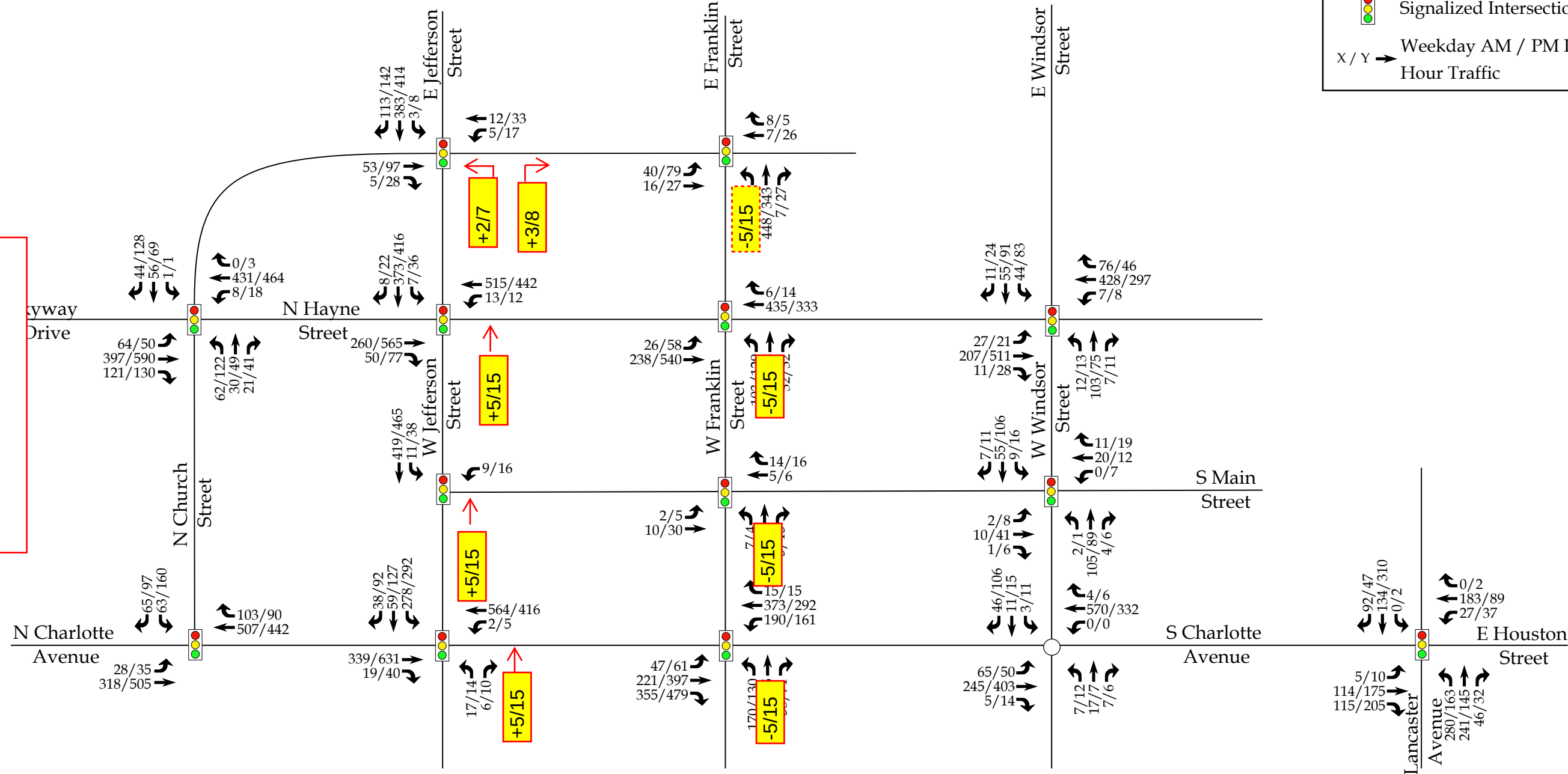
LEGEND

Unsignalized Intersection

Signalized Intersection

X / Y → Weekday AM / PM Peak Hour Traffic

JEFFERSON STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

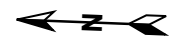


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



LEGEND

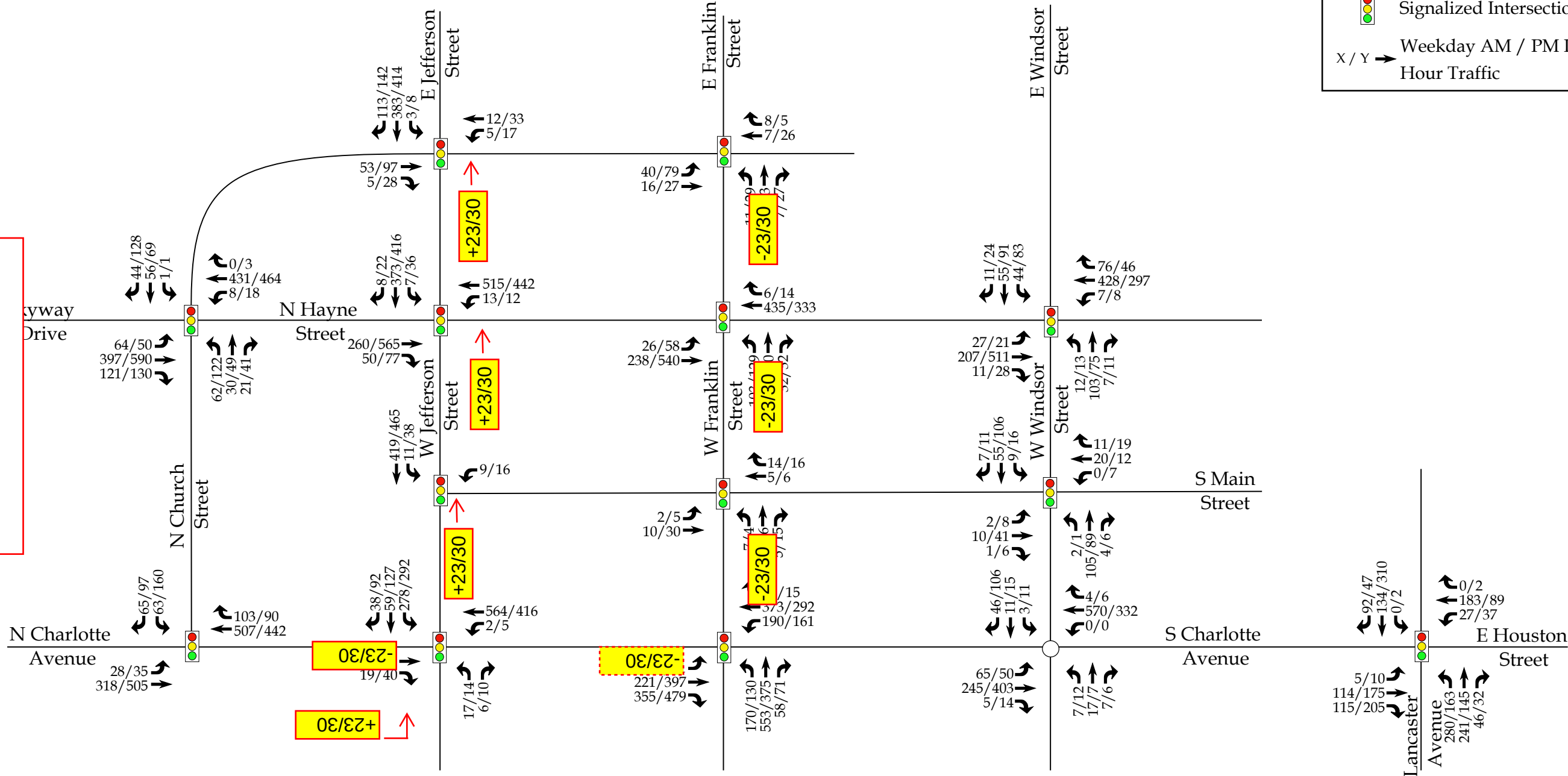
Unsignalized Intersection

Signalized Intersection

$X / Y \rightarrow$

Weekday AM / PM Peak Hour Traffic

JEFFERSON STREET
CONVERTED TO TWO-WAY



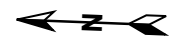
Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



LEGEND

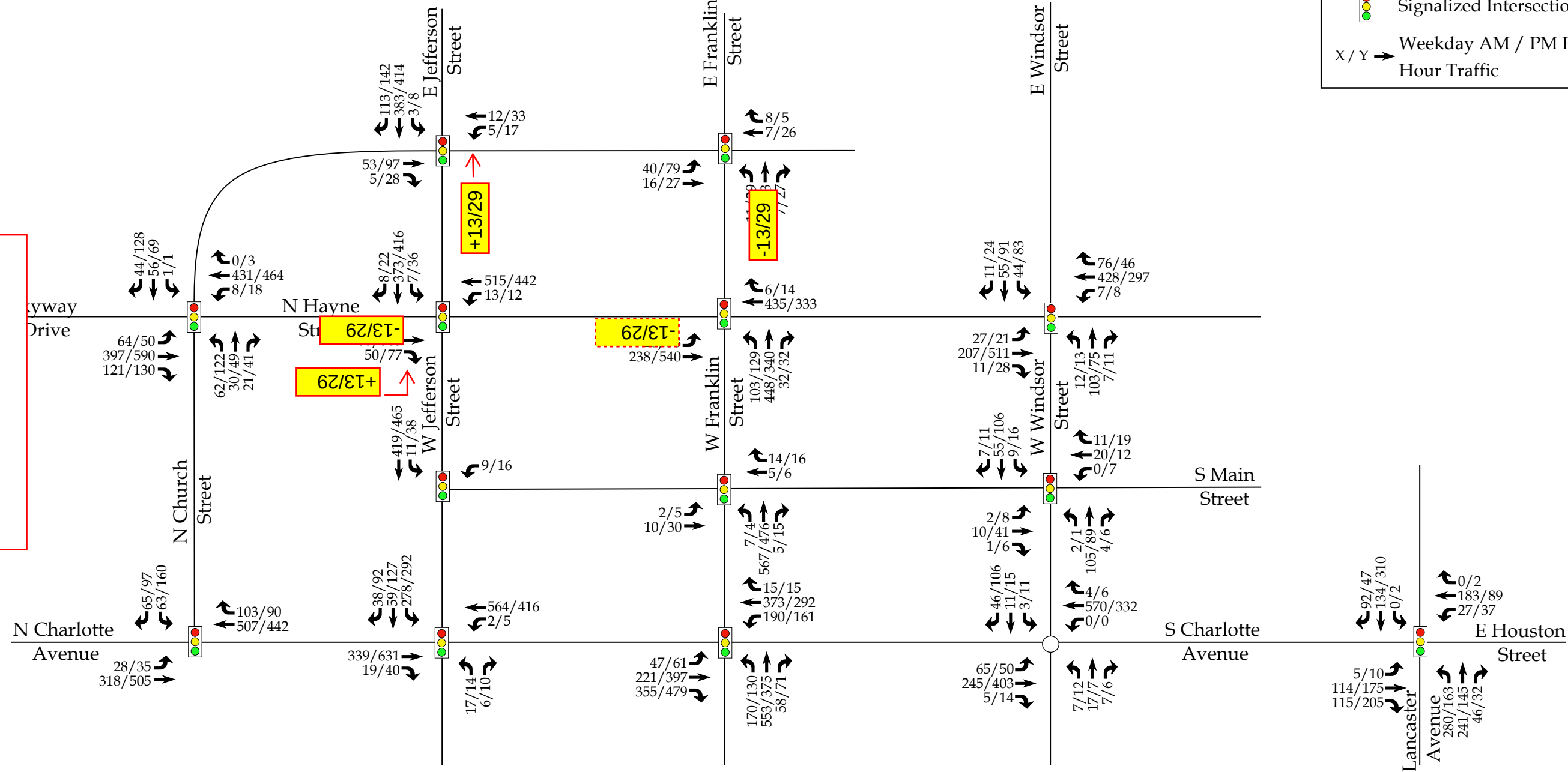
Unsignalized Intersection

Signalized Intersection

X / Y →

Weekday AM / PM Peak Hour Traffic

JEFFERSON STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

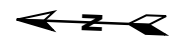


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



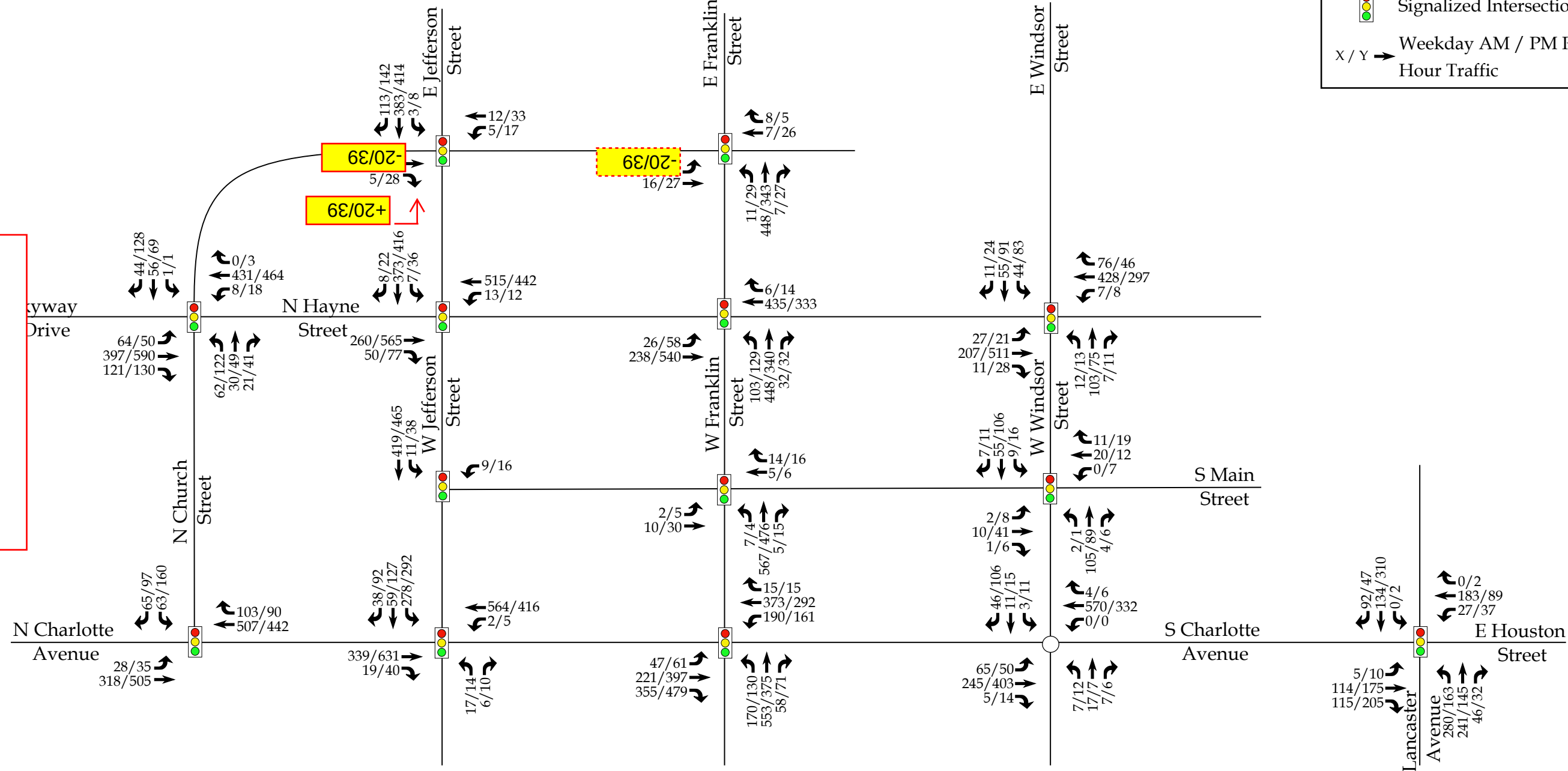
LEGEND

Unsignalized Intersection

Signalized Intersection

X / Y → Weekday AM / PM Peak Hour Traffic

JEFFERSON STREET
CONVERTED TO TWO-WAY



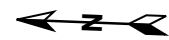
Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.



Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale Figure 2



LEGEND

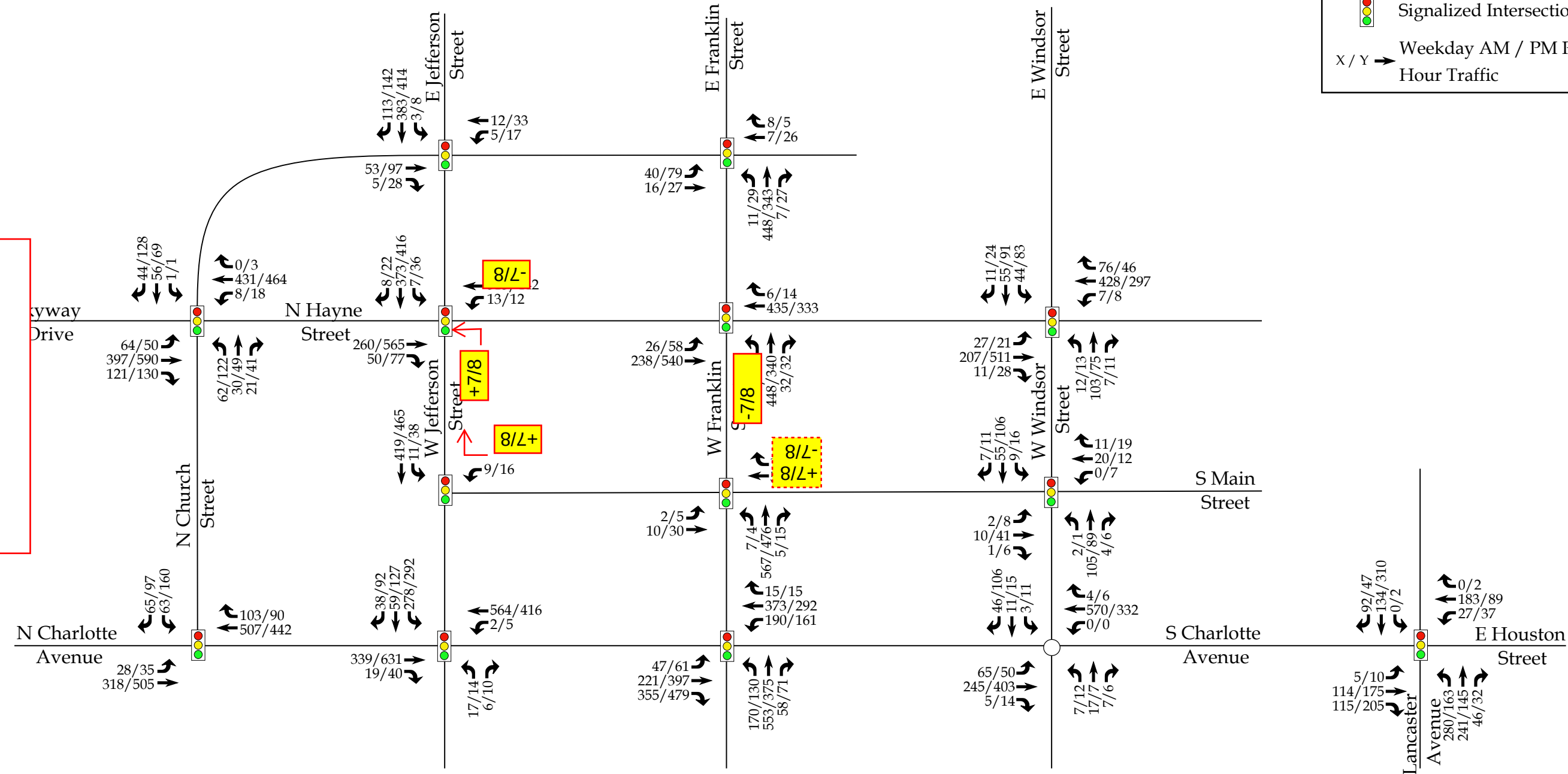
Unsignalized Intersection

Signalized Intersection

X / Y →

Weekday AM / PM Peak Hour Traffic

JEFFERSON STREET
CONVERTED TO TWO-WAY



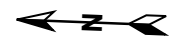
Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.



Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale Figure 2



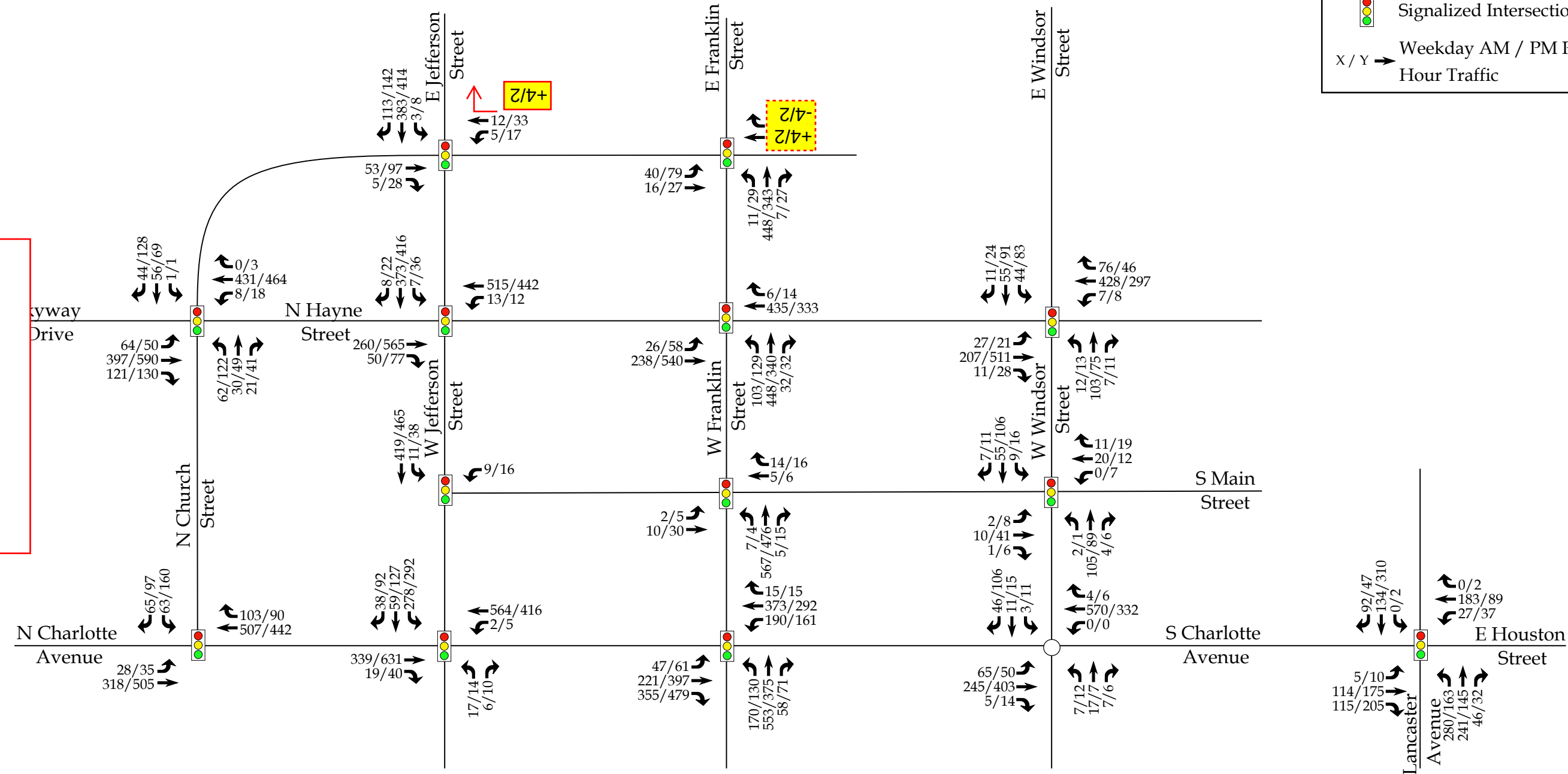
LEGEND

Unsignalized Intersection

Signalized Intersection

X / Y → Weekday AM / PM Peak Hour Traffic

JEFFERSON STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

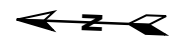


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



LEGEND

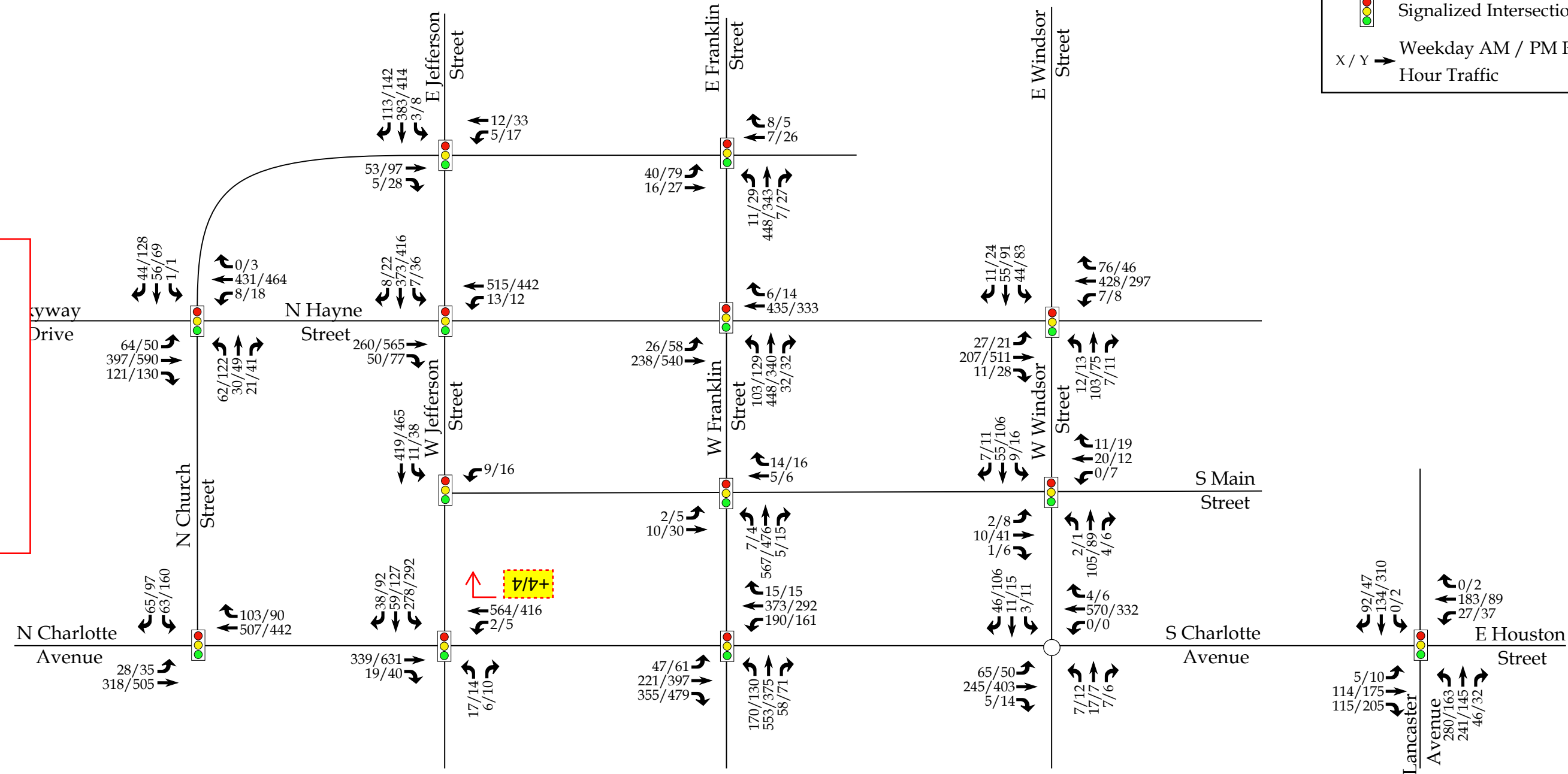
Unsignalized Intersection

Signalized Intersection

X / Y →

Weekday AM / PM Peak Hour Traffic

JEFFERSON STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.

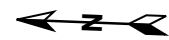


Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2



LEGEND

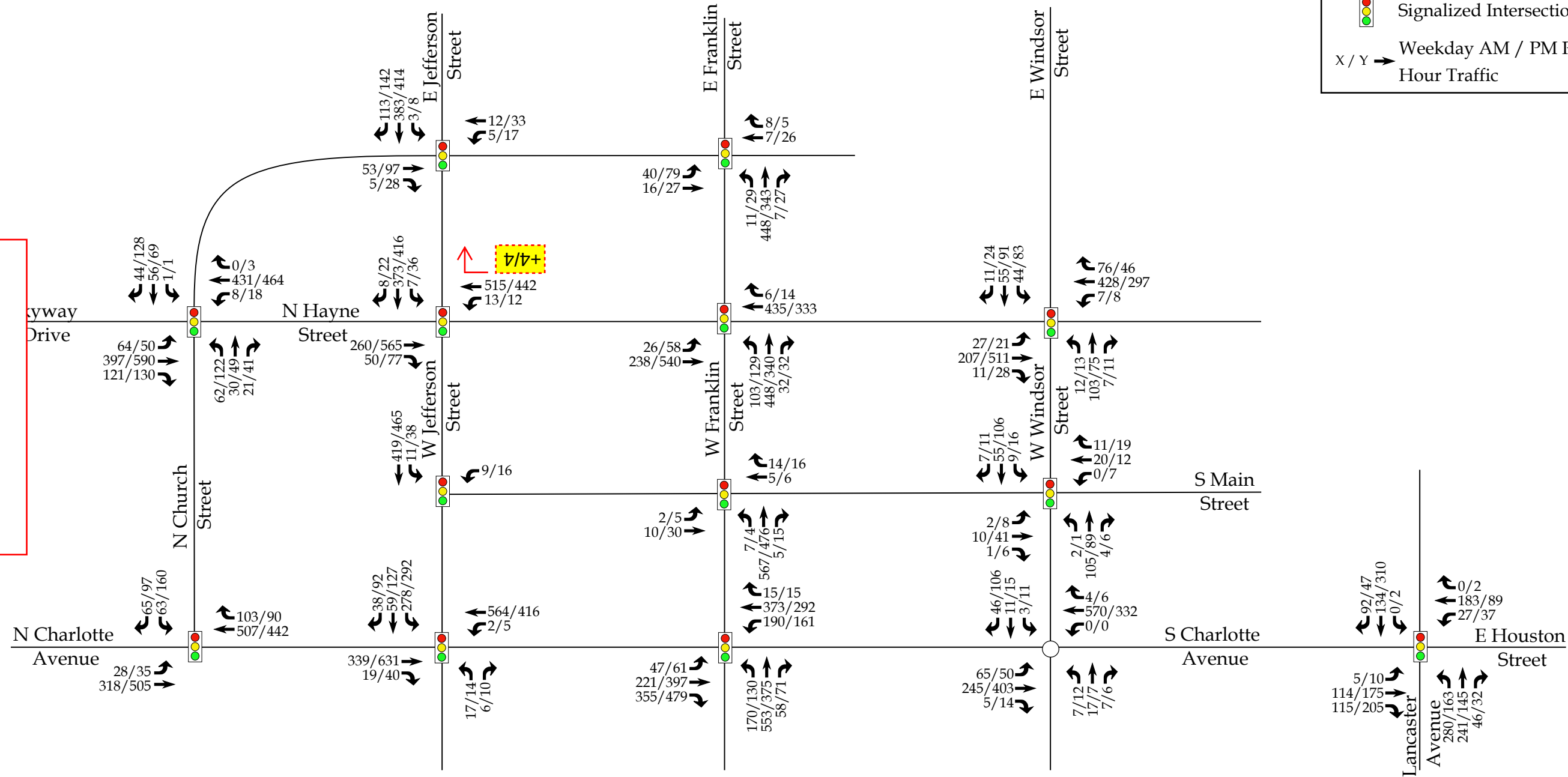
Unsignalized Intersection

Signalized Intersection

X / Y →

Weekday AM / PM Peak Hour Traffic

JEFFERSON STREET
CONVERTED TO TWO-WAY



Note: Based on NCDOT Congestion Management guidelines, a volume of 4 vehicles per hour (vph) was analyzed for any movement with less than 4 vph.



Downtown Master Plan
Monroe, NC

2022 Existing
Peak Hour Traffic

Scale: Not to Scale

Figure 2

APPENDIX E

2022 EXISTING SYNCHRO AND SIMTRAFFIC REPORTS

Lanes, Volumes, Timings
1: Charlotte Avenue & Church Street

2022 Existing
Timing Plan: AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	63	65	507	103	28	318
Future Volume (vph)	63	65	507	103	28	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.975			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3451	0	1770	3539
Flt Permitted	0.950				0.394	
Satd. Flow (perm)	1770	1583	3451	0	734	3539
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	20		35			35
Link Distance (ft)	823		519			1250
Travel Time (s)	28.1		10.1			24.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	70	72	563	114	31	353
Shared Lane Traffic (%)						
Lane Group Flow (vph)	70	72	677	0	31	353
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	10.0		10.0	10.0
Minimum Split (s)	30.3	30.3	30.9		30.9	30.9
Total Split (s)	31.0	31.0	44.0		44.0	44.0
Total Split (%)	41.3%	41.3%	58.7%		58.7%	58.7%
Maximum Green (s)	24.7	24.7	38.1		38.1	38.1
Yellow Time (s)	3.0	3.0	3.1		3.1	3.1
All-Red Time (s)	3.3	3.3	2.8		2.8	2.8
Lost Time Adjust (s)	-1.3	-1.3	-0.9		-0.9	-0.9
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Recall Mode	None	None	C-Max		C-Max	C-Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	19.0	19.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effect Green (s)	9.8	9.8	58.9		58.9	58.9
Actuated g/C Ratio	0.13	0.13	0.79		0.79	0.79
v/c Ratio	0.30	0.35	0.25		0.05	0.13
Control Delay	43.0	44.4	1.6		3.5	3.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	43.0	44.4	1.6		3.5	3.0

Lanes, Volumes, Timings
1: Charlotte Avenue & Church Street

2022 Existing
Timing Plan: AM Peak Hour

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	D	D	A		A	A
Approach Delay	43.7		1.6			3.0
Approach LOS	D		A			A
Queue Length 50th (ft)	35	36	22		3	18
Queue Length 95th (ft)	m64	m66	27		11	36
Internal Link Dist (ft)	743		439			1170
Turn Bay Length (ft)					100	
Base Capacity (vph)	613	548	2708		576	2777
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.11	0.13	0.25		0.05	0.13

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 35 (47%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.35

Intersection Signal Delay: 7.0

Intersection LOS: A

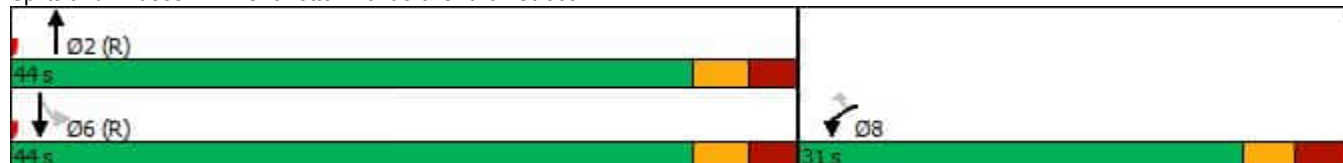
Intersection Capacity Utilization 37.4%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 1: Charlotte Avenue & Church Street



Lanes, Volumes, Timings

2: Charlotte Avenue & Jefferson Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	0	6	278	59	38	4	564	0	0	339	19
Future Volume (vph)	17	0	6	278	59	38	4	564	0	0	339	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	0		0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.964				0.850					0.992	
Flt Protected		0.965		0.950			0.950					
Satd. Flow (prot)	0	1733	0	1770	1863	1583	1770	3539	0	0	3511	0
Flt Permitted		0.837		0.740			0.517					
Satd. Flow (perm)	0	1503	0	1378	1863	1583	963	3539	0	0	3511	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			20			35			35	
Link Distance (ft)		1102			564			258			519	
Travel Time (s)		30.1			19.2			5.0			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	19	0	7	309	66	42	4	627	0	0	377	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	309	66	42	4	627	0	0	398	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2					
Detector Phase	4	4		8	8	8	2	2			6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	10.0	10.0			10.0	
Minimum Split (s)	27.4	27.4		28.3	28.3	28.3	21.7	21.7			18.2	
Total Split (s)	30.0	30.0		30.0	30.0	30.0	45.0	45.0			45.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	60.0%	60.0%			60.0%	
Maximum Green (s)	24.6	24.6		23.7	23.7	23.7	39.3	39.3			39.8	
Yellow Time (s)	3.0	3.0		3.3	3.3	3.3	4.1	4.1			3.6	
All-Red Time (s)	2.4	2.4		3.0	3.0	3.0	1.6	1.6			1.6	
Lost Time Adjust (s)		-0.4		-1.3	-1.3	-1.3	-0.7	-0.7			-0.2	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max			C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0			5.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0	17.0	11.0	11.0			8.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0			0	
Act Effect Green (s)		14.4		21.1	21.1	21.1	43.9	43.9			43.9	
Actuated g/C Ratio		0.19		0.28	0.28	0.28	0.59	0.59			0.59	
v/c Ratio		0.09		0.80	0.13	0.09	0.01	0.30			0.19	
Control Delay		21.0		38.7	15.9	15.4	7.2	7.6			6.9	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.2			0.0	
Total Delay		21.0		38.7	15.9	15.4	7.2	7.8			6.9	

Lanes, Volumes, Timings

2: Charlotte Avenue & Jefferson Street

2022 Existing
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C		D	B	B	A	A			A	
Approach Delay		21.0			32.7			7.8			6.9	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		11		160	33	21	1	61			37	
Queue Length 95th (ft)		24		235	68	50	m3	84			53	
Internal Link Dist (ft)		1022			484			178			439	
Turn Bay Length (ft)							50					
Base Capacity (vph)		501		459	621	527	563	2070			2054	
Starvation Cap Reductn		0		0	0	0	0	687			0	
Spillback Cap Reductn		0		0	0	0	0	0			326	
Storage Cap Reductn		0		0	0	0	0	0			0	
Reduced v/c Ratio		0.05		0.67	0.11	0.08	0.01	0.45			0.23	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 28 (37%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 14.8

Intersection LOS: B

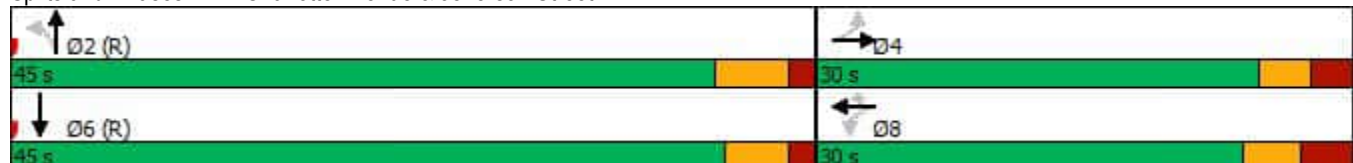
Intersection Capacity Utilization 43.0%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 2: Charlotte Avenue & Jefferson Street



Lanes, Volumes, Timings

3: Charlotte Avenue & Franklin Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	553	58	0	0	0	190	373	15	47	221	355
Future Volume (vph)	170	553	58	0	0	0	190	373	15	47	221	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	0		0	175		0	50		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.986						0.994			0.908	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1837	0	0	0	0	1770	3518	0	1770	3214	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1837	0	0	0	0	1770	3518	0	1770	3214	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			20			35			35	
Link Distance (ft)		1131			592			448			258	
Travel Time (s)		22.0			20.2			8.7			5.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	189	614	64	0	0	0	211	414	17	52	246	394
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	678	0	0	0	0	211	431	0	52	640	0
Turn Type	Perm	NA					Prot	NA		Prot	NA	
Protected Phases		4					5	2		1	6	
Permitted Phases	4											
Detector Phase	4	4					5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0					7.0	10.0		7.0	10.0	
Minimum Split (s)	26.3	26.3					12.1	19.1		12.1	19.0	
Total Split (s)	30.0	30.0					15.0	30.0		15.0	30.0	
Total Split (%)	40.0%	40.0%					20.0%	40.0%		20.0%	40.0%	
Maximum Green (s)	23.7	23.7					9.9	24.9		9.9	25.0	
Yellow Time (s)	4.1	4.1					3.0	3.7		3.0	3.6	
All-Red Time (s)	2.2	2.2					2.1	1.4		2.1	1.4	
Lost Time Adjust (s)	-1.3	-1.3					-0.1	-0.1		-0.1	0.0	
Total Lost Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0					2.0	2.0		2.0	2.0	
Recall Mode	None	None					None	C-Max		None	C-Max	
Walk Time (s)	5.0	5.0						5.0			5.0	
Flash Dont Walk (s)	15.0	15.0						9.0			9.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	25.0	25.0					10.0	32.2		7.7	25.0	
Actuated g/C Ratio	0.33	0.33					0.13	0.43		0.10	0.33	
v/c Ratio	0.32	1.11					0.89	0.29		0.29	0.60	
Control Delay	20.6	96.6					71.8	16.1		25.8	28.4	
Queue Delay	0.0	0.0					0.0	0.0		0.0	1.5	
Total Delay	20.6	96.6					71.8	16.1		25.8	29.9	

Lanes, Volumes, Timings
3: Charlotte Avenue & Franklin Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	F					E	B		C	C	
Approach Delay		80.0						34.4			29.6	
Approach LOS		F						C			C	
Queue Length 50th (ft)	65	~367					98	73		18	156	
Queue Length 95th (ft)	115	#564					#218	114		m37	210	
Internal Link Dist (ft)		1051			512			368			178	
Turn Bay Length (ft)	125						175			50		
Base Capacity (vph)	590	612					236	1508		236	1071	
Starvation Cap Reductn	0	0					0	0		0	246	
Spillback Cap Reductn	0	0					0	0		0	0	
Storage Cap Reductn	0	0					0	0		0	0	
Reduced v/c Ratio	0.32	1.11					0.89	0.29		0.22	0.78	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 45 (60%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 50.9

Intersection LOS: D

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

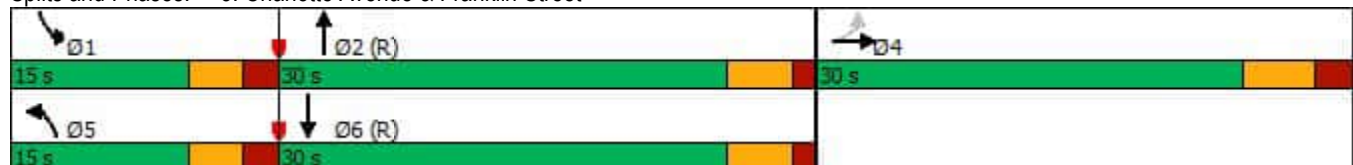
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Charlotte Avenue & Franklin Street



HCM 6th TWSC
4: Charlotte Avenue & Windsor Street

2022 Existing
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	17	7	4	11	46	4	570	4	65	245	5
Future Vol, veh/h	7	17	7	4	11	46	4	570	4	65	245	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	19	8	4	12	51	4	633	4	72	272	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	750	1064	139	933	1065	319	278	0	0	637	0	0
Stage 1	419	419	-	643	643	-	-	-	-	-	-	-
Stage 2	331	645	-	290	422	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	300	221	884	221	221	677	1282	-	-	943	-	-
Stage 1	582	588	-	428	467	-	-	-	-	-	-	-
Stage 2	656	466	-	694	587	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	245	200	884	189	200	677	1282	-	-	943	-	-
Mov Cap-2 Maneuver	245	200	-	189	200	-	-	-	-	-	-	-
Stage 1	579	535	-	426	465	-	-	-	-	-	-	-
Stage 2	588	464	-	604	534	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	21.3		15.1		0.1		2.1	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1282	-	-	255	423	943	-
HCM Lane V/C Ratio	0.003	-	-	0.135	0.16	0.077	-
HCM Control Delay (s)	7.8	0	-	21.3	15.1	9.1	0.3
HCM Lane LOS	A	A	-	C	C	A	A
HCM 95th %tile Q(veh)	0	-	-	0.5	0.6	0.2	-

Lanes, Volumes, Timings
4: Charlotte Avenue & Windsor Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	17	7	4	11	46	4	570	4	65	245	5
Future Volume (vph)	7	17	7	4	11	46	4	570	4	65	245	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.969			0.897			0.999			0.997	
Flt Protected		0.989			0.997						0.990	
Satd. Flow (prot)	0	1785	0	0	1666	0	0	3536	0	0	3493	0
Flt Permitted		0.989			0.997						0.990	
Satd. Flow (perm)	0	1785	0	0	1666	0	0	3536	0	0	3493	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1162			592			1102			448	
Travel Time (s)		31.7			16.1			21.5			8.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	8	19	8	4	12	51	4	633	4	72	272	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	35	0	0	67	0	0	641	0	0	350	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	38.7%											
Analysis Period (min)	15											
ICU Level of Service A												

Lanes, Volumes, Timings
5: Houston Street/Charlotte Avenue & Lancaster Avenue

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	280	241	46	4	134	92	27	183	4	5	114	115
Future Volume (vph)	280	241	46	4	134	92	27	183	4	5	114	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	50		0	0		0
Storage Lanes	1		1	0		0	1		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.946			0.997				0.850
Flt Protected	0.950				0.999		0.950				0.998	
Satd. Flow (prot)	1770	1863	1583	0	1760	0	1770	1857	0	0	1859	1583
Flt Permitted	0.417				0.993		0.672				0.979	
Satd. Flow (perm)	777	1863	1583	0	1750	0	1252	1857	0	0	1824	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1039			484			1097			1102	
Travel Time (s)		20.2			9.4			21.4			21.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	311	268	51	4	149	102	30	203	4	6	127	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	311	268	51	0	255	0	30	207	0	0	133	128
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2		2	6			8		4			4
Detector Phase	5	2	2	6	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	32.0	32.0	33.0	33.0		28.0	28.0		23.0	23.0	14.0
Total Split (s)	17.0	52.0	52.0	35.0	35.0		28.0	28.0		28.0	28.0	17.0
Total Split (%)	21.3%	65.0%	65.0%	43.8%	43.8%		35.0%	35.0%		35.0%	35.0%	21.3%
Maximum Green (s)	10.9	45.7	45.7	28.7	28.7		22.2	22.2		22.2	22.2	10.9
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.9	3.9		3.9	3.9	3.0
All-Red Time (s)	3.1	2.3	2.3	2.3	2.3		1.9	1.9		1.9	1.9	3.1
Lost Time Adjust (s)	-1.1	-1.3	-1.3		-1.3		-0.8	-0.8			-0.8	-1.1
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0	5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag							Lead
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	2.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None	Min	Min	Min	Min		None	None		None	None	None
Walk Time (s)		7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0	18.0	19.0	19.0		15.0	15.0		10.0	10.0	
Pedestrian Calls (#/hr)		0	0	0	0		0	0		0	0	
Act Effect Green (s)	31.3	31.3	31.3		14.8		11.3	11.3			11.3	27.9
Actuated g/C Ratio	0.59	0.59	0.59		0.28		0.21	0.21			0.21	0.53
v/c Ratio	0.46	0.24	0.05		0.52		0.11	0.52			0.34	0.15
Control Delay	8.2	6.2	5.3		21.0		18.9	24.3			21.2	7.6
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0			0.0	0.0
Total Delay	8.2	6.2	5.3		21.0		18.9	24.3			21.2	7.6

Lanes, Volumes, Timings
5: Houston Street/Charlotte Avenue & Lancaster Avenue

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A	A		C		B	C			C	A
Approach Delay		7.1			21.0			23.6			14.5	
Approach LOS		A			C			C			B	
Queue Length 50th (ft)	39	33	5		66		8	57			35	18
Queue Length 95th (ft)	93	78	19		138		27	124			84	49
Internal Link Dist (ft)		959			404			1017			1022	
Turn Bay Length (ft)	150						50					
Base Capacity (vph)	690	1652	1404		1012		555	823			809	858
Starvation Cap Reductn	0	0	0		0		0	0			0	0
Spillback Cap Reductn	0	0	0		0		0	0			0	0
Storage Cap Reductn	0	0	0		0		0	0			0	0
Reduced v/c Ratio	0.45	0.16	0.04		0.25		0.05	0.25			0.16	0.15

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 52.9

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 13.9

Intersection LOS: B

Intersection Capacity Utilization 51.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: Houston Street/Charlotte Avenue & Lancaster Avenue



Lanes, Volumes, Timings
6: Main Street & Jefferson Street

2022 Existing
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑↑	↖	
Traffic Volume (vph)	0	0	11	419	9	0
Future Volume (vph)	0	0	11	419	9	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	1.00
Fr						
Flt Protected				0.999	0.950	
Satd. Flow (prot)	0	0	0	5080	1770	0
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	0	0	0	5080	1770	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	20			20	35	
Link Distance (ft)	564			262	261	
Travel Time (s)	19.2			8.9	5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	12	466	10	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	478	10	0
Turn Type			Perm	NA	Prot	
Protected Phases				6	8	
Permitted Phases			6			
Detector Phase			6	6	8	
Switch Phase						
Minimum Initial (s)			20.0	20.0	15.0	
Minimum Split (s)			25.6	25.6	21.9	
Total Split (s)			48.0	48.0	27.0	
Total Split (%)			64.0%	64.0%	36.0%	
Maximum Green (s)			42.4	42.4	21.1	
Yellow Time (s)			3.0	3.0	3.0	
All-Red Time (s)			2.6	2.6	2.9	
Lost Time Adjust (s)				-0.6	-0.9	
Total Lost Time (s)				5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)			2.0	2.0	2.0	
Recall Mode			C-Max	C-Max	None	
Walk Time (s)			7.0	7.0	5.0	
Flash Dont Walk (s)			11.0	11.0	11.0	
Pedestrian Calls (#/hr)			0	0	0	
Act Effect Green (s)				69.8	15.9	
Actuated g/C Ratio				0.93	0.21	
v/c Ratio				0.10	0.03	
Control Delay				0.1	23.8	
Queue Delay				0.0	0.0	
Total Delay				0.1	23.8	
LOS				A	C	
Approach Delay				0.1	23.8	
Approach LOS				A	C	

Lanes, Volumes, Timings
6: Main Street & Jefferson Street

2022 Existing
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)				0	4	
Queue Length 95th (ft)				1	16	
Internal Link Dist (ft)	484			182	181	
Turn Bay Length (ft)						
Base Capacity (vph)				4729	519	
Starvation Cap Reductn				0	0	
Spillback Cap Reductn				0	0	
Storage Cap Reductn				0	0	
Reduced v/c Ratio				0.10	0.02	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 29 (39%), Referenced to phase 6:WBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.10

Intersection Signal Delay: 0.6

Intersection LOS: A

Intersection Capacity Utilization 37.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Main Street & Jefferson Street



Lanes, Volumes, Timings
7: Main Street & Franklin Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	567	5	0	0	0	0	5	14	4	10	0
Future Volume (vph)	7	567	5	0	0	0	0	5	14	4	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't		0.999						0.902				
Flt Protected		0.999									0.987	
Satd. Flow (prot)	0	5075	0	0	0	0	0	1680	0	0	1839	0
Flt Permitted		0.999									0.970	
Satd. Flow (perm)	0	5075	0	0	0	0	0	1680	0	0	1807	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			35			35	
Link Distance (ft)		592			262			455			261	
Travel Time (s)		20.2			8.9			8.9			5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	8	630	6	0	0	0	0	6	16	4	11	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	644	0	0	0	0	0	22	0	0	15	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						7.0		7.0	7.0	
Minimum Split (s)	22.0	22.0						22.0		22.0	22.0	
Total Split (s)	34.0	34.0						26.0		26.0	26.0	
Total Split (%)	56.7%	56.7%						43.3%		43.3%	43.3%	
Maximum Green (s)	28.2	28.2						20.4		20.4	20.4	
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0	
All-Red Time (s)	2.8	2.8						2.6		2.6	2.6	
Lost Time Adjust (s)		-0.8						-0.6			-0.6	
Total Lost Time (s)		5.0						5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Recall Mode	None	None						C-Min		C-Min	C-Min	
Walk Time (s)	5.0	5.0						5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0						11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0						0		0	0	
Act Effct Green (s)		16.5						33.5			33.5	
Actuated g/C Ratio		0.28						0.56			0.56	
v/c Ratio		0.46						0.02			0.01	
Control Delay		18.6						7.7			7.6	
Queue Delay		0.0						0.0			0.0	
Total Delay		18.6						7.7			7.6	
LOS		B						A			A	
Approach Delay		18.6						7.7			7.6	
Approach LOS		B						A			A	

Lanes, Volumes, Timings

7: Main Street & Franklin Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		70						3			2	
Queue Length 95th (ft)		86						14			11	
Internal Link Dist (ft)		512			182			375			181	
Turn Bay Length (ft)												
Base Capacity (vph)		2452						938			1009	
Starvation Cap Reductn		0						0			0	
Spillback Cap Reductn		0						0			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.26						0.02			0.01	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

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

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.46

Intersection Signal Delay: 18.0

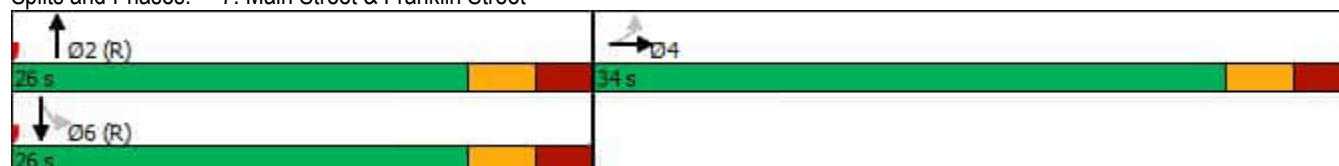
Intersection LOS: B

Intersection Capacity Utilization 25.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Main Street & Franklin Street



Lanes, Volumes, Timings
8: Main Street & Windsor Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	105	4	9	55	7	4	20	11	4	10	4
Future Volume (vph)	4	105	4	9	55	7	4	20	11	4	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.986			0.957			0.972	
Flt Protected		0.998			0.994			0.995			0.990	
Satd. Flow (prot)	0	1852	0	0	1826	0	0	1774	0	0	1792	0
Flt Permitted		0.984			0.933			0.979			0.958	
Satd. Flow (perm)	0	1826	0	0	1714	0	0	1745	0	0	1735	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		592			263			786			455	
Travel Time (s)		16.1			7.2			15.3			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	117	4	10	61	8	4	22	12	4	11	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	0	0	79	0	0	38	0	0	19	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	32.0	32.0		32.0	32.0		28.0	28.0		28.0	28.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		21.0	21.0		21.0	21.0	
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	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		9.4			9.4			19.0			19.0	
Actuated g/C Ratio		0.31			0.31			0.63			0.63	
v/c Ratio		0.22			0.15			0.03			0.02	
Control Delay		9.1			8.6			6.3			6.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.1			8.6			6.3			6.4	
LOS		A			A			A			A	
Approach Delay		9.1			8.6			6.3			6.4	
Approach LOS		A			A			A			A	

Lanes, Volumes, Timings
8: Main Street & Windsor Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		15			9			4			2	
Queue Length 95th (ft)		35			25			13			8	
Internal Link Dist (ft)		512			183			706			375	
Turn Bay Length (ft)												
Base Capacity (vph)		1671			1568			1443			1435	
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		0.07			0.05			0.03			0.01	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 30.2

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.22

Intersection Signal Delay: 8.4

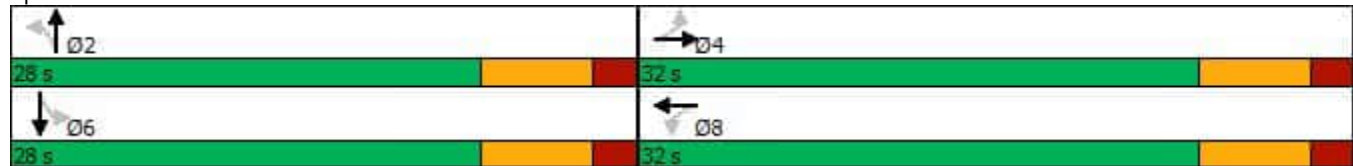
Intersection LOS: A

Intersection Capacity Utilization 24.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 8: Main Street & Windsor Street



Lanes, Volumes, Timings
9: Hayne Street/Skyway Drive & Church Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		EBT			WBT			NBT			SBT	
Traffic Volume (vph)	62	30	21	4	56	44	8	431	4	64	397	121
Future Volume (vph)	62	30	21	4	56	44	8	431	4	64	397	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.972			0.936			0.999			0.969	
Flt Protected		0.973			0.998			0.999			0.995	
Satd. Flow (prot)	0	3347	0	0	3306	0	0	3532	0	0	3412	0
Flt Permitted		0.788			0.949			0.940			0.804	
Satd. Flow (perm)	0	2711	0	0	3144	0	0	3324	0	0	2757	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		823			247			483			1201	
Travel Time (s)		28.1			8.4			16.5			40.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	69	33	23	4	62	49	9	479	4	71	441	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	0	0	115	0	0	492	0	0	646	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)	30.3	30.3		29.4	29.4		24.0	24.0		25.3	25.3	
Total Split (s)	40.0	40.0		40.0	40.0		35.0	35.0		35.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	33.7	33.7		33.6	33.6		29.0	29.0		28.7	28.7	
Yellow Time (s)	3.3	3.3		3.4	3.4		3.0	3.0		3.3	3.3	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.3			-1.4			-1.0			-1.3	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
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)	20.0	20.0		19.0	19.0		14.0	14.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		41.2			41.2			23.8			23.8	
Actuated g/C Ratio		0.55			0.55			0.32			0.32	
v/c Ratio		0.08			0.07			0.47			0.74	
Control Delay		15.3			8.0			16.5			27.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		15.3			8.0			16.5			27.9	
LOS		B			A			B			C	
Approach Delay		15.3			8.0			16.5			27.9	
Approach LOS		B			A			B			C	

Lanes, Volumes, Timings
9: Hayne Street/Skyway Drive & Church Street

2022 Existing
Timing Plan: AM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		24			11			73			137	
Queue Length 95th (ft)		49			21			107			172	
Internal Link Dist (ft)		743			167			403			1121	
Turn Bay Length (ft)												
Base Capacity (vph)		1490			1728			1329			1102	
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		0.08			0.07			0.37			0.59	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 29 (39%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 21.0

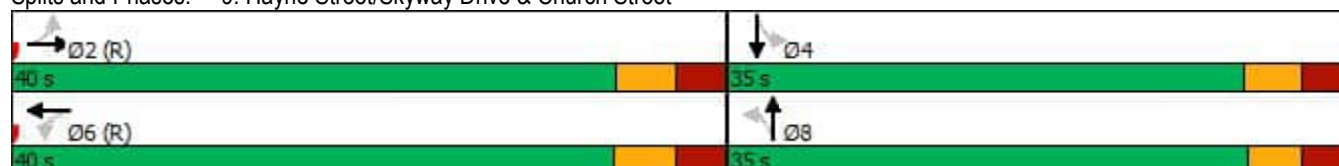
Intersection LOS: C

Intersection Capacity Utilization 51.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 9: Hayne Street/Skyway Drive & Church Street



Lanes, Volumes, Timings
10: Hayne Street & Jefferson Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	7	373	8	13	515	0	0	260	50
Future Volume (vph)	0	0	0	7	373	8	13	515	0	0	260	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	1.00	1.00	0.95	0.95
Fr _t					0.997						0.976	
Fl _t Protected					0.999			0.999				
Satd. Flow (prot)	0	0	0	0	5065	0	0	3536	0	0	3454	0
Fl _t Permitted					0.999			0.945				
Satd. Flow (perm)	0	0	0	0	5065	0	0	3345	0	0	3454	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		262			452			260			483	
Travel Time (s)		8.9			15.4			8.9			16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	8	414	9	14	572	0	0	289	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	431	0	0	586	0	0	345	0
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					4			2			6	
Permitted Phases				4			2					
Detector Phase				4	4		2	2			6	
Switch Phase												
Minimum Initial (s)				7.0	7.0		10.0	10.0			10.0	
Minimum Split (s)				21.9	21.9		21.6	21.6			21.6	
Total Split (s)				32.0	32.0		43.0	43.0			43.0	
Total Split (%)				42.7%	42.7%		57.3%	57.3%			57.3%	
Maximum Green (s)				26.1	26.1		37.4	37.4			37.4	
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0	
All-Red Time (s)				2.9	2.9		2.6	2.6			2.6	
Lost Time Adjust (s)					-0.9			-0.6			-0.6	
Total Lost Time (s)					5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	
Recall Mode				None	None		C-Max	C-Max			C-Max	
Walk Time (s)				5.0	5.0		5.0	5.0			5.0	
Flash Dont Walk (s)				11.0	11.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)				0	0		0	0			0	
Act Effect Green (s)					12.1			52.9			52.9	
Actuated g/C Ratio					0.16			0.71			0.71	
v/c Ratio					0.53			0.25			0.14	
Control Delay					28.9			3.1			6.5	
Queue Delay					0.0			0.2			0.0	
Total Delay					28.9			3.3			6.5	
LOS					C			A			A	
Approach Delay					28.9			3.3			6.5	
Approach LOS					C			A			A	

Lanes, Volumes, Timings
10: Hayne Street & Jefferson Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)					69			27			27	
Queue Length 95th (ft)					93			48			63	
Internal Link Dist (ft)		182			372			180			403	
Turn Bay Length (ft)												
Base Capacity (vph)					1823			2361			2437	
Starvation Cap Reductn					0			911			0	
Spillback Cap Reductn					12			0			36	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.24			0.40			0.14	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 60 (80%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 12.2

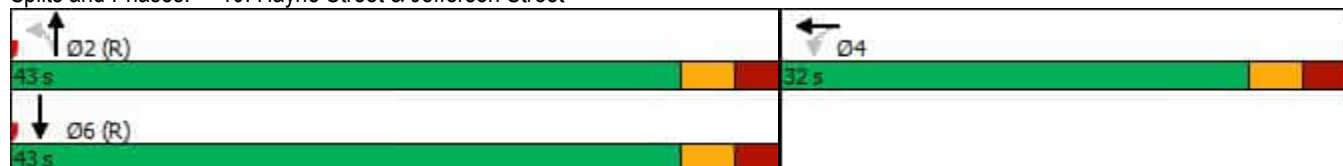
Intersection LOS: B

Intersection Capacity Utilization 39.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 10: Hayne Street & Jefferson Street



Lanes, Volumes, Timings
11: Hayne Street & Franklin Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	448	32	0	0	0	0	435	6	26	238	0
Future Volume (vph)	103	448	32	0	0	0	0	435	6	26	238	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992						0.998				
Flt Protected		0.991								0.950		
Satd. Flow (prot)	0	4999	0	0	0	0	0	1859	0	1770	1863	0
Flt Permitted		0.991								0.437		
Satd. Flow (perm)	0	4999	0	0	0	0	0	1859	0	814	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		262			456			457			260	
Travel Time (s)		8.9			15.5			15.6			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	114	498	36	0	0	0	0	483	7	29	264	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	648	0	0	0	0	0	490	0	29	264	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						10.0		10.0	10.0	
Minimum Split (s)	20.6	20.6						19.6		21.6	21.6	
Total Split (s)	32.0	32.0						43.0		43.0	43.0	
Total Split (%)	42.7%	42.7%						57.3%		57.3%	57.3%	
Maximum Green (s)	26.4	26.4						37.4		37.4	37.4	
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0	
All-Red Time (s)	2.6	2.6						2.6		2.6	2.6	
Lost Time Adjust (s)		-0.6						-0.6		-0.6	-0.6	
Total Lost Time (s)		5.0						5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0	
Recall Mode	None	None						C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0						4.0		4.0	4.0	
Flash Dont Walk (s)	10.0	10.0						10.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0						0		0	0	
Act Effct Green (s)		16.1						48.9		48.9	48.9	
Actuated g/C Ratio		0.21						0.65		0.65	0.65	
v/c Ratio		0.60						0.40		0.05	0.22	
Control Delay		28.6						5.7		10.6	12.6	
Queue Delay		0.0						0.1		0.0	0.3	
Total Delay		28.7						5.8		10.6	12.9	
LOS		C						A		B	B	
Approach Delay		28.7						5.8			12.7	
Approach LOS		C						A			B	

Lanes, Volumes, Timings
11: Hayne Street & Franklin Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		99						62		8	68	
Queue Length 95th (ft)		124						89		16	79	
Internal Link Dist (ft)		182			376			377			180	
Turn Bay Length (ft)												
Base Capacity (vph)		1799						1211		530	1213	
Starvation Cap Reductn		154						128		0	499	
Spillback Cap Reductn		0						0		0	0	
Storage Cap Reductn		0						0		0	0	
Reduced v/c Ratio		0.39						0.45		0.05	0.37	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 60 (80%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 17.6

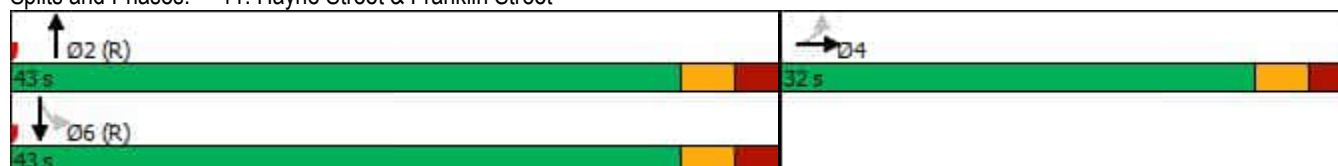
Intersection LOS: B

Intersection Capacity Utilization 43.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 11: Hayne Street & Franklin Street



Lanes, Volumes, Timings
12: Hayne Street & Windsor Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	103	7	44	55	11	7	428	76	27	207	11
Future Volume (vph)	12	103	7	44	55	11	7	428	76	27	207	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.987			0.980			0.993	
Flt Protected		0.995			0.980			0.999		0.950		
Satd. Flow (prot)	0	1839	0	0	1802	0	0	1824	0	1770	1850	0
Flt Permitted		0.965			0.759			0.996		0.464		
Satd. Flow (perm)	0	1783	0	0	1395	0	0	1818	0	864	1850	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			20			20	
Link Distance (ft)		263			1063			787			457	
Travel Time (s)		7.2			29.0			26.8			15.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	114	8	49	61	12	8	476	84	30	230	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	0	122	0	0	568	0	30	242	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	20.4	20.4		20.4	20.4		20.4	20.4		19.8	19.8	
Total Split (s)	27.0	27.0		27.0	27.0		48.0	48.0		48.0	48.0	
Total Split (%)	36.0%	36.0%		36.0%	36.0%		64.0%	64.0%		64.0%	64.0%	
Maximum Green (s)	21.6	21.6		21.6	21.6		42.6	42.6		43.2	43.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		1.8	1.8	
Lost Time Adjust (s)		-0.4			-0.4			-0.4		0.2	0.2	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		11.0			11.0			57.5		57.5	57.5	
Actuated g/C Ratio		0.15			0.15			0.77		0.77	0.77	
v/c Ratio		0.52			0.60			0.41		0.05	0.17	
Control Delay		36.1			41.8			5.5		1.9	1.9	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		36.1			41.8			5.5		1.9	1.9	
LOS		D			D			A		A	A	
Approach Delay		36.1			41.8			5.5			1.9	
Approach LOS		D			D			A			A	

Lanes, Volumes, Timings
12: Hayne Street & Windsor Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		59			54			85		3	22	
Queue Length 95th (ft)		103			99			175		6	29	
Internal Link Dist (ft)		183			983			707			377	
Turn Bay Length (ft)												
Base Capacity (vph)		523			409			1394		662	1418	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.26			0.30			0.41		0.05	0.17	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 56 (75%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 12.4

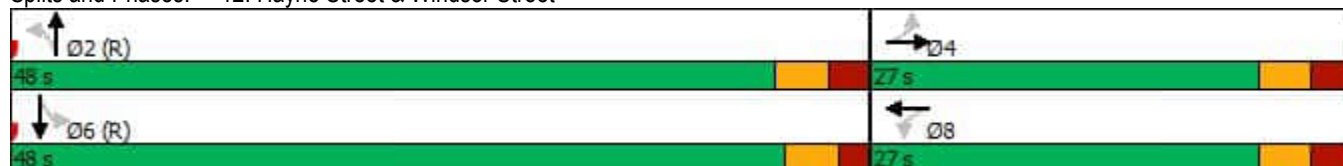
Intersection LOS: B

Intersection Capacity Utilization 53.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 12: Hayne Street & Windsor Street



Lanes, Volumes, Timings
13: Church Street & Jefferson Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	3	383	113	5	12	0	0	53	5
Future Volume (vph)	0	0	0	3	383	113	5	12	0	0	53	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.95	0.95
Frt					0.966						0.986	
Flt Protected								0.984				
Satd. Flow (prot)	0	0	0	0	4912	0	0	1833	0	0	3490	0
Flt Permitted								0.868				
Satd. Flow (perm)	0	0	0	0	4912	0	0	1617	0	0	3490	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		452			1043			259			558	
Travel Time (s)		15.4			35.6			8.8			19.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	3	426	126	6	13	0	0	59	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	555	0	0	19	0	0	65	0
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					6			8			4	
Permitted Phases				6			8					
Detector Phase				6	6		8	8			4	
Switch Phase												
Minimum Initial (s)				10.0	10.0		7.0	7.0			7.0	
Minimum Split (s)				26.9	26.9		22.8	22.8			22.4	
Total Split (s)				48.0	48.0		27.0	27.0			27.0	
Total Split (%)				64.0%	64.0%		36.0%	36.0%			36.0%	
Maximum Green (s)				42.1	42.1		21.2	21.2			21.6	
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0	
All-Red Time (s)				2.9	2.9		2.8	2.8			2.4	
Lost Time Adjust (s)					-0.9			-0.8			-0.4	
Total Lost Time (s)					5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	
Recall Mode				C-Max	C-Max		None	None			None	
Walk Time (s)				5.0	5.0		5.0	5.0			5.0	
Flash Dont Walk (s)				16.0	16.0		12.0	12.0			12.0	
Pedestrian Calls (#/hr)				0	0		0	0			0	
Act Effect Green (s)					60.9			7.8			7.6	
Actuated g/C Ratio					0.81			0.10			0.10	
v/c Ratio					0.14			0.11			0.19	
Control Delay					2.1			25.0			30.7	
Queue Delay					0.0			0.0			0.0	
Total Delay					2.1			25.0			30.7	
LOS					A			C			C	
Approach Delay					2.1			25.0			30.7	
Approach LOS					A			C			C	

Lanes, Volumes, Timings 13: Church Street & Jefferson Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)					18			8			17	
Queue Length 95th (ft)					26			26			m32	
Internal Link Dist (ft)		372			963			179			478	
Turn Bay Length (ft)												
Base Capacity (vph)					3990			474			1023	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.14			0.04			0.06	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 16 (21%), Referenced to phase 6:WBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.19

Intersection Signal Delay: 5.7

Intersection LOS: A

Intersection Capacity Utilization 24.2%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 13: Church Street & Jefferson Street



Lanes, Volumes, Timings
14: Church Street & Franklin Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	448	7	0	0	0	0	7	8	40	16	0
Future Volume (vph)	11	448	7	0	0	0	0	7	8	40	16	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't	0.998			0.929								
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	3532	0	0	0	0	0	1730	0	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	3532	0	0	0	0	0	1730	0	1770	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			35			20			20	
Link Distance (ft)		456			1229			1164			259	
Travel Time (s)		15.5			23.9			39.7			8.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	12	498	8	0	0	0	0	8	9	44	18	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	506	0	0	0	0	0	17	0	44	18	0
Turn Type	Perm	NA						NA		Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4											
Detector Phase	4	4						2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						10.0		7.0	10.0	
Minimum Split (s)	17.1	17.1						20.3		12.0	20.4	
Total Split (s)	38.0	38.0						22.0		15.0	37.0	
Total Split (%)	50.7%	50.7%						29.3%		20.0%	49.3%	
Maximum Green (s)	32.9	32.9						16.7		10.0	31.6	
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0	
All-Red Time (s)	2.1	2.1						2.3		2.0	2.4	
Lost Time Adjust (s)	-0.1	-0.1						-0.3		0.0	-0.4	
Total Lost Time (s)	5.0	5.0						5.0		5.0	5.0	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0	
Recall Mode	None	None						C-Max		None	C-Max	
Walk Time (s)	5.0	5.0						5.0			5.0	
Flash Dont Walk (s)	7.0	7.0						10.0			10.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	16.2	16.2						41.2		7.4	48.8	
Actuated g/C Ratio	0.22	0.22						0.55		0.10	0.65	
v/c Ratio	0.03	0.66						0.02		0.25	0.01	
Control Delay	4.5	9.3						12.3		52.0	0.4	
Queue Delay	0.0	0.0						0.0		0.0	0.0	
Total Delay	4.5	9.3						12.3		52.0	0.4	
LOS	A	A						B		D	A	
Approach Delay		9.2						12.3			37.0	
Approach LOS		A						B			D	

Lanes, Volumes, Timings
14: Church Street & Franklin Street

2022 Existing
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	1	14						4		23	0	
Queue Length 95th (ft)	m2	17						16		27	1	
Internal Link Dist (ft)		376			1149			1084			179	
Turn Bay Length (ft)												
Base Capacity (vph)	778	1554						950		236	1212	
Starvation Cap Reductn	0	0						0		0	0	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.02	0.33						0.02		0.19	0.01	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 18 (24%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 12.2

Intersection LOS: B

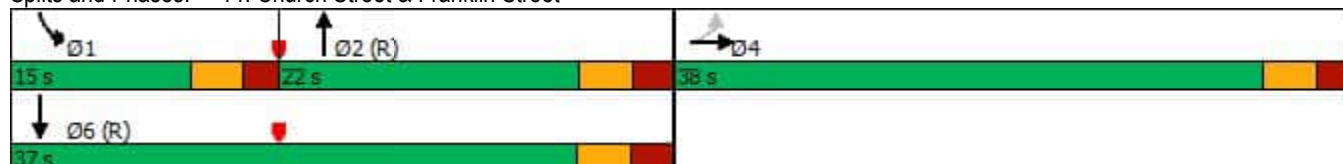
Intersection Capacity Utilization 29.8%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 14: Church Street & Franklin Street



Lanes, Volumes, Timings
1: Charlotte Avenue & Church Street

2022 Existing
Timing Plan: PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	160	97	442	90	35	505
Future Volume (vph)	160	97	442	90	35	505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.975			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3451	0	1770	3539
Flt Permitted	0.950				0.427	
Satd. Flow (perm)	1770	1583	3451	0	795	3539
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	20		35			35
Link Distance (ft)	823		519			1250
Travel Time (s)	28.1		10.1			24.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	178	108	491	100	39	561
Shared Lane Traffic (%)						
Lane Group Flow (vph)	178	108	591	0	39	561
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	10.0		10.0	10.0
Minimum Split (s)	31.0	31.0	31.0		31.0	31.0
Total Split (s)	32.0	32.0	68.0		68.0	68.0
Total Split (%)	32.0%	32.0%	68.0%		68.0%	68.0%
Maximum Green (s)	25.7	25.7	62.1		62.1	62.1
Yellow Time (s)	3.0	3.0	3.1		3.1	3.1
All-Red Time (s)	3.3	3.3	2.8		2.8	2.8
Lost Time Adjust (s)	-1.3	-1.3	-0.9		-0.9	-0.9
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Recall Mode	None	None	C-Max		C-Max	C-Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	19.0	19.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	15.7	15.7	74.3		74.3	74.3
Actuated g/C Ratio	0.16	0.16	0.74		0.74	0.74
v/c Ratio	0.64	0.43	0.23		0.07	0.21
Control Delay	46.9	40.5	2.6		4.7	4.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	46.9	40.5	2.6		4.7	4.6

Lanes, Volumes, Timings
1: Charlotte Avenue & Church Street

2022 Existing
Timing Plan: PM Peak Hour

	←	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	D	D	A		A	A
Approach Delay	44.5		2.6			4.6
Approach LOS	D		A			A
Queue Length 50th (ft)	118	71	21		6	48
Queue Length 95th (ft)	m161	m103	37		18	83
Internal Link Dist (ft)	743		439			1170
Turn Bay Length (ft)					100	
Base Capacity (vph)	477	427	2562		590	2627
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.37	0.25	0.23		0.07	0.21

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 80 (80%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 11.5

Intersection LOS: B

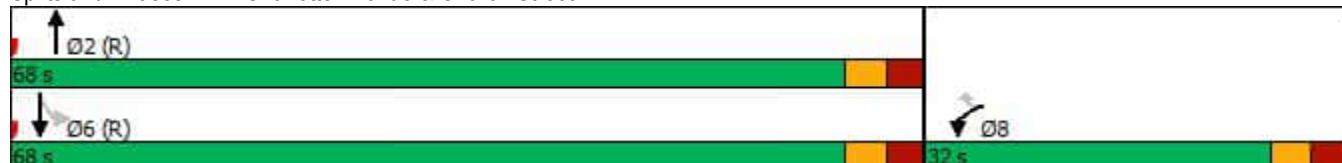
Intersection Capacity Utilization 44.8%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 1: Charlotte Avenue & Church Street



Lanes, Volumes, Timings

2: Charlotte Avenue & Jefferson Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	0	10	292	127	92	5	416	0	0	631	40
Future Volume (vph)	14	0	10	292	127	92	5	416	0	0	631	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	0		0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.945				0.850					0.991	
Flt Protected		0.971		0.950			0.950					
Satd. Flow (prot)	0	1709	0	1770	1863	1583	1770	3539	0	0	3507	0
Flt Permitted		0.849		0.740			0.331					
Satd. Flow (perm)	0	1494	0	1378	1863	1583	617	3539	0	0	3507	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			20			35			35	
Link Distance (ft)		1102			564			258			519	
Travel Time (s)		30.1			19.2			5.0			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	0	11	324	141	102	6	462	0	0	701	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	324	141	102	6	462	0	0	745	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2					
Detector Phase	4	4		8	8	8	2	2			6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	10.0	10.0			10.0	
Minimum Split (s)	31.0	31.0		32.0	32.0	32.0	41.0	41.0			41.0	
Total Split (s)	45.0	45.0		45.0	45.0	45.0	55.0	55.0			55.0	
Total Split (%)	45.0%	45.0%		45.0%	45.0%	45.0%	55.0%	55.0%			55.0%	
Maximum Green (s)	39.6	39.6		38.7	38.7	38.7	49.3	49.3			49.8	
Yellow Time (s)	3.0	3.0		3.3	3.3	3.3	4.1	4.1			3.6	
All-Red Time (s)	2.4	2.4		3.0	3.0	3.0	1.6	1.6			1.6	
Lost Time Adjust (s)		-0.4		-1.3	-1.3	-1.3	-0.7	-0.7			-0.2	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max			C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0			5.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0	17.0	11.0	11.0			8.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0			0	
Act Effect Green (s)		24.1		30.1	30.1	30.1	59.9	59.9			59.9	
Actuated g/C Ratio		0.24		0.30	0.30	0.30	0.60	0.60			0.60	
v/c Ratio		0.08		0.78	0.25	0.21	0.02	0.22			0.35	
Control Delay		22.9		49.4	29.0	28.5	11.4	10.1			9.6	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.3			0.4	
Total Delay		22.9		49.4	29.0	28.5	11.4	10.4			10.0	

Lanes, Volumes, Timings

2: Charlotte Avenue & Jefferson Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C		D	C	C	B	B			A	
Approach Delay		22.9			40.6			10.4			10.0	
Approach LOS		C			D			B			A	
Queue Length 50th (ft)		12		220	88	63	1	62			122	
Queue Length 95th (ft)		28		301	142	111	m7	83			152	
Internal Link Dist (ft)		1022			484			178			439	
Turn Bay Length (ft)							50					
Base Capacity (vph)		597		551	745	633	369	2118			2099	
Starvation Cap Reductn		0		0	0	0	0	997			0	
Spillback Cap Reductn		0		0	0	0	0	0			755	
Storage Cap Reductn		0		0	0	0	0	0			0	
Reduced v/c Ratio		0.05		0.59	0.19	0.16	0.02	0.41			0.55	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 75 (75%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 19.9

Intersection LOS: B

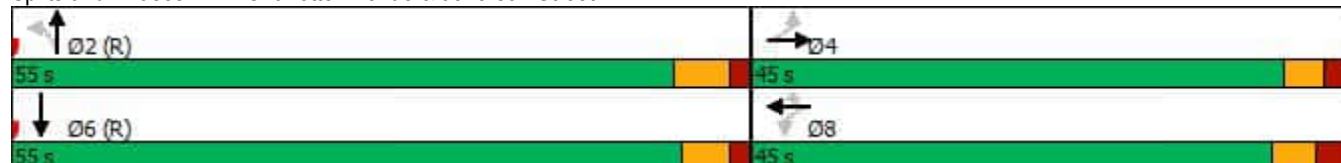
Intersection Capacity Utilization 49.9%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 2: Charlotte Avenue & Jefferson Street



Lanes, Volumes, Timings
3: Charlotte Avenue & Franklin Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	375	71	0	0	0	161	292	15	61	397	479
Future Volume (vph)	130	375	71	0	0	0	161	292	15	61	397	479
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	0		0	175		0	50		0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.976						0.993			0.918	
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1818	0	0	0	0	1770	3514	0	1770	3249	0
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1818	0	0	0	0	1770	3514	0	1770	3249	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			20			35			35	
Link Distance (ft)		1131			592			448			258	
Travel Time (s)		22.0			20.2			8.7			5.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	144	417	79	0	0	0	179	324	17	68	441	532
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	496	0	0	0	0	179	341	0	68	973	0
Turn Type	Perm	NA					Prot	NA		Prot	NA	
Protected Phases		4					5	2		1	6	
Permitted Phases	4											
Detector Phase	4	4					5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0					7.0	10.0		7.0	10.0	
Minimum Split (s)	27.0	27.0					13.0	20.0		13.0	19.0	
Total Split (s)	32.0	32.0					18.0	53.0		15.0	50.0	
Total Split (%)	32.0%	32.0%					18.0%	53.0%		15.0%	50.0%	
Maximum Green (s)	25.7	25.7					12.9	47.9		9.9	45.0	
Yellow Time (s)	4.1	4.1					3.0	3.7		3.0	3.6	
All-Red Time (s)	2.2	2.2					2.1	1.4		2.1	1.4	
Lost Time Adjust (s)	-1.3	-1.3					-0.1	-0.1		-0.1	0.0	
Total Lost Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0					2.0	2.0		2.0	2.0	
Recall Mode	None	None					None	C-Max		None	C-Max	
Walk Time (s)	5.0	5.0						5.0			5.0	
Flash Dont Walk (s)	15.0	15.0						9.0			9.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effct Green (s)	27.0	27.0					12.3	52.0		8.5	45.7	
Actuated g/C Ratio	0.27	0.27					0.12	0.52		0.08	0.46	
v/c Ratio	0.30	1.01					0.82	0.19		0.46	0.66	
Control Delay	31.1	81.4					71.8	14.0		60.3	26.9	
Queue Delay	0.0	0.0					0.0	0.0		0.0	1.1	
Total Delay	31.1	81.4					71.8	14.0		60.3	28.0	

Lanes, Volumes, Timings

3: Charlotte Avenue & Franklin Street

2022 Existing
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	F					E	B		E	C	
Approach Delay		70.1						33.9			30.1	
Approach LOS		E						C			C	
Queue Length 50th (ft)	73	~322					112	61		40	310	
Queue Length 95th (ft)	127	#532					#220	91		m89	380	
Internal Link Dist (ft)		1051			512			368			178	
Turn Bay Length (ft)	125						175			50		
Base Capacity (vph)	477	490					230	1825		177	1484	
Starvation Cap Reductn	0	0					0	0		0	272	
Spillback Cap Reductn	0	0					0	0		0	0	
Storage Cap Reductn	0	0					0	0		0	0	
Reduced v/c Ratio	0.30	1.01					0.78	0.19		0.38	0.80	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 85 (85%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 42.6

Intersection LOS: D

Intersection Capacity Utilization 71.8%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

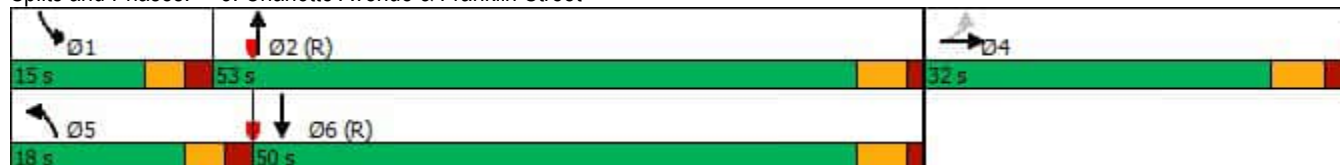
Queue shown is maximum after two cycles.

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: Charlotte Avenue & Franklin Street



HCM 6th TWSC
4: Charlotte Avenue & Windsor Street

2022 Existing
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	12	7	6	11	15	106	4	332	6	50	403	14
Future Vol, veh/h	12	7	6	11	15	106	4	332	6	50	403	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	8	7	12	17	118	4	369	7	56	448	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	769	952	232	721	957	188	464	0	0	376	0	0
Stage 1	568	568	-	381	381	-	-	-	-	-	-	-
Stage 2	201	384	-	340	576	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	291	258	770	315	256	822	1094	-	-	1179	-	-
Stage 1	475	505	-	613	612	-	-	-	-	-	-	-
Stage 2	782	610	-	648	500	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	224	240	770	289	238	822	1094	-	-	1179	-	-
Mov Cap-2 Maneuver	224	240	-	289	238	-	-	-	-	-	-	-
Stage 1	473	473	-	610	609	-	-	-	-	-	-	-
Stage 2	648	607	-	591	468	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	19.5		13.4		0.1		1.1	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1094	-	-	276	574	1179	-
HCM Lane V/C Ratio	0.004	-	-	0.101	0.256	0.047	-
HCM Control Delay (s)	8.3	0	-	19.5	13.4	8.2	0.2
HCM Lane LOS	A	A	-	C	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.3	1	0.1	-

Lanes, Volumes, Timings
4: Charlotte Avenue & Windsor Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	7	6	11	15	106	4	332	6	50	403	14
Future Volume (vph)	12	7	6	11	15	106	4	332	6	50	403	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.966			0.892			0.997			0.995	
Flt Protected		0.977			0.996			0.999			0.995	
Satd. Flow (prot)	0	1758	0	0	1655	0	0	3525	0	0	3504	0
Flt Permitted		0.977			0.996			0.999			0.995	
Satd. Flow (perm)	0	1758	0	0	1655	0	0	3525	0	0	3504	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1162			592			1102			448	
Travel Time (s)		31.7			16.1			21.5			8.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	8	7	12	17	118	4	369	7	56	448	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	0	0	147	0	0	380	0	0	520	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	40.5%											
Analysis Period (min)	15											
ICU Level of Service A												

Lanes, Volumes, Timings
5: Houston Street/Charlotte Avenue & Lancaster Avenue

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	145	32	4	310	47	37	89	4	10	175	205
Future Volume (vph)	163	145	32	4	310	47	37	89	4	10	175	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	50		0	0		0
Storage Lanes	1		1	0		0	1		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.982			0.994				0.850
Flt Protected	0.950						0.950				0.997	
Satd. Flow (prot)	1770	1863	1583	0	1829	0	1770	1852	0	0	1857	1583
Flt Permitted	0.336				0.997		0.602				0.980	
Satd. Flow (perm)	626	1863	1583	0	1824	0	1121	1852	0	0	1825	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1039			484			1097			1102	
Travel Time (s)		20.2			9.4			21.4			21.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	181	161	36	4	344	52	41	99	4	11	194	228
Shared Lane Traffic (%)												
Lane Group Flow (vph)	181	161	36	0	400	0	41	103	0	0	205	228
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2		2	6			8		4			4
Detector Phase	5	2	2	6	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	32.0	32.0	33.0	33.0		28.0	28.0		23.0	23.0	14.0
Total Split (s)	14.0	52.0	52.0	38.0	38.0		28.0	28.0		28.0	28.0	14.0
Total Split (%)	17.5%	65.0%	65.0%	47.5%	47.5%		35.0%	35.0%		35.0%	35.0%	17.5%
Maximum Green (s)	7.9	45.7	45.7	31.7	31.7		22.2	22.2		22.2	22.2	7.9
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.9	3.9		3.9	3.9	3.0
All-Red Time (s)	3.1	2.3	2.3	2.3	2.3		1.9	1.9		1.9	1.9	3.1
Lost Time Adjust (s)	-1.1	-1.3	-1.3		-1.3		-0.8	-0.8			-0.8	-1.1
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0	5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag							Lead
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	2.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None	Min	Min	Min	Min		None	None		None	None	None
Walk Time (s)		7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0	18.0	19.0	19.0		15.0	15.0		10.0	10.0	
Pedestrian Calls (#/hr)		0	0	0	0		0	0		0	0	
Act Effect Green (s)	32.8	32.8	32.8		18.6		11.8	11.8			11.8	25.9
Actuated g/C Ratio	0.60	0.60	0.60		0.34		0.21	0.21			0.21	0.47
v/c Ratio	0.32	0.14	0.04		0.65		0.17	0.26			0.52	0.30
Control Delay	7.0	5.7	5.2		21.0		21.1	21.2			25.6	11.5
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0			0.0	0.0
Total Delay	7.0	5.7	5.2		21.0		21.1	21.2			25.6	11.5

Lanes, Volumes, Timings
5: Houston Street/Charlotte Avenue & Lancaster Avenue

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A	A		C		C	C			C	B
Approach Delay		6.3			21.0			21.1			18.2	
Approach LOS		A			C			C			B	
Queue Length 50th (ft)	21	19	4		104		11	27			58	41
Queue Length 95th (ft)	56	50	15		208		37	73			134	108
Internal Link Dist (ft)		959			404			1017			1022	
Turn Bay Length (ft)	150						50					
Base Capacity (vph)	567	1606	1364		1130		484	799			788	755
Starvation Cap Reductn	0	0	0		0		0	0			0	0
Spillback Cap Reductn	0	0	0		0		0	0			0	0
Storage Cap Reductn	0	0	0		0		0	0			0	0
Reduced v/c Ratio	0.32	0.10	0.03		0.35		0.08	0.13			0.26	0.30

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 54.9

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 16.0

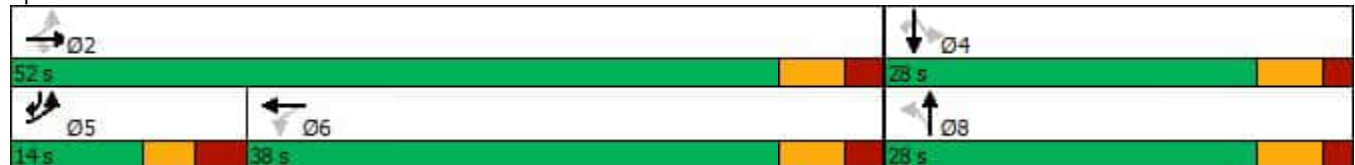
Intersection LOS: B

Intersection Capacity Utilization 60.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Houston Street/Charlotte Avenue & Lancaster Avenue



Lanes, Volumes, Timings
6: Main Street & Jefferson Street

2022 Existing
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑↑	↖	
Traffic Volume (vph)	0	0	38	465	16	0
Future Volume (vph)	0	0	38	465	16	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	1.00
Fr t						
Flt Protected				0.996	0.950	
Satd. Flow (prot)	0	0	0	5065	1770	0
Flt Permitted				0.996	0.950	
Satd. Flow (perm)	0	0	0	5065	1770	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	20			20	35	
Link Distance (ft)	564			262	261	
Travel Time (s)	19.2			8.9	5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	42	517	18	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	559	18	0
Turn Type			Perm	NA	Prot	
Protected Phases				6	8	
Permitted Phases			6			
Detector Phase			6	6	8	
Switch Phase						
Minimum Initial (s)			20.0	20.0	15.0	
Minimum Split (s)			26.0	26.0	22.0	
Total Split (s)			65.0	65.0	35.0	
Total Split (%)			65.0%	65.0%	35.0%	
Maximum Green (s)			59.4	59.4	29.1	
Yellow Time (s)			3.0	3.0	3.0	
All-Red Time (s)			2.6	2.6	2.9	
Lost Time Adjust (s)				-0.6	-0.9	
Total Lost Time (s)				5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)			2.0	2.0	2.0	
Recall Mode			C-Max	C-Max	None	
Walk Time (s)			7.0	7.0	5.0	
Flash Dont Walk (s)			11.0	11.0	11.0	
Pedestrian Calls (#/hr)			0	0	0	
Act Effect Green (s)				89.6	15.9	
Actuated g/C Ratio				0.90	0.16	
v/c Ratio				0.12	0.06	
Control Delay				0.2	36.6	
Queue Delay				0.0	0.0	
Total Delay				0.2	36.6	
LOS				A	D	
Approach Delay				0.2	36.6	
Approach LOS				A	D	

Lanes, Volumes, Timings
6: Main Street & Jefferson Street

2022 Existing
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)				0	10	
Queue Length 95th (ft)				2	30	
Internal Link Dist (ft)	484			182	181	
Turn Bay Length (ft)						
Base Capacity (vph)				4540	531	
Starvation Cap Reductn				662	0	
Spillback Cap Reductn				0	0	
Storage Cap Reductn				0	0	
Reduced v/c Ratio				0.14	0.03	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 76 (76%), Referenced to phase 6:WBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.12

Intersection Signal Delay: 1.3

Intersection LOS: A

Intersection Capacity Utilization 37.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Main Street & Jefferson Street



Lanes, Volumes, Timings
7: Main Street & Franklin Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	476	15	0	0	0	0	6	16	5	30	0
Future Volume (vph)	4	476	15	0	0	0	0	6	16	5	30	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't		0.995						0.903				
Flt Protected											0.992	
Satd. Flow (prot)	0	5060	0	0	0	0	0	1682	0	0	1848	0
Flt Permitted											0.980	
Satd. Flow (perm)	0	5060	0	0	0	0	0	1682	0	0	1825	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			35			35	
Link Distance (ft)		592			262			455			261	
Travel Time (s)		20.2			8.9			8.9			5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	529	17	0	0	0	0	7	18	6	33	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	550	0	0	0	0	0	25	0	0	39	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						7.0		7.0	7.0	
Minimum Split (s)	22.0	22.0						22.0		22.0	22.0	
Total Split (s)	25.0	25.0						35.0		35.0	35.0	
Total Split (%)	41.7%	41.7%						58.3%		58.3%	58.3%	
Maximum Green (s)	19.2	19.2						29.4		29.4	29.4	
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0	
All-Red Time (s)	2.8	2.8						2.6		2.6	2.6	
Lost Time Adjust (s)		-0.8						-0.6			-0.6	
Total Lost Time (s)		5.0						5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Recall Mode	None	None						C-Min		C-Min	C-Min	
Walk Time (s)	5.0	5.0						5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0						11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0						0		0	0	
Act Effct Green (s)		14.3						35.7			35.7	
Actuated g/C Ratio		0.24						0.60			0.60	
v/c Ratio		0.46						0.02			0.04	
Control Delay		20.3						6.3			6.3	
Queue Delay		0.0						0.0			0.0	
Total Delay		20.3						6.3			6.3	
LOS		C						A			A	
Approach Delay		20.3						6.3			6.3	
Approach LOS		C						A			A	

Lanes, Volumes, Timings
7: Main Street & Franklin Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		62						3			5	
Queue Length 95th (ft)		81						13			18	
Internal Link Dist (ft)		512			182			375			181	
Turn Bay Length (ft)												
Base Capacity (vph)		1686						1002			1087	
Starvation Cap Reductn		0						0			0	
Spillback Cap Reductn		0						0			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.33						0.02			0.04	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

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

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.46

Intersection Signal Delay: 18.8

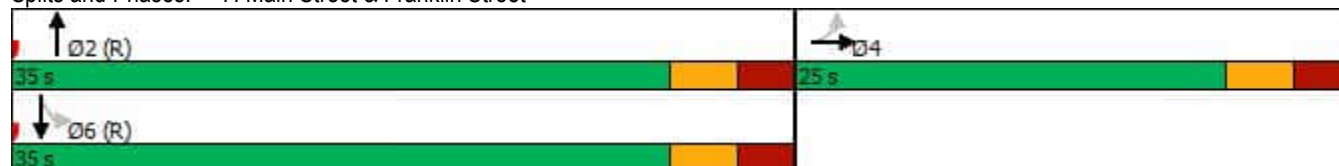
Intersection LOS: B

Intersection Capacity Utilization 23.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Main Street & Franklin Street



Lanes, Volumes, Timings
8: Main Street & Windsor Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	89	6	16	106	11	7	12	19	8	41	6
Future Volume (vph)	4	89	6	16	106	11	7	12	19	8	41	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.989			0.932			0.985	
Flt Protected		0.998			0.994			0.991			0.993	
Satd. Flow (prot)	0	1842	0	0	1831	0	0	1720	0	0	1822	0
Flt Permitted		0.980			0.938			0.951			0.964	
Satd. Flow (perm)	0	1809	0	0	1728	0	0	1651	0	0	1769	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		592			263			786			455	
Travel Time (s)		16.1			7.2			15.3			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	99	7	18	118	12	8	13	21	9	46	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	148	0	0	42	0	0	62	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	32.0	32.0		32.0	32.0		28.0	28.0		28.0	28.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		21.0	21.0		21.0	21.0	
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	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		9.6			9.6			16.0			16.0	
Actuated g/C Ratio		0.30			0.30			0.50			0.50	
v/c Ratio		0.20			0.28			0.05			0.07	
Control Delay		9.2			10.0			6.9			6.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.2			10.0			6.9			6.9	
LOS		A			A			A			A	
Approach Delay		9.2			10.0			6.9			6.9	
Approach LOS		A			A			A			A	

Lanes, Volumes, Timings 8: Main Street & Windsor Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		13			18			4			6	
Queue Length 95th (ft)		32			41			15			20	
Internal Link Dist (ft)		512			183			706			375	
Turn Bay Length (ft)												
Base Capacity (vph)		1593			1522			1287			1379	
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		0.07			0.10			0.03			0.04	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 31.8

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.28

Intersection Signal Delay: 8.8

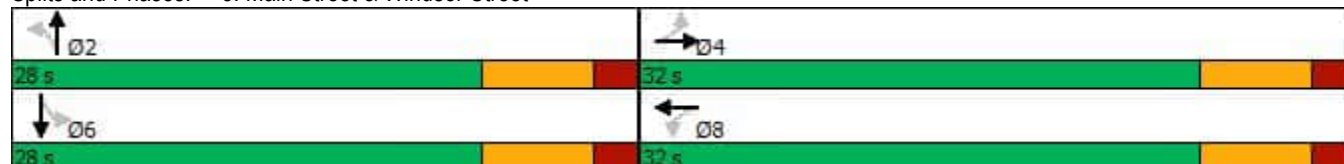
Intersection LOS: A

Intersection Capacity Utilization 29.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 8: Main Street & Windsor Street



Lanes, Volumes, Timings
9: Hayne Street/Skyway Drive & Church Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	49	41	4	69	128	18	464	4	50	590	130
Future Volume (vph)	122	49	41	4	69	128	18	464	4	50	590	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.971			0.904			0.999			0.975	
Flt Protected		0.972			0.999			0.998			0.997	
Satd. Flow (prot)	0	3340	0	0	3196	0	0	3529	0	0	3440	0
Flt Permitted		0.694			0.951			0.855			0.834	
Satd. Flow (perm)	0	2385	0	0	3043	0	0	3023	0	0	2878	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		823			247			483			1201	
Travel Time (s)		28.1			8.4			16.5			40.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	136	54	46	4	77	142	20	516	4	56	656	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	236	0	0	223	0	0	540	0	0	856	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)	31.0	31.0		30.0	30.0		24.0	24.0		26.0	26.0	
Total Split (s)	60.0	60.0		60.0	60.0		40.0	40.0		40.0	40.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	53.7	53.7		53.6	53.6		34.0	34.0		33.7	33.7	
Yellow Time (s)	3.3	3.3		3.4	3.4		3.0	3.0		3.3	3.3	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.3			-1.4			-1.0			-1.3	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
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)	20.0	20.0		19.0	19.0		14.0	14.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		56.2			56.2			33.8			33.8	
Actuated g/C Ratio		0.56			0.56			0.34			0.34	
v/c Ratio		0.18			0.13			0.53			0.88	
Control Delay		9.4			9.2			44.0			42.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.4			9.2			44.0			42.9	
LOS		A			A			D			D	
Approach Delay		9.4			9.2			44.0			42.9	
Approach LOS		A			A			D			D	

Lanes, Volumes, Timings
9: Hayne Street/Skyway Drive & Church Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		40			28			168			263	
Queue Length 95th (ft)		43			43			243			#370	
Internal Link Dist (ft)		743			167			403			1121	
Turn Bay Length (ft)												
Base Capacity (vph)		1340			1710			1058			1007	
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		0.18			0.13			0.51			0.85	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 13 (13%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 34.9

Intersection LOS: C

Intersection Capacity Utilization 68.7%

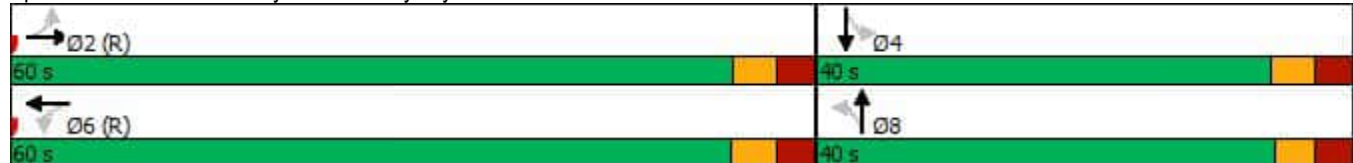
ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 9: Hayne Street/Skyway Drive & Church Street



Lanes, Volumes, Timings
10: Hayne Street & Jefferson Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	36	416	22	12	442	0	0	565	77
Future Volume (vph)	0	0	0	36	416	22	12	442	0	0	565	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	0.95	0.95	1.00	1.00	0.95	0.95
Frts					0.993						0.982	
Flt Protected					0.996			0.999				
Satd. Flow (prot)	0	0	0	0	5029	0	0	3536	0	0	3476	0
Flt Permitted					0.996			0.934				
Satd. Flow (perm)	0	0	0	0	5029	0	0	3306	0	0	3476	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		262			452			260			483	
Travel Time (s)		8.9			15.4			8.9			16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	40	462	24	13	491	0	0	628	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	526	0	0	504	0	0	714	0
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					4			2			6	
Permitted Phases				4			2					
Detector Phase				4	4		2	2			6	
Switch Phase												
Minimum Initial (s)				7.0	7.0		10.0	10.0			10.0	
Minimum Split (s)				22.0	22.0		22.0	22.0			22.0	
Total Split (s)				50.0	50.0		50.0	50.0			50.0	
Total Split (%)				50.0%	50.0%		50.0%	50.0%			50.0%	
Maximum Green (s)				44.1	44.1		44.4	44.4			44.4	
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0	
All-Red Time (s)				2.9	2.9		2.6	2.6			2.6	
Lost Time Adjust (s)					-0.9			-0.6			-0.6	
Total Lost Time (s)					5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	
Recall Mode				None	None		C-Max	C-Max			C-Max	
Walk Time (s)				5.0	5.0		5.0	5.0			5.0	
Flash Dont Walk (s)				11.0	11.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)				0	0		0	0			0	
Act Effect Green (s)					16.7			73.3			73.3	
Actuated g/C Ratio					0.17			0.73			0.73	
v/c Ratio					0.63			0.21			0.28	
Control Delay					40.1			5.1			0.8	
Queue Delay					0.0			0.3			0.0	
Total Delay					40.1			5.4			0.8	
LOS					D			A			A	
Approach Delay					40.1			5.4			0.8	
Approach LOS					D			A			A	

Lanes, Volumes, Timings
10: Hayne Street & Jefferson Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)					117			55			3	
Queue Length 95th (ft)					147			72			m4	
Internal Link Dist (ft)		182			372			180			403	
Turn Bay Length (ft)												
Base Capacity (vph)					2263			2422			2547	
Starvation Cap Reductn					0			1293			0	
Spillback Cap Reductn					0			0			39	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.23			0.45			0.28	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 18 (18%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 14.0

Intersection LOS: B

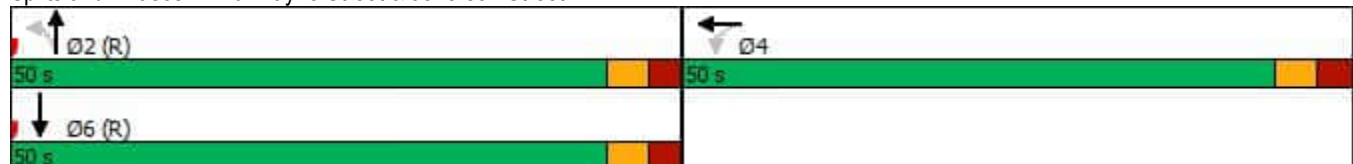
Intersection Capacity Utilization 38.4%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 10: Hayne Street & Jefferson Street



Lanes, Volumes, Timings
11: Hayne Street & Franklin Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	129	340	32	0	0	0	0	333	14	58	540	0
Future Volume (vph)	129	340	32	0	0	0	0	333	14	58	540	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990						0.994				
Flt Protected		0.987								0.950		
Satd. Flow (prot)	0	4969	0	0	0	0	0	1852	0	1770	1863	0
Flt Permitted		0.987								0.515		
Satd. Flow (perm)	0	4969	0	0	0	0	0	1852	0	959	1863	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		262			456			457			260	
Travel Time (s)		8.9			15.5			15.6			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	143	378	36	0	0	0	0	370	16	64	600	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	557	0	0	0	0	0	386	0	64	600	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						10.0		10.0	10.0	
Minimum Split (s)	21.0	21.0						20.0		22.0	22.0	
Total Split (s)	50.0	50.0						50.0		50.0	50.0	
Total Split (%)	50.0%	50.0%						50.0%		50.0%	50.0%	
Maximum Green (s)	44.4	44.4						44.4		44.4	44.4	
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0	
All-Red Time (s)	2.6	2.6						2.6		2.6	2.6	
Lost Time Adjust (s)		-0.6						-0.6		-0.6	-0.6	
Total Lost Time (s)		5.0						5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0	
Recall Mode	None	None						C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0						4.0		4.0	4.0	
Flash Dont Walk (s)	10.0	10.0						10.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0						0		0	0	
Act Effct Green (s)		17.6						72.4		72.4	72.4	
Actuated g/C Ratio		0.18						0.72		0.72	0.72	
v/c Ratio		0.64						0.29		0.09	0.44	
Control Delay		41.4						5.0		0.8	3.1	
Queue Delay		0.0						0.2		0.0	0.1	
Total Delay		41.4						5.3		0.8	3.2	
LOS		D						A		A	A	
Approach Delay		41.4						5.3			3.0	
Approach LOS		D						A			A	

Lanes, Volumes, Timings
11: Hayne Street & Franklin Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		122						63		1	13	
Queue Length 95th (ft)		152						103		4	299	
Internal Link Dist (ft)		182			376			377			180	
Turn Bay Length (ft)												
Base Capacity (vph)		2236						1341		694	1349	
Starvation Cap Reductn		162						411		0	160	
Spillback Cap Reductn		0						0		0	0	
Storage Cap Reductn		0						0		0	0	
Reduced v/c Ratio		0.27						0.42		0.09	0.50	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 13 (13%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 16.9

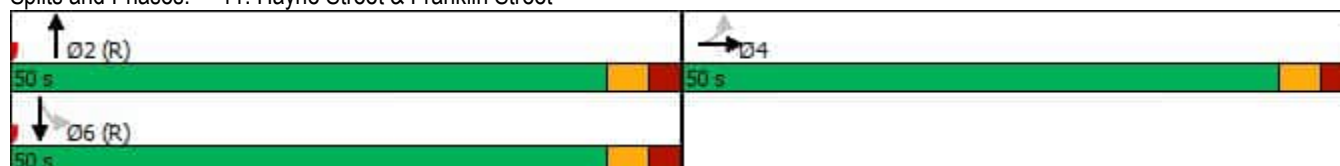
Intersection LOS: B

Intersection Capacity Utilization 49.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 11: Hayne Street & Franklin Street



Lanes, Volumes, Timings
12: Hayne Street & Windsor Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	75	11	83	91	24	8	297	46	21	511	28
Future Volume (vph)	13	75	11	83	91	24	8	297	46	21	511	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.983			0.982			0.992	
Flt Protected		0.994			0.980			0.999		0.950		
Satd. Flow (prot)	0	1824	0	0	1794	0	0	1827	0	1770	1848	0
Flt Permitted		0.948			0.794			0.987		0.536		
Satd. Flow (perm)	0	1739	0	0	1454	0	0	1805	0	998	1848	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			20			20	
Link Distance (ft)		263			1063			787			457	
Travel Time (s)		7.2			29.0			26.8			15.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	14	83	12	92	101	27	9	330	51	23	568	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	0	220	0	0	390	0	23	599	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		21.0	21.0		20.0	20.0	
Total Split (s)	35.0	35.0		35.0	35.0		65.0	65.0		65.0	65.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		65.0%	65.0%		65.0%	65.0%	
Maximum Green (s)	29.6	29.6		29.6	29.6		59.6	59.6		60.2	60.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		1.8	1.8	
Lost Time Adjust (s)		-0.4			-0.4			-0.4		0.2	0.2	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		19.2			19.2			70.8		70.8	70.8	
Actuated g/C Ratio		0.19			0.19			0.71		0.71	0.71	
v/c Ratio		0.33			0.79			0.31		0.03	0.46	
Control Delay		35.9			57.7			7.0		1.5	2.5	
Queue Delay		0.0			0.0			0.0		0.0	0.1	
Total Delay		35.9			57.7			7.0		1.5	2.6	
LOS		D			E			A		A	A	
Approach Delay		35.9			57.7			7.0			2.6	
Approach LOS		D			E			A			A	

Lanes, Volumes, Timings 12: Hayne Street & Windsor Street

2022 Existing
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		60			135			80		1	24	
Queue Length 95th (ft)		101			199			158		m2	63	
Internal Link Dist (ft)		183			983			707			377	
Turn Bay Length (ft)												
Base Capacity (vph)		521			436			1278		706	1309	
Starvation Cap Reductn		0			0			0		0	107	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.21			0.50			0.31		0.03	0.50	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

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

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 15.6

Intersection LOS: B

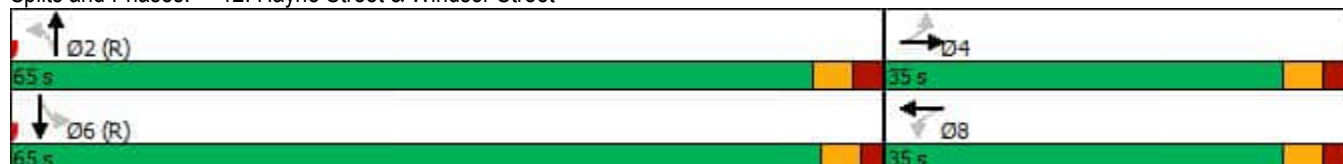
Intersection Capacity Utilization 54.4%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 12: Hayne Street & Windsor Street



Lanes, Volumes, Timings
13: Church Street & Jefferson Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	8	414	142	17	33	0	0	97	28
Future Volume (vph)	0	0	0	8	414	142	17	33	0	0	97	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	0.95	0.95
Fr't					0.962						0.967	
Flt Protected					0.999			0.983				
Satd. Flow (prot)	0	0	0	0	4887	0	0	1831	0	0	3422	0
Flt Permitted					0.999			0.829				
Satd. Flow (perm)	0	0	0	0	4887	0	0	1544	0	0	3422	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		452			1043			259			558	
Travel Time (s)		15.4			35.6			8.8			19.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	9	460	158	19	37	0	0	108	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	627	0	0	56	0	0	139	0
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					6			8			4	
Permitted Phases				6			8					
Detector Phase				6	6		8	8			4	
Switch Phase												
Minimum Initial (s)				10.0	10.0		7.0	7.0			7.0	
Minimum Split (s)				27.0	27.0		23.0	23.0			23.0	
Total Split (s)				65.0	65.0		35.0	35.0			35.0	
Total Split (%)				65.0%	65.0%		35.0%	35.0%			35.0%	
Maximum Green (s)				59.1	59.1		29.2	29.2			29.6	
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0	
All-Red Time (s)				2.9	2.9		2.8	2.8			2.4	
Lost Time Adjust (s)					-0.9			-0.8			-0.4	
Total Lost Time (s)					5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	
Recall Mode				C-Max	C-Max		None	None			None	
Walk Time (s)				5.0	5.0		5.0	5.0			5.0	
Flash Dont Walk (s)				16.0	16.0		12.0	12.0			12.0	
Pedestrian Calls (#/hr)				0	0		0	0			0	
Act Effect Green (s)					80.8			9.3			9.2	
Actuated g/C Ratio					0.81			0.09			0.09	
v/c Ratio					0.16			0.39			0.44	
Control Delay					2.3			42.7			45.8	
Queue Delay					0.0			0.0			0.0	
Total Delay					2.3			42.7			45.8	
LOS					A			D			D	
Approach Delay					2.3			42.7			45.8	
Approach LOS					A			D			D	

Lanes, Volumes, Timings
13: Church Street & Jefferson Street

2022 Existing
Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)					23			39			41	
Queue Length 95th (ft)					38			81			m60	
Internal Link Dist (ft)		372			963			179			478	
Turn Bay Length (ft)												
Base Capacity (vph)					3946			463			1026	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.16			0.12			0.14	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 50 (50%), Referenced to phase 6:WBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 12.4

Intersection LOS: B

Intersection Capacity Utilization 35.5%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 13: Church Street & Jefferson Street



Lanes, Volumes, Timings
14: Church Street & Franklin Street

2022 Existing
Timing Plan: PM Peak Hour

																	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR					
Lane Configurations																	
Traffic Volume (vph)	29	343	27	0	0	0	0	26	5	79	27	0					
Future Volume (vph)	29	343	27	0	0	0	0	26	5	79	27	0					
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900					
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Fr't	0.989		0.977														
Flt Protected	0.950										0.950						
Satd. Flow (prot)	1770	3500	0	0	0	0	0	1820	0	1770	1863	0					
Flt Permitted	0.950										0.950						
Satd. Flow (perm)	1770	3500	0	0	0	0	0	1820	0	1770	1863	0					
Right Turn on Red			No			No			No			No					
Satd. Flow (RTOR)																	
Link Speed (mph)	20				35			20			20						
Link Distance (ft)	456				1229			1164			259						
Travel Time (s)	15.5				23.9			39.7			8.8						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90					
Adj. Flow (vph)	32	381	30	0	0	0	0	29	6	88	30	0					
Shared Lane Traffic (%)																	
Lane Group Flow (vph)	32	411	0	0	0	0	0	35	0	88	30	0					
Turn Type	Perm	NA						NA		Prot	NA						
Protected Phases	4								2	1	6						
Permitted Phases	4																
Detector Phase	4	4							2	1	6						
Switch Phase																	
Minimum Initial (s)	7.0	7.0						10.0		7.0	10.0						
Minimum Split (s)	18.0	18.0						21.0		12.0	21.0						
Total Split (s)	60.0	60.0						25.0		15.0	40.0						
Total Split (%)	60.0%	60.0%						25.0%		15.0%	40.0%						
Maximum Green (s)	54.9	54.9						19.7		10.0	34.6						
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0						
All-Red Time (s)	2.1	2.1						2.3		2.0	2.4						
Lost Time Adjust (s)	-0.1	-0.1						-0.3		0.0	-0.4						
Total Lost Time (s)	5.0	5.0						5.0		5.0	5.0						
Lead/Lag								Lag		Lead							
Lead-Lag Optimize?								Yes		Yes							
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0						
Recall Mode	None	None						C-Max		None	C-Max						
Walk Time (s)	5.0	5.0						5.0			5.0						
Flash Dont Walk (s)	7.0	7.0						10.0			10.0						
Pedestrian Calls (#/hr)	0	0						0			0						
Act Effct Green (s)	17.3	17.3						60.4		9.7	72.7						
Actuated g/C Ratio	0.17	0.17						0.60		0.10	0.73						
v/c Ratio	0.10	0.68						0.03		0.52	0.02						
Control Delay	18.9	30.1						11.4		42.3	0.4						
Queue Delay	0.0	0.0						0.0		0.0	0.0						
Total Delay	18.9	30.1						11.4		42.3	0.4						
LOS	B	C						B		D	A						
Approach Delay	29.3							11.4		31.7							
Approach LOS	C							B		C							

Lanes, Volumes, Timings
14: Church Street & Franklin Street

2022 Existing
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	21	147						9		45	0	
Queue Length 95th (ft)	50	196						28		9	1	
Internal Link Dist (ft)		376			1149			1084			179	
Turn Bay Length (ft)												
Base Capacity (vph)	973	1925						1099		192	1354	
Starvation Cap Reductn	0	0						0		0	0	
Spillback Cap Reductn	0	0						0		0	0	
Storage Cap Reductn	0	0						0		0	0	
Reduced v/c Ratio	0.03	0.21						0.03		0.46	0.02	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 69 (69%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 28.7

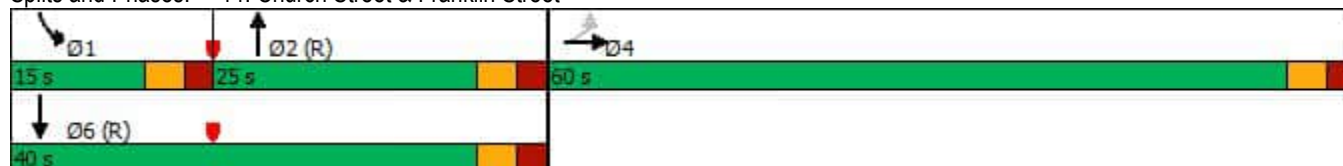
Intersection LOS: C

Intersection Capacity Utilization 29.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 14: Church Street & Franklin Street



Intersection: 1: Charlotte Avenue & Church Street

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	TR	L	T	T
Maximum Queue (ft)	118	104	80	90	60	63	94
Average Queue (ft)	49	52	22	39	16	18	33
95th Queue (ft)	97	93	58	77	48	48	77
Link Distance (ft)	737	737	424	424		1215	1215
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					100		
Storage Blk Time (%)					0		
Queuing Penalty (veh)					0		

Intersection: 2: Charlotte Avenue & Jefferson Street

Movement	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	T	R	L	T	T	T	TR
Maximum Queue (ft)	69	287	125	100	26	114	113	120	194
Average Queue (ft)	25	175	46	32	3	45	51	23	58
95th Queue (ft)	58	270	94	73	16	88	95	73	144
Link Distance (ft)	1051	482	482	482		187	187	424	424
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)					50				
Storage Blk Time (%)						5			
Queuing Penalty (veh)						0			

Intersection: 3: Charlotte Avenue & Franklin Street

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	225	1141	233	208	186	116	197	221
Average Queue (ft)	188	1068	120	67	83	33	105	184
95th Queue (ft)	297	1292	222	159	149	79	186	230
Link Distance (ft)		1084		362	362		187	187
Upstream Blk Time (%)		82			0		0	13
Queuing Penalty (veh)		0			0		1	45
Storage Bay Dist (ft)	125		175			50		
Storage Blk Time (%)	4	67	8	0		6	27	
Queuing Penalty (veh)	28	127	16	0		7	14	

Intersection: 4: Charlotte Avenue & Windsor Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LT	LT
Maximum Queue (ft)	49	86	26	113
Average Queue (ft)	23	38	2	32
95th Queue (ft)	50	71	13	79
Link Distance (ft)	1116	514	996	362
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Houston Street/Charlotte Avenue & Lancaster Avenue

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	T	LTR	L	TR	LT	R
Maximum Queue (ft)	167	122	183	52	147	103	68
Average Queue (ft)	83	50	82	19	78	27	10
95th Queue (ft)	138	99	146	46	132	71	43
Link Distance (ft)		999	384		1056	996	996
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	150			50			
Storage Blk Time (%)	0	0		3	22		
Queuing Penalty (veh)	1	0		5	7		

Intersection: 6: Main Street & Jefferson Street

Movement	WB	WB	NB
Directions Served	LT	T	L
Maximum Queue (ft)	23	12	39
Average Queue (ft)	2	1	10
95th Queue (ft)	13	7	33
Link Distance (ft)	199	199	227
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Main Street & Franklin Street

Movement	EB	EB	EB	NB	SB
Directions Served	LT	T	TR	TR	LT
Maximum Queue (ft)	121	122	165	39	47
Average Queue (ft)	67	80	102	7	7
95th Queue (ft)	113	121	156	28	31
Link Distance (ft)	516	516	516	374	227
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: Main Street & Windsor Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	106	88	44	44
Average Queue (ft)	50	43	13	7
95th Queue (ft)	91	80	38	30
Link Distance (ft)	514	200	758	374
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Hayne Street/Skyway Drive & Church Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	82	74	56	74	154	173	257	299
Average Queue (ft)	34	24	12	28	82	96	131	172
95th Queue (ft)	70	59	41	64	135	153	220	259
Link Distance (ft)	737	737	181	181	390	390	1158	1158
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 10: Hayne Street & Jefferson Street

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	215	172	120	100	112	76	182
Average Queue (ft)	114	83	41	51	54	12	92
95th Queue (ft)	173	139	89	87	100	47	165
Link Distance (ft)	372	372	372	226	226	390	390
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 11: Hayne Street & Franklin Street

Movement	EB	EB	EB	NB	SB	SB
Directions Served	LT	T	TR	TR	L	T
Maximum Queue (ft)	131	150	171	191	62	169
Average Queue (ft)	70	91	111	84	19	78
95th Queue (ft)	121	134	157	155	52	140
Link Distance (ft)	188	188	188	376	226	226
Upstream Blk Time (%)	0		0			0
Queuing Penalty (veh)	0		0			0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: Hayne Street & Windsor Street

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	LTR	L	TR
Maximum Queue (ft)	163	132	263	57	88
Average Queue (ft)	78	73	126	18	34
95th Queue (ft)	141	126	218	48	75
Link Distance (ft)	200	1028	758	376	376
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 13: Church Street & Jefferson Street

Movement	WB	WB	WB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	TR
Maximum Queue (ft)	70	73	74	48	88	61
Average Queue (ft)	25	14	20	13	30	16
95th Queue (ft)	60	47	55	41	66	45
Link Distance (ft)	988	988	988	219	471	471
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 14: Church Street & Franklin Street

Movement	EB	EB	EB	NB	SB	SB
Directions Served	L	T	TR	TR	L	T
Maximum Queue (ft)	31	247	269	28	104	12
Average Queue (ft)	5	102	115	4	37	1
95th Queue (ft)	22	219	240	20	80	8
Link Distance (ft)	374	374	374	1118	219	219
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 252

Intersection: 1: Charlotte Avenue & Church Street

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	TR	L	T	T
Maximum Queue (ft)	203	154	108	108	39	103	134
Average Queue (ft)	105	72	37	50	12	28	49
95th Queue (ft)	173	133	85	94	37	71	106
Link Distance (ft)	737	737	424	424		1215	1215
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					100		
Storage Blk Time (%)						0	
Queuing Penalty (veh)						0	

Intersection: 2: Charlotte Avenue & Jefferson Street

Movement	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	T	R	L	T	T	T	TR
Maximum Queue (ft)	64	349	211	141	21	118	104	174	280
Average Queue (ft)	22	191	93	69	3	43	46	44	118
95th Queue (ft)	56	298	167	126	16	89	92	125	233
Link Distance (ft)	1051	482	482	482		187	187	424	424
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)					50				
Storage Blk Time (%)						6			
Queuing Penalty (veh)						0			

Intersection: 3: Charlotte Avenue & Franklin Street

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	225	1005	188	136	114	137	202	225
Average Queue (ft)	170	695	99	42	62	53	133	195
95th Queue (ft)	295	1182	167	98	102	120	215	224
Link Distance (ft)		1084		362	362		187	187
Upstream Blk Time (%)		9					1	19
Queuing Penalty (veh)		0					5	87
Storage Bay Dist (ft)	125		175			50		
Storage Blk Time (%)	5	68	1	0		15	27	
Queuing Penalty (veh)	22	88	1	0		29	16	

Intersection: 4: Charlotte Avenue & Windsor Street

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	LT	LT	TR
Maximum Queue (ft)	35	88	22	57	5
Average Queue (ft)	16	46	1	14	0
95th Queue (ft)	41	77	10	45	3
Link Distance (ft)	1116	514	996	362	362
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Houston Street/Charlotte Avenue & Lancaster Avenue

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	T	LTR	L	TR	LT	R
Maximum Queue (ft)	116	116	202	61	101	118	112
Average Queue (ft)	52	32	106	25	45	43	28
95th Queue (ft)	90	76	174	55	85	99	81
Link Distance (ft)		999	384		1056	996	996
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	150			50			
Storage Blk Time (%)	0	0		4	9		
Queuing Penalty (veh)	0	0		4	3		

Intersection: 6: Main Street & Jefferson Street

Movement	WB	WB	WB	NB
Directions Served	LT	T	T	L
Maximum Queue (ft)	44	31	24	56
Average Queue (ft)	6	2	1	18
95th Queue (ft)	28	14	11	46
Link Distance (ft)	199	199	199	227
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: Main Street & Franklin Street

Movement	EB	EB	EB	NB	SB
Directions Served	LT	T	TR	TR	LT
Maximum Queue (ft)	157	141	164	43	70
Average Queue (ft)	76	72	86	6	17
95th Queue (ft)	135	127	155	26	52
Link Distance (ft)	516	516	516	374	227
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: Main Street & Windsor Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	96	126	56	75
Average Queue (ft)	42	57	14	23
95th Queue (ft)	75	101	42	59
Link Distance (ft)	514	200	758	374
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Hayne Street/Skyway Drive & Church Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	120	75	70	129	281	297	709	740
Average Queue (ft)	49	26	18	52	180	187	500	551
95th Queue (ft)	101	62	51	110	263	271	1072	1084
Link Distance (ft)	737	737	181	181	390	390	1158	1158
Upstream Blk Time (%)							10	10
Queuing Penalty (veh)							0	0
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 10: Hayne Street & Jefferson Street

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	T	TR
Maximum Queue (ft)	229	183	159	126	122	242	357
Average Queue (ft)	141	93	67	56	57	22	85
95th Queue (ft)	215	157	129	101	110	110	257
Link Distance (ft)	372	372	372	226	226	390	390
Upstream Blk Time (%)							0
Queuing Penalty (veh)							0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 11: Hayne Street & Franklin Street

Movement	EB	EB	EB	NB	SB	SB
Directions Served	LT	T	TR	TR	L	T
Maximum Queue (ft)	186	182	197	190	91	126
Average Queue (ft)	102	105	122	75	23	24
95th Queue (ft)	167	161	179	153	61	77
Link Distance (ft)	188	188	188	376	226	226
Upstream Blk Time (%)	0	0	1			0
Queuing Penalty (veh)	1	0	2			0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: Hayne Street & Windsor Street

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	LTR	L	TR
Maximum Queue (ft)	139	251	204	39	118
Average Queue (ft)	65	127	88	6	39
95th Queue (ft)	114	214	167	26	91
Link Distance (ft)	200	1028	758	376	376
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 13: Church Street & Jefferson Street

Movement	WB	WB	WB	NB	SB	SB
Directions Served	LT	T	TR	LT	T	TR
Maximum Queue (ft)	89	61	101	114	92	82
Average Queue (ft)	30	15	35	39	38	31
95th Queue (ft)	72	45	82	88	79	69
Link Distance (ft)	988	988	988	219	471	471
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 14: Church Street & Franklin Street

Movement	EB	EB	EB	NB	SB	SB
Directions Served	L	T	TR	TR	L	T
Maximum Queue (ft)	75	240	265	63	130	43
Average Queue (ft)	20	121	142	8	53	2
95th Queue (ft)	57	214	247	33	106	16
Link Distance (ft)	374	374	374	1118	219	219
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 259

APPENDIX F

2022 ROAD DIET SYNCHRO AND SIMTRAFFIC REPORTS

Lanes, Volumes, Timings
1: Charlotte Avenue & Church Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	L	L
Traffic Volume (vph)	63	65	507	103	28	318
Future Volume (vph)	63	65	507	103	28	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932		0.977			
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1694	0	1820	0	1770	1863
Flt Permitted	0.976				0.351	
Satd. Flow (perm)	1694	0	1820	0	654	1863
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	20		35			35
Link Distance (ft)	823		519			1250
Travel Time (s)	28.1		10.1			24.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	70	72	563	114	31	353
Shared Lane Traffic (%)						
Lane Group Flow (vph)	142	0	677	0	31	353
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	7.0		10.0		10.0	10.0
Minimum Split (s)	30.3		30.9		30.9	30.9
Total Split (s)	31.0		44.0		44.0	44.0
Total Split (%)	41.3%		58.7%		58.7%	58.7%
Maximum Green (s)	24.7		38.1		38.1	38.1
Yellow Time (s)	3.0		3.1		3.1	3.1
All-Red Time (s)	3.3		2.8		2.8	2.8
Lost Time Adjust (s)	-1.3		-0.9		-0.9	-0.9
Total Lost Time (s)	5.0		5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0		2.0	2.0
Recall Mode	None		C-Max		C-Max	C-Max
Walk Time (s)	5.0		5.0		5.0	5.0
Flash Dont Walk (s)	19.0		20.0		20.0	20.0
Pedestrian Calls (#/hr)	0		0		0	0
Act Effect Green (s)	12.2		56.5		56.5	56.5
Actuated g/C Ratio	0.16		0.75		0.75	0.75
v/c Ratio	0.52		0.49		0.06	0.25
Control Delay	34.8		3.2		4.8	4.8
Queue Delay	0.0		0.0		0.0	0.0
Total Delay	34.8		3.2		4.8	4.8

Lanes, Volumes, Timings
1: Charlotte Avenue & Church Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

	↖	↗	↑	↘	↙	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	C		A		A	A
Approach Delay	34.8		3.2			4.8
Approach LOS	C		A			A
Queue Length 50th (ft)	61		46		4	48
Queue Length 95th (ft)	107		61		14	101
Internal Link Dist (ft)	743		439			1170
Turn Bay Length (ft)					100	
Base Capacity (vph)	587		1370		492	1402
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	0.24		0.49		0.06	0.25

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 35 (47%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 7.4

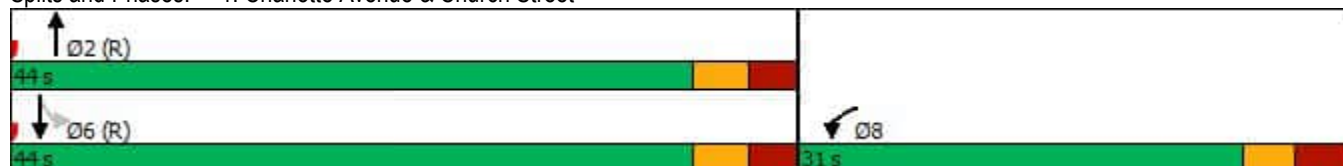
Intersection LOS: A

Intersection Capacity Utilization 48.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Charlotte Avenue & Church Street



Lanes, Volumes, Timings
2: Charlotte Avenue & Jefferson Street

2022 Existing - Road Diets

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	0	6	278	59	38	4	564	0	0	339	19
Future Volume (vph)	17	0	6	278	59	38	4	564	0	0	339	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	0		0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.964				0.850					0.993	
Flt Protected		0.965		0.950			0.950					
Satd. Flow (prot)	0	1733	0	1770	1863	1583	1770	1863	0	0	1850	0
Flt Permitted		0.837		0.740			0.481					
Satd. Flow (perm)	0	1503	0	1378	1863	1583	896	1863	0	0	1850	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			20			35			35	
Link Distance (ft)		1102			564			258			519	
Travel Time (s)		30.1			19.2			5.0			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	19	0	7	309	66	42	4	627	0	0	377	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	309	66	42	4	627	0	0	398	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2					
Detector Phase	4	4		8	8	8	2	2			6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	10.0	10.0			10.0	
Minimum Split (s)	27.4	27.4		28.3	28.3	28.3	21.7	21.7			18.2	
Total Split (s)	30.0	30.0		30.0	30.0	30.0	45.0	45.0			45.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	60.0%	60.0%			60.0%	
Maximum Green (s)	24.6	24.6		23.7	23.7	23.7	39.3	39.3			39.8	
Yellow Time (s)	3.0	3.0		3.3	3.3	3.3	4.1	4.1			3.6	
All-Red Time (s)	2.4	2.4		3.0	3.0	3.0	1.6	1.6			1.6	
Lost Time Adjust (s)		-0.4		-1.3	-1.3	-1.3	-0.7	-0.7			-0.2	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max			C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0			5.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0	17.0	11.0	11.0			8.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0			0	
Act Effect Green (s)		14.4		21.1	21.1	21.1	43.9	43.9			43.9	
Actuated g/C Ratio		0.19		0.28	0.28	0.28	0.59	0.59			0.59	
v/c Ratio		0.09		0.80	0.13	0.09	0.01	0.58			0.37	
Control Delay		21.0		40.6	18.9	18.7	8.2	13.4			7.8	
Queue Delay		0.0		0.0	0.0	0.0	0.0	11.7			0.0	
Total Delay		21.0		40.6	18.9	18.7	8.2	25.1			7.8	

Lanes, Volumes, Timings
2: Charlotte Avenue & Jefferson Street

2022 Existing - Road Diets

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C		D	B	B	A	C			A	
Approach Delay		21.0			35.0			25.0			7.8	
Approach LOS		C			C			C			A	
Queue Length 50th (ft)		11		130	23	14	1	174			71	
Queue Length 95th (ft)		24		234	54	39	5	296			101	
Internal Link Dist (ft)		1022			484			178			439	
Turn Bay Length (ft)							50					
Base Capacity (vph)		501		459	621	527	524	1090			1082	
Starvation Cap Reductn		0		0	0	0	0	439			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		0.05		0.67	0.11	0.08	0.01	0.96			0.37	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 28 (37%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 23.1

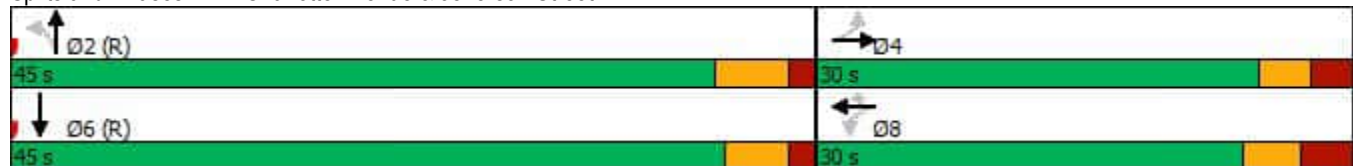
Intersection LOS: C

Intersection Capacity Utilization 57.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: Charlotte Avenue & Jefferson Street



Lanes, Volumes, Timings
3: Charlotte Avenue & Franklin Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	553	58	0	0	0	190	373	15	47	221	355
Future Volume (vph)	170	553	58	0	0	0	190	373	15	47	221	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	0		0	175		0	50		0
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986						0.994				0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1837	0	0	0	0	1770	1852	0	1770	1863	1583
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1837	0	0	0	0	1770	1852	0	1770	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			20			35			35	
Link Distance (ft)		1131			592			448			258	
Travel Time (s)		22.0			20.2			8.7			5.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	189	614	64	0	0	0	211	414	17	52	246	394
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	678	0	0	0	0	211	431	0	52	246	394
Turn Type	Perm	NA					Prot	NA		Prot	NA	Perm
Protected Phases		4					5	2		1	6	
Permitted Phases	4											6
Detector Phase	4	4					5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0					7.0	10.0		7.0	10.0	10.0
Minimum Split (s)	26.3	26.3					12.1	19.1		12.1	19.0	19.0
Total Split (s)	46.0	46.0					19.0	41.9		12.1	35.0	35.0
Total Split (%)	46.0%	46.0%					19.0%	41.9%		12.1%	35.0%	35.0%
Maximum Green (s)	39.7	39.7					13.9	36.8		7.0	30.0	30.0
Yellow Time (s)	4.1	4.1					3.0	3.7		3.0	3.6	3.6
All-Red Time (s)	2.2	2.2					2.1	1.4		2.1	1.4	1.4
Lost Time Adjust (s)	-1.3	-1.3					-0.1	-0.1		-0.1	0.0	0.0
Total Lost Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	5.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0					2.0	2.0		2.0	2.0	2.0
Recall Mode	None	None					None	Max		None	Max	Max
Walk Time (s)	5.0	5.0						5.0			5.0	5.0
Flash Dont Walk (s)	15.0	15.0						9.0			9.0	9.0
Pedestrian Calls (#/hr)	0	0						0			0	0
Act Effct Green (s)	38.6	38.6					13.3	39.1		7.1	30.1	30.1
Actuated g/C Ratio	0.40	0.40					0.14	0.40		0.07	0.31	0.31
v/c Ratio	0.27	0.93					0.87	0.58		0.40	0.43	0.80
Control Delay	20.9	48.8					74.9	28.3		54.2	30.4	46.1
Queue Delay	0.0	0.0					0.0	0.0		0.0	4.9	54.5
Total Delay	20.9	48.8					74.9	28.3		54.2	35.3	100.6

Lanes, Volumes, Timings
3: Charlotte Avenue & Franklin Street

2022 Existing - Road Diets

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	D					E	C		D	D	F
Approach Delay		42.7						43.7			73.9	
Approach LOS		D						D			E	
Queue Length 50th (ft)	78	396					133	223		32	126	233
Queue Length 95th (ft)	129	#621					#260	328		72	199	#392
Internal Link Dist (ft)		1051			512			368			178	
Turn Bay Length (ft)	125						175			50		
Base Capacity (vph)	749	778					255	744		129	577	490
Starvation Cap Reductn	0	0					0	0		0	260	160
Spillback Cap Reductn	0	0					0	0		0	0	0
Storage Cap Reductn	0	0					0	0		0	0	0
Reduced v/c Ratio	0.25	0.87					0.83	0.58		0.40	0.78	1.19

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 97.1

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 52.8

Intersection LOS: D

Intersection Capacity Utilization 71.5%

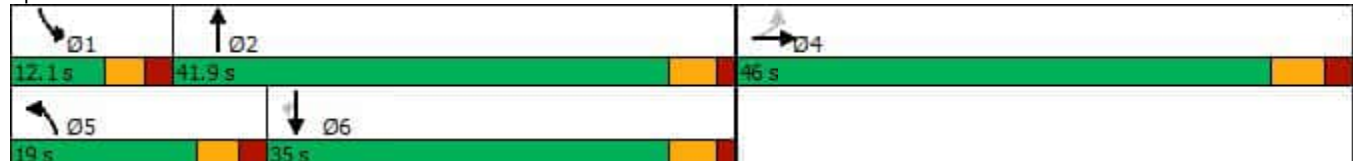
ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Charlotte Avenue & Franklin Street



HCM 6th TWSC
4: Charlotte Avenue & Windsor Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	7	17	7	4	11	46	4	570	4	65	245	5
Future Vol, veh/h	7	17	7	4	11	46	4	570	4	65	245	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	19	8	4	12	51	4	633	4	72	272	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1094	1064	275	1076	1065	635	278	0	0	637	0	0
Stage 1	419	419	-	643	643	-	-	-	-	-	-	-
Stage 2	675	645	-	433	422	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	191	223	764	197	223	478	1285	-	-	947	-	-
Stage 1	612	590	-	462	468	-	-	-	-	-	-	-
Stage 2	444	467	-	601	588	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	151	202	764	168	202	478	1285	-	-	947	-	-
Mov Cap-2 Maneuver	151	202	-	168	202	-	-	-	-	-	-	-
Stage 1	609	537	-	460	466	-	-	-	-	-	-	-
Stage 2	384	465	-	522	535	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	24.2		17.7		0.1		1.9	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1285	-	-	222 350	947	-	-
HCM Lane V/C Ratio	0.003	-	-	0.155 0.194	0.076	-	-
HCM Control Delay (s)	7.8	0	-	24.2 17.7	9.1	0	-
HCM Lane LOS	A	A	-	C C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5 0.7	0.2	-	-

Lanes, Volumes, Timings
4: Charlotte Avenue & Windsor Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	17	7	4	11	46	4	570	4	65	245	5
Future Volume (vph)	7	17	7	4	11	46	4	570	4	65	245	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.969			0.897			0.999			0.998	
Flt Protected		0.989			0.997						0.990	
Satd. Flow (prot)	0	1785	0	0	1666	0	0	1861	0	0	1840	0
Flt Permitted		0.989			0.997						0.990	
Satd. Flow (perm)	0	1785	0	0	1666	0	0	1861	0	0	1840	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1162			592			1102			448	
Travel Time (s)		31.7			16.1			21.5			8.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	8	19	8	4	12	51	4	633	4	72	272	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	35	0	0	67	0	0	641	0	0	350	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	61.2%											
Analysis Period (min)	15											
	ICU Level of Service B											

Lanes, Volumes, Timings
5: Houston Street/Charlotte Avenue & Lancaster Avenue

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	280	241	46	4	134	92	27	183	4	5	114	115
Future Volume (vph)	280	241	46	4	134	92	27	183	4	5	114	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	50		0	0		500
Storage Lanes	1		1	0		0	1		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.946			0.997				0.850
Flt Protected	0.950				0.999		0.950				0.998	
Satd. Flow (prot)	1770	1863	1583	0	1760	0	1770	1857	0	0	1859	1583
Flt Permitted	0.417				0.993		0.672				0.979	
Satd. Flow (perm)	777	1863	1583	0	1750	0	1252	1857	0	0	1824	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1039			484			1097			1102	
Travel Time (s)		20.2			9.4			21.4			21.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	311	268	51	4	149	102	30	203	4	6	127	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	311	268	51	0	255	0	30	207	0	0	133	128
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2		2	6			8		4			4
Detector Phase	5	2	2	6	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	32.0	32.0	33.0	33.0		28.0	28.0		23.0	23.0	14.0
Total Split (s)	17.0	52.0	52.0	35.0	35.0		28.0	28.0		28.0	28.0	17.0
Total Split (%)	21.3%	65.0%	65.0%	43.8%	43.8%		35.0%	35.0%		35.0%	35.0%	21.3%
Maximum Green (s)	10.9	45.7	45.7	28.7	28.7		22.2	22.2		22.2	22.2	10.9
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.9	3.9		3.9	3.9	3.0
All-Red Time (s)	3.1	2.3	2.3	2.3	2.3		1.9	1.9		1.9	1.9	3.1
Lost Time Adjust (s)	-1.1	-1.3	-1.3		-1.3		-0.8	-0.8			-0.8	-1.1
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0	5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag							Lead
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	2.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None	Min	Min	Min	Min		None	None		None	None	None
Walk Time (s)		7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0	18.0	19.0	19.0		15.0	15.0		10.0	10.0	
Pedestrian Calls (#/hr)		0	0	0	0		0	0		0	0	
Act Effect Green (s)	31.3	31.3	31.3		14.8		11.3	11.3			11.3	27.9
Actuated g/C Ratio	0.59	0.59	0.59		0.28		0.21	0.21			0.21	0.53
v/c Ratio	0.46	0.24	0.05		0.52		0.11	0.52			0.34	0.15
Control Delay	8.2	6.2	5.3		21.0		18.9	24.3			21.2	7.6
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0			0.0	0.0
Total Delay	8.2	6.2	5.3		21.0		18.9	24.3			21.2	7.6

Lanes, Volumes, Timings
5: Houston Street/Charlotte Avenue & Lancaster Avenue

2022 Existing - Road Diets

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A	A		C		B	C			C	A
Approach Delay		7.1			21.0			23.6			14.5	
Approach LOS		A			C			C			B	
Queue Length 50th (ft)	39	33	5		66		8	57			35	18
Queue Length 95th (ft)	93	78	19		138		27	124			84	49
Internal Link Dist (ft)		959			404			1017			1022	
Turn Bay Length (ft)	150						50					500
Base Capacity (vph)	690	1652	1404		1012		555	823			809	858
Starvation Cap Reductn	0	0	0		0		0	0			0	0
Spillback Cap Reductn	0	0	0		0		0	0			0	0
Storage Cap Reductn	0	0	0		0		0	0			0	0
Reduced v/c Ratio	0.45	0.16	0.04		0.25		0.05	0.25			0.16	0.15

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 52.9

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 13.9

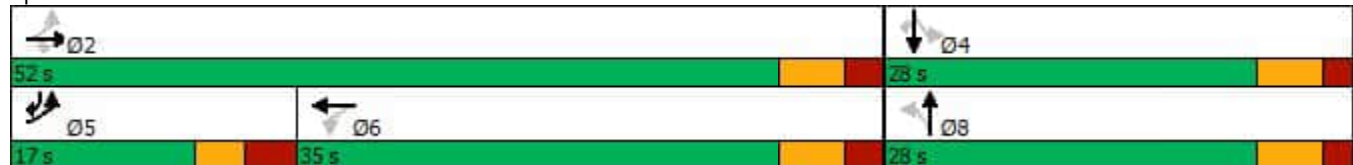
Intersection LOS: B

Intersection Capacity Utilization 51.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: Houston Street/Charlotte Avenue & Lancaster Avenue



Lanes, Volumes, Timings
6: Main Street & Jefferson Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑↑	↖	
Traffic Volume (vph)	0	0	11	419	9	0
Future Volume (vph)	0	0	11	419	9	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	1.00
Fr						
Flt Protected				0.999	0.950	
Satd. Flow (prot)	0	0	0	5080	1770	0
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	0	0	0	5080	1770	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	20			20	35	
Link Distance (ft)	564			262	261	
Travel Time (s)	19.2			8.9	5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	12	466	10	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	478	10	0
Turn Type			Perm	NA	Prot	
Protected Phases				6	8	
Permitted Phases			6			
Detector Phase			6	6	8	
Switch Phase						
Minimum Initial (s)			20.0	20.0	15.0	
Minimum Split (s)			25.6	25.6	21.9	
Total Split (s)			48.0	48.0	27.0	
Total Split (%)			64.0%	64.0%	36.0%	
Maximum Green (s)			42.4	42.4	21.1	
Yellow Time (s)			3.0	3.0	3.0	
All-Red Time (s)			2.6	2.6	2.9	
Lost Time Adjust (s)				-0.6	-0.9	
Total Lost Time (s)				5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)			2.0	2.0	2.0	
Recall Mode			C-Max	C-Max	None	
Walk Time (s)			7.0	7.0	5.0	
Flash Dont Walk (s)			11.0	11.0	11.0	
Pedestrian Calls (#/hr)			0	0	0	
Act Effect Green (s)				69.8	15.9	
Actuated g/C Ratio				0.93	0.21	
v/c Ratio				0.10	0.03	
Control Delay				1.5	23.8	
Queue Delay				0.0	0.0	
Total Delay				1.5	23.8	
LOS				A	C	
Approach Delay				1.5	23.8	
Approach LOS				A	C	

Lanes, Volumes, Timings
6: Main Street & Jefferson Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)				0	4	
Queue Length 95th (ft)				38	16	
Internal Link Dist (ft)	484			182	181	
Turn Bay Length (ft)						
Base Capacity (vph)				4729	519	
Starvation Cap Reductn				0	0	
Spillback Cap Reductn				0	0	
Storage Cap Reductn				0	0	
Reduced v/c Ratio				0.10	0.02	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 29 (39%), Referenced to phase 6:WBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.10

Intersection Signal Delay: 1.9

Intersection LOS: A

Intersection Capacity Utilization 37.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Main Street & Jefferson Street



Lanes, Volumes, Timings
7: Main Street & Franklin Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	567	5	0	0	0	0	5	14	4	10	0
Future Volume (vph)	7	567	5	0	0	0	0	5	14	4	10	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.999						0.902				
Fl _t Protected		0.999									0.987	
Satd. Flow (prot)	0	5075	0	0	0	0	0	1680	0	0	1839	0
Fl _t Permitted		0.999									0.970	
Satd. Flow (perm)	0	5075	0	0	0	0	0	1680	0	0	1807	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			35			35	
Link Distance (ft)		592			262			455			261	
Travel Time (s)		20.2			8.9			8.9			5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	8	630	6	0	0	0	0	6	16	4	11	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	644	0	0	0	0	0	22	0	0	15	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						7.0		7.0	7.0	
Minimum Split (s)	22.0	22.0						22.0		22.0	22.0	
Total Split (s)	34.0	34.0						26.0		26.0	26.0	
Total Split (%)	56.7%	56.7%						43.3%		43.3%	43.3%	
Maximum Green (s)	28.2	28.2						20.4		20.4	20.4	
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0	
All-Red Time (s)	2.8	2.8						2.6		2.6	2.6	
Lost Time Adjust (s)		-0.8						-0.6			-0.6	
Total Lost Time (s)		5.0						5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Recall Mode	None	None						C-Min		C-Min	C-Min	
Walk Time (s)	5.0	5.0						5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0						11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0						0		0	0	
Act Effct Green (s)		16.5						33.5			33.5	
Actuated g/C Ratio		0.28						0.56			0.56	
v/c Ratio		0.46						0.02			0.01	
Control Delay		18.6						7.7			7.6	
Queue Delay		0.0						0.0			0.0	
Total Delay		18.6						7.7			7.6	
LOS		B						A			A	
Approach Delay		18.6						7.7			7.6	
Approach LOS		B						A			A	

Lanes, Volumes, Timings
7: Main Street & Franklin Street

2022 Existing - Road Diets

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		70						3			2	
Queue Length 95th (ft)		86						14			11	
Internal Link Dist (ft)		512			182			375			181	
Turn Bay Length (ft)												
Base Capacity (vph)		2452						938			1009	
Starvation Cap Reductn		0						0			0	
Spillback Cap Reductn		0						0			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.26						0.02			0.01	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

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

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.46

Intersection Signal Delay: 18.0

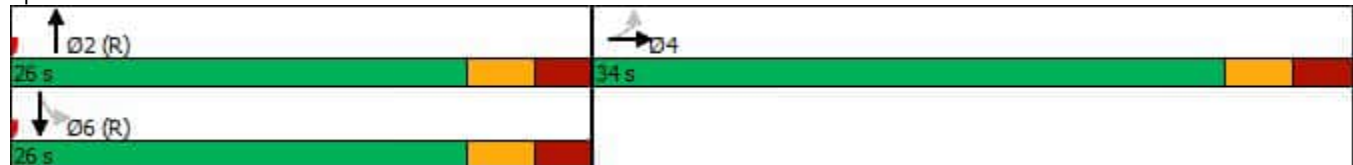
Intersection LOS: B

Intersection Capacity Utilization 25.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Main Street & Franklin Street



Lanes, Volumes, Timings
8: Main Street & Windsor Street

2022 Existing - Road Diets

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	105	4	9	55	7	4	20	11	4	10	4
Future Volume (vph)	4	105	4	9	55	7	4	20	11	4	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.986			0.957			0.972	
Flt Protected		0.998			0.994			0.995			0.990	
Satd. Flow (prot)	0	1852	0	0	1826	0	0	1774	0	0	1792	0
Flt Permitted		0.984			0.933			0.979			0.958	
Satd. Flow (perm)	0	1826	0	0	1714	0	0	1745	0	0	1735	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		592			263			786			455	
Travel Time (s)		16.1			7.2			15.3			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	117	4	10	61	8	4	22	12	4	11	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	0	0	79	0	0	38	0	0	19	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	32.0	32.0		32.0	32.0		28.0	28.0		28.0	28.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		21.0	21.0		21.0	21.0	
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	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		9.4			9.4			19.0			19.0	
Actuated g/C Ratio		0.31			0.31			0.63			0.63	
v/c Ratio		0.22			0.15			0.03			0.02	
Control Delay		9.1			8.6			6.3			6.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.1			8.6			6.3			6.4	
LOS		A			A			A			A	
Approach Delay		9.1			8.6			6.3			6.4	
Approach LOS		A			A			A			A	

Lanes, Volumes, Timings
8: Main Street & Windsor Street

2022 Existing - Road Diets

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		15			9			4			2	
Queue Length 95th (ft)		35			25			13			8	
Internal Link Dist (ft)		512			183			706			375	
Turn Bay Length (ft)												
Base Capacity (vph)		1671			1568			1443			1435	
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		0.07			0.05			0.03			0.01	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 30.2

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.22

Intersection Signal Delay: 8.4

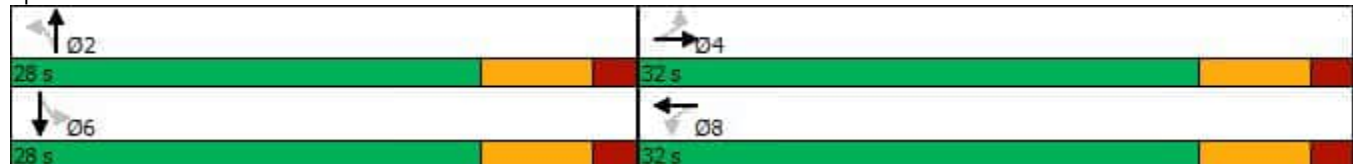
Intersection LOS: A

Intersection Capacity Utilization 24.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 8: Main Street & Windsor Street



Lanes, Volumes, Timings
9: Hayne Street/Skyway Drive & Church Street

2022 Existing - Road Diets

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	30	21	4	56	44	8	431	4	64	397	121
Future Volume (vph)	62	30	21	4	56	44	8	431	4	64	397	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		0	0		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00
Frt		0.975			0.942			0.999			0.965	
Flt Protected		0.973			0.998			0.999		0.950		
Satd. Flow (prot)	0	1767	0	0	1751	0	0	3532	0	1770	1798	0
Flt Permitted		0.804			0.994			0.944		0.421		
Satd. Flow (perm)	0	1460	0	0	1744	0	0	3338	0	784	1798	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		823			247			483			1201	
Travel Time (s)		28.1			8.4			16.5			40.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	69	33	23	4	62	49	9	479	4	71	441	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	0	0	115	0	0	492	0	71	575	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)	30.3	30.3		29.4	29.4		24.0	24.0		25.3	25.3	
Total Split (s)	36.0	36.0		36.0	36.0		64.0	64.0		64.0	64.0	
Total Split (%)	36.0%	36.0%		36.0%	36.0%		64.0%	64.0%		64.0%	64.0%	
Maximum Green (s)	29.7	29.7		29.6	29.6		58.0	58.0		57.7	57.7	
Yellow Time (s)	3.3	3.3		3.4	3.4		3.0	3.0		3.3	3.3	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.3			-1.4			-1.0		-2.0	-1.3	
Total Lost Time (s)		5.0			5.0			5.0		4.3	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
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)	20.0	20.0		19.0	19.0		14.0	14.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		47.6			47.6			42.4		43.1	42.4	
Actuated g/C Ratio		0.48			0.48			0.42		0.43	0.42	
v/c Ratio		0.18			0.14			0.35		0.21	0.75	
Control Delay		18.9			18.2			11.7		16.7	30.2	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		18.9			18.2			11.7		16.7	30.2	

Lanes, Volumes, Timings
9: Hayne Street/Skyway Drive & Church Street

2022 Existing - Road Diets

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B			B			B		B	C	
Approach Delay		18.9			18.2			11.7			28.7	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)		45			40			50		27	299	
Queue Length 95th (ft)		101			91			45		46	338	
Internal Link Dist (ft)		743			167			403			1121	
Turn Bay Length (ft)												
Base Capacity (vph)		694			829			1969		468	1060	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.18			0.14			0.25		0.15	0.54	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 66 (66%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 20.8

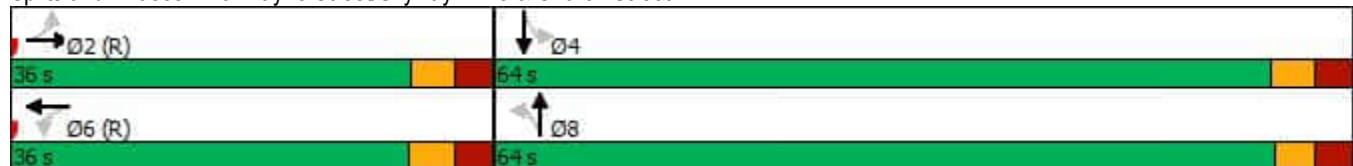
Intersection LOS: C

Intersection Capacity Utilization 66.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 9: Hayne Street/Skyway Drive & Church Street



Lanes, Volumes, Timings
10: Hayne Street & Jefferson Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	7	373	8	13	515	0	0	260	50
Future Volume (vph)	0	0	0	7	373	8	13	515	0	0	260	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frts					0.997						0.978	
Flt Protected					0.999			0.999				
Satd. Flow (prot)	0	0	0	0	5065	0	0	1861	0	0	1822	0
Flt Permitted					0.999			0.990				
Satd. Flow (perm)	0	0	0	0	5065	0	0	1844	0	0	1822	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		262			452			260			483	
Travel Time (s)		8.9			15.4			8.9			16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	8	414	9	14	572	0	0	289	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	431	0	0	586	0	0	345	0
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					4			2			6	
Permitted Phases				4			2					
Detector Phase				4	4		2	2			6	
Switch Phase												
Minimum Initial (s)				7.0	7.0		10.0	10.0			10.0	
Minimum Split (s)				21.9	21.9		21.6	21.6			21.6	
Total Split (s)				27.0	27.0		73.0	73.0			73.0	
Total Split (%)				27.0%	27.0%		73.0%	73.0%			73.0%	
Maximum Green (s)				21.1	21.1		67.4	67.4			67.4	
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0	
All-Red Time (s)				2.9	2.9		2.6	2.6			2.6	
Lost Time Adjust (s)					-0.9			-0.6			-0.6	
Total Lost Time (s)					5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	
Recall Mode				None	None		C-Max	C-Max			C-Max	
Walk Time (s)				5.0	5.0		5.0	5.0			5.0	
Flash Dont Walk (s)				11.0	11.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)				0	0		0	0			0	
Act Effect Green (s)					14.1			75.9			75.9	
Actuated g/C Ratio					0.14			0.76			0.76	
v/c Ratio					0.60			0.42			0.25	
Control Delay					43.7			3.9			1.6	
Queue Delay					0.0			0.5			0.0	
Total Delay					43.7			4.4			1.6	
LOS					D			A			A	
Approach Delay					43.7			4.4			1.6	
Approach LOS					D			A			A	

Lanes, Volumes, Timings
10: Hayne Street & Jefferson Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)					95			62			8	
Queue Length 95th (ft)					124			112			43	
Internal Link Dist (ft)		182			372			180			403	
Turn Bay Length (ft)												
Base Capacity (vph)					1114			1399			1383	
Starvation Cap Reductn					0			396			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.39			0.58			0.25	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 95 (95%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 16.1

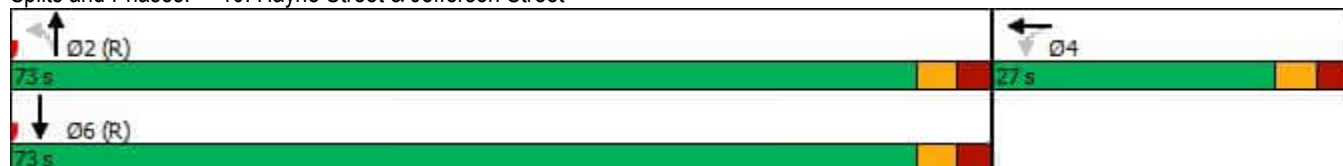
Intersection LOS: B

Intersection Capacity Utilization 53.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 10: Hayne Street & Jefferson Street



Lanes, Volumes, Timings
11: Hayne Street & Franklin Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	448	32	0	0	0	0	435	6	26	238	0
Future Volume (vph)	103	448	32	0	0	0	0	435	6	26	238	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't		0.992						0.998				
Flt Protected		0.991									0.995	
Satd. Flow (prot)	0	4999	0	0	0	0	0	1859	0	0	1853	0
Flt Permitted		0.991									0.932	
Satd. Flow (perm)	0	4999	0	0	0	0	0	1859	0	0	1736	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		262			456			457			260	
Travel Time (s)		8.9			15.5			15.6			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	114	498	36	0	0	0	0	483	7	29	264	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	648	0	0	0	0	0	490	0	0	293	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						10.0		10.0	10.0	
Minimum Split (s)	20.6	20.6						19.6		21.6	21.6	
Total Split (s)	34.0	34.0						66.0		66.0	66.0	
Total Split (%)	34.0%	34.0%						66.0%		66.0%	66.0%	
Maximum Green (s)	28.4	28.4						60.4		60.4	60.4	
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0	
All-Red Time (s)	2.6	2.6						2.6		2.6	2.6	
Lost Time Adjust (s)		-0.6						-0.6			-0.6	
Total Lost Time (s)		5.0						5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0	
Recall Mode	None	None						C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0						4.0		4.0	4.0	
Flash Dont Walk (s)	10.0	10.0						10.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0						0		0	0	
Act Effct Green (s)		19.3						70.7			70.7	
Actuated g/C Ratio		0.19						0.71			0.71	
v/c Ratio		0.67						0.37			0.24	
Control Delay		40.6						4.0			1.6	
Queue Delay		0.2						0.2			0.5	
Total Delay		40.9						4.2			2.1	
LOS		D						A			A	
Approach Delay		40.9						4.2			2.1	
Approach LOS		D						A			A	

Lanes, Volumes, Timings
11: Hayne Street & Franklin Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		140						48			13	
Queue Length 95th (ft)		171						62			46	
Internal Link Dist (ft)		182			376			377			180	
Turn Bay Length (ft)												
Base Capacity (vph)		1449						1313			1226	
Starvation Cap Reductn		260						246			541	
Spillback Cap Reductn		6						0			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.54						0.46			0.43	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 13 (13%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 20.4

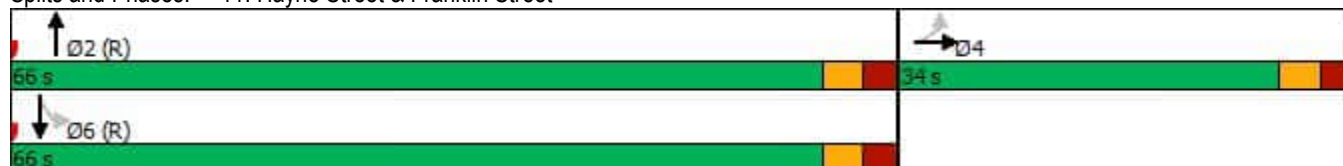
Intersection LOS: C

Intersection Capacity Utilization 54.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 11: Hayne Street & Franklin Street



Lanes, Volumes, Timings
12: Hayne Street & Windsor Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	103	7	44	55	11	7	428	76	27	207	11
Future Volume (vph)	12	103	7	44	55	11	7	428	76	27	207	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.987			0.980			0.994	
Flt Protected		0.995			0.980			0.999			0.995	
Satd. Flow (prot)	0	1839	0	0	1802	0	0	1824	0	0	1842	0
Flt Permitted		0.964			0.675			0.996			0.917	
Satd. Flow (perm)	0	1781	0	0	1241	0	0	1818	0	0	1698	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			20			20	
Link Distance (ft)		263			1063			787			457	
Travel Time (s)		7.2			29.0			26.8			15.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	114	8	49	61	12	8	476	84	30	230	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	0	122	0	0	568	0	0	272	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	20.4	20.4		20.4	20.4		20.4	20.4		19.8	19.8	
Total Split (s)	27.0	27.0		27.0	27.0		73.0	73.0		73.0	73.0	
Total Split (%)	27.0%	27.0%		27.0%	27.0%		73.0%	73.0%		73.0%	73.0%	
Maximum Green (s)	21.6	21.6		21.6	21.6		67.6	67.6		68.2	68.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		1.8	1.8	
Lost Time Adjust (s)		-0.4			-0.4			-0.4			0.2	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		12.7			12.7			77.3			77.3	
Actuated g/C Ratio		0.13			0.13			0.77			0.77	
v/c Ratio		0.60			0.78			0.40			0.21	
Control Delay		51.5			72.2			5.2			4.1	
Queue Delay		0.1			0.0			0.0			0.0	
Total Delay		51.6			72.2			5.2			4.1	
LOS		D			E			A			A	
Approach Delay		51.6			72.2			5.2			4.1	
Approach LOS		D			E			A			A	

Lanes, Volumes, Timings
12: Hayne Street & Windsor Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		82			77			96			33	
Queue Length 95th (ft)		136			132			185			71	
Internal Link Dist (ft)		183			983			707			377	
Turn Bay Length (ft)												
Base Capacity (vph)		391			273			1405			1312	
Starvation Cap Reductn		21			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.36			0.45			0.40			0.21	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

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

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 18.1

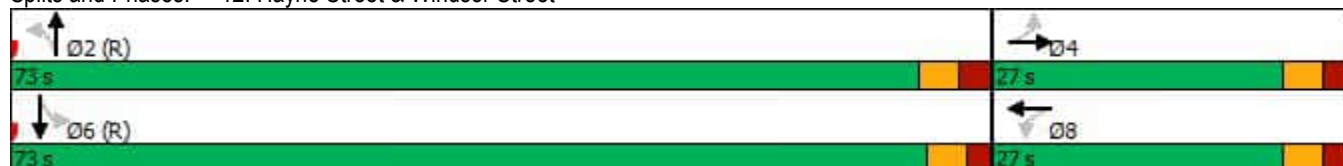
Intersection LOS: B

Intersection Capacity Utilization 49.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 12: Hayne Street & Windsor Street



Lanes, Volumes, Timings
13: Church Street & Jefferson Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					4+4			4			4	
Traffic Volume (vph)	0	0	0	3	383	113	5	12	0	0	53	5
Future Volume (vph)	0	0	0	3	383	113	5	12	0	0	53	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.966						0.988	
Fl _t Protected								0.984				
Satd. Flow (prot)	0	0	0	0	4912	0	0	1833	0	0	1840	0
Fl _t Permitted								0.870				
Satd. Flow (perm)	0	0	0	0	4912	0	0	1621	0	0	1840	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		452			1043			259			558	
Travel Time (s)		15.4			35.6			8.8			19.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	3	426	126	6	13	0	0	59	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	555	0	0	19	0	0	65	0
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					6			8			4	
Permitted Phases				6			8					
Detector Phase				6	6		8	8			4	
Switch Phase												
Minimum Initial (s)				10.0	10.0		7.0	7.0			7.0	
Minimum Split (s)				26.9	26.9		22.8	22.8			22.4	
Total Split (s)				48.0	48.0		27.0	27.0			27.0	
Total Split (%)				64.0%	64.0%		36.0%	36.0%			36.0%	
Maximum Green (s)				42.1	42.1		21.2	21.2			21.6	
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0	
All-Red Time (s)				2.9	2.9		2.8	2.8			2.4	
Lost Time Adjust (s)					-0.9			-0.8			-0.4	
Total Lost Time (s)					5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	
Recall Mode				C-Max	C-Max		None	None			None	
Walk Time (s)				5.0	5.0		5.0	5.0			5.0	
Flash Dont Walk (s)				16.0	16.0		12.0	12.0			12.0	
Pedestrian Calls (#/hr)				0	0		0	0			0	
Act Effect Green (s)					60.2			8.5			8.2	
Actuated g/C Ratio					0.80			0.11			0.11	
v/c Ratio					0.14			0.10			0.32	
Control Delay					2.4			23.4			34.9	
Queue Delay					0.0			0.0			0.0	
Total Delay					2.4			23.4			34.9	
LOS					A			C			C	
Approach Delay					2.4			23.4			34.9	
Approach LOS					A			C			C	

Lanes, Volumes, Timings
13: Church Street & Jefferson Street

2022 Existing - Road Diets

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)					18			9			29	
Queue Length 95th (ft)					31			25			62	
Internal Link Dist (ft)		372			963			179			478	
Turn Bay Length (ft)												
Base Capacity (vph)					3945			475			539	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.14			0.04			0.12	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 16 (21%), Referenced to phase 6:WBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.32

Intersection Signal Delay: 6.3

Intersection LOS: A

Intersection Capacity Utilization 24.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 13: Church Street & Jefferson Street



Lanes, Volumes, Timings
14: Church Street & Franklin Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	448	7	0	0	0	0	7	8	40	16	0
Future Volume (vph)	11	448	7	0	0	0	0	7	8	40	16	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't		0.998						0.929				
Flt Protected	0.950										0.966	
Satd. Flow (prot)	1770	3532	0	0	0	0	0	1730	0	0	1799	0
Flt Permitted	0.950										0.853	
Satd. Flow (perm)	1770	3532	0	0	0	0	0	1730	0	0	1589	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			35			20			20	
Link Distance (ft)		456			1229			1164			259	
Travel Time (s)		15.5			23.9			39.7			8.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	12	498	8	0	0	0	0	8	9	44	18	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	506	0	0	0	0	0	17	0	0	62	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						10.0		10.0	10.0	
Minimum Split (s)	17.1	17.1						20.3		20.4	20.4	
Total Split (s)	44.0	44.0						31.0		31.0	31.0	
Total Split (%)	58.7%	58.7%						41.3%		41.3%	41.3%	
Maximum Green (s)	38.9	38.9						25.7		25.6	25.6	
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0	
All-Red Time (s)	2.1	2.1						2.3		2.4	2.4	
Lost Time Adjust (s)	-0.1	-0.1						-0.3			-0.4	
Total Lost Time (s)	5.0	5.0						5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0	
Recall Mode	None	None						C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0						5.0		5.0	5.0	
Flash Dont Walk (s)	7.0	7.0						10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0						0		0	0	
Act Effct Green (s)	16.3	16.3						48.7			48.7	
Actuated g/C Ratio	0.22	0.22						0.65			0.65	
v/c Ratio	0.03	0.66						0.02			0.06	
Control Delay	20.7	30.6						6.1			0.5	
Queue Delay	0.0	0.0						0.0			0.0	
Total Delay	20.7	30.6						6.1			0.5	
LOS	C	C						A			A	
Approach Delay		30.3						6.1			0.5	
Approach LOS		C						A			A	

Lanes, Volumes, Timings
14: Church Street & Franklin Street

2022 Existing - Road Diets
Timing Plan: AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	4	113						2			1	
Queue Length 95th (ft)	15	146						11			1	
Internal Link Dist (ft)		376			1149			1084			179	
Turn Bay Length (ft)												
Base Capacity (vph)	920	1836						1122			1030	
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	0.01	0.28						0.02			0.06	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 3 (4%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 26.5

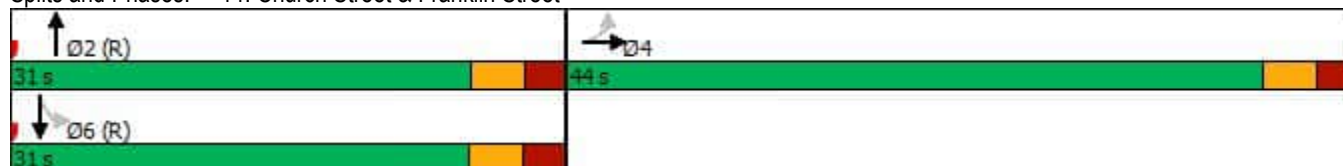
Intersection LOS: C

Intersection Capacity Utilization 30.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 14: Church Street & Franklin Street



Lanes, Volumes, Timings
1: Charlotte Avenue & Church Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	L	L
Traffic Volume (vph)	160	97	442	90	35	505
Future Volume (vph)	160	97	442	90	35	505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	0		0	1	
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.949		0.977			
Flt Protected	0.970				0.950	
Satd. Flow (prot)	1715	0	1820	0	1770	1863
Flt Permitted	0.970				0.370	
Satd. Flow (perm)	1715	0	1820	0	689	1863
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	20		35			35
Link Distance (ft)	823		519			1250
Travel Time (s)	28.1		10.1			24.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	178	108	491	100	39	561
Shared Lane Traffic (%)						
Lane Group Flow (vph)	286	0	591	0	39	561
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	7.0		10.0		10.0	10.0
Minimum Split (s)	31.0		31.0		31.0	31.0
Total Split (s)	38.0		62.0		62.0	62.0
Total Split (%)	38.0%		62.0%		62.0%	62.0%
Maximum Green (s)	31.7		56.1		56.1	56.1
Yellow Time (s)	3.0		3.1		3.1	3.1
All-Red Time (s)	3.3		2.8		2.8	2.8
Lost Time Adjust (s)	-1.3		-0.9		-0.9	-0.9
Total Lost Time (s)	5.0		5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0		2.0		2.0	2.0
Recall Mode	None		C-Max		C-Max	C-Max
Walk Time (s)	5.0		5.0		5.0	5.0
Flash Dont Walk (s)	19.0		20.0		20.0	20.0
Pedestrian Calls (#/hr)	0		0		0	0
Act Effect Green (s)	22.5		67.5		67.5	67.5
Actuated g/C Ratio	0.22		0.68		0.68	0.68
v/c Ratio	0.74		0.48		0.08	0.45
Control Delay	51.2		8.6		7.7	9.9
Queue Delay	0.0		0.1		0.0	0.0
Total Delay	51.2		8.7		7.7	9.9

Lanes, Volumes, Timings
1: Charlotte Avenue & Church Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	D		A		A	A
Approach Delay	51.2		8.7			9.7
Approach LOS	D		A			A
Queue Length 50th (ft)	167		85		8	148
Queue Length 95th (ft)	m211		395		25	274
Internal Link Dist (ft)	743		439			1170
Turn Bay Length (ft)					100	
Base Capacity (vph)	565		1229		465	1258
Starvation Cap Reductn	0		109		0	0
Spillback Cap Reductn	0		0		0	0
Storage Cap Reductn	0		0		0	0
Reduced v/c Ratio	0.51		0.53		0.08	0.45

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 70 (70%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 17.3

Intersection LOS: B

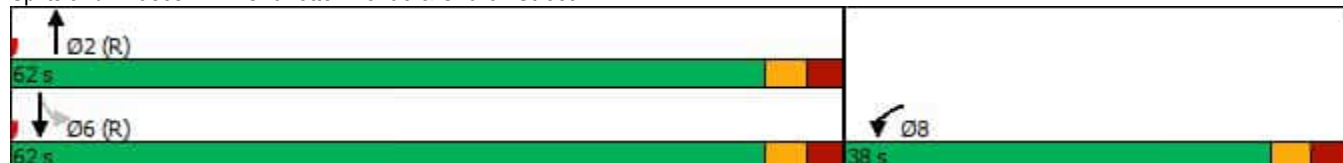
Intersection Capacity Utilization 52.2%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 1: Charlotte Avenue & Church Street



Lanes, Volumes, Timings
2: Charlotte Avenue & Jefferson Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	0	10	292	127	92	5	416	0	0	631	40
Future Volume (vph)	14	0	10	292	127	92	5	416	0	0	631	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	0		0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.945				0.850					0.992	
Flt Protected		0.971		0.950			0.950					
Satd. Flow (prot)	0	1709	0	1770	1863	1583	1770	1863	0	0	1848	0
Flt Permitted		0.847		0.740			0.241					
Satd. Flow (perm)	0	1491	0	1378	1863	1583	449	1863	0	0	1848	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			20			35			35	
Link Distance (ft)		1102			564			258			519	
Travel Time (s)		30.1			19.2			5.0			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	0	11	324	141	102	6	462	0	0	701	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	324	141	102	6	462	0	0	745	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2					
Detector Phase	4	4		8	8	8	2	2			6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	10.0	10.0			10.0	
Minimum Split (s)	31.0	31.0		32.0	32.0	32.0	41.0	41.0			41.0	
Total Split (s)	34.0	34.0		34.0	34.0	34.0	66.0	66.0			66.0	
Total Split (%)	34.0%	34.0%		34.0%	34.0%	34.0%	66.0%	66.0%			66.0%	
Maximum Green (s)	28.6	28.6		27.7	27.7	27.7	60.3	60.3			60.8	
Yellow Time (s)	3.0	3.0		3.3	3.3	3.3	4.1	4.1			3.6	
All-Red Time (s)	2.4	2.4		3.0	3.0	3.0	1.6	1.6			1.6	
Lost Time Adjust (s)		-0.4		-1.3	-1.3	-1.3	-0.7	-0.7			-0.2	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0			2.0	
Recall Mode	None	None		Max	Max	Max	C-Max	C-Max			C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0			5.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0	17.0	11.0	11.0			8.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0			0	
Act Effect Green (s)		20.4		29.0	29.0	29.0	61.0	61.0			61.0	
Actuated g/C Ratio		0.20		0.29	0.29	0.29	0.61	0.61			0.61	
v/c Ratio		0.09		0.81	0.26	0.22	0.02	0.41			0.66	
Control Delay		28.0		30.3	10.1	10.0	5.2	6.8			12.2	
Queue Delay		0.0		3.4	0.0	0.0	0.0	0.7			0.3	
Total Delay		28.0		33.7	10.1	10.0	5.2	7.5			12.5	

Lanes, Volumes, Timings

2: Charlotte Avenue & Jefferson Street

2022 Existing - Road Diets

Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C		C	B	B	A	A			B	
Approach Delay		28.0			23.6			7.5			12.5	
Approach LOS		C			C			A			B	
Queue Length 50th (ft)		12		68	21	15	0	25			208	
Queue Length 95th (ft)		33		#347	37	28	m2	71			249	
Internal Link Dist (ft)		1022			484			178			439	
Turn Bay Length (ft)							50					
Base Capacity (vph)		432		399	540	459	273	1136			1127	
Starvation Cap Reductn		0		0	0	0	0	366			36	
Spillback Cap Reductn		32		29	0	0	0	22			76	
Storage Cap Reductn		0		0	0	0	0	0			0	
Reduced v/c Ratio		0.07		0.88	0.26	0.22	0.02	0.60			0.71	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 55 (55%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 14.9

Intersection LOS: B

Intersection Capacity Utilization 66.8%

ICU Level of Service C

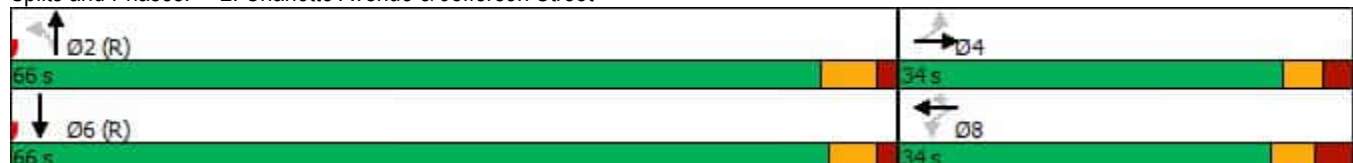
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 2: Charlotte Avenue & Jefferson Street



Lanes, Volumes, Timings
3: Charlotte Avenue & Franklin Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	375	71	0	0	0	161	292	15	61	397	479
Future Volume (vph)	130	375	71	0	0	0	161	292	15	61	397	479
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	0		0	175		0	50		0
Storage Lanes	1		0	0		0	1		0	1		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.976						0.993				0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1770	1818	0	0	0	0	1770	1850	0	1770	1863	1583
Flt Permitted	0.950						0.950			0.950		
Satd. Flow (perm)	1770	1818	0	0	0	0	1770	1850	0	1770	1863	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			20			35			35	
Link Distance (ft)		1131			592			448			258	
Travel Time (s)		22.0			20.2			8.7			5.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	144	417	79	0	0	0	179	324	17	68	441	532
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	496	0	0	0	0	179	341	0	68	441	532
Turn Type	Perm	NA					Prot	NA		Prot	NA	Perm
Protected Phases		4					5	2		1	6	
Permitted Phases	4											6
Detector Phase	4	4					5	2		1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0					7.0	10.0		7.0	10.0	10.0
Minimum Split (s)	27.0	27.0					13.0	20.0		13.0	19.0	19.0
Total Split (s)	31.0	31.0					18.0	55.0		14.0	51.0	51.0
Total Split (%)	31.0%	31.0%					18.0%	55.0%		14.0%	51.0%	51.0%
Maximum Green (s)	24.7	24.7					12.9	49.9		8.9	46.0	46.0
Yellow Time (s)	4.1	4.1					3.0	3.7		3.0	3.6	3.6
All-Red Time (s)	2.2	2.2					2.1	1.4		2.1	1.4	1.4
Lost Time Adjust (s)	-1.3	-1.3					-0.1	-0.1		-0.1	0.0	0.0
Total Lost Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	5.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0					2.0	2.0		2.0	2.0	2.0
Recall Mode	None	None					None	C-Max		None	C-Max	C-Max
Walk Time (s)	5.0	5.0						5.0			5.0	5.0
Flash Dont Walk (s)	15.0	15.0						9.0			9.0	9.0
Pedestrian Calls (#/hr)	0	0						0			0	0
Act Effct Green (s)	26.0	26.0					12.3	53.3		8.1	46.7	46.7
Actuated g/C Ratio	0.26	0.26					0.12	0.53		0.08	0.47	0.47
v/c Ratio	0.31	1.05					0.82	0.35		0.48	0.51	0.72
Control Delay	32.1	92.7					71.8	15.6		54.2	15.1	20.3
Queue Delay	0.0	0.0					0.0	0.0		0.0	5.5	18.2
Total Delay	32.1	92.7					71.8	15.6		54.2	20.6	38.5

Lanes, Volumes, Timings
3: Charlotte Avenue & Franklin Street

2022 Existing - Road Diets

Timing Plan: PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	F					E	B		D	C	D
Approach Delay		79.1						35.0			31.9	
Approach LOS		E						C			C	
Queue Length 50th (ft)	74	~346					112	126		40	133	198
Queue Length 95th (ft)	129	#544					#220	193		m60	m227	m360
Internal Link Dist (ft)		1051			512			368			178	
Turn Bay Length (ft)	125						175			50		
Base Capacity (vph)	460	472					230	986		159	869	739
Starvation Cap Reductn	0	0					0	0		0	359	204
Spillback Cap Reductn	0	0					0	28		0	0	0
Storage Cap Reductn	0	0					0	0		0	0	0
Reduced v/c Ratio	0.31	1.05					0.78	0.36		0.43	0.86	0.99

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 54 (54%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 46.4

Intersection LOS: D

Intersection Capacity Utilization 66.4%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

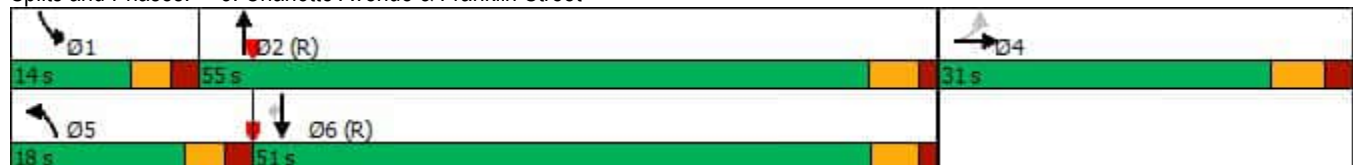
Queue shown is maximum after two cycles.

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: Charlotte Avenue & Franklin Street



HCM 6th TWSC
4: Charlotte Avenue & Windsor Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	12	7	6	11	15	106	4	332	6	50	403	14
Future Vol, veh/h	12	7	6	11	15	106	4	332	6	50	403	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	8	7	12	17	118	4	369	7	56	448	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1016	952	456	957	957	373	464	0	0	376	0	0
Stage 1	568	568	-	381	381	-	-	-	-	-	-	-
Stage 2	448	384	-	576	576	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	216	259	604	237	258	673	1097	-	-	1182	-	-
Stage 1	508	506	-	641	613	-	-	-	-	-	-	-
Stage 2	590	611	-	503	502	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	160	241	604	217	240	673	1097	-	-	1182	-	-
Mov Cap-2 Maneuver	160	241	-	217	240	-	-	-	-	-	-	-
Stage 1	505	474	-	638	610	-	-	-	-	-	-	-
Stage 2	471	608	-	458	470	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	23.8		15.5		0.1		0.9	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1097	-	-	219	488	1182	-
HCM Lane V/C Ratio	0.004	-	-	0.127	0.301	0.047	-
HCM Control Delay (s)	8.3	0	-	23.8	15.5	8.2	0
HCM Lane LOS	A	A	-	C	C	A	A
HCM 95th %tile Q(veh)	0	-	-	0.4	1.3	0.1	-

Lanes, Volumes, Timings
4: Charlotte Avenue & Windsor Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	7	6	11	15	106	4	332	6	50	403	14
Future Volume (vph)	12	7	6	11	15	106	4	332	6	50	403	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.966			0.892			0.998			0.996	
Flt Protected		0.977			0.996			0.999			0.995	
Satd. Flow (prot)	0	1758	0	0	1655	0	0	1857	0	0	1846	0
Flt Permitted		0.977			0.996			0.999			0.995	
Satd. Flow (perm)	0	1758	0	0	1655	0	0	1857	0	0	1846	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1162			592			1102			448	
Travel Time (s)		31.7			16.1			21.5			8.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	8	7	12	17	118	4	369	7	56	448	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	0	0	147	0	0	380	0	0	520	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization 60.9%	ICU Level of Service B											
Analysis Period (min) 15												

Lanes, Volumes, Timings
5: Houston Street/Charlotte Avenue & Lancaster Avenue

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	145	32	4	310	47	37	89	4	10	175	205
Future Volume (vph)	163	145	32	4	310	47	37	89	4	10	175	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	50		0	0		500
Storage Lanes	1		1	0		0	1		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.982			0.994				0.850
Flt Protected	0.950						0.950				0.997	
Satd. Flow (prot)	1770	1863	1583	0	1829	0	1770	1852	0	0	1857	1583
Flt Permitted	0.336				0.997		0.602				0.980	
Satd. Flow (perm)	626	1863	1583	0	1824	0	1121	1852	0	0	1825	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1039			484			1097			1102	
Travel Time (s)		20.2			9.4			21.4			21.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	181	161	36	4	344	52	41	99	4	11	194	228
Shared Lane Traffic (%)												
Lane Group Flow (vph)	181	161	36	0	400	0	41	103	0	0	205	228
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2		2	6			8		4			4
Detector Phase	5	2	2	6	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	32.0	32.0	33.0	33.0		28.0	28.0		23.0	23.0	14.0
Total Split (s)	14.0	52.0	52.0	38.0	38.0		28.0	28.0		28.0	28.0	14.0
Total Split (%)	17.5%	65.0%	65.0%	47.5%	47.5%		35.0%	35.0%		35.0%	35.0%	17.5%
Maximum Green (s)	7.9	45.7	45.7	31.7	31.7		22.2	22.2		22.2	22.2	7.9
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.9	3.9		3.9	3.9	3.0
All-Red Time (s)	3.1	2.3	2.3	2.3	2.3		1.9	1.9		1.9	1.9	3.1
Lost Time Adjust (s)	-1.1	-1.3	-1.3		-1.3		-0.8	-0.8			-0.8	-1.1
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0	5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag							Lead
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	2.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None	Min	Min	Min	Min		None	None		None	None	None
Walk Time (s)		7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0	18.0	19.0	19.0		15.0	15.0		10.0	10.0	
Pedestrian Calls (#/hr)		0	0	0	0		0	0		0	0	
Act Effect Green (s)	32.8	32.8	32.8		18.6		11.8	11.8			11.8	25.9
Actuated g/C Ratio	0.60	0.60	0.60		0.34		0.21	0.21			0.21	0.47
v/c Ratio	0.32	0.14	0.04		0.65		0.17	0.26			0.52	0.30
Control Delay	7.0	5.7	5.2		21.0		21.1	21.2			25.6	11.5
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0			0.0	0.0
Total Delay	7.0	5.7	5.2		21.0		21.1	21.2			25.6	11.5

Lanes, Volumes, Timings
5: Houston Street/Charlotte Avenue & Lancaster Avenue

2022 Existing - Road Diets

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A	A		C		C	C			C	B
Approach Delay		6.3			21.0			21.1			18.2	
Approach LOS		A			C			C			B	
Queue Length 50th (ft)	21	19	4		104		11	27			58	41
Queue Length 95th (ft)	56	50	15		208		37	73			134	108
Internal Link Dist (ft)		959			404			1017			1022	
Turn Bay Length (ft)	150						50					500
Base Capacity (vph)	567	1606	1364		1130		484	799			788	755
Starvation Cap Reductn	0	0	0		0		0	0			0	0
Spillback Cap Reductn	0	0	0		0		0	0			0	0
Storage Cap Reductn	0	0	0		0		0	0			0	0
Reduced v/c Ratio	0.32	0.10	0.03		0.35		0.08	0.13			0.26	0.30

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 54.9

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 16.0

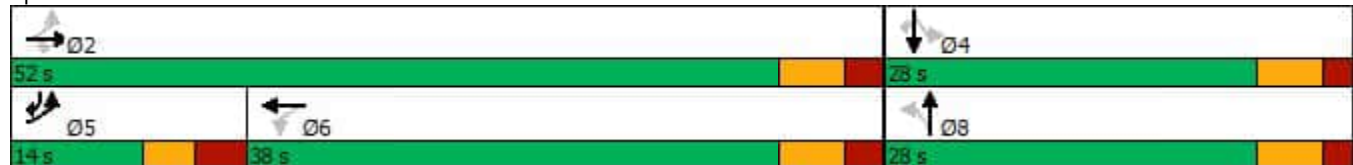
Intersection LOS: B

Intersection Capacity Utilization 60.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Houston Street/Charlotte Avenue & Lancaster Avenue



Lanes, Volumes, Timings
6: Main Street & Jefferson Street

2022 Existing - Road Diets

Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑↑	↖	
Traffic Volume (vph)	0	0	38	465	16	0
Future Volume (vph)	0	0	38	465	16	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.91	0.91	1.00	1.00
Frts						
Flt Protected				0.996	0.950	
Satd. Flow (prot)	0	0	0	5065	1770	0
Flt Permitted				0.996	0.950	
Satd. Flow (perm)	0	0	0	5065	1770	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	20			20	35	
Link Distance (ft)	564			262	261	
Travel Time (s)	19.2			8.9	5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	42	517	18	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	559	18	0
Turn Type			Perm	NA	Prot	
Protected Phases				6	8	
Permitted Phases			6			
Detector Phase			6	6	8	
Switch Phase						
Minimum Initial (s)			20.0	20.0	15.0	
Minimum Split (s)			26.0	26.0	22.0	
Total Split (s)			65.0	65.0	35.0	
Total Split (%)			65.0%	65.0%	35.0%	
Maximum Green (s)			59.4	59.4	29.1	
Yellow Time (s)			3.0	3.0	3.0	
All-Red Time (s)			2.6	2.6	2.9	
Lost Time Adjust (s)				-0.6	-0.9	
Total Lost Time (s)				5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)			2.0	2.0	2.0	
Recall Mode			C-Max	C-Max	None	
Walk Time (s)			7.0	7.0	5.0	
Flash Dont Walk (s)			11.0	11.0	11.0	
Pedestrian Calls (#/hr)			0	0	0	
Act Effect Green (s)				89.6	15.9	
Actuated g/C Ratio				0.90	0.16	
v/c Ratio				0.12	0.06	
Control Delay				0.4	36.6	
Queue Delay				0.0	0.0	
Total Delay				0.4	36.6	
LOS				A	D	
Approach Delay				0.4	36.6	
Approach LOS				A	D	

Lanes, Volumes, Timings 6: Main Street & Jefferson Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)				0	10	
Queue Length 95th (ft)				8	30	
Internal Link Dist (ft)	484			182	181	
Turn Bay Length (ft)						
Base Capacity (vph)				4540	531	
Starvation Cap Reductn				723	0	
Spillback Cap Reductn				0	0	
Storage Cap Reductn				0	0	
Reduced v/c Ratio				0.15	0.03	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 76 (76%), Referenced to phase 6:WBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.12

Intersection Signal Delay: 1.6

Intersection LOS: A

Intersection Capacity Utilization 37.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Main Street & Jefferson Street



Lanes, Volumes, Timings
7: Main Street & Franklin Street

2022 Existing - Road Diets

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	476	15	0	0	0	0	6	16	5	30	0
Future Volume (vph)	4	476	15	0	0	0	0	6	16	5	30	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't		0.995						0.903				
Flt Protected											0.992	
Satd. Flow (prot)	0	5060	0	0	0	0	0	1682	0	0	1848	0
Flt Permitted											0.980	
Satd. Flow (perm)	0	5060	0	0	0	0	0	1682	0	0	1825	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			35			35	
Link Distance (ft)		592			262			455			261	
Travel Time (s)		20.2			8.9			8.9			5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	529	17	0	0	0	0	7	18	6	33	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	550	0	0	0	0	0	25	0	0	39	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						7.0		7.0	7.0	
Minimum Split (s)	22.0	22.0						22.0		22.0	22.0	
Total Split (s)	25.0	25.0						35.0		35.0	35.0	
Total Split (%)	41.7%	41.7%						58.3%		58.3%	58.3%	
Maximum Green (s)	19.2	19.2						29.4		29.4	29.4	
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0	
All-Red Time (s)	2.8	2.8						2.6		2.6	2.6	
Lost Time Adjust (s)		-0.8						-0.6			-0.6	
Total Lost Time (s)		5.0						5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0						3.0		3.0	3.0	
Recall Mode	None	None						C-Min		C-Min	C-Min	
Walk Time (s)	5.0	5.0						5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0						11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0						0		0	0	
Act Effct Green (s)		14.3						35.7			35.7	
Actuated g/C Ratio		0.24						0.60			0.60	
v/c Ratio		0.46						0.02			0.04	
Control Delay		20.3						6.3			6.3	
Queue Delay		0.0						0.0			0.0	
Total Delay		20.3						6.3			6.3	
LOS		C						A			A	
Approach Delay		20.3						6.3			6.3	
Approach LOS		C						A			A	

Lanes, Volumes, Timings
7: Main Street & Franklin Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		62						3			5	
Queue Length 95th (ft)		81						13			18	
Internal Link Dist (ft)		512			182			375			181	
Turn Bay Length (ft)												
Base Capacity (vph)		1686						1002			1087	
Starvation Cap Reductn		0						0			0	
Spillback Cap Reductn		0						0			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.33						0.02			0.04	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

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

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.46

Intersection Signal Delay: 18.8

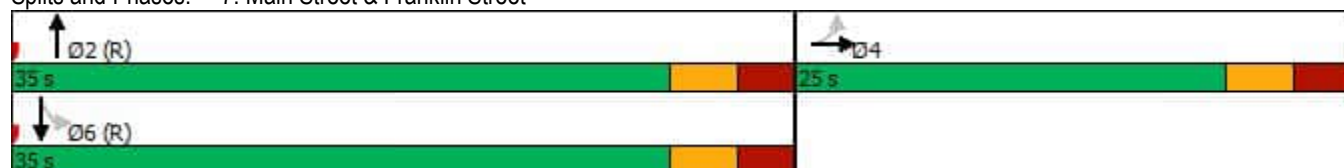
Intersection LOS: B

Intersection Capacity Utilization 23.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Main Street & Franklin Street



Lanes, Volumes, Timings
8: Main Street & Windsor Street

2022 Existing - Road Diets

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	89	6	16	106	11	7	12	19	8	41	6
Future Volume (vph)	4	89	6	16	106	11	7	12	19	8	41	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.989			0.932			0.985	
Flt Protected		0.998			0.994			0.991			0.993	
Satd. Flow (prot)	0	1842	0	0	1831	0	0	1720	0	0	1822	0
Flt Permitted		0.980			0.938			0.951			0.964	
Satd. Flow (perm)	0	1809	0	0	1728	0	0	1651	0	0	1769	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		592			263			786			455	
Travel Time (s)		16.1			7.2			15.3			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	99	7	18	118	12	8	13	21	9	46	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	148	0	0	42	0	0	62	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	32.0	32.0		32.0	32.0		28.0	28.0		28.0	28.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		21.0	21.0		21.0	21.0	
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	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		9.6			9.6			16.0			16.0	
Actuated g/C Ratio		0.30			0.30			0.50			0.50	
v/c Ratio		0.20			0.28			0.05			0.07	
Control Delay		9.2			10.0			6.9			6.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.2			10.0			6.9			6.9	
LOS		A			A			A			A	
Approach Delay		9.2			10.0			6.9			6.9	
Approach LOS		A			A			A			A	

Lanes, Volumes, Timings
8: Main Street & Windsor Street

2022 Existing - Road Diets

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		13			18			4			6	
Queue Length 95th (ft)		32			41			15			20	
Internal Link Dist (ft)		512			183			706			375	
Turn Bay Length (ft)												
Base Capacity (vph)		1593			1522			1287			1379	
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		0.07			0.10			0.03			0.04	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 31.8

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.28

Intersection Signal Delay: 8.8

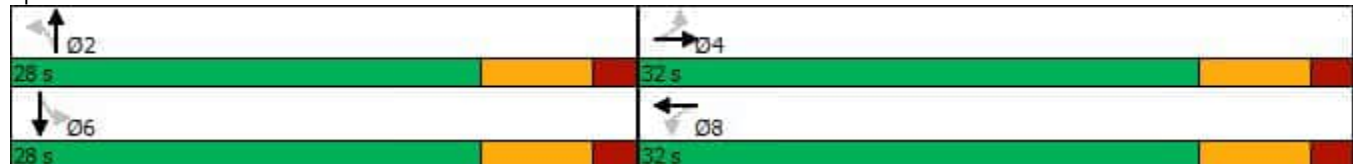
Intersection LOS: A

Intersection Capacity Utilization 29.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 8: Main Street & Windsor Street



Lanes, Volumes, Timings
9: Hayne Street/Skyway Drive & Church Street

2022 Existing - Road Diets

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	49	41	4	69	128	18	464	4	50	590	130
Future Volume (vph)	122	49	41	4	69	128	18	464	4	50	590	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	200		0	0		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00
Frt		0.974			0.914			0.999			0.973	
Flt Protected		0.972			0.999			0.998		0.950		
Satd. Flow (prot)	0	1764	0	0	1701	0	0	3529	0	1770	1812	0
Flt Permitted		0.649			0.995			0.834		0.417		
Satd. Flow (perm)	0	1177	0	0	1694	0	0	2949	0	777	1812	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		823			247			483			1201	
Travel Time (s)		28.1			8.4			16.5			40.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	136	54	46	4	77	142	20	516	4	56	656	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	236	0	0	223	0	0	540	0	56	800	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)	31.0	31.0		30.0	30.0		24.0	24.0		26.0	26.0	
Total Split (s)	38.0	38.0		38.0	38.0		62.0	62.0		62.0	62.0	
Total Split (%)	38.0%	38.0%		38.0%	38.0%		62.0%	62.0%		62.0%	62.0%	
Maximum Green (s)	31.7	31.7		31.6	31.6		56.0	56.0		55.7	55.7	
Yellow Time (s)	3.3	3.3		3.4	3.4		3.0	3.0		3.3	3.3	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.3			-1.4			-1.0		-2.0	-1.3	
Total Lost Time (s)		5.0			5.0			5.0		4.3	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
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)	20.0	20.0		19.0	19.0		14.0	14.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		37.8			37.8			52.2		52.9	52.2	
Actuated g/C Ratio		0.38			0.38			0.52		0.53	0.52	
v/c Ratio		0.53			0.35			0.35		0.14	0.85	
Control Delay		28.5			21.7			10.6		11.3	29.5	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		28.5			21.7			10.6		11.3	29.5	

Lanes, Volumes, Timings
9: Hayne Street/Skyway Drive & Church Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C			C			B		B	C	
Approach Delay		28.5			21.7			10.6			28.3	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		84			83			48		16	391	
Queue Length 95th (ft)		163			155			103		35	538	
Internal Link Dist (ft)		743			167			403			1121	
Turn Bay Length (ft)												
Base Capacity (vph)		444			640			1680		448	1032	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.53			0.35			0.32		0.13	0.78	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 78 (78%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 22.4

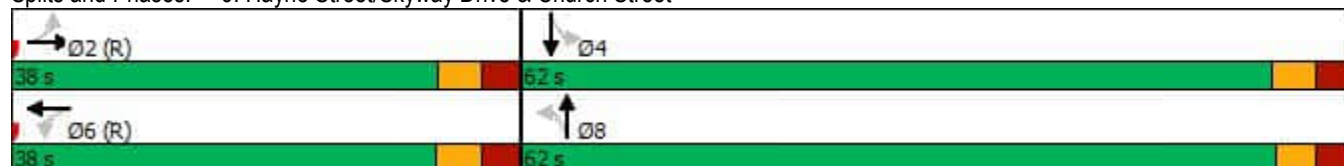
Intersection LOS: C

Intersection Capacity Utilization 77.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 9: Hayne Street/Skyway Drive & Church Street



Lanes, Volumes, Timings
10: Hayne Street & Jefferson Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	36	416	22	12	442	0	0	565	77
Future Volume (vph)	0	0	0	36	416	22	12	442	0	0	565	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Fr't					0.993						0.984	
Flt Protected					0.996			0.999				
Satd. Flow (prot)	0	0	0	0	5029	0	0	1861	0	0	1833	0
Flt Permitted					0.996			0.980				
Satd. Flow (perm)	0	0	0	0	5029	0	0	1825	0	0	1833	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		262			452			260			483	
Travel Time (s)		8.9			15.4			8.9			16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	40	462	24	13	491	0	0	628	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	526	0	0	504	0	0	714	0
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					4			2			6	
Permitted Phases				4			2					
Detector Phase				4	4		2	2			6	
Switch Phase												
Minimum Initial (s)				7.0	7.0		10.0	10.0			10.0	
Minimum Split (s)				22.0	22.0		22.0	22.0			22.0	
Total Split (s)				22.0	22.0		78.0	78.0			78.0	
Total Split (%)				22.0%	22.0%		78.0%	78.0%			78.0%	
Maximum Green (s)				16.1	16.1		72.4	72.4			72.4	
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0	
All-Red Time (s)				2.9	2.9		2.6	2.6			2.6	
Lost Time Adjust (s)					-0.9			-0.6			-0.6	
Total Lost Time (s)					5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	
Recall Mode				None	None		C-Max	C-Max			C-Max	
Walk Time (s)				5.0	5.0		5.0	5.0			5.0	
Flash Dont Walk (s)				11.0	11.0		11.0	11.0			11.0	
Pedestrian Calls (#/hr)				0	0		0	0			0	
Act Effect Green (s)					15.4			74.6			74.6	
Actuated g/C Ratio					0.15			0.75			0.75	
v/c Ratio					0.68			0.37			0.52	
Control Delay					41.3			8.2			1.7	
Queue Delay					0.0			0.7			0.3	
Total Delay					41.3			8.9			2.1	
LOS					D			A			A	
Approach Delay					41.3			8.9			2.1	
Approach LOS					D			A			A	

Lanes, Volumes, Timings
10: Hayne Street & Jefferson Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)					117			167			26	
Queue Length 95th (ft)					155			218			33	
Internal Link Dist (ft)		182			372			180			403	
Turn Bay Length (ft)												
Base Capacity (vph)					854			1361			1368	
Starvation Cap Reductn					0			518			224	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.62			0.60			0.62	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 21 (21%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 15.9

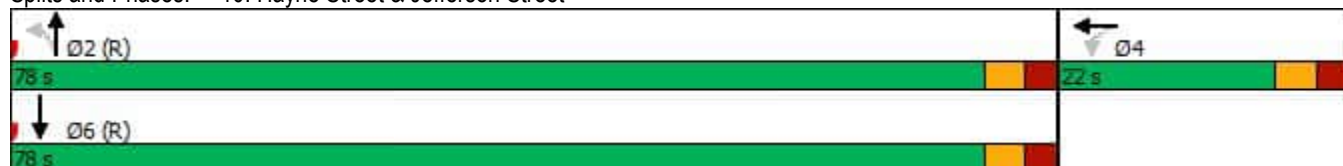
Intersection LOS: B

Intersection Capacity Utilization 52.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 10: Hayne Street & Jefferson Street



Lanes, Volumes, Timings
11: Hayne Street & Franklin Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	129	340	32	0	0	0	0	333	14	58	540	0
Future Volume (vph)	129	340	32	0	0	0	0	333	14	58	540	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990						0.994				
Flt Protected		0.987									0.995	
Satd. Flow (prot)	0	4969	0	0	0	0	0	1852	0	0	1853	0
Flt Permitted		0.987									0.928	
Satd. Flow (perm)	0	4969	0	0	0	0	0	1852	0	0	1729	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		262			456			457			260	
Travel Time (s)		8.9			15.5			15.6			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	143	378	36	0	0	0	0	370	16	64	600	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	557	0	0	0	0	0	386	0	0	664	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						10.0		10.0	10.0	
Minimum Split (s)	21.0	21.0						20.0		22.0	22.0	
Total Split (s)	21.0	21.0						79.0		79.0	79.0	
Total Split (%)	21.0%	21.0%						79.0%		79.0%	79.0%	
Maximum Green (s)	15.4	15.4						73.4		73.4	73.4	
Yellow Time (s)	3.0	3.0						3.0		3.0	3.0	
All-Red Time (s)	2.6	2.6						2.6		2.6	2.6	
Lost Time Adjust (s)		-0.6						-0.6			-0.6	
Total Lost Time (s)		5.0						5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0						2.0		2.0	2.0	
Recall Mode	None	None						C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0						4.0		4.0	4.0	
Flash Dont Walk (s)	10.0	10.0						10.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0						0		0	0	
Act Effct Green (s)		15.2						74.8			74.8	
Actuated g/C Ratio		0.15						0.75			0.75	
v/c Ratio		0.74						0.28			0.51	
Control Delay		46.9						3.9			4.3	
Queue Delay		0.3						0.2			0.2	
Total Delay		47.2						4.1			4.5	
LOS		D						A			A	
Approach Delay		47.2						4.1			4.5	
Approach LOS		D						A			A	

Lanes, Volumes, Timings
11: Hayne Street & Franklin Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		124						57			54	
Queue Length 95th (ft)		164						77			141	
Internal Link Dist (ft)		182			376			377			180	
Turn Bay Length (ft)												
Base Capacity (vph)		795						1385			1293	
Starvation Cap Reductn		34						405			152	
Spillback Cap Reductn		0						81			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.73						0.39			0.58	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 10 (10%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 19.2

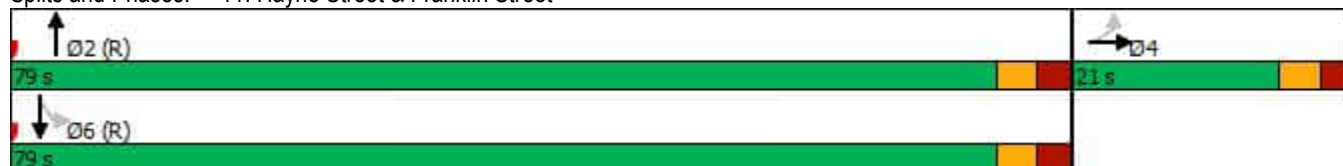
Intersection LOS: B

Intersection Capacity Utilization 72.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 11: Hayne Street & Franklin Street



Lanes, Volumes, Timings
12: Hayne Street & Windsor Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	75	11	83	91	24	8	297	46	21	511	28
Future Volume (vph)	13	75	11	83	91	24	8	297	46	21	511	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.983			0.982			0.993	
Flt Protected		0.994			0.980			0.999			0.998	
Satd. Flow (prot)	0	1824	0	0	1794	0	0	1827	0	0	1846	0
Flt Permitted		0.948			0.794			0.987			0.979	
Satd. Flow (perm)	0	1739	0	0	1454	0	0	1805	0	0	1811	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			20			20	
Link Distance (ft)		263			1063			787			457	
Travel Time (s)		7.2			29.0			26.8			15.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	14	83	12	92	101	27	9	330	51	23	568	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	0	220	0	0	390	0	0	622	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		21.0	21.0		20.0	20.0	
Total Split (s)	34.0	34.0		34.0	34.0		66.0	66.0		66.0	66.0	
Total Split (%)	34.0%	34.0%		34.0%	34.0%		66.0%	66.0%		66.0%	66.0%	
Maximum Green (s)	28.6	28.6		28.6	28.6		60.6	60.6		61.2	61.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		1.8	1.8	
Lost Time Adjust (s)		-0.4			-0.4			-0.4			0.2	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		19.2			19.2			70.8			70.8	
Actuated g/C Ratio		0.19			0.19			0.71			0.71	
v/c Ratio		0.33			0.79			0.31			0.49	
Control Delay		35.9			57.6			7.0			5.6	
Queue Delay		0.0			0.0			0.0			0.1	
Total Delay		35.9			57.6			7.0			5.7	
LOS		D			E			A			A	
Approach Delay		35.9			57.6			7.0			5.7	
Approach LOS		D			E			A			A	

Lanes, Volumes, Timings
12: Hayne Street & Windsor Street

2022 Existing - Road Diets

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		60			135			80			55	
Queue Length 95th (ft)		101			199			158			230	
Internal Link Dist (ft)		183			983			707			377	
Turn Bay Length (ft)												
Base Capacity (vph)		504			421			1278			1282	
Starvation Cap Reductn		0			0			0			108	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.22			0.52			0.31			0.53	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 31 (31%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 17.0

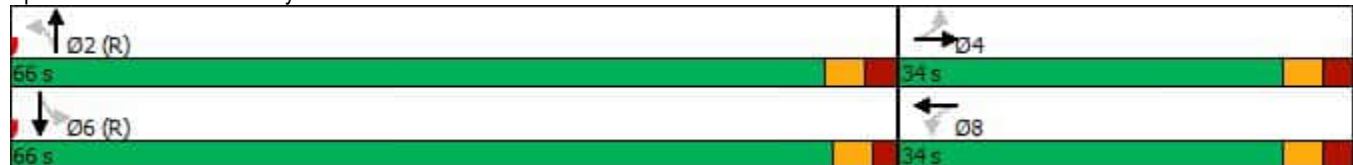
Intersection LOS: B

Intersection Capacity Utilization 64.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 12: Hayne Street & Windsor Street



Lanes, Volumes, Timings
13: Church Street & Jefferson Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					←↑↑			↑			↑	
Traffic Volume (vph)	0	0	0	8	414	142	17	33	0	0	97	28
Future Volume (vph)	0	0	0	8	414	142	17	33	0	0	97	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Flt					0.962						0.970	
Flt Protected					0.999			0.983				
Satd. Flow (prot)	0	0	0	0	4887	0	0	1831	0	0	1807	0
Flt Permitted					0.999			0.809				
Satd. Flow (perm)	0	0	0	0	4887	0	0	1507	0	0	1807	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		452			1043			259			558	
Travel Time (s)		15.4			35.6			8.8			19.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	9	460	158	19	37	0	0	108	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	627	0	0	56	0	0	139	0
Turn Type				Perm	NA		Perm	NA			NA	
Protected Phases					6			8			4	
Permitted Phases				6			8					
Detector Phase				6	6		8	8			4	
Switch Phase												
Minimum Initial (s)				10.0	10.0		7.0	7.0			7.0	
Minimum Split (s)				27.0	27.0		23.0	23.0			23.0	
Total Split (s)				55.0	55.0		45.0	45.0			45.0	
Total Split (%)				55.0%	55.0%		45.0%	45.0%			45.0%	
Maximum Green (s)				49.1	49.1		39.2	39.2			39.6	
Yellow Time (s)				3.0	3.0		3.0	3.0			3.0	
All-Red Time (s)				2.9	2.9		2.8	2.8			2.4	
Lost Time Adjust (s)					-0.9			-0.8			-0.4	
Total Lost Time (s)					5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0		2.0	2.0			2.0	
Recall Mode				C-Max	C-Max		None	None			None	
Walk Time (s)				5.0	5.0		5.0	5.0			5.0	
Flash Dont Walk (s)				16.0	16.0		12.0	12.0			12.0	
Pedestrian Calls (#/hr)				0	0		0	0			0	
Act Effect Green (s)					77.4			12.7			12.6	
Actuated g/C Ratio					0.77			0.13			0.13	
v/c Ratio					0.17			0.29			0.61	
Control Delay					3.3			42.5			48.0	
Queue Delay					0.0			0.0			0.0	
Total Delay					3.3			42.5			48.0	
LOS					A			D			D	
Approach Delay					3.3			42.5			48.0	
Approach LOS					A			D			D	

Lanes, Volumes, Timings
13: Church Street & Jefferson Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)					30			37			90	
Queue Length 95th (ft)					52			75			148	
Internal Link Dist (ft)		372			963			179			478	
Turn Bay Length (ft)												
Base Capacity (vph)					3781			602			722	
Starvation Cap Reductn					0			0			0	
Spillback Cap Reductn					0			0			0	
Storage Cap Reductn					0			0			0	
Reduced v/c Ratio					0.17			0.09			0.19	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 97 (97%), Referenced to phase 6:WBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 13.6

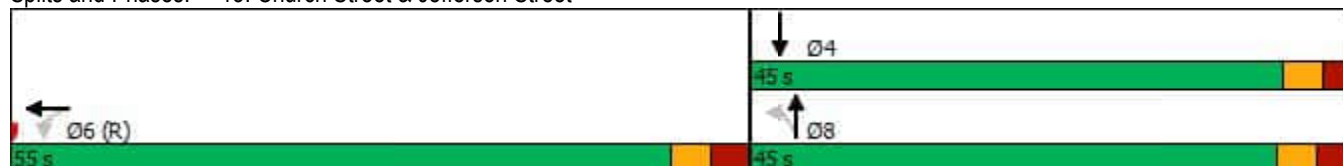
Intersection LOS: B

Intersection Capacity Utilization 36.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 13: Church Street & Jefferson Street



Lanes, Volumes, Timings
14: Church Street & Franklin Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

																				
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
Lane Configurations																				
Traffic Volume (vph)	29	343	27	0	0	0	0	26	5	79	27	0								
Future Volume (vph)	29	343	27	0	0	0	0	26	5	79	27	0								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900								
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Fr't	0.989		0.977																	
Flt Protected	0.950											0.964								
Satd. Flow (prot)	1770	3500	0	0	0	0	0	1820	0	0	1796	0								
Flt Permitted	0.950											0.795								
Satd. Flow (perm)	1770	3500	0	0	0	0	0	1820	0	0	1481	0								
Right Turn on Red			No			No			No			No								
Satd. Flow (RTOR)																				
Link Speed (mph)	20				35				20		20									
Link Distance (ft)	456				1229				1164		259									
Travel Time (s)	15.5				23.9				39.7		8.8									
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90								
Adj. Flow (vph)	32	381	30	0	0	0	0	29	6	88	30	0								
Shared Lane Traffic (%)																				
Lane Group Flow (vph)	32	411	0	0	0	0	0	35	0	0	118	0								
Turn Type	Perm	NA							NA	Perm	NA									
Protected Phases	4								2			6								
Permitted Phases	4											6								
Detector Phase	4	4							2	6	6									
Switch Phase																				
Minimum Initial (s)	7.0	7.0							10.0	10.0	10.0									
Minimum Split (s)	18.0	18.0							21.0	21.0	21.0									
Total Split (s)	60.0	60.0							40.0	40.0	40.0									
Total Split (%)	60.0%	60.0%							40.0%	40.0%	40.0%									
Maximum Green (s)	54.9	54.9							34.7	34.6	34.6									
Yellow Time (s)	3.0	3.0							3.0	3.0	3.0									
All-Red Time (s)	2.1	2.1							2.3	2.4	2.4									
Lost Time Adjust (s)	-0.1	-0.1							-0.3			-0.4								
Total Lost Time (s)	5.0	5.0							5.0			5.0								
Lead/Lag																				
Lead-Lag Optimize?																				
Vehicle Extension (s)	2.0	2.0							2.0	2.0	2.0									
Recall Mode	None	None							C-Max	C-Max	C-Max									
Walk Time (s)	5.0	5.0							5.0	5.0	5.0									
Flash Dont Walk (s)	7.0	7.0							10.0	10.0	10.0									
Pedestrian Calls (#/hr)	0	0							0	0	0									
Act Effct Green (s)	17.3	17.3							72.7			72.7								
Actuated g/C Ratio	0.17	0.17							0.73			0.73								
v/c Ratio	0.10	0.68							0.03			0.11								
Control Delay	23.7	36.9							4.8			0.6								
Queue Delay	0.0	0.0							0.0			0.0								
Total Delay	23.7	36.9							4.8			0.6								
LOS	C	D							A			A								
Approach Delay	35.9								4.8			0.6								
Approach LOS	D								A			A								

Lanes, Volumes, Timings
14: Church Street & Franklin Street

2022 Existing - Road Diets
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	11	79						5			2	
Queue Length 95th (ft)	m9	54						17			4	
Internal Link Dist (ft)		376			1149			1084			179	
Turn Bay Length (ft)												
Base Capacity (vph)	973	1925						1323			1076	
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	0.03	0.21						0.03			0.11	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 54 (54%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 27.1

Intersection LOS: C

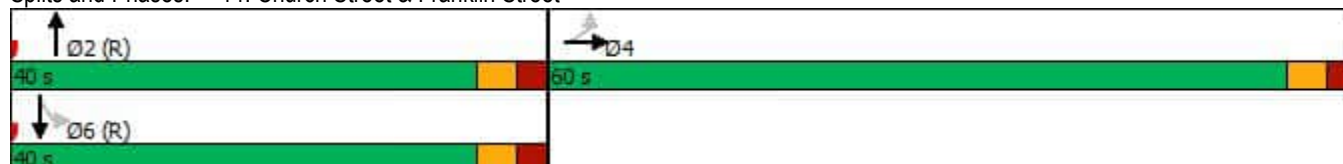
Intersection Capacity Utilization 31.1%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 14: Church Street & Franklin Street



Intersection: 1: Charlotte Avenue & Church Street

Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (ft)	148	208	52	147
Average Queue (ft)	81	87	18	54
95th Queue (ft)	135	177	47	114
Link Distance (ft)	755	436		1227
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	
Storage Blk Time (%)				1
Queuing Penalty (veh)				0

Intersection: 2: Charlotte Avenue & Jefferson Street

Movement	EB	WB	WB	WB	NB	NB	SB
Directions Served	LTR	L	T	R	L	T	TR
Maximum Queue (ft)	64	465	284	74	83	216	370
Average Queue (ft)	23	261	90	22	4	148	137
95th Queue (ft)	54	495	316	59	35	236	319
Link Distance (ft)	1051	494	494	494		186	436
Upstream Blk Time (%)		6	2			6	1
Queuing Penalty (veh)		9	3			35	2
Storage Bay Dist (ft)					50		
Storage Blk Time (%)					0	23	
Queuing Penalty (veh)					2	1	

Intersection: 3: Charlotte Avenue & Franklin Street

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R
Maximum Queue (ft)	225	924	258	366	149	200	207
Average Queue (ft)	173	609	161	232	47	124	185
95th Queue (ft)	294	1023	285	389	115	205	228
Link Distance (ft)		1087		360		186	186
Upstream Blk Time (%)		6		4		3	22
Queuing Penalty (veh)		0		29		11	76
Storage Bay Dist (ft)	125		175		50		
Storage Blk Time (%)	4	51	5	23	5	44	
Queuing Penalty (veh)	27	97	22	48	13	23	

Intersection: 4: Charlotte Avenue & Windsor Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	65	87	198	215
Average Queue (ft)	27	43	28	52
95th Queue (ft)	57	79	131	141
Link Distance (ft)	1128	526	1005	360
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Houston Street/Charlotte Avenue & Lancaster Avenue

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	T	LTR	L	TR	LT	R
Maximum Queue (ft)	150	124	210	81	167	101	55
Average Queue (ft)	83	49	86	23	84	39	12
95th Queue (ft)	133	99	149	58	144	88	39
Link Distance (ft)		999	402		1059	1005	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	150			50			500
Storage Blk Time (%)	0	0		3	25		
Queuing Penalty (veh)	1	0		6	8		

Intersection: 6: Main Street & Jefferson Street

Movement	WB	WB	WB	NB
Directions Served	LT	T	T	L
Maximum Queue (ft)	156	121	77	43
Average Queue (ft)	29	15	5	10
95th Queue (ft)	125	79	38	35
Link Distance (ft)	205	205	205	227
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: Main Street & Franklin Street

Movement	EB	EB	EB	NB	SB
Directions Served	LT	T	TR	TR	LT
Maximum Queue (ft)	168	166	199	34	49
Average Queue (ft)	83	95	118	8	7
95th Queue (ft)	151	155	188	29	29
Link Distance (ft)	528	528	528	374	227
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: Main Street & Windsor Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	121	107	48	35
Average Queue (ft)	53	44	12	7
95th Queue (ft)	95	84	38	29
Link Distance (ft)	526	206	758	374
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Hayne Street/Skyway Drive & Church Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	TR	L	TR
Maximum Queue (ft)	134	137	233	231	200	499
Average Queue (ft)	53	49	96	107	55	279
95th Queue (ft)	108	107	180	184	138	432
Link Distance (ft)	755	180		401	1170	1170
Upstream Blk Time (%)		0				
Queuing Penalty (veh)		0				
Storage Bay Dist (ft)			200			
Storage Blk Time (%)			1	1		
Queuing Penalty (veh)			3	2		

Intersection: 10: Hayne Street & Jefferson Street

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	217	203	152	224	129
Average Queue (ft)	136	109	56	109	34
95th Queue (ft)	197	172	121	206	95
Link Distance (ft)	388	388	388	227	401
Upstream Blk Time (%)				0	
Queuing Penalty (veh)				2	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 11: Hayne Street & Franklin Street

Movement	EB	EB	EB	NB	SB
Directions Served	LT	T	TR	TR	LT
Maximum Queue (ft)	213	226	224	196	147
Average Queue (ft)	115	135	154	77	38
95th Queue (ft)	223	242	256	165	111
Link Distance (ft)	205	205	205	376	227
Upstream Blk Time (%)	1	3	7		0
Queuing Penalty (veh)	2	7	14		0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 12: Hayne Street & Windsor Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	187	161	280	161
Average Queue (ft)	93	89	134	71
95th Queue (ft)	164	148	235	141
Link Distance (ft)	206	1034	758	376
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: Church Street & Jefferson Street

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	77	68	80	67	112
Average Queue (ft)	29	15	22	17	44
95th Queue (ft)	68	48	61	50	93
Link Distance (ft)	1001	1001	1001	221	477
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 14: Church Street & Franklin Street

Movement	EB	EB	EB	NB	SB
Directions Served	L	T	TR	TR	LT
Maximum Queue (ft)	104	306	322	39	23
Average Queue (ft)	15	158	175	5	1
95th Queue (ft)	59	303	322	23	11
Link Distance (ft)	399	399	399	1118	221
Upstream Blk Time (%)		0	0		
Queuing Penalty (veh)		0	0		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 444

Intersection: 1: Charlotte Avenue & Church Street

Movement	WB	NB	SB	SB
Directions Served	LR	TR	L	T
Maximum Queue (ft)	266	174	62	280
Average Queue (ft)	163	76	18	100
95th Queue (ft)	249	144	49	201
Link Distance (ft)	755	436		1227
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			100	
Storage Blk Time (%)				6
Queuing Penalty (veh)				2

Intersection: 2: Charlotte Avenue & Jefferson Street

Movement	EB	WB	WB	WB	NB	NB	SB
Directions Served	LTR	L	T	R	L	T	TR
Maximum Queue (ft)	72	378	146	65	54	199	315
Average Queue (ft)	23	105	34	20	5	69	144
95th Queue (ft)	56	256	98	55	29	159	258
Link Distance (ft)	1051	494	494	494		186	436
Upstream Blk Time (%)		0				1	0
Queuing Penalty (veh)		0				2	1
Storage Bay Dist (ft)					50		
Storage Blk Time (%)					0	15	
Queuing Penalty (veh)					1	1	

Intersection: 3: Charlotte Avenue & Franklin Street

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R
Maximum Queue (ft)	225	1011	212	250	149	202	204
Average Queue (ft)	168	694	102	97	50	122	152
95th Queue (ft)	298	1184	173	194	117	204	225
Link Distance (ft)		1087		360		186	186
Upstream Blk Time (%)		8				2	5
Queuing Penalty (veh)		0				8	24
Storage Bay Dist (ft)	125		175		50		
Storage Blk Time (%)	5	69	1	2	9	26	
Queuing Penalty (veh)	24	90	4	3	35	16	

Intersection: 4: Charlotte Avenue & Windsor Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	52	119	38	114
Average Queue (ft)	18	56	2	23
95th Queue (ft)	44	103	15	78
Link Distance (ft)	1128	526	1005	360
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Houston Street/Charlotte Avenue & Lancaster Avenue

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	T	LTR	L	TR	LT	R
Maximum Queue (ft)	112	91	200	72	124	138	130
Average Queue (ft)	53	32	108	29	46	51	37
95th Queue (ft)	93	67	172	63	93	111	93
Link Distance (ft)		999	402		1059	1005	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	150			50			500
Storage Blk Time (%)	0			8	8		
Queuing Penalty (veh)	0			7	3		

Intersection: 6: Main Street & Jefferson Street

Movement	WB	WB	WB	NB
Directions Served	LT	T	T	L
Maximum Queue (ft)	42	53	24	60
Average Queue (ft)	4	4	1	15
95th Queue (ft)	21	25	9	45
Link Distance (ft)	205	205	205	227
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 7: Main Street & Franklin Street

Movement	EB	EB	EB	NB	SB
Directions Served	LT	T	TR	TR	LT
Maximum Queue (ft)	162	135	164	38	66
Average Queue (ft)	79	71	85	6	10
95th Queue (ft)	143	122	150	27	40
Link Distance (ft)	528	528	528	374	227
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: Main Street & Windsor Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	88	153	44	69
Average Queue (ft)	44	64	14	19
95th Queue (ft)	75	119	40	53
Link Distance (ft)	526	206	758	374
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Hayne Street/Skyway Drive & Church Street

Movement	EB	WB	B15	NB	NB	SB	SB
Directions Served	LTR	LTR	T	LT	TR	L	TR
Maximum Queue (ft)	211	186	4	180	189	360	552
Average Queue (ft)	90	89	0	81	98	66	322
95th Queue (ft)	164	159	3	153	163	219	500
Link Distance (ft)	755	180	477		401	1170	1170
Upstream Blk Time (%)		0					
Queuing Penalty (veh)		1					
Storage Bay Dist (ft)				200			
Storage Blk Time (%)				0	0		
Queuing Penalty (veh)				1	1		

Intersection: 10: Hayne Street & Jefferson Street

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	271	202	160	229	94
Average Queue (ft)	148	105	75	126	25
95th Queue (ft)	226	175	133	215	71
Link Distance (ft)	388	388	388	227	401
Upstream Blk Time (%)				0	
Queuing Penalty (veh)				1	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 11: Hayne Street & Franklin Street

Movement	EB	EB	EB	NB	SB
Directions Served	LT	T	TR	TR	LT
Maximum Queue (ft)	194	170	201	146	225
Average Queue (ft)	113	105	124	54	105
95th Queue (ft)	170	156	181	113	212
Link Distance (ft)	205	205	205	376	227
Upstream Blk Time (%)	0		0		0
Queuing Penalty (veh)	1		1		2
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 12: Hayne Street & Windsor Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	144	232	191	226
Average Queue (ft)	67	125	76	100
95th Queue (ft)	121	201	153	193
Link Distance (ft)	206	1034	758	376
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: Church Street & Jefferson Street

Movement	WB	WB	WB	NB	SB
Directions Served	LT	T	TR	LT	TR
Maximum Queue (ft)	102	62	109	132	188
Average Queue (ft)	35	19	39	48	84
95th Queue (ft)	76	52	89	102	156
Link Distance (ft)	1001	1001	1001	221	477
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 14: Church Street & Franklin Street

Movement	EB	EB	EB	NB	SB
Directions Served	L	T	TR	TR	LT
Maximum Queue (ft)	62	174	195	55	30
Average Queue (ft)	18	104	120	6	3
95th Queue (ft)	50	161	173	30	19
Link Distance (ft)	399	399	399	1118	221
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 227

APPENDIX G

2022 TWO-WAY STREETS SYNCHRO AND SIMTRAFFIC REPORTS

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	63	65	507	103	28	318
Future Volume (vph)	63	65	507	103	28	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.975			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3451	0	1770	3539
Flt Permitted	0.950				0.394	
Satd. Flow (perm)	1770	1583	3451	0	734	3539
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	20		35			35
Link Distance (ft)	823		519			1250
Travel Time (s)	28.1		10.1			24.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	70	72	563	114	31	353
Shared Lane Traffic (%)						
Lane Group Flow (vph)	70	72	677	0	31	353
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	10.0		10.0	10.0
Minimum Split (s)	31.0	31.0	31.0		31.0	31.0
Total Split (s)	33.0	33.0	42.0		42.0	42.0
Total Split (%)	44.0%	44.0%	56.0%		56.0%	56.0%
Maximum Green (s)	26.7	26.7	36.1		36.1	36.1
Yellow Time (s)	3.0	3.0	3.1		3.1	3.1
All-Red Time (s)	3.3	3.3	2.8		2.8	2.8
Lost Time Adjust (s)	-1.3	-1.3	-0.9		-0.9	-0.9
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Recall Mode	None	None	C-Max		C-Max	C-Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	19.0	19.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effect Green (s)	9.8	9.8	58.9		58.9	58.9
Actuated g/C Ratio	0.13	0.13	0.79		0.79	0.79
v/c Ratio	0.30	0.35	0.25		0.05	0.13
Control Delay	20.2	21.6	2.1		3.5	3.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	20.2	21.6	2.1		3.5	3.0



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	C	C	A		A	A
Approach Delay	20.9		2.1			3.0
Approach LOS	C		A			A
Queue Length 50th (ft)	33	34	16		3	18
Queue Length 95th (ft)	m59	m62	39		11	36
Internal Link Dist (ft)	743		439			1170
Turn Bay Length (ft)					100	
Base Capacity (vph)	660	590	2708		576	2777
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.11	0.12	0.25		0.05	0.13

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 56 (75%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.35

Intersection Signal Delay: 4.6

Intersection LOS: A

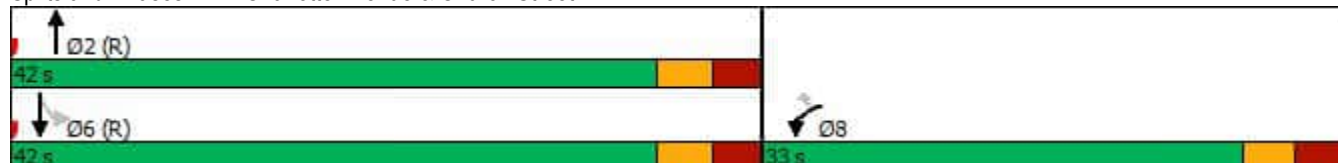
Intersection Capacity Utilization 37.4%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 1: Charlotte Avenue & Church Street



Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

2: Charlotte Avenue & Jefferson Street

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕			↕	
Traffic Volume (vph)	17	75	6	118	59	19	4	583	4	23	316	19
Future Volume (vph)	17	75	6	118	59	19	4	583	4	23	316	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	300		0	50		0	0		0
Storage Lanes	0		0	1		0	1		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Frt		0.991			0.964			0.999			0.992	
Flt Protected		0.991		0.950			0.950				0.997	
Satd. Flow (prot)	0	1829	0	1770	1796	0	1770	3536	0	0	3500	0
Flt Permitted		0.932		0.704			0.517				0.899	
Satd. Flow (perm)	0	1720	0	1311	1796	0	963	3536	0	0	3156	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			20			35			35	
Link Distance (ft)		1102			564			258			519	
Travel Time (s)		30.1			19.2			5.0			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	19	83	7	131	66	21	4	648	4	26	351	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	131	87	0	4	652	0	0	398	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	28.0	28.0		29.0	29.0		22.0	22.0		19.0	19.0	
Total Split (s)	36.0	36.0		36.0	36.0		39.0	39.0		39.0	39.0	
Total Split (%)	48.0%	48.0%		48.0%	48.0%		52.0%	52.0%		52.0%	52.0%	
Maximum Green (s)	30.6	30.6		29.7	29.7		33.3	33.3		33.8	33.8	
Yellow Time (s)	3.0	3.0		3.3	3.3		4.1	4.1		3.6	3.6	
All-Red Time (s)	2.4	2.4		3.0	3.0		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		-0.4		-1.3	-1.3		-0.7	-0.7			-0.2	
Total Lost Time (s)		5.0		5.0	5.0		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0		11.0	11.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		12.9		13.1	13.1		55.5	55.5			55.5	
Actuated g/C Ratio		0.17		0.17	0.17		0.74	0.74			0.74	
v/c Ratio		0.37		0.57	0.28		0.01	0.25			0.17	
Control Delay		29.6		17.3	8.4		1.5	2.3			6.5	
Queue Delay		0.0		0.0	0.0		0.0	0.2			0.0	
Total Delay		29.6		17.3	8.4		1.5	2.5			6.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C		B	A		A	A			A	
Approach Delay		29.6			13.7			2.5			6.5	
Approach LOS		C			B			A			A	
Queue Length 50th (ft)		45		15	10		0	82			41	
Queue Length 95th (ft)		82		18	13		m0	15			76	
Internal Link Dist (ft)		1022			484			178			439	
Turn Bay Length (ft)				300			50					
Base Capacity (vph)		710		541	742		713	2618			2337	
Starvation Cap Reductn		0		0	0		0	1115			0	
Spillback Cap Reductn		0		0	0		0	0			0	
Storage Cap Reductn		0		0	0		0	0			0	
Reduced v/c Ratio		0.15		0.24	0.12		0.01	0.43			0.17	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 8 (11%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 7.6

Intersection LOS: A

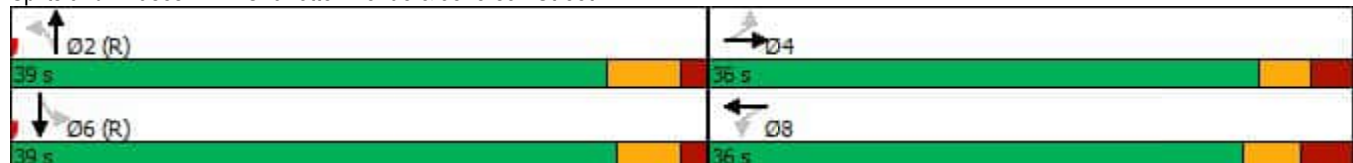
Intersection Capacity Utilization 48.4%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 2: Charlotte Avenue & Jefferson Street



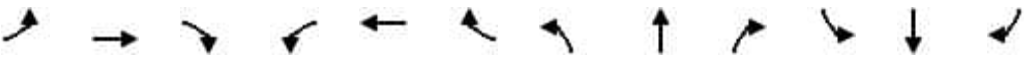
Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

3: Charlotte Avenue & Franklin Street

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	478	58	4	168	19	190	373	15	24	221	195
Future Volume (vph)	170	478	58	4	168	19	190	373	15	24	221	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	100		0	175		0	50		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.984			0.985			0.994			0.930	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1833	0	1770	1835	0	1770	3518	0	1770	3291	0
Flt Permitted	0.604			0.163			0.950			0.950		
Satd. Flow (perm)	1125	1833	0	304	1835	0	1770	3518	0	1770	3291	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			20			35			35	
Link Distance (ft)		1131			592			448			258	
Travel Time (s)		22.0			20.2			8.7			5.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	189	531	64	4	187	21	211	414	17	27	246	217
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	595	0	4	208	0	211	431	0	27	463	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	27.0	27.0		14.0	14.0		13.0	20.0		13.0	19.0	
Total Split (s)	36.0	36.0		36.0	36.0		18.0	26.0		13.0	21.0	
Total Split (%)	48.0%	48.0%		48.0%	48.0%		24.0%	34.7%		17.3%	28.0%	
Maximum Green (s)	29.7	29.7		29.0	29.0		12.9	20.9		7.9	16.0	
Yellow Time (s)	4.1	4.1		5.0	5.0		3.0	3.7		3.0	3.6	
All-Red Time (s)	2.2	2.2		2.0	2.0		2.1	1.4		2.1	1.4	
Lost Time Adjust (s)	-1.3	-1.3		-2.0	-2.0		-0.1	-0.1		-0.1	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		3.0	3.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)	5.0	5.0						5.0			5.0	
Flash Dont Walk (s)	15.0	15.0						9.0			9.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effect Green (s)	28.5	28.5		28.5	28.5		11.8	31.6		7.2	19.7	
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.16	0.42		0.10	0.26	
v/c Ratio	0.44	0.86		0.03	0.30		0.76	0.29		0.16	0.54	
Control Delay	20.4	34.6		14.2	16.8		48.7	17.4		36.1	20.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.1	
Total Delay	20.4	34.6		14.2	16.8		48.7	17.4		36.1	20.9	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C		B	B		D	B		D	C	
Approach Delay		31.2			16.8			27.7			21.7	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	60	234		1	62		93	62		10	114	
Queue Length 95th (ft)	114	#402		7	108		#183	126		32	96	
Internal Link Dist (ft)		1051			512			368			178	
Turn Bay Length (ft)	125			100			175			50		
Base Capacity (vph)	465	757		125	758		307	1481		188	865	
Starvation Cap Reductn	0	0		0	0		0	0		0	21	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.41	0.79		0.03	0.27		0.69	0.29		0.14	0.55	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 72 (96%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 26.5

Intersection LOS: C

Intersection Capacity Utilization 74.1%

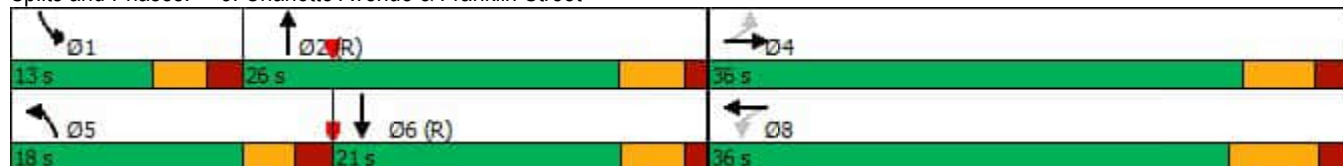
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: Charlotte Avenue & Franklin Street



Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	17	7	4	4	46	4	570	4	65	245	5
Future Vol, veh/h	7	17	7	4	4	46	4	570	4	65	245	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	19	8	4	4	51	4	633	4	72	272	6
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	746	1064	139	933	1065	319	278	0	0	637	0	0
Stage 1	419	419	-	643	643	-	-	-	-	-	-	-
Stage 2	327	645	-	290	422	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	302	221	884	221	221	677	1282	-	-	943	-	-
Stage 1	582	588	-	428	467	-	-	-	-	-	-	-
Stage 2	660	466	-	694	587	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	255	200	884	189	200	677	1282	-	-	943	-	-
Mov Cap-2 Maneuver	255	200	-	189	200	-	-	-	-	-	-	-
Stage 1	579	535	-	426	465	-	-	-	-	-	-	-
Stage 2	601	464	-	604	534	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	21.1		13.3		0.1		2.1					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1282	-	-	258	495	943	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.134	0.121	0.077	-	-				
HCM Control Delay (s)	7.8	0	-	21.1	13.3	9.1	0.3	-				
HCM Lane LOS	A	A	-	C	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.5	0.4	0.2	-	-				

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	17	7	4	4	46	4	570	4	65	245	5
Future Volume (vph)	7	17	7	4	4	46	4	570	4	65	245	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.969			0.883			0.999			0.997	
Flt Protected		0.989			0.997						0.990	
Satd. Flow (prot)	0	1785	0	0	1640	0	0	3536	0	0	3493	0
Flt Permitted		0.989			0.997						0.990	
Satd. Flow (perm)	0	1785	0	0	1640	0	0	3536	0	0	3493	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1162			592			1102			448	
Travel Time (s)		31.7			16.1			21.5			8.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	8	19	8	4	4	51	4	633	4	72	272	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	35	0	0	59	0	0	641	0	0	350	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 38.4%

ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

5: Houston Street/Charlotte Avenue & Lancaster Avenue

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	280	241	46	4	134	92	27	183	4	5	114	115
Future Volume (vph)	280	241	46	4	134	92	27	183	4	5	114	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	50		0	0		0
Storage Lanes	1		1	0		0	1		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.946			0.997				0.850
Flt Protected	0.950				0.999		0.950				0.998	
Satd. Flow (prot)	1770	1863	1583	0	1760	0	1770	1857	0	0	1859	1583
Flt Permitted	0.417				0.993		0.672				0.979	
Satd. Flow (perm)	777	1863	1583	0	1750	0	1252	1857	0	0	1824	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1039			484			1097			1102	
Travel Time (s)		20.2			9.4			21.4			21.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	311	268	51	4	149	102	30	203	4	6	127	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	311	268	51	0	255	0	30	207	0	0	133	128
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2		2	6			8		4			4
Detector Phase	5	2	2	6	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	32.0	32.0	33.0	33.0		28.0	28.0		23.0	23.0	14.0
Total Split (s)	17.0	52.0	52.0	35.0	35.0		28.0	28.0		28.0	28.0	17.0
Total Split (%)	21.3%	65.0%	65.0%	43.8%	43.8%		35.0%	35.0%		35.0%	35.0%	21.3%
Maximum Green (s)	10.9	45.7	45.7	28.7	28.7		22.2	22.2		22.2	22.2	10.9
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.9	3.9		3.9	3.9	3.0
All-Red Time (s)	3.1	2.3	2.3	2.3	2.3		1.9	1.9		1.9	1.9	3.1
Lost Time Adjust (s)	-1.1	-1.3	-1.3		-1.3		-0.8	-0.8			-0.8	-1.1
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0	5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag							Lead
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	2.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None	Min	Min	Min	Min		None	None		None	None	None
Walk Time (s)		7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0	18.0	19.0	19.0		15.0	15.0		10.0	10.0	
Pedestrian Calls (#/hr)		0	0	0	0		0	0		0	0	
Act Effect Green (s)	31.3	31.3	31.3		14.8		11.3	11.3			11.3	27.9
Actuated g/C Ratio	0.59	0.59	0.59		0.28		0.21	0.21			0.21	0.53
v/c Ratio	0.46	0.24	0.05		0.52		0.11	0.52			0.34	0.15
Control Delay	8.2	6.2	5.3		21.0		18.9	24.3			21.2	7.6
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0			0.0	0.0
Total Delay	8.2	6.2	5.3		21.0		18.9	24.3			21.2	7.6

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A	A		C		B	C			C	A
Approach Delay		7.1			21.0			23.6			14.5	
Approach LOS		A			C			C			B	
Queue Length 50th (ft)	39	33	5		66		8	57			35	18
Queue Length 95th (ft)	93	78	19		138		27	124			84	49
Internal Link Dist (ft)		959			404			1017			1022	
Turn Bay Length (ft)	150						50					
Base Capacity (vph)	690	1652	1404		1012		555	823			809	858
Starvation Cap Reductn	0	0	0		0		0	0			0	0
Spillback Cap Reductn	0	0	0		0		0	0			0	0
Storage Cap Reductn	0	0	0		0		0	0			0	0
Reduced v/c Ratio	0.45	0.16	0.04		0.25		0.05	0.25			0.16	0.15

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 52.9

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 13.9

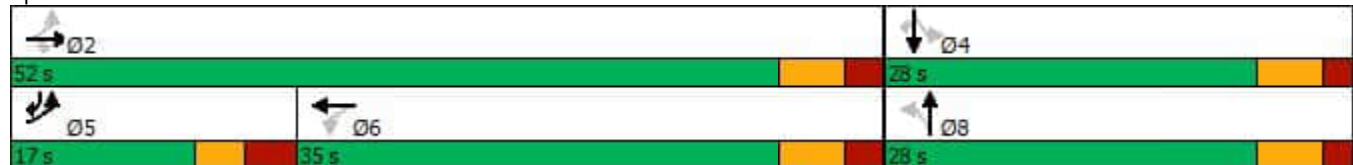
Intersection LOS: B

Intersection Capacity Utilization 51.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 5: Houston Street/Charlotte Avenue & Lancaster Avenue



Lanes, Volumes, Timings
6: Main Street & Jefferson Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↱	
Traffic Volume (vph)	95	4	6	240	9	7
Future Volume (vph)	95	4	6	240	9	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.940	
Flt Protected				0.999	0.973	
Satd. Flow (prot)	1853	0	0	1861	1704	0
Flt Permitted				0.996	0.973	
Satd. Flow (perm)	1853	0	0	1855	1704	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	20			20	35	
Link Distance (ft)	564			262	261	
Travel Time (s)	19.2			8.9	5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	106	4	7	267	10	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	110	0	0	274	18	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	7.0		20.0	20.0	15.0	
Minimum Split (s)	14.0		26.0	26.0	22.0	
Total Split (s)	50.0		50.0	50.0	25.0	
Total Split (%)	66.7%		66.7%	66.7%	33.3%	
Maximum Green (s)	43.0		44.4	44.4	19.1	
Yellow Time (s)	5.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.6	2.6	2.9	
Lost Time Adjust (s)	-2.0			-0.6	-0.9	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		2.0	2.0	2.0	
Recall Mode	None		C-Max	C-Max	None	
Walk Time (s)			7.0	7.0	5.0	
Flash Dont Walk (s)			11.0	11.0	11.0	
Pedestrian Calls (#/hr)			0	0	0	
Act Effect Green (s)	69.8			69.8	15.9	
Actuated g/C Ratio	0.93			0.93	0.21	
v/c Ratio	0.06			0.16	0.05	
Control Delay	1.3			0.8	24.1	
Queue Delay	0.0			0.0	0.0	
Total Delay	1.3			0.9	24.1	
LOS	A			A	C	
Approach Delay	1.3			0.9	24.1	
Approach LOS	A			A	C	

Lanes, Volumes, Timings
6: Main Street & Jefferson Street

2022 Existing - Two-Way Streets - Realign Jefferson Street
Timing Plan: AM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)	0			0	7	
Queue Length 95th (ft)	24			23	23	
Internal Link Dist (ft)	484			182	181	
Turn Bay Length (ft)						
Base Capacity (vph)	1725			1727	454	
Starvation Cap Reductn	0			214	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.06			0.18	0.04	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 29 (39%), Referenced to phase 6:WBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.16

Intersection Signal Delay: 2.0

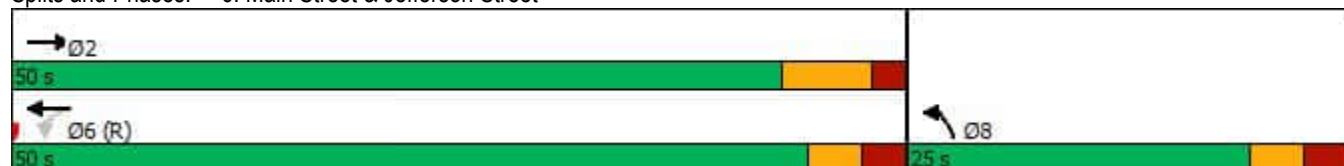
Intersection LOS: A

Intersection Capacity Utilization 38.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Main Street & Jefferson Street



Lanes, Volumes, Timings
7: Main Street & Franklin Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	472	5	5	187	4	4	12	7	4	4	4
Future Volume (vph)	4	472	5	5	187	4	4	12	7	4	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.998			0.957			0.955	
Flt Protected					0.999			0.992			0.984	
Satd. Flow (prot)	0	1859	0	0	1857	0	0	1768	0	0	1750	0
Flt Permitted		0.998			0.984			0.979			0.956	
Satd. Flow (perm)	0	1855	0	0	1829	0	0	1745	0	0	1701	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			35			35	
Link Distance (ft)		592			262			455			261	
Travel Time (s)		20.2			8.9			8.9			5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	524	6	6	208	4	4	13	8	4	4	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	534	0	0	218	0	0	25	0	0	12	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	22.0	22.0		14.0	14.0		22.0	22.0		22.0	22.0	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Maximum Green (s)	31.2	31.2		30.0	30.0		17.4	17.4		17.4	17.4	
Yellow Time (s)	3.0	3.0		5.0	5.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.8	2.8		2.0	2.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-0.8			-2.0			-0.6			-0.6	
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	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Walk Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0					11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0					0	0		0	0	
Act Effct Green (s)		24.7			24.7			25.3			25.3	
Actuated g/C Ratio		0.41			0.41			0.42			0.42	
v/c Ratio		0.70			0.29			0.03			0.02	
Control Delay		19.0			11.5			13.6			13.6	
Queue Delay		0.0			0.3			0.0			0.0	
Total Delay		19.0			11.8			13.6			13.6	
LOS		B			B			B			B	
Approach Delay		19.0			11.8			13.6			13.6	
Approach LOS		B			B			B			B	

Lanes, Volumes, Timings
7: Main Street & Franklin Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		149			49			5			2	
Queue Length 95th (ft)		190			69			21			13	
Internal Link Dist (ft)		512			182			375			181	
Turn Bay Length (ft)												
Base Capacity (vph)		990			976			735			717	
Starvation Cap Reductn		0			356			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.54			0.35			0.03			0.02	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

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

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 16.8

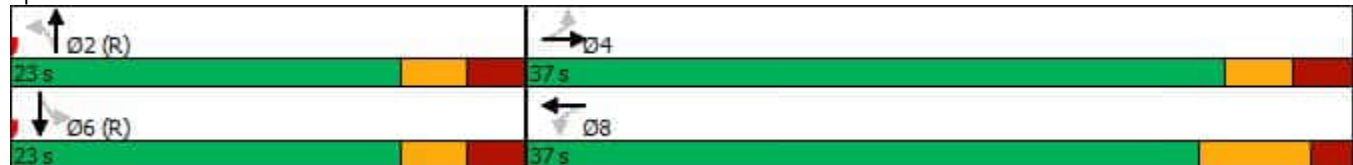
Intersection LOS: B

Intersection Capacity Utilization 41.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Main Street & Franklin Street



Lanes, Volumes, Timings
8: Main Street & Windsor Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	105	4	9	47	7	4	20	11	4	10	4
Future Volume (vph)	4	105	4	9	47	7	4	20	11	4	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.985			0.957			0.972	
Flt Protected		0.998			0.993			0.995			0.990	
Satd. Flow (prot)	0	1852	0	0	1822	0	0	1774	0	0	1792	0
Flt Permitted		0.985			0.925			0.980			0.958	
Satd. Flow (perm)	0	1827	0	0	1697	0	0	1747	0	0	1735	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		592			263			786			455	
Travel Time (s)		16.1			7.2			15.3			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	117	4	10	52	8	4	22	12	4	11	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	0	0	70	0	0	38	0	0	19	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	32.0	32.0		32.0	32.0		28.0	28.0		28.0	28.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		46.7%	46.7%		46.7%	46.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		21.0	21.0		21.0	21.0	
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	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		9.3			9.3			19.1			19.1	
Actuated g/C Ratio		0.31			0.31			0.63			0.63	
v/c Ratio		0.22			0.13			0.03			0.02	
Control Delay		9.2			8.6			6.3			6.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.2			8.6			6.3			6.4	
LOS		A			A			A			A	
Approach Delay		9.2			8.6			6.3			6.4	
Approach LOS		A			A			A			A	

Lanes, Volumes, Timings
8: Main Street & Windsor Street

2022 Existing - Two-Way Streets - Realign Jefferson Street
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		15			8			4			2	
Queue Length 95th (ft)		35			23			13			8	
Internal Link Dist (ft)		512			183			706			375	
Turn Bay Length (ft)												
Base Capacity (vph)		1672			1553			1428			1418	
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		0.07			0.05			0.03			0.01	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 30.4

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.22

Intersection Signal Delay: 8.4

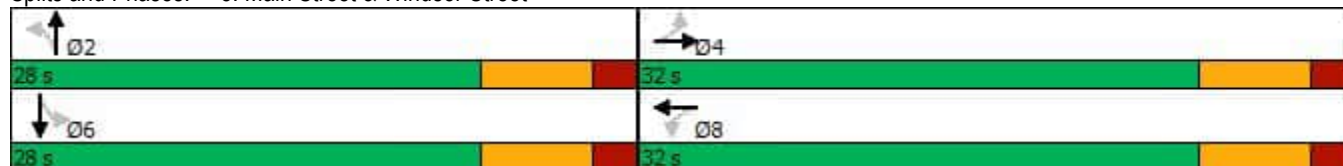
Intersection LOS: A

Intersection Capacity Utilization 23.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 8: Main Street & Windsor Street



Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

9: Hayne Street/Skyway Drive & Church Street

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		EBT			WBT			NBT			SBT	
Traffic Volume (vph)	62	30	21	4	25	19	39	456	4	64	397	121
Future Volume (vph)	62	30	21	4	25	19	39	456	4	64	397	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.972			0.941			0.999			0.969	
Flt Protected		0.973			0.996			0.996			0.995	
Satd. Flow (prot)	0	3347	0	0	3317	0	0	3522	0	0	3412	0
Flt Permitted		0.810			0.943			0.835			0.779	
Satd. Flow (perm)	0	2786	0	0	3141	0	0	2952	0	0	2672	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		823			247			483			1201	
Travel Time (s)		28.1			8.4			16.5			40.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	69	33	23	4	28	21	43	507	4	71	441	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	0	0	53	0	0	554	0	0	646	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)	31.0	31.0		30.0	30.0		24.0	24.0		26.0	26.0	
Total Split (s)	34.0	34.0		34.0	34.0		41.0	41.0		41.0	41.0	
Total Split (%)	45.3%	45.3%		45.3%	45.3%		54.7%	54.7%		54.7%	54.7%	
Maximum Green (s)	27.7	27.7		27.6	27.6		35.0	35.0		34.7	34.7	
Yellow Time (s)	3.3	3.3		3.4	3.4		3.0	3.0		3.3	3.3	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.3			-1.4			-1.0			-1.3	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
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)	20.0	20.0		19.0	19.0		14.0	14.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		40.5			40.5			24.5			24.5	
Actuated g/C Ratio		0.54			0.54			0.33			0.33	
v/c Ratio		0.08			0.03			0.57			0.74	
Control Delay		10.0			14.8			15.9			27.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		10.0			14.8			15.9			27.4	
LOS		A			B			B			C	
Approach Delay		10.0			14.8			15.9			27.4	
Approach LOS		A			B			B			C	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		11			6			89			137	
Queue Length 95th (ft)		40			20			61			168	
Internal Link Dist (ft)		743			167			403			1121	
Turn Bay Length (ft)												
Base Capacity (vph)		1504			1696			1416			1282	
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		0.08			0.03			0.39			0.50	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 10 (13%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 20.7

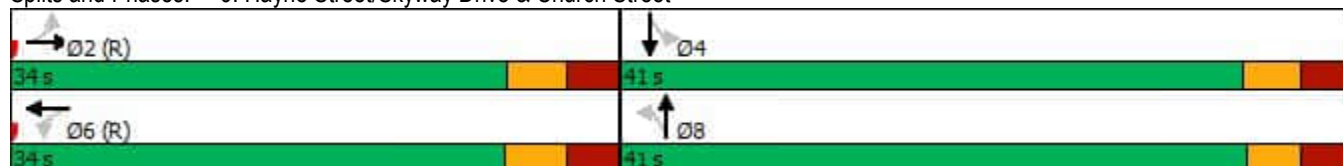
Intersection LOS: C

Intersection Capacity Utilization 53.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 9: Hayne Street/Skyway Drive & Church Street



Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

10: Hayne Street & Jefferson Street

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	28	16	4	205	4	13	517	4	13	263	34
Future Volume (vph)	58	28	16	4	205	4	13	517	4	13	263	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.945			0.997			0.999			0.983	
Flt Protected	0.950			0.950				0.999			0.998	
Satd. Flow (prot)	1770	1760	0	1770	1857	0	0	3532	0	0	3472	0
Flt Permitted	0.469			0.725				0.945			0.929	
Satd. Flow (perm)	874	1760	0	1350	1857	0	0	3341	0	0	3232	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		262			452			260			483	
Travel Time (s)		8.9			15.4			8.9			16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	64	31	18	4	228	4	14	574	4	14	292	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	49	0	4	232	0	0	592	0	0	344	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4			4			2			6		
Detector Phase	4	4		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	33.0	33.0		33.0	33.0		42.0	42.0		42.0	42.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		56.0%	56.0%		56.0%	56.0%	
Maximum Green (s)	27.1	27.1		27.1	27.1		36.4	36.4		36.4	36.4	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.9	2.9		2.9	2.9		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-0.9			-0.6			-0.6	
Total Lost Time (s)	3.9	3.9		3.9	5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)	16.3	16.3		16.3	15.2			49.8			49.8	
Actuated g/C Ratio	0.22	0.22		0.22	0.20			0.66			0.66	
v/c Ratio	0.34	0.13		0.01	0.62			0.27			0.16	
Control Delay	20.2	14.5		18.8	30.8			9.6			1.4	
Queue Delay	0.0	0.0		0.0	0.0			0.4			0.0	
Total Delay	20.2	14.5		18.8	30.8			10.0			1.4	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	B		B	C			A			A	
Approach Delay		17.7			30.6			10.0			1.4	
Approach LOS		B			C			A			A	
Queue Length 50th (ft)	28	20		1	84			46			2	
Queue Length 95th (ft)	54	44		m6	116			159			13	
Internal Link Dist (ft)		182			372			180			403	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	339	682		523	693			2217			2145	
Starvation Cap Reductn	0	0		0	0			1079			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.19	0.07		0.01	0.33			0.52			0.16	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 50 (67%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 12.1

Intersection LOS: B

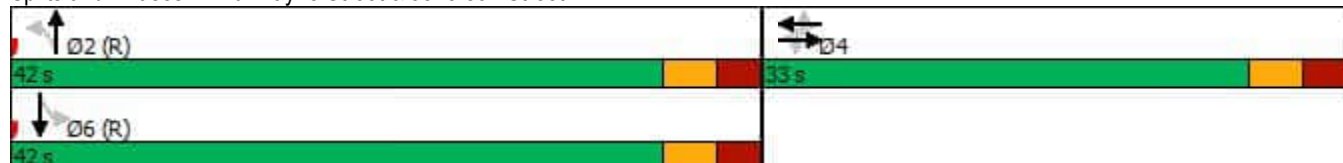
Intersection Capacity Utilization 52.3%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 10: Hayne Street & Jefferson Street



Lanes, Volumes, Timings
11: Hayne Street & Franklin Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	420	16	4	168	60	4	435	6	13	246	21
Future Volume (vph)	45	420	16	4	168	60	4	435	6	13	246	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.960			0.998			0.988	
Flt Protected	0.950			0.950						0.950		
Satd. Flow (prot)	1770	1852	0	1770	1788	0	0	1859	0	1770	1840	0
Flt Permitted	0.534			0.239				0.998		0.432		
Satd. Flow (perm)	995	1852	0	445	1788	0	0	1855	0	805	1840	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		262			456			457			260	
Travel Time (s)		8.9			15.5			15.6			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	50	467	18	4	187	67	4	483	7	14	273	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	50	485	0	4	254	0	0	494	0	14	296	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	21.0	21.0		14.0	14.0		20.0	20.0		22.0	22.0	
Total Split (s)	39.0	39.0		39.0	39.0		36.0	36.0		36.0	36.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	33.4	33.4		32.0	32.0		30.4	30.4		30.4	30.4	
Yellow Time (s)	3.0	3.0		5.0	5.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.6	2.6		2.0	2.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-2.0	-0.6		-2.0	-2.0			-0.6		-0.6	-0.6	
Total Lost Time (s)	3.6	5.0		5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		3.0	3.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0					4.0	4.0		4.0	4.0	
Flash Dont Walk (s)	10.0	10.0					10.0	10.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0					0	0		0	0	
Act Effect Green (s)	27.2	25.8		25.8	25.8			39.2		39.2	39.2	
Actuated g/C Ratio	0.36	0.34		0.34	0.34			0.52		0.52	0.52	
v/c Ratio	0.14	0.76		0.03	0.41			0.51		0.03	0.31	
Control Delay	14.6	29.5		15.5	28.1			11.5		2.5	3.0	
Queue Delay	0.0	3.5		0.0	0.0			0.1		0.0	0.7	
Total Delay	14.6	33.0		15.5	28.1			11.7		2.5	3.7	

Lanes, Volumes, Timings
11: Hayne Street & Franklin Street

2022 Existing - Two-Way Streets - Realign Jefferson Street
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	B	C		B	C			B		A	A	
Approach Delay		31.3			27.9			11.7			3.7	
Approach LOS		C			C			B			A	
Queue Length 50th (ft)	15	196		1	89			83		0	9	
Queue Length 95th (ft)	31	251		m2	67			113		4	31	
Internal Link Dist (ft)		182			376			377			180	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	469	839		201	810			970		421	962	
Starvation Cap Reductn	0	257		0	0			52		0	382	
Spillback Cap Reductn	0	0		0	0			0		0	0	
Storage Cap Reductn	0	0		0	0			0		0	0	
Reduced v/c Ratio	0.11	0.83		0.02	0.31			0.54		0.03	0.51	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 73 (97%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 19.3

Intersection LOS: B

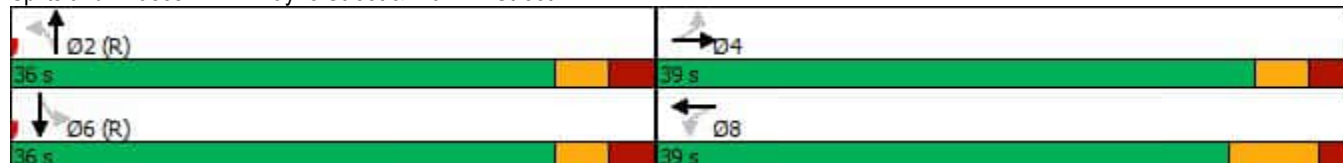
Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 11: Hayne Street & Franklin Street



Lanes, Volumes, Timings
12: Hayne Street & Windsor Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	103	7	44	55	11	4	431	76	27	207	6
Future Volume (vph)	12	103	7	44	55	11	4	431	76	27	207	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.987			0.980			0.996	
Flt Protected		0.995			0.980					0.950		
Satd. Flow (prot)	0	1839	0	0	1802	0	0	1825	0	1770	1855	0
Flt Permitted		0.964			0.757			0.999		0.465		
Satd. Flow (perm)	0	1781	0	0	1392	0	0	1824	0	866	1855	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			20			20	
Link Distance (ft)		263			1063			787			457	
Travel Time (s)		7.2			29.0			26.8			15.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	114	8	49	61	12	4	479	84	30	230	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	0	122	0	0	567	0	30	237	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		21.0	21.0		20.0	20.0	
Total Split (s)	24.0	24.0		24.0	24.0		51.0	51.0		51.0	51.0	
Total Split (%)	32.0%	32.0%		32.0%	32.0%		68.0%	68.0%		68.0%	68.0%	
Maximum Green (s)	18.6	18.6		18.6	18.6		45.6	45.6		46.2	46.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		1.8	1.8	
Lost Time Adjust (s)		-0.4			-0.4			-0.4		0.2	0.2	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		10.9			10.9			57.6		57.6	57.6	
Actuated g/C Ratio		0.15			0.15			0.77		0.77	0.77	
v/c Ratio		0.52			0.60			0.41		0.05	0.17	
Control Delay		36.3			42.1			5.5		1.3	1.3	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		36.3			42.1			5.5		1.3	1.3	
LOS		D			D			A		A	A	
Approach Delay		36.3			42.1			5.5			1.3	
Approach LOS		D			D			A			A	

Lanes, Volumes, Timings
12: Hayne Street & Windsor Street

2022 Existing - Two-Way Streets - Realign Jefferson Street
Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		59			54			84		1	9	
Queue Length 95th (ft)		103			99			173		m3	15	
Internal Link Dist (ft)		183			983			707			377	
Turn Bay Length (ft)												
Base Capacity (vph)		451			352			1400		664	1423	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.30			0.35			0.41		0.05	0.17	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 64 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 12.4

Intersection LOS: B

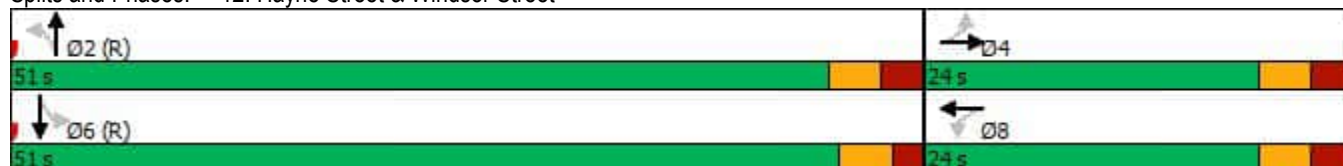
Intersection Capacity Utilization 51.5%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 12: Hayne Street & Windsor Street



Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

13: Church Street & Jefferson Street

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	36	4	4	208	57	5	10	4	20	33	5
Future Volume (vph)	4	36	4	4	208	57	5	10	4	20	33	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.986			0.968			0.974			0.986	
Flt Protected	0.950			0.950				0.986			0.983	
Satd. Flow (prot)	1770	1837	0	1770	1803	0	0	1789	0	0	3430	0
Flt Permitted	0.580			0.728				0.880			0.859	
Satd. Flow (perm)	1080	1837	0	1356	1803	0	0	1597	0	0	2998	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		452			566			259			558	
Travel Time (s)		15.4			19.3			8.8			19.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	40	4	4	231	63	6	11	4	22	37	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	44	0	4	294	0	0	21	0	0	65	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)	7.0	7.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	14.0		27.0	27.0		23.0	23.0		23.0	23.0	
Total Split (s)	49.0	49.0		49.0	49.0		26.0	26.0		26.0	26.0	
Total Split (%)	65.3%	65.3%		65.3%	65.3%		34.7%	34.7%		34.7%	34.7%	
Maximum Green (s)	42.0	42.0		43.1	43.1		20.2	20.2		20.6	20.6	
Yellow Time (s)	5.0	5.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.9	2.9		2.8	2.8		2.4	2.4	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-0.9			-0.8			-0.4	
Total Lost Time (s)	5.0	5.0		3.9	5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		C-Max	C-Max		None	None		None	None	
Walk Time (s)				5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)				16.0	16.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)				0	0		0	0		0	0	
Act Effect Green (s)	60.9	60.9		61.7	60.9			7.9			7.6	
Actuated g/C Ratio	0.81	0.81		0.82	0.81			0.11			0.10	
v/c Ratio	0.00	0.03		0.00	0.20			0.13			0.21	
Control Delay	0.8	0.9		2.0	2.7			30.5			34.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	0.8	0.9		2.0	2.7			30.5			34.7	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A		A	A			C			C	
Approach Delay		0.9			2.7			30.5			34.7	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	0	1		0	28			8			11	
Queue Length 95th (ft)	m1	4		m2	50			29			m26	
Internal Link Dist (ft)		372			486			179			478	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	876	1490		1116	1463			447			839	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.00	0.03		0.00	0.20			0.05			0.08	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 24 (32%), Referenced to phase 6:WBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.21

Intersection Signal Delay: 8.7

Intersection LOS: A

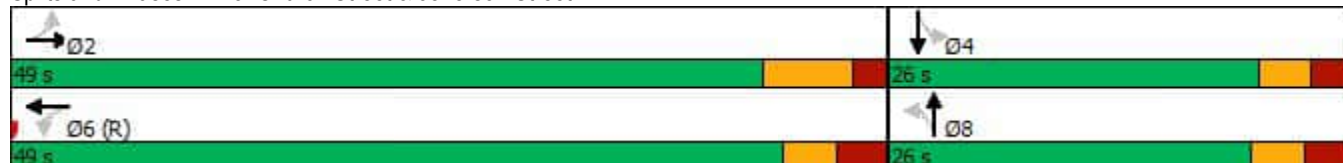
Intersection Capacity Utilization 28.6%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 13: Church Street & Jefferson Street



Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

14: Church Street & Franklin Street

Timing Plan: AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	412	7	4	231	4	4	11	4	20	15	4
Future Volume (vph)	6	412	7	4	231	4	4	11	4	20	15	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.998			0.973			0.971	
Flt Protected	0.950				0.999			0.990		0.950		
Satd. Flow (prot)	1770	1857	0	0	1857	0	0	1794	0	1770	1809	0
Flt Permitted	0.510				0.992			0.976		0.950		
Satd. Flow (perm)	950	1857	0	0	1844	0	0	1769	0	1770	1809	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			35			20			20	
Link Distance (ft)		456			373			1164			259	
Travel Time (s)		15.5			7.3			39.7			8.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	7	458	8	4	257	4	4	12	4	22	17	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	466	0	0	265	0	0	20	0	22	21	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2					
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		7.0	10.0	
Minimum Split (s)	18.0	18.0		14.0	14.0		21.0	21.0		12.0	21.0	
Total Split (s)	40.0	40.0		40.0	40.0		23.0	23.0		12.0	35.0	
Total Split (%)	53.3%	53.3%		53.3%	53.3%		30.7%	30.7%		16.0%	46.7%	
Maximum Green (s)	34.9	34.9		33.0	33.0		17.7	17.7		7.0	29.6	
Yellow Time (s)	3.0	3.0		5.0	5.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.1	2.1		2.0	2.0		2.3	2.3		2.0	2.4	
Lost Time Adjust (s)	-0.1	-0.1			-2.0			-0.3		0.0	-0.4	
Total Lost Time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	2.0	2.0		3.0	3.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)	5.0	5.0					5.0	5.0			5.0	
Flash Dont Walk (s)	7.0	7.0					10.0	10.0			10.0	
Pedestrian Calls (#/hr)	0	0					0	0			0	
Act Effct Green (s)	24.5	24.5			24.5			35.7		7.0	40.5	
Actuated g/C Ratio	0.33	0.33			0.33			0.48		0.09	0.54	
v/c Ratio	0.02	0.77			0.44			0.02		0.13	0.02	
Control Delay	6.5	17.5			21.0			17.1		38.3	3.0	
Queue Delay	0.0	0.0			0.0			0.0		0.0	0.0	
Total Delay	6.5	17.5			21.0			17.1		38.3	3.0	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	B			C			B		D	A	
Approach Delay		17.3			21.0			17.1			21.1	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	1	48			95			4		12	1	
Queue Length 95th (ft)	m1	55			131			23		10	4	
Internal Link Dist (ft)		376			293			1084			179	
Turn Bay Length (ft)	100											
Base Capacity (vph)	443	866			860			842		165	977	
Starvation Cap Reductn	0	0			0			0		0	0	
Spillback Cap Reductn	0	0			0			0		0	0	
Storage Cap Reductn	0	0			0			0		0	0	
Reduced v/c Ratio	0.02	0.54			0.31			0.02		0.13	0.02	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 18 (24%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 18.7

Intersection LOS: B

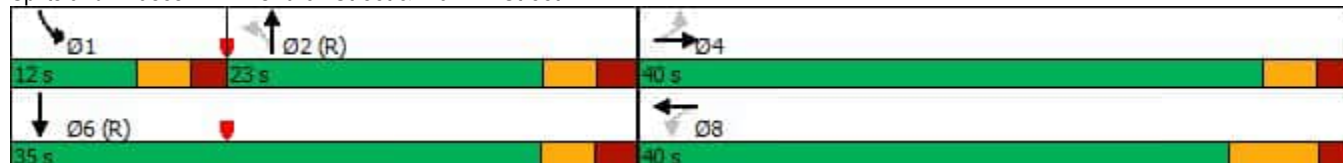
Intersection Capacity Utilization 38.8%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 14: Church Street & Franklin Street



HCM 6th TWSC
15: Franklin Street & Jefferson Street

2022 Existing - Two-Way Streets - Realign Jefferson Street
Timing Plan: AM Peak Hour

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	436	236	265	60	4
Future Vol, veh/h	4	436	236	265	60	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, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	484	262	294	67	4
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	556	0	-	0	901	409
Stage 1	-	-	-	-	409	-
Stage 2	-	-	-	-	492	-
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	1015	-	-	-	309	642
Stage 1	-	-	-	-	671	-
Stage 2	-	-	-	-	615	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1015	-	-	-	307	642
Mov Cap-2 Maneuver	-	-	-	-	307	-
Stage 1	-	-	-	-	668	-
Stage 2	-	-	-	-	615	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		19.6		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1015	-	-	-	317	
HCM Lane V/C Ratio	0.004	-	-	-	0.224	
HCM Control Delay (s)	8.6	0	-	-	19.6	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	0.8	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	436	236	265	60	4
Future Volume (vph)	4	436	236	265	60	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.929		0.992	
Flt Protected					0.955	
Satd. Flow (prot)	0	1863	1730	0	1765	0
Flt Permitted					0.955	
Satd. Flow (perm)	0	1863	1730	0	1765	0
Link Speed (mph)		35	35		25	
Link Distance (ft)		373	846		566	
Travel Time (s)		7.3	16.5		15.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	484	262	294	67	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	488	556	0	71	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 38.9% ICU Level of Service A

Analysis Period (min) 15

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	160	97	442	90	35	505
Future Volume (vph)	160	97	442	90	35	505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	100	
Storage Lanes	1	1		0	1	
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.975			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3451	0	1770	3539
Flt Permitted	0.950				0.426	
Satd. Flow (perm)	1770	1583	3451	0	794	3539
Right Turn on Red		No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	20		35			35
Link Distance (ft)	823		519			1250
Travel Time (s)	28.1		10.1			24.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	178	108	491	100	39	561
Shared Lane Traffic (%)						
Lane Group Flow (vph)	178	108	591	0	39	561
Turn Type	Prot	Perm	NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases		8			6	
Detector Phase	8	8	2		6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	10.0		10.0	10.0
Minimum Split (s)	31.0	31.0	31.0		31.0	31.0
Total Split (s)	46.0	46.0	54.0		54.0	54.0
Total Split (%)	46.0%	46.0%	54.0%		54.0%	54.0%
Maximum Green (s)	39.7	39.7	48.1		48.1	48.1
Yellow Time (s)	3.0	3.0	3.1		3.1	3.1
All-Red Time (s)	3.3	3.3	2.8		2.8	2.8
Lost Time Adjust (s)	-1.3	-1.3	-0.9		-0.9	-0.9
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Recall Mode	None	None	C-Max		C-Max	C-Max
Walk Time (s)	5.0	5.0	5.0		5.0	5.0
Flash Dont Walk (s)	19.0	19.0	20.0		20.0	20.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	16.0	16.0	74.0		74.0	74.0
Actuated g/C Ratio	0.16	0.16	0.74		0.74	0.74
v/c Ratio	0.63	0.43	0.23		0.07	0.21
Control Delay	37.4	30.9	2.3		4.9	4.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	37.4	30.9	2.3		4.9	4.7



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
LOS	D	C	A		A	A
Approach Delay	35.0		2.3			4.7
Approach LOS	C		A			A
Queue Length 50th (ft)	106	64	26		6	48
Queue Length 95th (ft)	159	103	34		19	85
Internal Link Dist (ft)	743		439			1170
Turn Bay Length (ft)					100	
Base Capacity (vph)	725	649	2555		587	2620
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.25	0.17	0.23		0.07	0.21

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 9.6

Intersection LOS: A

Intersection Capacity Utilization 44.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Charlotte Avenue & Church Street



Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

2: Charlotte Avenue & Jefferson Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↕			↕	
Traffic Volume (vph)	14	97	10	140	127	46	5	462	4	30	601	40
Future Volume (vph)	14	97	10	140	127	46	5	462	4	30	601	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	300		0	50		0	0		0
Storage Lanes	0		0	1		0	1		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95
Frt		0.989			0.960			0.999			0.991	
Flt Protected		0.994		0.950			0.950				0.998	
Satd. Flow (prot)	0	1831	0	1770	1788	0	1770	3536	0	0	3500	0
Flt Permitted		0.949		0.580			0.353				0.913	
Satd. Flow (perm)	0	1748	0	1080	1788	0	658	3536	0	0	3202	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			20			35			35	
Link Distance (ft)		1102			564			258			519	
Travel Time (s)		30.1			19.2			5.0			10.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	108	11	156	141	51	6	513	4	33	668	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	156	192	0	6	517	0	0	745	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	31.0	31.0		32.0	32.0		41.0	41.0		41.0	41.0	
Total Split (s)	41.0	41.0		41.0	41.0		59.0	59.0		59.0	59.0	
Total Split (%)	41.0%	41.0%		41.0%	41.0%		59.0%	59.0%		59.0%	59.0%	
Maximum Green (s)	35.6	35.6		34.7	34.7		53.3	53.3		53.8	53.8	
Yellow Time (s)	3.0	3.0		3.3	3.3		4.1	4.1		3.6	3.6	
All-Red Time (s)	2.4	2.4		3.0	3.0		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		-0.4		-1.3	-1.3		-0.7	-0.7			-0.2	
Total Lost Time (s)		5.0		5.0	5.0		5.0	5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	17.0	17.0		17.0	17.0		11.0	11.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		18.6		18.6	18.6		71.4	71.4			71.4	
Actuated g/C Ratio		0.19		0.19	0.19		0.71	0.71			0.71	
v/c Ratio		0.42		0.78	0.58		0.01	0.20			0.33	
Control Delay		38.2		64.1	44.2		3.6	5.1			5.3	
Queue Delay		0.0		0.0	0.0		0.0	0.3			0.0	
Total Delay		38.2		64.2	44.2		3.6	5.4			5.3	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		D		E	D		A	A			A	
Approach Delay		38.2			53.2			5.4			5.3	
Approach LOS		D			D			A			A	
Queue Length 50th (ft)		77		104	124		1	69			75	
Queue Length 95th (ft)		120		151	177		m4	116			121	
Internal Link Dist (ft)		1022			484			178			439	
Turn Bay Length (ft)				300			50					
Base Capacity (vph)		629		388	643		469	2524			2285	
Starvation Cap Reductn		0		0	0		0	1321			0	
Spillback Cap Reductn		11		6	0		0	0			33	
Storage Cap Reductn		0		0	0		0	0			0	
Reduced v/c Ratio		0.22		0.41	0.30		0.01	0.43			0.33	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 89 (89%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 17.4

Intersection LOS: B

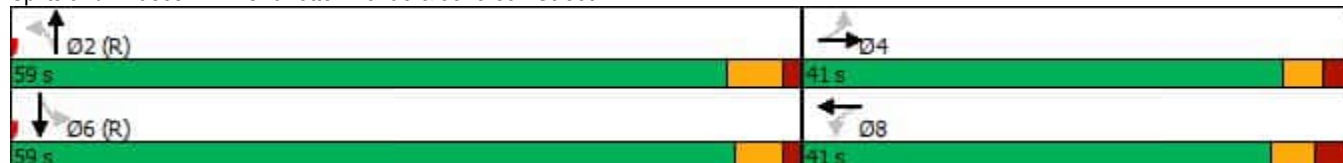
Intersection Capacity Utilization 61.8%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 2: Charlotte Avenue & Jefferson Street



Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

3: Charlotte Avenue & Franklin Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	278	71	4	176	46	161	292	15	31	397	327
Future Volume (vph)	130	278	71	4	176	46	161	292	15	31	397	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	100		0	175		0	50		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.969			0.969			0.993			0.932	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1805	0	1770	1805	0	1770	3514	0	1770	3299	0
Flt Permitted	0.455			0.230			0.950			0.950		
Satd. Flow (perm)	848	1805	0	428	1805	0	1770	3514	0	1770	3299	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			20			35			35	
Link Distance (ft)		1131			592			448			258	
Travel Time (s)		22.0			20.2			8.7			5.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	144	309	79	4	196	51	179	324	17	34	441	363
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	388	0	4	247	0	179	341	0	34	804	0
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	27.0	27.0		20.0	20.0		13.0	20.0		13.0	19.0	
Total Split (s)	38.0	38.0		38.0	38.0		23.0	49.0		13.0	39.0	
Total Split (%)	38.0%	38.0%		38.0%	38.0%		23.0%	49.0%		13.0%	39.0%	
Maximum Green (s)	31.7	31.7		31.0	31.0		17.9	43.9		7.9	34.0	
Yellow Time (s)	4.1	4.1		5.0	5.0		3.0	3.7		3.0	3.6	
All-Red Time (s)	2.2	2.2		2.0	2.0		2.1	1.4		2.1	1.4	
Lost Time Adjust (s)	-1.3	-1.3		-2.0	-2.0		-0.1	-0.1		-0.1	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.0	2.0		3.0	3.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)	5.0	5.0						5.0			5.0	
Flash Dont Walk (s)	15.0	15.0						9.0			9.0	
Pedestrian Calls (#/hr)	0	0						0			0	
Act Effect Green (s)	26.7	26.7		26.7	26.7		14.1	55.8		7.3	44.2	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.14	0.56		0.07	0.44	
v/c Ratio	0.64	0.80		0.04	0.51		0.72	0.17		0.26	0.55	
Control Delay	44.7	47.0		24.8	34.1		57.1	13.3		56.8	14.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.9	
Total Delay	44.7	47.0		24.8	34.1		57.1	13.3		56.8	15.3	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	D	D		C	C		E	B		E	B	
Approach Delay		46.4			34.0			28.4			17.0	
Approach LOS		D			C			C			B	
Queue Length 50th (ft)	80	229		2	133		110	60		23	128	
Queue Length 95th (ft)	139	313		10	192		176	99		53	156	
Internal Link Dist (ft)		1051			512			368			178	
Turn Bay Length (ft)	125			100			175			50		
Base Capacity (vph)	279	595		141	595		318	1960		141	1458	
Starvation Cap Reductn	0	0		0	0		0	0		0	358	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.52	0.65		0.03	0.42		0.56	0.17		0.24	0.73	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 75 (75%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 29.0

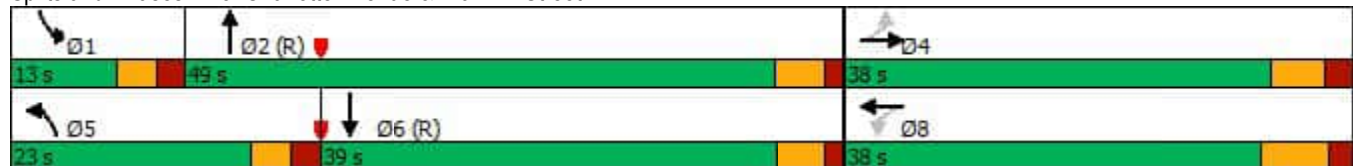
Intersection LOS: C

Intersection Capacity Utilization 71.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Charlotte Avenue & Franklin Street



Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	12	7	6	11	4	106	4	332	6	50	403	14
Future Vol, veh/h	12	7	6	11	4	106	4	332	6	50	403	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	8	7	12	4	118	4	369	7	56	448	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	763	952	232	721	957	188	464	0	0	376	0	0
Stage 1	568	568	-	381	381	-	-	-	-	-	-	-
Stage 2	195	384	-	340	576	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	294	258	770	315	256	822	1094	-	-	1179	-	-
Stage 1	475	505	-	613	612	-	-	-	-	-	-	-
Stage 2	788	610	-	648	500	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	235	240	770	289	238	822	1094	-	-	1179	-	-
Mov Cap-2 Maneuver	235	240	-	289	238	-	-	-	-	-	-	-
Stage 1	473	473	-	610	609	-	-	-	-	-	-	-
Stage 2	667	607	-	591	468	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19	11.9	0.1	1.1
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1094	-	-	284 658	1179	-	-
HCM Lane V/C Ratio	0.004	-	-	0.098 0.204	0.047	-	-
HCM Control Delay (s)	8.3	0	-	19 11.9	8.2	0.2	-
HCM Lane LOS	A	A	-	C B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3 0.8	0.1	-	-

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	7	6	11	4	106	4	332	6	50	403	14
Future Volume (vph)	12	7	6	11	4	106	4	332	6	50	403	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.966			0.881			0.997			0.995	
Flt Protected		0.977			0.996			0.999			0.995	
Satd. Flow (prot)	0	1758	0	0	1635	0	0	3525	0	0	3504	0
Flt Permitted		0.977			0.996			0.999			0.995	
Satd. Flow (perm)	0	1758	0	0	1635	0	0	3525	0	0	3504	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1162			592			1102			448	
Travel Time (s)		31.7			16.1			21.5			8.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	13	8	7	12	4	118	4	369	7	56	448	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	0	0	134	0	0	380	0	0	520	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 40.0%

ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

5: Houston Street/Charlotte Avenue & Lancaster Avenue

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	163	145	32	4	310	47	37	89	4	10	175	205
Future Volume (vph)	163	145	32	4	310	47	37	89	4	10	175	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	50		0	0		0
Storage Lanes	1		1	0		0	1		0	0		1
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.982			0.994				0.850
Flt Protected	0.950						0.950				0.997	
Satd. Flow (prot)	1770	1863	1583	0	1829	0	1770	1852	0	0	1857	1583
Flt Permitted	0.336				0.997		0.602				0.980	
Satd. Flow (perm)	626	1863	1583	0	1824	0	1121	1852	0	0	1825	1583
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1039			484			1097			1102	
Travel Time (s)		20.2			9.4			21.4			21.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	181	161	36	4	344	52	41	99	4	11	194	228
Shared Lane Traffic (%)												
Lane Group Flow (vph)	181	161	36	0	400	0	41	103	0	0	205	228
Turn Type	pm+pt	NA	Perm	Perm	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2			6			8			4	5
Permitted Phases	2		2	6			8		4			4
Detector Phase	5	2	2	6	6		8	8		4	4	5
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	10.0	10.0		7.0	7.0		7.0	7.0	7.0
Minimum Split (s)	14.0	32.0	32.0	33.0	33.0		28.0	28.0		23.0	23.0	14.0
Total Split (s)	14.0	52.0	52.0	38.0	38.0		28.0	28.0		28.0	28.0	14.0
Total Split (%)	17.5%	65.0%	65.0%	47.5%	47.5%		35.0%	35.0%		35.0%	35.0%	17.5%
Maximum Green (s)	7.9	45.7	45.7	31.7	31.7		22.2	22.2		22.2	22.2	7.9
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0		3.9	3.9		3.9	3.9	3.0
All-Red Time (s)	3.1	2.3	2.3	2.3	2.3		1.9	1.9		1.9	1.9	3.1
Lost Time Adjust (s)	-1.1	-1.3	-1.3		-1.3		-0.8	-0.8			-0.8	-1.1
Total Lost Time (s)	5.0	5.0	5.0		5.0		5.0	5.0			5.0	5.0
Lead/Lag	Lead			Lag	Lag							Lead
Lead-Lag Optimize?	Yes			Yes	Yes							Yes
Vehicle Extension (s)	2.0	3.0	3.0	3.0	3.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	None	Min	Min	Min	Min		None	None		None	None	None
Walk Time (s)		7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0	18.0	19.0	19.0		15.0	15.0		10.0	10.0	
Pedestrian Calls (#/hr)		0	0	0	0		0	0		0	0	
Act Effect Green (s)	32.8	32.8	32.8		18.6		11.8	11.8			11.8	25.9
Actuated g/C Ratio	0.60	0.60	0.60		0.34		0.21	0.21			0.21	0.47
v/c Ratio	0.32	0.14	0.04		0.65		0.17	0.26			0.52	0.30
Control Delay	7.0	5.7	5.2		21.0		21.1	21.2			25.6	11.5
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0			0.0	0.0
Total Delay	7.0	5.7	5.2		21.0		21.1	21.2			25.6	11.5

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A	A		C		C	C			C	B
Approach Delay		6.3			21.0			21.1			18.2	
Approach LOS		A			C			C			B	
Queue Length 50th (ft)	21	19	4		104		11	27			58	41
Queue Length 95th (ft)	56	50	15		208		37	73			134	108
Internal Link Dist (ft)		959			404			1017			1022	
Turn Bay Length (ft)	150						50					
Base Capacity (vph)	567	1606	1364		1130		484	799			788	755
Starvation Cap Reductn	0	0	0		0		0	0			0	0
Spillback Cap Reductn	0	0	0		0		0	0			0	0
Storage Cap Reductn	0	0	0		0		0	0			0	0
Reduced v/c Ratio	0.32	0.10	0.03		0.35		0.08	0.13			0.26	0.30

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 54.9

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 16.0

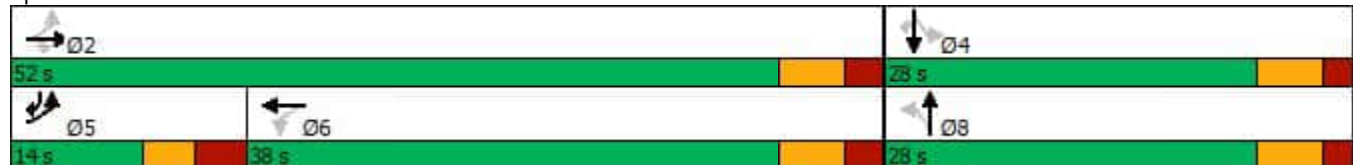
Intersection LOS: B

Intersection Capacity Utilization 60.7%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 5: Houston Street/Charlotte Avenue & Lancaster Avenue



Lanes, Volumes, Timings
6: Main Street & Jefferson Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: PM Peak Hour

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	125	4	19	267	16	8
Future Volume (vph)	125	4	19	267	16	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996				0.955	
Flt Protected				0.997	0.968	
Satd. Flow (prot)	1855	0	0	1857	1722	0
Flt Permitted				0.980	0.968	
Satd. Flow (perm)	1855	0	0	1825	1722	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)	20			20	35	
Link Distance (ft)	564			262	261	
Travel Time (s)	19.2			8.9	5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	139	4	21	297	18	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	143	0	0	318	27	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	7.0		20.0	20.0	15.0	
Minimum Split (s)	20.0		26.0	26.0	22.0	
Total Split (s)	72.0		72.0	72.0	28.0	
Total Split (%)	72.0%		72.0%	72.0%	28.0%	
Maximum Green (s)	65.0		66.4	66.4	22.1	
Yellow Time (s)	5.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.6	2.6	2.9	
Lost Time Adjust (s)	-2.0			-0.6	-0.9	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		2.0	2.0	2.0	
Recall Mode	None		C-Max	C-Max	None	
Walk Time (s)			7.0	7.0	5.0	
Flash Dont Walk (s)			11.0	11.0	11.0	
Pedestrian Calls (#/hr)			0	0	0	
Act Effect Green (s)	89.6			89.6	15.9	
Actuated g/C Ratio	0.90			0.90	0.16	
v/c Ratio	0.09			0.19	0.10	
Control Delay	0.5			1.3	37.1	
Queue Delay	0.0			0.0	0.0	
Total Delay	0.5			1.4	37.1	
LOS	A			A	D	
Approach Delay	0.5			1.4	37.1	
Approach LOS	A			A	D	

Lanes, Volumes, Timings
6: Main Street & Jefferson Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: PM Peak Hour

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)	0			0	15	
Queue Length 95th (ft)	7			36	40	
Internal Link Dist (ft)	484			182	181	
Turn Bay Length (ft)						
Base Capacity (vph)	1663			1636	396	
Starvation Cap Reductn	0			193	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.09			0.22	0.07	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 59 (59%), Referenced to phase 6:WBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.19

Intersection Signal Delay: 3.1

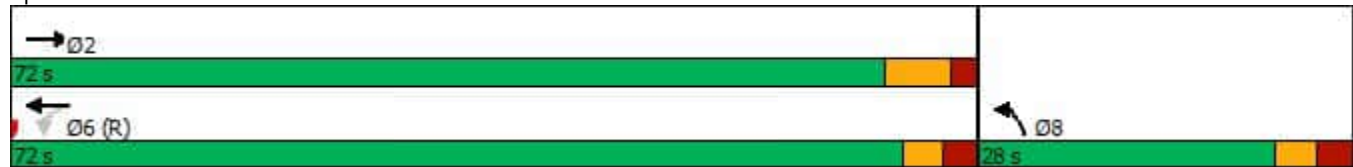
Intersection LOS: A

Intersection Capacity Utilization 48.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Main Street & Jefferson Street



Lanes, Volumes, Timings
7: Main Street & Franklin Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	351	15	19	216	4	4	14	8	5	8	4
Future Volume (vph)	4	351	15	19	216	4	4	14	8	5	8	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.998			0.958			0.972	
Flt Protected					0.996			0.993			0.984	
Satd. Flow (prot)	0	1852	0	0	1852	0	0	1772	0	0	1782	0
Flt Permitted		0.997			0.954			0.983			0.957	
Satd. Flow (perm)	0	1846	0	0	1774	0	0	1754	0	0	1733	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			35			35	
Link Distance (ft)		592			262			455			261	
Travel Time (s)		20.2			8.9			8.9			5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	390	17	21	240	4	4	16	9	6	9	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	411	0	0	265	0	0	29	0	0	19	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	22.0	22.0		20.0	20.0		22.0	22.0		22.0	22.0	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Maximum Green (s)	31.2	31.2		30.0	30.0		17.4	17.4		17.4	17.4	
Yellow Time (s)	3.0	3.0		5.0	5.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.8	2.8		2.0	2.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		-0.8			-2.0			-0.6			-0.6	
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	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Walk Time (s)	5.0	5.0					5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0					11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0					0	0		0	0	
Act Effct Green (s)		20.5			20.5			29.5			29.5	
Actuated g/C Ratio		0.34			0.34			0.49			0.49	
v/c Ratio		0.65			0.44			0.03			0.02	
Control Delay		21.1			16.5			10.7			10.8	
Queue Delay		0.0			0.2			0.0			0.0	
Total Delay		21.1			16.7			10.7			10.8	
LOS		C			B			B			B	
Approach Delay		21.1			16.7			10.7			10.8	
Approach LOS		C			B			B			B	

Lanes, Volumes, Timings
7: Main Street & Franklin Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		122			72			5			3	
Queue Length 95th (ft)		162			102			21			16	
Internal Link Dist (ft)		512			182			375			181	
Turn Bay Length (ft)												
Base Capacity (vph)		984			946			863			853	
Starvation Cap Reductn		0			211			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.42			0.36			0.03			0.02	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

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

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 18.8

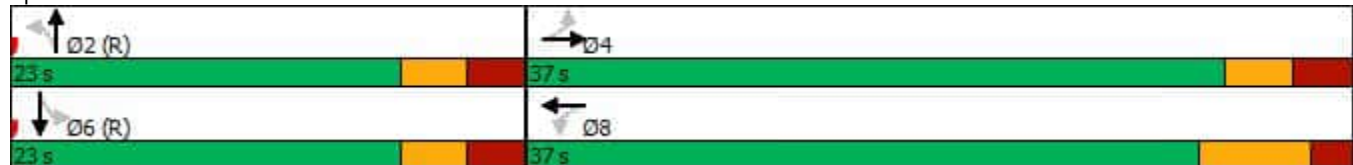
Intersection LOS: B

Intersection Capacity Utilization 37.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Main Street & Franklin Street



Lanes, Volumes, Timings
8: Main Street & Windsor Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	89	6	16	88	11	4	15	19	8	41	4
Future Volume (vph)	4	89	6	16	88	11	4	15	19	8	41	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.987			0.932			0.991	
Flt Protected		0.998			0.993			0.995			0.992	
Satd. Flow (prot)	0	1842	0	0	1826	0	0	1727	0	0	1831	0
Flt Permitted		0.979			0.929			0.978			0.964	
Satd. Flow (perm)	0	1807	0	0	1708	0	0	1698	0	0	1780	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		592			263			786			455	
Travel Time (s)		16.1			7.2			15.3			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	99	7	18	98	12	4	17	21	9	46	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	110	0	0	128	0	0	42	0	0	59	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	31.0	31.0		31.0	31.0		29.0	29.0		29.0	29.0	
Total Split (%)	51.7%	51.7%		51.7%	51.7%		48.3%	48.3%		48.3%	48.3%	
Maximum Green (s)	24.0	24.0		24.0	24.0		22.0	22.0		22.0	22.0	
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	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		9.6			9.6			18.6			18.6	
Actuated g/C Ratio		0.32			0.32			0.63			0.63	
v/c Ratio		0.19			0.23			0.04			0.05	
Control Delay		8.7			9.0			6.4			6.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		8.7			9.0			6.4			6.3	
LOS		A			A			A			A	
Approach Delay		8.7			9.0			6.4			6.3	
Approach LOS		A			A			A			A	

Lanes, Volumes, Timings
8: Main Street & Windsor Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		13			15			4			6	
Queue Length 95th (ft)		32			37			14			18	
Internal Link Dist (ft)		512			183			706			375	
Turn Bay Length (ft)												
Base Capacity (vph)		1604			1516			1451			1522	
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		0.07			0.08			0.03			0.04	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 29.6

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.23

Intersection Signal Delay: 8.1

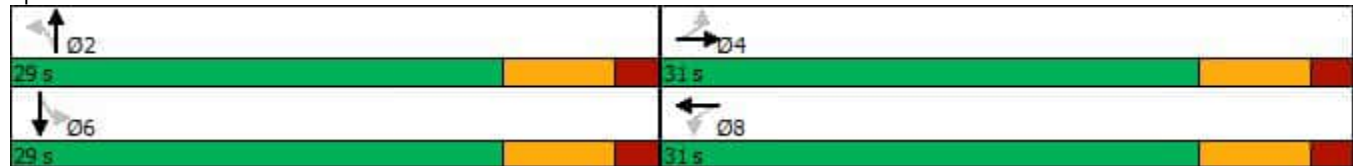
Intersection LOS: A

Intersection Capacity Utilization 28.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 8: Main Street & Windsor Street



Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

9: Hayne Street/Skyway Drive & Church Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	49	41	4	44	82	43	510	4	50	590	130
Future Volume (vph)	122	49	41	4	44	82	43	510	4	50	590	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.971			0.905			0.999			0.975	
Flt Protected		0.972			0.999			0.996			0.997	
Satd. Flow (prot)	0	3340	0	0	3200	0	0	3522	0	0	3440	0
Flt Permitted		0.724			0.949			0.754			0.839	
Satd. Flow (perm)	0	2488	0	0	3040	0	0	2666	0	0	2895	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		823			247			483			1201	
Travel Time (s)		28.1			8.4			16.5			40.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	136	54	46	4	49	91	48	567	4	56	656	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	236	0	0	144	0	0	619	0	0	856	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)	31.0	31.0		30.0	30.0		24.0	24.0		26.0	26.0	
Total Split (s)	38.0	38.0		38.0	38.0		62.0	62.0		62.0	62.0	
Total Split (%)	38.0%	38.0%		38.0%	38.0%		62.0%	62.0%		62.0%	62.0%	
Maximum Green (s)	31.7	31.7		31.6	31.6		56.0	56.0		55.7	55.7	
Yellow Time (s)	3.3	3.3		3.4	3.4		3.0	3.0		3.3	3.3	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-1.3			-1.4			-1.0			-1.3	
Total Lost Time (s)		5.0			5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
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)	20.0	20.0		19.0	19.0		14.0	14.0		15.0	15.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		50.4			50.4			39.6			39.6	
Actuated g/C Ratio		0.50			0.50			0.40			0.40	
v/c Ratio		0.19			0.09			0.59			0.75	
Control Delay		15.1			20.9			15.2			29.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		15.1			20.9			15.2			29.7	
LOS		B			C			B			C	
Approach Delay		15.1			20.9			15.2			29.7	
Approach LOS		B			C			B			C	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		45			31			88			242	
Queue Length 95th (ft)		84			59			112			263	
Internal Link Dist (ft)		743			167			403			1121	
Turn Bay Length (ft)												
Base Capacity (vph)		1252			1530			1519			1650	
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		0.19			0.09			0.41			0.52	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 51 (51%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 22.3

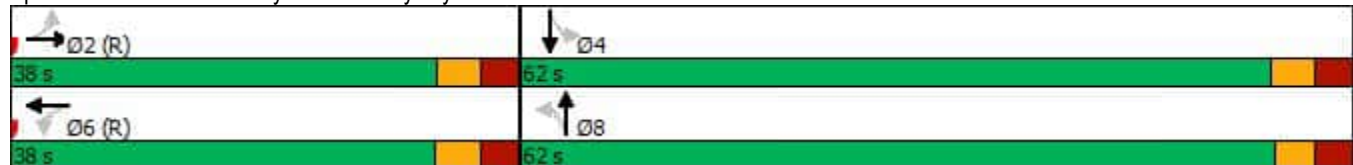
Intersection LOS: C

Intersection Capacity Utilization 70.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 9: Hayne Street/Skyway Drive & Church Street



Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

10: Hayne Street & Jefferson Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	45	16	18	214	11	12	452	4	29	551	62
Future Volume (vph)	72	45	16	18	214	11	12	452	4	29	551	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.960			0.993			0.999			0.985	
Flt Protected	0.950			0.950				0.999			0.998	
Satd. Flow (prot)	1770	1788	0	1770	1850	0	0	3532	0	0	3479	0
Flt Permitted	0.370			0.713				0.934			0.913	
Satd. Flow (perm)	689	1788	0	1328	1850	0	0	3302	0	0	3183	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		262			452			260			483	
Travel Time (s)		8.9			15.4			8.9			16.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	80	50	18	20	238	12	13	502	4	32	612	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	68	0	20	250	0	0	519	0	0	713	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			4			2			6	
Permitted Phases	4			4			2			6		
Detector Phase	4	4		4	4		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	22.0	22.0		22.0	22.0		22.0	22.0		22.0	22.0	
Total Split (s)	41.0	41.0		41.0	41.0		59.0	59.0		59.0	59.0	
Total Split (%)	41.0%	41.0%		41.0%	41.0%		59.0%	59.0%		59.0%	59.0%	
Maximum Green (s)	35.1	35.1		35.1	35.1		53.4	53.4		53.4	53.4	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.9	2.9		2.9	2.9		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-0.9			-0.6			-0.6	
Total Lost Time (s)	3.9	3.9		3.9	5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)	20.6	20.6		20.6	19.5			70.5			70.5	
Actuated g/C Ratio	0.21	0.21		0.21	0.20			0.70			0.70	
v/c Ratio	0.57	0.19		0.07	0.69			0.22			0.32	
Control Delay	31.1	14.4		24.7	41.7			5.9			0.8	
Queue Delay	0.0	0.0		0.0	0.0			0.3			0.0	
Total Delay	31.1	14.4		24.7	41.7			6.2			0.8	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	B		C	D			A			A	
Approach Delay		23.4			40.4			6.2			0.8	
Approach LOS		C			D			A			A	
Queue Length 50th (ft)	16	14		8	136			55			5	
Queue Length 95th (ft)	94	28		23	187			72			8	
Internal Link Dist (ft)		182			372			180			403	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	255	663		492	666			2328			2244	
Starvation Cap Reductn	0	0		0	0			1158			0	
Spillback Cap Reductn	0	0		0	0			0			11	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.31	0.10		0.04	0.38			0.44			0.32	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 15 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 11.0

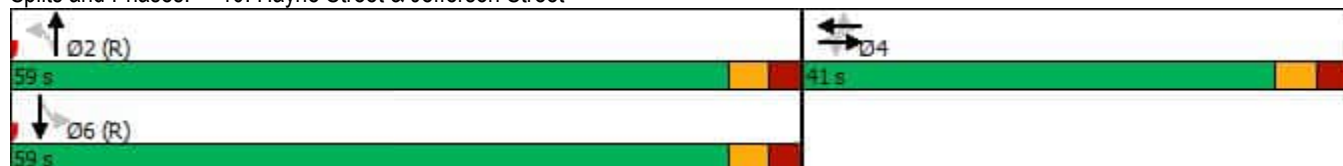
Intersection LOS: B

Intersection Capacity Utilization 64.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Hayne Street & Jefferson Street



Lanes, Volumes, Timings
11: Hayne Street & Franklin Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	295	16	18	202	82	4	333	14	29	524	29
Future Volume (vph)	57	295	16	18	202	82	4	333	14	29	524	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.957			0.994			0.992	
Flt Protected	0.950			0.950				0.999		0.950		
Satd. Flow (prot)	1770	1848	0	1770	1783	0	0	1850	0	1770	1848	0
Flt Permitted	0.337			0.272				0.996		0.521		
Satd. Flow (perm)	628	1848	0	507	1783	0	0	1844	0	970	1848	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		262			456			457			260	
Travel Time (s)		8.9			15.5			15.6			8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	63	328	18	20	224	91	4	370	16	32	582	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	63	346	0	20	315	0	0	390	0	32	614	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	21.0	21.0		20.0	20.0		20.0	20.0		22.0	22.0	
Total Split (s)	38.0	38.0		38.0	38.0		62.0	62.0		62.0	62.0	
Total Split (%)	38.0%	38.0%		38.0%	38.0%		62.0%	62.0%		62.0%	62.0%	
Maximum Green (s)	32.4	32.4		31.0	31.0		56.4	56.4		56.4	56.4	
Yellow Time (s)	3.0	3.0		5.0	5.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.6	2.6		2.0	2.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)	-2.0	-0.6		-2.0	-2.0			-0.6		-0.6	-0.6	
Total Lost Time (s)	3.6	5.0		5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		3.0	3.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0					4.0	4.0		4.0	4.0	
Flash Dont Walk (s)	10.0	10.0					10.0	10.0		12.0	12.0	
Pedestrian Calls (#/hr)	0	0					0	0		0	0	
Act Effect Green (s)	26.6	25.2		25.2	25.2			64.8		64.8	64.8	
Actuated g/C Ratio	0.27	0.25		0.25	0.25			0.65		0.65	0.65	
v/c Ratio	0.38	0.74		0.16	0.70			0.33		0.05	0.51	
Control Delay	35.0	44.0		14.9	24.4			8.4		2.9	4.1	
Queue Delay	0.0	5.6		0.0	0.0			0.3		0.0	0.1	
Total Delay	35.0	49.6		14.9	24.4			8.7		2.9	4.3	

Lanes, Volumes, Timings
11: Hayne Street & Franklin Street

2022 Existing - Two-Way Streets - Realign Jefferson Street
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	D		B	C			A		A	A	
Approach Delay		47.4			23.8			8.7			4.2	
Approach LOS		D			C			A			A	
Queue Length 50th (ft)	33	204		3	52			87		2	41	
Queue Length 95th (ft)	66	273		m6	52			146		8	75	
Internal Link Dist (ft)		182			376			377			180	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	216	609		167	588			1195		628	1198	
Starvation Cap Reductn	0	201		0	0			361		0	83	
Spillback Cap Reductn	0	0		0	0			0		0	0	
Storage Cap Reductn	0	0		0	0			0		0	0	
Reduced v/c Ratio	0.29	0.85		0.12	0.54			0.47		0.05	0.55	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 1 (1%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 18.8

Intersection LOS: B

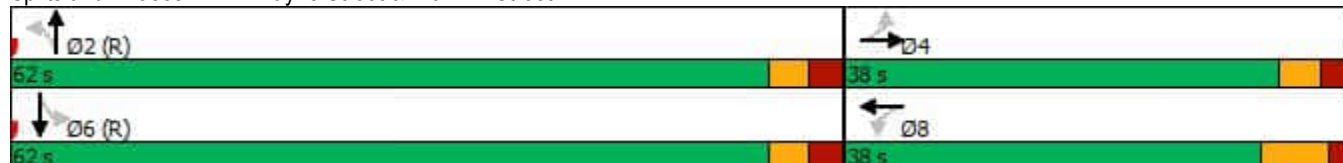
Intersection Capacity Utilization 64.2%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 11: Hayne Street & Franklin Street



Lanes, Volumes, Timings
12: Hayne Street & Windsor Street

2022 Existing - Two-Way Streets - Realign Jefferson Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	75	11	83	91	24	4	301	46	21	511	14
Future Volume (vph)	13	75	11	83	91	24	4	301	46	21	511	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.983			0.982			0.996	
Flt Protected		0.994			0.980			0.999		0.950		
Satd. Flow (prot)	0	1824	0	0	1794	0	0	1827	0	1770	1855	0
Flt Permitted		0.948			0.794			0.996		0.536		
Satd. Flow (perm)	0	1739	0	0	1454	0	0	1822	0	998	1855	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			20			20	
Link Distance (ft)		263			1063			787			457	
Travel Time (s)		7.2			29.0			26.8			15.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	14	83	12	92	101	27	4	334	51	23	568	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	0	220	0	0	389	0	23	584	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		21.0	21.0		20.0	20.0	
Total Split (s)	36.0	36.0		36.0	36.0		64.0	64.0		64.0	64.0	
Total Split (%)	36.0%	36.0%		36.0%	36.0%		64.0%	64.0%		64.0%	64.0%	
Maximum Green (s)	30.6	30.6		30.6	30.6		58.6	58.6		59.2	59.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		1.8	1.8	
Lost Time Adjust (s)		-0.4			-0.4			-0.4		0.2	0.2	
Total Lost Time (s)		5.0			5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		19.2			19.2			70.8		70.8	70.8	
Actuated g/C Ratio		0.19			0.19			0.71		0.71	0.71	
v/c Ratio		0.33			0.79			0.30		0.03	0.44	
Control Delay		35.8			57.5			7.0		1.8	2.7	
Queue Delay		0.0			0.0			0.0		0.0	0.4	
Total Delay		35.8			57.5			7.0		1.8	3.1	
LOS		D			E			A		A	A	
Approach Delay		35.8			57.5			7.0			3.0	
Approach LOS		D			E			A			A	

Lanes, Volumes, Timings
12: Hayne Street & Windsor Street

2022 Existing - Two-Way Streets - Realign Jefferson Street
Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		60			135			80		2	54	
Queue Length 95th (ft)		100			199			157		m3	95	
Internal Link Dist (ft)		183			983			707			377	
Turn Bay Length (ft)												
Base Capacity (vph)		539			450			1289		706	1313	
Starvation Cap Reductn		0			0			0		0	283	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.20			0.49			0.30		0.03	0.57	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 28 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 15.9

Intersection LOS: B

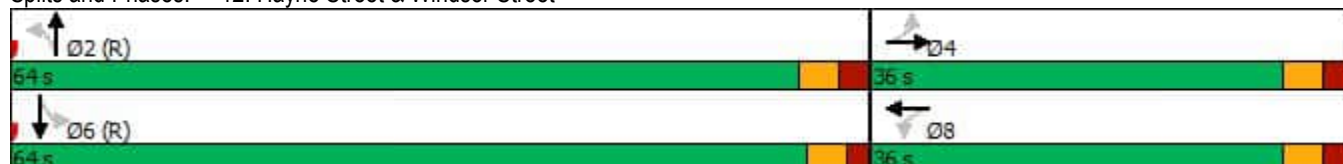
Intersection Capacity Utilization 53.6%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 12: Hayne Street & Windsor Street



Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

13: Church Street & Jefferson Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	59	8	4	183	71	17	26	4	39	58	28
Future Volume (vph)	7	59	8	4	183	71	17	26	4	39	58	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Frt		0.982			0.958			0.990			0.966	
Flt Protected	0.950			0.950				0.982			0.985	
Satd. Flow (prot)	1770	1829	0	1770	1785	0	0	1811	0	0	3368	0
Flt Permitted	0.587			0.708				0.819			0.877	
Satd. Flow (perm)	1093	1829	0	1319	1785	0	0	1510	0	0	2998	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			20			20			20	
Link Distance (ft)		452			566			259			558	
Travel Time (s)		15.4			19.3			8.8			19.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	8	66	9	4	203	79	19	29	4	43	64	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	75	0	4	282	0	0	52	0	0	138	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)	7.0	7.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	20.0		27.0	27.0		23.0	23.0		23.0	23.0	
Total Split (s)	65.0	65.0		65.0	65.0		35.0	35.0		35.0	35.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	58.0	58.0		59.1	59.1		29.2	29.2		29.6	29.6	
Yellow Time (s)	5.0	5.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.9	2.9		2.8	2.8		2.4	2.4	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-0.9			-0.8			-0.4	
Total Lost Time (s)	5.0	5.0		3.9	5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		C-Max	C-Max		None	None		None	None	
Walk Time (s)				5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)				16.0	16.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)				0	0		0	0		0	0	
Act Effect Green (s)	80.3	80.3		81.4	80.3			9.8			9.7	
Actuated g/C Ratio	0.80	0.80		0.81	0.80			0.10			0.10	
v/c Ratio	0.01	0.05		0.00	0.20			0.35			0.48	
Control Delay	0.9	0.8		2.2	2.8			43.1			44.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	0.9	0.8		2.2	2.8			43.1			44.0	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A		A	A			D			D	
Approach Delay		0.8			2.8			43.1			44.0	
Approach LOS		A			A			D			D	
Queue Length 50th (ft)	0	2		1	31			28			37	
Queue Length 95th (ft)	m1	6		m2	59			63			77	
Internal Link Dist (ft)		372			486			179			478	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	877	1469		1074	1433			453			899	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.01	0.05		0.00	0.20			0.11			0.15	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 94 (94%), Referenced to phase 6:WBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 16.4

Intersection LOS: B

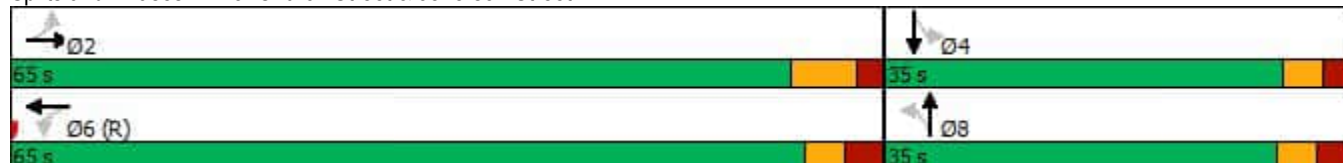
Intersection Capacity Utilization 31.5%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 13: Church Street & Jefferson Street



Lanes, Volumes, Timings

2022 Existing - Two-Way Streets - Realign Jefferson Street

14: Church Street & Franklin Street

Timing Plan: PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	284	27	4	302	4	4	28	4	40	23	4
Future Volume (vph)	14	284	27	4	302	4	4	28	4	40	23	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.998			0.986			0.980	
Flt Protected	0.950				0.999			0.995		0.950		
Satd. Flow (prot)	1770	1839	0	0	1857	0	0	1827	0	1770	1825	0
Flt Permitted	0.324				0.995			0.988		0.950		
Satd. Flow (perm)	604	1839	0	0	1850	0	0	1815	0	1770	1825	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		20			35			20			20	
Link Distance (ft)		456			373			1164			259	
Travel Time (s)		15.5			7.3			39.7			8.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	16	316	30	4	336	4	4	31	4	44	26	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	346	0	0	344	0	0	39	0	44	30	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2					
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		10.0	10.0		7.0	10.0	
Minimum Split (s)	18.0	18.0		20.0	20.0		21.0	21.0		12.0	21.0	
Total Split (s)	54.0	54.0		54.0	54.0		29.0	29.0		17.0	46.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		29.0%	29.0%		17.0%	46.0%	
Maximum Green (s)	48.9	48.9		47.0	47.0		23.7	23.7		12.0	40.6	
Yellow Time (s)	3.0	3.0		5.0	5.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.1	2.1		2.0	2.0		2.3	2.3		2.0	2.4	
Lost Time Adjust (s)	-0.1	-0.1			-2.0			-0.3		0.0	-0.4	
Total Lost Time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	2.0	2.0		3.0	3.0		2.0	2.0		2.0	2.0	
Recall Mode	None	None		None	None		C-Max	C-Max		None	C-Max	
Walk Time (s)	5.0	5.0					5.0	5.0			5.0	
Flash Dont Walk (s)	7.0	7.0					10.0	10.0			10.0	
Pedestrian Calls (#/hr)	0	0					0	0			0	
Act Effct Green (s)	26.7	26.7			26.7			55.3		7.8	63.3	
Actuated g/C Ratio	0.27	0.27			0.27			0.55		0.08	0.63	
v/c Ratio	0.10	0.70			0.70			0.04		0.32	0.03	
Control Delay	34.0	51.8			40.1			15.1		34.5	21.0	
Queue Delay	0.0	0.0			0.0			0.0		0.0	0.0	
Total Delay	34.0	51.8			40.1			15.1		34.5	21.0	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	D			D			B		C	C	
Approach Delay		51.1			40.1			15.1			29.0	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)	7	169			198			12		30	18	
Queue Length 95th (ft)	m11	170			261			36		64	46	
Internal Link Dist (ft)		376			293			1084			179	
Turn Bay Length (ft)	100											
Base Capacity (vph)	295	901			906			1004		212	1155	
Starvation Cap Reductn	0	0			0			0		0	0	
Spillback Cap Reductn	0	0			0			0		0	0	
Storage Cap Reductn	0	0			0			0		0	0	
Reduced v/c Ratio	0.05	0.38			0.38			0.04		0.21	0.03	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 29 (29%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 42.7

Intersection LOS: D

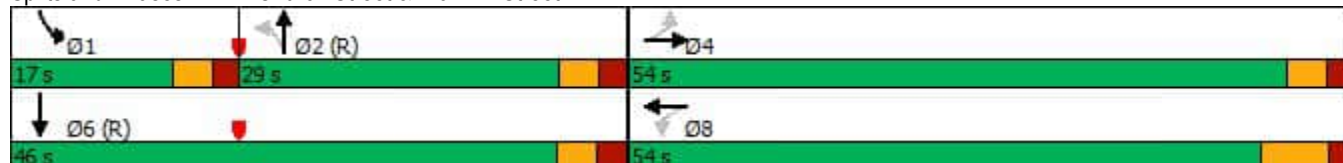
Intersection Capacity Utilization 36.6%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 14: Church Street & Franklin Street



HCM 6th TWSC
15: Franklin Street & Jefferson Street

2022 Existing - Two-Way Streets - Realign Jefferson Street
Timing Plan: PM Peak Hour

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	327	310	254	100	4
Future Vol, veh/h	4	327	310	254	100	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, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	363	344	282	111	4
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	626	0	-	0	856	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	371	-
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	956	-	-	-	328	582
Stage 1	-	-	-	-	619	-
Stage 2	-	-	-	-	698	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	956	-	-	-	326	582
Mov Cap-2 Maneuver	-	-	-	-	326	-
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	698	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		21.5		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	956	-	-	-	332	
HCM Lane V/C Ratio	0.005	-	-	-	0.348	
HCM Control Delay (s)	8.8	0	-	-	21.5	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	1.5	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	327	310	254	100	4
Future Volume (vph)	4	327	310	254	100	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.939		0.995	
Flt Protected		0.999			0.954	
Satd. Flow (prot)	0	1861	1749	0	1768	0
Flt Permitted		0.999			0.954	
Satd. Flow (perm)	0	1861	1749	0	1768	0
Link Speed (mph)		35	35		20	
Link Distance (ft)		373	846		566	
Travel Time (s)		7.3	16.5		19.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	363	344	282	111	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	367	626	0	115	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 44.3% ICU Level of Service A

Analysis Period (min) 15

Intersection: 1: Charlotte Avenue & Church Street

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	TR	L	T	T
Maximum Queue (ft)	110	106	162	192	51	89	95
Average Queue (ft)	46	48	59	78	16	24	26
95th Queue (ft)	90	92	132	162	45	64	68
Link Distance (ft)	737	737	437	437		1215	1215
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					100		
Storage Blk Time (%)						0	
Queuing Penalty (veh)						0	

Intersection: 2: Charlotte Avenue & Jefferson Street

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	T	TR	LT	TR
Maximum Queue (ft)	150	225	122	21	169	192	125	120
Average Queue (ft)	72	86	49	1	70	84	48	53
95th Queue (ft)	124	170	101	11	142	168	96	106
Link Distance (ft)	1051		483		178	178	437	437
Upstream Blk Time (%)					0	0		
Queuing Penalty (veh)					0	1		
Storage Bay Dist (ft)		300		50				
Storage Blk Time (%)		0			11			
Queuing Penalty (veh)		0			0			

Intersection: 3: Charlotte Avenue & Franklin Street

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	225	660	29	229	196	155	158	90	168	193
Average Queue (ft)	162	390	4	107	109	66	83	19	73	121
95th Queue (ft)	280	769	20	197	170	127	135	55	143	192
Link Distance (ft)		1084		513		385	385		178	178
Upstream Blk Time (%)		1							0	2
Queuing Penalty (veh)		0							0	4
Storage Bay Dist (ft)	125		100		175			50		
Storage Blk Time (%)	6	43		8	1	0		4	18	
Queuing Penalty (veh)	35	82		0	1	0		4	5	

Intersection: 4: Charlotte Avenue & Windsor Street

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	LT	LT	TR
Maximum Queue (ft)	53	95	6	123	14
Average Queue (ft)	23	32	0	34	0
95th Queue (ft)	50	68	4	81	10
Link Distance (ft)	1116	514	996	385	385
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Houston Street/Charlotte Avenue & Lancaster Avenue

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	T	LTR	L	TR	LT	R
Maximum Queue (ft)	162	128	194	52	166	105	61
Average Queue (ft)	83	50	89	17	81	29	9
95th Queue (ft)	138	100	157	44	143	76	36
Link Distance (ft)		999	384		1056	996	996
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	150			50			
Storage Blk Time (%)	0	0		2	24		
Queuing Penalty (veh)	1	0		3	7		

Intersection: 6: Main Street & Jefferson Street

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	75	182	39
Average Queue (ft)	9	31	13
95th Queue (ft)	42	115	38
Link Distance (ft)	483	199	191
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Main Street & Franklin Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	394	166	48	40
Average Queue (ft)	253	76	14	7
95th Queue (ft)	377	148	41	28
Link Distance (ft)	513	188	392	191
Upstream Blk Time (%)	0	0		
Queuing Penalty (veh)	1	1		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Main Street & Windsor Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	91	109	57	39
Average Queue (ft)	45	43	14	8
95th Queue (ft)	74	86	40	32
Link Distance (ft)	514	200	758	392
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Hayne Street/Skyway Drive & Church Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	87	75	53	72	232	220	217	247
Average Queue (ft)	38	24	9	25	98	98	124	161
95th Queue (ft)	77	60	34	58	175	172	196	234
Link Distance (ft)	737	737	181	181	408	408	1158	1158
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 10: Hayne Street & Jefferson Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	TR	LT	TR
Maximum Queue (ft)	113	100	35	229	178	184	71	123
Average Queue (ft)	49	36	4	114	89	99	10	40
95th Queue (ft)	95	79	20	182	153	156	42	92
Link Distance (ft)		199		372	190	190	408	408
Upstream Blk Time (%)					0	0		
Queuing Penalty (veh)					0	0		
Storage Bay Dist (ft)	100		100					
Storage Blk Time (%)	1	0		17				
Queuing Penalty (veh)	1	0		1				

Intersection: 11: Hayne Street & Franklin Street

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	L	TR
Maximum Queue (ft)	186	208	25	263	310	43	171
Average Queue (ft)	41	186	2	134	128	10	56
95th Queue (ft)	121	223	12	231	237	36	122
Link Distance (ft)		188		374	393	190	190
Upstream Blk Time (%)	0	17			0		0
Queuing Penalty (veh)	0	90			1		0
Storage Bay Dist (ft)	100		100				
Storage Blk Time (%)	0	39		24			
Queuing Penalty (veh)	0	20		1			

Intersection: 12: Hayne Street & Windsor Street

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	LTR	L	TR
Maximum Queue (ft)	153	142	228	49	92
Average Queue (ft)	79	71	117	16	27
95th Queue (ft)	133	119	203	43	71
Link Distance (ft)	200	1028	758	393	393
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 13: Church Street & Jefferson Street

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	TR
Maximum Queue (ft)	18	54	16	120	66	69	49
Average Queue (ft)	1	6	1	46	22	26	14
95th Queue (ft)	8	31	8	94	55	56	37
Link Distance (ft)		372		490	189	494	494
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100		100				
Storage Blk Time (%)				0			
Queuing Penalty (veh)				0			

Intersection: 14: Church Street & Franklin Street

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	L	TR
Maximum Queue (ft)	101	401	240	44	60	41
Average Queue (ft)	11	211	115	10	19	5
95th Queue (ft)	59	389	203	35	48	24
Link Distance (ft)		374	308	1129	189	189
Upstream Blk Time (%)		1	0			
Queuing Penalty (veh)		5	0			
Storage Bay Dist (ft)	100					
Storage Blk Time (%)		33				
Queuing Penalty (veh)		2				

Intersection: 15: Franklin Street & Jefferson Street

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	91	19	86
Average Queue (ft)	9	1	38
95th Queue (ft)	57	14	72
Link Distance (ft)	308	809	490
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 269

Intersection: 1: Charlotte Avenue & Church Street

Movement	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	R	T	TR	L	T	T
Maximum Queue (ft)	199	166	69	84	53	100	116
Average Queue (ft)	103	67	22	34	18	35	47
95th Queue (ft)	175	130	58	74	46	81	99
Link Distance (ft)	737	737	437	437		1215	1215
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)					100		
Storage Blk Time (%)						0	
Queuing Penalty (veh)						0	

Intersection: 2: Charlotte Avenue & Jefferson Street

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	L	T	TR	LT	TR
Maximum Queue (ft)	169	213	215	26	139	163	158	198
Average Queue (ft)	72	104	111	3	56	69	63	85
95th Queue (ft)	131	181	188	15	114	134	132	166
Link Distance (ft)	1051		483		178	178	437	437
Upstream Blk Time (%)					0	0		
Queuing Penalty (veh)					0	0		
Storage Bay Dist (ft)		300		50				
Storage Blk Time (%)					10			
Queuing Penalty (veh)					1			

Intersection: 3: Charlotte Avenue & Franklin Street

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	224	356	28	251	185	117	126	87	179	198
Average Queue (ft)	110	198	3	108	104	42	59	31	85	133
95th Queue (ft)	214	316	18	220	168	89	109	71	162	207
Link Distance (ft)		1084		513		385	385		178	178
Upstream Blk Time (%)									1	5
Queuing Penalty (veh)									3	17
Storage Bay Dist (ft)	125		100		175			50		
Storage Blk Time (%)	4	26		11	1			11	23	
Queuing Penalty (veh)	15	34		0	1			21	7	

Intersection: 4: Charlotte Avenue & Windsor Street

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	TR	LT	TR
Maximum Queue (ft)	35	118	21	4	80	16
Average Queue (ft)	18	45	1	0	17	1
95th Queue (ft)	43	84	11	3	58	12
Link Distance (ft)	1116	514	996	996	385	385
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Houston Street/Charlotte Avenue & Lancaster Avenue

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	T	LTR	L	TR	LT	R
Maximum Queue (ft)	112	73	236	60	94	151	113
Average Queue (ft)	51	26	104	24	45	53	31
95th Queue (ft)	91	61	190	53	80	115	83
Link Distance (ft)		999	384		1056	996	996
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	150			50			
Storage Blk Time (%)	0			3	9		
Queuing Penalty (veh)	0			3	3		

Intersection: 6: Main Street & Jefferson Street

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	70	180	65
Average Queue (ft)	9	32	20
95th Queue (ft)	45	111	53
Link Distance (ft)	483	199	191
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Main Street & Franklin Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	334	203	60	56
Average Queue (ft)	196	105	16	9
95th Queue (ft)	326	204	44	35
Link Distance (ft)	513	188	392	191
Upstream Blk Time (%)		2		
Queuing Penalty (veh)		5		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Main Street & Windsor Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	113	147	44	72
Average Queue (ft)	48	59	13	20
95th Queue (ft)	88	111	38	55
Link Distance (ft)	514	200	758	392
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: Hayne Street/Skyway Drive & Church Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	TR	LT	TR	LT	TR	LT	TR
Maximum Queue (ft)	194	142	70	116	243	238	379	409
Average Queue (ft)	69	38	21	54	119	123	174	237
95th Queue (ft)	136	96	54	101	202	210	309	358
Link Distance (ft)	737	737	181	181	408	408	1158	1158
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 10: Hayne Street & Jefferson Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	TR	LT	TR
Maximum Queue (ft)	131	81	87	212	139	143	132	252
Average Queue (ft)	49	25	17	125	52	60	22	59
95th Queue (ft)	102	65	57	201	105	112	77	171
Link Distance (ft)		199		372	190	190	408	408
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100					
Storage Blk Time (%)	2	1		22				
Queuing Penalty (veh)	1	0		4				

Intersection: 11: Hayne Street & Franklin Street

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	L	TR
Maximum Queue (ft)	188	207	111	321	164	48	205
Average Queue (ft)	63	154	16	126	88	12	92
95th Queue (ft)	152	249	63	284	150	39	193
Link Distance (ft)		188		374	393	190	190
Upstream Blk Time (%)	0	11		1			2
Queuing Penalty (veh)	0	40		3			5
Storage Bay Dist (ft)	100		100				
Storage Blk Time (%)	3	30	1	26			
Queuing Penalty (veh)	10	17	1	5			

Intersection: 12: Hayne Street & Windsor Street

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	LTR	L	TR
Maximum Queue (ft)	162	266	242	38	241
Average Queue (ft)	68	129	84	7	64
95th Queue (ft)	129	217	183	29	167
Link Distance (ft)	200	1028	758	393	393
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 13: Church Street & Jefferson Street

Movement	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	TR	L	TR	LTR	LT	TR
Maximum Queue (ft)	31	49	16	123	118	136	108
Average Queue (ft)	3	6	1	44	45	53	36
95th Queue (ft)	18	30	8	102	93	107	83
Link Distance (ft)		372		490	189	494	494
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100		100				
Storage Blk Time (%)				1			
Queuing Penalty (veh)				0			

Intersection: 14: Church Street & Franklin Street

Movement	EB	EB	WB	NB	SB	SB
Directions Served	L	TR	LTR	LTR	L	TR
Maximum Queue (ft)	167	328	282	56	89	66
Average Queue (ft)	17	172	159	16	35	23
95th Queue (ft)	81	307	260	48	78	58
Link Distance (ft)		374	308	1129	189	189
Upstream Blk Time (%)			0			
Queuing Penalty (veh)			1			
Storage Bay Dist (ft)	100					
Storage Blk Time (%)		35				
Queuing Penalty (veh)		5				

Intersection: 15: Franklin Street & Jefferson Street

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	96	50	118
Average Queue (ft)	5	4	47
95th Queue (ft)	37	46	88
Link Distance (ft)	308	809	490
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 204



STAFF REPORT

TO: General Services Committee

VIA: Mark Watson, City Manager

DATE: March 7, 2024

FROM: Matthew Black, Downtown Director

PREPARED BY: Matthew Black, Downtown Director

SUBJECT: Discussion of the Food Truck Pilot Program

SUMMARY STATEMENT

Call for a discussion regarding any proposed revisions to the Food Truck Pilot Program in the Central Business District (CBD).

REVIEW

The original food truck pilot program was designed to provide safe and efficient procedures for those who wished to have food trucks in the downtown area. These items included the definition of a food truck, a new permit application, the number of food trucks allowed in downtown at one time, the locations allowed, and guidelines for use.

On January 16, 2024 the downtown businesses and city staff met to discuss possible changes to the existing food truck pilot program in hopes of adopting an enforceable ordinance that all downtown businesses could abide by. The majority of businesses wished to maintain the pilot program and adopt it as an ordinance. One business wished the program could be changed to accommodate bringing in a food truck during early morning hours.

The Downtown Advisory Board were then requested to revisit the Food Truck Pilot Program after the Downtown Businesses met January 16, 2024 with the Downtown Director to give their thoughts and opinions on the program. The board recommended adopting a similar ordinance with a few changes and additions including changing the current program from 100 ft. to 150 ft. of an existing, downtown restaurant or food establishment and create a form on enforcement procedures for those who do not abide by the ordinance.

The current Food Truck Pilot Program, in the Central Business District, was adopted by City Council Nov. 9, 2021. Attached are the documents related to the Food Truck Pilot Program including the Nov 9, 2021 Resolution and an outline for discussion.

RECOMMENDATION

Staff is requesting the General Services Committee make a recommendation on the existing food truck pilot program, to the City Manager, Staff, and City Council so a draft of an ordinance can be presented at a later date.

Attachment(s):
Resolution-2021-87
Outline for Discussion

**RESOLUTION APPROVING FOOD TRUCKS PILOT PROGRAM
FOR CENTRAL BUSINESS DISTRICT (CBD) IN DOWNTOWN MONROE
FOR ONE-YEAR PERIOD
R-2021-87**

WHEREAS, City Council has observed the rapid growth in interest in the “food truck” phenomenon; and

WHEREAS, food trucks are defined as a licensed, motorized vehicle or mobile food unit licensed by the North Carolina State Division of Motor Vehicles, designed and equipped to serve food and beverages; and

WHEREAS, food trucks are currently prohibited in the Central Business District (CBD) of Downtown Monroe except during permitted special events; and

WHEREAS, members of the general public have requested this vibrant and rapidly growing food service be allowed in the CBD in the City of Monroe; and

WHEREAS, the City has not yet had the opportunity to fully assess the benefits and burdens of this new business model; and

WHEREAS, the most effective manner to fully analyze the concept of allowing food trucks in the CBD is to allow food trucks into the CBD of Downtown Monroe on a temporary basis for a one (1) year period; and

WHEREAS, City Staff has developed a Pilot Program to establish standards to allow food trucks on private property, City-Owned parking lots and public right-of-way in the CBD of Downtown Monroe. The Food Trucks Pilot Program shall be effective for one (1) year and comply with the program standards.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Monroe recommend adoption of the Resolution approving Foods Truck Pilot Program that shall become effective upon adoption:

- A. Food Trucks on Private Property. Food trucks on private property are permitted on lots in the Central Business District (CBD) and are subject to the following:
1. Must obtain a food truck registration, be located on private property and obtain written permission from the property owner. Food truck registrations is required on an annual basis by July 1st of each year at a cost of \$100. Complete the food truck registration form by contacting the City of Monroe Planning and Development Department.
 2. To locate on a property in in the Central Business District (CBD), the property must have a primary use. An example of a primary use would be a building with an active

use or an improved stand-alone parking lot. An unimproved grass or dirt lot is not a primary use.

- B. Food Trucks in City-Owned Parking Lots. Food trucks within the Central Business District (CBD) can locate in the following City-Owned parking lots: Intersection of Franklin Street and Main Street, Intersection of Main Street and W. Talleyrand Ave, Intersection of Hayne Street and Windsor Street or Intersection of N. Church Street and E. Franklin Street.
1. Requires a host business with a physical location be a part of the temporary use permit submitted to the City requesting the food truck services. The host business shall be located within the Central Business District (CBD) and meet the following:
 - i. Permitted and has a valid certificate of occupancy.
 - ii. Is actively operating.
 2. Food trucks shall not impede, endanger or interfere with pedestrian or vehicular traffic.
 3. The vendor must possess a valid insurance policy through an insurance carrier authorized or eligible to do business in the State of North Carolina for any damage to the public right-of-way and for any damages for which the City might incur the liability because of property damage or personal injury arising out of the use of the public right-of-way. The minimum liability limit to the policy shall be one million dollars (\$1,000,000.00). The City of Monroe shall be listed as an additional insured as its interests may appear on all Certificate of Insurance.
 4. The City reserves the right to require any permit holder to cease part or all of its operation, or remove the food truck from the permitted parking space in order to allow for construction, maintenance or repair of any street, curb, gutter, sidewalk, storm drain inlet and any other similar municipal utility.
 5. The food truck operator must comply with all other applicable local, state and federal regulations. Any food truck operator in a manner inconsistent with these regulations is illegal.
 6. The City may suspend the permit to maintain the health, safety, and welfare of the public. The City may suspend the food truck permit when the street is closed for a special event.
 7. If at any time evidence of the improper disposal of liquid waste or grease is discovered, the temporary use permit will be rendered null and void and the food truck business will be required to cease operation immediately.

C. Food Trucks in Public Right-of-Way. Food trucks in the public right-of-way can locate on any street within the Central Business District (CBD).

1. No food truck vendor may utilize the right-of-way to serve customers without obtaining a temporary use permit from the Planning and Development Department.
2. No single food truck operator shall occupy more than one food truck at one given time in the Central Business District (CBD).
3. Requires a host business with a physical location be a part of the temporary use permit submitted to the City requesting the food truck services. The host business shall be located within the Central Business District (CBD) and meet the following:
 - i. Permitted and has a valid certificate of occupancy.
 - ii. Is actively operating.
4. The vendor must possess a valid insurance policy through an insurance carrier authorized or eligible to do business in the State of North Carolina for any damage to the public right-of-way and for any damages for which the City might incur the liability because of property damage or personal injury arising out of the use of the public right-of-way. The minimum liability limit to the policy shall be one million dollars (\$1,000,000.00). The City of Monroe shall be listed as an additional insured as its interests may appear on all Certificate of Insurance.

D. Standards for all Food Trucks.

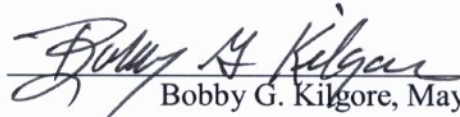
1. No single food truck operator shall occupy more than one food truck at one given time in the Central Business District (CBD).
2. Food trucks are limited to no more than four (4) food trucks in the Central Business District (CBD) at one given time to include the City-owned parking lots and within the public right-of-way.
3. Hours of operation are limited to the hours between 5 pm and 2 am from Monday to Sunday.
4. Temporary Use Permits for food trucks located in the Central Business District (CBD) shall be valid for a maximum of seven (7) days (Monday through Sunday) a week. A food truck vendor shall not book a seven (7) day period consecutively in order to provide customers with a variety of cuisine.
5. Allowed at special events and on active construction sites with an approved temporary use permit that are exempt from Section (D) (3) and (4).

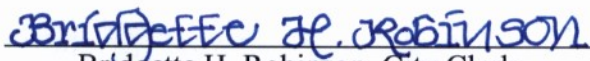
6. Not allowed one hundred (100) feet from the main entrance of any restaurant or outdoor dining area.
7. All food trucks must be situated to allow at least five (5) feet of unobstructed space for pedestrians on sidewalks, pedestrian paths and other locations intended primarily for pedestrian travel. If any applicable law, including American with Disability Act regulations, shall require a greater distance, the greater distance shall apply.
8. The food truck must be located at least five (5) feet from any utility box, utility vault, handicapped ramp, or emergency call box. Not allowed within fifteen (15) feet from any fire hydrant.
9. The minimum distance requirements are measured in a straight line from the closest point of the proposed food truck location to the closest point of the buffered object, or in the case of a restaurant, measured from the closest point of the restaurant's main entrance.
10. Food truck vendors are responsible for the proper disposal of waste and trash associated with the operation. Vendors shall remove all waste and trash from their location at the end of each day or as needed to maintain the health and safety to the public. City receptacles may not be utilized for this purpose. The vendor shall keep all areas within ten (10) feet of the truck clean of grease, trash, paper, cups or cans associated with the vending operation. No liquid waste or grease is to be disposed into the tree pits, storm drains or onto the sidewalks, streets or other public place. Under no circumstances shall grease be released into or disposed of in the City's sanitary sewer system.
11. There shall be no audio amplifier or similar device to attract the attention of the public.
12. No food truck shall be parked in a location that prohibits or restricts access to a private property. A minimum of five (5) feet spacing is required from any driveway, measured from the driveway apron.
13. Advertising consisting of business name, logo and items available for sale may be displayed onto the food truck. No other form of advertising is permitted.
14. If Union County Environmental Health revokes the permit for the food truck, the City's temporary use permit shall be revoked as well.
15. The food truck operator shall not utilize tables, chairs, free-standing signage or audio amplification in conjunction with the food truck. All equipment shall be contained within or on the food truck.

16. The vendor shall hold the City, its officers, councilors and employees harmless and indemnify them for any loss, liability, damage, costs, and expenses arising from its operations.

Adopted this the 9th day of November, 2021.

Attest:


Bobby G. Kilgore, Mayor


Bridgette H. Robinson, City Clerk



DOWNTOWN DISTRICT ESTABLISHED.

The Downtown District is hereby established within the City of Monroe and is encompassed within the following boundary:

S. Charlotte Ave to Morrow Ave., Morrow Ave. to N. Beasley St., N. Beasley St. to W. Windsor St., W. Windsor St. to E. Franklin St., E. Franklin St. to E. Jefferson St., E. Jefferson St. to N. Church St., N. Church St. to the CXS Railroad Right of Way, the CXS Railroad Right of Way to S. Charlotte Ave., S. Charlotte Ave. to Morrow Ave.

FOOD TRUCKS in DOWNTOWN

A. Private Property.

- Permit
- Located on private property
- Property has primary use (not a vacant unimproved lot)
- Written permission of property owner

B. City-Owned Parking Lots.

- Permit
- Designated parking lots
- Host Business - Physically located and operating in Downtown
- Host Business owner must sign permit application

C. Public Right-of-Way.

- Permit
- Host Business – Physically located and operating in Downtown
- Host Business owner must sign permit application
- One food truck per operator

D. Standards For All Food Trucks on City Property.

- Valid permit from Union County Environmental Health
- One food truck per operator
- No more than 4 food trucks at any given time
- Hours of operation – Current policy is 5 pm to 2 am Monday to Sunday
 - Breakfast hours
 - Lunch hours
- Permit is valid for seven days (Monday through Sunday)
- Distance Restriction
 - Current policy is 100 feet from entrance of restaurant or outdoor dining area
 - five feet from utility box, handicapped ramp
 - 15 feet from fire hydrant
- Trash disposal, grease disposal
- Not impede sidewalks, street, and access to private property
- No amplified music or sound
- No tables and chairs or free-standing signage
- Truck must have general liability insurance naming City as additional insured
- Comply with all applicable local, state, and federal laws

E. Enforcement. By written notice of violation from enforcement agent

- First offense - Food Truck Owner shall be ineligible to receive a City issued Food Truck Permit for a period of one year from the date of the violation
 - Host Business is ineligible to host a food truck for one year

-Second offense within a five-year period, the Food Truck Owner shall be ineligible to receive a City issued Food Truck Permit for a period of five years from the date of the violation.

-Host Business is ineligible to host a Food Truck or a period of five years from the date of the violation.

-Summary suspension of permit and immediately cease operation for any of following

- i. Failure to be duly permitted as required by this ordinance.
- ii. Failure to obtain, or suspension of, a Food Truck Permit required by Union County Environment Health.
- iii. A Food Truck found to impede, endanger, or interfere with pedestrian or vehicular traffic.
- iv. When the operation of Food Truck poses an eminent threat to public health, safety, or welfare.

-Notices of violation – served by personal delivery or US Mail

-Appeal of Violation



STAFF REPORT

TO: General Services Committee

VIA: Mark Watson, City Manager

DATE: March 7, 2023

FROM: Lisa Strickland, Finance Director

PREPARED BY: Ashley Ivey, Assistant Finance Director
Teresa Campo, Community Development Manager

SUBJECT: Outside Agency Funding Requests for Fiscal Year 2025 Budget

SUMMARY STATEMENT

This is a request to consider outside agency funding requests for the fiscal year 2025 budget.

REVIEW

Outside agency applications for funding requests for the fiscal year 2025 budget were due on January 12, 2024. Eligible applicants must be a non-profit organization that provides a service for the Monroe community. In order to be considered, the applicants were required to attend a mandatory workshop that was held on November 16, 2023 and submit an application.

A Committee comprised of three staff members has reviewed the documentation that has been submitted to ensure a public purpose eligibility, fiscal and programmatic compliance. The General Services Committee is requested to review the funding requests and staff recommendations and make recommendations to City Council for funding. All funding is based on City Council approval of the FY 2025 budget.

RECOMMENDATION

Staff requests that the General Services Committee consider funding requests and make recommendations to City Council for the fiscal year 2025 budget.

Attachment: Outside Agency FY 2025 Funding Requests

CITY OF MONROE
OUTSIDE AGENCY FUNDING HISTORY

ORGANIZATION NAME	2023 Approved	2024 Approved	2025 Estimated In-Kind	2025 Requested	2025 Recommended	Summary of FY 25 Request
Angel Shoes Inc	3,000	5,000		5,000	5,000	Provide shoes and other back to school essentials for approximately 300 residents partnership with the Parks & Recreation and Domestic Violence - Monroe
Arc of Union Cabarrus, Inc.				5,000	5,000	Life Like Yours for Developmentally Disabled and Disabled
Common Heart	10,000	20,000		25,000	20,000	Getting Ahead Program to improve Economic Empowerment for 10-14 adults, Monroe Residents
Community Health Services of Union County, Inc.	20,000	25,000		25,000	25,000	Free Clinic, Diabetes education, prescription assistance, preventative healthcare screenings and advocacy for uninsured to low-moderate income residents/Senior Adults Gap
Council on Aging of Union County	7,500	15,000		25,000	20,000	Assist older adults with In-Home services, Counseling, Caregiver support, Day program, Monroe Residents
Excel Enrichment Program	5,000	4,020		3,325	3,325	Literacy Enrichment program for 10 at-risk children Pre-K to 4th grade Monroe Residents Qualified Census Tract
Food for Families NC, Inc.	21,000	0		7,500	7,500	Provide food to Monroe households through Monroe Parks and Recreation and Scattered Site Monroe
Ground 40 Ministries	10,000	15,000		20,000	20,000	Disabled Men, Housing
HealthQuest of Union County	4,150	4,150		10,000	4,150	Rx meds uninsured and/or gap prescription assistance for low to moderate income seniors Monroe residents
HELP Center Inc (HELP Pregnancy Center)	7,500	0		10,000	10,000	Low to Moderate Income Women and Children, Qualified Census Tract - Prenatal and post natal education and supplies
Atrium Health Foundation (Hospice of Union County)	15,000	15,000		15,000	15,000	Care for patients and families with life-limiting illness. Appx 28 per year are Monroe residents
Monroe-Union County CDC – Administration	25,000	25,000		25,000	25,000	Housing and Financial Counseling, Fair Housing Clearinghouse
Turning Point, Inc. – Operating	15,000	20,000		20,000	20,000	Domestic Violence Ctr, Tree House Children's Advocacy Ctr, Sexual Assault Resource Ctr
Union County Community Action, Inc.	25,000	25,000		25,000	25,000	Utility Reimbursement - Child Care and Educational Enrichment Low to Moderate Income Households Qualified Census Tract
Union County Community Action, Inc. / Head Start (Utility Sub)	3,725	511,459	511,459	511,459	511,459	Utility bill for classrooms and offices - split 75/25 with city being 75% Included in in-kind rent.
Union County Community Shelter/ (Utility Subsidy)	55,000	55,000		55,000	55,000	Homeless Shelter Utility Reimbursement
Union County Crisis Assistance Ministry	30,000	30,000		30,000	30,000	Crisis Intervention Program - Annual/One Time Utility, rent, mortgage assistance to low to moderate income households in Monroe.
TOTAL ANNUAL AGENCY REQUESTS	256,875	769,629	511,459	817,284	801,434	
Balance of Funding Allocated For:						
Utility Fees Waived-Variou	26,172				21,881	Current Balance
Monroe-Union County CDC – Down payment Assistance	15,850				9,094	Current Balance
TOTAL BALANCE OF FUNDING ALLOCATED	42,022				30,975	
Total Funding:	298,897	769,629	511,459		832,409	

New Agency Requests	54,979,682	City Council Outside Agency Designation and Resourcing Policy Calculation (GA-16)
In-kind funding	1,099,594	FY 2024 Annual General Fund Budget
	801,434	2% maximum funding level to be allocated to Outside Agency per policy GA-16
	298,160	Total direct and estimated in-kind funding requested for FY 2025
		Amount under policy maximum
	289,976	FY 2025 Cash Funding level
	57,995	20% cap for award to an individual agency

STAFF REPORT

TO: General Services Committee

FROM: Mark Watson, City Manager

VIA: Lisa Strickland, Finance Director

DATE: March 7, 2024

PREPARED BY: Pete Hovanec, Communications and Tourism Director

SUBJECT: Monroe Country Club Ballroom/Simulator

SUMMARY STATEMENT

The City of Monroe currently operates the Monroe Country Club Ballroom as a rental facility. The facility struggles to make money and needs many upgrades and new equipment to bring the historic building to a place where greater rental prices could be expected and to offset the costs associated with the operation of the building. The cost of those repairs, along with the cost to staff and manage the facility as a rental venue, has led staff to explore other options for the use of the facility.

Staff is looking at the feasibility of using the Ballroom as an indoor golf range with multiple electronic simulators similar to the ones used at the PGA Store and Top Golf. This move would create a venue that would be used regularly for practice and training for golfers and for those looking for a new experience. The transition would allow for the historic building to remain intact, and possibly retrofitted to its original configuration by reopening the patio area, while creating as many as five or six individually controlled “hitting bays.”

Each bay would require a reservation and an hourly charge for its use. Usages would vary from individuals working on their golf game and receiving digital feedback from each swing, to more leisurely competitions between individuals “playing” golf digitally with others and even those wanting to play golf without spending hours outdoors.

Having the individual hitting bays would create a revenue stream of use for the facility and open additional avenues of revenue through the sale of food, drink and merchandise. Conceptually, this use of the facility would pair well with the golf course due to the close proximity and the need for a driving range facility on site.

Staff is in the process of determining costs associated with equipment needed: Each hitting bay would cost roughly \$40,000, and the facility infrastructure costs are unknown at this time. There would be costs associated with the construction and renovation of the facility as well as new furnishings and kitchen equipment to bring it to an acceptable level. The process could be done in stages with the kitchen renovations happening after the hitting bays and subsequent areas are built.

REVIEW

Staff would like to continue exploring the transformation of the ballroom into a multiple bay golf swing facility. The costs of the actual equipment, maintenance and furnishings are in the process of being gathered. Additionally, a cost benefit analysis will be completed to determine what potential revenues the transformation could produce.

Staff has had preliminary discussions with other golf courses that have similar facilities available on site, and those courses have shared that they have experienced great success with the amount of income and traffic the digital bays generated.

With the additional growth and development scheduled for the area surrounding the golf course and Monroe's expanding senior population, this may be an excellent opportunity to transform the historic ballroom into a one-of-kind experience for Monroe, Union County and beyond. At the very least, the facility will fill a need within the golf community and generate needed revenue to help sustain and enhance the current golf course complex.

RECOMMENDATION

Approve staff to continue to explore what is needed to complete the transformation and bring a full presentation to City Council at a future meeting.



STAFF REPORT

TO: General Services Committee

VIA: Mark Watson, City Manager

DATE: March 7, 2023

FROM: Terry Sholar

PREPARED BY: Terry Sholar

SUBJECT: Pension Contribution Cap Policy

SUMMARY STATEMENT

General Services Committee is requested to support Council's adopting a policy regarding payment of employee's LGRS pension in excess of the contribution-based benefits cap.

REVIEW

The North Carolina General Assembly adopted a statute that addressed Local Government Retirement System (LGRS) pension spiking. The Act sets a cap on benefits from the retirement system based on contributions by the employee to the LGRS system. Some employees that receive pay increases late in their career may be entitled to receive pension benefits in excess of their contributions to the LGRS system. This is known as "pension spiking" and the Anti-Pension Spiking Act adopted by the North Carolina legislature put a cap on benefits based on contributions.

Employees retiring making less than \$100,000 per year are exempt from the Anti-Pension Spiking provisions and the cap does not apply. In addition, employees that began contributing to the LGRS system prior to January 1, 2015 cannot have their benefits reduced and the governmental agency they retire from is required to pay the difference between the contribution based cap and the benefit in which the retired employee is entitled.

Employees that began contributing after January 1, 2015 are subject to the contribution based cap at the time of their retirement. If the difference in the contribution based cap and the amount the retiree is entitled to receive is not paid or otherwise covered, the retiree will receive only the

amount at the capped rate. The City has the option to pay the additional amount over the capped rate or the employee can make the additional contribution to receive their full benefits.

City Council will be asked to consider treating all retiring employees the same and adopt a policy allowing retiring employees to receive their full benefits with the City paying the difference in excess of the contribution based cap the same as required for employees contributing prior to January 1, 2015.

RECOMMENDATION

Staff recommends that the General Services Committee support City Council's adopting the Pension Contribution Cap Policy to provide that the City will pay the difference between the LGRS Anti-Pension Spiking Contribution-Based Benefits Cap and the pension amount due the retiree based on their salary for all City of Monroe retirees regardless of when they began contributing to the LGRS pension system.

Attachment(s): City Council Policy GA-19

	Policy: Pension Cap Policy	Effective Date: March 12, 2024
		Revision Effective Date:
	Policy Number: GA-19	Page 1 of 1
	Robert A. Burns, Mayor	<u>City Council</u> Responsible Party

DRAFT 1-TMS

PURPOSE

The North Carolina Legislature adopted the Fiscal Integrity Act of 2014 designed as an Anti-Pension Spiking cap on Local Government Retirement System (LGRS) retirees. The Act sets a cap on benefits for retirees based on contributions by the employee to the LGRS system. Some employees that receive pay increases late in their career may be entitled to receive pension benefits in excess of their contributions to the LGRS system. The Anti-Pension Spiking Act adopted by the North Carolina legislature put a cap on benefits based on contributions made by the employee to the system.

According to the Act, employees earning less than \$100,000 per year are exempt from the Anti-Pension Spiking provisions and the cap does not apply. In addition, employees that began contributing to the LGRS system prior to January 1, 2015 cannot have their benefits reduced and the governmental agency they retire from is required to pay the difference between the contribution based cap and the benefit in which the retired employee is entitled.

Employees that began contributing after January 1, 2015 are subject to the contribution based cap at the time of their retirement. If the difference in the contribution based cap and the amount the retiree is entitled to receive is not paid or otherwise covered, the retiree will receive only the amount at the capped rate. The City has the option to pay the additional amount over the capped rate or the employee can make the additional contribution to receive their full benefits.

POLICY

It is the policy of the City of Monroe that all retirees be treated the same and receive the full pension benefits they are entitled to regardless of the contributions made to the Local Government Retirement System. City retirees that began contributing to the LGRS after January 1, 2015 will be treated the same as retirees contributing before January 1, 2015. The City of Monroe will supplement all City retirees' pension necessary to make up the difference between the LGRS Contribution-Based Benefits Cap and the amount the retiree is entitled to receive as full pension benefits regardless of when they began contributions to the retirement system.



STAFF REPORT

TO: General Services Committee

VIA: Mark Watson, City Manager

DATE: March 7, 2024

FROM: Lisa Strickland, Finance Director

PREPARED BY: Ashley Ivey, Assistant Finance Director

SUBJECT: Fiscal Year 2024 Audit Contract for City of Monroe

SUMMARY STATEMENT

The purpose of this report is to provide information regarding the contract for audit services for the City of Monroe to Martin Starnes & Associates, CPA's, P.A. for the year ending June 30, 2024.

REVIEW

A Request for Proposals was done in February 2014 and Martin Starnes & Associates, CPA's P.A. was the firm selected by the Finance Committee's audit selection team. The City first contracted with Martin Starnes & Associates, CPA's P.A. for the fiscal year 2014 audit. A five-year service agreement was approved by City Council in fiscal year 2018 that lasted through fiscal year 2023. A new five-year service agreement has been received this year. If approved, this will be the eleventh year with this audit firm. The cost estimates given by the firm for the next five years are as follows:

\$93,650	Fiscal Year 2024
\$103,000	Fiscal Year 2025
\$110,000	Fiscal Year 2026
\$121,000	Fiscal Year 2027
\$129,000	Fiscal Year 2028

*The fees listed above include up to 2 major programs for single audit purposes. Additional major programs in excess of 2 will be charged at \$4,000 each.

There were no disputes or conflicts with the audit firm in the prior year and the City received the audit report and financial statements in a timely manner in order to meet the Local Government Commission's submission deadline of October 31st.

The proposed contract for audit services for the City for the fiscal year ending June 30, 2024 is \$93,650 plus an additional \$4,000, totaling \$97,650. This is due to a preliminary review of grants by City staff and the audit firm that indicates the need for auditing 3 major programs for single audit purposes. This fee reflects maintaining the current level of audit services. This includes testing of internal controls to ensure that the City's financial statements are fairly presented, in all material respects, in conformity with generally accepted accounting principles, preparation of the annual financial statements and an audit to maintain compliance with single audit act requirements.

RECOMMENDATION

Staff recommends and requests approval by the General Services Committee of the audit contract with Martin Starnes & Associates, CPA's, P.A. for \$97,650.

Attachments:
Service Renewal Agreement
Audit Contract
Engagement Letter

MARTIN ♦ STARNES

& ASSOCIATES, CPAs, P.A.

"A Professional Association of Certified Public Accountants and Management Consultants"

January 24, 2023

Lisa Strickland
City of Monroe
P.O. Box 69
Monroe, NC 28111

Dear Lisa,

It has been a pleasure to provide audit services to the City of Monroe for the past several years. We are looking forward to a continued relationship with the City that will allow us to become more efficient in our procedures and offer even better management suggestions as a result of our knowledge of the City's operations.

The audit relationship is much more than a commodity product. Therefore, the Local Government Commission does not require the services to be re-bid at the end of a service agreement. We are proud of the level of service we offer and believe that to be the reason we have an excellent renewal rate with our government clients. We would rather negotiate a renewal of our agreement rather than subject the relationship to the bidding process.

We are required by our auditing standards to maintain our independence, and we can assure the City that Martin Starnes & Associates takes compliance with the independence standards seriously. We reevaluate the audit process each year during the planning stage to make sure we are addressing the pertinent risk areas of the City's audit. Therefore, a long audit relationship, if managed properly, is a great benefit to the City.

Audit contracts must be approved annually by the Local Government Commission. For your planning purposes, our estimated fees to provide our services to you in the future are shown in the table below. These are estimated fees only. Governmental and rule-making boards may add or change their requirements related to our services which may change these estimates. The final fee arrangement will be outlined in the annual contract for the respective year.

Our proposed audit fees for the City of Monroe for fiscal years ending June 30, 2024 – 2028 are as follows:

2024	\$ 93,650	*
2025	103,000	*
2026	110,000	*
2027	121,000	*
2028	129,000	*

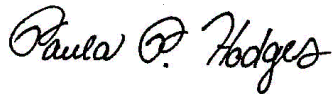
*The fees listed above include up to 2 major programs for single audit purposes. Additional major programs in excess of 2 will be charged at \$4,000 each.

The audit fees listed above include the following:

- Single Audit testing (up to 2 major programs)
- Preparation of the auditor portions of the Data Collection Form, as required
- MSA drafting and proofing the financial statements and footnotes
- Submission of the report to the LGC
- Presentation to the City Council

We look forward to your favorable response regarding our service renewal agreement.

Sincerely,



Paula P. Hodges, CPA
Audit Partner

For acceptance of this agreement, please sign a copy of this letter in the space provided and return it to our office via email to Amber McGhinnis at amcghinnis@msa.cpa.

Accepted by: _____

Title: _____ Date: _____

The	Governing Board City Council
of	Primary Government Unit City of Monroe, NC
and	Discretely Presented Component Unit (DPCU) (if applicable) N/A

Primary Government Unit, together with DPCU (if applicable), hereinafter referred to as Governmental Unit(s)

and	Auditor Name Martin Starnes & Associates, CPAs, P.A.
	Auditor Address 730 13th Avenue Drive SE, Hickory, NC 28602

Hereinafter referred to as Auditor

for	Fiscal Year Ending 06/30/24	Date Audit Will Be Submitted to LGC 10/31/24
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Must be within four months of FYE

hereby agree as follows:

1. The Auditor shall audit all statements and disclosures required by U.S. generally accepted auditing standards (GAAS) and additional required legal statements and disclosures of all funds and/or divisions of the Governmental Unit(s). The non-major combining, and individual fund statements and schedules shall be subjected to the auditing procedures applied in the audit of the basic financial statements and an opinion shall be rendered in relation to (as applicable) the governmental activities, the business- type activities, the aggregate DPCUs, each major governmental and enterprise fund, and the aggregate remaining fund information (non-major government and enterprise funds, the internal service fund type, and the fiduciary fund types). The basic financial statements shall include budgetary comparison information in a budgetary comparison statement, rather than as RSI, for the General Fund and any annually budgeted Special Revenue funds.

2. At a minimum, the Auditor shall conduct the audit and render the report in accordance with GAAS. The Auditor shall perform the audit in accordance with *Government Auditing Standards (GAGAS)* if the Governmental Unit expended \$100,000 or more in combined Federal and State financial assistance during the reporting period. The auditor shall perform a Single Audit if required by Title 2 US Code of Federal Regulations Part 200 *Uniform Administration Requirements, Cost Principles, and Audit Requirements for Federal Awards, Subpart F* (Uniform Guidance) or the State Single Audit Implementation Act. This audit and all associated audit documentation may be subject to review by Federal and State agencies in accordance with Federal and State laws, including the staffs of the Office of State Auditor (OSA) and the Local Government Commission (LGC). If the audit requires a federal single audit in accordance with the Uniform Guidance (§200.501), it is recommended that the Auditor and Governmental Unit(s) jointly agree, in advance of the execution of this contract, which party is responsible for submission of the audit and the accompanying data collection form to the Federal Audit Clearinghouse as required under the Uniform Guidance (§200.512).

Effective for audits of fiscal years beginning on or after June 30, 2023, the LGC will allow auditors to consider whether a unit qualifies as a State low-risk auditee based upon federal criteria in the Uniform Guidance §200.520(a), and (b) through (e) as it applies to State awards. In addition to the federal criteria in the Uniform Guidance, audits must have been submitted timely to the LGC. If in the reporting year, or in either of the two previous years, the unit reported a Financial Performance Indicator of Concern that the audit was late, then

the report was not submitted timely for State low-risk auditee status. Please refer to "Discussion of Single Audits in North Carolina" on the LGC's website for more information.

If the audit and Auditor communication are found in this review to be substandard, the results of the review may be forwarded to the North Carolina State Board of CPA Examiners (NC State Board).

3. If an entity is determined to be a component of another government as defined by the group audit standards, the entity's auditor shall make a good faith effort to comply in a timely manner with the requests of the group auditor in accordance with AU-6 §600.41 - §600.42.

4. This contract contemplates an unmodified opinion being rendered. If during the process of conducting the audit, the Auditor determines that it will not be possible to render an unmodified opinion on the financial statements of the unit, the Auditor shall contact the LGC Staff to discuss the circumstances leading to that conclusion as soon as is practical and before the final report is issued. The audit shall include such tests of the accounting records and such other auditing procedures as are considered by the Auditor to be necessary in the circumstances. Any limitations or restrictions in scope which would lead to a qualification should be fully explained in an attachment to this contract.

5. If this audit engagement is subject to the standards for audit as defined in *Government Auditing Standards*, 2018 revision, issued by the Comptroller General of the United States, then by accepting this engagement, the Auditor warrants that he/she has met the requirements for a peer review and continuing education as specified in *Government Auditing Standards*. The Auditor agrees to provide a copy of the most recent peer review report to the Governmental Unit(s) and the Secretary of the LGC prior to the execution of an audit contract. Subsequent submissions of the report are required only upon report expiration or upon auditor's receipt of an updated peer review report. If the audit firm received a peer review rating other than pass, the Auditor shall not contract with the Governmental Unit(s) without first contacting the Secretary of the LGC for a peer review analysis that may result in additional contractual requirements.

If the audit engagement is not subject to *Government Auditing Standards* or if financial statements are not prepared in accordance with U.S. generally accepted accounting principles (GAAP) and fail to include all disclosures required by GAAP, the Auditor shall provide an explanation as to why in an attachment to this contract or in an amendment.

6. It is agreed that time is of the essence in this contract. All audits are to be performed and the report of audit submitted to LGC Staff within four months of fiscal year end. If it becomes necessary to amend the audit fee or the date that the audit report will be submitted to the LGC, an amended contract along with a written explanation of the change shall be submitted to the Secretary of the LGC for approval.

7. It is agreed that GAAS include a review of the Governmental Unit's (Units') systems of internal control and accounting as same relate to accountability of funds and adherence to budget and law requirements applicable thereto; that the Auditor shall make a written report, which may or may not be a part of the written report of audit, to the Governing Board setting forth his/her findings, together with his recommendations for improvement. That written report shall include all matters defined as "significant deficiencies and material weaknesses" in AU-C 265 of the *AICPA Professional Standards (Clarified)*. The Auditor shall file a copy of that report with the Secretary of the LGC.

For GAAS or *Government Auditing Standards* audits, if an auditor issues an AU-C §260 report, commonly referred to as "Governance Letter," LGC staff does not require the report to be submitted unless the auditor cites significant findings or issues from the audit, as defined in AU-C §260.12 - .14. This would include issues such as difficulties encountered during the audit, significant or unusual transactions, uncorrected misstatements, matters that are difficult or contentious reviewed with those charged with governance, and other significant matters. If matters identified during the audit were required to be reported as described in AU-C §260.12-.14 and were communicated in a method other than an AU-C §260 letter, the written documentation must be submitted.

8. All local government and public authority contracts for audit or audit-related work require the approval of the Secretary of the LGC. This includes annual or special audits, agreed upon procedures related to internal controls, bookkeeping or other assistance necessary to prepare the Governmental Unit's records for audit, financial statement preparation, any finance-related investigations, or any other audit-related work in the State of North Carolina. Approval is also required for the Alternative Compliance Examination Engagement for auditing the Coronavirus State and Local Fiscal Recovery Funds expenditures as allowed by US Treasury. Approval is not required on audit contracts and invoices for system improvements and similar services of a non-auditing nature.
9. Invoices for services rendered under these contracts shall not be paid by the Governmental Unit(s) until the invoice has been approved by the Secretary of the LGC. This also includes any progress billings [G.S. 159-34 and 115C-447]. All invoices for audit work shall be submitted in PDF format to the Secretary of the LGC for approval. The invoice marked 'approved' with approval date shall be returned to the Auditor to present to the Governmental Unit(s) for payment. This paragraph is not applicable to contracts for audits of hospitals.
10. In consideration of the satisfactory performance of the provisions of this contract, the Governmental Unit(s) shall pay to the Auditor, upon approval by the Secretary of the LGC if required, the fee, which includes any costs the Auditor may incur from work paper or peer reviews or any other quality assurance program required by third parties (federal and state grantor and oversight agencies or other organizations) as required under the Federal and State Single Audit Acts. This does not include fees for any pre-issuance reviews that may be required by the NC Association of CPAs (NCACPA) Peer Review Committee or NC State Board of CPA Examiners (see Item 13).
11. If the Governmental Unit(s) has/have outstanding revenue bonds, the Auditor shall submit to LGC Staff, either in the notes to the audited financial statements or as a separate report, a calculation demonstrating compliance with the revenue bond rate covenant. Additionally, the Auditor shall submit to LGC Staff simultaneously with the Governmental Unit's (Units') audited financial statements any other bond compliance statements or additional reports required by the authorizing bond documents, unless otherwise specified in the bond documents.
12. After completing the audit, the Auditor shall submit to the Governing Board a written report of audit. This report shall include, but not be limited to, the following information: (a) Management's Discussion and Analysis, (b) the financial statements and notes of the Governmental Unit(s) and all of its component units prepared in accordance with GAAP, (c) supplementary information requested by the Governmental Unit(s) or required for full disclosure under the law, and (d) the Auditor's opinion on the material presented. The Auditor shall furnish the required number of copies of the report of audit to the Governing Board upon completion.
13. If the audit firm is required by the NC State Board, the NCACPA Peer Review Committee, or the Secretary of the LGC to have a pre-issuance review of its audit work, there shall be a statement in the engagement letter indicating the pre-issuance review requirement. There also shall be a statement that the Governmental Unit(s) shall not be billed for the pre-issuance review. The pre-issuance review shall be performed prior to the completed audit being submitted to LGC Staff. The pre-issuance review report shall accompany the audit report upon submission to LGC Staff.

14. The Auditor shall submit the report of audit in PDF format to LGC Staff. For audits of units other than hospitals, the audit report should be submitted when (or prior to) submitting the final invoice for services rendered. The report of audit, as filed with the Secretary of the LGC, becomes a matter of public record for inspection, review and copy in the offices of the LGC by any interested parties. Any subsequent revisions to these reports shall be sent to the Secretary of the LGC. These audited financial statements, excluding the Auditors' opinion, may be used in the preparation of official statements for debt offerings by municipal bond rating services to fulfill secondary market disclosure requirements of the Securities and Exchange Commission and for other lawful purposes of the Governmental Unit(s) without requiring consent of the Auditor. If the LGC Staff determines that corrections need to be made to the Governmental Unit's (Units') financial statements and/or the compliance section, those corrections shall be provided within three business days of notification unless another deadline is agreed to by LGC Staff.

15. Should circumstances disclosed by the audit call for a more detailed investigation by the Auditor than necessary under ordinary circumstances, the Auditor shall inform the Governing Board in writing of the need for such additional investigation and the additional compensation required therefore. Upon approval by the Secretary of the LGC, this contract may be modified or amended to include the increased time, compensation, or both as may be agreed upon by the Governing Board and the Auditor.

16. If an approved contract needs to be modified or amended for any reason, the change shall be made in writing and pre-audited if the change includes a change in audit fee (pre-audit requirement does not apply to hospitals). This amended contract shall be completed in full, including a written explanation of the change, signed and dated by all original parties to the contract. It shall then be submitted to the Secretary of the LGC for approval. No change to the audit contract shall be effective unless approved by the Secretary of the LGC.

17. A copy of the engagement letter, issued by the Auditor and signed by both the Auditor and the Governmental Unit(s), shall be attached to this contract, and except for fees, work, and terms not related to audit services, shall be incorporated by reference as if fully set forth herein as part of this contract. In case of conflict between the terms of the engagement letter and the terms of this contract, the terms of this contract shall take precedence. Engagement letter terms that conflict with the contract are deemed to be void unless the conflicting terms of this contract are specifically deleted in Item 30 of this contract. Engagement letters containing indemnification clauses shall not be accepted by LGC Staff.

18. Special provisions should be limited. Please list any special provisions in an attachment.

19. A separate contract should not be made for each division to be audited or report to be submitted. If a DPCU is subject to the audit requirements detailed in the Local Government Budget and Fiscal Control Act and a separate audit report is issued, a separate audit contract is required. If a separate report is not to be issued and the DPCU is included in the primary government audit, the DPCU shall be named along with the primary government on this audit contract. DPCU Board approval date, signatures from the DPCU Board chairman and finance officer also shall be included on this contract.

20. The contract shall be executed, pre-audited (pre-audit requirement does not apply to hospitals), and physically signed by all parties including Governmental Unit(s) and the Auditor, then submitted in PDF format to the Secretary of the LGC.

21. The contract is not valid until it is approved by the Secretary of the LGC. The staff of the LGC shall notify the Governmental Unit and Auditor of contract approval by email. The audit should not be started before the contract is approved.

22. Retention of Client Records: Auditors are subject to the NC State Board of CPA Examiners' Retention of Client Records Rule 21 NCAC 08N .0305 as it relates to the provision of audit and other attest services, as well as non-attest services. Clients and former clients should be familiar with the requirements of this rule prior to requesting the return of records.

23. This contract may be terminated at any time by mutual consent and agreement of the Governmental Unit(s) and the Auditor, provided that (a) the consent to terminate is in writing and signed by both parties, (b) the parties have agreed on the fee amount which shall be paid to the Auditor (if applicable), and (c) no termination shall be effective until approved in writing by the Secretary of the LGC.

24. The Governmental Unit's (Units') failure or forbearance to enforce, or waiver of, any right or an event of breach or default on one occasion or instance shall not constitute the waiver of such right, breach or default on any subsequent occasion or instance.

25. There are no other agreements between the parties hereto and no other agreements relative hereto that shall be enforceable unless entered into in accordance with the procedure set out herein and approved by the Secretary of the LGC.

26. E-Verify. Auditor shall comply with the requirements of NCGS Chapter 64 Article 2. Further, if Auditor utilizes any subcontractor(s), Auditor shall require such subcontractor(s) to comply with the requirements of NCGS Chapter 64, Article 2.

27. **Applicable to audits with fiscal year ends of June 30, 2020 and later.** For all non-attest services, the Auditor shall adhere to the independence rules of the AICPA Professional Code of Conduct and *Government Auditing Standards, 2018 Revision* (as applicable). Financial statement preparation assistance shall be deemed a "significant threat" requiring the Auditor to apply safeguards sufficient to reduce the threat to an acceptable level. If the Auditor cannot reduce the threats to an acceptable level, the Auditor cannot complete the audit. If the Auditor is able to reduce the threats to an acceptable level, the documentation of this determination, including the safeguards applied, must be included in the audit workpapers.

All non-attest service(s) being performed by the Auditor that are necessary to perform the audit must be identified and included in this contract. The Governmental Unit shall designate an individual with the suitable skills, knowledge, and/or experience (SKE) necessary to oversee the services and accept responsibility for the results of the services performed. If the Auditor is able to identify an individual with the appropriate SKE, s/he must document and include in the audit workpapers how he/she reached that conclusion. If the Auditor determines that an individual with the appropriate SKE cannot be identified, the Auditor cannot perform both the non-attest service(s) and the audit. See "Fees for Audit Services" page of this contract to disclose the person identified as having the appropriate SKE for the Governmental Unit.

28. **Applicable to audits with fiscal year ends of June 30, 2021 and later.** The auditor shall present the audited financial statements including any compliance reports to the government unit's governing body or audit committee in an official meeting in open session as soon as the audited financial statements are available but not later than 45 days after the submission of the audit report to the Secretary. The auditor's presentation to the government unit's governing body or audit committee shall include:

- a) the description of each finding, including all material weaknesses and significant deficiencies, as found by the auditor, and any other issues related to the internal controls or fiscal health of the government unit as disclosed in the management letter, the Single Audit or Yellow Book reports, or any other communications from the auditor regarding internal controls as required by current auditing standards set by the Accounting Standards Board or its successor;
- b) the status of the prior year audit findings;
- c) the values of Financial Performance Indicators based on information presented in the audited financial statements; and
- d) notification to the governing body that the governing body shall develop a "Response to the Auditor's Findings, Recommendations, and Fiscal Matters," if required under 20 NCAC 03 .0508.

29. Information based on the audited financial statements shall be submitted to the Secretary for the purpose of identifying Financial Performance Indicators and Financial Performance Indicators of Concern. See 20 NCAC 03 .0502(c)(6).

30. All of the above paragraphs are understood and shall apply to this contract, except the following numbered paragraphs shall be deleted (See Item 17 for clarification).

31. The process for submitting contracts, audit reports and invoices is subject to change. Auditors and units should use the submission process and instructions in effect at the time of submission. Refer to the N.C. Department of State Treasurer website at <https://www.nctreasurer.com/state-and-local-government-finance-division/local-government-commission/submitting-your-audit>

32. All communications regarding audit contract requests for modification or official approvals will be sent to the email addresses provided on the signature pages that follow.

33. Modifications to the language and terms contained in this contract form (LGC-205) are not allowed.

FEES FOR AUDIT SERVICES

1. For all non-attest services, the Auditor shall adhere to the independence rules of the AICPA Professional Code of Conduct (as applicable) and *Government Auditing Standards, 2018 Revision*. Refer to Item 27 of this contract for specific requirements. The following information must be provided by the Auditor; contracts presented to the LGC without this information will be not be approved.

Financial statements were prepared by: ☒ Auditor ☐ Governmental Unit ☐ Third Party

If applicable: Individual at Governmental Unit designated to have the suitable skills, knowledge, and/or experience (SKE) necessary to oversee the non-attest services and accept responsibility for the results of these services:

Name:

Title and Unit / Company:

Email Address:

Lisa Strickland

Finance Director, City of Monroe

lstrickland@monroenc.org

OR Not Applicable ☐ (Identification of SKE Individual on the LGC-205 Contract is not applicable for GAAS-only audits or audits with FYEs prior to June 30, 2020.)

2. Fees may not be included in this contract for work performed on Annual Financial Information Reports (AFIRs), Form 990s, or other services not associated with audit fees and costs. Such fees may be included in the engagement letter but may not be included in this contract or in any invoices requiring approval of the LGC. See Items 8 and 13 for details on other allowable and excluded fees.

3. The audit fee information included in the table below for both the Primary Government Fees and the DPCU Fees (if applicable) should be reported as a specific dollar amount of audit fees for the year under this contract. If any language other than an amount is included here, the contract will be returned to the audit form for correction.

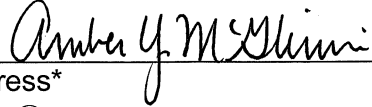
4. Prior to the submission of the completed audited financial report and applicable compliance reports subject to this contract, or to an amendment to this contract (if required) the Auditor may submit interim invoices for approval for services rendered under this contract to the Secretary of the LGC, not to exceed 75% of the billings for the unit's last annual audit that was submitted to the Secretary of the LGC. All invoices for services rendered in an audit engagement as defined in 20 NCAC .0503 shall be submitted to the Commission for approval before any payment is made. Payment before approval is a violation of law. (This paragraph not applicable to contracts and invoices associated with audits of hospitals).

Primary Government Unit	City of Monroe, NC
Audit Fee (financial and compliance if applicable)	\$ 84,400 (includes single audit for up to 2 programs)
Fee per Major Program (if not included above)	\$ 4,000 per major program in excess of 2
Additional Fees Not Included Above (if applicable):	
Financial Statement Preparation (incl. notes and RSI)	\$ 9,250
All Other Non-Attest Services	\$
TOTAL AMOUNT NOT TO EXCEED	\$ 97,650 (includes 3 major programs)

Discretely Presented Component Unit	N/A
Audit Fee (financial and compliance if applicable)	\$
Fee per Major Program (if not included above)	\$
Additional Fees Not Included Above (if applicable):	
Financial Statement Preparation (incl. notes and RSI)	\$
All Other Non-Attest Services	\$
TOTAL AMOUNT NOT TO EXCEED	\$

SIGNATURE PAGE

AUDIT FIRM

Audit Firm*	
Martin Starnes & Associates, CPAs, P.A.	
Authorized Firm Representative (typed or printed)* Amber Y. McGhinnis	Signature* 
Date* 02/21/24	Email Address* amcghinnis@msa.cpa

GOVERNMENTAL UNIT

Governmental Unit*	
City of Monroe, NC	
Date Governing Board Approved Audit Contract* (Enter date in box to right)	
Mayor/Chairperson (typed or printed)* Robert Burns, Mayor	Signature*
Date	Email Address* rburns@monroenc.org

Chair of Audit Committee (typed or printed, or "NA") N/A	Signature
Date	Email Address

GOVERNMENTAL UNIT – PRE-AUDIT CERTIFICATE

Required by G.S. 159-28(a1) or G.S. 115C-441(a1). Not applicable to hospital contracts.

This instrument has been pre-audited in the manner required by The Local Government Budget and Fiscal Control Act or by the School Budget and Fiscal Control Act.

Sum Obligated by This Transaction:	\$ 97,650 (includes 3 major programs)
Primary Governmental Unit Finance Officer* (typed or printed) Lisa Strickland, Finance Director	Signature*
Date of Pre-Audit Certificate*	Email Address* lstrickland@monroenc.org

SIGNATURE PAGE – DPCU
(complete only if applicable)

DISCRETELY PRESENTED COMPONENT UNIT

DPCU* N/A	
Date DPCU Governing Board Approved Audit Contract* (Enter date in box to right)	
DPCU Chairperson (typed or printed)*	Signature*
Date*	Email Address*

Chair of Audit Committee (typed or printed, or "NA") N/A	Signature
Date	Email Address

DPCU – PRE-AUDIT CERTIFICATE

Required by G.S. 159-28(a1) or G.S. 115C-441(a1). Not applicable to hospital contracts.

This instrument has been pre-audited in the manner required by The Local Government Budget and Fiscal Control Act or by the School Budget and Fiscal Control Act.

Sum Obligated by this Transaction:	\$
DPCU Finance Officer (typed or printed)* N/A	Signature*
Date of Pre-Audit Certificate*	Email Address*

Remember to print this form, and obtain all
required signatures prior to submission.

PRINT



Report on the Firm's System of Quality Control

To the Shareholders of Martin Starnes & Associates, CPAs, P.A. and the
Peer Review Committee, Coastal Peer Review, Inc.

We have reviewed the system of quality control for the accounting and auditing practice of Martin Starnes & Associates, CPAs, P.A. (the firm) in effect for the year ended December 31, 2020. Our peer review was conducted in accordance with the Standards for Performing and Reporting on Peer Reviews established by the Peer Review Board of the American Institute of Certified Public Accountants (Standards).

A summary of the nature, objectives, scope, limitations of, and the procedures performed in a System Review as described in the Standards may be found at www.aicpa.org/prsummary. The summary also includes an explanation of how engagements identified as not performed or reported in conformity with applicable professional standards, if any, are evaluated by a peer reviewer to determine a peer review rating.

Firm's Responsibility

The firm is responsible for designing a system of quality control and complying with it to provide the firm with reasonable assurance of performing and reporting in conformity with applicable professional standards in all material respects. The firm is also responsible for evaluating actions to promptly remediate engagements deemed as not performed or reported in conformity with professional standards, when appropriate, and for remediating weaknesses in its system of quality control, if any.

Peer Reviewer's Responsibility

Our responsibility is to express an opinion on the design of the system of quality control and the firm's compliance therewith based on our review.

Required Selections and Considerations

Engagements selected for review included engagements performed under *Government Auditing Standards*, including compliance audits under the Single Audit Act and an audit of an employee benefit plan.

As part of our peer review, we considered reviews by regulatory entities as communicated by the firm, if applicable, in determining the nature and extent of our procedures.

Opinion

In our opinion, the system of quality control for the accounting and auditing practice of Martin Starnes & Associates, CPAs, P.A. in effect for the year ended December 31, 2020, has been suitably designed and complied with to provide the firm with reasonable assurance of performing and reporting in conformity with applicable professional standards in all material respects. Firms can receive a rating of *pass*, *pass with deficiency(ies)* or *fail*. Martin Starnes & Associates, CPAs, P.A. has received a peer review rating of *pass*.

Koonce, Wooten & Haywood, LLP

Koonce, Wooten & Haywood, LLP

May 4, 2021

Raleigh

4060 Barrett Drive
Post Office Box 17806
Raleigh, North Carolina 27619

919 782 9265
919 783 8937 FAX

Durham

3500 Westgate Drive
Suite 203
Durham, North Carolina 27707

919 354 2584
919 489 8183 FAX

Pittsboro

579 West Street
Post Office Box 1399
Pittsboro, North Carolina 27312

919 542 6000
919 542 5764 FAX

Smithfield

212 East Church Street
Post Office Box 2348
Smithfield, North Carolina 27577

919 934 1121
919 934 1217 FAX

MARTIN ♦ STARNES & ASSOCIATES, CPAs, P.A.

"A Professional Association of Certified Public Accountants and Management Consultants"

February 21, 2024

Lisa Strickland
City of Monroe
P.O. Box 69
Monroe, NC 28111

The following represents our understanding of the services we will provide the City of Monroe.

You have requested that we audit the governmental activities, the business-type activities, the aggregate discretely presented component units, each major fund, and the aggregate remaining fund information of the City of Monroe, NC, as of June 30, 2024, and for the year then ended, and the related notes to the financial statements, which collectively comprise the City of Monroe's basic financial statements as listed in the table of contents.

In addition, we will audit the entity's compliance over major federal and state award programs for the period ended June 30, 2024. We are pleased to confirm our acceptance and our understanding of this audit engagement by means of this letter. Our audits will be conducted with the objectives of our expressing an opinion on each opinion unit and an opinion on compliance regarding the entity's major federal and state award programs. The objectives of our audit of the financial statements are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with auditing standards generally accepted in the United States of America (GAAS) and in accordance with *Government Auditing Standards* will always detect a material misstatement when it exists. Misstatements, including omissions, can arise from fraud or error and are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

The objectives of our compliance audit are to obtain sufficient appropriate audit evidence to form an opinion and report at the level specified in the governmental audit requirement about whether the entity complied in all material respects with the applicable compliance requirements and identify audit and reporting requirements specified in the governmental audit requirement that are supplementary to GAAS and *Government Auditing Standards*, if any, and perform procedures to address those requirements.

Accounting principles generally accepted in the United States of America require that certain supplementary information be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. As part of our engagement, we will apply certain limited procedures to the required supplementary information (RSI) in accordance with auditing standards generally accepted in the United States of America. These limited procedures will consist primarily of inquiries of management regarding their methods of measurement and presentation, and comparing the information for consistency with management's responses to our inquiries. We will not express an opinion or provide any form of assurance on the RSI. The following RSI is required by accounting principles generally accepted in the United States of America. This RSI will be subjected to certain limited procedures but will not be audited:

- Management's Discussion and Analysis
- Law Enforcement Officers' Special Separation Allowance schedules
- Other Post-Employment Benefits' schedules
- Local Governmental Employees' Retirement System's schedules

Supplementary information other than RSI will accompany the City of Monroe's basic financial statements. We will subject the following supplementary information to the auditing procedures applied in our audit of the basic financial statements and certain additional procedures, including comparing and reconciling the supplementary information to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and additional procedures in accordance with auditing standards generally accepted in the United States of America. We intend to provide an opinion on the following supplementary information in relation to the financial statements as a whole:

- Combining and individual fund financial statements
- Budgetary schedules
- Other schedules
- Schedule of Expenditures of Federal and State Awards

Schedule of Expenditures of Federal and State Awards

We will subject the Schedule of Expenditures of Federal and State Awards to the auditing procedures applied in our audit of the basic financial statements and certain additional procedures, including comparing and reconciling the schedule to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and additional procedures in accordance with auditing standards generally accepted in the United States of America. We intend to provide an opinion on whether the Schedule of Expenditures of Federal and State Awards is presented fairly in all material respects in relation to the financial statements as a whole.

Also, the document we submit to you will include the following other additional information that will not be subjected to the auditing procedures applied in our audit of the basic financial statements:

- Introductory section
- Statistical section

We will make reference to the component unit auditor's audit of the City of Monroe ABC Board in our report on your financial statements.

Data Collection Form (if applicable)

Prior to the completion of our engagement, we will complete the sections of the Data Collection Form that are our responsibility. The form will summarize our audit findings, amounts and conclusions. It is management's responsibility to submit a reporting package including financial statements, Schedule of Expenditures of Federal and State Awards, summary schedule of prior audit findings and corrective action plan along with the Data Collection Form to the Federal Audit Clearinghouse. The financial reporting package must be text searchable, unencrypted, and unlocked. Otherwise, the reporting package will not be accepted by the Federal Audit Clearinghouse. We will assist you in the electronic submission and certification. You may request from us copies of our report for you to include with the reporting package submitted to pass-through entities.

The Data Collection Form is required to be submitted within the *earlier* of 30 days after receipt of our auditors' reports or nine months after the end of the audit period, unless specifically waived by a federal cognizant or oversight agency for audits. Data Collection Forms submitted untimely are one of the factors in assessing programs at a higher risk.

Audit of the Financial Statements

We will conduct our audit in accordance with auditing standards generally accepted in the United States of America (U.S. GAAS), the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States of America; the audit requirements of Title 2 U.S. Code of Federal Regulations (CFR) Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance) and the State Single Audit Implementation Act. As part of an audit of financial statements in accordance with GAAS and in accordance with *Government Auditing Standards*, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. However, we will communicate to you in writing concerning any significant deficiencies or material weaknesses in internal control relevant to the audit of the financial statements that we have identified during the audit.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Conclude, based on the audit evidence obtained, whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the City of Monroe's ability to continue as a going concern for a reasonable period of time.

Because of the inherent limitations of an audit, together with the inherent limitations of internal control, an unavoidable risk that some material misstatements may not be detected exists, even though the audit is properly planned and performed in accordance with GAAS and *Government Auditing Standards* of the Comptroller General of the United States of America. Please note that the determination of abuse is subjective and *Government Auditing Standards* does not require auditors to detect abuse.

Our responsibility as auditors is limited to the period covered by our audit and does not extend to any other periods.

We will issue a written report upon completion of our audit of the City of Monroe's basic financial statements. Our report will be addressed to the governing body of the City of Monroe. Circumstances may arise in which our report may differ from its expected form and content based on the results of our audit. Depending on the nature of these circumstances, it may be necessary for us to modify our opinions, add an emphasis-of-matter or other-matter paragraph(s) to our auditor's report, or if necessary, withdraw from the engagement. If our opinions on the basic financial statements are other than unmodified, we will discuss the reasons with you in advance. If, for any reason, we are unable to complete the audit or are unable to form or have not formed opinions, we may decline to express opinions or to issue a report as a result of this engagement.

In accordance with the requirements of *Government Auditing Standards*, we will also issue a written report describing the scope of our testing over internal control over financial reporting and over compliance with laws, regulations, and provisions of grants and contracts, including the results of that testing. However, providing an opinion on internal control and compliance over financial reporting will not be an objective of the audit and, therefore, no such opinion will be expressed.

Audit of Major Program Compliance

Our audit of the City of Monroe's major federal and state award program(s) compliance will be conducted in accordance with the requirements of the Single Audit Act, as amended, the Uniform Guidance, and the State Single Audit Implementation Act, and will include tests of accounting records, a determination of major programs in accordance with the Uniform Guidance and the State Single Audit Implementation Act and other procedures we consider necessary to enable us to express such an opinion on major federal and state award program compliance and to render the required reports. We cannot provide assurance that an unmodified opinion on compliance will be expressed. Circumstances may arise in which it is necessary for us to modify our opinion or withdraw from the engagement.

The Uniform Guidance and the State Single Audit Implementation Act require that we also plan and perform the audit to obtain reasonable assurance about whether material noncompliance with applicable laws and regulations, the provisions of contracts and grant agreements applicable to major federal and state award programs, and the applicable compliance requirements occurred, whether due to fraud or error, and express an opinion on the entity's compliance based on the audit. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS, *Government Auditing Standards*, the Uniform Guidance, and the State Single Audit Implementation Act will always detect material noncompliance when it exists. The risk of not detecting material noncompliance resulting from fraud is higher than for that resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Noncompliance with the compliance requirements is considered material if there is a substantial likelihood that, individually or in the aggregate, it would influence the judgment made by a reasonable user of the report on compliance about the entity's compliance with the requirements of the federal or state programs as a whole.

As part of a compliance audit in accordance with GAAS and *Government Auditing Standards*, we exercise professional judgment and maintain professional skepticism throughout the audit. We also identify and assess the risks of material noncompliance, whether due to fraud or error, and design and perform audit procedures responsive to those risks.

Our procedures will consist of determining major federal and state programs and, performing the applicable procedures described in the U.S. Office of Management and Budget *OMB Compliance Supplement* for the

types of compliance requirements that could have a direct and material effect on each of the entity's major programs, and performing such other procedures as we consider necessary in the circumstances. The purpose of those procedures will be to express an opinion on the entity's compliance with requirements applicable to each of its major programs in our report on compliance issued pursuant to the Uniform Guidance and the State Single Audit Implementation Act.

Also, as required by the Uniform Guidance and the State Single Audit Implementation Act, we will obtain an understanding of the entity's internal control over compliance relevant to the audit in order to design and perform tests of controls to evaluate the effectiveness of the design and operation of controls that we consider relevant to preventing or detecting material noncompliance with compliance requirements applicable to each of the entity's major federal and state award programs. Our tests will be less in scope than would be necessary to render an opinion on these controls and, accordingly, no opinion will be expressed in our report. However, we will communicate to you, regarding, among other matters, the planned scope and timing of the audit and any significant deficiencies and material weaknesses in internal control over compliance that we have identified during the audit.

We will issue a report on compliance that will include an opinion or disclaimer of opinion regarding the entity's major federal and state award programs, and a report on internal controls over compliance that will report any significant deficiencies and material weaknesses identified; however, such report will not express an opinion on internal control.

Management's Responsibilities

Our audit will be conducted on the basis that management and, when appropriate, those charged with governance, acknowledge and understand that they have responsibility:

1. For the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America;
2. For the design, implementation, and maintenance of the system of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error;
3. For identifying, in its accounts, all federal and state awards received and expended during the period and the federal and State programs under which they were received;
4. For maintaining records that adequately identify the source and application of funds for federal and state funded activities;
5. For preparing the Schedule of Expenditures of Federal and State Awards (including notes and noncash assistance received) in accordance with the Uniform Guidance and State Single Audit Implementation Act;
6. For designing, implementing, and maintaining effective internal control over federal and state awards that provides reasonable assurance that the entity is managing federal and state awards in compliance with federal and state statutes, regulations, and the terms and conditions of the federal and state awards;
7. For identifying and ensuring that the entity complies with federal and state laws, statutes, regulations, rules, provisions of contracts or grant agreements, and the terms and conditions of federal and state award programs, and implementing systems designed to achieve compliance with applicable federal and state statutes, regulations and the terms and conditions of federal and state award programs;
8. For disclosing accurately, currently and completely the financial results of each federal and state award in accordance with the requirements of the award;
9. For identifying and providing report copies of previous audits, attestation engagements, or other studies that directly relate to the objectives of the audit, including whether related recommendations have been implemented;
10. For taking prompt action when instances of noncompliance are identified;

11. For addressing the findings and recommendations of auditors, for establishing and maintaining a process to track the status of such findings and recommendations and taking corrective action on reported audit findings from prior periods and preparing a summary schedule of prior audit findings;
12. For following up and taking corrective action on current year audit findings and preparing a corrective action plan for such findings;
13. For submitting the reporting package and data collection form to the appropriate parties;
14. For making the auditor aware of any significant contractor relationships where the contractor is responsible for program compliance;
15. To provide us with:
 - a. Access to all information of which management is aware that is relevant to the preparation and fair presentation of the financial statements including the disclosures, and relevant to federal and state award programs, such as records, documentation, and other matters;
 - b. Additional information that we may request from management for the purpose of the audit;
 - c. Unrestricted access to persons within the entity from whom we determine it necessary to obtain audit evidence.
 - d. A written acknowledgement of all the documents that management expects to issue that will be included in the annual report and the planned timing and method of issuance of that annual report (if applicable); and
 - e. A final version of the annual report (including all the documents that, together, comprise the annual report) in a timely manner prior to the date of the auditor's report (if applicable).
16. For adjusting the financial statements to correct material misstatements and confirming to us in the management representation letter that the effects of any uncorrected misstatements aggregated by us during the current engagement and pertaining to the current year or period(s) under audit are immaterial, both individually and in the aggregate, to the financial statements as a whole;
17. For acceptance of nonattest services, including identifying the proper party to oversee nonattest work;
18. For maintaining adequate records, selecting and applying accounting principles, and safeguarding assets;
19. For informing us of any known or suspected fraud affecting the entity involving management, employees with significant roles in the system of internal control and others where fraud could have a material effect on compliance;
20. For the accuracy and completeness of all information provided;
21. For taking reasonable measures to safeguard protected personally identifiable and other sensitive information; and
22. For confirming your understanding of your responsibilities as defined in this letter to us in your management representation letter.

With regard to the Schedule of Expenditures of Federal and State Awards referred to above, you acknowledge and understand your responsibility (a) for the preparation of the Schedule of Expenditures of Federal and State Awards in accordance with the Uniform Guidance and the State Single Audit Implementation Act, (b) to provide us with the appropriate written representations regarding the Schedule of Expenditures of Federal and State Awards, (c) to include our report on the Schedule of Expenditures of Federal and State Awards in any document that contains the Schedule of Expenditures of Federal and State Awards and that indicates that we have reported on such schedule, and (d) to present the Schedule of Expenditures of Federal and State Awards with the audited financial statements, or if the schedule will not be presented with the audited financial statements, to make the audited basic financial statements readily available to the intended users of the Schedule of Expenditures of Federal and State Awards no later than the date of issuance by you of the schedule and our report thereon.

As part of our audit process, we will request from management and, when appropriate, those charged with governance, written confirmation concerning representations made to us in connection with the audit.

We understand that your employees will prepare all confirmations we request and will locate any documents or invoices selected by us for testing.

If you intend to publish or otherwise reproduce the basic financial statements and make reference to our firm, you agree to provide us with printers' proofs or masters for our review and approval before printing. You also agree to provide us with a copy of the final reproduced material for our approval before it is distributed.

Nonattest Services

We will perform the following nonattest services:

- Draft of financial statements and footnotes
- GASB 34 conversion entries
- Clerical services

We will not assume management responsibilities on behalf of the City of Monroe. However, we will provide advice and recommendations to assist management of the City of Monroe in performing its responsibilities.

The City of Monroe's management is responsible for (a) making all management decisions and performing all management functions; (b) assigning a competent individual to oversee the services; (c) evaluating the adequacy of the services performed; (d) evaluating and accepting responsibility for the results of the services performed; and (e) designing, implementing, and maintaining the system of internal control, including the process used to monitor the system of internal control.

Our responsibilities and limitations of the nonattest services are as follows:

- We will perform the services in accordance with applicable professional standards.
- The nonattest services are limited to the services previously outlined. Our firm, in its sole professional judgment, reserves the right to refuse to do any procedure or take any action that could be construed as making management decisions or assuming management responsibilities, including determining account coding and approving journal entries.

Other Matters

During the course of the engagement, we may communicate with you or your personnel via fax or e-mail, and you should be aware that communication in those mediums contains a risk of misdirected or intercepted communications.

Regarding the electronic dissemination of audited financial statements, including financial statements published electronically on your Internet website, you understand that electronic sites are a means to distribute information and, therefore, we are not required to read the information contained in these sites or to consider the consistency of other information in the electronic site with the original document.

Professional standards prohibit us from being the sole host and/or the sole storage for your financial and non-financial data. As such, it is your responsibility to maintain your original data and records and we cannot be responsible to maintain such original information. By signing this engagement letter, you affirm that you have all the data and records required to make your books and records complete.

During the course of the engagement, a portal will be in place for information to be shared, but not stored. Our policy is to terminate access to this portal after one year. The City is responsible for data backup for business continuity and disaster recovery, and our workpaper documentation is not to be used for these purposes.

Provisions of Engagement Administration and Fees

Paula Hodges is the engagement partner for the audit services specified in this letter. Her responsibilities include supervising Martin Starnes & Associates, CPAs, P.A.'s services performed as part of this engagement and signing or authorizing another qualified firm representative to sign the audit report. To ensure that our independence is not impaired under the AICPA Code of Professional Conduct, you agree to inform the engagement partner before entering into any substantive employment discussions with any of our personnel.

Our fees for these services are as follows:

Audit Fee (includes up to 2 major programs)	\$ 84,400
Financial Statement Drafting	<u>9,250</u>
	<u>\$ 93,650</u>
Additional Fees:	
Charge per major program in excess of 2	<u>\$ 4,000</u>

Please note that the fees above include up to 2 major programs, as indicated. The "total amount not to exceed" listed on the audit contract includes up to 3 major programs. If the total number of major programs exceeds 3 and the "total amount not to exceed" needs to be increased, we will prepare an amended contract to include the fees necessary based on the per program amount listed as additional fees above.

Our invoices for these fees will be rendered in four installments as work progresses and are payable upon presentation. In accordance with our firm policies, work may be suspended if your account becomes overdue and may not be resumed until your account is paid in full. If we elect to terminate our services for non-payment, our engagement will be deemed to have been completed upon written notification of termination, even if we have not completed our reports. You will be obligated to compensate us for all time expended and to reimburse us for all out-of-pocket costs through the date of termination.

We will notify you immediately of any circumstances we encounter that could significantly affect this initial fee estimate. Whenever possible, we will attempt to use the City of Monroe's personnel to assist in the preparation of schedules and analyses of accounts. This effort could substantially reduce our time requirements and facilitate the timely conclusion of the audit. Further, we will be available during the year to consult with you on financial management and accounting matters of a routine nature.

We want our clients to receive the maximum value for our professional services and to perceive that our fees are reasonable and fair. In working to provide you with such value, we find there are certain circumstances that can cause us to perform work in excess of that contemplated in our fee estimate.

Following are some of the more common reasons for potential supplemental billings:

Changing Laws and Regulations

There are many governmental and rule-making boards that regularly add or change their requirements. Although we attempt to plan our work to anticipate the requirements that will affect our engagement, there are times when this is not possible. We will discuss these situations with you at the earliest possible time in order to make the necessary adjustments and amendments in our engagement.

Incorrect Accounting Methods or Errors in Client Records

We base our fee estimates on the expectation that client accounting records are in order so that our work can be completed using our standard testing and accounting procedures. However, should we find numerous

errors, incomplete records, or the application of incorrect accounting methods, we will have to perform additional work to make the corrections and reflect those changes in the financial statements.

Failure to Prepare for the Engagement

In an effort to minimize your fees, we assign you the responsibility for the preparation of schedules and documents needed for the engagement. We also discuss matters such as availability of your key personnel, deadlines, and work space. If your personnel are unable, for whatever reasons, to provide these items as previously agreed upon, it might substantially increase the work we must do to complete the engagement within the scheduled time.

Starting and Stopping Our Work

If we must withdraw our staff because of the condition of the client's records, or the failure to provide agreed upon items within the established timeline for the engagement, we will not be able to perform our work in a timely, efficient manner, as established by our engagement plan. This will result in additional fees, as we must reschedule our personnel and incur additional start-up costs.

Our fees are based on anticipated cooperation from your personnel and the assumption that unexpected circumstances will not be encountered during the audit. If significant additional time is necessary, we will discuss it with you and arrive at a new fee estimate before we incur the additional costs. Our fees for such services range from \$85-\$400 per hour.

Government Auditing Standards require that we document an assessment of the skills, knowledge, and experience of management, should we participate in any form of preparation of the basic financial statements and related schedules or disclosures as these actions are deemed a non-audit service.

During the course of the audit, we may observe opportunities for economy in, or improved controls over, your operations. We will bring such matters to the attention of the appropriate level of management, either orally or in writing.

You agree to inform us of facts that may affect the financial statements of which you may become aware during the period from the date of the auditor's report to the date the financial statements are issued. We agree to retain our audit documentation or work papers for a period of at least five years from the date of our report.

You agree to inform us of facts that may affect the basic financial statements of which you may become aware during the period from the date of the auditor's report to the date the financial statements are issued.

At the conclusion of our audit engagement, we will communicate to management and those charged with governance the following significant findings from the audit:

- Our view about the qualitative aspects of the entity's significant accounting practices;
- Significant difficulties, if any, encountered during the audit;
- Uncorrected misstatements, other than those we believe are trivial, if any;
- Disagreements with management, if any;
- Other findings or issues, if any, arising from the audit that are, in our professional judgment, significant and relevant to those charged with governance regarding their oversight of the financial reporting process;
- Material, corrected misstatements that were brought to the attention of management as a result of our audit procedures;

- Representations we requested from management;
- Management's consultations with other accountants, if any; and
- Significant issues, if any, arising from the audit that were discussed, or the subject of correspondence, with management.

The audit documentation for this engagement is the property of Martin Starnes & Associates, CPAs, P.A. and constitutes confidential information. However, we may be requested to make certain audit documentation available to the Local Government Commission, Office of the State Auditor, federal or state agencies and the U.S. Government Accountability Office pursuant to authority given to it by law or regulation, or to peer reviewers. If requested, access to such audit documentation will be provided under the supervision of Martin Starnes & Associates, CPAs, P.A.'s personnel. Furthermore, upon request, we may provide copies of selected audit documentation to these agencies and regulators. The regulators and agencies may intend, or decide, to distribute the copies of information contained therein to others, including other governmental agencies.

In accordance with the requirements of *Government Auditing Standards*, we have attached a copy of our latest external peer review report of our firm to the Contract to Audit Accounts for your consideration and files.

Please sign and return a copy of this letter to indicate your acknowledgment of, and agreement with, the arrangements for our audit of the financial statements and compliance over major federal and state award programs, including our respective responsibilities.

We appreciate the opportunity to be your financial statement auditors and look forward to working with you and your staff.

Respectfully,

Martin Starnes & Associates, CPAs, P.A.

Martin Starnes & Associates, CPAs, P.A.
Hickory, North Carolina

RESPONSE:

This letter correctly sets forth our understanding.

Acknowledged and agreed on behalf of the City of Monroe by:

Signature: _____

Title: _____

Date: _____



STAFF REPORT

TO: General Service Committee

VIA: Mark Watson, City Manager

DATE: March 7, 2024

FROM: Lisa Stiwinter, Planning and Development Director

PREPARED BY: Catherine Mullis, Permit Center Supervisor

SUBJECT: Temporary Use Permits for Special Events in Downtown Monroe – Spring Fest and Monroe’s Popup Event.

SUMMARY STATEMENT

General Services Committee is requested to consider temporary use permits for two special events to be held in Downtown Monroe. The Spring Fest to be held on April 13, 2024 and a Pop-Up Market to be held on October 12, 2024.

REVIEW

The applicant, Greg Moore with Home Brew Taproom & Tunes is requesting temporary use permits to hold two special events in Downtown Monroe on April 13, 2024 and October 12, 2024.

Spring Fest:

The Spring Fest event will be held Saturday, April 13, 2024 in Downtown Monroe from 11am – 5pm. Main Street will be closed from Franklin Street to Morrow Avenue from 8am – 10pm for the preparation and tear down of the event. The applicant is estimating 1,000 people will attend the event with a total of 500 at peak periods. The festival will include food sales, food trucks, merchandise sales/vendors, and music. There will be no alcohol sales as part of the event within the social district. The businesses that will be open during the event have all signed in favor of the event on page 13 of their application. I have included the application, map, and barricade map (created by the Engineering Department) for your reference.

Monroe's Pop-up Festival:

Monroe's Pop-up Festival will be held Saturday, October 12, 2024 in Downtown Monroe from 11am – 5pm. Main Street will be closed from Franklin Street to Morrow Avenue from 8am – 10pm for the preparation and tear down of the event. The applicant is estimating 1,000 people will attend the event with a total of 500 at peak periods. The festival will include food sales, food trucks, merchandise sales/vendors, and music. There will be no alcohol sales as part of the event within the social district. The businesses that will be open during the event have all signed in favor of the event on page 13 of their application. I have included the application, map, and barricade map (created by the Engineering Department) for your reference.

DEPARTMENT REVIEWS

The following departments have reviewed and approved the applications with the following comments:

Fire Department:

Approved the permit pending a valid fire inspection. Applicant must call Monroe Fire Department 24 hours in advance to schedule the fire inspection at 704-282-4726.

Police Department:

Monroe Police Department approves the permit with no concerns or objections.

Engineering Department:

- 1) Main Street approved to temporarily close between Franklin Street and Morrow Avenue.
- 2) Applicant to notify all businesses/ property owners opened or closed within and adjacent to the event and provide them with their contact info for questions/concerns before or during the event. Applicant shall notify ALL businesses located along the entire length of Main Street one week prior to the event. This is in addition to the proof of notification already provided. Failure to contact all businesses/ property owners and provide event information can and will affect future approvals;
- 3) Applicant is responsible for placing and removing barricades on day of event per the attached map Spring Fest Barricades. Applicant is responsible for ensuring barricades are maintained in place throughout the event. Barricades should be delivered by the Street Division 24 hours prior. Report issues or concerns to the Street Division at 704-282-4533 during normal business hours and to the Street Division Standby at 704-226-5916 after hours;
- 4) Applicant is responsible for removal of all trash and debris generated by the event. The area should be cleaned on Saturday after the event is completed.
- 5) Tents and other temporary structures are allowed within the street right-of-way provided no pegs are driven into the pavement. Please use sandbags, concrete weights or other means for stabilization.

Downtown Department:

Downtown Monroe approves the Applicant's temporary use permits with the following comments:

- 1) The applicant is responsible for notifying affected downtown businesses well in advance of the event.

- 2) The applicant must supply affected businesses with a person of contact and contact number.
- 3) The applicant is responsible for any trash accumulated during the event and cleaning up after the event has finished.
- 4) The applicant is responsible for providing adequate restroom facilities for event visitors.
- 5) The applicant is responsible for providing vendors and structures with their own source of power.
- 6) The applicant is to consider using vendors, which do not conflict with existing business in the downtown area.
- 7) The applicant must be approved by engineering, fire, and police and follow their requirements as stated in the permit approval process

Planning and Development Department:

- 1) Event spaces must be thoroughly cleaned during and following each event.
- 2) Event organizer is required to provide a minimum of at least one ADA compliant restroom facility.

Union County Environmental Health:

Unable to approve until closer to the event date.

RECOMMENDATION

If General Services Committee is in agreement with the aforementioned approvals, a recommendation will be presented to the City Council for approval of the temporary use permits.

Attachments:

1. Application – Monroe’s Pop-up
2. Map – Monroe’s Pop-up
3. Barricade Map – Monroe’s Pop-up
4. Application – Spring Fest
5. Map – Spring Fest
6. Barricade Map – Spring Fest



TEMPORARY USE PERMIT APPLICATION

SECTION I: GENERAL INFORMATION

Title of Event: Monroe's Pop-Up Festival

Event Website (if applicable):

Event Date/s: 10/12/24

Event Hours: 11-5pm

USE ADDITIONAL ATTACHMENTS FOR ANY PORTIONS OF APPLICATION AS NEEDED

Event Category: (please check all that apply)

- ☐ Assembly
- ☒ Festival/Outdoor Market
- ☐ Run/Walk
- ☐ Parade
- ☐ Demonstration
- ☐ Concert/Performance
- ☐ Block Party
- ☐ Educational
- ☐ Other: _____

Special Considerations: (please check all that apply)

- ☐ Alcoholic Beverages
- ☐ Food Sales
- ☐ Cooking
- ☒ Merchandise Sales
- ☐ Pets/Animals
- ☒ Sound Amplification
- ☐ Tents / Inflatables
- ☐ Fireworks/Pyrotechnics
- ☒ Portable Restrooms
- ☐ Fire Watch/Crowd Manager (if deemed necessary by Fire Marshall)
- ☐ Other: _____

Time Set up Begins: 8am

Time Break Down Ends: 6pm

Estimated Event Attendance: 1,000

Estimated # of People at Peak Periods: 500

Estimated # of Vehicles: 300

Estimated Vehicles at Peak Periods: 150

SECTION II: EVENT ORGANIZATION INFORMATION

Host Organization: Home Brew Taproom & Tunes

Applicant Name: Greg Moore

Address: 215 S Main St

City: Monroe

State: NC

Zip: 28112

Phone#: 980 215 3564

Mobile#:

Email: Homebrewtaproom@gmail

Primary On-Site Contact: Greg Moore

Mobile#:

Other On-Site Contact Info: Sandra Murschel

SECTION III: EVENT DETAILS

Description of the Event:

Vendor Pop Up Market

Location/s of the Event:

Main St Monroe

Site Capacity:

Property Address:

Property Owner/s:

Owner/s Authorized Use:



SECTION IV: INSURANCE REQUIREMENTS

[REQUIRED FOR STREET CLOSURE (CITY OR NC-DOT), IF ON CITY OF MONROE PROPERTY, OR IF FIREWORKS OR ALCOHOL BEING REQUESTED]

A COPY OF POLICY MUST BE PROVIDED WITH THE APPLICATION.

CITY OF MONROE MUST BE LISTED AS "ADDITIONAL INSURED" PARTY.

COVERAGE	MINIMUM LIMITS
Workers' Compensation	Statutory Limits
Employers' Liability	\$500,000
General Liability	\$1,000,000 per occurrence/\$2,000,000 aggregate
Automobile Liability	\$1,000,000
Professional Liability (E & O)	\$1,000,000 per occurrence/\$2,000,000 aggregate

Applicant shall provide the City with a Certificate of Insurance for review prior to the issuance of any permit. This should be an ACORD form. All Certificates of Insurance will require thirty (30) days written notice by the insurer or applicant's agent in the event of cancellation, reduction or other modifications of coverage. In addition to the notice requirement above, Applicant shall provide the City with immediate written notice of cancellation, reduction, or other modification of coverage of insurance. Upon failure of the Applicant to provide such notice, Applicant assumes sole responsibility for all losses incurred by the City for which insurance would have provided coverage. The insurance certificate shall be for the initial contract period of one (1) year and shall be renewed by the applicant for each subsequent renewal period of the contract.

The City shall be named as an additional insured and it is required that coverage be placed with "A" rated insurance companies acceptable to the City. Statement should read "City of Monroe is to be added as an additional insured as evidenced by an endorsement attached to this certificate."

SECTION V: SPECIAL CONSIDERATION DETAIL

(CHECK EACH BOX AS APPLICABLE AND PROVIDE DETAIL REQUESTED)

- ☐ **Street Closures** (map of proposed closing and route must be provided with application)

NOTE: ALL NCDOT ROADS MUST BE APPROVED BY NCDOT

Reason for Street Closure: Vendor Pop-Up Market
Name of Street to be closed: Main St from Franklin to Morrow
Additional Street: _____ from _____ to _____
of Barricades needed: _____ # of cones needed _____ Drop-off location: _____
Date of Closure: 10/12/24 Start Time: 8am to 10pm
Additional Comments: _____

- ☒ **Trash/Debris Plan:** Disposable garbage cans will be setup on Main St



SECTION V: SPECIAL CONSIDERATION DETAIL (Continued)

(CHECK EACH BOX AS APPLICABLE AND PROVIDE DETAIL REQUESTED)

☐ **Alcoholic Beverages*** (check all that apply)

- ☐ Free/Host Alcohol
- ☐ Alcohol Sales (ABC Permit must accompany)
- ☐ Host and Sale Alcohol
- ☐ Beer
- ☐ Wine
- ☐ Beer and Wine
- ☐ Liquor

* Applicant must provide a map of proposed designated area with this application. Right to modify area is reserved by the City.

Additional Permit Attachments Required:

- ☒ Site Map of All Activities
- ☐ Parking Plan
- ☐ Security Plan
- ☐ General Liability Insurance
- ☐ ABC Permit
- ☐ Alcohol Beverage Designated Area Map
- ☐ Proof of 501C Status
- ☐ Application Fee
- ☐ Property Owner Authorization
- ☐ Business Notification Form

☒ **Parade/Run/Walk/Procession/Demonstration**
(map of route required)

- ☐ Open Sidewalks only
- ☐ Streets w/ temporary traffic interruptions
- ☒ Street Closures
- ☐ Sidewalk Closures

Start Time: 8am End Time: 10pm

Purpose: Pop Up Market

☒ **Tents** (Width x Length X Height)
Dimensions of Tent:

10' x 10'

Tents greater than 400 square feet require an additional \$40 permit fee

☐ **Inflatables** (Width x Length X Height)
Dimensions of Inflatable:

☐ **Cooking or Warming Food?** (Circle One)
Method of Heat:

I certify that the information contained in the foregoing application is true and correct to the best of my knowledge and belief that I have read, understand, and agree to abide by the rules and regulations governing the proposed Temporary Use under the City of Monroe Municipal Code and I understand that this application is made subject to the rules and regulations established by the City Council and/or City Manager or City Manager's designee. Applicant agrees to comply with all other requirements by the City, County, State, and Federal Government, and any other applicable entity which may pertain to the use of the Event venue and the conduct of the Event. I agree to abide by these rules, and further certify that I, on behalf of the host organization, am also authorized to commit that organization, and therefore the host organization agrees to be financially responsible for any costs, fees, and damages, that may be incurred by or on behalf of the Event to the City of Monroe. I understand the application fee is non-refundable and due at the time of application submittal. The submission of this application is not an automatic approval or guarantee. No City of Monroe logo or seal may be used on any promotional material or advertisement.

Print Name of Application/Host Organization: Greg Moore Title: Organizer

Signature

Submission Date: 12/18/23



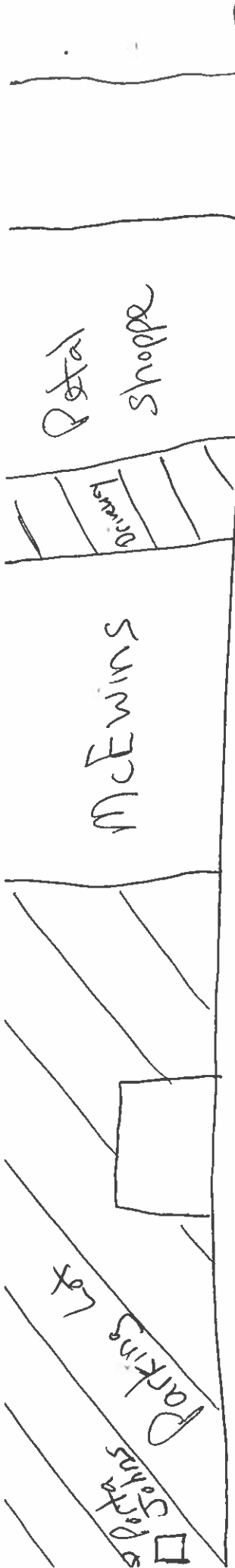
Business Notification Form (FOR PRIVATE SPONSORED EVENTS)

Proposed Event Title and Nature of Event: Spring Fest (4/13/24) + Pop Up Festival (10/12/23)
 Date of Proposed Event: 4/13 and 10/12 Times of Proposed Event: 11am - 5pm

Streets Proposed to be closed or Partially Closed:
Main St from Franklin to Morrow

Businesses Notified

Business Name	Date of Notification	Time of Notification	Person Notified	Favor/Against	Signature (if possible)
McEwen	12-14-2023	3:28 pm	Arlene Brock	Favor	Arlene Brock
Petal Shoppe	12/14/23	3:30pm	Danene Blackburn	Favor	Danene Blackburn
Simpson's	12/14/23	3:30pm	Krista Philemon	Favor	Krista Philemon
Mary's Salon	12/15/23	11:30 am	Terry Carter	Favor	Terry Carter
Faded Rose	12/15/23	11:30 am	Erin Phelan	Favor	Erin Phelan
M-Bellish	12/14/23	4:37	Robin Lane	Favor	Robin Lane
Local Logic	12/14/23	4:30	Elise Gatt	Favor	Elise Gatt
Gillbert Ciro	12/14/23	3:35 pm	Emily Gilbert	Favor	Emily Gilbert
Dowd	City owned				
Basis	12/14/23	3:35	Tim Hatt	FAVOR	Tim Hatt
Directors Cut	12/14/23	3:40	Rob Dunn	FAVOR	Rob Dunn
Superior	12/14/23	3:45	Mike	Favor	Mike
Puttline on Main	12/14/23	3:45	Mike	Favor	Mike
Rocko's	12/14/23	3:45	Mike	Favor	Mike
Mazing Dancewear	12/14/23	4:10	Kerry Thomas	Favor	Kerry Thomas
Backstage	12/14/23	3:45	JD CRAYCRAFT	Yes for favor	JD CRAYCRAFT
Love Country	12/14/23	4:00	Tina Cavendish	Yes	Tina Cavendish
BB Lash + Beaut	12/14/23	4:00	Brandi Jenkins	Yes	Brandi Jenkins
Halo	12/14/23	4:05	Lindsey Shelton	Yes	Lindsey Shelton
Americana	12/14/23	4:07	Alec Barnes	Favor	Alec Barnes
Sorella	12/14/23	4:16	Savannah Griffin	Favor	Savannah Griffin
Main St Bistro	12/14/23	4:20	Lisa Bero	Favor	Lisa Bero
Jam-Pack	12/14/23	4:27	Walt Gier	Favor	Walt Gier
Bela Nature	12/14/23	4:40	Sandra Murschel	Favor	Sandra Murschel



11 12 13 14 15 16 17 18 19 20 21 22

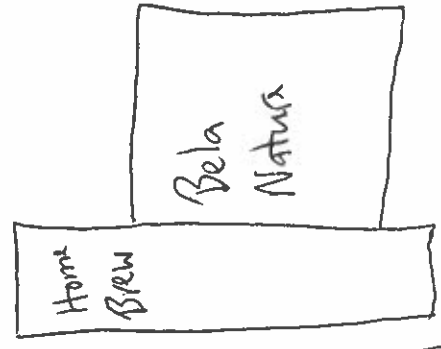
Morrow Ave
Trash

Trash

Food Truck 1 2 3

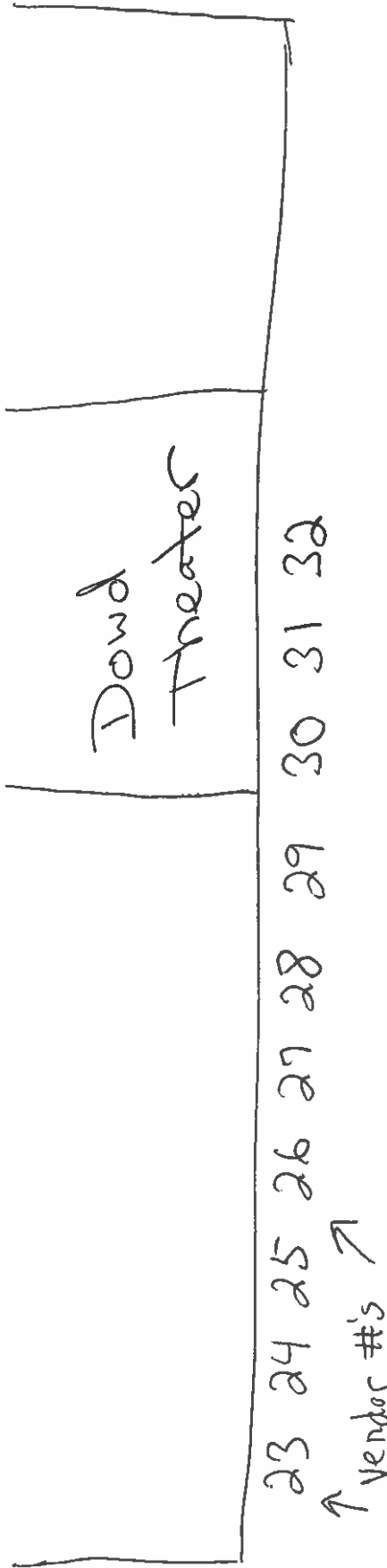
Each Vendor has
an 11' x 11' space
on Main St

4 5 6 7 8 9 10



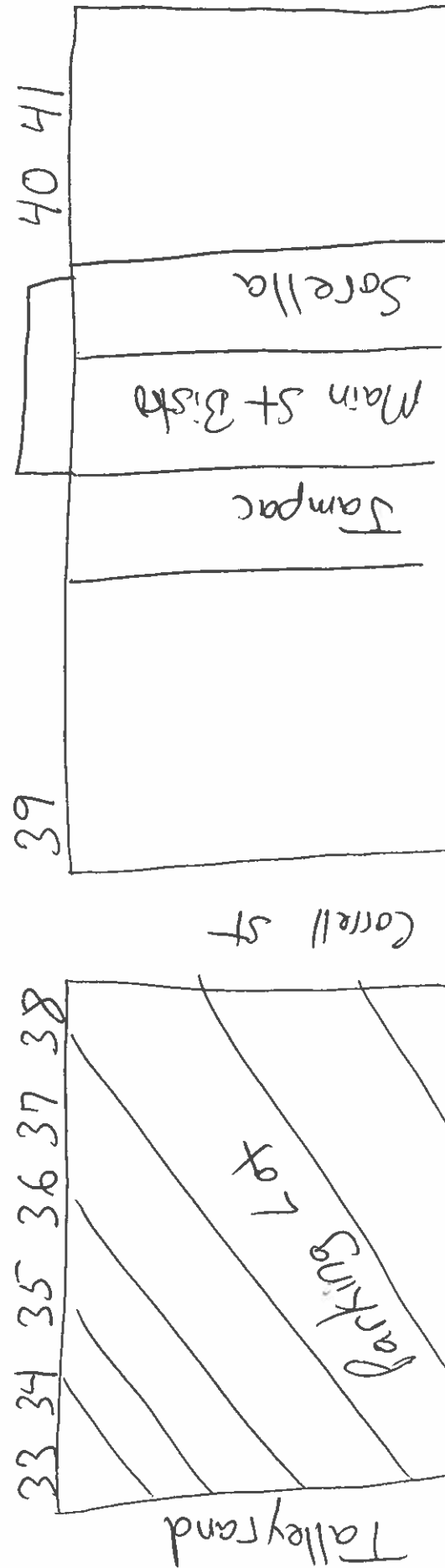
LANE ST

windsor st



Trash

Trash



Franklin St

Trash
○

2 Porta
Johns - 1 ADA

62 63 64 65 66 67 68 69 70

52 53 54 55 56 57 58 59 60 61

Parking Lot

Trash
○

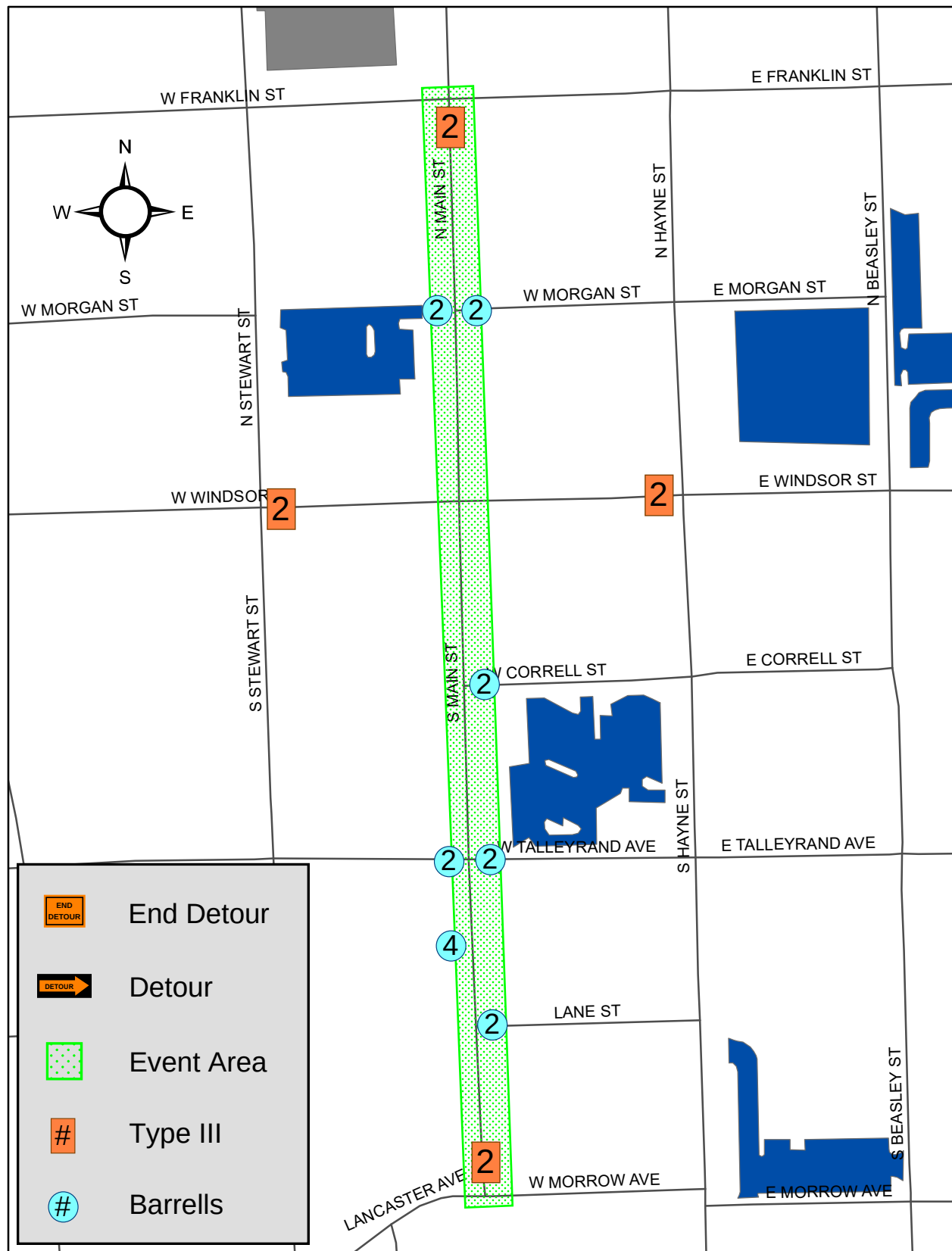
Food Truck
Americana

48 49 50 51

Morgan St

42 43 44 45 46 47

Backstage
Love Country



Monroe's Pop-up Market Barricades 10/12/24



FUNERAL HOME OF MONROE

Serving Families Since 1933

204 South Main Street
Monroe, North Carolina 28112
(O) 704.289.3173 (F) 704.289.4981

January 8, 2024

To: City of Monroe – City Council Members

Re: Permission for Porta-Johns to be on McEwen Funeral Home Property

McEwen Funeral Home of Monroe is allowing Home Brew Taproom & Tunes to Set 2 Porta-Johns in our parking lot for public use the dates of April 13th, 2024 and October 12th, 2024. This is during the open air vendor markets for downtown and the Art Shows.

Chris Drake
Office Manager

received
12/18/23 JB



SECTION I: GENERAL INFORMATION

Title of Event: Spring Fest

Event Website (if applicable):

Event Date/s: 4/13

Event Hours: 11am - 5pm

USE ADDITIONAL ATTACHMENTS FOR ANY PORTIONS OF APPLICATION AS NEEDED

Event Category: (please check all that apply)

- ☐ Assembly
- ☒ Festival/Outdoor Market
- ☐ Run/Walk
- ☐ Parade
- ☐ Demonstration
- ☐ Concert/Performance
- ☐ Block Party
- ☐ Educational
- ☐ Other: _____

Special Considerations: (please check all that apply)

- ☐ Alcoholic Beverages
- ☒ Food Sales
- ☐ Cooking
- ☒ Merchandise Sales
- ☐ Pets/Animals
- ☒ Sound Amplification
- ☐ Tents / Inflatables
- ☐ Fireworks/Pyrotechnics
- ☒ Portable Restrooms
- ☐ Fire Watch/Crowd Manager (if deemed necessary by Fire Marshall)
- ☐ Other: _____

Time Set up Begins: 8am

Time Break Down Ends: 6pm

Estimated Event Attendance: 1,000

Estimated # of People at Peak Periods: 500

Estimated # of Vehicles: 300

Estimated Vehicles at Peak Periods: 150

SECTION II: EVENT ORGANIZATION INFORMATION

Host Organization: Home Brew Taproom & Tunn

Applicant Name: Greg Moore

Address: 215 S Main St

City: Monroe

State: NC

Zip: 28112

Phone#: 980 215 3564

Mobile#:

Email: Homebrewtaproom@gmail

Primary On-Site Contact: Greg Moore

Mobile#:

Other On-Site Contact Info: Sandra Murschel

SECTION III: EVENT DETAILS

Description of the Event:

Vendor Pop up Market

Location/s of the Event:

Main St Monroe

Site Capacity:

Property Address:

Property Owner/s:

Owner/s Authorized Use:



SECTION IV: INSURANCE REQUIREMENTS

[REQUIRED FOR STREET CLOSURE (CITY OR NC-DOT), IF ON CITY OF MONROE PROPERTY, OR IF FIREWORKS OR ALCOHOL BEING REQUESTED]

A COPY OF POLICY MUST BE PROVIDED WITH THE APPLICATION.

CITY OF MONROE MUST BE LISTED AS "ADDITIONAL INSURED" PARTY.

COVERAGE	MINIMUM LIMITS
Workers' Compensation	Statutory Limits
Employers' Liability	\$500,000
General Liability	\$1,000,000 per occurrence/\$2,000,000 aggregate
Automobile Liability	\$1,000,000
Professional Liability (E & O)	\$1,000,000 per occurrence/\$2,000,000 aggregate

Applicant shall provide the City with a Certificate of Insurance for review prior to the issuance of any permit. This should be an ACORD form. All Certificates of Insurance will require thirty (30) days written notice by the insurer or applicant's agent in the event of cancellation, reduction or other modifications of coverage. In addition to the notice requirement above, Applicant shall provide the City with immediate written notice of cancellation, reduction, or other modification of coverage of insurance. Upon failure of the Applicant to provide such notice, Applicant assumes sole responsibility for all losses incurred by the City for which insurance would have provided coverage. The insurance certificate shall be for the initial contract period of one (1) year and shall be renewed by the applicant for each subsequent renewal period of the contract.

The City shall be named as an additional insured and it is required that coverage be placed with "A" rated insurance companies acceptable to the City. Statement should read "City of Monroe is to be added as an additional insured as evidenced by an endorsement attached to this certificate."

SECTION V: SPECIAL CONSIDERATION DETAIL

[CHECK EACH BOX AS APPLICABLE AND PROVIDE DETAIL REQUESTED]

- ☒ **Street Closures** (map of proposed closing and route must be provided with application)
NOTE: ALL NCDOT ROADS MUST BE APPROVED BY NCDOT

Reason for Street Closure: Vendor Pop-Up Market
Name of Street to be closed: Main St from Franklin to Morrow
Additional Street: _____ from _____ to _____
of Barricades needed: _____ # of cones needed _____ Drop-off location: _____
Date of Closure: 4/13 Start Time: 8am to 10pm
Additional Comments: _____

- ☒ **Trash/Debris Plan:** Disposable garbage cans will be setup on Main St and managed by Greg Moore



SECTION V: SPECIAL CONSIDERATION DETAIL (Continued)

(CHECK EACH BOX AS APPLICABLE AND PROVIDE DETAIL REQUESTED)

☐ **Alcoholic Beverages*** (check all that apply)

- ☐ Free/Host Alcohol
- ☐ Alcohol Sales (ABC Permit must accompany)
- ☐ Host and Sale Alcohol
- ☐ Beer
- ☐ Wine
- ☐ Beer and Wine
- ☐ Liquor

* Applicant must provide a map of proposed designated area with this application. Right to modify area is reserved by the City.

Additional Permit Attachments Required:

- ☐ Site Map of All Activities
- ☐ Parking Plan
- ☐ Security Plan
- ☐ General Liability Insurance
- ☐ ABC Permit
- ☐ Alcohol Beverage Designated Area Map
- ☐ Proof of 501C Status
- ☐ Application Fee
- ☐ Property Owner Authorization
- ☐ Business Notification Form

☒ **Parade/Run/Walk/Procession/Demonstration**
(map of route required)

- ☐ Open Sidewalks only
- ☐ Streets w/ temporary traffic interruptions
- ☒ Street Closures
- ☐ Sidewalk Closures

Start Time: 8am End Time: 10pm

Purpose: Spring Fest 2024

☒ **Tents** (Width x Length X Height)

Dimensions of Tent:

10' x 10'

Tents greater than 400 square feet require an additional \$40 permit fee

☐ **Inflatables** (Width x Length X Height)

Dimensions of Inflatable:

☐ **Cooking or Warming Food?** (Circle One)

Method of Heat:

I certify that the information contained in the foregoing application is true and correct to the best of my knowledge and belief that I have read, understand, and agree to abide by the rules and regulations governing the proposed Temporary Use under the City of Monroe Municipal Code and I understand that this application is made subject to the rules and regulations established by the City Council and/or City Manager or City Manager's designee. Applicant agrees to comply with all other requirements by the City, County, State, and Federal Government, and any other applicable entity which may pertain to the use of the Event venue and the conduct of the Event. I agree to abide by these rules, and further certify that I, on behalf of the host organization, am also authorized to commit that organization, and therefore the host organization agrees to be financially responsible for any costs, fees, and damages, that may be incurred by or on behalf of the Event to the City of Monroe. I understand the application fee is non-refundable and due at the time of application submittal. The submission of this application is not an automatic approval or guarantee. No City of Monroe logo or seal may be used on any promotional material or advertisement.

Print Name of Application/Host Organization: Greg Moore Title: Organizer

Signature: [Signature] Submission Date: 12/18/23

M

Business Notification Form

(FOR PRIVATE SPONSORED EVENTS)

Proposed Event Title and Nature of Event:

Spring Fest (4/13/24) + Pop Up Festival (10/12/23)

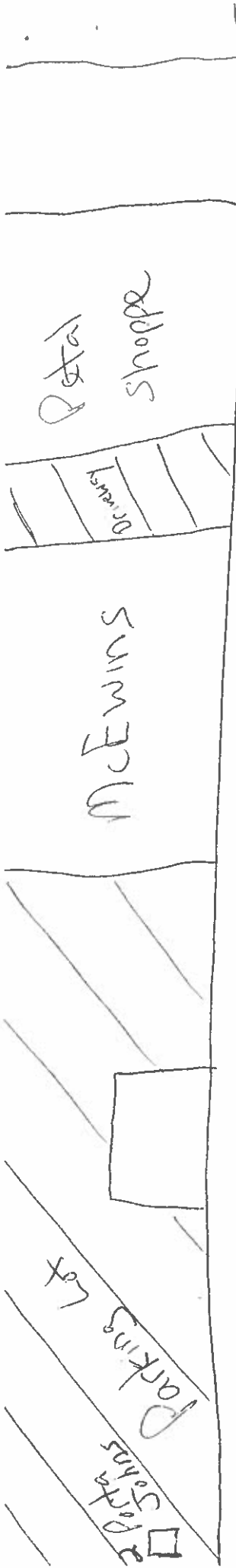
Date of Proposed Event: 4/13 and 10/12

Times of Proposed Event: 11am - 5pm

Streets Proposed to be closed or Partially Closed:

Main St from Franklin to Marrow

Business Name	Date of Notification	Time of Notification	Person Notified	Favor/Against	Signature (if possible)
McEwen	12-14-2023	3:28 pm	Arlene Bross	Favor	Arlene Bross
Petal Shoppe	12/14/23	3:30 pm	Danene Blackburn	Favor	Danene Blackburn
Simpson's	12/14/23	3:30 pm	Krista Philemon	Favor	Krista Philemon
Mary's Salon	12/15/23	11:30 am	Terry Carter	Favor	Terry Carter
Faded Rose	12/15/23	11:30 am	Robin Lane	Favor	Robin Lane
M-Bellish	12/14/23	4:37	Elise Gattiff	Favor	Elise Gattiff
Local Logic	12/14/23	4:30	Emily Gilbert	Favor	Emily Gilbert
Gilbert Ciro	12/14/23	3:35 pm	Emily Gilbert	Favor	Emily Gilbert
Dowd	City owned				
Basis	12/14/23	3:35	Jill Hattie	Favor	Jill Hattie
Directors Cut	12/14/23	3:40	KOH BULL	Favor	KOH BULL
Superior	12/14/23	3:45	Mike	Favor	Mike
Gettysburg Min	12/14/23	3:45	Mike	Favor	Mike
Wocka's	12/14/23	3:45	Mike	Favor	Mike
Mazing Dancewear	12/14/23	4:10	Kerry Thomas	Favor	K. Thomas
Backstage	12/14/23	3:45	JB CRAYCRAFT	Yes/for favor	JB Craycraft
Lower Country	12/14/23	4:00	Tina Cavendish	Yes	Tina Cavendish
BB Lash + Beauty	12/14/23	4:00	Brandi Jenkins	Yes	Brandi Jenkins
Halo	12/14/23	4:05	Lindsey Shotton	Yes	Lindsey Shotton
Americana	12/14/23	4:07	Alec Barnes	Favor	Alec Barnes
Sorella	12/14/23	4:16	Savannah Griffin	Favor	Savannah Griffin
Main St Bistro	12/14/23	4:20	Lisa Boye	Favor	Lisa Boye
Jam-Pack	12/14/23	4:27	Walt Gibson	Favor	Walt Gibson
Bela Nature	12/14/23	4:40	Andres Marschall	Favor	Andres Marschall



11 12 13 14 15 16 17 18 19 20 21 22
 Axe Dods

Trash
 0
 Morrow Ave

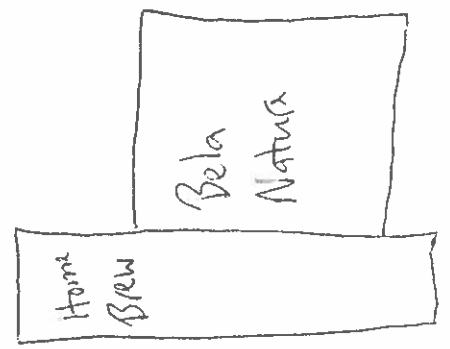
Trash
 0

Food Truck 1 2 3

Each Vendor has
 an 11' x 11' space
 on Main St

Talleyrand

4 5 6 7 8 9 10



LANE ST

Home Brew
 Bela
 Natura

windsor st

Trash
0

Dond
Theater

23 24 25 26 27 28 29 30 31 32

↑ Vendor #'s →

Trash
0

33 34 35 36 37 38

Parking 7x

Talleyrand

Correll St

39

Tampac

Main St Bldg

Sorella

40 41

Franklin St

Trash
○

2 Porta
Johns - 1 ADA

62 63 64 65 66 67 68 69 70

Parking Lot

52 53 54 55 56 57 58 59 60 61

trash
○

42 43 44 45 46 47

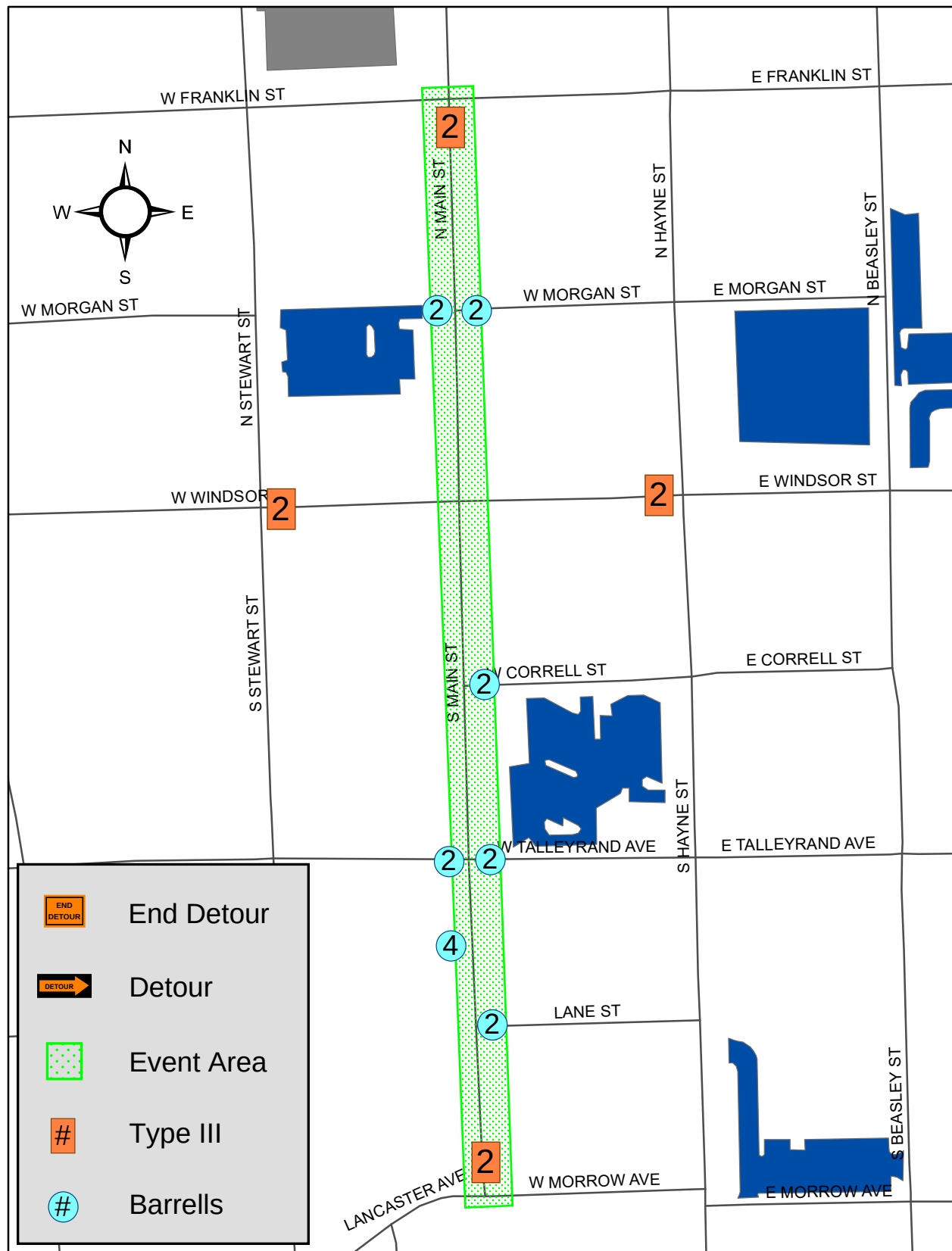
Backstage
Lower Country

Morgan St

48 49 50 51

Food Truck

Americana



Spring Fest Pop-up Market Barricades 4/13/24



FUNERAL HOME OF MONROE

Serving Families Since 1933

204 South Main Street
Monroe, North Carolina 28112
(O) 704.289.3173 (F) 704.289.4981

January 8, 2024

To: City of Monroe – City Council Members

Re: Permission for Porta-Johns to be on McEwen Funeral Home Property

McEwen Funeral Home of Monroe is allowing Home Brew Taproom & Tunes to Set 2 Porta-Johns in our parking lot for public use the dates of April 13th, 2024 and October 12th, 2024. This is during the open air vendor markets for downtown and the Art Shows.

Chris Drake
Office Manager



STAFF REPORT

TO: General Services Committee

VIA: Mark Watson, City Manager

DATE: March 7, 2024

FROM: Lisa Strickland, Finance Director

PREPARED BY: Lisa Strickland, Finance Director

SUBJECT: Reallocation of Funding for Bearskin Creek Stream Restoration and Ellen Fitzgerald Center Projects

SUMMARY STATEMENT

The City was awarded American Rescue Plan funding in the amount of \$11,326,507.16. On November 9, 2021, City Council adopted a Budget Ordinance to allocate \$1,375,000 of this funding to the project for the Bearskin Creek Stream Restoration Project. On February 14, 2023, City Council adopted a Budget Ordinance to allocate \$300,000 to remodel the Ellen Fitzgerald Center to convert this facility to Fire Administrative offices. Staff is seeking approval to repurpose the money in both of these projects.

REVIEW

The City was previously awarded American Rescue Plan funding in the amount of \$11,326,507.16. On November 9, 2021, City Council adopted a Budget Ordinance to allocate \$1,375,000 of this funding to the project ARP014 for the Bearskin Creek Stream Restoration Project. Staff is requesting that this amount plus interest earnings totaling \$29,879 be reallocated from the project for the Bearskin Creek Stream Restoration Project to a Water Main Restoration Project in qualified census tracts. The funds need to be committed prior to the end of calendar year 2024 and staff feels that the City is able to accomplish this task by changing the purpose of the project. The stream restoration project will remain a priority and the City will seek alternate grant funding to fund or partially fund this project.

On February 14, 2023, City Council adopted a Budget Ordinance to allocate \$300,000 to remodel the Ellen Fitzgerald Center to convert this facility to Fire Administrative offices. Staff is

requesting that this amount be reallocated from the project GB2302 to remodel this facility for Fire Administrative offices to a Fire Station #1/Administration Building project. This new project will allow for expenses associated site selection and award of a bid for design services for this facility.

RECOMMENDATION

General Services Committee is requested to recommend favorably to City Council to change the use of these two previously approved capital projects.

Attachment:



STAFF REPORT

TO: General Services Committee
VIA: Mark Watson, City Manager
DATE: March 7, 2024
FROM: Ryan Jones, Parks and Recreation Director
PREPARED BY: Ryan Jones, Parks and Recreation Director
SUBJECT: Vaccine Mini Grant

SUMMARY STATEMENT

The Parks and Recreation Department seeks to accept a grant from Centralina Area Agency on Aging and requests a budget amendment.

REVIEW

The Parks and Recreation Department has received a grant in the amount of \$1,500.00 from the Centralina Area Agency on Aging through the Aging and Disability Vaccination Collaborative. Our staff provided two flu vaccine clinics to the community. These funds provided staff the opportunity to equip and provide these vaccination clinics within the community specific to health promotion and disease prevention.

RECOMMENDATION

Staff request that the General Services Committee recommend City Council approval to accept funds associated with the Vaccine Mini Grant and approve the budget amendment.

Attachment: Budget Amendment (BA-2024-08)

**BUDGET AMENDMENT
BA-2024-08**

1. Amendment necessary to designate and appropriate funds received from the Vaccine Mini Grant from the Centralina Area Agency on Aging through the Aging and Disability Vaccine Collaborative to be used for vaccination clinics programming needs related to senior and adult health promotion and disease prevention.

General Fund:

Revenues:

Restricted Revenue	\$ 1,500.00
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Expenditures:

Parks and Recreation	\$ 1,500.00
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Adopted this 12th day of March, 2024.

Robert A. Burns, Mayor

Attest:

Bridgette H. Robinson, City Clerk



STAFF REPORT

TO: General Services Committee

VIA: Mark Watson, City Manager

DATE: March 7, 2024

FROM: Ryan Jones, Parks and Recreation Director

PREPARED BY: Ryan Jones, Parks and Recreation Director

SUBJECT: Senior Center American Rescue Plan Act (ARPA) Funding

SUMMARY STATEMENT

The Parks and Recreation Department seeks to accept American Rescue Plan Act (ARPA) funding distributed by the Centralina Area Agency on Aging in the amount of \$9,504.00 and request a budget amendment.

REVIEW

In June of 2023, the Bazemore Active Adult Center met all requirements to attain Multipurpose Senior Center status which made our department eligible to request this funding at the local level. Operation of a multipurpose senior center provides a broad spectrum of services and activities for older adults. The primary objectives of a multipurpose senior center are centralized provision of services which address the special needs of older adults; opportunities for adults to be more involved in the community; and the prevention of loneliness and premature institutionalization by promoting personal independence and wellness. The Bazemore Active Adult Center met all necessary requirements to become eligible to request and receive this funding.

Because of this, we can be considered as a facility that is eligible to receive money that existed as a surplus in ARPA funding. There is no match associated with this funding.

RECOMMENDATION

Staff requests that the General Services Committee recommend City Council approval to accept funds associated with the surplus ARPA funding and approve the budget amendment.

Attachment: Budget Amendment (BA-2024-09)

**BUDGET AMENDMENT
BA-2024-09**

1. Amendment necessary to designate and appropriate funds received from the American Rescue Plan Act (ARPA) be used for the programming needs related to senior and adult activities.

General Fund:

Revenues:

Restricted Revenue	\$ 9,504.00
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Expenditures:

Parks and Recreation	\$ 9,504.00
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Adopted this 12th day of March, 2024.

Robert A. Burns, Mayor

Attest:

Bridgette H. Robinson, City Clerk



STAFF REPORT

TO: General Services

VIA: Mark Watson, City Manager

DATE: March 7, 2024

FROM: Ryan Jones, Parks and Recreation Director

PREPARED BY: Ryan Jones, Parks and Recreation Director

SUBJECT: Senior Center General Purpose Funding

SUMMARY STATEMENT

The Parks and Recreation Department seeks to accept a Senior Center General Purpose grant from Centralina Area Agency on Aging and requests a budget amendment.

REVIEW

The Parks and Recreation Department has received a grant in the amount of \$3,719.00 from the Centralina Area Agency on Aging. These funds will allow staff the opportunity to equip and provide active adult programs within the community specific to health promotion and disease prevention. This grant will allow our department the ability to provide members of the community the opportunity to enjoy programs and facilities at a high quality level that include, but is not limited to, amenities throughout the facility, as well as, funding utilized to pay instructors for our new Tai Chi and Zumba Gold programs. Participation for both new programs has been outstanding. This funding is allocated to specific Area Agencies on Aging and then distributed to centers within the region that provide full-time programs. These funds are used to support and develop programming and general operations or to construct, renovate or maintain facilities that serve seniors. There is a 25% match associated with this grant that can be funded through the operational budget of the Active Adult Center. We have been awarded \$3,719.00 through this grant. With the match included in the amount of \$1,238.00, the full amount of funding is \$4,957.00.

RECOMMENDATION

Staff requests that the General Services Committee recommend City Council approval to accept funds associated with the Senior Center General Purpose funding and approve the budget amendment.

Attachment: Budget Amendment (BA-2024-10)

**BUDGET AMENDMENT
BA-2024-10**

1. Amendment necessary to designate and appropriate funds received from the Senior Center General Purpose Grant from Centralina Area Agency on Aging be used for the programming needs related to senior and adult activities.

General Fund:

Revenues:

Restricted Revenue	\$ 3,719.00
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Expenditures:

Parks and Recreation	\$ 3,719.00
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Adopted this 12th day of March, 2024.

Robert A. Burns, Mayor

Attest:

Bridgette H. Robinson, City Clerk