City of Dublin

Office of the City Manager
5555 Perimeter Drive • Dublin, OH 43017
Phone: 614.410.4400

Memo

To: Dublin City Council

From: Dana L. McDaniel, City Manager

Date: April 5, 2022

Initiated By: Megan O'Callaghan, PE, Deputy City Manager/Finance and Development Officer
Jennifer M. Rauch, AICP, Director of Planning
Jean-Ellen Willis, PE, Deputy Director of Transportation and Mobility
J.M. Rayburn, Planner II

Re: Micro-mobility Demonstration Pilot – Resolution 18-22 to Proceed with the Micro-mobility Demonstration Pilot and to Permit the Operation of Low-speed Micro-mobility Devices on Streets, Sidewalks and Shared-use Paths for a Duration and 12 Months

Background

The recommendations of the Frantz Road Alternative Transportation Lane Study, combined with the interest of Bird to operate in Dublin, led staff to propose a Micro-mobility Demonstration Pilot at the November 2021 meeting of the Public Services Committee. Staff received favorable feedback from the Committee and followed up in February 2022 with information regarding the pilot boundaries, timeline, Bird e-scooters phasing, speed limits, parking management, and sidewalk congestion mitigation. The memos shared with the Public Services Committee for the November 2021 and February 2022 meetings are attached for your reference.

At the February 2022 meeting, the Public Services Committee was supportive of the proposed timeline and components outlined for the demonstration pilot. Furthermore, the Committee was supportive of proposed Bird and CoGo Bike Share fleet sizes, supplemental signs, use of glow pavers and proposed sidewalk congestion mitigation measures and locations. The demonstration pilot proposal is consistent with the discussions and feedback from the Public Services Committee.

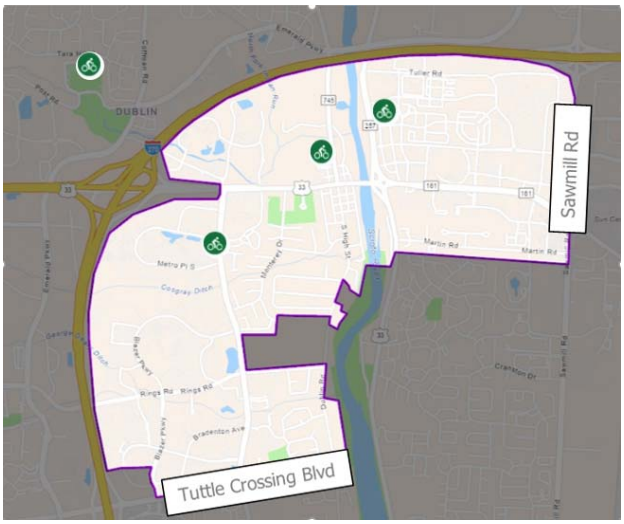
Staff anticipates the launch of the Micro-mobility Demonstration Pilot on May 1st in celebration of Bike Month. Staff proposed the following timeline for the pilot:

Phase 1 (May 2022 to July 2022)
- Implement communications plan
- Demonstration pilot commences in May 2022 in recognition of National Bike Month
- Pilot launched within defined Phase 1 boundaries, as shown in Figure 1 on page 2
- Monitor and evaluate Phase 1 area for a minimum of 3 months

Phase 2 (August 2022 to May 2023)
- Expand pilot boundaries to be citywide
- Continue communications plan
- Monitor and evaluate Phase 2 area for 9 months

Pilot Concludes (June 2023)
- Conclude demonstration pilot
- Report findings to the Public Services Committee and City Council and provide recommendations for next steps

Figure 1: Pilot Boundaries for Phase 1 (purple) and CoGo Stations (green)



Launch of Bird and CoGo Bike Share Services in Dublin

Pending approval of the Micro-mobility Demonstration Pilot by Council, Bird anticipates a launch in Dublin by mid-May. CoGo Bike Share will debut later in the year to coincide with the completion of the DCRC Mobility Hub. Staff anticipates CoGo to launch in Dublin in September with station locations at the DCRC, the North Market Bridge Park, the library parking garage, and at the intersection of Frantz Road and Metro Place North, as budgets allow. Figure 1 illustrates CoGo station locations with green circles featuring a bicycle icon.

For specifics regarding designated parking areas for micro-mobility devices such as Bird e-scooters, please refer to the February 16, 2022 Public Services Committee memo where this topic is discussed in more detail.

Demonstration Pilot Cost Estimates – Signs and Materials

In order to implement the demonstration pilot as proposed, new signs and materials such as the glow pavers will be installed. Funding is available in this year's budget to cover these costs.

To enhance safety and amplify awareness of the existing cycle track in the Bridge Street District, staff will install a collection of signs that will be strategically placed along the cycle track route within the Bridge Park neighborhood. These signs may be attached on existing public infrastructure, as shown in Figure 2 on page 3.

Staff will construct a 70-square-foot scooter parking area at the John Wright Parking Lot to be identified with a paver product that has glow-in-the-dark components, as shown in Figures 3 and 4. This location provides an opportunity to test glow-in-the-dark pavers for possible application in future mobility projects. As an example, the sample shown below is from a manufacturer called Glow Path Pavers, which claim a continuous glow of their pavers for six to eight hours after dark. The cost of materials for 70 square feet of glow pavers is approximately $23 per square foot, or about $1,600.

Figure 2: Example of sign to amplify awareness of Downtown Dublin Cycle Track

Figure 3: Examples of Glow Path Pavers

Figure 4: Glow Path Pavers after dark

Attachments

Staff has attached two previous memos to the Public Services Committee of Council from February 2022 and November 2021. Feedback from the Public Services Committee at the November 2021 meeting included requests of staff to provide additional information regarding the Demonstration Pilot boundaries, timeline, Bird e-scooters phasing, speed limits, parking management, and sidewalk congestion mitigation. These memos may be referenced for specific details regarding the demonstration pilot proposal.

1. PSC Memo 2-16-2022
2. PSC Memo 11-10-2021 (with Frantz Road Alternative Transportation Lane Study)

Resolution 18-22

The launch of the Micro-mobility Demonstration Pilot in May will align with Bike Month and reflects Dublin's commitment to expand mobility options by supporting micro-mobility operators. Additionally, the pilot builds upon the five essential elements of a Bicycle Friendly Community including encouragement, education, equity, evaluation and engineering. Staff is requesting Council temporarily permit the operation of low-speed micro-mobility devices, such as Bird e-scooters, beginning May 1, 2022. Approval of Resolution 18-22 would direct staff to proceed with the Micro-mobility Demonstration Pilot and would permit the operation of low-speed micro-mobility devices on streets, sidewalks and shared-use paths for a duration of 12 months.

Recommendation

Staff recommends approval of Resolution 18-22 to temporarily permit the operation of low-speed micro-mobility devices on streets, sidewalks and shared-use paths for a duration of 12 months, beginning May 1, 2022.

RECORD OF RESOLUTIONS

Resolution No. 18-22 *Passed* _____, 20____

A RESOLUTION TO PROCEED WITH THE MICRO-MOBILITY DEMONSTRATION PILOT AND TO PERMIT THE OPERATION OF LOW-SPEED MICRO-MOBILITY DEVICES ON STREETS, SIDEWALKS AND SHARED-USE PATHS FOR A DURATION OF 12 MONTHS

WHEREAS, the State of Ohio passed H.B. 295 in January, 2021, which legalizes and regulates electric scooters as low-speed micro-mobility devices; and

WHEREAS, the transportation system is more than a collection of roadways but rather an ecosystem of different mobility options and transportation facilities; and

WHEREAS, the City of Dublin supports transportation for users of all ages and abilities; and

WHEREAS, the City of Dublin aspires to be the most connected community in the United States; and

WHEREAS, a micro-mobility demonstration pilot builds upon the five essential elements of a Bicycle Friendly Community including encouragement, education, equity, evaluation and engineering; and

WHEREAS, the City Council finds it necessary to expand mobility options within the City through the operation of micro-mobility devices on streets, sidewalks, shared-use paths and regional trails; and

WHEREAS, the City of Dublin will launch a micro-mobility demonstration pilot in celebration of Bike Month and expand Dublin's mobility options by supporting micro-mobility operators.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Dublin, State of Ohio, _____ of its elected members concurring, that:

Section 1. The City Council is hereby authorizing the City Manager to proceed with the Micro-mobility Demonstration Pilot and permitting the operation of low-speed micro-mobility devices on streets, sidewalks and shared-use paths for a duration of 12 months. The approval of changes thereto by those officials, and their character as not being substantially adverse to the City, shall be evidenced conclusively by their execution thereof.

Section 2. The City Manager, the Clerk of Council, the Director of Law, the Director of Finance, or other appropriate officers of the City are hereby authorized to prepare and sign all agreements and instruments and to take any other actions as may be appropriate to implement this Resolution.

Section 3. This Resolution shall take effect on May 1, 2022.

Passed this _____day of _____, 2022.

_____
Mayor – Presiding Officer

ATTEST:

_____
Clerk of Council

City of Dublin

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Memo

To: Public Services Committee of Dublin City Council

From: Dana L. McDaniel, City Manager

Date: November 5, 2021

Initiated By: Megan O'Callaghan, Deputy City Manager/Chief Finance and Development Officer
Jennifer M. Rauch, AICP, Director of Planning
Jean-Ellen Willis, PE, Deputy Director of Transportation and Mobility
J.M. Rayburn, Planner I

Re: Mobility Study Update – Micro-mobility Demonstration Pilot, COTA Bus Shelter Program, DCRC Mobility Hub, and Speed Management

Summary

This memo provides an update on four mobility initiatives including the micro-mobility demonstration pilot, the COTA bus shelter program, the mobility hub at the Dublin Community Recreation Center, and speed management.

Mobility Update

Frantz Road Alternative Transportation Lane Study

The Frantz Road Alternative Transportation Lane Study, completed by American StructurePoint in early 2021, evaluated the feasibility of options for micro-mobility along this corridor. The full report is attached for reference. For this study, micro-mobility or alternative transportation vehicles are considered lightweight, single passenger vehicles powered by electricity. The study evaluated several options ranging from physical improvements, such as widening the roadway, sidewalk, or shared-use path to code revisions using the existing infrastructure.

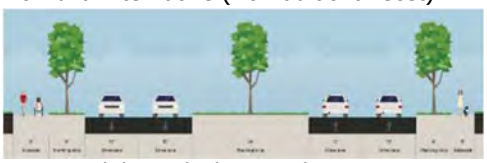
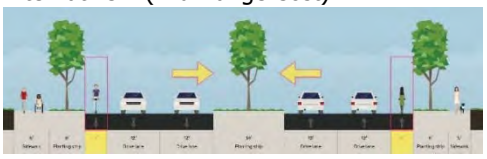
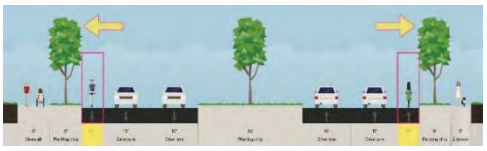
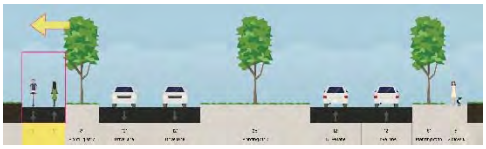
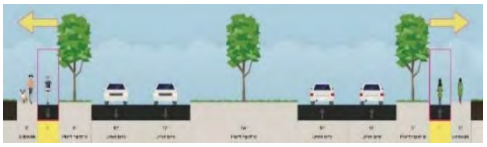
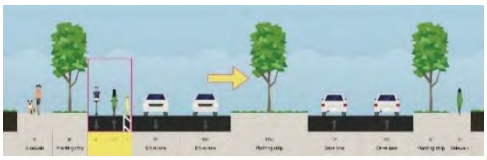
Figure 1: Map of Frantz Road Alternative Transportation Lane Study Area

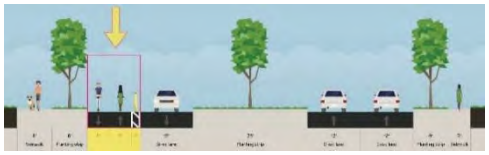
As part of this study, research was conducted with other cities for benchmarking. The following considerations were found in benchmark cities for micro-mobility:

- Same guidelines as bicycles
- Speeds are limited to 15 – 20 mph
- Permitted in streets, in bike lanes, and along shared use paths - generally not on sidewalks
- Independent facilities for micro-mobility vehicles are not common

Study alternatives were developed, including a "no-build" option, to determine how each might fit in the Frantz Road corridor and the impacts that would result from their implementation, as summarized on the next page.

Table 1: Frantz Road Alternative Transportation Lane Alt. Comparison

Alternative	Advantages	Disadvantages
No-Build Alternative (No Additional Cost)  Micro-mobility vehicles use the existing divided four-lane roadway or shared-use path or sidewalk.	Maintains landscaped median. No impact to right-of-way, utilities, traffic. No additional cost.	Micro-mobility vehicles mix with other travel types in the roadway, shared-use path, or sidewalk.
Alternative 1 (Mid-Range Cost)  Add alternative transportation lanes along both sides of roadway, by reducing the width of the landscaped median.	No impact to right-of-way, utilities. Space dedicated to micro-mobility. Pedestrians have access to both sides of roadway.	Significant project cost. Reduces the landscaped median, causing the loss of large trees. Micro-mobility vehicles immediately adjacent to higher speed travel lanes.
Alternative 2 (High Cost)  Add alternative transportation lanes along both sides of roadway, by reducing the tree lawn/relocating the sidewalks and paths.	Space dedicated to micro-mobility. Maintains landscaped median. Pedestrians have access to both sides of roadway.	Highest cost alternative. Significant impacts to right-of-way, drainage system, other utilities, and tree lawns/landscaping. Micro-mobility vehicles immediately adjacent to higher speed travel lanes.
Alternative 3 (Mid to Low-Range Cost)  Widen or construct a 10-ft shared use path on one side of the roadway to allow for micro-mobility vehicles.	Micro-mobility vehicles separated from vehicular traffic. Maintains landscaped median. Project cost is not as high as other alternatives.	Impacts to right-of-way and utilities on one side of the corridor. Pedestrians only have access to one side of the roadway.
Alternative 4 (Mid-Range Cost)  Widen or construct a 10-ft shared use path on both sides of the roadway to allow for micro-mobility vehicles.	Micro-mobility vehicles separated from vehicular traffic. Maintains landscaped median. Pedestrians have access to both sides of roadway.	Significant project cost. Impacts to right-of-way and utilities on both sides of the corridor.
Alternative 5 (Mid-Range Cost)  Add two-way alternative transportation lanes along one side of roadway, by widening the pavement to the inside.	No impact to right-of-way, utilities. Space dedicated to micro-mobility. Pedestrians have access to both sides of roadway.	Significant project cost. Reduces the landscaped median, causing the loss of large trees. This alternative was not advanced, due to safety concerns with contra-flow micro-mobility.

Alternative	Advantages	Disadvantages
Alternative 6 (Mid to Low-Range Cost)  Add two-way alternative transportation lanes along one side of roadway, by removing a travel lane.	No impact to right-of-way, utilities. Space dedicated to micro-mobility. Maintains landscaped median. Pedestrians have access to both sides of roadway Project cost is not as high as other alternatives.	Removes a travel lane. This alternative was not advanced, due to safety concerns from contra-flow micro-mobility and insufficient roadway capacity.

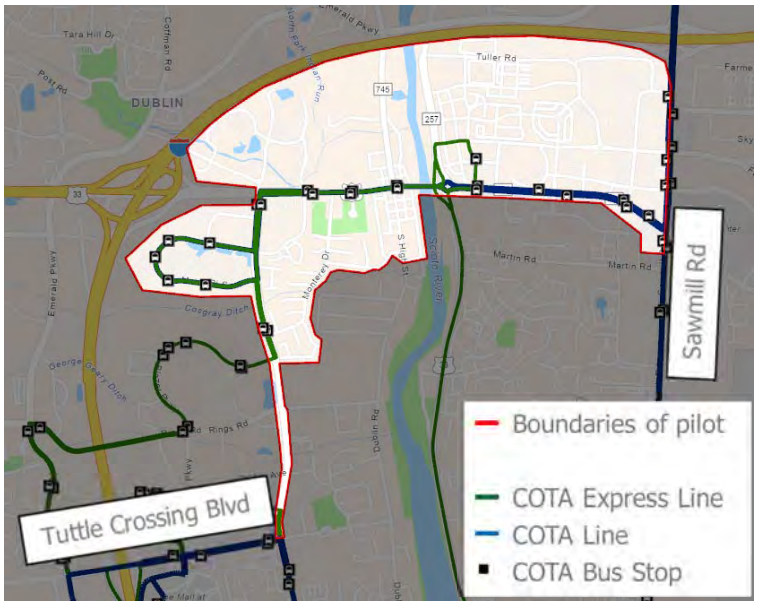
One factor that the study uncovered was the latent demand for micro-mobility transportation is unknown, due to the relatively low number of these vehicles in use throughout the City or in this corridor. Given the expenditures associated with any of the build options, and that the demand is unknown, the study recommended the "no-build" alternative combined with a suspension of certain code restrictions. For example, under the current Dublin Code, motorized micro-mobility vehicles, such as electric scooters, are not permitted on shared-use paths, sidewalks or roadways. The study also recommended that the City conduct a demonstration pilot to better understand the preferred operations and balance between these newer vehicles and more traditional transportation modes.

As the Frantz Road Alternative Transportation Lane Study was nearing completion, Bird approached the City of Dublin in November 2020 with an interest in deploying a fleet of electric scooters for rent. As with the Alternative Transportation Lane demonstration project, in order for Bird to operate electric-powered scooters in the City, the same sections of Dublin Code would have to be modified to allow micro-mobility vehicles to operate on our shared-use paths, sidewalks or roadways.

Micro-Mobility Demonstration Project

Given the recommendations of the Frantz Road Alternative Transportation Lane Study combined with the interest of Bird to operate in Dublin, staff proposes to merge the two into a single pilot project to be conducted in the Frantz Road and Bridge Park area, as shown in Figure 2 below.

Figure 2: Proposed Pilot Boundaries



This proposed pilot project is consistent with previous discussions with the Public Services Committee earlier this year when the topic of micro-mobility vehicles, and specifically Bird scooters operating in Dublin, were contemplated and received favorable feedback.

The pilot requires that certain code sections are suspended for a period of time, thereby temporarily allowing human- and electric-powered micro-mobility vehicles to operate on shared-use paths, sidewalks, and travel lanes for purposes of a demonstration pilot project. Staff proposes to permit the operation of the demonstration project for a one-year period to cover all weather conditions and seasons. Upon the conclusion of the 12-month period, staff will report back the results of the pilot, provide relevant data, and provide a recommendation to the Public Services Committee and City Council regarding next steps.

Demonstration Pilot - Proposed Code Section for Suspension

Staff has identified one section of the Dublin Code to suspend as part of the demonstration pilot.

- § 72.061 Driving upon sidewalks, bike paths, street lawns or other areas
  - *No person shall drive or operate any vehicle, other than a bicycle, upon a sidewalk or sidewalk area, or bike path, except upon a permanent or duly authorized temporary driveway*.

Demonstration Pilot - Operators

Staff researched micro-mobility programs in other U.S. cities and identified the Cities of Santa Monica, California, Gainesville, Florida, and Kansas City, Missouri as the best case studies to use to structure Dublin's demonstration pilot. Building from lessons learned from these cities, staff is proposing the following structure for the pilot.

Staff proposes three (3) micro-mobility operators to be included in the demonstration pilot. These include Bird (e-scooters), CoGo Bike Share, and TRIP e-Bike Share.

Figure 3: Photo of e-scooters parked in Downtown Columbus

Staff met with Bird on October 19, 2021 to discuss potential operations in Dublin as part of the micro-mobility demonstration pilot. Tools that Bird uses to encourage safe riding and parking include geo-fencing, Community Safety Zones, and in-app incentives. Geo-fences are used two ways by Bird: the first renders e-scooters inoperable outside the boundaries of an invisible geo-fence, and the second is the Community Safety Zones program, which creates a special geo-fence zone around high-pedestrian areas like schools, hospitals, and could be applied to the Dublin Link and landing plaza areas, that automatically forces Bird scooters to slow down to help keep all users safe. Bird scooters passing through a Community Safety Zone will automatically reduce their maximum allowable speed to 8 mph and trigger an in-app message explaining the reason for the deceleration. The areas are also clearly visible on the in-app Bird service map, allowing riders to plan their routes accordingly. At the May 3, 2021 Public Services Committee, Bird recommended parking locations can be tailored to Dublin's policies for micro-mobility parking. Acceptable parking locations can be highlighted in the Bird app with a photo for the rider to reference in addition to in-app incentives such as a credit. Finally, there is no

cost to launch Bird in Dublin as the e-scooters are dockless and do not require public investment to operate—only changes to the Dublin Code.

CoGo Bike Share is a public-private bike sharing system serving the Cities of Columbus, Upper Arlington, Bexley, and Grandview Heights, and continues to gain in popularity. While traditional CoGo bikes are parked in the docking stations, CoGo can identify public bike racks for users of e-bikes and use incentives such as a $1 credit to encourage acceptable parking practices. Dublin staff plans to complete site designs and construction of five (5) CoGo stations in Dublin in 2022 as reflected in the 2022-2026 Capital Improvements Program. Several of the Phase 1 stations identified are located within the demonstration pilot project area, such as: the Columbus Metropolitan Library Dublin Branch, North Market Bridge Park, Dale Drive COTA Park and Ride, Dublin Link East Plaza, and Frantz & Metro Place North.

TRIP e-Bike Share is a private bike share company based in Columbus, Ohio. TRIP's fleet of dockless e-bikes feature fat tires, dual-shock suspension, a 52-volt battery with an 80-100 mile range. The company is planning to launch the e-bike share in Columbus in early 2022. Dublin staff has been engaged in ongoing conversations with TRIP regarding a launch in Dublin, which is targeted for later in 2022 or early 2023.

Demonstration Pilot - Timeline

Staff is proposing a timeline divided into three (3) phases.

Phase 1 (November 2021 to April 2022)

- Review demonstration project with the Public Services Committee
- Finalize goals, scope, timeline and evaluation
- Create an engagement and communications plan to educate the public on boundaries of the pilot, expectations of drivers and micro-mobility users, and enforcement practices

Phase 2 (May 2022 to May 2023)

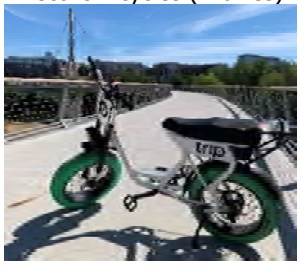
- Staff provides City Council demonstration project parameters and details and requests that Council suspend Code at the meeting scheduled for April 11, 2022
- Demonstration project commences in May, 2022 in recognition of National Bike Month
- Monitor and evaluate for 12 months
- Implement communications plan

Phase 3 (June 2023)

- Conclude demonstration pilot
- Report findings to the Public Services Committee and City Council and provide next steps

Demonstration Pilot - Targeted Vehicles

Human-powered or electric-powered micro-mobility vehicles are the focus of the pilot. These could include, but are not limited to:

Bicycles	Electric Bicycles (E-bikes)	Handbikes/Handcycles
		

Kick scooters	Electric scooters (E-scooters)	Segways
		

Skateboards	Wheelchairs & personal mobility devices	Golf carts but **not** on shared-use paths
		

Details of Demonstration Pilot – Education and Marketing Campaign

As part of the demonstration pilot, Transportation & Mobility staff will work with Communications & Public Information to develop a robust and coordinated education and marketing campaign. The campaign may include new signs, sidewalk decals, static and digital message boards, city press releases, community emails, social media notifications, and in-app messaging provided by each operator. The goal of the communications and marketing plan is to provide awareness and parameters of Dublin's micro-mobility demonstration pilot, including basic parking and riding rules. In addition to City efforts, operators will be required to engage the community and deliver safe riding education campaigns as part of the demonstration pilot. Engagement activities during the pilot could include tabling at events, helmet distribution, and ongoing education during supply rebalancing efforts.

Details of Demonstration Pilot – Data Collection

Staff will collect data from operators including the total number of rides, ridership peaks during the 12-month pilot, average trip time, average trip length, and the percentage of rides in Historic Dublin, Bridge Street District, and the Frantz Road Corridor. Staff will audit crash reports, publish a survey and use trail counters to gather additional data during the pilot.

Details of Demonstration Pilot – Costs

The demonstration pilot can be implemented at no additional cost to the City. As mentioned previously, Bird may launch in Dublin without funding from the City. The costs associated with CoGo bike share stations, Code modifications, and trail counting are already included in capital and operating budgets for 2022.

Details of Demonstration Pilot – Indicators of Success

Staff believes an expansion in micro-mobility options in the Dublin community can provide a potential first mile/last mile solution as well as advance the City Council's goal of being the most Connected Community. Indicators of success include the following.

- Feedback from the public indicating support
- Sufficient data to provide recommendations to City Council

Potential Next Steps Following a Successful Demonstration Pilot

Dublin Staff has identified additional sections of the Dublin Code that may need revised to better accommodate micro-mobility options but are not required to be suspended for the demonstration pilot. These include the following.

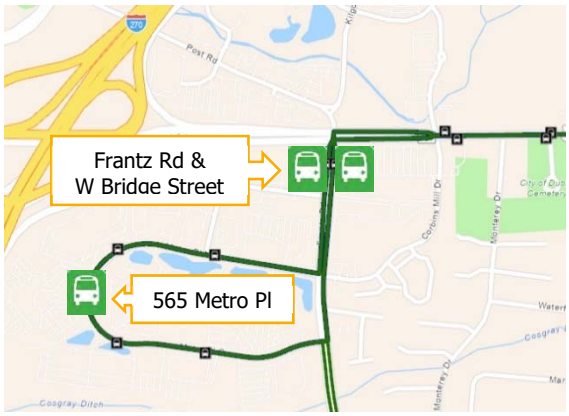
- § 72.003 Rules governing overtaking and passing of vehicles
  - Consider adding micro-mobility vehicles to allow operation in travel lanes
- § 75.01 Code application to bicycles
  - *A) The provisions of this Traffic Code that are applicable to bicycles and electric bicycles apply whenever a bicycle or electric bicycle is operated upon any street or upon any path set aside for the exclusive use of bicycles.*
- § 75.02 Rules for bicycles, motorcycles and snowmobiles
  - Consider adding micro-mobility language
- § 75.04 Riding bicycles and motorcycles abreast
  - Consider addressing micro-mobility vehicles
- § 75.06 Riding on roadway
  - *Every person operating a bicycle or motorized bicycle upon the roadway shall operate such vehicle within three feet of the right edge of the roadway.*
  - Consider updating language and incorporating micro-mobility vehicles
- § 75.07 Reckless operation
  - Consider addressing micro-mobility vehicles
- § 75.08 Parking of bicycle or motorized bicycle
  - *No person shall park a bicycle or motorized bicycle upon a sidewalk in such a manner so as to unduly interfere with pedestrian traffic or upon a roadway so as to unduly interfere with vehicular traffic*.
  - Consider addressing micro-mobility vehicles
- § 76.01 Prohibited standing or parking places
  - *No person shall stand or park a vehicle…Within 20 feet of a crosswalk at an intersection; or within one foot of another parked vehicle*.
  - Consider addressing micro-mobility vehicles
- § 76.13 Parking restrictions in residential districts
  - *No person who is the owner, agent, operator, or other person in charge of any commercial or recreational vehicle as defined herein may permit such vehicle to remain parked, standing, or abandoned upon any street in a residential district*.
- § 96.27 Vehicle regulations
  - *No person shall leave a vehicle in a park during the hours when a park is closed without having first obtained a permit from the City Manager or designee.*
  - Consider addressing micro-mobility vehicles in parks.

Discussion Topics

Is the Public Services Committee supportive of the micro-mobility demonstration pilot and what might success look like?

COTA Bus Shelter Program

Figure 4: Map of COTA bus stops identified for improvements



There are 45 COTA bus stops serving Dublin. A significant number of these lack base amenities, which likely dissuades potential riders from using transit and micro-transit options such as the Dublin Connector shuttle. The COTA bus shelter program would provide amenities such as shelters and street furniture, technology enabled and additional smart mobility features in order to increase access and use of transit. The first three (3) locations identified for improvements include 565 Metro Place, Frantz Road and W. Bridge Street (northbound), and Frantz Road and W. Bridge Street (southbound). All three (3) of these bus stops are serviced by Lines 33 and 73 (Rush Hour). Line 33 connects the Bridge Street District, MetroCenter, Carriage Place Shopping Center, Sawmill Plaza, and Graceland Shopping Center. The 73 is the rush hour express service from the Dale Drive Park & Ride to COTA's Downtown Columbus Transit Terminal. Of the 25 stops along this bus route, 18 are located within Dublin.

The bus stop locations at 565 Metro Place, Frantz Road and W. Bridge Street (northbound), and Frantz Road and W. Bridge Street (southbound) were selected for a variety of reasons. Each of these bus stops feature a green circular bus sign topper promoting the Dublin Connector. The Dublin Connector sign toppers were installed in 2019 at the COTA bus stops that connect with the shuttle with the highest workforce ridership at that time. Furthermore, outside of the Dale Drive Park & Ride, these bus stop locations are in the top 4 locations of highest average weekday ridership in Dublin. While Dublin Connector activity has changed during the COVID-19 pandemic, there remains a strong correlation between the COTA and Dublin Connector services at these bus stops and supports the selection of these locations.

Figure 5: Example of Enhanced Shelter: "Garden Stop" Lexington Kentucky

On May 3, 2021, Dublin staff met virtually with COTA staff to discuss a partnership for funding bus shelter improvements. COTA is supportive of a partnership and prefers a standard bus shelter design with the opportunity to incorporate placemaking components. COTA acknowledges that some transit stop locations present opportunities for public art, landscaping, or customized designs for amenities like shelters or benches. Where feasible, COTA is interested in partnering with communities to make special improvements to transit stops. However, Dublin will have to provide funding for the stations where ridership numbers do not currently meet COTA's criteria for enhanced stops. COTA prefers to own and maintain their stops, including bus shelters, regardless if they are a standard or enhanced design. If an improved stop is relocated, Dublin may be eligible for reimbursement. Further discussion with COTA is needed to finalize the terms of an agreement regarding bus shelter improvements.

Funding for COTA bus shelters is included in the 2022-2026 Capital Improvements Program to upgrade the three locations mentioned previously. Based on conversations with COTA, Dublin

enhanced transit stops are anticipated to cost approximately $55,000 each and are expected to include items such as an enhanced shelter, benches, trash cans, lighting, wi-fi, charging stations, wayfinding and smart signs.

Discussion Topic
What are the important design components relative to the bus shelters?

DCRC Mobility Hub Concept

Staff presented mobility hub concepts to the Public Services Committee on May 3, 2021 and June 15, 2021 and received favorable feedback from the Committee. AARP Ohio notified Dublin staff on August 16, 2021 that the City was selected for a state-level grant at the requested amount of $20,000. The grant will help fund the building of a mobility hub near the Senior Lounge at the Dublin Community Recreation Center (DCRC). Dublin City Council voted at its meeting on October 11, 2021, to accept the grant funding and authorize the City Manager to enter into an agreement with AARP Ohio. Accordingly, staff issued a Request for Quote on October 12, 2021 in order to hire an engineering consultant to provide a detailed design of the DCRC mobility hub in the form of construction drawings. The final design of the proposed DCRC mobility hub will be completed by March 2022 and construction is anticipated in late spring/summer 2022.

Next Steps for the DCRC Mobility Hub

Staff will select a consultant, develop design concepts, and identify costs associated with various elements of the mobility hub. Staff anticipates reporting back to the Public Services Committee for discussion and feedback in early 2022.

Speed Management

Staff will present on the topic of speed management at the November 9, 2021 meeting of the Community Services Advisory Commission (CSAC). Topics of discussion will include the history and a summary of the City's Traffic Calming Program with an emphasis on the roles and relationship between Engineering and the Police Department. Staff will also introduce the concept of Vision Zero and provide a general timeline of this topic moving forward.

Discussion Questions

1. Is the Public Services Committee supportive of the micro-mobility demonstration pilot and what does success look like?

2. What are the important design components relative to the bus shelters?

3. Other considerations.

Attachment

Frantz Road Alternative Transportation Lane Study

Feasibility Study

Frantz Road Alternative Transportation Lane

City of Dublin
Division of Engineering
6555 Shier Rings Road
Dublin, Ohio 43016

February 8, 2021

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Appendices

1.0 Executive Summary

1.1 Overall Summary and Recommendations

The purpose of this Feasibility Study is to determine the feasibility of adding an alternative transportation lane along the Frantz Road corridor between Tuttle Crossing Boulevard and W. Bridge Street. Alternatives were developed and compared to meet this goal and safely accommodate micro-mobility transportation vehicles. The information included in this study will be used to evaluate the feasibility of these alternatives and provide a basis for recommendations.

Based on current guidelines and regulations, class 1 and class 2 electric bicycles are permitted on roadways and shared use paths but not sidewalks within Dublin city limits. However, other alternative transportation vehicles like electric scooters are not permitted on roadways, shared use paths, or sidewalks within Dublin city limits, per an April 16, 2019 interview with ThisWeekNews.com where City of Dublin Assistant City Manager Michelle Crandall stated that scooters are not permitted on roadways or shared-use paths. Modifying this policy would be one of the first steps in making alternative transportation feasible within the study area. If micro-mobility transportation vehicles, such as electric scooters and electric bikes, are desired for transportation in Dublin, the City of Dublin should consider some sort of policy change to make this type of alternative transportation allowable within the City of Dublin, including along the Frantz Road corridor.

The following alternatives were considered to evaluate the feasibility of the alternative transportation lane.

A No-Build alternative.

Alternative 1, which would add new 5’ NB and SB alternative transportation lanes along the road on either side of roadway by widening to the inside.

Alternative 2, which would add new 5’ NB and SB alternative transportation lanes along the road on either side of roadway by widening to the outside.

Alternative 3, which would modify/replace the existing shared-use path and sidewalk along one side of the roadway to provide bidirectional alternative transportation traffic on a single path.

Alternative 4, which would modify/replace the existing shared-use path and sidewalk along both sides of the roadway to provide single direction alternative transportation traffic alongside pedestrian traffic.

Two additional alternatives were considered and not advanced further based on safety and/or traffic operation issues and deemed as non-feasible options. These issues will be discussed later in the study. They have been included in the study for comparison purposes.

Alternative 5, which would add a new 10’ bidirectional alternative transportation lane along one side of the roadway.

Alternative 6, which converts one lane of travel to a 12’ bidirectional alternative transportation lane.

The seven alternatives briefly described above are described in further detail in a later section of this study. Predicted safety benefits, drainage, utility, aesthetic, ease of construction, and right-of-way impacts, along with an opinion of probable construction costs for each alternative, will be discussed and used to compare and differentiate the alternatives. After a thorough analysis of each of the above alternatives, **we recommend the No-Build Alternative for the Frantz Road Corridor, with adjustments to City codes and regulations as the preferred alternative.** Prior to making formal code revisions, we recommend the city perform a demonstration project to evaluate the best way to allow alternative transportation vehicles, by code, on the existing infrastructure along city streets. Dublin City Council would need to suspend the applicable code requirements for certain paths for a certain period of time to perform this demonstration project. The results would be used to make recommendations for formal code revisions.

Following formal code changes, the city should reconsider the build alternatives if issues arise with alternative transportation vehicles utilizing the existing facilities. With the lack of user demand, the costs and impacts produced by the build alternatives are not beneficial at this time. Information obtained from the introduction of these vehicles to the existing infrastructure should be utilized to further evaluate Alternatives 1, 3, and 4 in order to select a preferred build alternative should the city reconsider the build alternatives in the future. Alternatives 5 and 6 should not be considered further due to safety concerns. Alternative 2 should not be considered further due to considerable corridor impacts and cost.

1.2 Cost Summary

The total project construction cost, including inflation and contingencies, was estimated for each of the alternatives considered, based on the preliminary layouts and design. Table 1.1 shows a comparison of the estimated opinion of probable construction for each alternative. Detailed estimates are included in **Appendix F**. Construction costs were estimated using historical bid data observed on recent City of Dublin projects and a 30-percent contingency. The 30-percent contingency is used to cover the potential discovery of additional costs as the alternative would be further developed and more detailed information is obtained. The estimate that will be provided during final design will have zero-percent contingency, since all items will be accounted for at that time. Item unit costs are shown in year 2020 dollars.

Table 1.1 – Estimated Opinion of Probable Cost

Alternative	Description of Alternative	Estimated Opinion of Probable Cost	Rating
No Build	No Build	None	
1	Alternative transportation lanes with widening into median	$1,950,000	
2	Alternative transportation lanes with widening to outside	$5,380,000	
3	Dedicated bidirectional alternative transportation path on one side of roadway	$690,000	
4	Shared paths on both sides of roadway	$1,300,000	
5	*Bidirectional alternative transportation lane widening into median*	*Not Calculated*	
6	*Convert existing travel lane into bidirectional alternative transportation lane*	*Not Calculated*	

1.3 Summary Alternative Comparison Matrix

Table 1.2 provides a side-by-side summary comparison of the proposed alternatives based upon the criteria identified as part of the project's study approach. See **Appendix C** for a detailed Alternative Comparison Matrix which contains a summary of criteria notes for each alternative.

Table 1.2 – Summary Alternative Comparison Matrix

Evaluation Criteria	No Build	Alt 1	Alt 2	Alt 3	Alt 4	*Alt 5*	*Alt 6*
Safety							
Traffic Capacity Impacts							
Integration with other Transportation Modes							
Drainage Impacts							
Utility Impacts							
Aesthetic/ Corridor Impacts							
Ease of Construction/ Maintenance of Traffic							
Right-of-Way Impacts							
Construction Cost							

Legend: Very Good: Good: Fair: Poor:

2.0 Introduction/Background

2.1 Study Goals

The purpose of this study is to determine the feasibility of an alternative transportation lane for the Frantz Road corridor between Tuttle Crossing Boulevard and W. Bridge Street. This lane is proposed to accommodate micro-mobility transportation vehicles, such as electric scooters and other single rider electric vehicles. Due to the anticipated rise in micro-mobility vehicle usage, it is critical to study best ways to safely accommodate these vehicles within the roadway network. This study will evaluate and categorize the various types of alternative transportation lanes along with the feasibility of each. The goal of this study will be to identify and develop project alternatives for an alternative transportation lane along this street, while also minimizing the acquisition of additional right-of-way, impacts existing utilities, and effects on corridor aesthetics.

2.2 Study Area

The study area is located in Dublin, Ohio. The "Frantz Road corridor" mentioned throughout the study refers to a section of Frantz Road that commences at the Tuttle Crossing Boulevard intersection to the south and terminates at the W. Bridge Street intersection to the north. This corridor was studied as an isolated location. Tie-ins north and south of the corridor to existing facilities was not considered as part of the study. Frantz Road is a major artery and gateway into the Dublin Corporate Area, which houses Dublin's legacy office complexes. The existing roadway corridor is a divided four-lane urban arterial, with a landscaped median for most of its length. A shared-use path runs along one side of the roadway and a sidewalk on the other, north of Bradenton Avenue, and sidewalks run along both sides of the road south of Bradenton Avenue. A map showing the study area can be found in **Appendix A**. A map showing locations of existing traffic signals, bus stops, shared use paths, and the boundaries of the Dublin Corporate Area can be found in **Appendix B**.

2.3 Community Benchmarking

The presence and lessons-learned of existing alternative transportation lanes in other communities is an important factor in the design and selection of an alternative transportation lane alternative for the Frantz Road corridor. As part of this study, interviews and/or research was conducted with other sample communities. These communities include Carmel, IN, Ft. Wayne, IN, Kansas City, MO, and Atlanta, GA. These communities were selected due to their recent experience introducing alternative transportation vehicles to their transportation network and work associated with public input, city code changes, and guidance related to the growing use of alternative transportation vehicles within their communities. Below is a bullet point list of key findings obtained through the interview/research process. Detailed interview/research notes can be found in **Appendix G**.

Any rules/regulations for alternative transportation vehicles?

- *Generally follow the same rules/regulations of foot-powered bicycles. (Kansas City)*
- *Scooters are governed to a speed of 15 mph. (Carmel)*
- *Vehicle speeds limited to 20 mph. Power output limited to no more than 1,000 watts. (Kansas City)*
- *Vehicle speeds limited to 15 mph. App-based vehicles governed to 15 mph. (Atlanta)*
- *Vehicle speeds limited to 15 mph and enforced by bike patrol. (Ft. Wayne)*
- *Nighttime (9:00pm-4:00am) restrictions on app-based vehicle rentals. (Atlanta)*

Where are alternative transportation vehicles permitted?

- *Vehicles are permitted in streets, along multi-use paths and greenways. (Carmel)*
- *Vehicles permitted on sidewalks and multi-use paths, but not in the streets since they do not have a combustion engine. (Ft. Wayne)*
- *People should ride in streets or in bike lane where available. (Kansas City)*
- *No riding on sidewalks. (Kansas City, Atlanta)*
- *Ride where bikes are allowed, in travel lanes, bike paths, and along shared used pathways. (Atlanta)*

Are new facilities being implemented?

- *Pilot program was introduced to the existing infrastructure without making improvements first. The pilot program is being used to gauge how motorized units best fit into the existing transportation system. (Kansas City)*
- *Not currently. (Carmel)*

Baseline alternative transportation vehicle criteria from Community Benchmarking:

- Generally follows the same guidelines as bicycles.
- Generally permitted in streets, in bike lanes if present, and along shared use paths. Not generally allow on sidewalks.
- Speeds are generally limited to 15 mph.
- Generally introduced to existing infrastructure and independent facilities strictly for alternative transportation vehicles are not common.

2.4 Alternative Transportation Vehicle Types and History

Alternative transportation, also known as micro-mobility, generally refers to lightweight, single passenger vehicles powered by electricity as opposed to combustion engines. These vehicles typically have limited speeds and ranges due to their type of power. In most research, the term micro-mobility includes human-powered vehicles such as bicycles and scooters. This study will separate human-powered units, as they are already accommodated and present along the Frantz Road corridor. Alternative transportation vehicles studied as part of this report will focus on electric powered vehicles such as e-bikes and e-scooters.

The use of alternative transportation has exponentially increased over the past couple of years. Much of this increase can be contributed to population growth rates within urban areas. In these locations, alternative transportation vehicles have the ability to better connect people to public transit and replace cars when

making short trips. Use of electric powered vehicles also have the ability to reduce gas emissions which has become an important topic more recently. In addition to personally owned electric vehicles, private investors have capitalized on this increased demand by introducing ride share programs within urbanized areas. Ride share programs allow users the ability to rent e-bikes or e-scooters using phone apps and typically pay a per-mile fee. These programs have been introduced to cities by companies such as Lime, Bird, Zagster, Lyft, Trip Bikes, etc. At this time, there are currently no electric based ride share programs within the City of Dublin; however, they are present in the nearby cities of Columbus and Upper Arlington. In late 2018, the City of Dublin worked with Lime to introduce a bike share pilot program within their city limits. As a result of data obtained during this pilot program, Lime determined that suburban environments are not fitting well with their current business model. The recent redevelopment of the Bridge Street District, approximately 0.5 miles east of the northern limits of the "Frantz Road Corridor", will likely lead to increased demand for alternative transportation with increases in close proximity destinations such as parks, restaurants, bars, event centers, etc.

2.5 Alternative Transportation Lane Types

As alternative transportation vehicles have been introduced to communities, safety related questions arise. Most communities have introduced these vehicles to the existing infrastructure without making additional changes. Sometimes city codes are updated to provide rules and regulations for these vehicles. The most common update is to define alternative transportation vehicles in the same way as human-powered bicycles. This is reasonable due to the similarity in size and speeds, when restricted to 15-20mph. Under this code update, alternative transportation would utilize the same facilities as bicycles such as bike lanes, shared used paths, and within travel lanes if separate facilities are not available, as well as sidewalks. Proper separation of vehicle types is an important safety factor that must be considered when selecting an alternative transportation facility type. Similar to the importance of separating pedestrians from roadway traffic, it is beneficial to separate limited speed alternative transportation from very-low speed pedestrians and high-speed roadway traffic.

Below is a list of alternative transportation facility types along with a bullet point list of advantages and disadvantages for each. A combination of these facility types is included in project alternatives and compared as part of this study.

Raised "Cycle Track" (Alternative Transportation/Bicycle): A separated path provided behind the roadway curb that is designated to only be used by medium-speed users such as alternative transportation and bicycles. A separate sidewalk, typically separated from the alternative transportation lane using a tree lawn, a curb, or a different texture of pavement, is provided for low-speed users such as pedestrians or wheelchair users.

- *Pro: Vehicle types are completely separated by type. Separation enhances safety.*
- *Con: Additional right-of-way/cost required to provide independent lanes.*
- *Con: Additional points of interaction required. (e.g. Crosswalks, driveway crossings)*

Shared-use Path (Alternative Transportation/Bicycle/Pedestrian): A single path provided behind the roadway curb that is used by both medium-speed and low-speed users. Speed types could be divided on the path through signs, pavement markings, or different material type.

- *Pro: Reduced path space needed compared to isolated lane.*
- *Pro: Merged, single crossing points at intersections and driveways.*
- *Con: Conflict points possible between path users of differing speeds, such as pedestrians and bicycles/alternative transportation vehicles, if not properly divided.*
- *Con: May require additional right-of-way and use of green space.*

Conventional or Protected Alternative Transportation/Bicycle Lane along Roadway: A street-level lane in front of the curb and adjacent to the travel way is provided for medium-speed users. Conventional lanes are separated from higher-speed traffic using pavement markings only while protected lanes offer physical protection, often with bounce back delineators such as Qwick-Kurb.

- *Pro: Minimal right-of-way required.*
- *Pro: If provided on both sides of the roadway, directional traffic can be separated.*
- *Pro: Vehicles would flow through intersections along with adjacent roadway traffic.*
- *Con: Close proximately to high-speed vehicles decreases user comfort level compared to a physically separated facility.*
- *Con: Maintenance and aesthetic issues if bounce back delineators used.*

2.6 Study Approach

The primary focus of this study is to determine the feasibility of an alternative transportation lane along the Frantz Road corridor and meet the study goals described in Section 2.1. The following sections of this evaluation will provide a description of alternatives considered for comparison.

Existing and projected traffic were analyzed to determine vehicular travel lane needs based on available capacity. Following preliminary design of each alternative, impacts and costs were identified to quantify adverse effects caused by the proposed improvements. A matrix was prepared summarizing how each alternative compares against one another to help identify a preferred alternative.

3.0 Alternatives

3.1 Alternatives

Several alternatives were considered before narrowing them down to the alternatives described below. The following alternatives were selected for evaluation following preliminary design and communication with the City of Dublin. Typical sections and plan views for these alternatives can be found in **Appendix D and E**.

These alternatives were developed to consider the different types of Alternative Transportation Lanes described in Section 2.5. Alternatives 1 and 2 incorporate conventional alternative transportation/bicycle lanes, Alternative 3 incorporates a shared use path, Alternative 4 incorporates a raised “cycle track,” and Alternatives 5 and 6 incorporate a protected bidirectional alternative transportation/bicycle lane. These

different alternatives allow for the examination of how the different types of dedicated alternative transportation/bicycle infrastructure could be added to the Frantz Road corridor and the impacts that would result from their implementation.

No-Build Alternative

Based on current guidelines and regulations, class 1 and class 2 electric bicycles are permitted on roadways and shared use paths but not sidewalks within Dublin city limits. Other alternative transportation vehicles like electric scooters are not permitted on roadways, shared use paths, or sidewalks within Dublin city limits. In the no-build alternative, these vehicles will not be allowed to operate along the Frantz Road corridor unless code changes are enacted. Based on community benchmarking research, most communities allow alternative transportation vehicles to act in the same way as bicycles. These vehicles are generally prohibited from sidewalks; however, they are allowed to use shared-use paths and vehicular travel lanes as a bicycle would. Some cities have used language restricting vehicles that may be used on sidewalks to include only those that are human powered (e.g. “No person shall drive or operate any vehicle other than by human power upon a sidewalk”), which would permit bicycles but not electric-powered alternative transportation vehicles.

Prior to enacting formal code changes, the city could consider a demonstration project that would permit alternative transportation vehicles to use the city right of way. Dublin City Council would need to suspend the applicable code requirements to permit alternative transportation vehicles on certain paths and for a certain amount of time to collect observations on how these vehicles are used within the City of Dublin and guide future changes to the city code. Given that the City of Dublin currently allows bicycles to be used on sidewalks, the demonstration project should consider where users of these vehicles prefer to use these vehicles (e.g. in the travel lane, on shared use paths, or on sidewalks) and identify any issues that arise from their use. As a result of this demonstration project, recommendations would be made for formal changes to city code that would allow alternative transportation vehicles to utilize the existing infrastructure along the Frantz Road corridor.

Alternative 1

In Alternative 1, new 5’ NB and SB alternative transportation lanes along the road on both sides of roadway is proposed by widening the pavement into the existing median. The existing typical section of Frantz Road features a landscaped median along most of the corridor. The width of this median is 22’ south of Rings Road and 26’ north of Rings Road. In this alternative, the additional 10’ required for the alternative transportation lanes can be achieved by widening Frantz Road to the inside, reducing the width of the landscaped median. In some locations where there are left turn lanes, the median would be completely removed to provide the necessary width for the left turn lane and the alternative transportation lanes. These locations can be seen in the plan views in Appendix E. This alternative maintains the existing outside curb and gutter along with existing facilities behind the curb and gutter.

Alternative 2

In Alternative 2, new 5’ NB and SB alternative transportation lanes along the road on both sides of roadway is proposed by widening to the outside of the existing pavement. The proposed intent of this alternative mimics Alternative 1 with the exception of the outside widening. In this alternative, the inside landscaped

median, including straight curb, will be undisturbed. The additional 10’ required for the alternative transportation lanes will be achieved by widening Frantz Road to the outside, replacing curb and gutter, drainage structures, and existing facilities behind the curb and gutter disturbed by the widening.

Muirfield Drive between Moors Place and Glick Road features a bike lane along the roadway similar to what is proposed in Alternatives 1 and 2. A scooter symbol pavement marking would be included with the bicycle symbol.

Alternative 3

In Alternative 3, a new 10’ bidirectional alternative transportation path is proposed along one side of the roadway by modifying/replacing the existing shared-use path or sidewalk. This alternative will avoid any impact or disturbance to the existing travel lanes outside of what is required to tie the new path into existing intersections. This alternative will require users of the alternative transportation path to cross Frantz Road at Rings Road, as the path is proposed on the west side of Frantz Road north of Rings Road and on the east side of Frantz Road south of Rings Road.

Example sign that could be used to direct pedestrians to cross to the other side of Frantz Rd. Sign would be installed at signalized intersections next to crosswalks.

Alternative transportation vehicles and bicycles, due to similar anticipated traveling speeds, will share the new bidirectional path. Pedestrians will be encouraged to use the existing sidewalk along the opposite side of the roadway. This separation of users could best be accomplished through signs at each intersection such as “Pedestrians Cross Frantz Road.” In addition to a centerline pavement marking to delineate bidirectional traffic, bicycle and scooter symbols and arrows would be added near intersections for guidance. These initiatives should reduce the number of conflicts between pedestrians, bicycles, and alternative transportation vehicles.

However, not providing a dedicated walkway for pedestrians adjacent to the bidirectional alternative transportation path while attempting to prioritize alternative transportation vehicles and bicycles along that path could create logistical challenges and an uninviting environment for pedestrians. Due to the various businesses and residences as well as COTA bus stops located along both sides of the Frantz Road corridor, pedestrians need to have access to both sides of the roadway.

Intersection of Dublin Road and N. Riverview Street. Pedestrians can use the shared use path on the one side of the street or the sidewalk on the other. Additional signs to encourage pedestrians to use the sidewalk would be added along Frantz Road.

Alternative 4

In Alternative 4, two new 10' shared transportation paths are proposed along both sides of the roadway by modifying/replacing the existing shared-use path and/or sidewalk. Similar to alternative 3, this alternative will avoid any impact or disturbance to the existing travel lanes outside of what is required to tie the new path into existing intersections. Alternative transportation vehicles and bicycles will utilize the half of the path closer to the roadway while pedestrians will use the other half of the path, closer to development, so that pedestrians can access those destinations without crossing alternative transportation and bicycle traffic. The paths would carry one-way alternative transportation and bicycle traffic on either side of the roadway while pedestrians could travel in both directions.

The separation of mobility types and direction of travel could be accomplished in a variety of ways. At the least, proposed centerline striping, bike, scooter, and pedestrian symbols, and signs would be installed to direct users to which side of the path is designed for them and would direct alternative transportation and bicycle users to path on the correct side of the roadway.

Another option would be using separate surface materials such as concrete for the pedestrian side and asphalt for the bicycle/alternative transportation side. Recently, an application similar to this was installed along the north side of Rock Cress Parkway and along the south side of John Shields Parkway, both in Dublin. At these locations the pedestrian side of the path is brick and the bicycle side is asphalt. Granite bands are used to separate the two sections as opposed to striping. (Note that, in these locations, the pedestrian walkway is located closer to the street and the bicycle/asphalt transportation path is located further from the street, which is the reverse of what is proposed in this alternative.) Meanwhile, Bridge Park Avenue, also in Dublin, uses brick pavers for both the bicycle and pedestrian sides, with a line of pavers between the two sides and a bicycle symbol at intersections to indicate which side is for bicycles. Bridge Park Avenue has the same arrangement proposed in this alternative, with the bicycle path located closer to the street.

Intersection of Dublin Road and Rock Cress Parkway showing the different pavement surface materials used to help with the separation of user types on shared-use path, similar to what is proposed in Alternative 4.

Signage along the pathway can also be provided to alert users to stay on the designated section of the path.

Alternative 5

In Alternative 5, a 10’ wide, a street-level bidirectional alternative transportation lane along one side of the roadway is proposed. Similar to Alternative 1, the pavement widening would be achieved by widening Frantz Road to the inside, reducing the width of the existing landscaped median and maintaining the existing outside curb and gutter.

The bidirectional alternative transportation lane would be split into a 4’ NB and 4’ SB lane with a 2’ buffer between the adjacent vehicular traffic. Barrier separation is recommended as a safety measure to separate the alternative transportation vehicles from adjacent motorized traffic. As further described in Section 6.0, this alternative would likely have safety concerns at intersections and driveways with alternative transportation vehicles approaching from the opposite direction as the near side traffic flow. This also includes potential conflicts with turning vehicles crossing over the alternative transportation lanes. This introduces safety concerns compared to Alternative 3, where bidirectional alternative transportation and bicycle traffic would use a path behind the curb, because drivers are more accustomed to encountering bicyclists and pedestrians coming from either direction in the existing crosswalks along the corridor than in a bidirectional lane adjacent to vehicular traffic. Due to these safety concerns compared with the other alternatives this alternative was not advanced for further consideration.

Summit Street in the City of Columbus. An example of what is proposed in Alternative 5, with barrier separation. This location features a high volume of bicycle traffic and one-way vehicle traffic.

Alternative 6

In Alternative 6, one travel lane, either northbound or southbound would be closed to traffic and converted to be used for alternative transportation. The width of the existing travel lane would be ample enough to provide two bidirectional lanes along with space for barrier separation. This conversion could be accomplished within the existing roadway width with minimal impact to adjacent facilities. This alternative would have a similar configuration as Alternative 5; however, a reduction in impacts to utilities, drainage, and right-of-way are anticipating by utilizing the existing facilities. Based on traffic capacity analysis, as detailed below and in **Appendix H**, a reduction in travel lanes would have significant impacts on vehicle travel delay. Additional congestion in the corridor roadway could lead to increased rear-end and angle collisions due to unexpected stops and greater risk taking from delay. As a result, along with the safety concerns discussed in Alternative 5, this alternative was not advanced for further consideration.

4.0 Traffic Analysis

A traffic analysis was performed to evaluate the Existing Year 2020 and Design Year 2040 traffic operations of the existing intersections along the study corridor with the existing lane configurations. A traffic analysis was also performed in order to determine if the existing number of travel lanes could be reduced to accommodate an alternative transportation lane. The following sections describe the methodology used to develop traffic volume projections and perform capacity analysis at the study intersections.

4.1 Traffic Volume Projections

Turning movement counts were collected at seven (7) intersections on Frantz Road, and additional traffic data was obtained from a recent traffic study for three (3) other intersections on Frantz Road. The traffic volumes were summarized for the AM and PM peak hours at all intersections, in addition to a midday (MD) peak at select locations. The data collection was utilized to develop traffic volume projections for an Existing

Year 2020 and Design Year 2040. Traffic projections provided within the report are considered preliminary and meet the requirements of the study. The traffic projections were reviewed by the City of Dublin.

Future growth between the years 2020 and 2040 was determined based on a comparison of travel demand model outputs provided by the City of Dublin for the respective analysis years. Growth rates were estimated for each leg at all study intersections. The annual linear growth rates used for this study are provided in **Appendix H**.

4.2 Capacity Analysis

Capacity analysis was performed at each study intersection for the Opening Year 2020 and Design Year 2040 No-Build conditions. The No-Build analysis of the existing conditions evaluated the study intersections with existing lane configurations, traffic control types, and signal timings. No-Build analysis for the Design Year 2040 evaluated the study intersections with the future projected growth in traffic volumes.

The capacity analysis for the No-Build scenarios is based on the methodology outlined in *the Highway Capacity Manual (HCM).* The standard parameter used to evaluate traffic operating conditions is referred to as Level-of-Service (LOS). The operating conditions of intersections were considered to be acceptable if found to operate at LOS D or better for the overall intersection and for each approach. The 95th percentile queue lengths on each approach were considered to be unacceptable if shown to have an impact on adjacent intersections, i.e. queue spillback that extends beyond the upstream intersection. A volume-to-capacity (v/c) ratio of 1.0 or higher was considered unacceptable, as this indicates that an approach has inadequate capacity to handle the demand volume.

Alternatives 1 through 5 generally do not impact the overall capacity along the Frantz Road corridor, as each of those proposed alternative transportation lane concepts maintain the existing number of travel lanes and turn lanes at each of the study intersections. With the addition of an alternative transportation lane, there would potentially be minor impacts to intersection capacity due to slight increases in clearance intervals (all red clearance and/or pedestrian walk intervals); however, these would be minimal increases of less than 1.0-sec per movement. These increases to the clearance intervals are negligible with regard to the overall performance of an intersection; therefore, additional capacity analysis for those alternatives was not necessary. Additionally, because these alternatives do not impact the capacity along the corridor, no intersection improvements were considered to be required.

Alternative 6, which removes a travel lane in lieu of an alternative transportation lane, does impact capacity along the corridor. A capacity analysis was performed for the Design Year 2040 traffic volumes to account for both of the following options: northbound reduced to a single travel lane and southbound reduced to a single travel lane. The capacity analysis results for the single travel lane alternatives showed that multiple intersections along the study corridor will result in LOS F operations. Several intersections were shown to operate with significant average vehicle delays (> 1.0 minute) and queue lengths on Frantz Road that would spill back into/beyond adjacent intersections. Additionally, v/c ratios at multiple intersections exceeded the 1.0 criteria threshold. Operating conditions such as this lead to heavy congestion along the corridor and can be highly detrimental to safety along the corridor as more crashes are likely to occur. Providing only one travel lane as an alternative is not considered to be feasible from a capacity standpoint.

To facilitate intersection analyses, the computer software Synchro 9.0 (implementing HCM 6 methodologies) was used for signalized and stop-controlled intersections. Tables summarizing the capacity analysis results at all study intersections for the No-Build scenarios and for the Alternative 6 Build scenario are provided in **Appendix H**. The Synchro outputs are also provided in **Appendix H**. Table 4.1 includes a summary of the traffic capacity impacts of the alternatives.

Table 4.1 – Traffic Capacity Impacts Summary

Alternative	Impact Description	Rating
No Build, 1, 2, 3, 4, and 5	Do not impact roadway capacity.	●
6	*Removal of a single travel lane in one direction.*	○

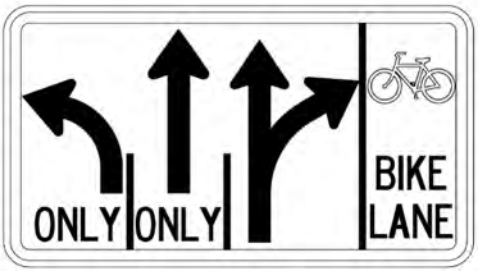
4.3 Intersection Control Considerations

All alternatives require additional considerations for intersection control in order to accommodate the proposed configuration of the respective alternative transportation lane concepts.

Alternatives 1 and 2

In Alternatives 1 and 2, users of the NB and SB alternative transportation lanes on either side of the roadway would be able to travel with the flow of mainline traffic along Frantz Road. At the signalized intersections, the existing traffic signal heads would also be sufficient for the alternative transportation lane users. However, additional signs should be considered to warn drivers to yield to pedestrians and e-mobility users at potential turning conflicts. Signs such as the modified R10-15 sign (see next page) could be mounted on the mast arms to alert turning drivers to yield to pedestrians, bicyclists, and e-mobility users. Modifications to the lane control signs approaching an intersection would also be required to account for the dedicated alternative transportation lane. These signs would replace the existing intersection lane control signs.

Modified R10-15 sign instructing drivers to yield to bicyclists and pedestrians when turning at intersections. Typically the sign would be mounted on the traffic signal mast arm at signalized intersections.



Modified intersection lane control sign indicating the presence of a bike lane.

Alternative 3

In Alternative 3, users of the bidirectional alternative transportation path would be separated from the mainline travel lanes. At the signalized intersections, either dedicated alternative transportation path signal heads (for both directions) or signs instructing alternative transportation and bicycle users to follow the pedestrian signal would be needed. All of the signals along Frantz Road operate with recall on for the NB and SB directions; therefore, the alternative transportation path signal heads would be able to operate with green/yellow/red intervals concurrent to the mainline flow, and detection would not be necessary. Additional signs should be provided at the signalized intersections to warn drivers to yield to e-mobility users at potential turning conflicts.

For the instances where a user of the alternative transportation path would turn onto a side-street, the e-mobility user must utilize the pedestrian crossings and would behave similarly to a pedestrian.

Where the alternative transportation path crosses from the east side of Frantz Road to the west side of Frantz Road at Rings Road, additional signs would need to be provided to direct bicycle and e-mobility users to cross. These signs could use bicycle and e-scooter symbols with arrows to guide users through the intersections. The signs should be placed near the crosswalks that bicycle and e-mobility users will use to cross Frantz Road.

R9-5 sign instructs bicycle users to follow pedestrian signal indications. When used, this sign is typically placed near the pedestrian signal head.

Example sign that could be used to direct bicyclists and e-mobility users to cross Frantz Rd at the intersection of Rings Rd, where the path cross from the east side to the west side of Frantz Rd in Alternative 3.

Typical bike signal with bike-symbol lenses and accompanying bike signal sign. When used, bike signals should be placed so that they are clearly visible to oncoming bicycles. Near-sided bicycle signals can also be provided to supplement far-sided signals for increased visibility.

Alternative 4

In Alternative 4, users of the two shared transportation paths along both sides of the roadway would experience similar operations at signalized intersections as compared to Alternatives 1 and 2 except the alternative transportation path is separated from the roadway. Dedicated signal heads, or enhanced signalized pedestrian crossings, should be provided for the shared transportation paths which can run concurrently with the respective NB and SB thru phases on Frantz Road. Additional signs should be provided to warn drivers to yield to shared use path users at potential turning conflicts (see modified R10-15 sign on page 14). These signs are typically mounted on the traffic signal mast arms at signalized intersections and can also be mounted on posts on the side of the road at unsignalized intersections.

Alternatives 5 and 6

In Alternatives 5 and 6, users of the bidirectional alternative transportation lane would be adjacent to motor vehicle traffic. At a minimum, additional signal heads would be required for the contraflow users of the bidirectional alternative transportation lane. Additional signs should also be provided at the signalized intersections to warn drivers to yield to e-mobility users at potential turning conflicts (see modified R10-15 sign on page 14).

5.0 Roadway Assessment

Existing roadway limits and property lines were obtained from survey data conducted as part of a prior project within the study area, Frantz Road Streetscape Improvements (18-010-CIP). Design criteria for Frantz Road was developed based on existing characteristics of the roadways, City of Dublin standard drawings, and standards outlined in ODOT's *Location and Design Manual, Volume 1.* This includes establishing the following conditions for each alternative: Minimum 11' through lanes and 11' turn lanes (with 10' turn lanes in limited locations due to limited existing pavement width), 2' curb and gutter, minimum 8' shared use path, minimum 4' sidewalk (with 5' sidewalk in the commercial areas at the far north and south ends of the corridor, matching existing), and standard 8' tree lawns where feasible. Frantz Road is a minor arterial with a posted speed of 35 mph.

Based on community benchmarking and research of alternative transportation vehicles, the design of facilities necessary for these vehicles should mimic facilities designed for bicycles. The design criteria described below, and typical sections as part of **Appendix D**, for the alternative transportation lane and/or path is based on guidelines and standards stated within the *AASHTO Guide for the Development of Bicycle Facilities – 4th Edition*.

The standard provided in Section 4.6.4 of the *AASHTO Guide* minimum bike lane width is 5' from the face of curb to the edge line; however, in locations where a 2' wide gutter is used, the preferred bike lane width is 6' inclusive of the gutter. The proposed alternatives feature a more conservative 5' from edge of pavement to edge line. Minimum width for a shared use path shall be 10' with 8' allowable for short distances with physical constraints. Alternatives 3 and 4 feature a 10' path that will be striped down the middle to help separate user types or direction of travel.

The idea of adding a vertical barrier to separate an alternative transportation lane from adjacent travel lanes was considered in the development of the proposed alternatives. This was considered as a way of improving safety and minimizing conflict between vehicles. With regard to conventional bike lanes, Section 4.7.1 of the *AASHTO Guide* states *"Raised pavement markers, curbs, posts, or barriers should not be used to separate bike lanes from adjacent travel lanes. Raised devices are difficult for bicyclists to traverse because they are fixed to the pavement surface immediately adjacent to the travel path of the bicyclist. In addition, raised devices may discourage or prevent right-turning motorists from merging into the bike lane before turning. Raised devices can also make it more difficult to maintain the bike lane."* **Alternatives 1 and 2** that propose an alternative transportation lane will not utilize barrier separation and will be divided from adjacent travel lanes using an edge line only.

In the years since the publication of the 4th Edition of the AASHTO Guide, additional publications from FHWA (Federal Highway Administration), NACTO (National Association of City Transportation Officials), and other agencies have provided guidance on the development of *protected* or *separated* bike facilities, which are not included in the *AASHTO Guide*. This includes bikeway facilities such as cycle tracks, protected bike lanes, and bidirectional bike lanes. These types of facilities can be provided within the roadway footprint (in front of the curb) but require physical separation from motor vehicle traffic. **Alternatives 5 and 6**, which provide a bidirectional bike lane in front of the curb, would thus benefit from including barrier separation because the alternative transportation lane would have bidirectional traffic and thus would need to be further protected from motor vehicle users compared to a conventional bike lane that travels in the same direction as motor vehicle traffic. Barrier separation, such as Qwick Kurb with vertical markers, would be an important safety enhancement.

In Alternatives 2, roadway widening would result in modifications to the existing curb line along Frantz Road. This would require the reconstruction of radius returns at each of the intersections and corresponding reconstruction of the curb ramps at those intersections. In Alternatives 3 and 4, a new 10' path replaces either the existing shared use path or existing sidewalk on one or both sides of the street. At these locations, the existing curb ramps and crosswalks at intersections would have to be modified to accommodate the path width.

6.0 Safety Assessment

Safety is an important factor in the development and selection of the proposed alternatives. Safety is also a significant factor in the comparison and selection of a preferred alternative and has a major factor in public perception of the success of an implemented alternative. Safety must be evaluated for every affected user type, including alternative transportation vehicles, bicycles, pedestrians, and roadway traffic. Although difficult to measure during the planning stage, anticipated safety benefits and/or conflicts have been evaluated and described below for each alternative.

The **No Build Alternative** would maintain the existing shared use path on the west side of the roadway north of Rings Road and sidewalk throughout the rest of the corridor. With no changes to city code, class 1 and class 2 electric bikes would be allowed to use the shared use path and travel lanes while other alternative transportation vehicles such as electric scooters would remain unable to be used in the corridor. If city code is changed to allow alternative transportation vehicles to be used on shared use paths and in the travel lanes, there would be no dedicated facilities for alternative transportation vehicles aside from the shared use path. In the sections of Frantz Road where there is no existing shared use path, alternative transportation vehicles would be mixed with motor vehicle traffic in the travel lanes. If city code is changed to also allow the use of alternative transportation vehicles on sidewalks, these vehicles would be able to use the sidewalks as well in locations where there is no existing shared use path. Prior to making formal code changes, a demonstration project should be performed to evaluate the safety concerns with using alternative transportation vehicles in each of these locations (in the roadway, on shared use paths, and on sidewalks) in order to develop meaningful code. Dublin City Council would need to suspend applicable code requirements on certain paths for a certain period of time in order to perform this demonstration project

evaluating safety concerns and other impacts resulting from alternative transportation vehicles using the existing infrastructure.

Alternatives 1 and 2 both add an alternative transportation lane alongside of travel lanes and would have similar impacts on safety. These alternatives would separate the alternative transportation vehicles from motorized vehicles; however, the two vehicle types would be separated by only pavement markings so the potential for overlap still exists. By placing alternative transportation vehicles in the roadway, slower speed pedestrians will have no overlap with these vehicles outside of the roadway, other than at roadway crossings.

Alternative 3 provides alternative transportation vehicles and bicycles with their own shared path outside the roadway and separated from pedestrians. However, because a dedicated pedestrian walkway is only provided along one side of the roadway, there would be some conflicts between alternative transportation vehicles/bicycles and pedestrians along the alternative transportation/bicycle path. While pedestrians can be encouraged to use the sidewalk on one side of the roadway, they cannot be prohibited from using the alternative transportation/bicycle path in order to provide pedestrian access to businesses and residences along the Frantz Road corridor as well as COTA bus stops. Additionally, because the alternative transportation/bike path changes from the east side of Frantz Road south of Rings Road to the west side of Frantz Road north of Rings Road, there will be some conflicts between various users at the intersection as well as the possibility users continuing on along the sidewalk or path on the same side of the roadway instead of crossing to the appropriate path.

In this alternative, the path would be bi-directional so conflict could exist along the path between users traveling in opposite directions. Alternative transportation vehicles interaction with motorized vehicles would be limited to driveway crossings and roadway intersections. At driveway crossings and roadway intersections, alternative transportation vehicles could approach from either direction, similar to how bicycles can approach from either direction on the existing shared use paths along the Frantz Road corridor and throughout Dublin.

Alternative 4 positions alternative transportation vehicles and bicycles on a shared path with pedestrians. Pedestrians will be separated from faster moving alternative vehicles and bicycles by pavement markings or different surface materials. In this alternative, the alternative vehicle and bicycle side of the path would be one way so potential conflict between like users would be reduced. Alternative transportation vehicles interaction with motorized vehicles would be limited to safe crossings and roadway intersections.

Alternative 5 safety is similar to Alternatives 1 and 2; however, it is anticipated to have a higher chance of conflict with motorized vehicles. This is due to alternative transportation vehicles and bicycles traveling in the opposite direction as adjacent motorized traffic. Crossing locations specifically would be an area of concern as turning vehicles are not as accustomed to bike lane traffic traveling in the opposite direction as they are to pedestrians and bicycles coming from both directions at a crosswalk. Additional measures, such as colored pavement for the alternative transportation lanes, “turning vehicles yield to bikes” signs (see modified R10-15 sign pictured in section 4.3), and protected phasing at signalized intersections may be considered to address the safety challenges of driver expectancy at driveways and cross streets.

Alternative 6 safety is similar to Alternatives 5; however, it is anticipated to be somewhat safer for users of the alternative transportation/bicycle lane due to a reduction in adjacent travel lanes. However, increased

congestion on the roadway could lead to increased rear-end and angle collisions due to unexpected stops and greater risk taking from delay.

Table 6.1 includes a summary of safety impacts for each alternative. These safety ratings are separated by user type. An overall rating was also given to compare the overall safety between each of the alternatives. The overall rating takes into account the safety of each alternative compared to the other alternatives and is not an average of the three user types. Additional weight was given to the safety of pedestrians and alternative transportation vehicles, as compared to motorized vehicles, when providing an overall rating. This is due to the potential severity of injury accidents for non-motorized user types. This overall rating has been included with the overall alternative comparison matrix in **Appendix C**.

Table 6.1 – Safety Summary

Alternative	Impact Description	Alter. Trans.	Peds	Motor-ized	Overall Rating
No Build	Alternative transportation not currently allowed. No dedicated facilities.				
1	Alternative transportation vehicles adjacent to motorized vehicles. Separated from peds and bicycles.				
2	Alternative transportation vehicles adjacent to motorized vehicles. Separated from peds and bicycles.				
3	Path separated from motorized vehicles. Road crossings at X-walks. Alternative vehicles will cross driveways from both directions.				
4	Path separated from motorized vehicles; however, adjacent to peds. Road crossings at X-walks.				
5	*Bi-directional alternative transportation vehicles adjacent to motorized vehicles.*				
6	*Bi-directional alternative transportation vehicles adjacent to motorized vehicles. Likely additional motorized vehicle crashes due to congestion.*				

In addition to safety, there is perceived safety and comfortability of the alternative transportation users. In general, transportation users do not like to be mixed with other modes of transportation. On April 2, 2019, a memo was prepared by the City of Dublin that summarized a survey that solicited 837 responses related to the introduction of electric scooters within city limits. Some key questions/answers obtained from this survey are listed below:

Q: Where would you feel comfortable operating an electric scooter?
A: Streets 26-35 mph: 12% Recreation paths: 44%

Q: If you do not intend to use electric scooters, where would you feel most comfortable allowing others to ride them?
A: Streets 26-35 mph: 11% Recreation paths: 42%

In general, the survey showed that more people prefer alternative transportation facilities be incorporated outside of the roadway limits as opposed to adjacent to vehicular traffic. Table 6.2 includes a summary of how alternative transportation would be integrated with other modes of transportation for each alternative.

The survey response above have been taken into account to provide a rating that has been included with the overall alternative comparison matrix.

Table 6.2 – Integration with other Transportation Modes Summary

Alternative	Impact Description	Rating
No Build	Alternative transportation not currently allowed.	
1	Alternative transportation vehicles in own lane. Cars separated by markings.	
2	Alternative transportation vehicles in own lane. Cars separated by markings.	
3	Path shared with bicycles. Cars completely separate. Peds encouraged to use other side.	
4	Path shared with bicycles and peds. Peds separated by markings.	
5	*Alternative transportation vehicles in own lane bi-directional lane. Cars separated by physical barrier.*	
6	*Alternative transportation vehicles in own lane bi-directional lane. Cars separated by physical barrier.*	

7.0 Drainage Assessment

The entirety of the Frantz Road corridor is comprised of curb and gutter, which collects pavement drainage and enters closed drainage systems via curb inlets. There are no open ditches along the corridor within the study limits. Several closed drainage systems exist throughout the corridor and help convey storm water to major outlet points. These outlet points are an unnamed creek north of Parkcenter Avenue, Cramer Ditch north of Bradenton Avenue, an unnamed ditch north of Rings Road, Cosgray Ditch north of Monterey Drive, and an unnamed creek north of Corbins Mill Drive. In addition to the closed drainage systems, there are large existing culverts that cross Frantz Road at two of the locations mentioned above. These include a 13'-5' four-sided box culvert at Cosgray Ditch, constructed in 2019 and a 12'-8' three-sided box culvert at Cramer Ditch, constructed in 1984. Both culverts have an operational status of "A" based on recent inspections.

The **No Build Alternative** would have no impacts on existing drainage.

Alternative 1 is anticipated to have no impacts to the existing drainage system. Pavement widening proposed with this alternative would cause an increase in pavement spread which will need to be calculated as part of the project design. However, with the increase in shoulder width due to the addition of the alternative transportation lane, the curb inlets are likely to be spaced appropriately. Similar to the adjacent travel lane, the alternative travel lane would carry stormwater spread during rain events.

Alternatives 2, which proposes widening the outside of the roadway and constructing new curb and gutter would also require the construction of new curb inlets and modifications to the existing closed drainage systems. At culvert crossings, the existing culverts will require extension with new headwalls to maintain recommended tree lawn widths.

Both **Alternatives 3 and 4** would widen existing shared use paths and/or sidewalks. This widening is minimal and could be accomplished without impact to the existing culverts with minor reductions in the existing tree lawn width at crossings. Similar to Alternative 2, to maintain recommended tree lawn widths, the existing culverts will require extension with new headwalls. These alternatives would add impervious area to the drainage areas outside the roadway pavement area. Curb inlet spacing would need to be verified based on this increase in impervious area and additional curb inlets may be necessary to account for the additional impervious area. Unlike Alternative 1, the shared use paths outside the roadway pavement do not contribute towards the allowable stormwater spread on the roadway pavement.

For comparison sake, the rejected **Alternative 5** would have a similar impact to existing drainage as Alternative 1 (no anticipated impacts). **Alternative 6** is anticipated to have no impact to existing drainage similar to the no-build alternative as there is no new impervious area added.

Table 7.1 includes a summary of drainage impacts for each alternative. These impacts are included with the overall alternative comparison matrix.

Table 7.1 – Drainage Impact Summary

Alternative	Impact Description	Rating
No Build	No impacts.	
1	No impacts anticipated.	
2	Replacement of all curb inlets. Possible culvert extensions and headwall modifications.	
3	Possible culvert extensions and headwall modifications.	
4	Possible culvert extensions and headwall modifications.	
5	*No impacts anticipated.*	
6	*No impacts anticipated.*	

8.0 Right-of-Way Assessment

Existing right-of-way linework shown on the Alternative Layouts was determined as part of a prior project, Frantz Road Streetscape Improvements (18-010-CIP). The Frantz Road corridor generally consists of a 100' right-of-way width, with 50' on either side of the roadway centerline. There is some variation in the 100' width along the north end of the study where there is the presence of right turn lanes.

Areas exist throughout the corridor where the existing shared use path extend outside the limits of the right-of-way. Through research of existing plans, there appear to be bike path/pathway easements in these areas which allow future maintenance/modifications to the paths, however some of these easements do limit the width of the path to 8 feet. It is likely that new easements or permanent right-of-way would need to be acquired in order to construct any new path in these areas.

In general, locations where existing shared use paths and sidewalks are located within the right-of-way, the outside edge of these surfaces are approximately 1' inside the right-of-way line. Widening of existing facilities beyond the existing outside curb line without reducing tree lawn widths would result in the need for additional right-of-way and/or bike path easements, with additional right-of-way of up to approximately 5' required for some segments of the corridor, or more if new easements or permanent right-of-way need to be acquired for path that is already outside of the existing right-of-way. These right-of-way acquisitions will have limited impacts to parking lots and should not impact any buildings; however setback requirements along the corridor may need to be analyzed further to determine if there would be any issues from reduced setbacks.

The **No Build Alternative** would have no impacts on right-of-way.

Alternative 1 is anticipated to have no impacts to right-of-way. Widening pavement to the inside by reducing the median width would not involve any work that would require additional right-of-way or easements.

Alternative 2 proposes widening the outside of the roadway and would cause increases in the overall pavement width. If standard tree lawn widths were to be maintained, existing shared use paths and sidewalks would require relocations away from the center of the roadway. This relocation would result in the need for additional right-of-way and/or bike path easements.

Alternative 3 would widen the existing shared use path along the west side of the roadway (north of Rings Road) from 8' to 10'. Where the tree lawn width is greater than the standard width of 8', it is recommended that this widening be accomplished by reducing the tree lawn width in locations where right-of-way may be tight. There are likely locations where this would not be possible and additional right-of-way or path easements would be required on the west side of the corridor, as well as locations where existing bike path easements specify an 8' path width that would require new easements or permanent right of way. Additionally, Alternative 3 would widen the 4' existing sidewalk along the east side of the roadway (south of Rings Road) to a 10' path. This would likely require additional right of way along the east side of the corridor but is not expected to impact existing parking lots or buildings.

Alternative 4 would widen the existing shared use path and sidewalk along the west side of the roadway from 8' (for the shared use path) and 4' (for the sidewalk) to 10', which would require additional right of way or bike path easements along the west side of the roadway. Additionally, Alternative 4 would widen the existing 4' sidewalk on the east side of the roadway with a 10' path which would also require additional right of way for the length of the corridor in order to maintain recommended tree lawn widths.

For comparison sake, the rejected **Alternative 5** would have a similar impact to right-of-way as Alternative 1 (no anticipated impacts). **Alternative 6** is anticipated to have no impact to existing right-of-way similar to Alternative 1.

Table 8.1 includes a summary of anticipated right-of-way impacts for each alternative. These impacts are included with the overall alternative comparison matrix.

Table 8.1 – Right-of-Way Impact Summary

Alternative	Impact Description	Rating	Anticipated Number of Impacted Parcels
No Build	No impacts.		0
1	No impacts anticipated.		0
2	Likely need for additional right-of-way/bike path easements along both sides of roadway.		44
3	Need for additional right-of-way/bike path easements possible along west side (north of Rings Road) and likely along east side (south of Rings Road)		17
4	Need for additional right-of-way/bike path easements possible along one side and likely along the other side of the roadway.		44
5	*No impacts anticipated.*		0
6	*No impacts anticipated.*		0

9.0 Utility Assessment

Several utilities were discovered along the Frantz Road corridor through site visits within the study area. Items identified during these site visits include fire hydrants, gas markers, telecommunication manholes and pedestals, street lighting, and traffic signal equipment. As part of the evaluation process, utility owner communication and existing plans were compiled from two recent projects within the study area. These were the Frantz Road Streetscape Improvements (18-010-CIP) and the Frantz Road at Cosgray Creek Bridge Maintenance (19-007-CIP) projects. Review of all recent utility correspondence as part of these projects produced the following list of utility owners and respective facilities within the corridor:

AEP: An underground transmission backbone runs the length of the study area. This transmission line is generally located approximately 2-10 feet west of the edge of the existing shared use path. The line is connected through a series of manholes with nearby switch gear and transformers.

Time Warner Cable: An underground duct bank runs the length of the study area, within the same trench as the AEP transmission line. The duct bank is connected by a series of vaults.

Columbus FiberNet & Dublink: underground conduits run the length of the study along the west side of the roadway in the general location of the AEP transmission line or within the tree lawn area on the west side.

Columbia Gas: A 6" gas distribution line runs the length of the study area, generally inside the western curb and gutter line or under the existing shared use path.

City of Columbus & Dublin: A 12" water line runs the length of the study area, just behind the eastern curb and gutter line. 8", 10", and 21" sanitary lines are present in the study area. These lines are all located west of the western shared use path. Also located along the corridor are City owned underground traffic conduit and wiring for existing signals and street lighting (where present). These underground lines are generally

located within the western tree lawn. Signal poles are located at each corner of their associated intersection. Locations of signalized intersections are identified in the Traffic Analysis section of the study.

Based on the utility information compiled above, a majority of the existing utilities along Frantz Road are located along the west side of the roadway near the curb and gutter, in the tree lawn, or near the shared use path. The exception to this is the existing 12" water line located behind the east side curb and gutter. Due to their size and/or configuration, relocation of these utilities would lead to significant cost added to the project.

The **No Build Alternative** would have no impacts on existing utilities.

Alternative 1 is anticipated to have no impacts to the existing utilities due to lack of facilities located near the center of the roadway.

Alternative 2, which widens the outside of the roadway and constructs new curb and gutter is anticipated to cause a large utility impact. Widening the east side of the roadway impact the existing 12" water line including, but not limited to fire hydrant relocations. Widening the west side of the roadway has the potential of impacting the existing gas, telecommunication, and power lines. In addition to these impacts, roadway widening would result in relocation of traffic signal and street lighting poles.

Both **Alternatives 3 and 4** would widen existing shared use paths and/or sidewalks. On the west side of the roadway, this widening is minimal and could likely be accomplished without impact to the existing utilities with minor reductions in the existing tree lawn widths where existing widths exceed the standard 8' tree lawn width. In Alternative 3, this widening only occurs north of Rings Road while in Alternative 4, this widening happens for the entire length of the corridor. On the east side of the roadway, where existing 4' sidewalk is being widened to a 10' path, there will be impacts to several utility boxes that are located close to the existing sidewalk. In Alternative 3, this widening only occurs south of Rings Road while in Alternative 4, this widening happens for the entire length of the corridor.

Alternative 4 would replace the existing sidewalk with a wider path; however, this occurs on the east side of the roadway where less utilities are present.

For comparison sake, the rejected **Alternative 5** would have a similar impact to existing utilities as Alternative 1 (no anticipated impacts). **Alternative 6** is anticipated to have no impact to existing utilities similar to Alternative 1.

Table 9.1 includes a summary of utility impacts for each alternative. These impacts are included with the overall alternative comparison matrix.

Table 9.1 – Utility Impact Summary

Alternative	Impact Description	Rating
No Build	No impacts.	
1	No impacts anticipated.	
2	Signal/light pole relocations. Possible impact to underground utilities, including AEP transmission and water line.	
3	Possible minor impact to underground utilities within tree lawn areas and under path on one side of roadway.	
4	Possible minor impact to underground utilities within tree lawn areas and under path on both sides of roadway.	
5	*No impacts anticipated.*	
6	*No impacts anticipated.*	

10.0 Additional Assessments

The following sections will include a description of additional criteria used to compare the proposed alternatives. These items have a high impact on public perception of the alternatives and are critical in the identification of a preferred alternative.

10.1 Aesthetic/Corridor Impacts

Classified as a minor arterial by the *City of Dublin Thoroughfare Plan*, the Frantz Road corridor is a major backbone route through the City of Dublin with an approximate average daily traffic of 20,000 vehicles per day. Several commercial and residential developments are located along the corridor with more developments currently under design and/or construction. Due to the high number of users and destination points, aesthetic features are an important factor to the corridor.

Frantz Road features a wide (22-26') raised median along a large portion of the existing corridor. This median contains large trees, decorative plantings, and brick pavers that provide screening between opposing directions of traffic and add visual appeal to the corridor. In addition to planting within the median, existing tree lawns along both sides of the roadway contain a combination of medium and small trees. These trees help in providing visual separation between path users and the travel lanes and also visually narrow the corridor, helping with speed compliance.

Table 10.1 includes a summary of aesthetic/corridor impacts for each alternative. These impacts are included with the overall alternative comparison matrix.

Table 10.1 – Aesthetic/Corridor Impact Summary

Alternative	Impact Description	Rating
No Build	No impacts.	
1	Reduced median width will impact large trees. Could be replaced with smaller vegetation that requires less space.	
2	No impact to median vegetation. Impact to small tree lawn trees that can be replaced.	
3	No impact to median vegetation. Impact to small tree lawn trees along one side that can be replaced.	
4	No impact to median vegetation. Impact to small tree lawn trees along both sides. Most can be replaced.	
5	*Reduced median width will impact large trees. Could be replaced with smaller vegetation that requires less space.*	
6	*No impacts.*	

10.2 Ease of Construction/Maintenance of Traffic

For the reasons described in the previous section, delayed construction time and maintaining existing traffic through the work zone would affect a large number of users and have a significant impact to public perception. The complexity of each alternative could produce additional cost and time required to construct the proposed improvements. When comparing and identifying preferred alternatives, it is import to consider the impact to vehicular traffic, pedestrians, and adjacent businesses and residents.

Table 10.2 includes a summary of ease of construction and maintenance of traffic for each alternative. These impacts are included with the overall alternative comparison matrix.

Table 10.2 – Ease of Construction/Maintenance of Traffic Summary

Alternative	Impact Description	Rating
No Build	No impacts.	
1	Fair amount of roadway work needed. Reduced construction timeframe due to avoidance of drainage/utilities. Long-term lane closures.	
2	Significant roadway and drainage work needed. Longer construction timeframe due to drainage/utility relocation. Long-term lane closures.	
3	No roadway work needed. Path along one side replaced.	
4	No roadway work needed. Paths along both sides replaced.	
5	*Fair amount of roadway work needed. Reduced construction timeframe due to avoidance of drainage/utilities. Long-term lane closures.*	
6	*Roadway work limited to resurfacing and restriping. Reduced construction timeframe due to avoidance of drainage/utilities.*	

10.3 Cost Summary

The total project construction costs, including inflation and contingencies, were established based on the preliminary layouts and design of each alternative. Table 10.3 shows a comparison of the estimated option of probable construction costs for each alternative. Detailed estimates are included in **Appendix F**. Construction costs were estimated using historical bid data observed on recent City of Dublin projects, a 15-percent inflation, and a 30-percent contingency.

Table 10.3 – Estimated Opinion of Probable Cost

Alternative	Estimated Opinion of Probable Cost	Rating
No Build	None	
1	$1,950,000	
2	$5,380,000	
3	$690,000	
4	$1,300,000	
5	*Not Calculated*	
6	*Not Calculated*	

11.0 Alternatives Comparison

11.1 Summary Alternative Comparison Matrix

Table 11.1 provides a side-by-side comparison of the proposed alternatives based upon the criteria identified as part of the project's study approach. See **Appendix C** for a detailed Alternative Comparison Matrix which contains a summary of criteria notes for each alternative.

Table 11.1 – Summary Alternative Comparison Matrix

Evaluation Criteria	No Build	Alt 1	Alt 2	Alt 3	Alt 4	*Alt 5*	*Alt 6*
Safety	◒	◔	◔	◒	◔	◒	○
Traffic Capacity Impacts	●	●	●	●	●	●	○
Integration with other Transportation Modes	○	◒	◒	◒	◔	◒	◒
Drainage Impacts	●	●	○	◒	◒	●	●
Utility Impacts	●	●	○	◔	◒	●	●
Aesthetic/ Corridor Impacts	●	◒	◒	◔	◒	◒	●
Ease of Construction/ Maintenance of Traffic	●	◒	○	●	◔	◒	◔
Right-of-Way Impacts	●	●	○	◔	◒	●	●
Construction Cost	●	◒	○	◔	◒	◒	◔

Legend: Very Good: ● Good: ◔ Fair: ◒ Poor: ○

12.0 Recommendations

12.1 Conclusion

Based on a thorough review of the information presented in this study, **we recommend the No-Build Alternative, with adjustments to City codes and regulations based on the outcomes of a demonstration project as the preferred alternative. As the regulations are changed to permit these types of vehicles, alternative transportation use should be monitored to assess the potential need for additional infrastructure.** The compilation of benchmarking interview data showed that most communities introduced the use of alternative transportation vehicles to the existing infrastructure prior to constructing improvements. This sometimes required revisions to City codes and regulations to dictate where these vehicles are permitted. Within the City of Dublin, there has been little demand to date for alternative transportation. In late 2018, Lime launched a pilot program for dockless bike share in Dublin. After the completion of the pilot program, Lime made the decision to end their bike share program in Dublin, citing the City's suburban layout as a barrier for meeting their current business model.

Based on current guidelines and regulations, class 1 and class 2 electric bicycles are permitted on roadways and shared use paths but not sidewalks within Dublin city limits. Other alternative transportation vehicles like electric scooters are not permitted to utilize the existing infrastructure at all, including on roadways, shared use paths, or sidewalks within Dublin city limits. Our recommendation is to modify these codes to allow the use of alternative transportation vehicles in the same places where bicycles are allowed to be used within the City of Dublin: on existing shared-use paths, sidewalks, and in travel lanes. The one possible exception to this modification would be the recommendation that alternative transportation vehicles be prohibited from using sidewalks. Additionally, we recommend modifying city codes to limit the speed of alternative transportation vehicles to 15 mph, which will align with the limit for these types of vehicles in the City of Columbus.

In order to help determine the changes that should be made to the city codes and regulations, we recommend the City consider a demonstration project to better evaluate and determine the best way to allow alternative transportation vehicles, by code, within the existing infrastructure along city streets. Dublin City Council would need to suspend the applicable code requirements on certain shared use paths and for a certain period of time in order to complete the demonstration project.

The demonstration project would review alternative mobility solutions citywide, including bikes, e-bikes, e-scooters, and other battery powered alternatives, to understand how people prefer to operate these vehicles, identify safety concerns, and determine the best way to approach modifications to the City code based on observation. The project could use video documentation, smart technology, and surveys of residents and users of alternative transportation modes to gather this information regarding their use. As an outcome of the demonstration project, recommendations would be made for code revisions to address existing sections of the City code related to “toy” vehicles, electric bicycles, scooters, etc, and designate appropriate places for the use of alternative transportation vehicles within the right-of-way. This demonstration project review period should last for a specified period of time (12 to 18 months) and could be geographically based to certain areas of the city. The demonstration project should also be coordinated with the Secondary Wayfinding recommended in the Dublin Mobility Plan Phase III Report.

The geographic limits should be restricted so that the demonstration would generally operate on lower speed roadways so there is less variation of speed between alternative transportation vehicles and other motorized vehicles. Additionally, areas should include a good mix of residential and potential destinations within these boundaries and within an appropriate range for alternative transportation vehicles in order to attract usage.

Potential geographic areas of the city to include within the demonstration project include the Bridge Street District, Historic Dublin, and the Frantz Road corridor. The Bridge Street District would be limited to the area between Riverside Drive and Village Parkway, with alternative transportation vehicles allowed to cross Riverside Drive to access The Dublin Link and connect to Historic Dublin but not allowed to travel on Riverside Drive. Similarly, within Historic Dublin, alternative transportation vehicles would be allowed to cross Bridge Street but not to travel along the curb to curb pavement for safety reasons. Within the Frantz Road corridor, both the commercial area west of Frantz Road and the residential area connecting to Historic Dublin east of Frantz Road would be included as the infrastructure in this area is most similar to the rest of Dublin.

Given that the Frantz Road corridor already has shared use path for much of its length, it is likely the existing facilities will be adequate to meet the demand for alternative transportation vehicles in the corridor without the impacts to drainage, existing utilities, existing street trees, and right-of-way that would result from the build alternatives. With the lack of user demand, the costs and substantial impacts produced by the build alternatives are not justified at the current time.

After alternative transportation vehicles are introduced to the corridor, we recommend the City to monitor the results and reconsider the build alternatives in the future should issues arise with alternative transportation vehicles utilizing the existing facilities or should demand warrant investment in dedicated facilities.

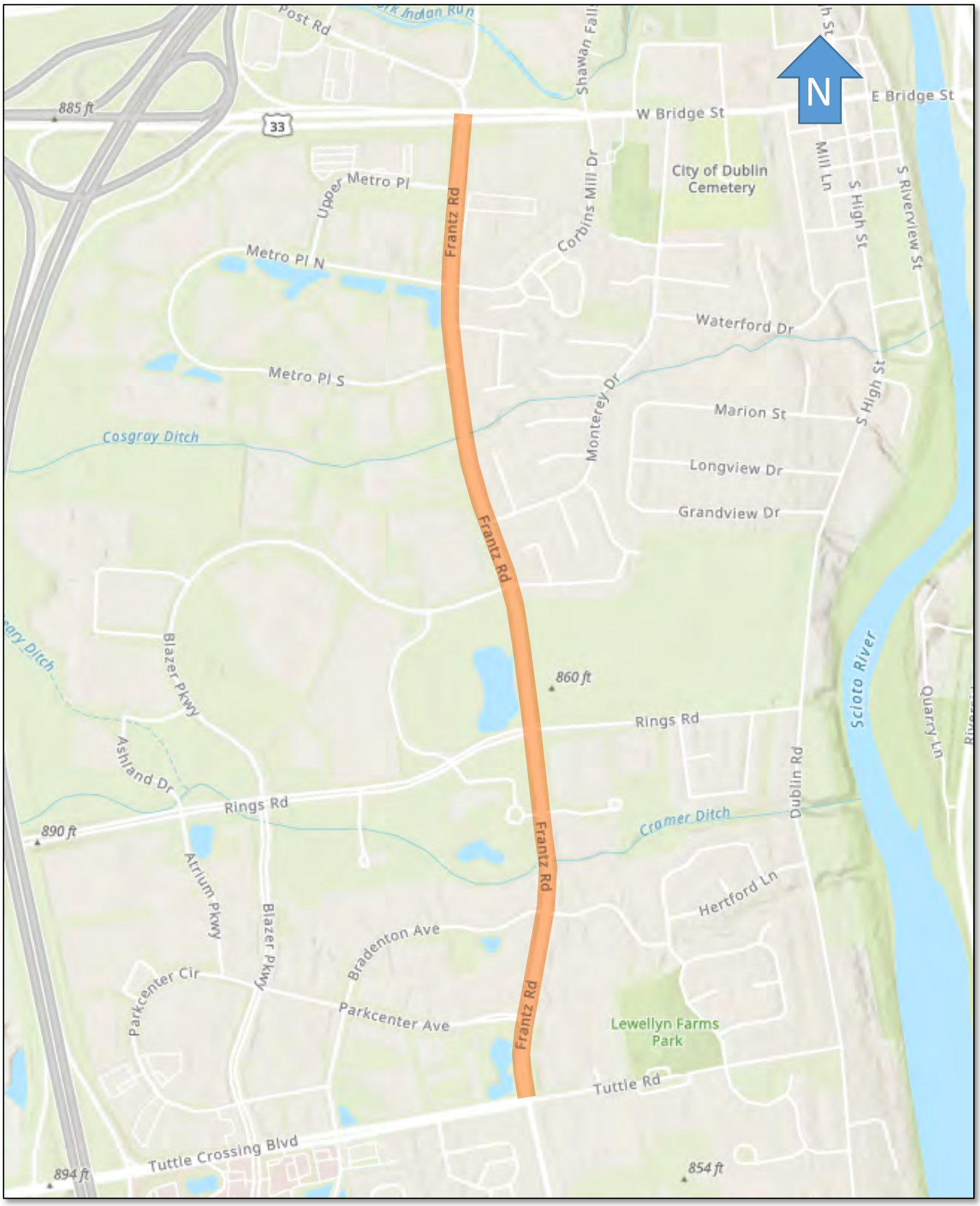
12.2 Identification of Preliminary Preferred Alternative

The No-Build Alternative, with adjustments to City codes and regulations to allow alternative transportation vehicles to use the existing infrastructure as discussed above, is recommended as the preferred alternative. Additionally, further observation of how alternative transportation vehicles are used in the corridor and throughout the City of Dublin should be performed to identify any necessary changes to City codes resulting from how these vehicles are used once they are introduced to the corridor and throughout the City of Dublin. The City should reconsidered the build alternatives in the future should issues arise with these vehicles using the existing infrastructure or should demand in the corridor warrant dedicated infrastructure.

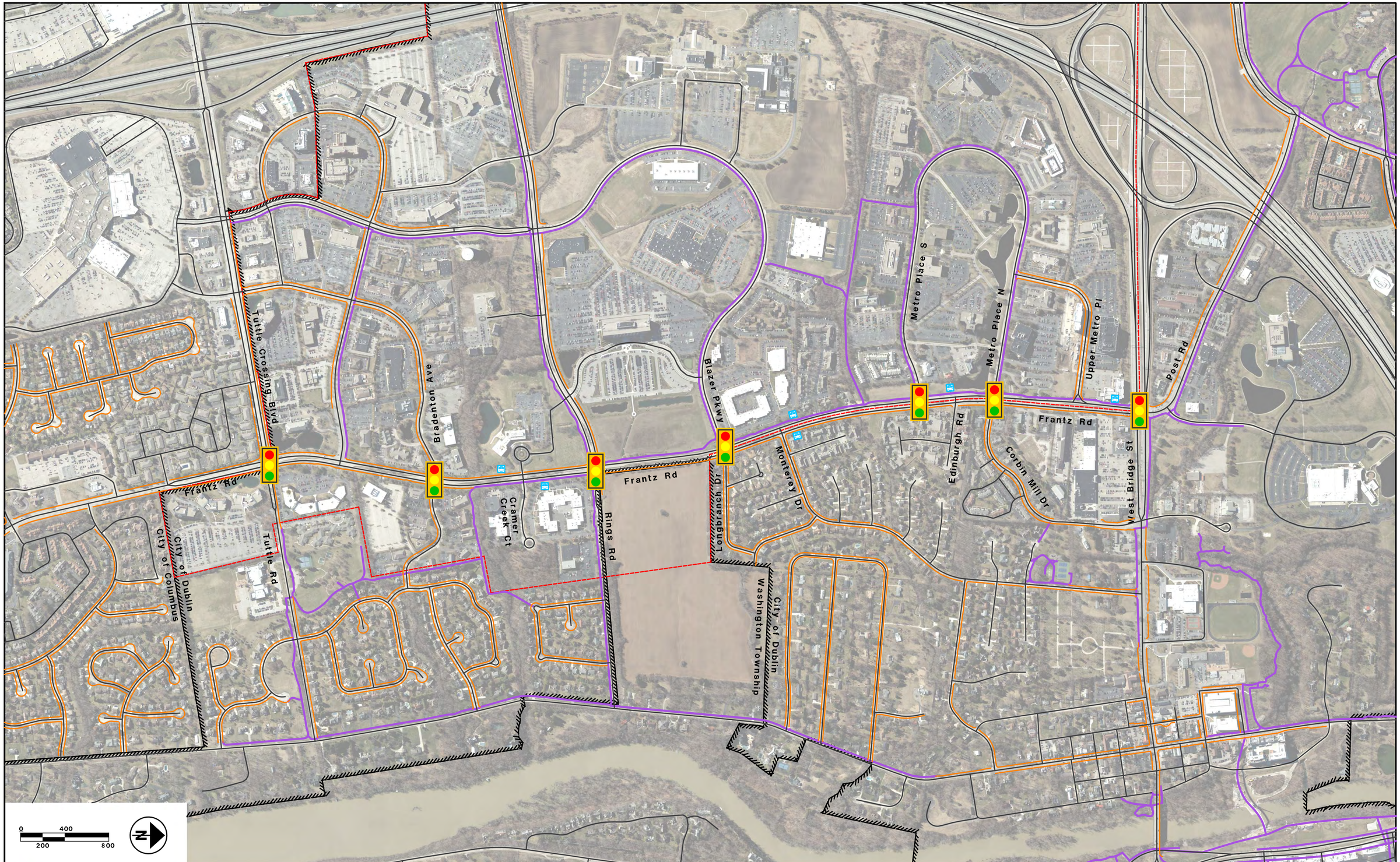
If the City reconsiders build alternatives in the future, information obtained from the demonstration project should be utilized to further evaluate Alternatives 1, 3, and 4 in order to select a preferred build alternative. Alternatives 5 and 6 should not be considered further due to safety concerns. Alternative 2 should not be considered further due to considerable corridor impacts and cost.

Appendix A – Study Area Map

Study Area Map



Appendix B – Existing Conditions



City of Dublin
OHIO, USA

Frantz Road Existing Conditions

Legend

- Existing Shared Use Path
- Existing Sidewalk
- Frantz Road Study Area
- Dublin Corporate Limit
- Dublin Corporate Area Plan Boundary

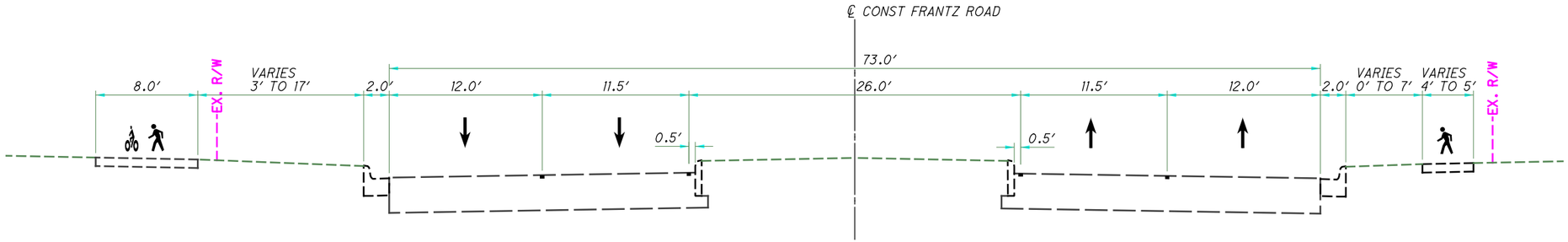
AMERICAN STRUCTUREPOINT INC.

Appendix C – Alternative Comparison Matrix

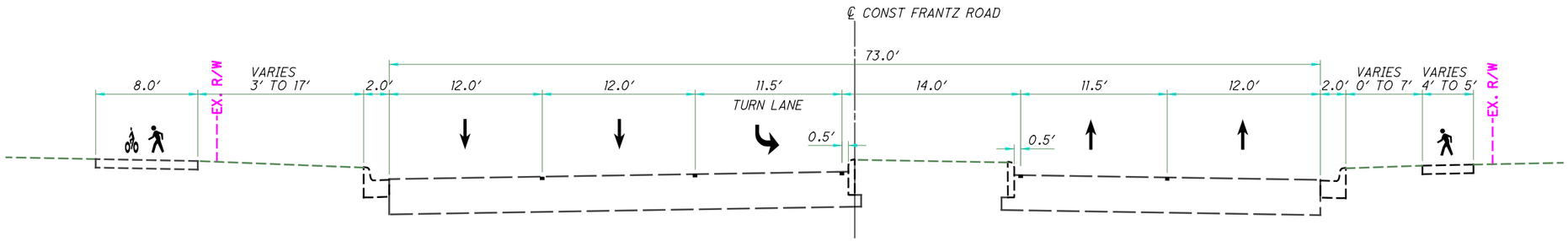
Evaluation Criteria	No Build		Alt 1		Alt 2		Alt 3		Alt 4		*Alt 5*		*Alt 6*	
Safety	Alternative transportation not currently allowed. No dedicated facilities.	◒	Alternative transportation vehicles adjacent to motorized vehicles. Separated from peds and bicycles.	◔	Alternative transportation vehicles adjacent to motorized vehicles. Separated from peds and bicycles.	◔	Path separated from motorized vehicles. Road crossings at X-walks. Alternative vehicles will cross driveways from both directions.	◒	Path separated from motorized vehicles, however adjacent to peds. Road crossings at X-walks.	◔	*Bi-directional alternative transportation vehicles adjacent to motorized vehicles.*	◒	*Bi-directional alternative transportation vehicles adjacent to motorized vehicles.Likely additional motorized vehicle crashes due to congestion.*	○
Traffic Capacity Impacts	No impacts	●	No impacts	●	No impacts	●	No impacts	●	No impacts	●	*No impacts*	●	*Removal of travel lane would result in capcaity failures*	○
Integration with other Transportation Modes	Alternative transportation not currently allowed.	○	Alternative transportation vehicles in own lane. Cars separated by markings.	◒	Alternative transportation vehicles in own lane. Cars separated by markings.	◒	Path shared with bicycles. Cars completely separate. Peds encouraged to use other side.	◒	Path shared with bicycles and peds. Peds separated by markings.	◔	*Alternative transportation vehicles in own lane bi-directional lane. Cars separated by physical barriers.*	◒	*Alternative transportation vehicles in own lane bi-directional lane. Cars separated by physical barriers.*	◒
Drainage Impacts	No impacts	●	No impacts anticipated	●	Replacement of all curb inlets. Possible culvert extensions and headwall modifications	○	Possible culvert extensions and headwall modifications	◒	Possible culvert extensions and headwall modifications	◒	*No impacts anticipated.*	●	*No impacts anticipated*	●
Utility Impacts	No impacts	●	No impacts anticipated	●	Signal/light pole relocations. Possible impact to underground utilities, including AEP transmission and water line.	○	Possible minor impact to underground utilities within tree lawn areas and under path on one side of roadway.	◔	Possible minor impact to underground utilities within tree lawn areas and under path on both sides of roadway.	◒	*No impacts anticipated*	●	*No impacts anticipated*	●
Aesthetic/ Corridor Impacts	No impacts	●	Reduced median width will impact large trees. Could be replaced with smaller vegetation that requires less space.	◒	No impact to median vegetation. Impact to small tree lawn trees that can be replaced.	◒	No impact to median vegetation. Impact to small tree lawn trees along one side that can be replaced.	◔	No impact to median vegetation. Impact to small tree lawn trees along both sides. Most can be replaced.	◒	*Reduced median width will impact large trees. Could be replaced with smaller vegetation that requires less space.*	◒	*No impacts*	●
Ease of Construction/ Maintenance of Traffic	No impacts	●	Fair amount of roadway work needed. Reduced construction timeframe due to avoidance of drainage/utilities. Long-term lane closures.	◒	Significant roadway and drainage work needed. Longer construction timeframe due to drainage/utility relocation. Long-term lane closures.	○	No roadway work needed. Path along one side replaced.	●	No roadway work needed. Paths along both sides replaced.	◔	*Fair amount of roadway work needed. Reduced construction timeframe due to avoidance of drainage/utilities. Long-term lane closures.*	◒	*Roadway work limited to resurfacing and restriping. Reduced construction timeframe due to avoidance of drainage/utilities.*	◔
Right-of-Way Impacts	No impacts	●	No impacts anticipated.	●	Likely need for additional right-of-way/bikepath easements along both sides of roadway.	○	Possible need for additional right-of-way/bikepath easements along one side of the roadway.	◔	Need for additional right-of-way/bikepath easements possible along one side and likely along the other side of the roadway.	◒	*No impacts anticipated.*	●	*No impacts anticipated.*	●
Construction Cost	None	●	$1,950,000	◒	$5,380,000	○	$690,000	◔	$1,300,000	◒	*Cost not calculated.*	◒	*Cost not calculated.*	◔

Legend: **Very Good:** ● **Good:** ◔ **Fair:** ◒ **Poor:** ○

Appendix D – Alternative Typical Sections

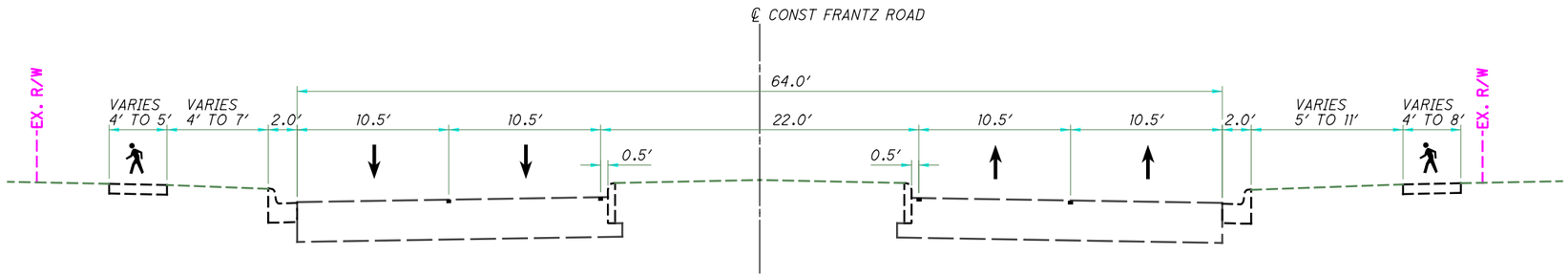


FRANTZ RD EXISTNG SECTION
(NORTH OF RINGS ROAD)



FRANTZ RD EXISTNG SECTION W/ TURN LANE
(NORTH OF RINGS ROAD)

NORTH OF RINGS ROAD



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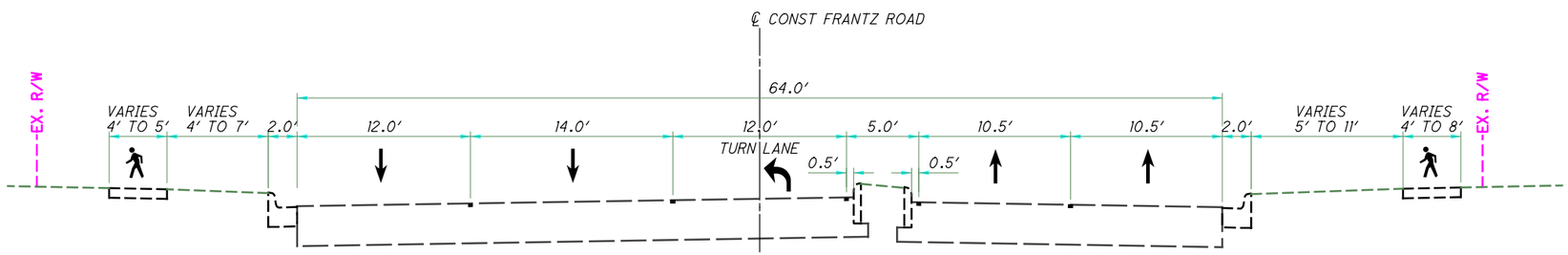
(SOUTH OF RINGS ROAD)

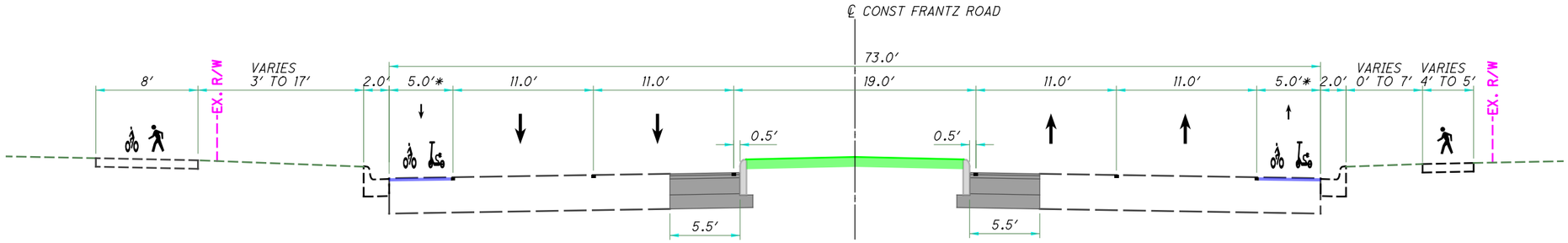


FRANTZ RD EXISTNG SECTION W/ TURN LANE
(SOUTH OF RINGS ROAD)

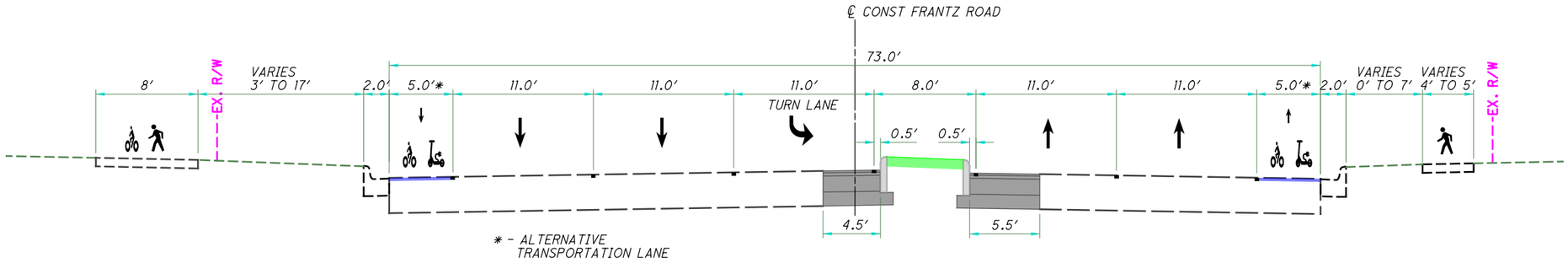
SOUTH OF RINGS ROAD

TYPICAL SECTIONS - EXISTING

FRANTZ RD

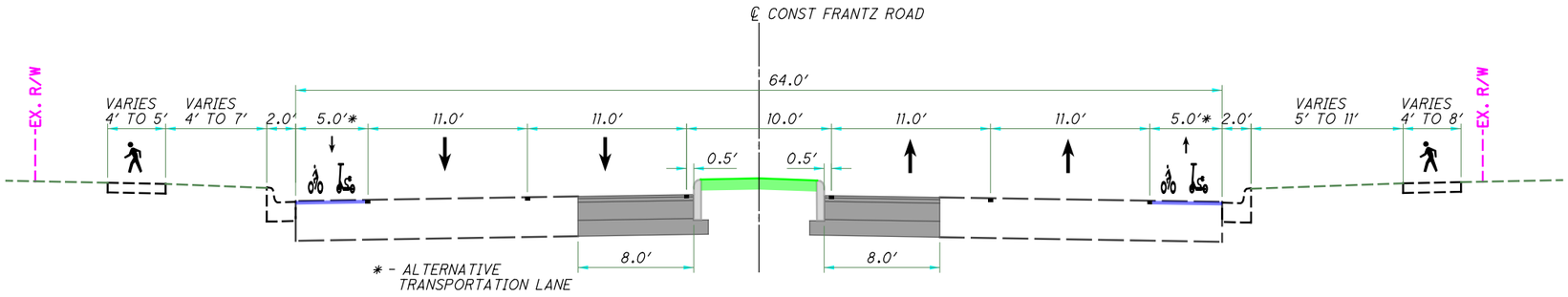


ALTERNATIVE #1
(FRANTZ RD)

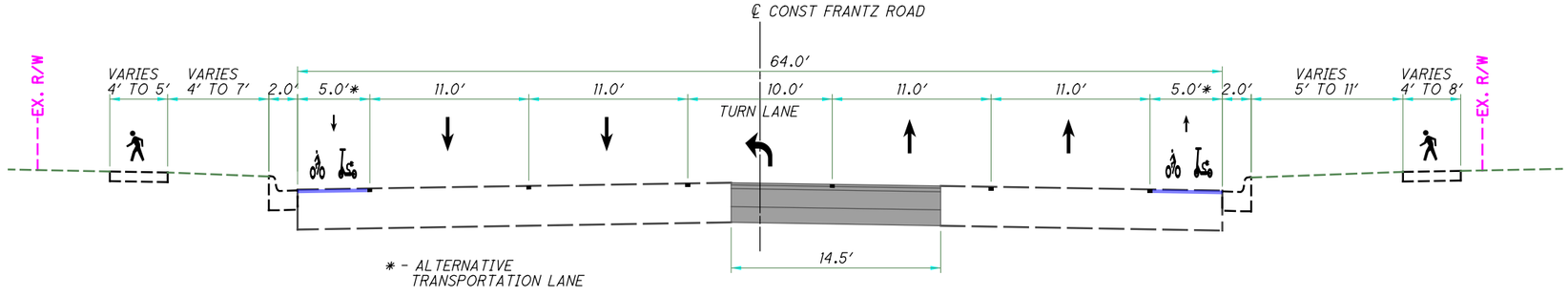


ALTERNATIVE #1 W/ TURN LANE
(FRANTZ RD)

NORTH OF RINGS ROAD



ALTERNATIVE #1
(FRANTZ RD)

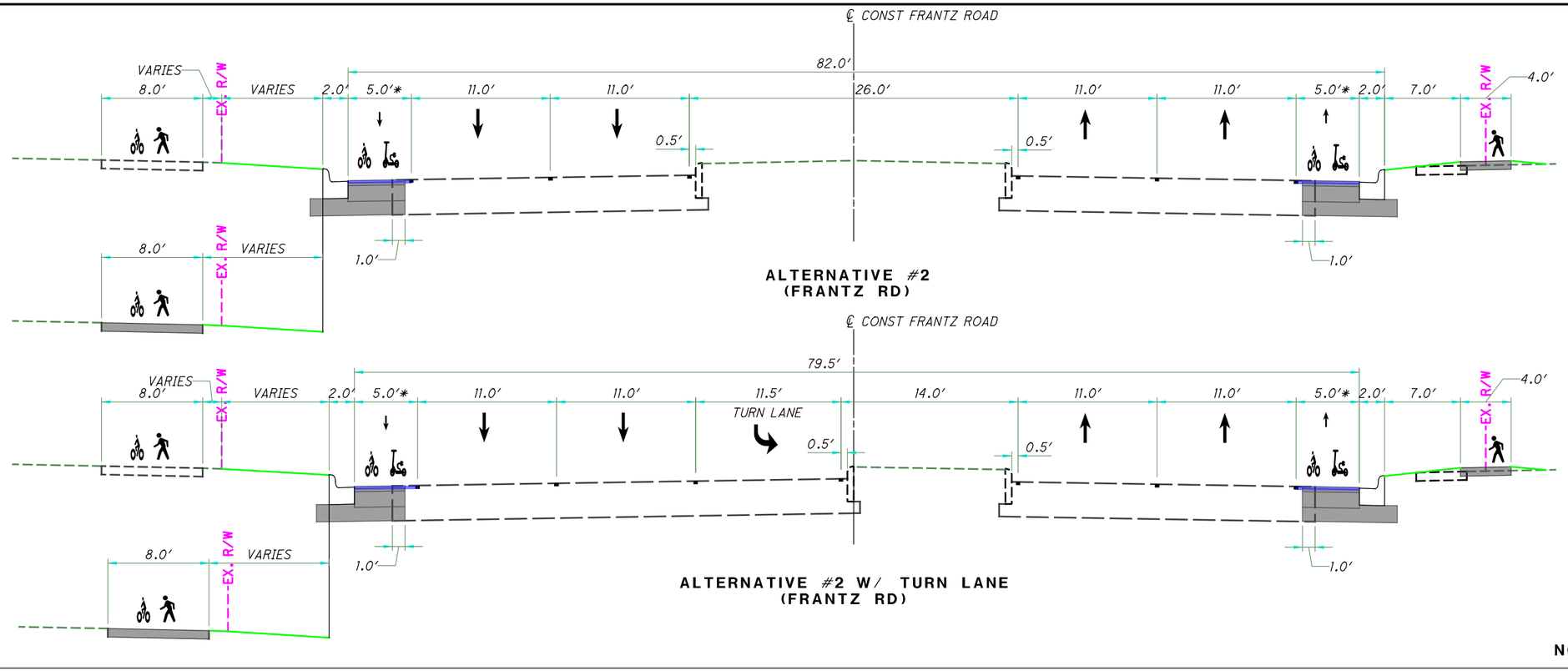


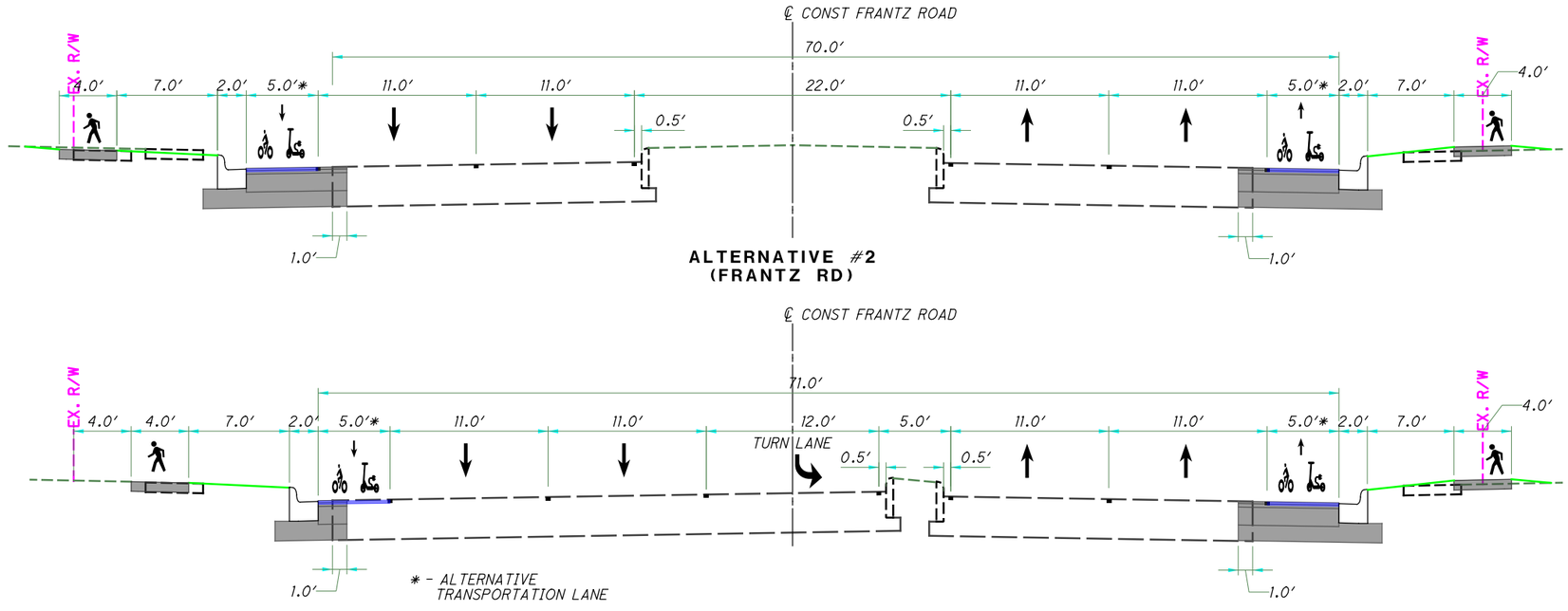
ALTERNATIVE #1 W/ TURN LANE
(FRANTZ RD)

SOUTH OF RINGS ROAD

TYPICAL SECTIONS - ALTERNATIVE #1

FRANTZ RD





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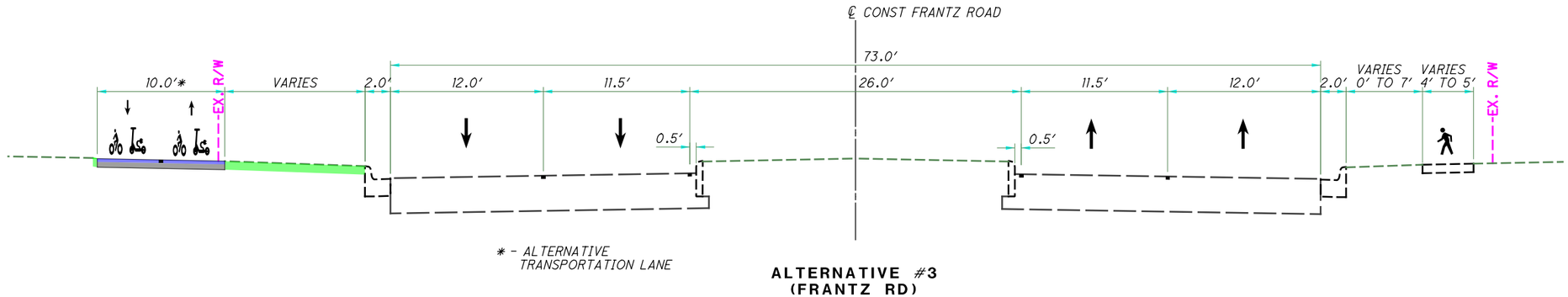
FRANTZ RD



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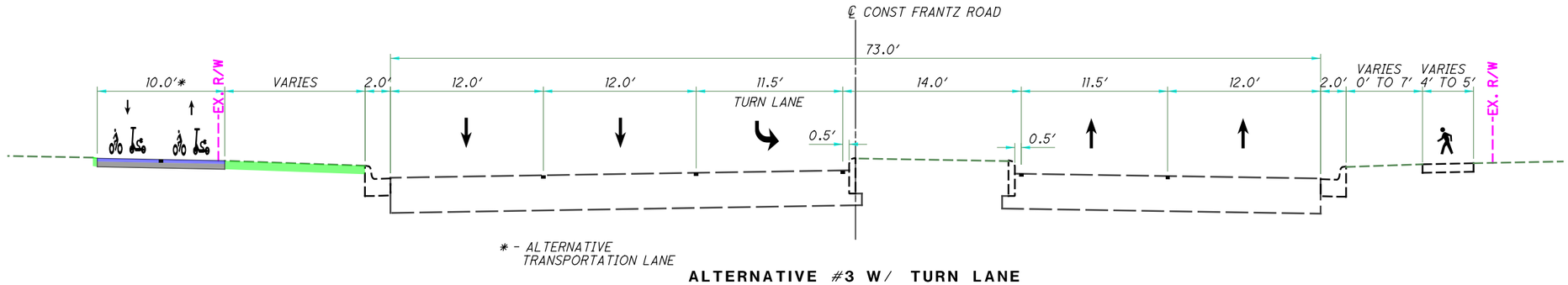
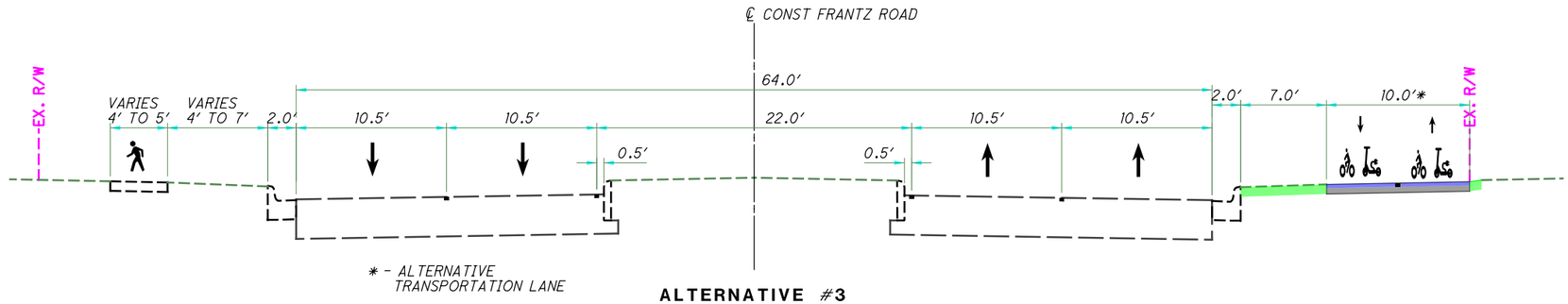


ALTERNATIVE #3 W/ TURN LANE
(FRANTZ RD)

NORTH OF RINGS ROAD



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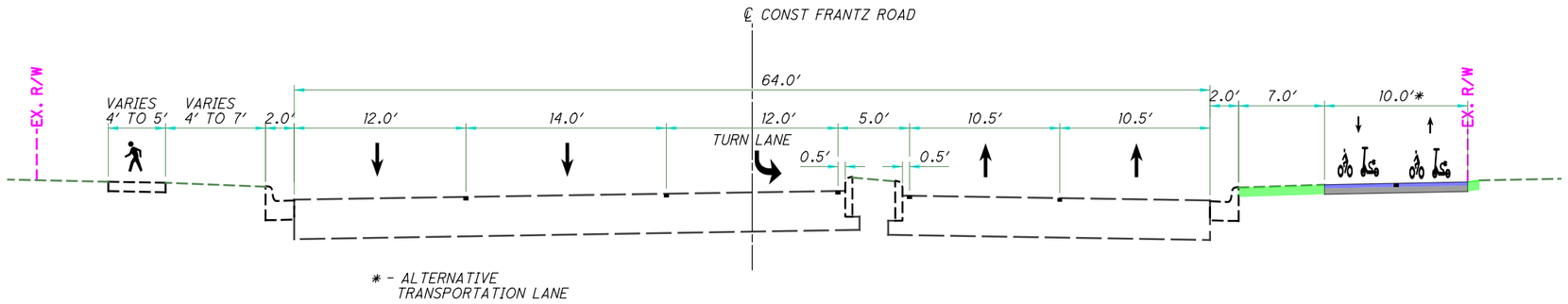
(FRANTZ RD)

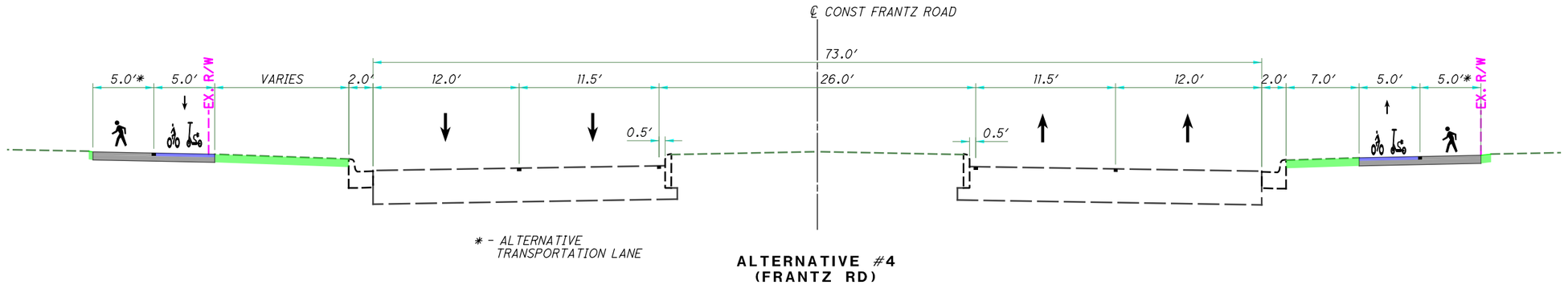


ALTERNATIVE #3 W/ TURN LANE
(FRANTZ RD)

SOUTH OF RINGS ROAD

TYPICAL SECTIONS - ALTERNATIVE #3

FRANTZ RD



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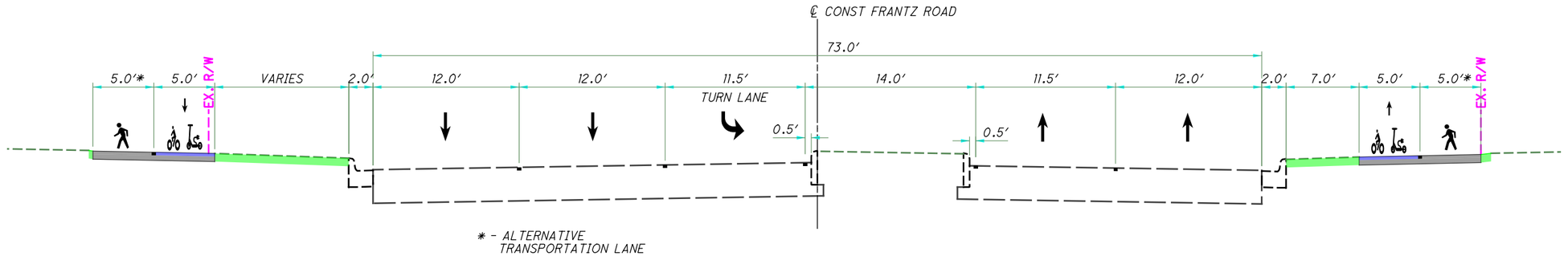

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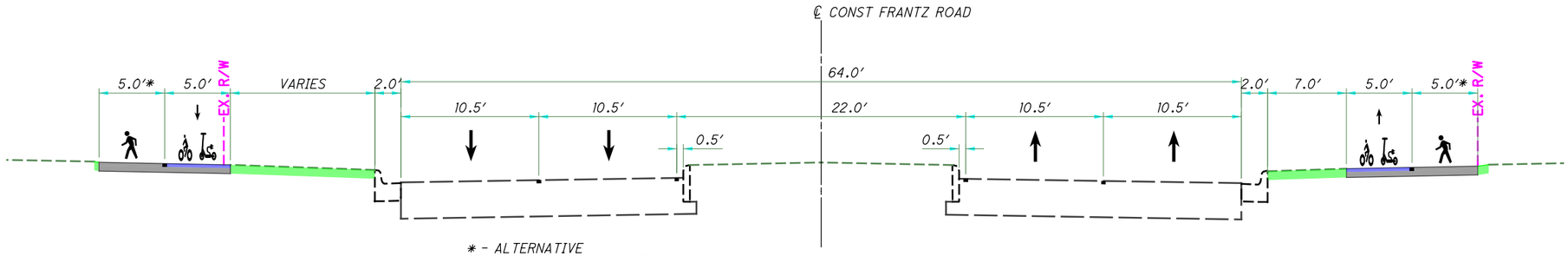
NORTH OF RINGS ROAD



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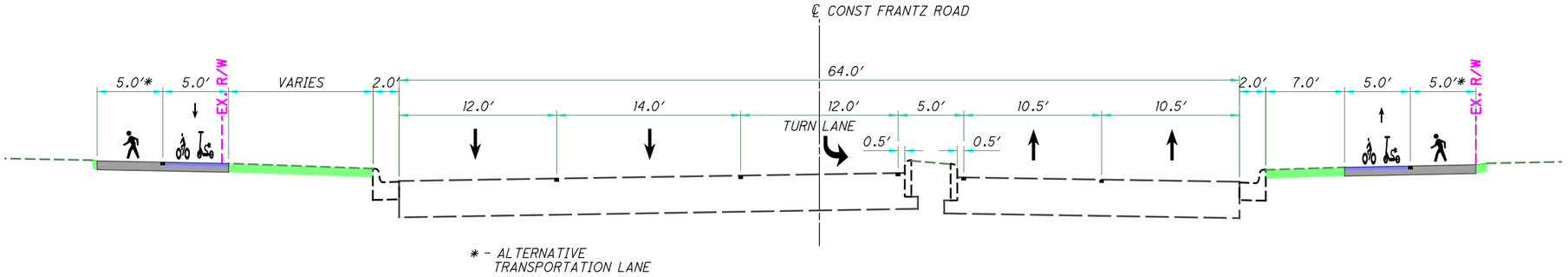
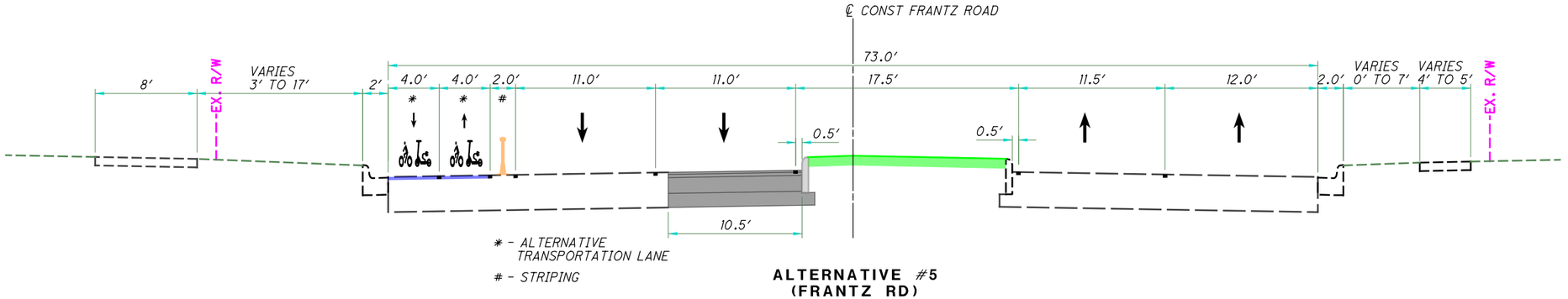


ALTERNATIVE #4 W/ TURN LANE
(FRANTZ RD)

SOUTH OF RINGS ROAD

TYPICAL SECTIONS - ALTERNATIVE #4

FRANTZ RD



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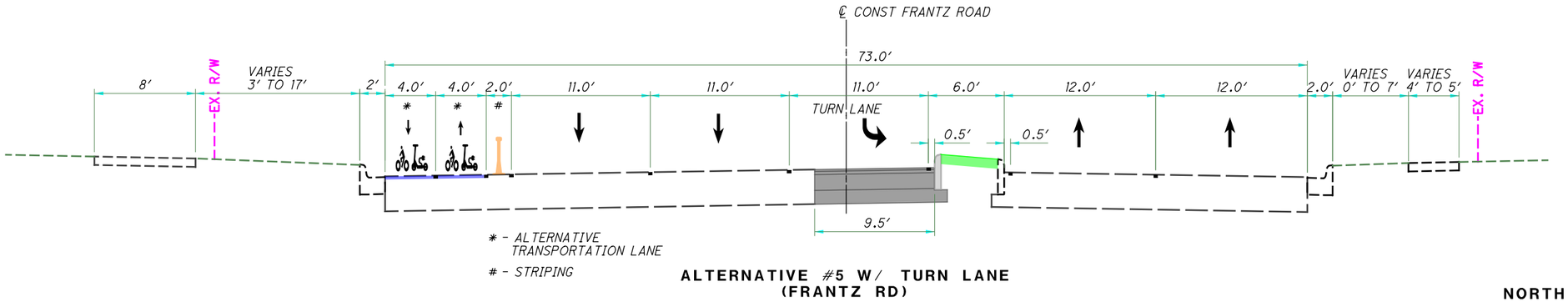
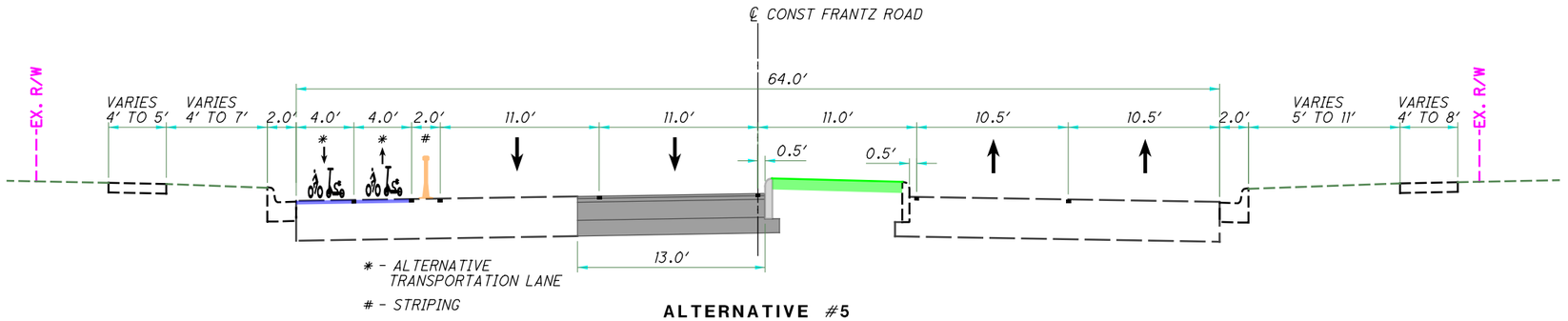


ALTERNATIVE #5 W/ TURN LANE (FRANTZ RD)

NORTH OF RINGS ROAD



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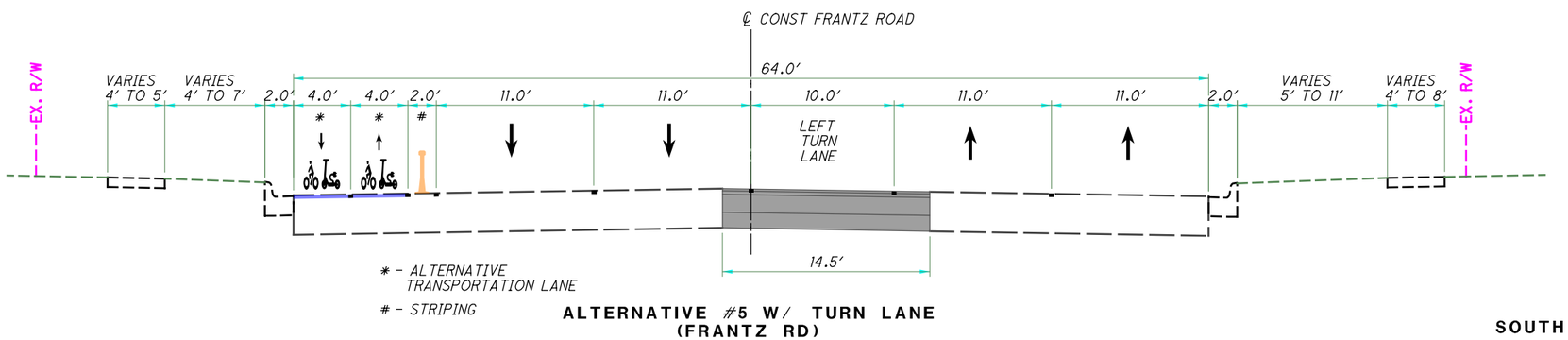

ALTERNATIVE #5 W/ TURN LANE (FRANTZ RD)

SOUTH OF RINGS ROAD

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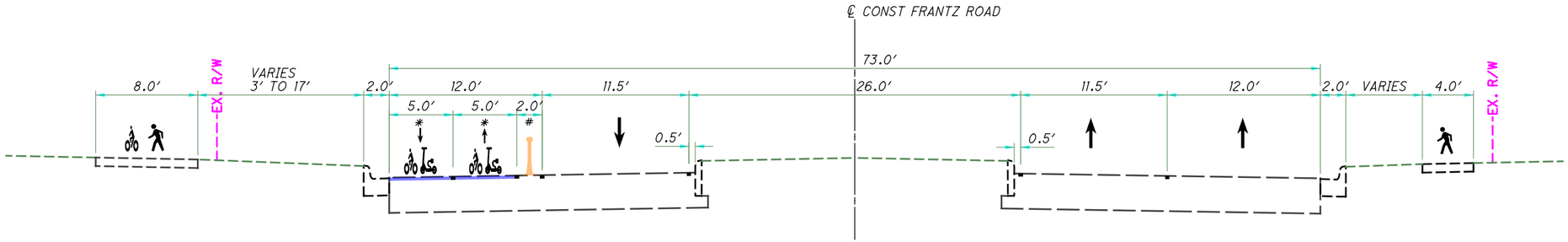
TYPICAL SECTIONS - ALTERNATIVE #5

FRANTZ RD



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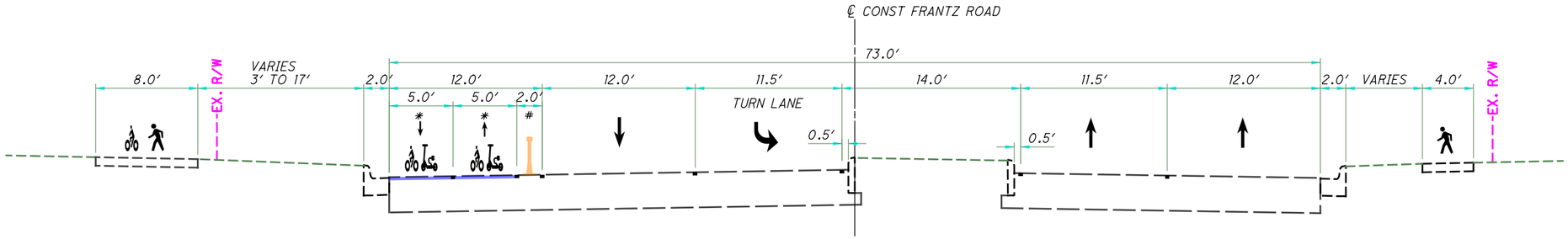
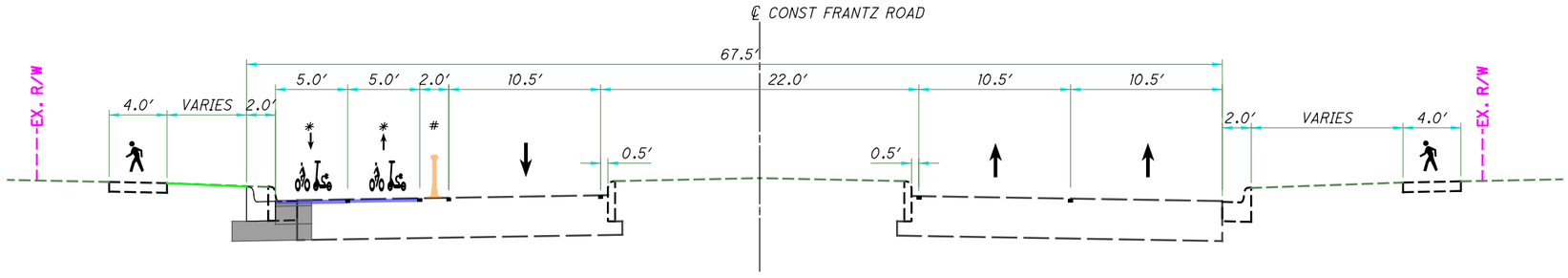


ALTERNATIVE #6 W/ TURN LANE
(FRANTZ RD)

NORTH OF RINGS ROAD



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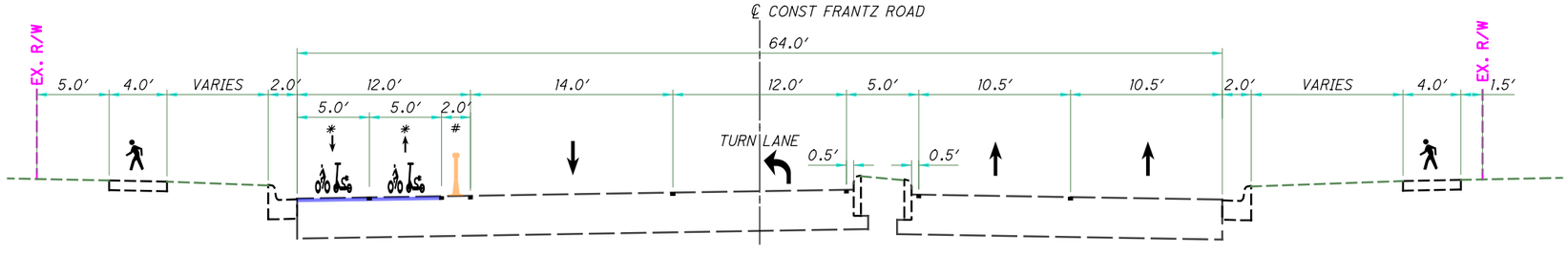


ALTERNATIVE #6 W/ TURN LANE
(FRANTZ RD)

SOUTH OF RINGS ROAD

TYPICAL SECTIONS - ALTERNATIVE #6

FRANTZ RD

Appendix E – Alternative Layouts

Tuttle Crossing Blvd
Frantz Rd
Tuttle Rd
Dominion Homes
Cincinnati Bell
Parkcenter Ave
Ohio Sleep Medicine Institute
American Cancer Society
Office Park
Match Line - See Below
Match Line - See Above
Delong and Associates
Dublin Family Vision
Bradenton Ave
Lee Esposito Accoc
Fanning Howey and Associates
DNV of Columbus
Match Line - See Next Sheet
0
40
20
80
N

City of Dublin
OHIO, USA

Frantz Road Improvements Alternative 1

Legend

Proposed Alternative Transportation Lane

AMERICAN STRUCTUREPOINT INC.

Match Line - See Previous Sheet

Match Line - See Below

Match Line - See Above

Match Line - See Next Sheet

DNV of Columbus

Office Park

Office Park

Office Park

Cramer Creek Ct

Rings Rd

Rings Rd

Blazer Pkwy

Frantz Rd

Longbranch Dr

0 40
20 80

N

City of Dublin
OHIO, USA

Frantz Road Improvements Alternative 1

Legend

Proposed Alternative Transportation Lane

AMERICAN STRUCTUREPOINT INC.

Match Line - See Previous Sheet

Frantz Rd

Monterey Dr

Match Line - See Below

Match Line - See Above

Metro Place S

Frantz Rd

Edinburgh Rd

Match Line - See Next Sheet

0 40 20 80

N

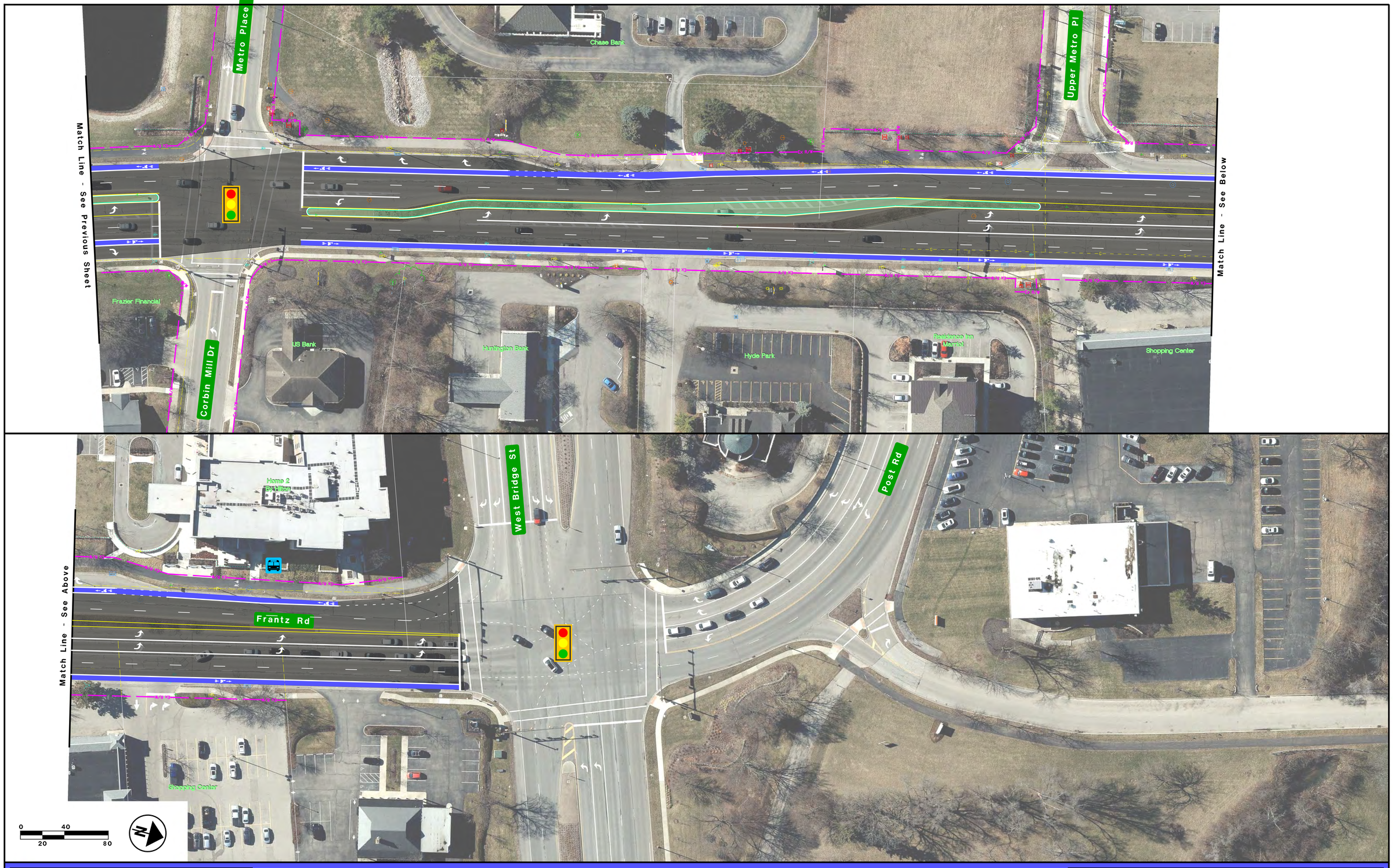
City of Dublin
OHIO, USA

Frantz Road Improvements Alternative 1

Legend

Proposed Alternative Transportation Lane

American Structurepoint Inc.



City of Dublin
OHIO, USA

Frantz Road Improvements Alternative 1

Legend

Proposed Alternative Transportation Lane

AMERICAN STRUCTUREPOINT INC.

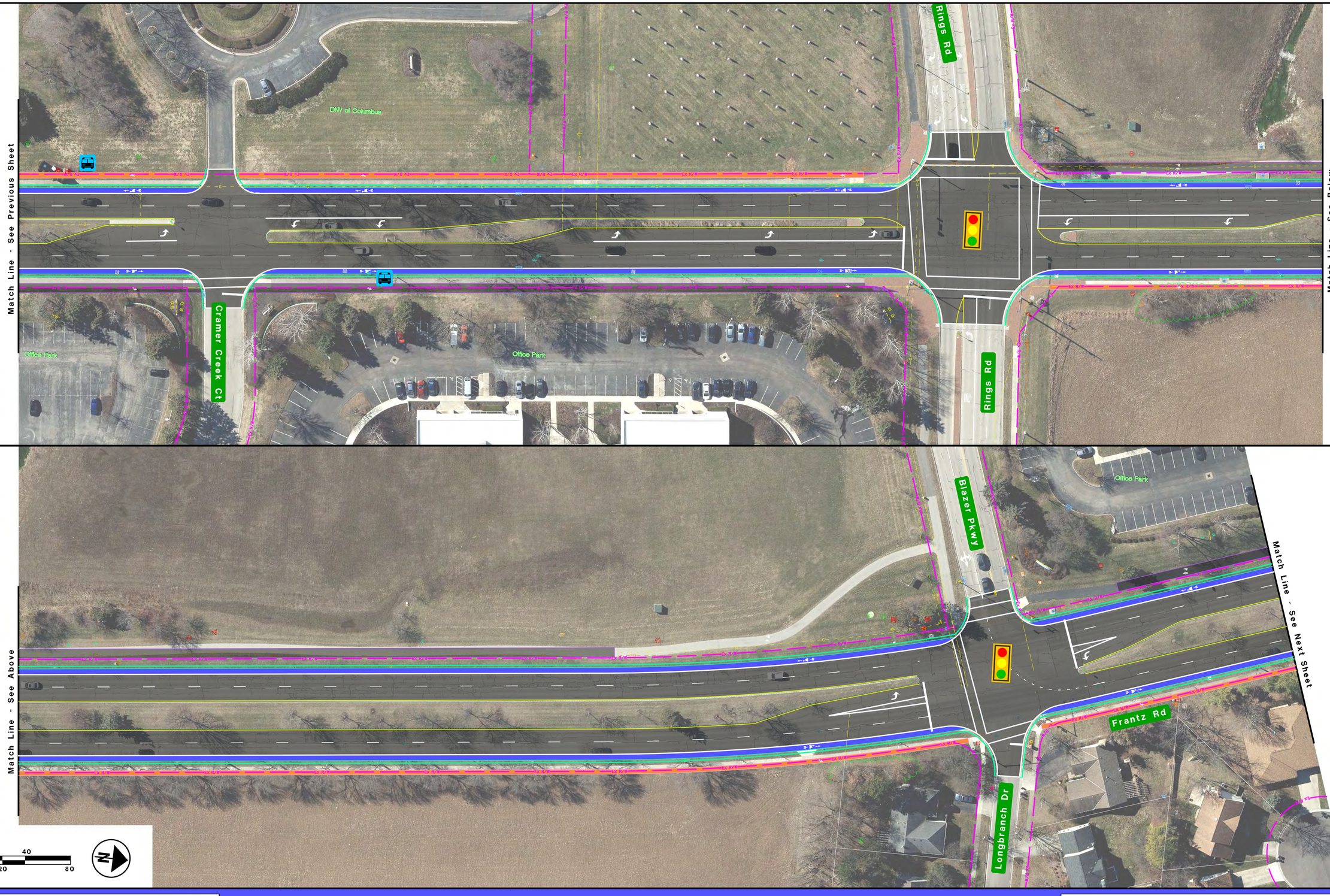
City of Dublin
OHIO, USA

Frantz Road Improvements Alternative 2

Legend

Proposed Alternative Transportation Lane

AMERICAN STRUCTUREPOINT INC.



City of Dublin
OHIO, USA

Frantz Road Improvements Alternative 2

Legend

Proposed Alternative Transportation Lane

AMERICAN STRUCTUREPOINT INC.

Match Line - See Previous Sheet

Frantz Rd

Monterey Dr

Match Line - See Below

Match Line - See Above

Metro Place S

Frantz Rd

Edinburgh Rd

Match Line - See Next Sheet

0 40 20 80

N

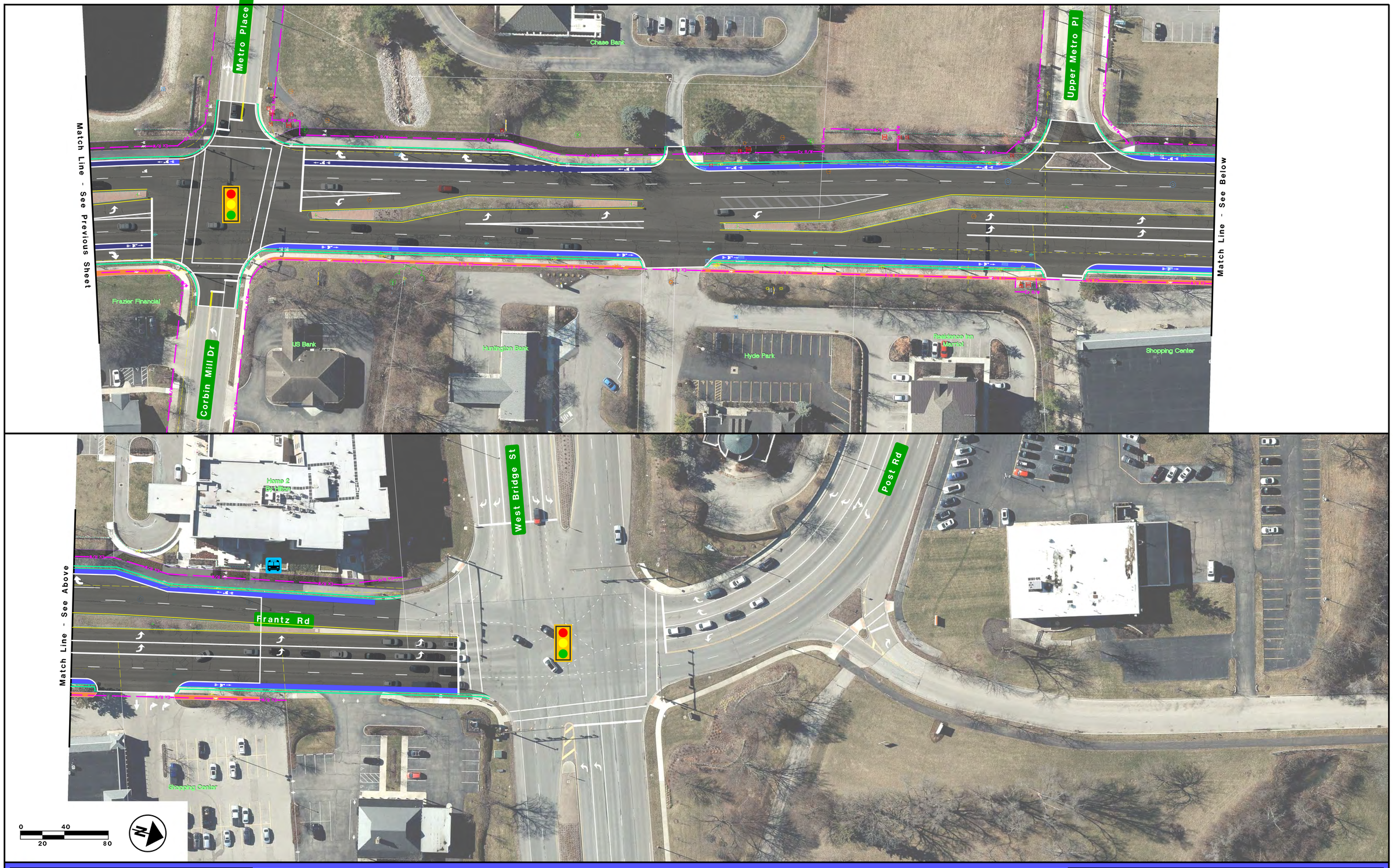
City of Dublin
OHIO, USA

Frantz Road Improvements Alternative 2

Legend

Proposed Alternative Transportation Lane

AMERICAN STRUCTUREPOINT INC.



City of Dublin
OHIO, USA

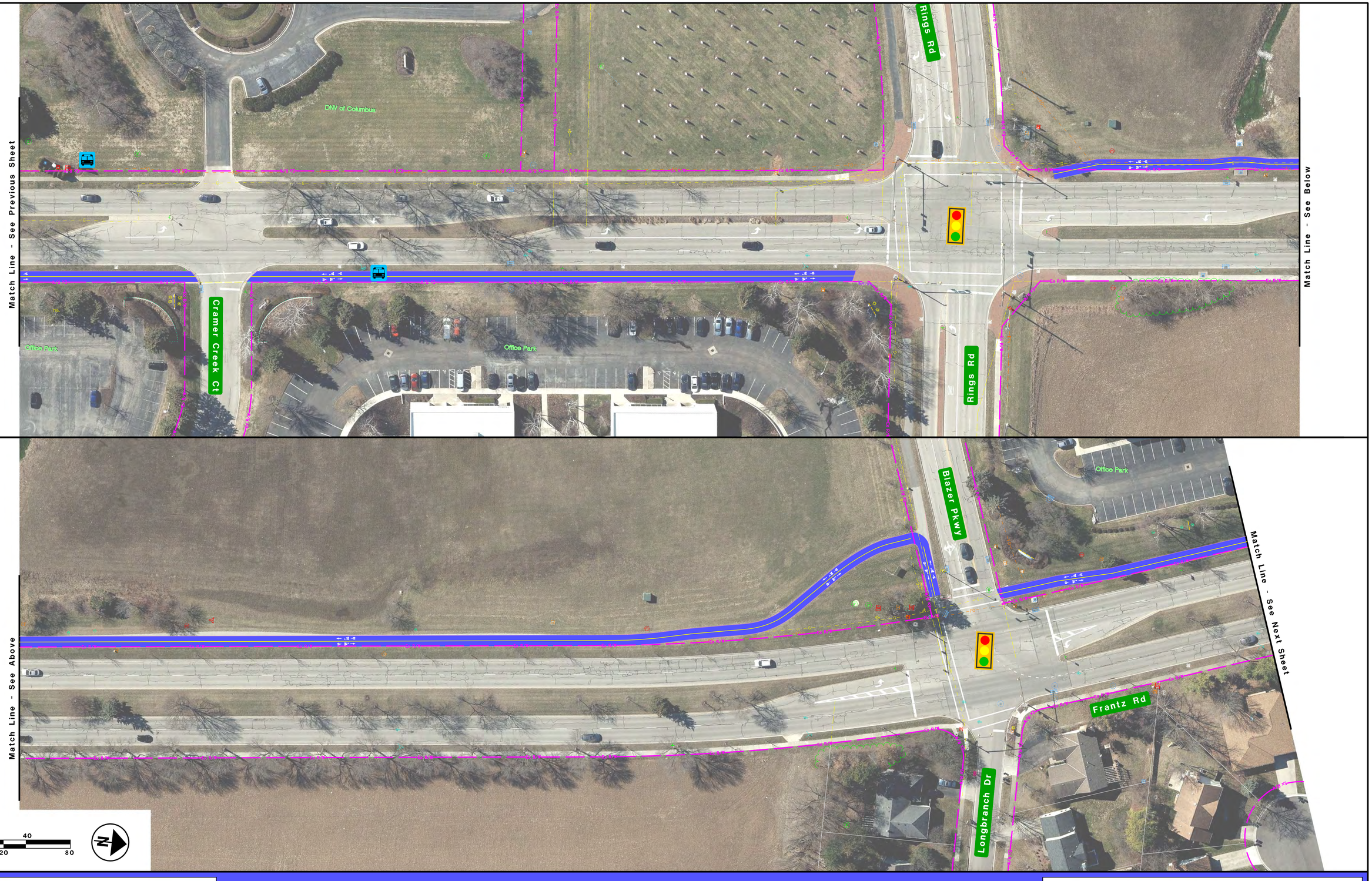
Frantz Road Improvements Alternative 2

Legend

Proposed Alternative Transportation Lane

AMERICAN STRUCTUREPOINT INC.

Tuttle Crossing Blvd
Frantz Rd
Tuttle Rd
Dominion Homes
Parkcenter Ave
Ohio Sleep Medicine Institute
American Cancer Society
Cincinnati Bell
Office Park
Match Line - See Below
Match Line - See Above
Delong and Associates
Dublin Family Vision
Bradenton Ave
Bradenton Ave
DNV of Columbus
Fanning Howey and Associates
Lee Esposito Accoc
Office Park
Match Line - See Next Sheet
0 40
20 80
N
City of Dublin
OHIO, USA
Frantz Road Improvements Alternative 3
Legend
Proposed Alternative Transportation Lane
AMERICAN STRUCTUREPOINT INC.



City of Dublin
OHIO, USA

Frantz Road Improvements Alternative 3

Legend

Proposed Alternative Transportation Lane

AMERICAN STRUCTUREPOINT INC.

Match Line - See Previous Sheet

Frantz Rd

Monterey Dr

Ex R/W

Match Line - See Below

Match Line - See Above

Metro Place S

Frantz Rd

Edinburgh Rd

Match Line - See Next Sheet

0 20 40 80

City of Dublin
OHIO, USA

Frantz Road Improvements Alternative 3

Legend

Proposed Alternative Transportation Lane

American Structurepoint Inc.

Metro Place N

Chase Bank

Upper Metro Pl

Match Line - See Previous Sheet

Match Line - See Below

Frazier Financial

Corbin Mill Dr

US Bank

Huntington Bank

Hyde Park

Residence Inn Marriot

Shopping Center

West Bridge St

Post Rd

Home 2 Suites by Hilton

Frantz Rd

Match Line - See Above

Shopping Center

0 40 20 80

N

City of Dublin OHIO, USA

Frantz Road Improvements Alternative 3

Legend

Proposed Alternative Transportation Lane

American STRUCTUREPOINT INC.

Dominion Homes

Ohio Sleep Medicine Institute

Tuttle Crossing Blvd

Parkcenter Ave

American Cancer Society

Frantz Rd

Cincinnati Bell

Match Line - See Below

Tuttle Rd

Office Park

Delong and Associates

Dublin Family Vision

Bradenton Ave

DNV of Columbus

Fanning Howey and Associates

Match Line - See Above

Lee Esposito Accoc

Bradenton Ave

Office Park

Match Line - See Next Sheet

0 40 80 20

N

City of Dublin
OHIO, USA

Frantz Road Improvements Alternative 4

Legend

Proposed Alternative Transportation Lane

AMERICAN STRUCTUREPOINT INC.

Match Line - See Previous Sheet

DNV of Columbus

Rings Rd

Cramer Creek Ct

Office Park

Office Park

Rings Rd

Match Line - See Below

Match Line - See Above

Blazer Pkwy

Office Park

Match Line - See Next Sheet

Frantz Rd

Branch Dr

0 40 20 80

N

City of Dublin
OHIO, USA

Frantz Road Improvements Alternative 4

Legend

Proposed Alternative Transportation Lane

AMERICAN STRUCTUREPOINT INC.

Match Line - See Previous Sheet

Frantz Rd

Monterey Dr

Ex R/W

Match Line - See Below

Match Line - See Above

Metro Place S

Frantz Rd

Edinburgh Rd

Match Line - See Next Sheet

0 40
20 80

N

City of Dublin
OHIO, USA

Frantz Road Improvements Alternative 4

Legend

Proposed Alternative Transportation Lane

AMERICAN STRUCTUREPOINT INC.

Match Line - See Previous Sheet

Match Line - See Below

Match Line - See Above

Metro Place N

Chase Bank

Upper Metro Pl

Frazier Financial

Corbin Mill Dr

US Bank

Huntington Bank

Hyde Park

Residence Inn Marriot

Shopping Center

West Bridge St

Post Rd

Home 2 Suites by Hilton

Frantz Rd

Shopping Center

0 40
20 80

N

City of Dublin
OHIO, USA

Frantz Road Improvements Alternative 4

Legend

Proposed Alternative Transportation Lane

AMERICAN STRUCTUREPOINT INC.

Appendix F – Opinion of Probable Construction Cost

Frantz Road - Alternative 1

PRELIMINARY COST ESTIMATE

DESCRIPTION	ITEM	QUANTITY	UNIT	$/UNIT	TOTAL $
ROADWAY					
Clearing and Grubbing	201	1	Lump	$3,000.00	$3,000
Straight Curb Removed	202	13,145	Lin. Ft.	$8.00	$105,160
Pavement Removed	202	405	Sq. Yd.	$12.00	$4,860
Median Removed	202	685	Sq. Yd.	$20.00	$13,700
Excavation	203	1,000	Cu. Yd.	$13.00	$13,000
Embankment	203	1,000	Cu. Yd.	$10.00	$10,000
Subgrade Compaction	204	7,430	Sq. Yd.	$2.50	$18,575
Proof Rolling	204	4	Hour	$200.00	$800
ROADWAY SUBTOTAL					**$169,095**
EROSION CONTROL					
Seeding & Mulching	659	6,550	Sq. Yd.	$2.00	$13,100
Storm Water Pollution Prevention Plan	832	1	Lump	$7,000.00	$7,000
Erosion Control	832	20,000	Each	$1.00	$20,000
EROSION CONTROL SUBTOTAL					**$40,100**
DRAINAGE					
None Anticipated	611	0	Lin. Ft.	$150.00	$0
DRAINAGE SUBTOTAL					**$0**
PAVEMENT					
Pavement Planing - 1.25"	254	52,270	Sq. Yd.	$5.00	$261,350
Asphalt Concrete Base Course - 6"	301	1,130	Cu. Yd.	$140.00	$158,200
Aggregate Base - 6"	304	1,240	Cu. Yd.	$45.00	$55,800
Tack Coat	407	3,955	Gal	$6.00	$23,730
Asphalt Concrete Surface Course - 1.25"	448	2,050	Cu. Yd.	$190.00	$389,500
Asphalt Concrete Intermediate Course - 1.75"	448	330	Cu. Yd.	$150.00	$49,500
Straight Curb	609	10,355	Lin. Ft.	$12.00	$124,260
PAVEMENT SUBTOTAL					**$1,062,340**
WATER WORK					
None Anticipated	638	1	Lump	$0.00	$0
WATER WORK SUBTOTAL					**$0**
SANITARY SEWER					
None Anticipated	611	1	Lump	$0.00	$0
SANITARY SEWER SUBTOTAL					**$0**
LIGHTING					
None Anticipated	625	1	Lump	$0.00	$0
LIGHTING SUBTOTAL					**$0**
TRAFFIC CONTROL					
Signing	630	1	Lump	$15,000.00	$15,000
Pavement Markings Incidentals	644	1	Lump	$5,000.00	$5,000
Center Line	644	0.18	Mile	$5,000.00	$900
Channelizing Line	644	19,050	Lin. Ft.	$1.50	$28,575
Crosswalk Line	644	1,680	Lin. Ft.	$3.00	$5,040
Dotted Line	644	485	Lin. Ft.	$1.50	$728
Edge Line	644	2.25	Mile	$3,500.00	$7,875
Lane Line	644	2.65	Mile	$2,000.00	$5,300
Stop Line	644	505	Lin. Ft.	$15.00	$7,575
Signal Modification	632	5	Each	$2,500.00	$12,500
TRAFFIC CONTROL SUBTOTAL					**$88,493**
LANDSCAPING					
Median Landscaping	661	1	Lump	$20,000.00	$20,000
LANDSCAPING SUBTOTAL					**$20,000**
MAINTENANCE OF TRAFFIC					
See Incidentals	614	1	Lump	$0.00	$0
MAINTAINING TRAFFIC SUBTOTAL					**$0**
Subtotal				**SUBTOTAL**	**$1,380,028**
30% Contingency					**$414,008**
Total Construction Cost					**$1,794,036**
Maintaining Traffic (**5%** of Total Construction Cost)		1	Lump	$89,702	**$89,701.79**
Field Office, Type B	619	4	Month	$1,800	**$7,200**
Construction Layout Stakes (0.75% of Total Construction Cost)	623	1	Lump	$13,455	**$13,455**
Mobilization (Per ODOT CMS)	624	1	Lump	$40,000	**$40,000**
TOTAL PROJECT COST					**$1,950,000**

This estimated does not include Right-of-Way or utility relocation costs
This estimate represents our Professional Opinion of the Probable Project Construction Cost.
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Frantz Road - Alternative 2
PRELIMINARY COST ESTIMATE

DESCRIPTION	ITEM	QUANTITY	UNIT	$/UNIT	TOTAL $
ROADWAY					
Clearing and Grubbing	201	1	Lump	$10,000.00	$10,000
Curb & Gutter Removed	202	15,705	Lin. Ft.	$9.00	$141,345
Pavement Removed	202	1,750	Sq. Yd.	$12.00	$21,000
Pavement Removed - Shared Use Path	202	4,310	Sq. Yd.	$12.00	$51,720
Walk Removed	202	17,745	Sq. Ft.	$3.00	$53,235
Excavation	203	2,000	Cu. Yd.	$13.00	$26,000
Embankment	203	2,000	Cu. Yd.	$10.00	$20,000
Subgrade Compaction	204	18,822	Sq. Yd.	$2.50	$47,055
Proof Rolling	204	8	Hour	$200.00	$1,600
Concrete Walk	608	36,534	Sq. Ft.	$5.00	$182,670
Detectable Warning	608	9	Each	$50.00	$450
Curb Ramp	608	31	Each	$400.00	$12,400
ROADWAY SUBTOTAL					**$567,475**
EROSION CONTROL					
Seeding & Mulching	659	9,070	Sq. Yd.	$2.00	$18,140
Storm Water Pollution Prevention Plan	832	1	Lump	$10,000.00	$10,000
Erosion Control	832	25,000	Each	$1.00	$25,000
EROSION CONTROL SUBTOTAL					**$53,140**
DRAINAGE					
Drainage and Underdrain	611	7,500	Lin. Ft.	$150.00	$1,125,000
Culvert and Headwall Modifications	611	1	Lump	$100,000.00	$100,000
DRAINAGE SUBTOTAL					**$1,225,000**
PAVEMENT					
Pavement Planing - 1.25"	254	55,115	Sq. Yd.	$5.00	$275,575
Asphalt Concrete Base Course - 6"	301	2,010	Cu. Yd.	$140.00	$281,400
Asphalt Concrete Base Course - 3"	301	395	Cu. Yd.	$140.00	$55,300
Aggregate Base - 4"	304	455	Cu. Yd.	$45.00	$20,475
Aggregate Base - 6" - Roadway	304	2,215	Cu. Yd.	$45.00	$99,675
Aggregate Base - 6" - Shared Use Path	304	860	Cu. Yd.	$45.00	$38,700
Tack Coat	407	4,570	Gal	$6.00	$27,420
Asphalt Concrete Surface Course - 1.25"	448	2,225	Cu. Yd.	$190.00	$422,750
1.50" Asphalt Concrete Surface Course, Type 1, (Medium Traffic), pg64-22	448	180	Cu. Yd.	$225.00	$40,500
Asphalt Concrete Intermediate Course - 1.75"	448	590	Cu. Yd.	$150.00	$88,500
Curb & Gutter	609	15,705	Lin. Ft.	$20.00	$314,100
PAVEMENT SUBTOTAL					**$1,664,395**
WATER WORK					
Hydrant Relocation	638	12	Each	$3,000.00	$36,000
Misc. Water Line Relocations	638	1	Lump	$20,000.00	$20,000
WATER WORK SUBTOTAL					**$56,000**
SANITARY SEWER					
Manhole Adjusted to Grade	611	2	Each	$750.00	$1,500
SANITARY SEWER SUBTOTAL					**$1,500**
LIGHTING					
Misc. Lighting Relocations	625	1	Lump	$50,000.00	$50,000
LIGHTING SUBTOTAL					**$50,000**
TRAFFIC CONTROL					
Signing	630	1	Lump	$25,000.00	$25,000
Pavement Markings Incidentals	644	1	Lump	$5,000.00	$5,000
Center Line	644	0.03	Mile	$5,000.00	$150
Channelizing Line	644	7,055	Lin. Ft.	$1.50	$10,583
Crosswalk Line	644	1,680	Lin. Ft.	$3.00	$5,040
Dotted Line	644	500	Lin. Ft.	$1.50	$750
Edge Line	644	2.50	Mile	$3,500.00	$8,750
Lane Line	644	2.75	Mile	$2,000.00	$5,500
Stop Line	644	730	Lin. Ft.	$15.00	$10,950
Signal Modification	632	5	Each	$10,000.00	$50,000
TRAFFIC CONTROL SUBTOTAL					**$121,723**
LANDSCAPING					
Tree Lawn Landscaping	661	1	Lump	$10,000.00	$10,000
LANDSCAPING SUBTOTAL					**$10,000**
MAINTENANCE OF TRAFFIC					
See Incidentals	614	1	Lump	$0.00	$0
MAINTAINING TRAFFIC SUBTOTAL					**$0**
Subtotal				**SUBTOTAL**	**$3,749,233**
30% Contingency					**$1,124,770**
Total Construction Cost					**$4,874,002**
Maintaining Traffic (**5%** of Total Construction Cost)		1	Lump	$243,700	**$243,700.11**
Field Office, Type B	619	9	Month	$1,800	**$16,200**
Construction Layout Stakes (0.75% of Total Construction Cost)	623	1	Lump	$36,555	**$36,555.02**
Mobilization (Per ODOT CMS)	624	1	Lump	$200,000	**$200,000**
TOTAL PROJECT COST					**$5,380,000**

This estimated does not include Right-of-Way or utility relocation costs
This estimate represents our Professional Opinion of the Probable Project Construction Cost.
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Frantz Road - Alternative 3

PRELIMINARY COST ESTIMATE

DESCRIPTION	ITEM	QUANTITY	UNIT	$/UNIT	TOTAL $
ROADWAY					
Clearing and Grubbing	201	1	Lump	$5,000.00	$5,000
Pavement Removed - Shared Use Path	202	4,940	Sq. Yd.	$12.00	$59,280
Walk Removed	202	7,350	Sq. Ft.	$3.00	$22,050
Excavation	203	250	Cu. Yd.	$13.00	$3,250
Embankment	203	250	Cu. Yd.	$10.00	$2,500
Subgrade Compaction	204	9,220	Sq. Yd.	$2.50	$23,050
Detectable Warning	608	10	Each	$50.00	$500
Curb Ramp	608	25	Each	$400.00	$10,000
ROADWAY SUBTOTAL					**$125,630**
EROSION CONTROL					
Seeding & Mulching	659	6,140	Sq. Yd.	$2.00	$12,280
Storm Water Pollution Prevention Plan	832	1	Lump	$7,000.00	$7,000
Erosion Control	832	20,000	Each	$1.00	$20,000
EROSION CONTROL SUBTOTAL					**$39,280**
DRAINAGE					
Manhole Adjusted to Grade	605	3	Each	$750.00	$2,250
Culvert and Headwall Modifications	611	1	Lump	$50,000.00	$50,000
DRAINAGE SUBTOTAL					**$52,250**
PAVEMENT					
Asphalt Concrete Base Course - 3"	301	705	Cu. Yd.	$140.00	$98,700
Aggregate Base - 6" - Shared Use Path	304	1,540	Cu. Yd.	$45.00	$69,300
1.50" Asphalt Concrete Surface Course, Type 1, (Medium Traffic), pg64-22	448	320	Cu. Yd.	$225.00	$72,000
PAVEMENT SUBTOTAL					**$240,000**
WATER WORK					
None Anticipated	638	1	Each	$0.00	$0
WATER WORK SUBTOTAL					**$0**
SANITARY SEWER					
Manhole Adjusted to Grade	611	1	Each	$750.00	$750
SANITARY SEWER SUBTOTAL					**$750**
LIGHTING					
None Anticipated	625	1	Lump	$0.00	$0
LIGHTING SUBTOTAL					**$0**
TRAFFIC CONTROL					
Signing	630	1	Lump	$5,000.00	$5,000
Pavement Markings Incidentals	644	1	Lump	$2,000.00	$2,000
Center Line	644	1.35	Mile	$5,000.00	$6,750
Pull Box Adjusted to Grade	632	7	Each	$250.00	$1,750
TRAFFIC CONTROL SUBTOTAL					**$15,500**
LANDSCAPING					
Tree Lawn Landscaping	661	1	Lump	$5,000.00	$5,000
LANDSCAPING SUBTOTAL					**$5,000**
MAINTENANCE OF TRAFFIC					
See Incidentals	614	1	Lump	$0.00	$0
MAINTAINING TRAFFIC SUBTOTAL					**$0**
Subtotal				**SUBTOTAL**	**$478,410**
30% Contingency					**$143,523**
Total Construction Cost					**$621,933**
Maintaining Traffic (**3%** of Total Construction Cost)		1	Lump	$18,658	**$18,657.99**
Field Office, Type B	619	2	Month	$1,800	**$3,600**
Construction Layout Stakes (0.75% of Total Construction Cost)	623	1	Lump	$4,664	**$4,664.50**
Mobilization (Per ODOT CMS)	624	1	Lump	$40,000	**$40,000**
TOTAL PROJECT COST					**$690,000**

This estimated does not include Right-of-Way or utility relocation costs

This estimate represents our Professional Opinion of the Probable Project Construction Cost.

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Frantz Road - Alternative 4

PRELIMINARY COST ESTIMATE

DESCRIPTION	ITEM	QUANTITY	UNIT	$/UNIT	TOTAL $
ROADWAY					
Clearing and Grubbing	201	1	Lump	$7,500.00	$7,500
Pavement Removed - Shared Use Path	202	4,940	Sq. Yd.	$12.00	$59,280
Walk Removed	202	37,575	Sq. Ft.	$3.00	$112,725
Excavation	203	300	Cu. Yd.	$13.00	$3,900
Embankment	203	300	Cu. Yd.	$10.00	$3,000
Subgrade Compaction	204	18,675	Sq. Yd.	$2.50	$46,688
Detectable Warning	608	22	Each	$50.00	$1,100
Curb Ramp	608	46	Each	$400.00	$18,400
ROADWAY SUBTOTAL					**$252,593**
EROSION CONTROL					
Seeding & Mulching	659	8,240	Sq. Yd.	$2.00	$16,480
Storm Water Pollution Prevention Plan	832	1	Lump	$10,000.00	$10,000
Erosion Control	832	25,000	Each	$1.00	$25,000
EROSION CONTROL SUBTOTAL					**$51,480**
DRAINAGE					
Manhole Adjusted to Grade	605	10	Each	$750.00	$7,500
Culvert and Headwall Modifications	611	1	Lump	$75,000.00	$75,000
DRAINAGE SUBTOTAL					**$82,500**
PAVEMENT					
Asphalt Concrete Base Course - 3"	301	1,430	Cu. Yd.	$140.00	$200,200
Aggregate Base - 6" - Shared Use Path	304	3,115	Cu. Yd.	$45.00	$140,175
1.50" Asphalt Concrete Surface Course, Type 1, (Medium Traffic), pg64-22	448	650	Cu. Yd.	$225.00	$146,250
PAVEMENT SUBTOTAL					**$486,625**
WATER WORK					
None Anticipated	638	1	Each	$0.00	$0
WATER WORK SUBTOTAL					**$0**
SANITARY SEWER					
Manhole Adjusted to Grade	611	1	Each	$750.00	$750
SANITARY SEWER SUBTOTAL					**$750**
LIGHTING					
Misc. Lighting Relocations	625	1	Lump	$25,000.00	$25,000
LIGHTING SUBTOTAL					**$25,000**
TRAFFIC CONTROL					
Signing	630	1	Lump	$5,000.00	$5,000
Pavement Markings Incidentals	644	1	Lump	$2,000.00	$2,000
Center Line	644	2.70	Mile	$5,000.00	$13,500
Pull Box Adjusted to Grade	632	10	Each	$250.00	$2,500
TRAFFIC CONTROL SUBTOTAL					**$23,000**
LANDSCAPING					
Tree Lawn Landscaping	661	1	Lump	$5,000.00	$5,000
LANDSCAPING SUBTOTAL					**$5,000**
MAINTENANCE OF TRAFFIC					
See Incidentals	614	1	Lump	$0.00	$0
MAINTAINING TRAFFIC SUBTOTAL					**$0**
Subtotal				**SUBTOTAL**	**$926,948**
30% Contingency					**$278,084**
Total Construction Cost					**$1,205,032**
Maintaining Traffic (**3%** of Total Construction Cost)		1	Lump	$36,151	**$36,151**
Field Office, Type B	619	3	Month	$1,800	**$5,400**
Construction Layout Stakes (0.75% of Total Construction Cost)	623	1	Lump	$9,038	**$9,038**
Mobilization (Per ODOT CMS)	624	1	Lump	$40,000	**$40,000**
TOTAL PROJECT COST					**$1,300,000**

This estimated does not include Right-of-Way or utility relocation costs

This estimate represents our Professional Opinion of the Probable Project Construction Cost.

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Appendix G – Community Benchmarking Data

Alternative Transportation Lane Study

Tom Hibbard spoke to David Littlejohn with the Camel, IN Engineering Department on February 11, 2020.

1. Does your community currently have app-based electric scooters offered (eg Lime, Bird, etc.) with the City limits?

   Electric scooters are not in Carmel, but they are in neighboring Indianapolis and wander in occasionally. Zagster operates a docking station based bike share program in the City. In the past, Zagster has offered to set up an electric scooter network in the City if contracted and would manage the program for them. So far, the City has not acted on this idea.

   The City has seen more personally owned electric scooters showing up in recent years.

2. What rules/regulations are in place for low speed transportation vehicles – eg. Electric scooters, e-bikes, etc?

   There are no specific rules or any recent rule changes made – see next response.

3. Are these types of vehicles permitted along streets, sidewalks, bike paths or bike lanes?

   Multi-use paths and greenways (including the Monon Trail) prohibit motorized vehicles. So far, Carmel has interpreted this to mean combustion motor vehicles and there hasn't been an effort to prohibit electric motor scooters or e-bikes. There is a speed limit on the trail which has to be obeyed. Scooters are governed to a speed of 15 mph and could be adjusted slower if the City were to contract with a service and think this is necessary. The speeds could even be controlled in certain areas using geo-fencing. David noted that Carmel's interpretation to the permission to use scooters on the Monon Trail is not the same as other communities where the trail goes – Indianapolis, for instance, does not permit them.

   Scooters are permitted in the streets.

4. Has the City revised or developed new roadway design standards to accommodate these modes of transportation?

   No. David did note that Kansas City did a pilot program for micro mobility lanes last year.

5. What is the public perception/support for these transportation alternatives in your community?

   Not much of a huge demand for them. No organized or broad opposition to them. He noted there has been an interest from high school students – he has been interviewed by the high school newspaper about them. He suspects the City council would likely be divided.

6. Were these types of transportation alternatives previously available in your community? If so, what was the experience like in terms public support, safety, regulation?

   No.

7. Is the community serviced by a fixed route transit service? If so, do alternative transportation modes serve to provide first mile/last mile access to transit stops?

   No, not fixed route.

Alternative Transportation Lane Study

Tom Hibbard spoke to Nick Jarrell with the Fort Wayne, IN Public Works Department on February 10, 2020.

1. Does your community currently have app-based electric scooters offered (eg Lime, Bird, etc.) with the City limits?

   In order to be proactive and pre-empt scooters being deployed in the City before rules could be in place, Ft. Wayne sought out app based providers for interest in submitting to be considered for a 2 year pilot program. A contract would be put in place with a single provider for this period. The City ultimately selected VeoRide to provide the pilot program service. They were selected after considering that they offered both bikes and scooters, ADA compliance and other considerations. The contract is well into the second year and will expire in the fall of 2020. Nick thought the program has worked well and has been well received by the community. It currently operates only within a mile of downtown based on the pilot requirements. Geofencing is used to restrict areas where they are not permitted to operate within this zone (eg parks, parking garages, etc.). Another of their requirements was that a local representative must be in the city to provide services (eg retrieving a scooter) within 2 hours upon being contacted. If they do not respond within this time, the City retrieves it and charges $30 to the VeoRide.

   Free rides are provided to disadvantaged users.

   The City charged VeoRide $100 to be in the pilot program, $2,000 to get the permit and then $2 per bike or scooter. VeoRide makes and operates the scooters, which are well build and the most robust of the ones Ft. Wayne considered.

2. What rules/regulations are in place for low speed transportation vehicles – eg. Electric scooters, e-bikes, etc?

   Electric app-based scooters are only permitted to VeoRide under their contract. There are no restrictions on the use of personally owned electric scooters or bikes.

3. Are these types of vehicles permitted along streets, sidewalks, bike paths or bike lanes?

   Electric scooters are permitted on sidewalks and multi-use paths, but not in the street since they do not have a combustion motor. There is a 15 mph speed limit, which is enforced by their bike patrol who can write tickets.

4. What is the public perception/support for these transportation alternatives in your community?

   The feedback the City has received on the pilot program has been positive. They initially had some issues with vandalism to the scooters but VeoRide reinforced components

that were being damaged in order to reduce this problem. Not sure if the damage was by those opposed to the scooters or just general vandalism.

5. Were these types of transportation alternatives previously available in your community? If so, what was the experience like in terms public support, safety, regulation?

   No…the pilot program was initiated before these types of vehicles were deployed.

6. Is the community serviced by a fixed route transit service? If so, do alternative transportation modes serve to provide first mile/last mile access to transit stops?

   Yes. Fort Wayne Citilink. It doesn't appear so based on the data the City has collected….47,000 rides were counted from the beginning of September to end of December 2019 for 18,000 users. The average length of ride is 17 minutes. The heaviest use occurs from Friday night through early Sunday morning (around midnight). There is another peak that occurs during mid-day on Sundays.

Alternative Transportation Lane Study

Kansas City, Missouri - Summary of "Scooter and eBike Pilot Program" launched May 9, 2019. https://www.kcmo.gov/programs-initiatives/scooters-and-ebikes. Also includes e-mail conversation with Eric Vaughan from BikeWalkKC (non-profit advocacy/education group implementing RideKC).

1. Does your community currently have app-based electric scooters offered (eg Lime, Bird, etc.) with the City limits?

   On May 9, 2019, Kansas City welcomed Bird, Spin and RideKC Bike & RideKC Scooter into a yearlong scooter and e-bike pilot program. The City created the scooter and e-bike pilot as an innovative way to provide additional modes of transportation for residents and visitors while also providing data and other information to City staff.

2. What rules/regulations are in place for low speed transportation vehicles – eg. Electric scooters, e-bikes, etc?

   Electric scooters and e-bikes generally follow the same rules/regulations of foot-powered bicycles.

   "Very little regulation in the vendor operating agreement and no enforcement measures in place." – Eric Vaughan

   Data collected during/from the pilot program will be analyzed to help determine what, if any, revisions to city code might be considered.

   Electric-assisted bicycle: "Has a power output of not more than 1,000 watts. Is incapable of propelling the bicycle at a speed of more than 20 miles per hour."

   Foot scooter: "…may be equipped with an electric motor that is capable of being propelled at a speed of no more than 20 miles per hour."

3. Are these types of vehicles permitted along streets, sidewalks, bike paths or bike lanes?

   Scooters: People should ride in the streets, or in bike lanes where available. Do not ride on sidewalks. Riding a scooter (classified as a motorized vehicle) on a sidewalk is in violation of KCMO ordinance 70-253: No person shall drive any vehicle other than by human power upon a sidewalk, sidewalk area, park or public property, except upon a permanent or duly authorized temporary driveway.

   New facilities, such as protected bike lanes, buffered bike lanes, shared use trails, are being implemented as part of the Bike KC Master Plan (https://drive.google.com/file/d/1U9Bdz-xaNzXBN-MDH0QTIIR624cVlF33/view).

   "Permitted basically anywhere except sidewalks, although they get ridden even in restricted zones without penalty." – Eric Vaughan

4. What is the public perception/support for these transportation alternatives in your community?

   Public meeting results related to facility types were included in the Bike KC Master Plan. Although meeting was not specifically related to micro-mobility, bike users are viewed as a similar population. In general, bike users preferred to ride in bike lanes along traffic as opposed to on a shared use trail.

5. Were these types of transportation alternatives previously available in your community? If so, what was the experience like in terms public support, safety, regulation?

   The pilot program was introduced to the existing infrastructure without making improvements first. The pilot program is being used to gauge how motorized units best fit into the existing transportation system.

   "KC has had bike hare since 2012 as a non-profit program. Electric bikes and scooters were added to the RideKC program early last year." – Eric Vaughan

6. Is the community serviced by a fixed route transit service? If so, do alternative transportation modes serve to provide first mile/last mile access to transit stops?

   Yes. Bus system and streetcars through RideKC.

   "64% of RideKC Bike and Scooter trips start or end in proximity to a transit stop." – Eric Vaughan

7. Additional information:

   Ridership information from the companies will help us prioritize where we need to build more infrastructure and understand the impacts of scooters and e-bikes on existing infrastructure.

   "Our current pilot program is not something that I would recommend to other cities at this time. It does not build in any accountability for vendors and we have seen regular problems with operators due to that. For-profit vendors regularly violate their agreement by blocking the public right of way or skirt their equity requirements despite the City continually requesting improvements. RideKC Bike and Scooter is the only vendor that is aligned with the transit system and offers true first and last mile operations along fixed route services. 64% of RideKC Bike and Scooter trips start or end in proximity to a transit stop. The other vendors primarily focus on heavy density and tourist zones of the City. Any pilot you consider should have heavy enforcement, compliance, and data collection components, as the for-profit companies have a long history of cutting corners and violating their operating agreements." – Eric Vaughan

Alternative Transportation Lane Study

Atlanta, GA - Summary of information compiled from micro-mobility studies, public meetings, regulation updates, etc.

1. Does your community currently have app-based electric scooters offered (eg Lime, Bird, etc.) with the City limits?

   Yes, Permitted Shareable Dockless Mobility Devices and Operators as of 7/2/2019:

Operator	*# of Permitted Devices*
Bird	*2,000*
Boaz	*200*
Bolt	*1,000*
Gotcha	*500*
Jump	*2,000*
Lime	*2,000*
Lyft	*2,000*
Spin	*2,000*
Wheels	*1,000*

2. What rules/regulations are in place for low speed transportation vehicles – eg. Electric scooters, e-bikes, etc?

   https://www.atlantaga.gov/government/departments/shareable-dockless-mobility-devices

   There is currently a Nighttime Riding Restriction for scooters/e-bikes that are permitted through the City's Shareable Dockless Mobility Device (SDMD) Permit and rented through an App. No devices may be rented from 9:00PM-4:00AM. Relay Bikeshare and personal bikes, scooters, e-bikes, or any other personally owned device are NOT affected by the nighttime no-ride zone. You may continue to ride at any time.

   What if I have my own e-scooter or e-bike? Great! We applaud your use of this non-car mode of transportation. You still need to follow all the rules regulating riding and parking these devices.

   The Atlanta Police Department will monitor and enforce appropriate riding behavior.

3. Are these types of vehicles permitted along streets, sidewalks, bike paths or bike lanes?

   https://www.midtownatl.com/about/news-center/post/new-escooter-regulations-in-atlanta-explained

   No riding on sidewalks. Yield to pedestrians. Scooters are allowed on shared use pathways. Like cars and bikes, you must yield to pedestrians at crosswalks.

   Keep it under 15 mph. The scooters themselves are limited to 15 mph speeds.

Do ride where bikes are allowed: bike lanes, on shared use paths including, on the street – in the rightmost lane

Ordinance 18-O-1322:

- *SDMDs shall not be considered motorized vehicles as set forth in Chapter 110, Article III*
- *SDMDs shall not be operated on sidewalks. SDMDs may operate in vehicle travel lanes, in bike lanes, and along shared use paths throughout the City.*

4. What is the public perception/support for these transportation alternatives in your community?

   2019 Atlanta E-Scooter survey results (https://www.atlantaga.gov/home/showdocument?id=45981 and attached):

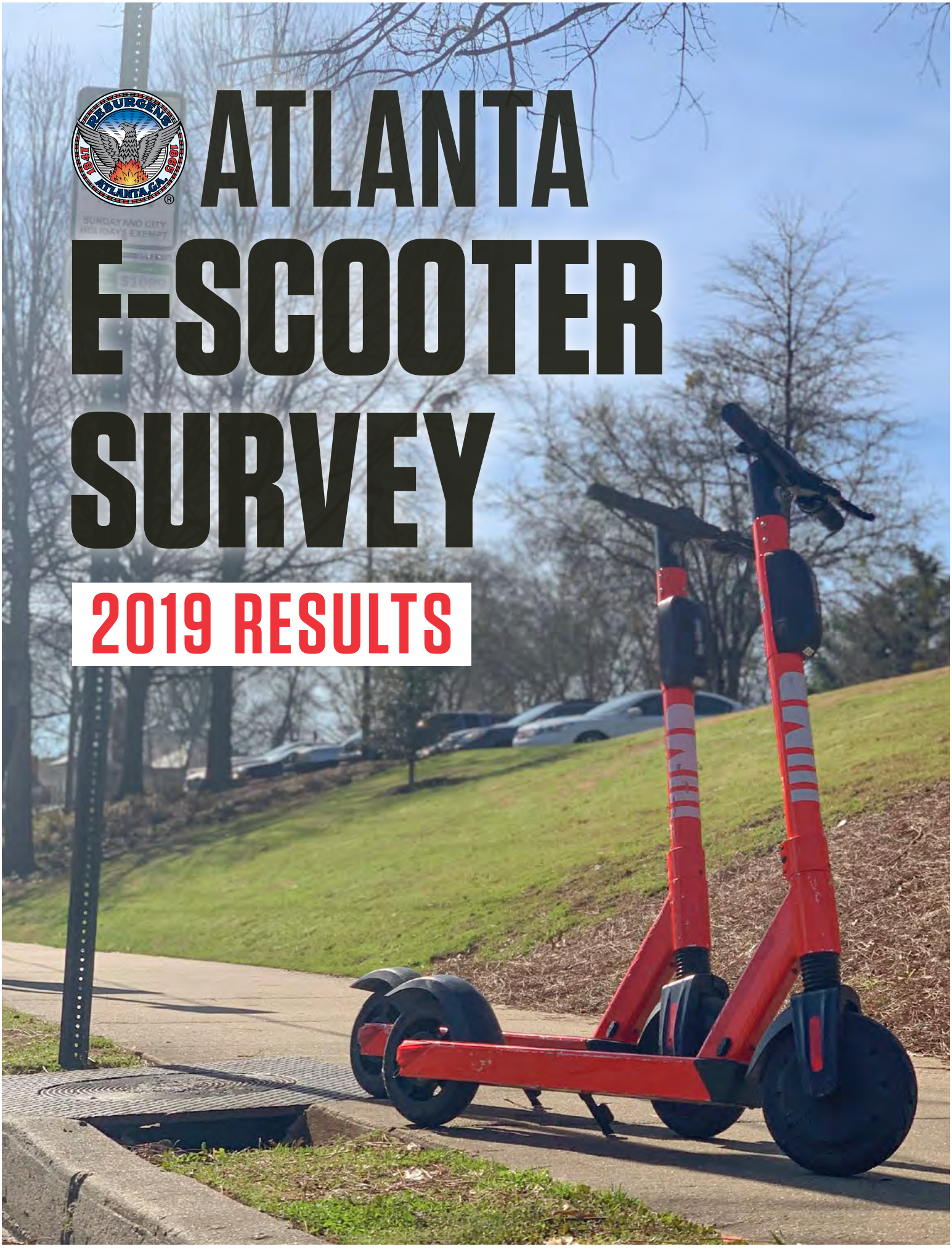
   Which changes are most critical to making e-scooters successful in Atlanta?
   Population that have ridden e-scooters: 78% - build more safe places to ride

5. Were these types of transportation alternatives previously available in your community? If so, what was the experience like in terms public support, safety, regulation?

   N/A

6. Is the community serviced by a fixed route transit service? If so, do alternative transportation modes serve to provide first mile/last mile access to transit stops?

   Yes, Metropolitan Atlanta Rapid Transit Authority (MARTA). MARTA runs fixed-route buses and small rail. Access to dockless mobility devices are generally located nearby most MARTA bus or rail stops.



ATLANTA E-SCOOTER SURVEY

2019 RESULTS

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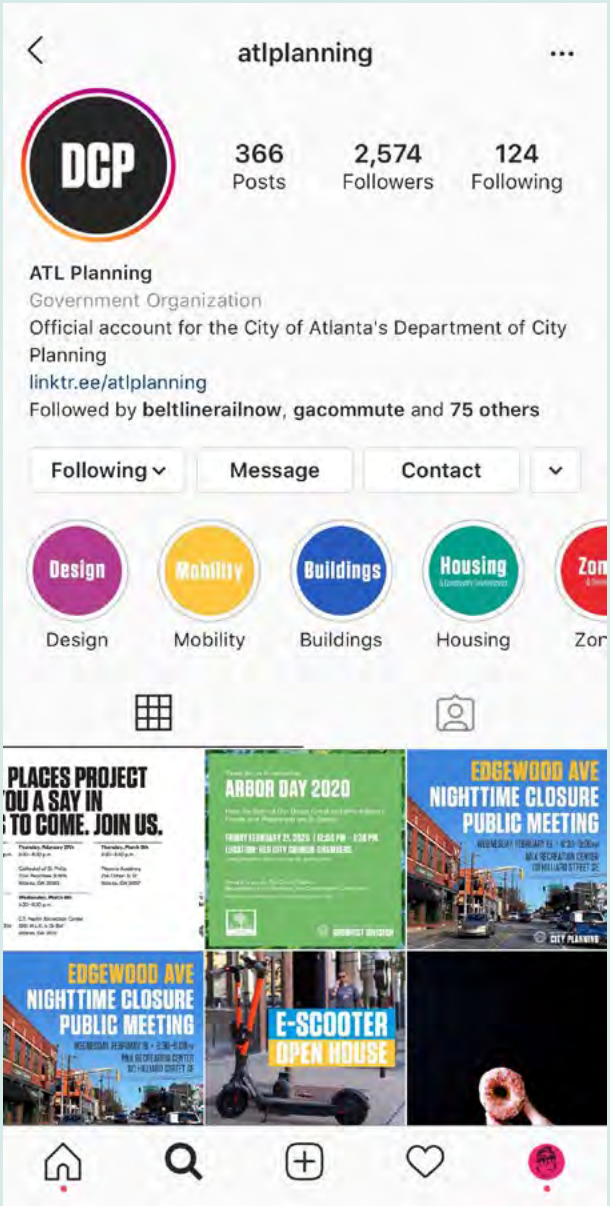


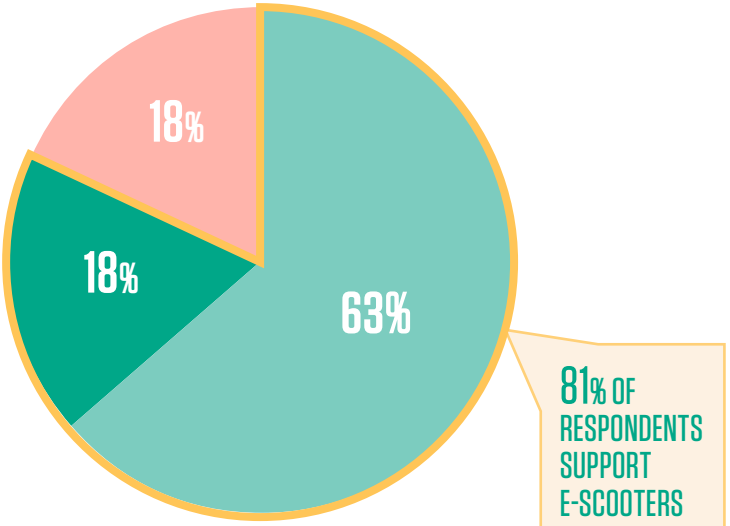
THE BIG PICTURE

Between November 18th and December 8th, 2019, the Atlanta E-Scooter Survey collected feedback from **2,640 people** about the use and opinions of e-scooters in Atlanta.

The results showed **support for continuing the e-scooter program** while also emphasizing the many **opportunities for improvement**. The results of this survey were used in conjunction with the feedback we received over the last year and extensive research into other cities' best practices to inform changes to our e-scooter permit program in 2020 and beyond.

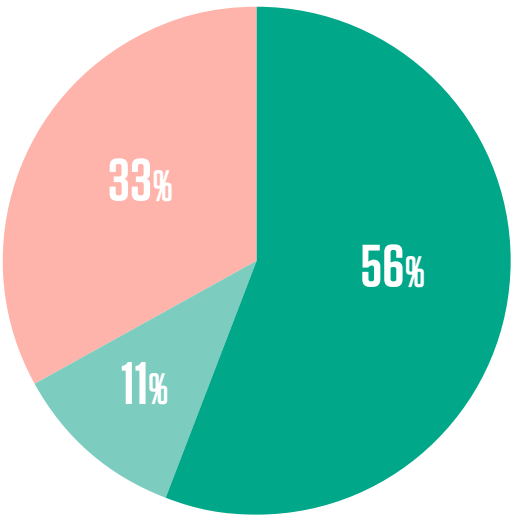
Most respondents **supported the use of e-scooters as a transportation option** in Atlanta. Over half of respondents had previously ridden an e-scooter, and even more were interested in trying one out.

SHOULD E-SCOOTERS BE A MOBILITY OPTION FOR ATLANTA?



- E-SCOOTERS **SHOULD BE AN OPTION** FOR ATLANTANS. THE CURRENT E-SCOOTER SYSTEM SERVES ATLANTA'S NEEDS WELL.
- E-SCOOTERS **SHOULD BE AN OPTION** FOR ATLANTANS. HOWEVER, THE CURRENT E-SCOOTER SYSTEM NEEDS IMPROVEMENT.
- E-SCOOTERS **SHOULD NOT BE AN OPTION** FOR ATLANTANS.

HAVE YOU RIDDEN AN E-SCOOTER IN ATLANTA?



- YES
- NO, BUT I WANT TO TRY IT
- NO, AND I DO NOT WANT TO TRY IT

EVERYONE AGREES THAT CHANGES ARE NEEDED.

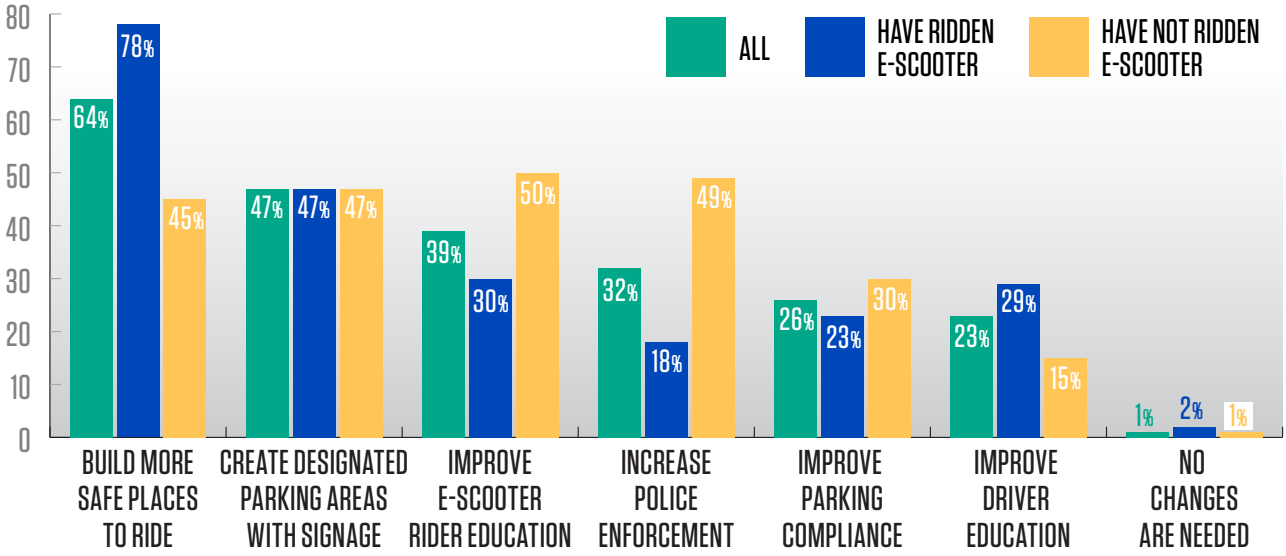
Many respondents gave similar feedback for the needed changes to Atlanta's e-scooter program. The most common request was that we **build safer places to ride**.

Other common changes to improve behavior were **creating designated parking** and **improving educational programming**.

A decrease in the number of companies and scooters was stated as a critical regulatory improvement, especially from respondents who have not ridden scooters. Other critical regulatory improvements identified in the survey, especially from respondents who have ridden scooters, included **establishing larger and more equitable service areas** and **increased maintenance requirements** of e-scooters.

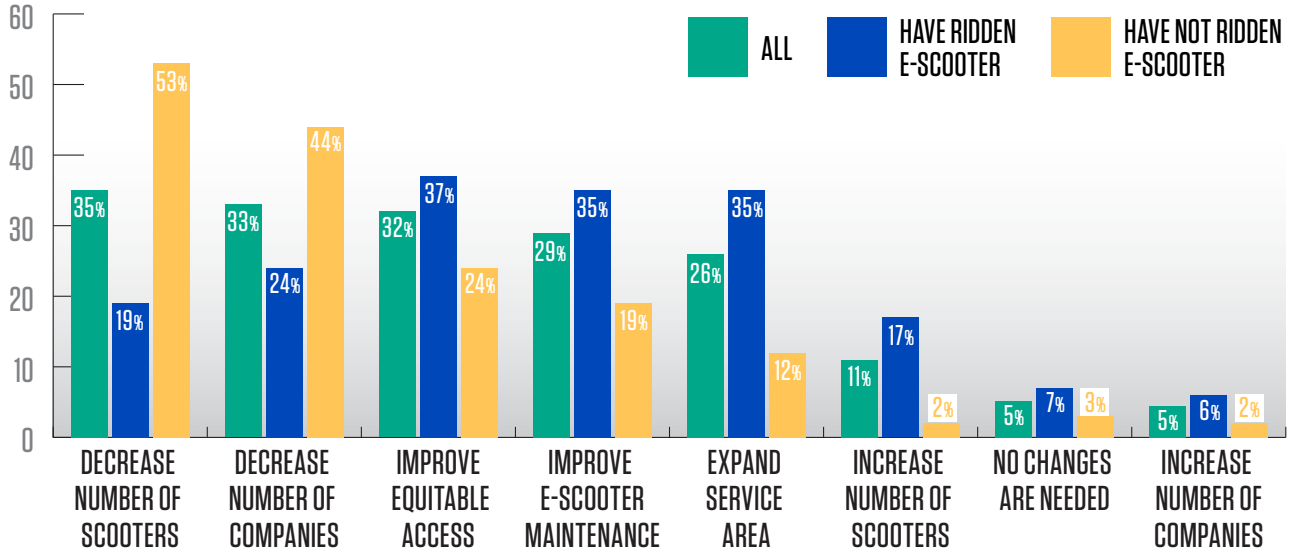
WHICH CHANGES ARE MOST CRITICAL FOR MAKING E-SCOOTERS SUCCESSFUL IN ATLANTA?

SELECT UP TO 3



WHICH REGULATIONS ARE MOST CRITICAL FOR MAKING E-SCOOTERS SUCCESSFUL IN ATLANTA?

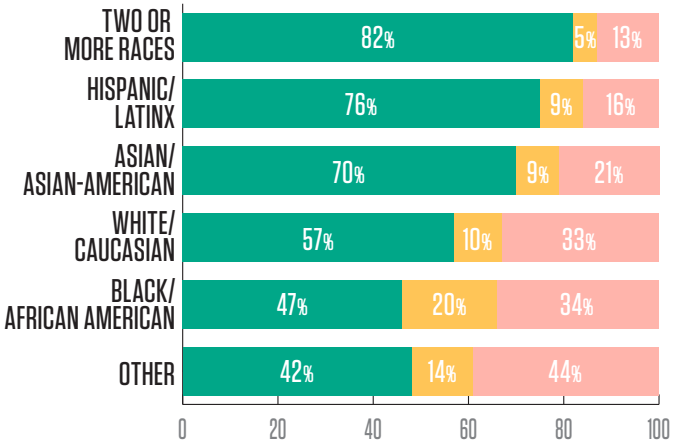
SELECT UP TO 3



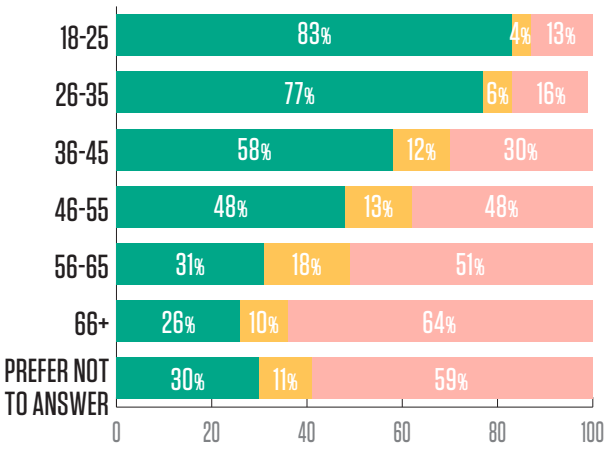
WHO IS RIDING E-SCOOTERS IN ATLANTA?

Riding e-scooters is popular with a diverse set of demographic groups. **People of all ages** have tried and are interested in trying scooters, but **younger adults are more likely to ride scooters. Higher income individuals are slightly less likely** to ride e-scooters. **Women are slightly more likely** to ride and be interested in riding e-scooters.

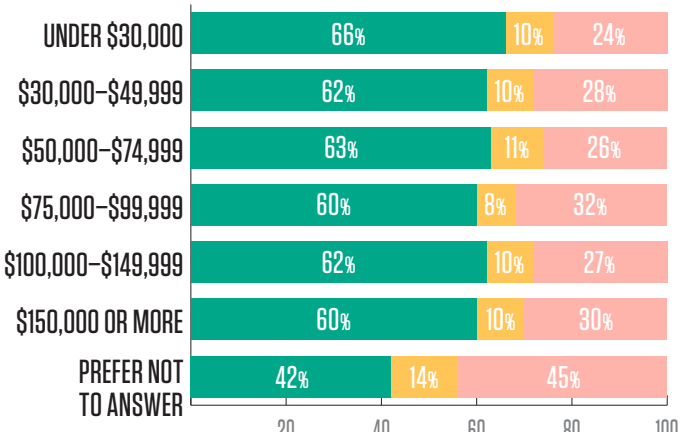
BY RACE/ETHNICITY



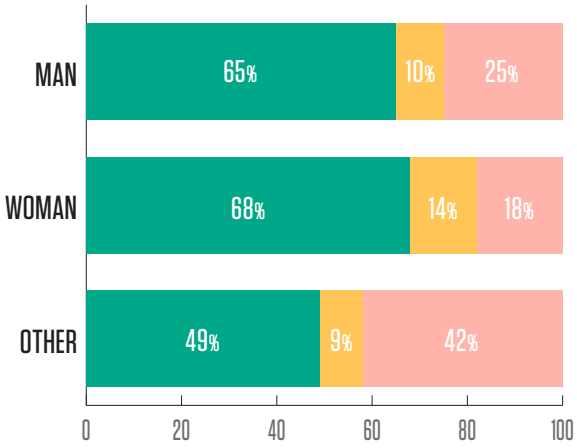
BY AGE



BY INCOME



BY GENDER



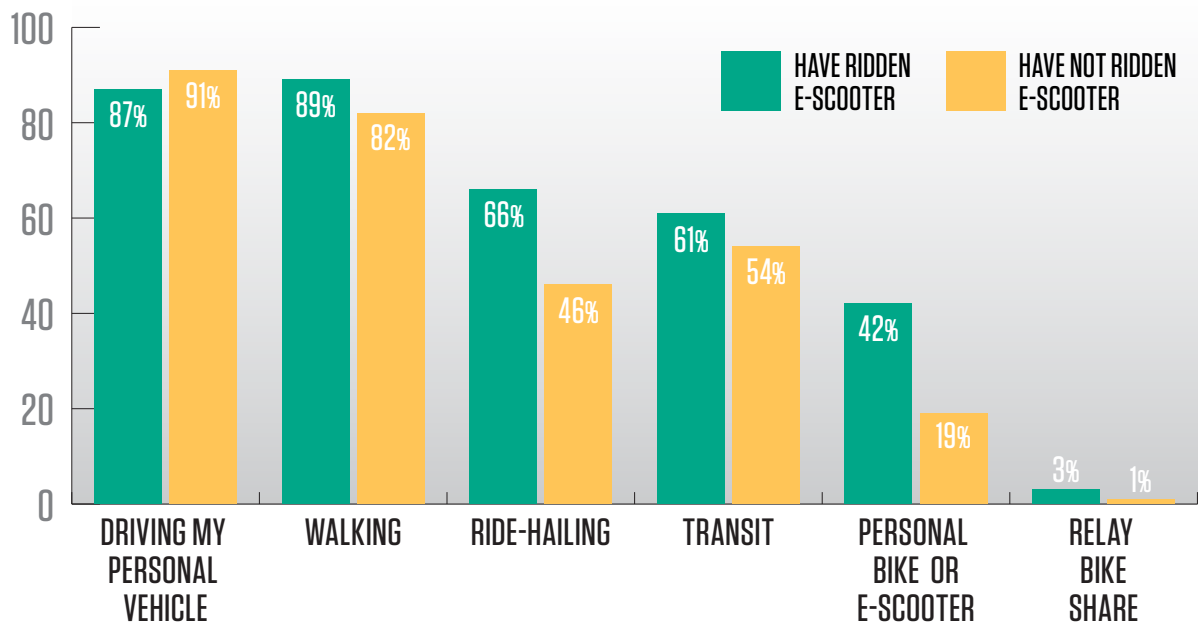
YES, I HAVE RIDDEN AN E-SCOOTER

NO, BUT I WANT TO TRY IT

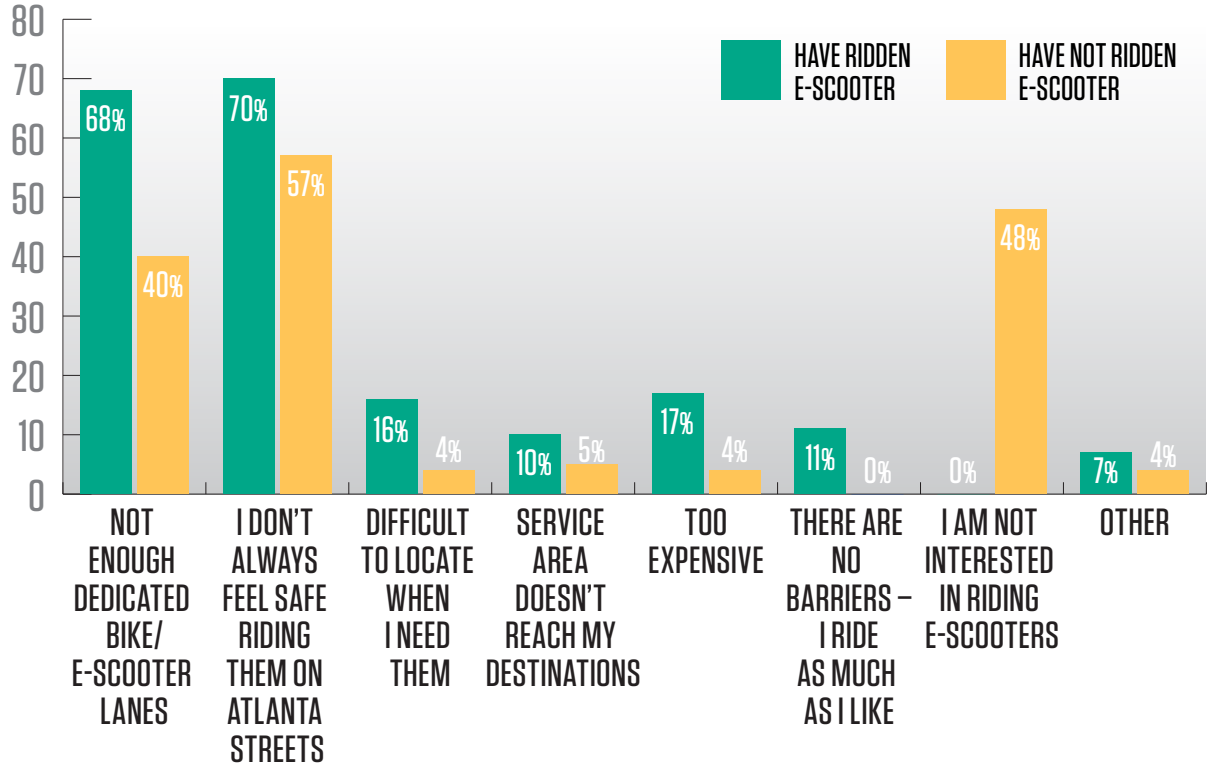
NO, AND I DO NOT WANT TO TRY IT

E-scooter riders walk and drive at approximately the same rate as non-scooter riders. However, e-scooter users have taken other forms of transportation more frequently in the last month such as **transit, ride-hailing, and biking**. The most common barrier to riding e-scooters more often is the **lack of safe street infrastructure.**

WHAT OTHER FORMS OF TRANSPORTATION HAVE YOU TAKEN IN THE LAST MONTH? SELECT ALL THAT APPLY



WHAT BARRIERS, IF ANY, PREVENT YOU FROM USING E-SCOOTERS AS MUCH AS YOU WOULD LIKE? SELECT UP TO 3



HOW DO PERSPECTIVES ON E-SCOOTERS DIFFER?

Different experiences with e-scooters lead to different perspectives of how to integrate them into the transportation network.

If you have ridden an e-scooter, you are more likely to think they **should be part of Atlanta's transportation mix.** You are also more likely than non-riders to think that **riding and parking behavior has improved** over the last year.

Most people of all age groups support e-scooters as an option, but younger people are most likely to support them. However, respondents' different **income levels did not show different levels of support** for e-scooters.

WHO SUPPORTS E-SCOOTERS? SHOULD THEY BE AN OPTION?

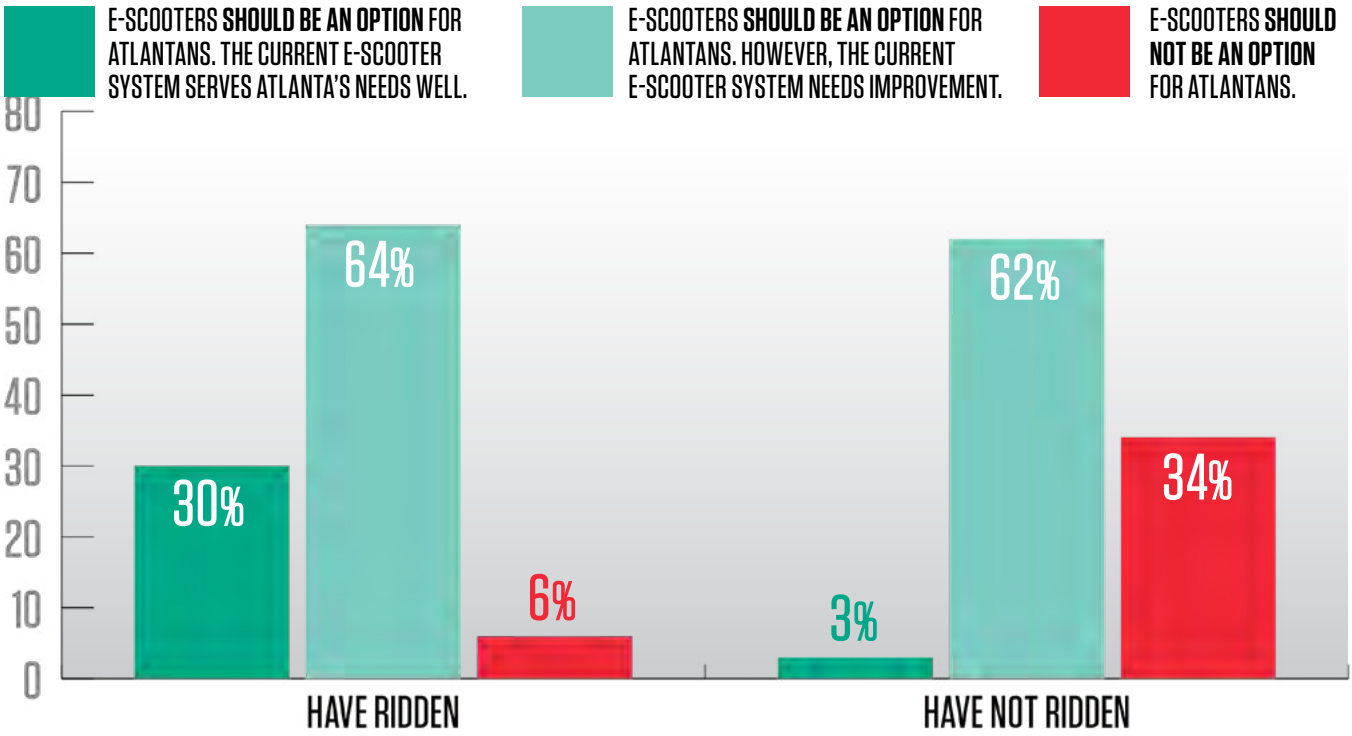
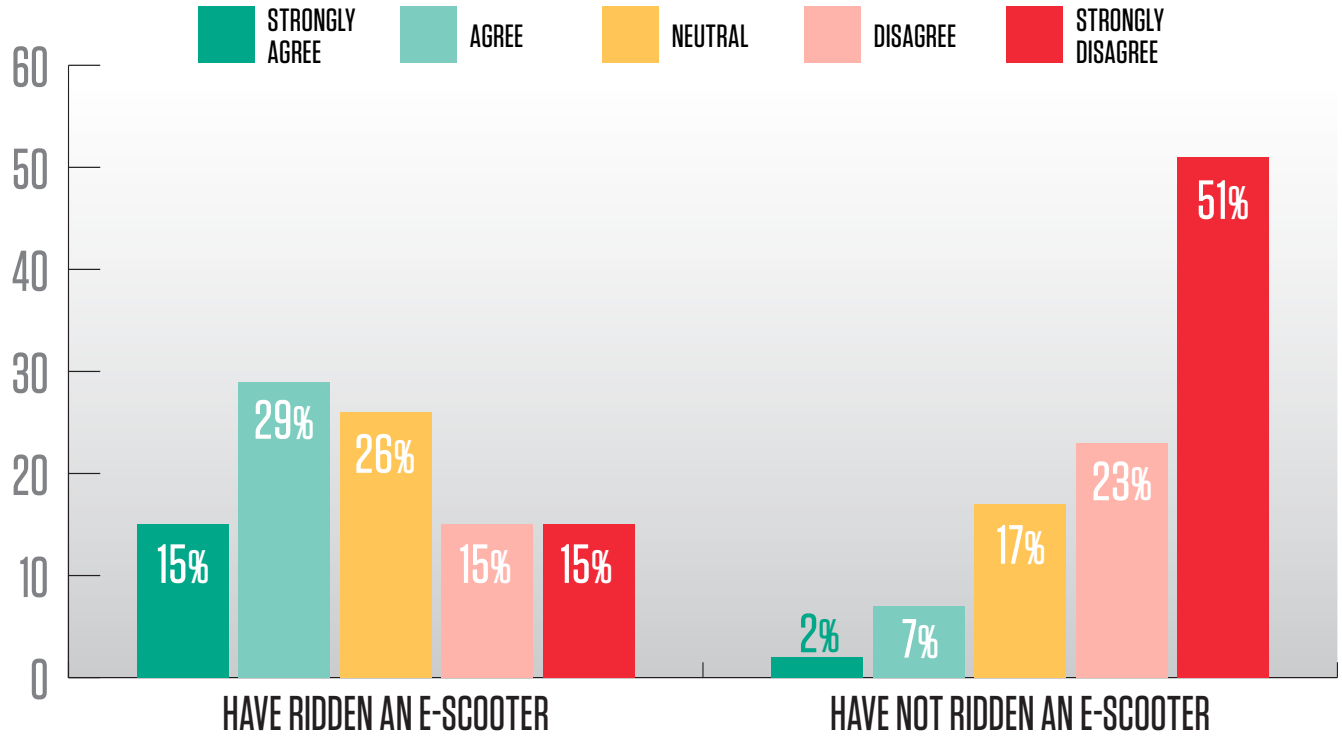
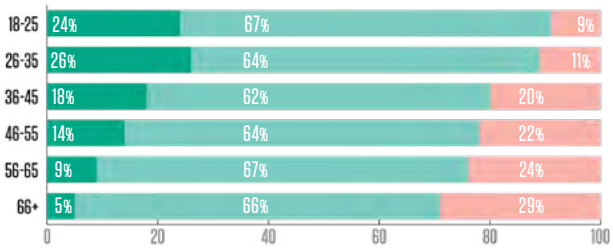


PHOTO BY MAUD WORSCHAK, UDP

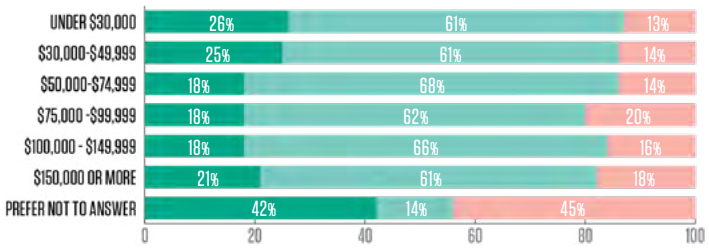
AGREE OR DISAGREE? PEOPLE ARE PARKING THEIR SCOOTERS MORE RESPONSIBLY THAN ONE YEAR AGO



SUPPORT BY AGE



SUPPORT BY INCOME



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E-SCOOTERS **SHOULD BE AN OPTION** FOR ATLANTANS. HOWEVER, THE CURRENT E-SCOOTER SYSTEM NEEDS IMPROVEMENT.

E-SCOOTERS **SHOULD NOT BE AN OPTION** FOR ATLANTANS.

HOW ARE PEOPLE USING E-SCOOTERS?

Most e-scooter trips in Atlanta are reported to be **replacing walking or single occupant car trips** (ride hailing and personally driven vehicles). Top reasons reported for using e-scooters instead of other modes of transportation are to get people to their desinations faster, more conveniently, and in a more enjoyable manner. Additionally, many of those who would have used a car report that e-scooters were a **cheaper alternative**.

WHY DID YOU CHOOSE TO TAKE AN E-SCOOTER FOR YOUR LAST TRIP OVER ANOTHER MODE OF TRANSPORTATION?

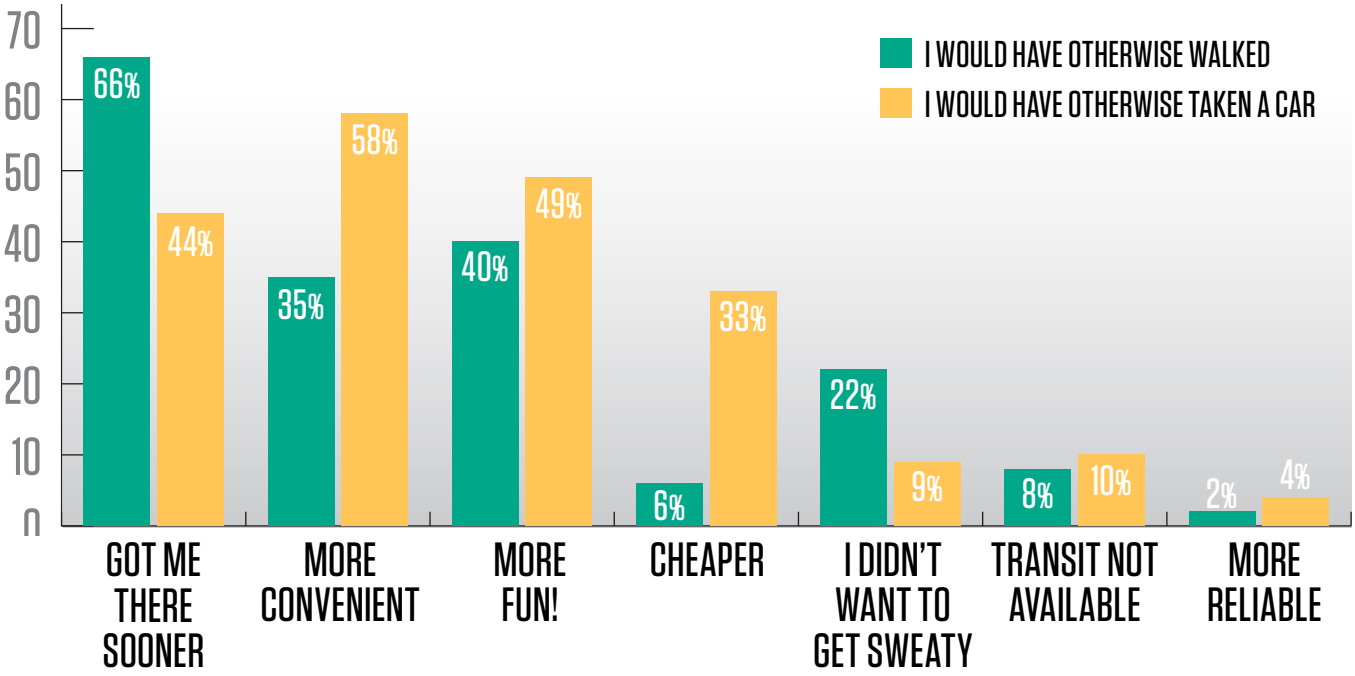
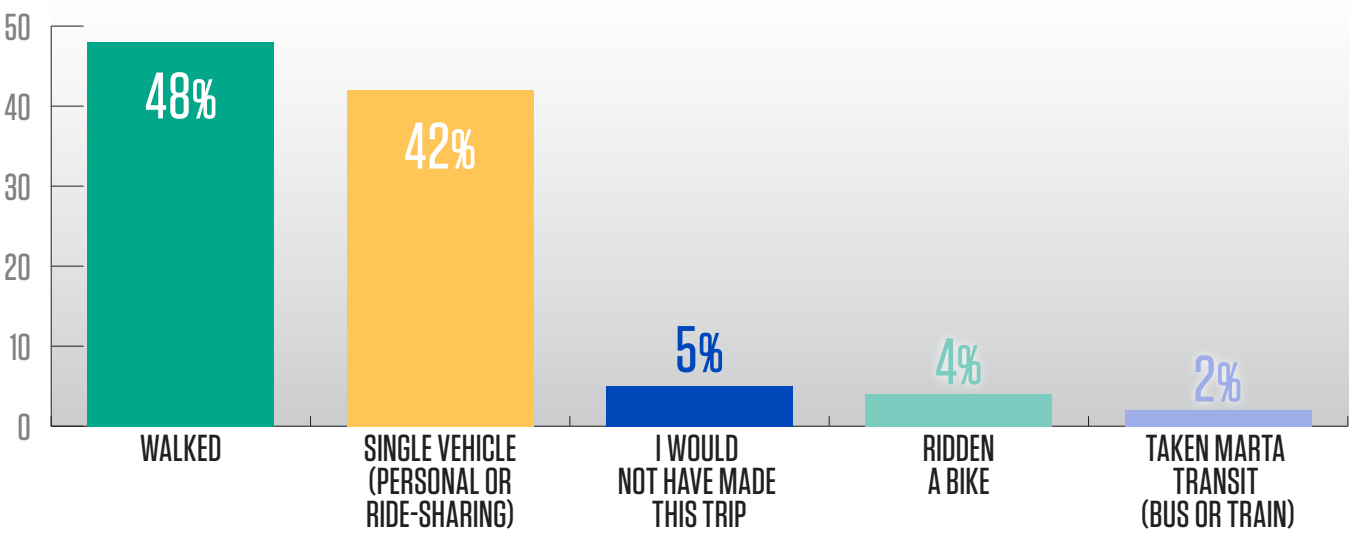


PHOTO BY MAO DWORSHAK, BCP

IF AN E-SCOOTER HAD NOT BEEN AVAILABLE, HOW WOULD YOU HAVE MADE YOUR LAST TRIP?

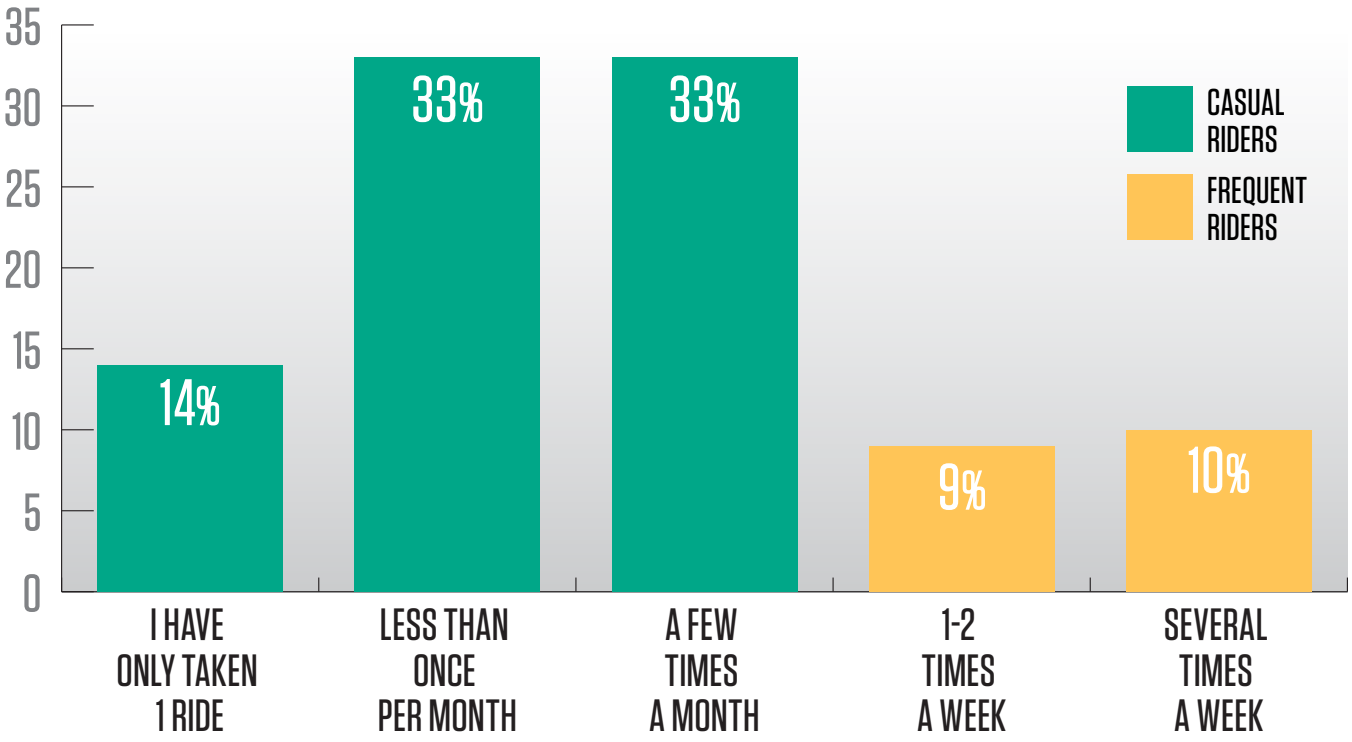


CASUAL RIDERS VS. FREQUENT RIDERS

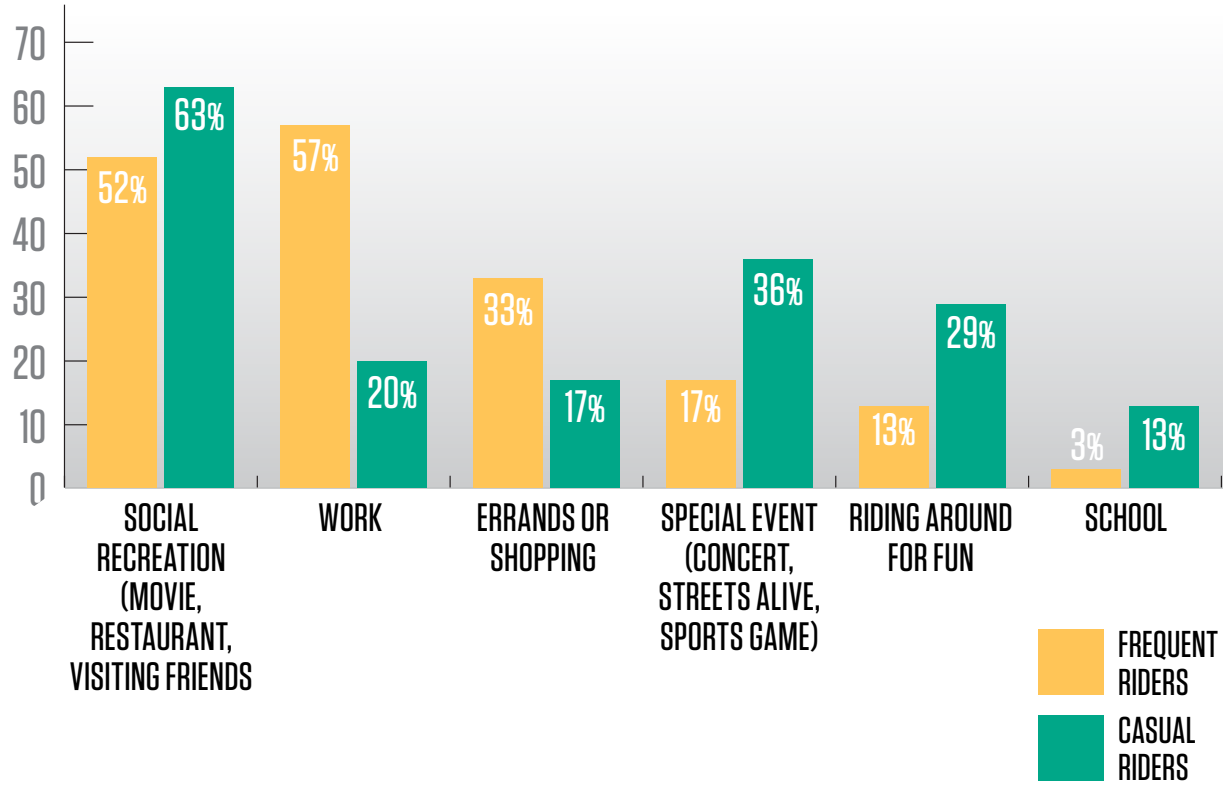
To get a better understanding of how people are using e-scooters, we classified riding respondents as casual riders or frequent riders.

Casual riders are categorized as those taking e-scooters **a few times per month or less**. Casual riders report they are more likely to use e-scooters for social recreation, special events, and riding around just for fun. Frequent riders ride **1-2 times per week or more**. They are more likely to use e-scooters for work and school trips, as well as shopping or running errands. Frequent riders also report more often that they rode in the street with cars or in a bike lane.

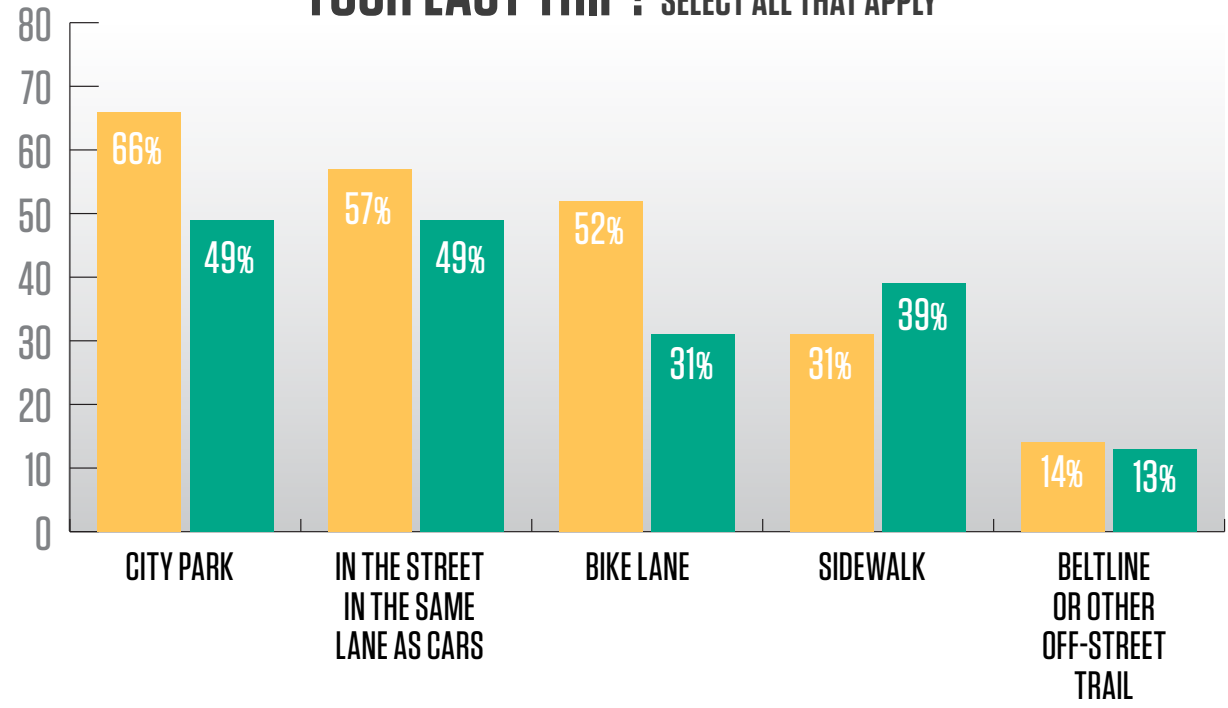
HOW OFTEN DO YOU RIDE E-SCOOTERS?



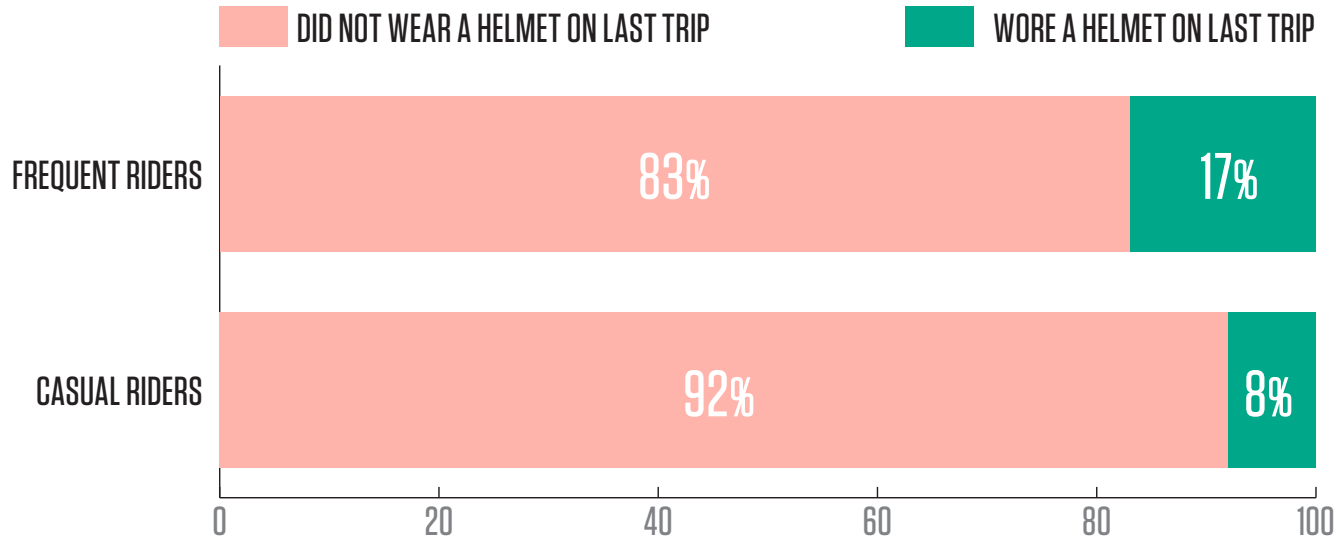
WHAT ARE YOUR TOP 2 DESTINATIONS WHEN RIDING?



WHERE DID YOU RIDE YOUR E-SCOOTER ON YOUR LAST TRIP? SELECT ALL THAT APPLY



HELMET USE, BY RIDER FREQUENCY



CRASHES

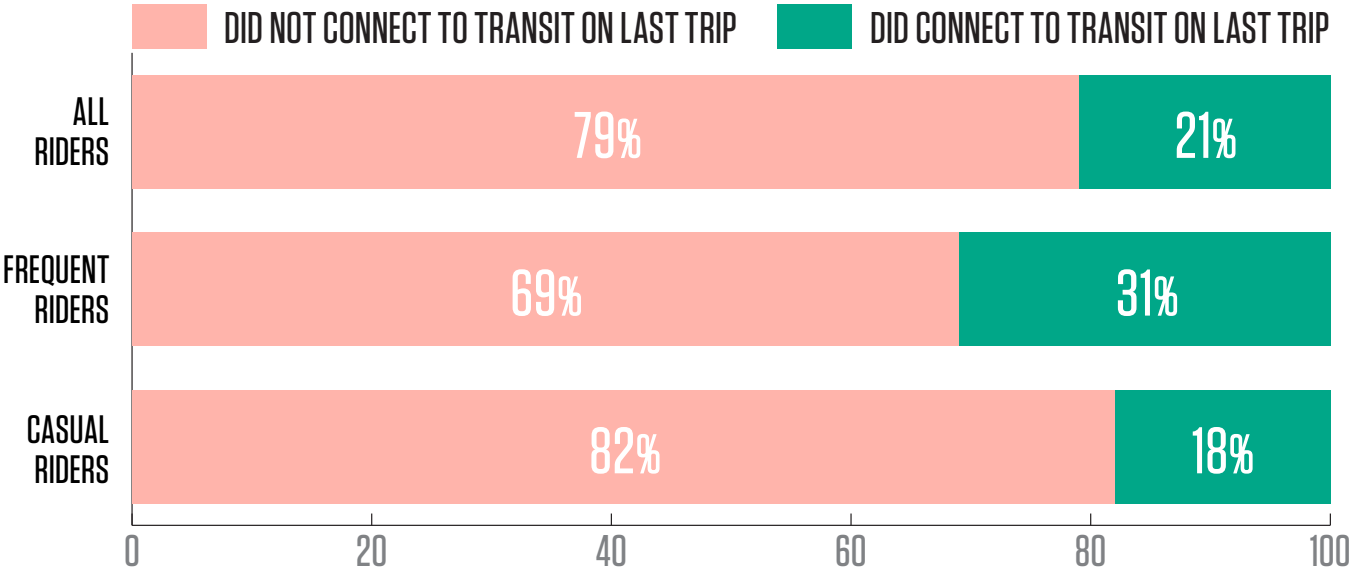
Of all respondents, 8.8% (233 people) were **personally involved** in an e-scooter crash while 44% (1,166 people) reported that they had **seen a crash**.

Of all respondents, around **13% of e-scooter riders report having been in a crash** while 4% of respondents who have not ridden have been involved in a crash.

Overall, 9% of riders reported **wearing a helmet** on their last trip. Frequent Riders were more likely than Casual Riders to report helmet use.

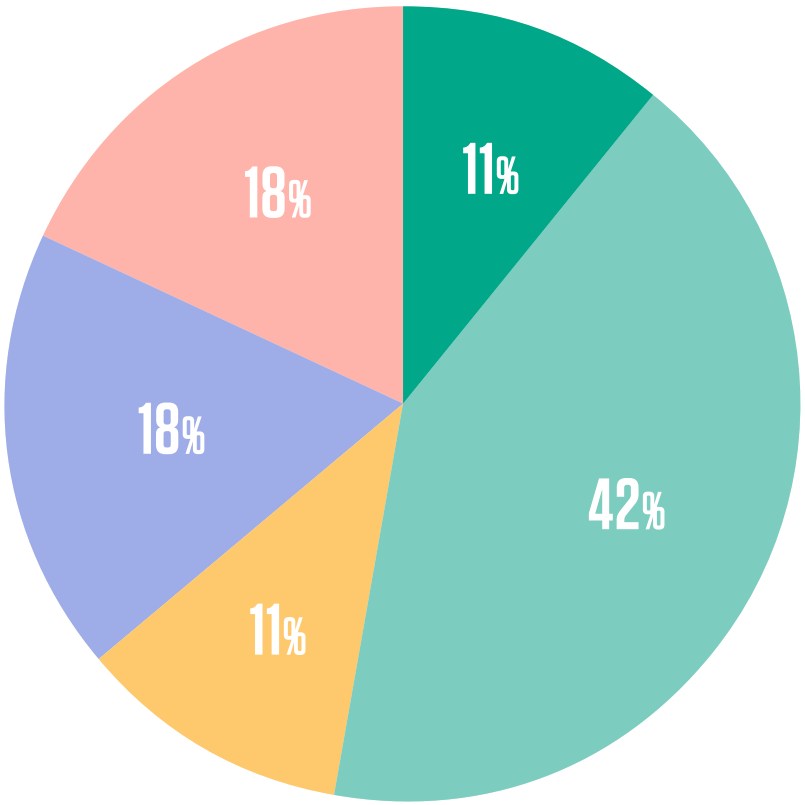
HOW DO E-SCOOTERS RELATE TO TRANSIT USE IN ATLANTA?

Over 20% of trips are reported to connect to transit as part of the trip. Frequent riders are more likely than casual riders to connect to transit.



PROFILES

To better understand the diverse perspectives of e-scooters in Atlanta, we broke down survey respondents by their broad opinion types and people's different riding behaviors.



Power Users (11%): Frequent Riders who ride once a week or more

Building Confidence (42%): Casual Riders who ride less than once per week

Interested but Concerned (11%): Non-riders who are interested in riding

Supportive Non-Riders (18%): Non-riders who are not interested in riding e-scooters themselves, but agree they should be an option for others

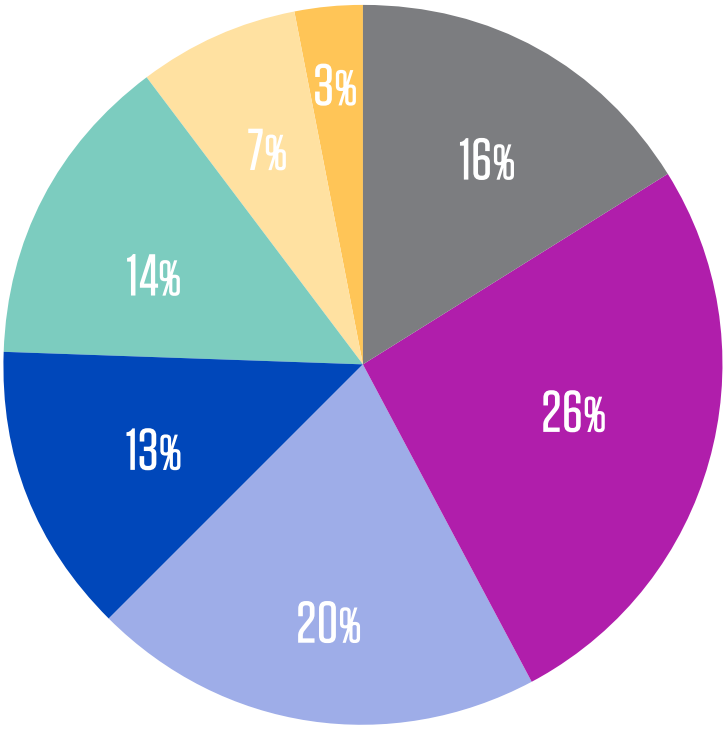
Ban Them! (18%): Non-riders who have not ridden an e-scooter, and do not think they should be an option for others

PHOTO BY MAD DWORSCHAK, DCP

SURVEY RESPONDENT DEMOGRAPHICS

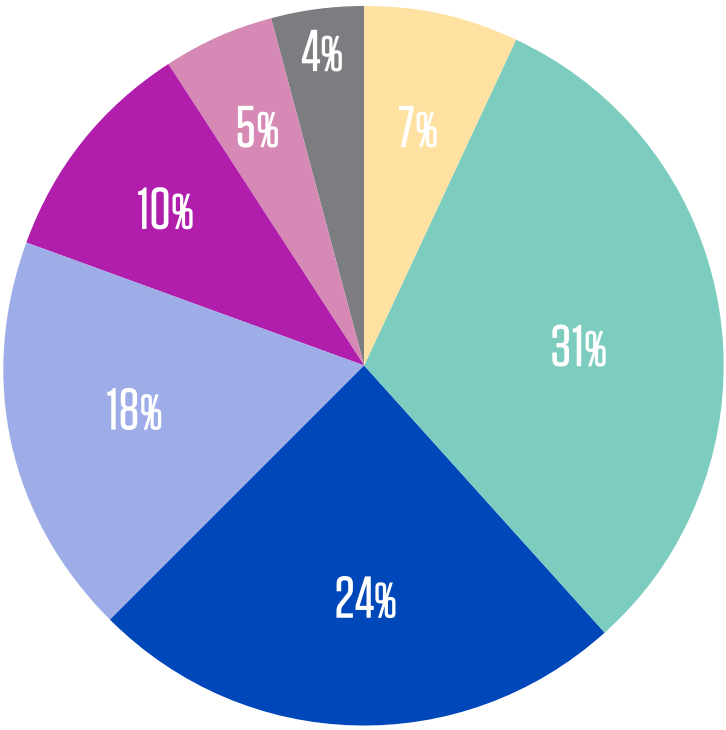
MY INCOME LEVEL IS:

- UNDER $30,000
- $30,000-$49,999
- $50,000-$74,999
- $75,000 -$99,999
- $100,000 - $149,999
- $150,000 OR MORE
- PREFER NOT TO ANSWER



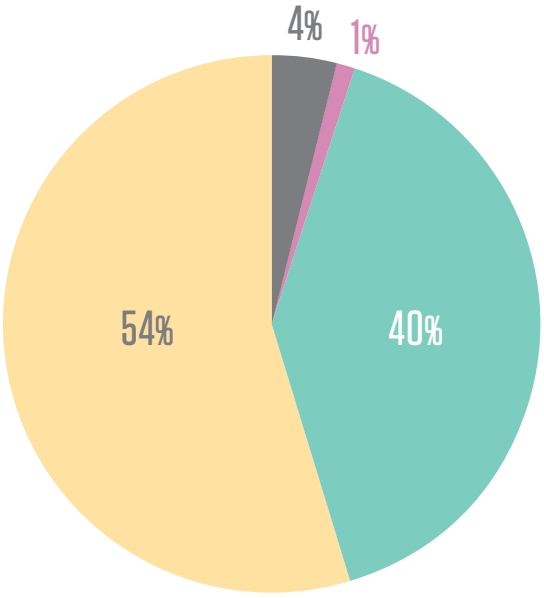
MY AGE IS:

- UNDER 18
- 18–25
- 26–35
- 36–45
- 46–55
- 56–65
- 66+
- PREFER NOT TO ANSWER



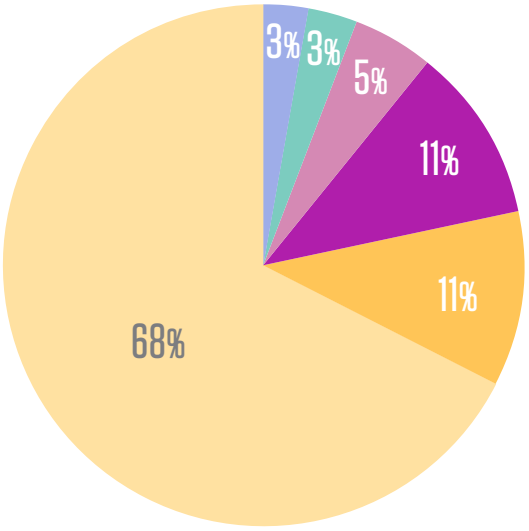
I IDENTIFY MY GENDER AS:

- MAN
- WOMAN
- NON-BINARY
- OTHER
- PREFER NOT TO ANSWER



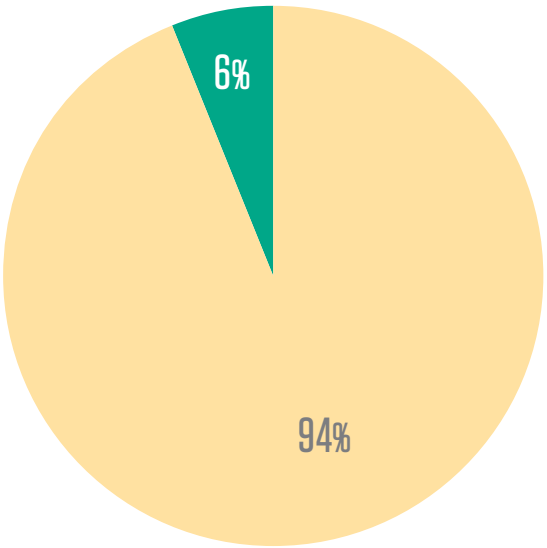
I IDENTIFY MY RACE/ETHNICITY TO BE:

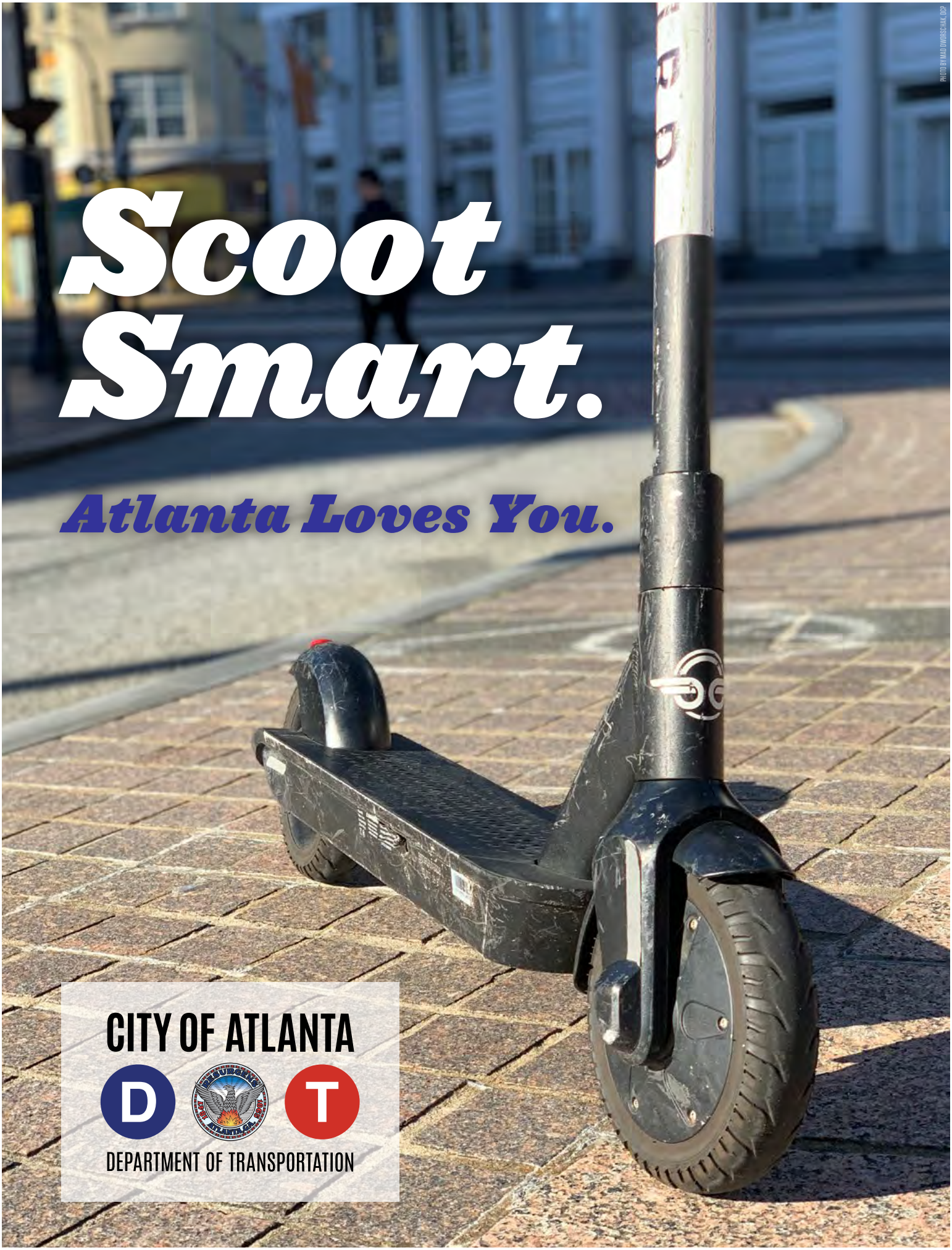
- WHITE/CAUCASIAN
- BLACK/AFRICAN AMERICAN
- OTHER
- TWO OR MORE RACES
- HISPANIC/LATINO
- ASIAN/ASIAN-AMERICAN



DO YOU IDENTIFY WITH HAVING OR LIVING WITH A DISBILITY?

- YES
- NO




Scoot
Smart.
Atlanta Loves You.
PHOTO BY MAD DWORSCHAK, DCP
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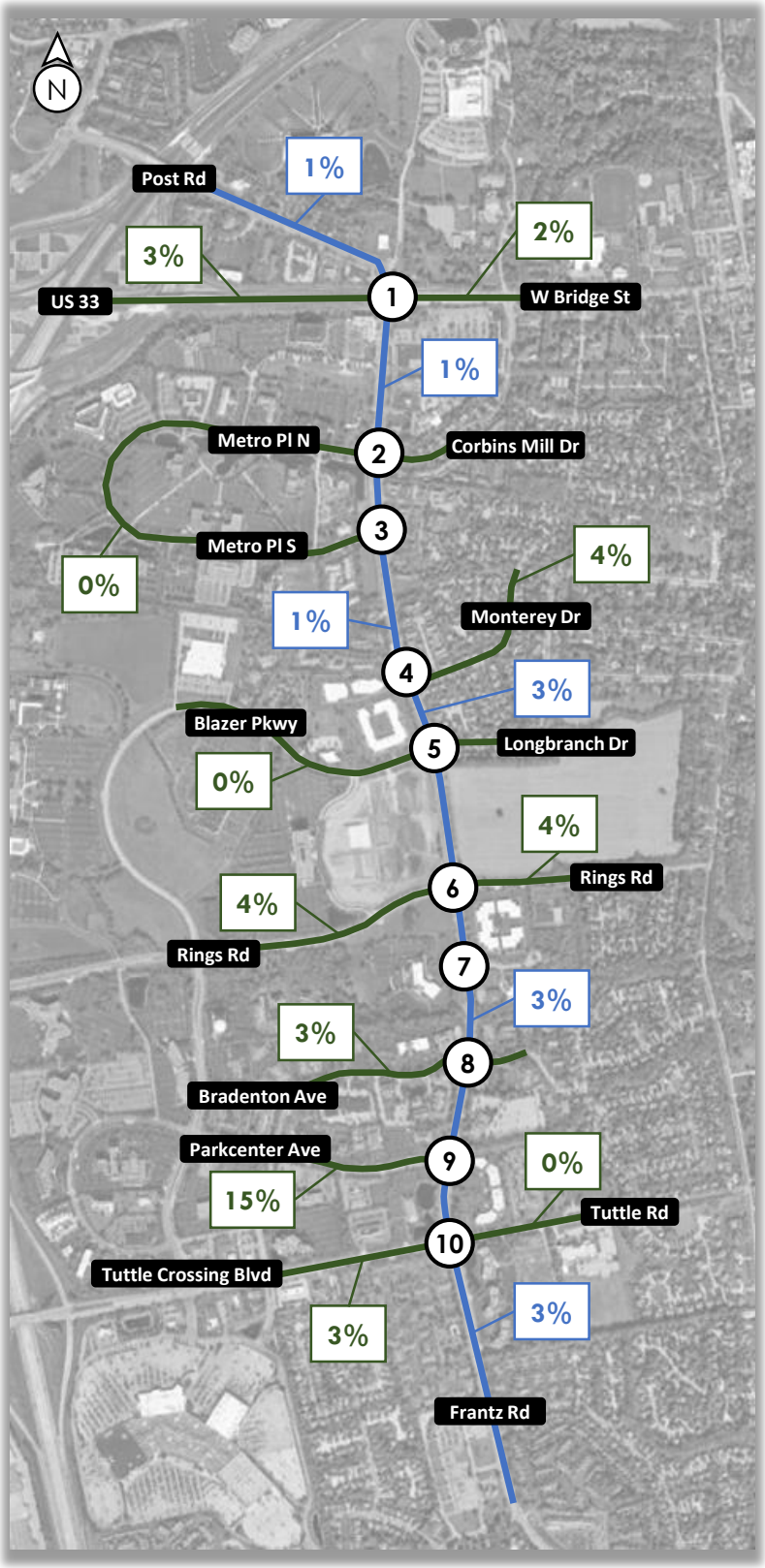
DEPARTMENT OF TRANSPORTATION

Appendix H – Capacity Analysis Report



Projected Linear Annual Growth Rates (20-yr)

Growth Rates: N-S

Frantz Rd
- *1% north of Monterey Dr*
- *3% south of Monterey Dr*

Growth Rates: E-W

US 33/W Bridge St
- *3% west of Frantz Rd*
- *2% east of Frantz Rd*

Metro Place N
- *0%*

Metro Place S
- *0%*

Monterey Dr
- *4%*

Blazer Pkwy
- *0%*

Rings Rd
- *4%*

Bradenton Ave
- *3%*

Parkcenter Ave
- *15%*

Tuttle Crossing Blvd
- *3% west of Frantz Rd*
- *0% east of Frantz Rd*

AMERICAN STRUCTUREPOINT INC.

Legend
- (1) Study Intersection
- 3% Linear Annual Growth Rate

Frantz Rd Feasibility Study Dublin, OH

Growth Rates

2019.02529

Defining the built environment.

Capacity Analysis Results and Synchro Output

Existing Year 2020 Traffic Volumes

[No-Build]

01 - Frantz Rd & US 33/W Bridge St [Signal]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2020 AM	NB	E	61.6	0.79	175
	SB	D	40.5	0.61	275
	EB	F	102.5	1.23	425
	WB	D	39.8	0.56	350
	Overall	**E**	**73.0**	--	--
2020 MD	NB	D	51.6	0.80	200
	SB	D	45.9	0.66	200
	EB	D	35.3	0.65	250
	WB	C	27.0	0.40	200
	Overall	**D**	**38.6**	--	--
2020 PM	NB	E	70.9	0.99	600
	SB	E	58.1	0.96	500
	EB	E	59.5	0.94	450
	WB	E	73.9	0.93	375
	Overall	**E**	**65.0**	--	--

XXX *indicates value exceeds threshold for acceptable operations*

---

02 - Frantz Rd & Metro Pl N/Corbins Mill Dr [Signal]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2020 AM	NB	A	0.7	0.16	100
	SB	A	0.5	0.45	325
	EB	E	64.2	0.53	75
	WB	E	63.2	0.77	150
	Overall	**A**	**8.9**	--	--
2020 MD	NB	A	1.2	0.25	200
	SB	A	0.8	0.21	125
	EB	D	49.9	0.81	200
	WB	D	50.2	0.80	175
	Overall	**B**	**19.6**	--	--
2020 PM	NB	A	2.2	0.56	500
	SB	A	1.6	0.21	175
	EB	E	67.5	0.94	450
	WB	E	63.2	0.80	175
	Overall	**C**	**24.9**	--	--

XXX *indicates value exceeds threshold for acceptable operations*

03 - Frantz Rd & Metro Pl S [Signal]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2020 AM	NB	A	0.9	0.39	25
	SB	A	0.3	0.32	75
	EB	D	54.5	0.15	25
	WB	--	--	--	--
	Overall	**A**	**2.2**	**--**	**--**
2020 MD	NB	A	3.3	0.20	50
	SB	A	0.2	0.21	75
	EB	D	43.0	0.56	50
	WB	--	--	--	--
	Overall	**A**	**8.9**	**--**	**--**
2020 PM	NB	A	1.4	0.43	125
	SB	A	3.7	0.24	25
	EB	D	47.3	0.73	175
	WB	--	--	--	--
	Overall	**B**	**11.8**	**--**	**--**

04 - Frantz Rd & Monterey Dr [One-Way Stop]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2020 AM	NB	A	0.0	0.00	0
	SB*	B	11.0	0.01	0
	EB	--	--	--	--
	WB*	B	13.3	0.13	25
	Overall	**A**	**1.0**	**--**	**--**
2020 MD	NB	A	0.0	0.00	0
	SB*	B	11.0	0.02	25
	EB	--	--	--	--
	WB*	B	13.1	0.09	25
	Overall	**A**	**1.1**	**--**	**--**
2020 PM	NB	A	0.0	0.00	0
	SB*	C	19.1	0.13	25
	EB	--	--	--	--
	WB*	C	19.7	0.14	25
	Overall	**A**	**4.1**	**--**	**--**

**represents operations for left-turn movement only*

05 - Frantz Rd & Blazer Pkwy [Signal]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2020 AM	NB	A	4.2	0.27	125
	SB	A	0.9	0.39	175
	EB	E	59.9	0.24	50
	WB	E	67.2	0.34	0
	Overall	**A**	**4.3**	--	--
2020 MD	data not available				
2020 PM	NB	B	11.5	0.36	275
	SB	C	31.2	0.42	350
	EB	D	53.9	0.77	275
	WB	E	65.2	0.39	0
	Overall	**C**	**29.4**	--	--

XXX *indicates value exceeds threshold for acceptable operations*

---

06 - Frantz Rd & Rings Rd [Signal]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2020 AM	NB	B	10.7	0.39	75
	SB	B	13.2	0.31	150
	EB	C	32.2	0.36	75
	WB	D	37.3	0.54	100
	Overall	**B**	**18.4**	--	--
2020 MD	data not available				
2020 PM	NB	A	4.3	0.48	200
	SB	B	19.1	0.57	275
	EB	C	30.6	0.66	175
	WB	C	32.4	0.34	50
	Overall	**B**	**18.9**	--	--

07 - Frantz Rd & Cramer Creek Ct [Two-Way Stop]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2020 AM	NB*	A	8.6	0.01	0
	SB*	B	10.0	0.03	25
	EB	A	0.0	0.00	0
	WB	D	27.1	0.02	25
	Overall	**A**	**0.2**	--	--
2020 MD	data not available				
2020 PM	NB*	B	10.4	0.01	0
	SB*	A	9.3	0.01	0
	EB	B	12.3	0.01	0
	WB	D	27.0	0.24	25
	Overall	**A**	**0.8**	--	--

**represents operations for left-turn movement only*

08 - Frantz Rd & Bradenton Ave [Signal]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2020 AM	NB	A	0.8	0.34	75
	SB	A	9.5	0.20	25
	EB	D	37.2	0.14	50
	WB	D	38.4	0.28	50
	Overall	**A**	**6.3**	--	--
2020 MD	NB	A	7.0	0.24	100
	SB	A	0.7	0.25	100
	EB	C	27.4	0.22	50
	WB	C	27.3	0.19	25
	Overall	**A**	**6.6**	--	--
2020 PM	NB	B	18.4	0.30	175
	SB	B	18.3	0.40	275
	EB	D	36.3	0.42	75
	WB	D	37.4	0.51	75
	Overall	**C**	**20.8**	--	--

09 - Frantz Rd & Parkcenter Ave [Two-Way Stop]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2020 AM	NB*	A	8.4	0.09	25
	SB*	A	9.6	0.01	0
	EB	C	16.7	0.07	25
	WB	B	11.3	0.01	0
	Overall	**A**	**1.0**	--	--
2020 MD	NB*	A	8.6	0.04	25
	SB*	A	8.3	0.01	0
	EB	B	14.1	0.09	25
	WB	C	15.9	0.03	25
	Overall	**A**	**1.3**	--	--
2020 PM	NB*	B	11.4	0.05	25
	SB*	A	8.8	0.01	0
	EB	C	24.1	0.31	25
	WB	D	29.0	0.11	25
	Overall	**A**	**2.2**	--	--

**represents operations for left-turn movement only*

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10 - Frantz Rd & Tuttle Crossing Blvd/Tuttle Rd [Signal]

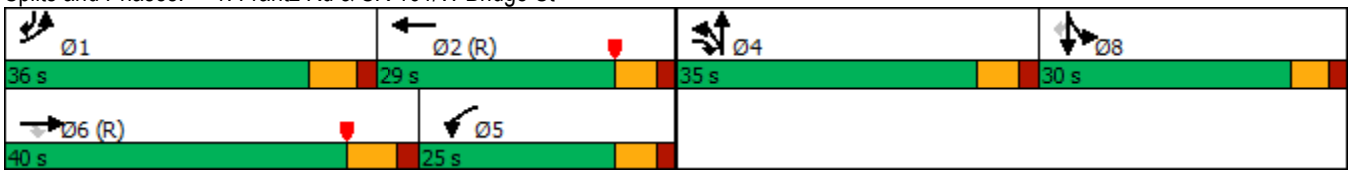
Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2020 AM	NB	C	23.3	0.74	250
	SB	C	27.3	0.53	125
	EB	C	25.1	0.57	150
	WB	D	37.6	0.33	75
	Overall	**C**	**25.0**	--	--
2020 MD	NB	C	25.9	0.77	100
	SB	B	18.3	0.53	100
	EB	B	19.9	0.54	125
	WB	C	30.9	0.45	75
	Overall	**C**	**22.1**	--	--
2020 PM	NB	C	23.2	0.75	125
	SB	A	8.6	0.61	225
	EB	C	21.8	0.52	100
	WB	D	46.3	0.81	175
	Overall	**B**	**19.0**	--	--

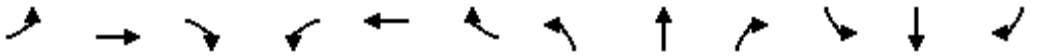
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	590	703	1160	195	628	277	140	163	178	697
Future Volume (vph)	590	703	1160	195	628	277	140	163	178	697
Lane Group Flow (vph)	648	773	1275	214	880	304	213	161	214	766
Turn Type	Prot	NA	pm+ov	Prot	NA	Split	NA	Split	NA	pm+ov
Protected Phases	1	6	4	5	2	4	4	8	8	1
Permitted Phases			6							8
Detector Phase	1	6	4	5	2	4	4	8	8	1
Switch Phase										
Minimum Initial (s)	7.0	21.0	10.0	7.0	20.0	10.0	10.0	10.0	10.0	7.0
Minimum Split (s)	15.7	33.0	46.1	17.4	26.0	46.1	46.1	26.0	26.0	15.7
Total Split (s)	36.0	40.0	35.0	25.0	29.0	35.0	35.0	30.0	30.0	36.0
Total Split (%)	27.7%	30.8%	26.9%	19.2%	22.3%	26.9%	26.9%	23.1%	23.1%	27.7%
Yellow Time (s)	4.5	5.0	4.0	4.0	4.0	4.0	4.0	3.6	3.6	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	7.0	6.0	6.0	6.0	6.0	6.0	5.6	5.6	6.5
Lead/Lag	Lead	Lead		Lag	Lag					Lead
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	None	C-Max	None	None	Max	Max	None
v/c Ratio	0.87	0.88	0.83	0.43	0.92	0.44	0.31	0.47	0.58	0.54
Control Delay	62.4	58.9	15.7	53.7	64.6	45.2	34.1	51.7	54.5	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.4	58.9	15.7	53.7	64.6	45.2	34.1	51.7	54.5	19.4
Queue Length 50th (ft)	270	330	171	86	260	124	72	130	176	192
Queue Length 95th (ft)	#343	#435	225	126	#353	166	105	209	270	259
Internal Link Dist (ft)		1043			821		1271		568	
Turn Bay Length (ft)	650			375		575		425		325
Base Capacity (vph)	779	881	1582	492	957	765	763	341	370	1450
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.88	0.81	0.43	0.92	0.40	0.28	0.47	0.58	0.53

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 36 (28%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Natural Cycle: 125
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Frantz Rd & SR 161/W Bridge St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	590	703	1160	195	628	173	277	140	54	163	178	697
Future Volume (veh/h)	590	703	1160	195	628	173	277	140	54	163	178	697
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1900	1841	1885	1885	1870	1826	1826	1826	1885	1885
Adj Flow Rate, veh/h	648	773	1275	214	690	190	304	154	59	179	196	766
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	4	0	4	1	1	2	5	5	5	1	1
Cap, veh/h	708	888	1037	875	1249	339	387	278	102	326	354	1254
Arrive On Green	0.20	0.25	0.25	0.26	0.31	0.31	0.04	0.04	0.04	0.19	0.19	0.19
Sat Flow, veh/h	3456	3497	2834	3401	4026	1093	3456	2482	914	1739	1885	3195
Grp Volume(v), veh/h	648	773	1275	214	587	293	304	106	107	179	196	766
Grp Sat Flow(s),veh/h/ln	1728	1749	1417	1700	1716	1688	1728	1735	1661	1739	1885	1598
Q Serve(g_s), s	23.9	27.5	33.0	6.5	18.5	18.9	11.3	7.8	8.3	12.1	12.3	24.4
Cycle Q Clear(g_c), s	23.9	27.5	33.0	6.5	18.5	18.9	11.3	7.8	8.3	12.1	12.3	24.4
Prop In Lane	1.00		1.00	1.00		0.65	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	708	888	1037	875	1064	524	387	194	186	326	354	1254
V/C Ratio(X)	0.92	0.87	1.23	0.24	0.55	0.56	0.79	0.54	0.58	0.55	0.55	0.61
Avail Cap(c_a), veh/h	784	888	1037	875	1064	524	771	387	371	326	354	1254
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.6	46.5	36.6	38.3	37.3	37.4	61.1	59.3	59.6	47.8	47.9	31.5
Incr Delay (d2), s/veh	14.2	11.4	112.1	0.1	2.1	4.3	1.3	0.9	1.0	6.5	6.1	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.6	13.2	33.2	2.7	8.0	8.4	5.3	3.6	3.7	5.8	6.3	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.8	57.9	148.7	38.4	39.4	41.7	62.4	60.2	60.6	54.3	54.0	33.8
LnGrp LOS	E	E	F	D	D	D	E	E	E	D	D	C
Approach Vol, veh/h		2696			1094			517			1141	
Approach Delay, s/veh		102.5			39.8			61.6			40.5	
Approach LOS		F			D			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	33.1	46.3		20.5	39.5	40.0		30.0				
Change Period (Y+Rc), s	6.5	6.0		6.0	6.0	7.0		5.6				
Max Green Setting (Gmax), s	29.5	23.0		29.0	19.0	33.0		24.4				
Max Q Clear Time (g_c+I1), s	25.9	20.9		13.3	8.5	35.0		26.4				
Green Ext Time (p_c), s	0.8	1.5		1.2	0.4	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		73.0
HCM 6th LOS		E

Notes

User approved pedestrian interval to be less than phase max green.

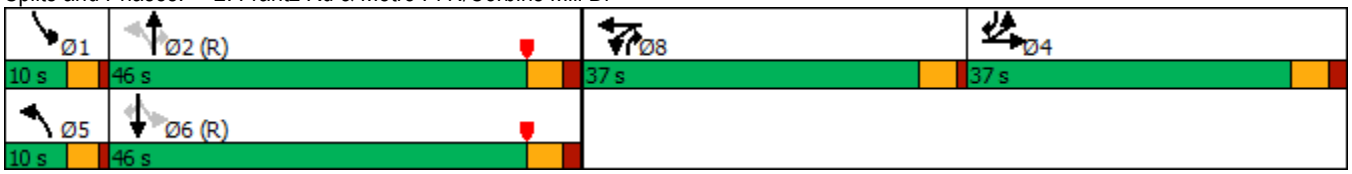
User approved volume balancing among the lanes for turning movement.

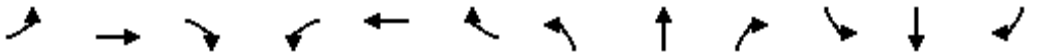
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	55	17	118	72	50	364	65	22	950	500
Future Volume (vph)	55	17	118	72	50	364	65	22	950	500
Lane Group Flow (vph)	46	45	124	94	53	383	68	23	1000	526
Turn Type	Split	NA	Split	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	4	4	8	8	5	2	8	1	6	4
Permitted Phases					2		2	6		6
Detector Phase	4	4	8	8	5	2	8	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	7.0
Minimum Split (s)	38.0	38.0	37.0	37.0	10.0	35.0	37.0	10.0	35.0	38.0
Total Split (s)	37.0	37.0	37.0	37.0	10.0	46.0	37.0	10.0	46.0	37.0
Total Split (%)	28.5%	28.5%	28.5%	28.5%	7.7%	35.4%	28.5%	7.7%	35.4%	28.5%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	2.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	4.6	4.6	4.0	5.6	4.6	4.0	5.6	5.6
Lead/Lag					Lead	Lag		Lead	Lag	
Lead-Lag Optimize?					Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	C-Min	None	None	C-Min	None
v/c Ratio	0.33	0.30	0.62	0.44	0.15	0.17	0.06	0.03	0.45	0.41
Control Delay	61.7	45.0	68.0	54.0	8.1	10.8	3.3	8.5	15.6	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.7	45.0	68.0	54.0	8.1	10.8	3.3	8.5	15.6	1.8
Queue Length 50th (ft)	40	25	102	68	10	74	0	4	232	33
Queue Length 95th (ft)	80	65	160	118	36	106	21	m12	333	19
Internal Link Dist (ft)		984		630		585			1271	
Turn Bay Length (ft)			225		125		175	100		185
Base Capacity (vph)	414	420	441	459	366	2254	1282	705	2203	1402
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.11	0.28	0.20	0.14	0.17	0.05	0.03	0.45	0.38

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 71 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Frantz Rd & Metro Pl N/Corbins Mill Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	17	14	118	72	17	50	364	65	22	950	500
Future Volume (veh/h)	55	17	14	118	72	17	50	364	65	22	950	500
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1900	1870	1663	1900	1885	1900
Adj Flow Rate, veh/h	46	35	15	124	76	18	53	383	68	23	1000	526
Peak Hour 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
Percent Heavy Veh, %	0	0	0	2	2	2	0	2	16	0	1	0
Cap, veh/h	94	66	28	160	131	31	348	2430	1090	737	2410	1167
Arrive On Green	0.05	0.05	0.05	0.09	0.09	0.09	0.07	1.00	1.00	0.04	1.00	1.00
Sat Flow, veh/h	1810	1262	541	1781	1462	346	1810	3554	1409	1810	3582	1610
Grp Volume(v), veh/h	46	0	50	124	0	94	53	383	68	23	1000	526
Grp Sat Flow(s),veh/h/ln	1810	0	1803	1781	0	1808	1810	1777	1409	1810	1791	1610
Q Serve(g_s), s	3.2	0.0	3.5	8.9	0.0	6.5	1.2	0.0	0.0	0.5	0.0	0.0
Cycle Q Clear(g_c), s	3.2	0.0	3.5	8.9	0.0	6.5	1.2	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		0.30	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	94	0	94	160	0	163	348	2430	1090	737	2410	1167
V/C Ratio(X)	0.49	0.00	0.53	0.77	0.00	0.58	0.15	0.16	0.06	0.03	0.41	0.45
Avail Cap(c_a), veh/h	437	0	435	444	0	451	372	2430	1090	781	2410	1167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.99	0.99	0.99	0.58	0.58	0.58
Uniform Delay (d), s/veh	59.9	0.0	60.1	57.9	0.0	56.8	5.6	0.0	0.0	6.0	0.0	0.0
Incr Delay (d2), s/veh	3.9	0.0	4.6	7.7	0.0	3.2	0.2	0.1	0.1	0.0	0.3	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	1.7	4.4	0.0	3.1	0.4	0.0	0.0	0.2	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.8	0.0	64.7	65.6	0.0	60.0	5.8	0.1	0.1	6.0	0.3	0.7
LnGrp LOS	E	A	E	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		96			218			504			1549	
Approach Delay, s/veh		64.2			63.2			0.7			0.5	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	94.5		12.4	8.3	93.1		16.3				
Change Period (Y+Rc), s	4.0	5.6		5.6	4.0	5.6		4.6				
Max Green Setting (Gmax), s	6.0	40.4		31.4	6.0	40.4		32.4				
Max Q Clear Time (g_c+I1), s	2.5	2.0		5.5	3.2	2.0		10.9				
Green Ext Time (p_c), s	0.0	2.9		0.3	0.0	11.8		0.8				

Intersection Summary	
HCM 6th Ctrl Delay	8.9
HCM 6th LOS	A

Notes

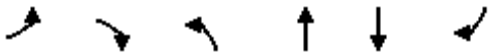
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	28	204	441	850	208
Future Volume (vph)	29	28	204	441	850	208
Lane Group Flow (vph)	30	29	213	459	885	217
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	1	1	6	2	4
Permitted Phases		4	6			2
Detector Phase	4	1	1	6	2	4
Switch Phase						
Minimum Initial (s)	10.0	7.0	7.0	20.0	20.0	10.0
Minimum Split (s)	37.0	12.0	12.0	26.0	42.0	37.0
Total Split (s)	42.0	24.0	24.0	88.0	64.0	42.0
Total Split (%)	32.3%	18.5%	18.5%	67.7%	49.2%	32.3%
Yellow Time (s)	3.6	3.5	3.5	3.6	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.0	5.0	5.1	5.1	5.1
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	C-Min	C-Min	None
v/c Ratio	0.12	0.08	0.38	0.16	0.35	0.16
Control Delay	57.1	13.2	5.3	1.9	4.7	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	13.2	5.3	1.9	4.7	0.5
Queue Length 50th (ft)	12	0	23	26	74	3
Queue Length 95th (ft)	28	25	35	34	84	5
Internal Link Dist (ft)	991			1198	585	
Turn Bay Length (ft)	350	400	425			400
Base Capacity (vph)	955	428	628	2931	2555	1614
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	0.03	0.07	0.34	0.16	0.35	0.13

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 95 (73%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated

Splits and Phases: 3: Frantz Rd & Metro Pl S



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	28	204	441	850	208
Future Volume (veh/h)	29	28	204	441	850	208
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1841	1885	1841	1885	1900
Adj Flow Rate, veh/h	30	29	212	459	885	217
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	1	4	1	0
Cap, veh/h	231	190	545	2986	2727	1335
Arrive On Green	0.07	0.07	0.11	1.00	1.00	1.00
Sat Flow, veh/h	3401	1560	1795	3589	3676	1610
Grp Volume(v), veh/h	30	29	212	459	885	217
Grp Sat Flow(s),veh/h/ln	1700	1560	1795	1749	1791	1610
Q Serve(g_s), s	1.1	2.2	3.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	2.2	3.2	0.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	231	190	545	2986	2727	1335
V/C Ratio(X)	0.13	0.15	0.39	0.15	0.32	0.16
Avail Cap(c_a), veh/h	965	527	710	2986	2727	1335
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.88	0.88
Uniform Delay (d), s/veh	57.0	51.1	2.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.5	0.6	0.1	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	2.0	0.8	0.0	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	57.3	51.6	2.6	0.1	0.3	0.2
LnGrp LOS	E	D	A	A	A	A
Approach Vol, veh/h	59			671	1102	
Approach Delay, s/veh	54.5			0.9	0.3	
Approach LOS	D			A	A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.0	104.1		13.9		116.1
Change Period (Y+Rc), s	5.0	5.1		5.1		5.1
Max Green Setting (Gmax), s	19.0	58.9		36.9		82.9
Max Q Clear Time (g_c+I1), s	5.2	2.0		4.2		2.0
Green Ext Time (p_c), s	0.7	19.2		0.2		6.8

Intersection Summary	
HCM 6th Ctrl Delay	2.2
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Vol, veh/h	18	44	626	8	8	6	927
Future Vol, veh/h	18	44	626	8	8	6	927
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-
Veh in Median Storage, #	1	-	0	-	-	-	0
Grade, %	0	-	0	-	-	-	0
Peak Hour Factor	95	95	95	95	95	95	95
Heavy Vehicles, %	0	3	3	0	0	17	1
Mvmt Flow	19	46	659	8	8	6	976

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	1179	334	0	0	667	667	0
Stage 1	663	-	-	-	-	-	-
Stage 2	516	-	-	-	-	-	-
Critical Hdwy	6.8	6.96	-	-	6.4	4.44	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-	-
Follow-up Hdwy	3.5	3.33	-	-	2.5	2.37	-
Pot Cap-1 Maneuver	186	659	-	-	550	824	-
Stage 1	480	-	-	-	-	-	-
Stage 2	570	-	-	-	-	-	-
Platoon blocked, %			-	-			-
Mov Cap-1 Maneuver	176	659	-	-	612	612	-
Mov Cap-2 Maneuver	312	-	-	-	-	-	-
Stage 1	480	-	-	-	-	-	-
Stage 2	539	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	0.8
HCM LOS	B		

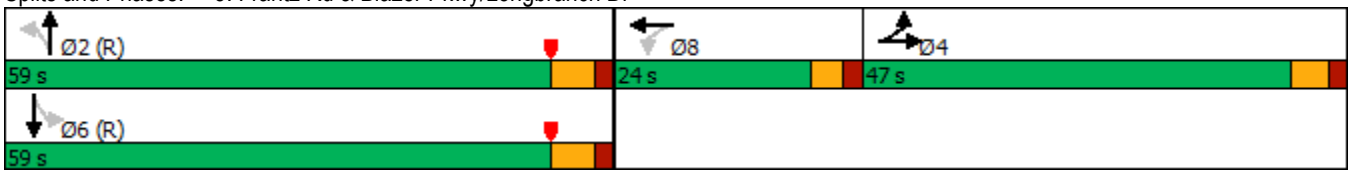
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	498	612	-
HCM Lane V/C Ratio	-	-	0.131	0.01	-
HCM Control Delay (s)	-	-	13.3	11	0.6
HCM Lane LOS	-	-	B	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

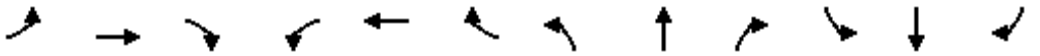
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	33	1	5	0	61	690	2	510
Future Volume (vph)	33	1	5	0	61	690	2	510
Lane Group Flow (vph)	23	23	0	14	67	758	2	1019
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4	4		8		2		6
Permitted Phases			8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	8.0	8.0	15.0	15.0	15.0	15.0
Minimum Split (s)	40.0	40.0	15.0	15.0	25.2	25.2	25.2	25.2
Total Split (s)	47.0	47.0	24.0	24.0	59.0	59.0	59.0	59.0
Total Split (%)	36.2%	36.2%	18.5%	18.5%	45.4%	45.4%	45.4%	45.4%
Yellow Time (s)	3.6	3.6	3.0	3.0	4.2	4.2	4.2	4.2
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6		5.0	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.18	0.18		0.09	0.15	0.25	0.00	0.36
Control Delay	59.1	42.5		1.1	5.2	3.8	7.5	4.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	59.1	42.5		1.1	5.2	3.8	7.5	4.5
Queue Length 50th (ft)	20	11		0	9	55	0	91
Queue Length 95th (ft)	50	42		0	35	134	m2	175
Internal Link Dist (ft)		507		671		1105		467
Turn Bay Length (ft)	160				100		50	
Base Capacity (vph)	500	483		278	435	3029	583	2863
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.05	0.05		0.05	0.15	0.25	0.00	0.36

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 77 (59%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Frantz Rd & Blazer Pkwy/Longbranch Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	1	8	5	0	8	61	690	0	2	510	418
Future Volume (veh/h)	33	1	8	5	0	8	61	690	0	2	510	418
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1900	1900	1900	1900	1900	1900	1870	1870	1900	1870	1870
Adj Flow Rate, veh/h	23	19	9	5	0	9	67	758	0	2	560	459
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	9	0	0	0	0	0	0	2	2	0	2	2
Cap, veh/h	109	79	37	15	0	26	495	2778	0	574	1449	1188
Arrive On Green	0.06	0.06	0.06	0.02	0.00	0.02	0.78	0.78	0.00	1.00	1.00	1.00
Sat Flow, veh/h	1682	1219	577	599	0	1077	562	3647	0	718	1854	1519
Grp Volume(v), veh/h	23	0	28	14	0	0	67	758	0	2	537	482
Grp Sat Flow(s),veh/h/ln	1682	0	1796	1676	0	0	562	1777	0	718	1777	1597
Q Serve(g_s), s	1.7	0.0	1.9	1.1	0.0	0.0	3.8	7.7	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.7	0.0	1.9	1.1	0.0	0.0	3.8	7.7	0.0	7.7	0.0	0.0
Prop In Lane	1.00		0.32	0.36		0.64	1.00		0.00	1.00		0.95
Lane Grp Cap(c), veh/h	109	0	116	41	0	0	495	2778	0	574	1389	1248
V/C Ratio(X)	0.21	0.00	0.24	0.34	0.00	0.00	0.14	0.27	0.00	0.00	0.39	0.39
Avail Cap(c_a), veh/h	536	0	572	245	0	0	495	2778	0	574	1389	1248
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.96	0.96	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.6	0.0	57.8	62.4	0.0	0.0	3.5	3.9	0.0	0.3	0.0	0.0
Incr Delay (d2), s/veh	2.0	0.0	2.3	4.9	0.0	0.0	0.5	0.2	0.0	0.0	0.8	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.9	0.5	0.0	0.0	0.4	2.4	0.0	0.0	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.7	0.0	60.0	67.2	0.0	0.0	4.1	4.2	0.0	0.3	0.8	0.9
LnGrp LOS	E	A	E	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		51			14			825			1021	
Approach Delay, s/veh		59.9			67.2			4.2			0.9	
Approach LOS		E			E			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		107.8		14.0		107.8		8.2				
Change Period (Y+Rc), s		6.2		5.6		6.2		5.0				
Max Green Setting (Gmax), s		52.8		41.4		52.8		19.0				
Max Q Clear Time (g_c+I1), s		9.7		3.9		9.7		3.1				
Green Ext Time (p_c), s		7.0		0.4		8.5		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			4.3									
HCM 6th LOS			A									

Notes

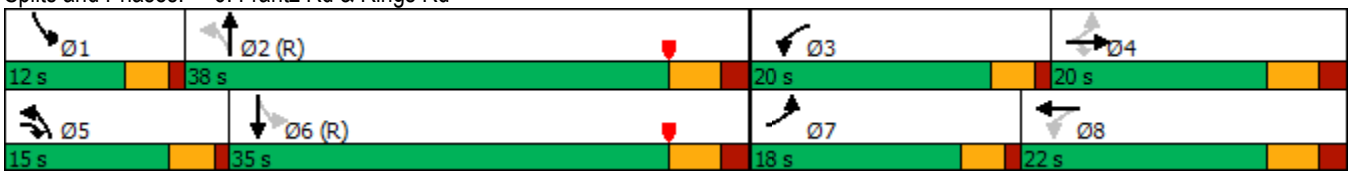
User approved volume balancing among the lanes for turning movement.

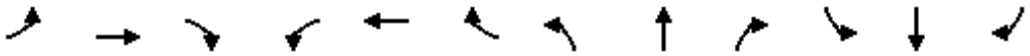
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	96	56	107	69	191	227	572	28	343
Future Volume (vph)	96	56	107	69	191	227	572	28	343
Lane Group Flow (vph)	98	57	109	70	234	232	611	29	533
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8	5	2	1	6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	5	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	7.0	11.0	7.0	7.0	11.0	7.0	12.0	7.0	12.0
Minimum Split (s)	11.0	40.0	11.0	11.0	42.0	11.0	39.0	11.0	41.0
Total Split (s)	18.0	20.0	15.0	20.0	22.0	15.0	38.0	12.0	35.0
Total Split (%)	20.0%	22.2%	16.7%	22.2%	24.4%	16.7%	42.2%	13.3%	38.9%
Yellow Time (s)	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.5	4.0	4.0	5.5	4.0	5.5	4.0	5.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.30	0.22	0.19	0.21	0.49	0.40	0.30	0.06	0.33
Control Delay	25.8	35.3	4.6	24.0	36.2	7.4	7.5	8.6	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	35.3	4.6	24.0	36.2	7.4	7.5	8.6	14.3
Queue Length 50th (ft)	42	29	0	30	60	21	45	6	75
Queue Length 95th (ft)	73	61	30	56	93	71	86	19	143
Internal Link Dist (ft)		1352			734		584		1105
Turn Bay Length (ft)	140			175		300		200	
Base Capacity (vph)	388	301	597	456	657	591	2028	545	1612
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.19	0.18	0.15	0.36	0.39	0.30	0.05	0.33

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 8 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 105
Control Type: Actuated-Coordinated

Splits and Phases: 6: Frantz Rd & Rings Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	56	107	69	191	38	227	572	26	28	343	179
Future Volume (veh/h)	96	56	107	69	191	38	227	572	26	28	343	179
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1841	1841	1900	1900	1900	1870	1870	1870	1900	1856	1856
Adj Flow Rate, veh/h	98	57	109	70	195	39	232	584	27	29	350	183
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	4	4	0	0	0	2	2	2	0	3	3
Cap, veh/h	274	237	329	335	368	72	594	1921	89	535	1158	595
Arrive On Green	0.07	0.13	0.13	0.06	0.12	0.12	0.08	0.56	0.56	0.04	0.51	0.51
Sat Flow, veh/h	1767	1841	1560	1810	3009	590	1781	3459	160	1810	2253	1157
Grp Volume(v), veh/h	98	57	109	70	115	119	232	300	311	29	272	261
Grp Sat Flow(s),veh/h/ln	1767	1841	1560	1810	1805	1794	1781	1777	1842	1810	1763	1647
Q Serve(g_s), s	4.3	2.5	5.3	2.9	5.4	5.6	5.2	8.1	8.1	0.7	8.0	8.2
Cycle Q Clear(g_c), s	4.3	2.5	5.3	2.9	5.4	5.6	5.2	8.1	8.1	0.7	8.0	8.2
Prop In Lane	1.00		1.00	1.00		0.33	1.00		0.09	1.00		0.70
Lane Grp Cap(c), veh/h	274	237	329	335	221	219	594	987	1023	535	906	847
V/C Ratio(X)	0.36	0.24	0.33	0.21	0.52	0.54	0.39	0.30	0.30	0.05	0.30	0.31
Avail Cap(c_a), veh/h	423	297	379	540	331	329	666	987	1023	624	906	847
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	31.2	35.2	30.1	31.0	37.0	37.1	8.4	10.7	10.7	9.2	12.6	12.6
Incr Delay (d2), s/veh	0.6	0.5	0.6	0.2	1.9	2.1	0.3	0.8	0.8	0.0	0.8	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.1	2.0	1.3	2.4	2.5	1.8	3.1	3.2	0.2	3.1	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.8	35.7	30.7	31.2	39.0	39.2	8.7	11.5	11.5	9.2	13.4	13.5
LnGrp LOS	C	D	C	C	D	D	A	B	B	A	B	B
Approach Vol, veh/h		264			304			843			562	
Approach Delay, s/veh		32.2			37.3			10.7			13.2	
Approach LOS		C			D			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.6	55.5	9.8	17.1	11.3	51.8	10.4	16.5
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	8.0	32.5	16.0	14.5	11.0	29.5	14.0	16.5
Max Q Clear Time (g_c+I1), s	2.7	10.1	4.9	7.3	7.2	10.2	6.3	7.6
Green Ext Time (p_c), s	0.0	4.4	0.1	0.3	0.2	3.7	0.1	0.8

Intersection Summary	
HCM 6th Ctrl Delay	18.4
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	0	1	6	849	19	18	524	3
Future Vol, veh/h	0	0	0	2	0	1	6	849	19	18	524	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	3	0
Mvmt Flow	0	0	0	2	0	1	7	923	21	20	570	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1088	1570	287	1273	1561	472	573	0	0	944	0	0
Stage 1	612	612	-	948	948	-	-	-	-	-	-	-
Stage 2	476	958	-	325	613	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	173	112	716	126	113	544	1010	-	-	735	-	-
Stage 1	452	487	-	284	342	-	-	-	-	-	-	-
Stage 2	544	338	-	667	486	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	168	108	716	123	109	544	1010	-	-	735	-	-
Mov Cap-2 Maneuver	168	108	-	123	109	-	-	-	-	-	-	-
Stage 1	449	474	-	282	340	-	-	-	-	-	-	-
Stage 2	539	336	-	649	473	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	27.1	0.1	0.3
HCM LOS	A	D		

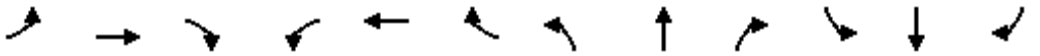
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1010	-	-	-	166	735	-	-
HCM Lane V/C Ratio	0.006	-	-	-	0.02	0.027	-	-
HCM Control Delay (s)	8.6	-	-	0	27.1	10	-	-
HCM Lane LOS	A	-	-	A	D	B	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.1	-	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	3	13	11	21	749	32	360
Future Volume (vph)	30	3	13	11	21	749	32	360
Lane Group Flow (vph)	32	4	0	61	22	838	34	464
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0	15.0	7.0	15.0
Minimum Split (s)	32.0	32.0	35.0	35.0	12.0	30.0	12.0	34.0
Total Split (s)	32.0	32.0	32.0	32.0	20.0	38.0	20.0	38.0
Total Split (%)	35.6%	35.6%	35.6%	35.6%	22.2%	42.2%	22.2%	42.2%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	4.0	3.6	4.0
All-Red Time (s)	2.5	2.5	2.5	2.5	1.0	1.5	1.0	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	4.6	5.5	4.6	5.5
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.17	0.02		0.29	0.03	0.32	0.06	0.18
Control Delay	38.4	32.5		23.4	1.8	4.4	1.6	2.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	32.5		23.4	1.8	4.4	1.6	2.3
Queue Length 50th (ft)	17	2		14	1	82	2	11
Queue Length 95th (ft)	44	11		50	m4	82	5	26
Internal Link Dist (ft)		353		381		797		718
Turn Bay Length (ft)	200				145		145	
Base Capacity (vph)	488	526		489	892	2587	660	2577
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.07	0.01		0.12	0.02	0.32	0.05	0.18

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 55.5 (62%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Frantz Rd & Bradenton Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	3	1	13	11	33	21	749	39	32	360	76
Future Volume (veh/h)	30	3	1	13	11	33	21	749	39	32	360	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1900	1900	1900	1900	1900	1885	1885	1856	1841	1841
Adj Flow Rate, veh/h	32	3	1	14	12	35	22	797	41	34	383	81
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	0	0	0	0	0	0	1	1	3	4	4
Cap, veh/h	229	138	46	71	50	96	711	2337	120	597	1974	413
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.07	1.00	1.00	0.03	0.46	0.46
Sat Flow, veh/h	1337	1364	455	214	493	952	1810	3466	178	1767	2878	603
Grp Volume(v), veh/h	32	0	4	61	0	0	22	412	426	34	231	233
Grp Sat Flow(s),veh/h/ln	1337	0	1818	1659	0	0	1810	1791	1853	1767	1749	1732
Q Serve(g_s), s	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.5	7.1	7.2
Cycle Q Clear(g_c), s	1.5	0.0	0.2	3.0	0.0	0.0	0.3	0.0	0.0	0.5	7.1	7.2
Prop In Lane	1.00		0.25	0.23		0.57	1.00		0.10	1.00		0.35
Lane Grp Cap(c), veh/h	229	0	184	217	0	0	711	1207	1249	597	1199	1188
V/C Ratio(X)	0.14	0.00	0.02	0.28	0.00	0.00	0.03	0.34	0.34	0.06	0.19	0.20
Avail Cap(c_a), veh/h	479	0	523	518	0	0	961	1207	1249	821	1199	1188
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.0	0.0	36.4	37.7	0.0	0.0	4.0	0.0	0.0	3.7	9.5	9.6
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.7	0.0	0.0	0.0	0.8	0.7	0.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.1	1.3	0.0	0.0	0.1	0.3	0.3	0.1	2.6	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.3	0.0	36.5	38.4	0.0	0.0	4.0	0.8	0.7	3.7	9.9	10.0
LnGrp LOS	D	A	D	D	A	A	A	A	A	A	A	A
Approach Vol, veh/h		36			61			860			498	
Approach Delay, s/veh		37.2			38.4			0.8			9.5	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	67.2		15.2	8.6	66.2		15.2				
Change Period (Y+Rc), s	4.6	5.5		6.1	4.6	5.5		6.1				
Max Green Setting (Gmax), s	15.4	32.5		25.9	15.4	32.5		25.9				
Max Q Clear Time (g_c+I1), s	2.3	9.2		3.5	2.5	2.0		5.0				
Green Ext Time (p_c), s	0.0	5.1		0.1	0.0	11.3		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			6.3									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	0	17	0	0	1	96	790	4	5	322	43
Future Vol, veh/h	11	0	17	0	0	1	96	790	4	5	322	43
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	75	-	-	-	-	-	200	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	24	0	0	0	2	1	0	0	4	0
Mvmt Flow	12	0	19	0	0	1	105	868	4	5	354	47

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1032	1470	201	1267	1491	436	401	0	0	872	0	0
Stage 1	388	388	-	1080	1080	-	-	-	-	-	-	-
Stage 2	644	1082	-	187	411	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.38	7.5	6.5	6.9	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.54	3.5	4	3.3	2.22	-	-	2.2	-	-
Pot Cap-1 Maneuver	190	129	742	128	125	574	1154	-	-	782	-	-
Stage 1	613	612	-	236	297	-	-	-	-	-	-	-
Stage 2	433	296	-	803	598	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	176	117	742	116	113	574	1154	-	-	782	-	-
Mov Cap-2 Maneuver	176	117	-	116	113	-	-	-	-	-	-	-
Stage 1	557	608	-	215	270	-	-	-	-	-	-	-
Stage 2	393	269	-	778	594	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.7	11.3	0.9	0.1
HCM LOS	C	B		

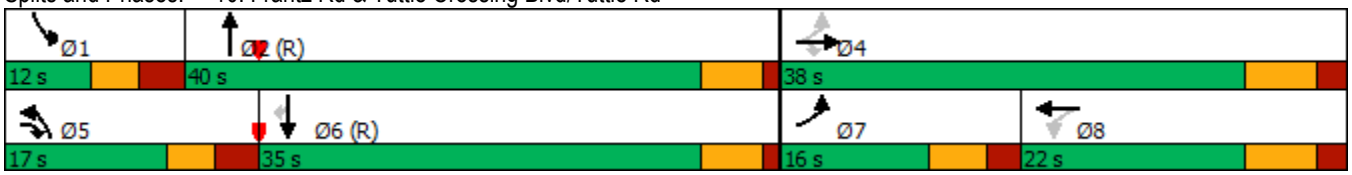
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1154	-	-	176	742	574	782	-	-
HCM Lane V/C Ratio	0.091	-	-	0.069	0.025	0.002	0.007	-	-
HCM Control Delay (s)	8.4	-	-	27	10	11.3	9.6	-	-
HCM Lane LOS	A	-	-	D	B	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.2	0.1	0	0	-	-

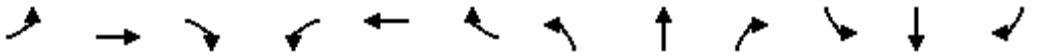
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	202	139	218	6	54	209	730	22	245	50
Future Volume (vph)	202	139	218	6	54	209	730	22	245	50
Lane Group Flow (vph)	217	149	234	6	67	225	798	24	263	54
Turn Type	pm+pt	NA	pm+ov	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	5		8	5	2	1	6	
Permitted Phases	4		4	8						6
Detector Phase	7	4	5	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	13.1	39.0	13.5	40.8	40.8	13.5	30.5	13.2	39.8	39.8
Total Split (s)	16.0	38.0	17.0	22.0	22.0	17.0	40.0	12.0	35.0	35.0
Total Split (%)	17.8%	42.2%	18.9%	24.4%	24.4%	18.9%	44.4%	13.3%	38.9%	38.9%
Yellow Time (s)	3.9	4.8	3.2	4.8	4.8	3.2	4.1	3.2	4.1	4.1
All-Red Time (s)	2.2	2.2	3.0	2.2	2.2	3.0	1.3	3.0	1.3	1.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	7.0	6.2	7.0	7.0	6.2	5.4	6.2	5.4	5.4
Lead/Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max	C-Max
v/c Ratio	0.68	0.31	0.17	0.05	0.31	0.53	0.41	0.18	0.19	0.07
Control Delay	38.4	27.2	1.8	36.2	37.4	41.3	15.4	38.4	24.2	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	27.2	1.8	36.2	37.4	41.3	15.4	38.4	24.2	2.5
Queue Length 50th (ft)	98	65	0	3	32	62	121	14	40	0
Queue Length 95th (ft)	159	112	17	14	70	94	240	38	121	15
Internal Link Dist (ft)		1368			1219		1103		587	
Turn Bay Length (ft)	525		475	200		500		175		
Base Capacity (vph)	317	654	1400	179	310	450	1937	136	1404	744
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.23	0.17	0.03	0.22	0.50	0.41	0.18	0.19	0.07

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated

Splits and Phases: 10: Frantz Rd & Tuttle Crossing Blvd/Tuttle Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	202	139	218	6	54	8	209	730	12	22	245	50
Future Volume (veh/h)	202	139	218	6	54	8	209	730	12	22	245	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1900	1841	1648	1900	1900	1856	1885	1885	1900	1811	1811
Adj Flow Rate, veh/h	217	149	234	6	58	9	225	785	13	24	263	54
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	0	4	17	0	0	3	1	1	0	6	6
Cap, veh/h	380	549	1036	178	178	28	303	1728	29	45	1432	639
Arrive On Green	0.11	0.29	0.29	0.11	0.11	0.11	0.09	0.48	0.48	0.01	0.14	0.14
Sat Flow, veh/h	1781	1900	2745	881	1606	249	3428	3606	60	1810	3441	1535
Grp Volume(v), veh/h	217	149	234	6	0	67	225	390	408	24	263	54
Grp Sat Flow(s),veh/h/ln	1781	1900	1373	881	0	1855	1714	1791	1874	1810	1721	1535
Q Serve(g_s), s	9.4	5.4	5.2	0.5	0.0	3.0	5.8	13.0	13.0	1.2	6.1	2.8
Cycle Q Clear(g_c), s	9.4	5.4	5.2	0.5	0.0	3.0	5.8	13.0	13.0	1.2	6.1	2.8
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	380	549	1036	178	0	206	303	859	899	45	1432	639
V/C Ratio(X)	0.57	0.27	0.23	0.03	0.00	0.33	0.74	0.45	0.45	0.53	0.18	0.08
Avail Cap(c_a), veh/h	380	654	1188	227	0	309	411	859	899	117	1432	639
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.5	24.7	19.1	35.8	0.0	36.9	40.0	15.6	15.6	44.1	25.3	23.9
Incr Delay (d2), s/veh	2.1	0.3	0.1	0.1	0.0	0.9	4.8	1.7	1.7	9.2	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	2.3	1.7	0.1	0.0	1.4	2.6	5.4	5.6	0.6	2.6	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.6	25.0	19.2	35.9	0.0	37.8	44.8	17.3	17.2	53.3	25.6	24.1
LnGrp LOS	C	C	B	D	A	D	D	B	B	D	C	C
Approach Vol, veh/h		600			73			1023			341	
Approach Delay, s/veh		25.1			37.6			23.3			27.3	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	48.5		33.0	14.1	42.9	16.0	17.0				
Change Period (Y+Rc), s	* 6.2	* 5.4		* 7	* 6.2	* 5.4	* 6.1	* 7				
Max Green Setting (Gmax), s	* 5.8	* 35		* 31	* 11	* 30	* 9.9	* 15				
Max Q Clear Time (g_c+I1), s	3.2	15.0		7.4	7.8	8.1	11.4	5.0				
Green Ext Time (p_c), s	0.0	4.8		1.6	0.2	1.7	0.0	0.2				

Intersection Summary												
HCM 6th Ctrl Delay			25.0									
HCM 6th LOS			C									

Notes

User approved pedestrian interval to be less than phase max green.

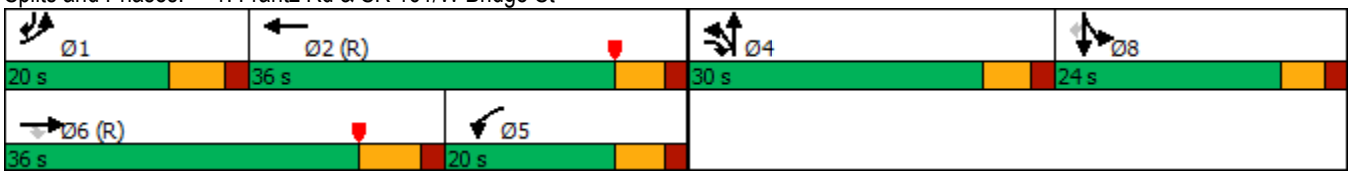
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

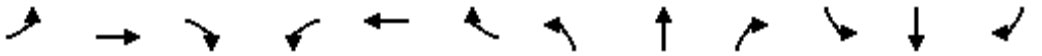
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	136	542	320	148	552	400	190	234	105	265
Future Volume (vph)	136	542	320	148	552	400	190	234	105	265
Lane Group Flow (vph)	143	571	337	156	784	421	320	175	182	279
Turn Type	Prot	NA	pm+ov	Prot	NA	Split	NA	Split	NA	pm+ov
Protected Phases	1	6	4	5	2	4	4	8	8	1
Permitted Phases			6							8
Detector Phase	1	6	4	5	2	4	4	8	8	1
Switch Phase										
Minimum Initial (s)	7.0	21.0	10.0	7.0	20.0	10.0	10.0	10.0	10.0	7.0
Minimum Split (s)	14.4	33.0	46.1	14.4	48.0	46.1	46.1	20.0	20.0	14.4
Total Split (s)	20.0	36.0	30.0	20.0	36.0	30.0	30.0	24.0	24.0	20.0
Total Split (%)	18.2%	32.7%	27.3%	18.2%	32.7%	27.3%	27.3%	21.8%	21.8%	18.2%
Yellow Time (s)	4.5	5.0	4.0	4.0	4.0	4.0	4.0	3.6	3.6	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	7.0	6.0	6.0	6.0	6.0	6.0	5.6	5.6	6.5
Lead/Lag	Lead	Lead		Lag	Lag					Lead
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	None	C-Max	None	None	Max	Max	None
v/c Ratio	0.48	0.62	0.23	0.38	0.51	0.68	0.47	0.51	0.51	0.26
Control Delay	53.0	39.2	1.2	46.9	29.5	41.4	23.3	46.2	46.2	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	39.2	1.2	46.9	29.5	41.4	23.3	46.2	46.2	12.0
Queue Length 50th (ft)	50	187	0	52	148	103	36	116	122	32
Queue Length 95th (ft)	80	247	11	86	197	195	125	200	207	68
Internal Link Dist (ft)		1043			821		1271		568	
Turn Bay Length (ft)	650			375		575		425		325
Base Capacity (vph)	425	915	1539	416	1537	749	805	345	354	1154
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.62	0.22	0.38	0.51	0.56	0.40	0.51	0.51	0.24

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Natural Cycle: 130
Control Type: Actuated-Coordinated

Splits and Phases: 1: Frantz Rd & SR 161/W Bridge St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	542	320	148	552	193	400	190	114	234	105	265
Future Volume (veh/h)	136	542	320	148	552	193	400	190	114	234	105	265
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1841	1870	1796	1841	1841	1870	1870	1870	1870	1856	1870
Adj Flow Rate, veh/h	143	571	337	156	581	203	421	200	120	178	205	279
Peak Hour 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
Percent Heavy Veh, %	1	4	2	7	4	4	2	2	2	2	3	2
Cap, veh/h	219	922	1161	641	1475	503	527	331	190	298	310	729
Arrive On Green	0.06	0.26	0.26	0.19	0.40	0.40	0.05	0.05	0.05	0.17	0.17	0.17
Sat Flow, veh/h	3483	3497	2790	3319	3701	1262	3456	2175	1247	1781	1856	3170
Grp Volume(v), veh/h	143	571	337	156	525	259	421	162	158	178	205	279
Grp Sat Flow(s),veh/h/ln	1742	1749	1395	1659	1675	1614	1728	1777	1646	1781	1856	1585
Q Serve(g_s), s	4.4	15.8	8.8	4.4	12.3	12.7	13.3	9.8	10.4	10.2	11.4	8.2
Cycle Q Clear(g_c), s	4.4	15.8	8.8	4.4	12.3	12.7	13.3	9.8	10.4	10.2	11.4	8.2
Prop In Lane	1.00		1.00	1.00		0.78	1.00		0.76	1.00		1.00
Lane Grp Cap(c), veh/h	219	922	1161	641	1335	643	527	271	251	298	310	729
V/C Ratio(X)	0.65	0.62	0.29	0.24	0.39	0.40	0.80	0.60	0.63	0.60	0.66	0.38
Avail Cap(c_a), veh/h	427	922	1161	641	1335	643	754	388	359	298	310	729
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.4	35.6	21.3	37.6	23.6	23.7	50.6	48.9	49.2	42.4	42.9	35.7
Incr Delay (d2), s/veh	2.4	3.1	0.6	0.1	0.9	1.9	2.3	0.7	0.9	8.6	10.6	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	7.0	3.8	1.8	4.9	5.1	6.3	4.7	4.6	5.1	6.1	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.8	38.8	22.0	37.7	24.5	25.6	52.9	49.7	50.1	50.9	53.4	37.3
LnGrp LOS	D	D	C	D	C	C	D	D	D	D	D	D
Approach Vol, veh/h		1051			940			741			662	
Approach Delay, s/veh		35.3			27.0			51.6			45.9	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.4	49.8		22.8	27.2	36.0		24.0				
Change Period (Y+Rc), s	6.5	6.0		6.0	6.0	7.0		5.6				
Max Green Setting (Gmax), s	13.5	30.0		24.0	14.0	29.0		18.4				
Max Q Clear Time (g_c+I1), s	6.4	14.7		15.3	6.4	17.8		13.4				
Green Ext Time (p_c), s	0.2	7.4		1.5	0.2	6.3		1.1				

Intersection Summary			
HCM 6th Ctrl Delay		38.6	
HCM 6th LOS		D	

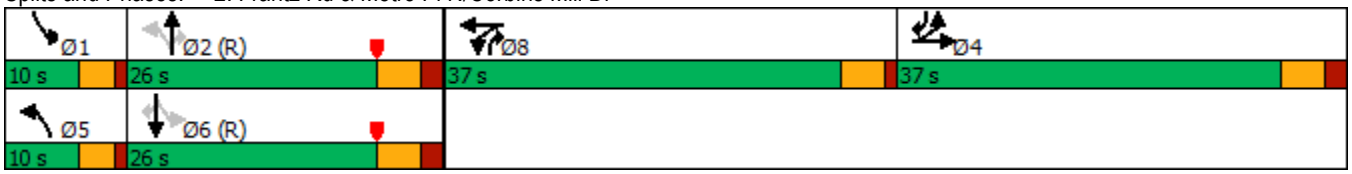
Notes
User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.

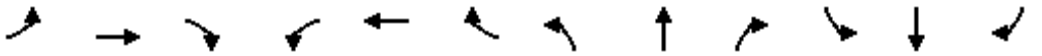
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	232	84	178	88	50	432	130	23	344	131
Future Volume (vph)	232	84	178	88	50	432	130	23	344	131
Lane Group Flow (vph)	200	195	189	118	53	460	138	24	366	139
Turn Type	Split	NA	Split	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	4	4	8	8	5	2	8	1	6	4
Permitted Phases					2		2	6		6
Detector Phase	4	4	8	8	5	2	8	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	7.0
Minimum Split (s)	38.0	38.0	37.0	37.0	10.0	26.0	37.0	10.0	26.0	38.0
Total Split (s)	37.0	37.0	37.0	37.0	10.0	26.0	37.0	10.0	26.0	37.0
Total Split (%)	33.6%	33.6%	33.6%	33.6%	9.1%	23.6%	33.6%	9.1%	23.6%	33.6%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	2.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	4.6	4.6	4.0	5.6	4.6	4.0	5.6	5.6
Lead/Lag					Lead	Lag		Lead	Lag	
Lead-Lag Optimize?					Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	C-Min	None	None	C-Min	None
v/c Ratio	0.68	0.63	0.66	0.39	0.10	0.28	0.12	0.05	0.24	0.14
Control Delay	54.1	46.2	53.6	39.5	17.5	23.5	5.5	13.5	19.6	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.1	46.2	53.6	39.5	17.5	23.5	5.5	13.5	19.6	0.6
Queue Length 50th (ft)	141	121	126	67	21	122	0	7	74	0
Queue Length 95th (ft)	206	186	187	115	54	198	43	m23	128	0
Internal Link Dist (ft)		984		630		585			1271	
Turn Bay Length (ft)			225		125		175	100		185
Base Capacity (vph)	484	499	531	545	548	1631	1322	502	1527	1138
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.39	0.36	0.22	0.10	0.28	0.10	0.05	0.24	0.12

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 53 (48%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Frantz Rd & Metro Pl N/Corbins Mill Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	84	55	178	88	23	50	432	130	23	344	131
Future Volume (veh/h)	232	84	55	178	88	23	50	432	130	23	344	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1900	1900	1900	1900	1856	1885	1900	1841	1856
Adj Flow Rate, veh/h	198	158	59	189	94	24	53	460	138	24	366	139
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	0	0	0	0	3	1	0	4	3
Cap, veh/h	267	196	73	236	190	49	590	1824	1035	529	1764	1027
Arrive On Green	0.15	0.15	0.15	0.13	0.13	0.13	0.07	1.00	1.00	0.05	1.00	1.00
Sat Flow, veh/h	1795	1319	492	1810	1460	373	1810	3526	1598	1810	3497	1572
Grp Volume(v), veh/h	198	0	217	189	0	118	53	460	138	24	366	139
Grp Sat Flow(s),veh/h/ln	1795	0	1811	1810	0	1833	1810	1763	1598	1810	1749	1572
Q Serve(g_s), s	11.6	0.0	12.7	11.2	0.0	6.6	1.5	0.0	0.0	0.7	0.0	0.0
Cycle Q Clear(g_c), s	11.6	0.0	12.7	11.2	0.0	6.6	1.5	0.0	0.0	0.7	0.0	0.0
Prop In Lane	1.00		0.27	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	267	0	270	236	0	239	590	1824	1035	529	1764	1027
V/C Ratio(X)	0.74	0.00	0.81	0.80	0.00	0.49	0.09	0.25	0.13	0.05	0.21	0.14
Avail Cap(c_a), veh/h	513	0	517	533	0	540	622	1824	1035	585	1764	1027
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.99	0.99	0.99	0.95	0.95	0.95
Uniform Delay (d), s/veh	44.8	0.0	45.3	46.5	0.0	44.5	11.5	0.0	0.0	12.1	0.0	0.0
Incr Delay (d2), s/veh	4.0	0.0	5.6	6.3	0.0	1.6	0.1	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	6.1	5.5	0.0	3.1	0.6	0.1	0.1	0.3	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.8	0.0	50.9	52.7	0.0	46.1	11.5	0.3	0.3	12.1	0.3	0.3
LnGrp LOS	D	A	D	D	A	D	B	A	A	B	A	A
Approach Vol, veh/h		415			307			651			529	
Approach Delay, s/veh		49.9			50.2			1.2			0.8	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	62.5		22.0	8.0	61.1		18.9				
Change Period (Y+Rc), s	4.0	5.6		5.6	4.0	5.6		4.6				
Max Green Setting (Gmax), s	6.0	20.4		31.4	6.0	20.4		32.4				
Max Q Clear Time (g_c+I1), s	2.7	2.0		14.7	3.5	2.0		13.2				
Green Ext Time (p_c), s	0.0	3.2		1.6	0.0	2.6		1.2				

Intersection Summary			
HCM 6th Ctrl Delay		19.6	
HCM 6th LOS		B	

Notes

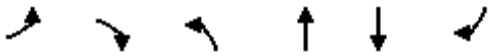
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	160	139	511	484	81
Future Volume (vph)	88	160	139	511	484	81
Lane Group Flow (vph)	93	168	146	538	509	85
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	1	1	6	2	4
Permitted Phases		4	6			2
Detector Phase	4	1	1	6	2	4
Switch Phase						
Minimum Initial (s)	10.0	7.0	7.0	20.0	20.0	10.0
Minimum Split (s)	37.0	12.0	12.0	26.0	42.0	37.0
Total Split (s)	41.0	25.0	25.0	69.0	44.0	41.0
Total Split (%)	37.3%	22.7%	22.7%	62.7%	40.0%	37.3%
Yellow Time (s)	3.6	3.5	3.5	3.6	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.0	5.0	5.1	5.1	5.1
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	C-Min	C-Min	None
v/c Ratio	0.29	0.36	0.20	0.19	0.21	0.06
Control Delay	49.0	8.1	2.7	2.4	6.3	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	8.1	2.7	2.4	6.3	2.0
Queue Length 50th (ft)	31	2	16	33	69	2
Queue Length 95th (ft)	57	56	28	46	85	18
Internal Link Dist (ft)	991			1198	585	
Turn Bay Length (ft)	350	400	425			400
Base Capacity (vph)	1109	620	839	2881	2437	1615
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	0.08	0.27	0.17	0.19	0.21	0.05

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 73 (66%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated

Splits and Phases: 3: Frantz Rd & Metro Pl S



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	88	160	139	511	484	81
Future Volume (veh/h)	88	160	139	511	484	81
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1870	1885	1870	1856	1900
Adj Flow Rate, veh/h	93	168	146	538	509	85
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	2	1	2	3	0
Cap, veh/h	429	298	738	2780	2376	1286
Arrive On Green	0.13	0.13	0.06	0.78	1.00	1.00
Sat Flow, veh/h	3428	1585	1795	3647	3618	1610
Grp Volume(v), veh/h	93	168	146	538	509	85
Grp Sat Flow(s),veh/h/ln	1714	1585	1795	1777	1763	1610
Q Serve(g_s), s	2.7	10.6	2.4	4.3	0.0	0.0
Cycle Q Clear(g_c), s	2.7	10.6	2.4	4.3	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	429	298	738	2780	2376	1286
V/C Ratio(X)	0.22	0.56	0.20	0.19	0.21	0.07
Avail Cap(c_a), veh/h	1119	617	951	2780	2376	1286
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.93	0.93
Uniform Delay (d), s/veh	43.3	40.6	3.6	3.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	2.2	0.2	0.2	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	9.5	0.7	1.2	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.6	42.7	3.8	3.2	0.2	0.1
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	261			684	594	
Approach Delay, s/veh	43.0			3.3	0.2	
Approach LOS	D			A	A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	11.9	79.2		18.9		91.1
Change Period (Y+Rc), s	5.0	5.1		5.1		5.1
Max Green Setting (Gmax), s	20.0	38.9		35.9		63.9
Max Q Clear Time (g_c+I1), s	4.4	2.0		12.6		6.3
Green Ext Time (p_c), s	0.4	7.9		1.2		8.1

Intersection Summary	
HCM 6th Ctrl Delay	8.9
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Vol, veh/h	17	27	633	12	18	11	626
Future Vol, veh/h	17	27	633	12	18	11	626
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-
Veh in Median Storage, #	1	-	0	-	-	-	0
Grade, %	0	-	0	-	-	-	0
Peak Hour Factor	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	2	0	0	0	2
Mvmt Flow	18	28	653	12	19	11	645

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	1042	333	0	0	665	665	0
Stage 1	659	-	-	-	-	-	-
Stage 2	383	-	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	6.4	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.5	2.2	-
Pot Cap-1 Maneuver	229	669	-	-	551	934	-
Stage 1	482	-	-	-	-	-	-
Stage 2	665	-	-	-	-	-	-
Platoon blocked, %			-	-			-
Mov Cap-1 Maneuver	212	669	-	-	633	633	-
Mov Cap-2 Maneuver	341	-	-	-	-	-	-
Stage 1	482	-	-	-	-	-	-
Stage 2	616	-	-	-	-	-	-

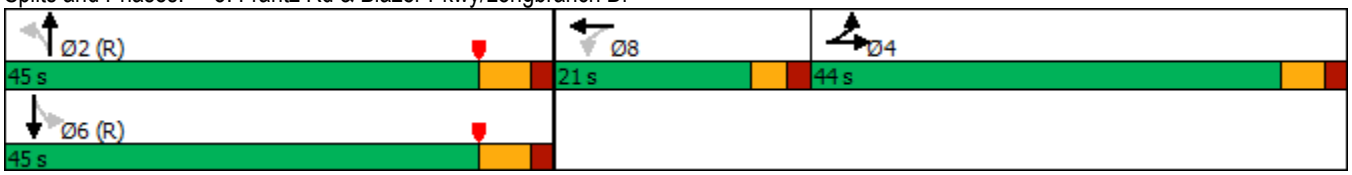
Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	1.3
HCM LOS	B		

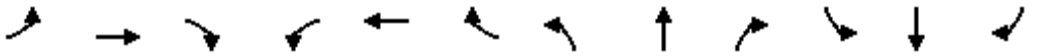
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	488	633	-
HCM Lane V/C Ratio	-	-	0.093	0.018	-
HCM Control Delay (s)	-	-	13.1	11	0.8
HCM Lane LOS	-	-	B	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Lane Group	Ø2	Ø4	Ø6	Ø8
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	2	4	6	8
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	15.0	10.0	15.0	8.0
Minimum Split (s)	25.2	40.0	25.2	18.0
Total Split (s)	45.0	44.0	45.0	21.0
Total Split (%)	41%	40%	41%	19%
Yellow Time (s)	4.2	3.6	4.2	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	None	C-Max	None
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
Queue Length 50th (ft)				
Queue Length 95th (ft)				
Internal Link Dist (ft)				
Turn Bay Length (ft)				
Base Capacity (vph)				
Starvation Cap Reductn				
Spillback Cap Reductn				
Storage Cap Reductn				
Reduced v/c Ratio				

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 14 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 5: Frantz Rd & Blazer Pkwy/Longbranch Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0	0	0	0	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	2	0	0	2	0	65	3353	0	65	3353	0
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1781	1870	0	0	1870	0	1781	3647	0	1781	3647	0
Grp Volume(v), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	0	1781	1777	0	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	2	2	0	0	2	0	65	3353	0	65	3353	0
V/C Ratio(X)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	622	653	0	0	272	0	65	3353	0	65	3353	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		0			0			0			0	
Approach Delay, s/veh		0.0			0.0			0.0			0.0	
Approach LOS												

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		110.0		0.0		110.0		0.0				
Change Period (Y+Rc), s		6.2		5.6		6.2		5.0				
Max Green Setting (Gmax), s		38.8		38.4		38.8		16.0				
Max Q Clear Time (g_c+I1), s		0.0		0.0		0.0		0.0				
Green Ext Time (p_c), s		0.0		0.0		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			0.0									
HCM 6th LOS			A									

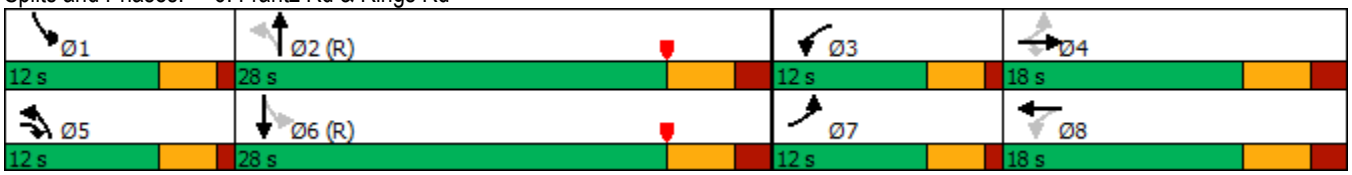
Notes

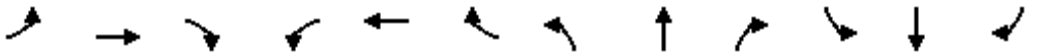
User approved volume balancing among the lanes for turning movement.

Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8
Lane Configurations								
Traffic Volume (vph)								
Future Volume (vph)								
Lane Group Flow (vph)								
Turn Type								
Protected Phases	1	2	3	4	5	6	7	8
Permitted Phases								
Detector Phase								
Switch Phase								
Minimum Initial (s)	7.0	12.0	7.0	11.0	7.0	12.0	7.0	11.0
Minimum Split (s)	11.0	39.0	11.0	40.0	11.0	41.0	11.0	42.0
Total Split (s)	12.0	28.0	12.0	18.0	12.0	28.0	12.0	18.0
Total Split (%)	17%	40%	17%	26%	17%	40%	17%	26%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.0	3.5	3.0	3.5
All-Red Time (s)	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)								
Total Lost Time (s)								
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	None	None	C-Min	None	None
v/c Ratio								
Control Delay								
Queue Delay								
Total Delay								
Queue Length 50th (ft)								
Queue Length 95th (ft)								
Internal Link Dist (ft)								
Turn Bay Length (ft)								
Base Capacity (vph)								
Starvation Cap Reductn								
Spillback Cap Reductn								
Storage Cap Reductn								
Reduced v/c Ratio								

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 105
Control Type: Actuated-Coordinated

Splits and Phases: 6: Frantz Rd & Rings Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0	0	0	0	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	105	3	0	105	5	0	1412	3274	0	1412	3274	0
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1781	1870	1585	1781	3647	0	1781	3647	0	1781	3647	0
Grp Volume(v), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	0	1781	1777	0	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	105	3	-88	105	5	0	1412	3274	0	1412	3274	0
V/C Ratio(X)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	306	334	192	306	635	0	1613	3274	0	1613	3274	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		0			0			0			0	
Approach Delay, s/veh		0.0			0.0			0.0			0.0	
Approach LOS												

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	70.0	0.0	0.0	0.0	70.0	0.0	0.0
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	8.0	22.5	8.0	12.5	8.0	22.5	8.0	12.5
Max Q Clear Time (g_c+I1), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	0.0
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
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	-	-	-	-	-	-	50	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1	1	1	1	1	0	1	0	0	0	0	0
Stage 1	1	1	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	1	1	-	-	-	-	-	-	-
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	1021	894	1083	1021	894	-	1620	-	-	-	-	-
Stage 1	1021	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	1021	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	894	1083	1021	894	-	1620	-	-	-	-	-
Mov Cap-2 Maneuver	-	894	-	1021	894	-	-	-	-	-	-	-
Stage 1	1021	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	1021	895	-	-	-	-	-	-	-

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

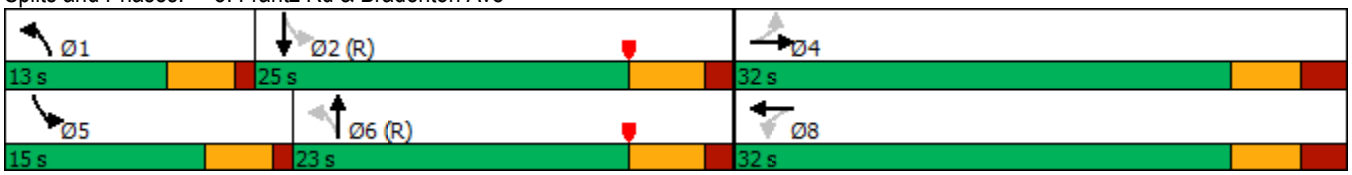
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1620	-	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-

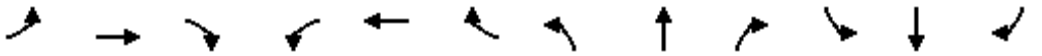
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	59	12	15	7	8	466	17	462
Future Volume (vph)	59	12	15	7	8	466	17	462
Lane Group Flow (vph)	65	34	0	54	9	527	19	556
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0	15.0	7.0	15.0
Minimum Split (s)	32.0	32.0	35.0	35.0	12.0	30.0	12.0	34.0
Total Split (s)	32.0	32.0	32.0	32.0	13.0	23.0	15.0	25.0
Total Split (%)	45.7%	45.7%	45.7%	45.7%	18.6%	32.9%	21.4%	35.7%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	4.0	3.6	4.0
All-Red Time (s)	2.5	2.5	2.5	2.5	1.0	1.5	1.0	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	4.6	5.5	4.6	5.5
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.32	0.13		0.21	0.01	0.21	0.03	0.22
Control Delay	30.9	16.2		17.0	3.8	5.8	3.8	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	16.2		17.0	3.8	5.8	3.8	5.7
Queue Length 50th (ft)	26	5		9	1	35	2	36
Queue Length 95th (ft)	58	27		37	5	97	8	102
Internal Link Dist (ft)		353		381		797		718
Turn Bay Length (ft)	200				145		145	
Base Capacity (vph)	497	629		584	733	2489	660	2489
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.13	0.05		0.09	0.01	0.21	0.03	0.22

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 8: Frantz Rd & Bradenton Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	12	19	15	7	27	8	466	14	17	462	44
Future Volume (veh/h)	59	12	19	15	7	27	8	466	14	17	462	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1767	1767	1900	1900	1900	1900	1856	1856	1633	1870	1870
Adj Flow Rate, veh/h	65	13	21	16	8	30	9	512	15	19	508	48
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	9	9	0	0	0	0	3	3	18	2	2
Cap, veh/h	300	82	133	104	61	123	654	2106	62	559	2025	191
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.02	0.60	0.60	0.06	1.00	1.00
Sat Flow, veh/h	1370	608	982	277	450	909	1810	3498	102	1555	3282	309
Grp Volume(v), veh/h	65	0	34	54	0	0	9	258	269	19	274	282
Grp Sat Flow(s),veh/h/ln	1370	0	1590	1636	0	0	1810	1763	1837	1555	1777	1815
Q Serve(g_s), s	0.4	0.0	1.3	0.0	0.0	0.0	0.1	4.8	4.8	0.3	0.0	0.0
Cycle Q Clear(g_c), s	2.4	0.0	1.3	2.0	0.0	0.0	0.1	4.8	4.8	0.3	0.0	0.0
Prop In Lane	1.00		0.62	0.30		0.56	1.00		0.06	1.00		0.17
Lane Grp Cap(c), veh/h	300	0	216	289	0	0	654	1061	1106	559	1096	1120
V/C Ratio(X)	0.22	0.00	0.16	0.19	0.00	0.00	0.01	0.24	0.24	0.03	0.25	0.25
Avail Cap(c_a), veh/h	621	0	588	658	0	0	842	1061	1106	742	1096	1120
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	0.0	26.7	27.0	0.0	0.0	5.1	6.5	6.5	4.8	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.3	0.3	0.0	0.0	0.0	0.5	0.5	0.0	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.5	0.8	0.0	0.0	0.0	1.6	1.6	0.1	0.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.5	0.0	27.1	27.3	0.0	0.0	5.1	7.0	7.0	4.8	0.5	0.5
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		99			54			536			575	
Approach Delay, s/veh		27.4			27.3			7.0			0.7	
Approach LOS		C			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	48.7		15.6	6.8	47.6		15.6				
Change Period (Y+Rc), s	4.6	5.5		6.1	4.6	5.5		6.1				
Max Green Setting (Gmax), s	8.4	19.5		25.9	10.4	17.5		25.9				
Max Q Clear Time (g_c+I1), s	2.1	2.0		4.4	2.3	6.8		4.0				
Green Ext Time (p_c), s	0.0	5.4		0.3	0.0	3.8		0.2				

Intersection Summary			
HCM 6th Ctrl Delay		6.6	
HCM 6th LOS		A	

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	0	41	4	1	4	44	468	1	4	469	23
Future Vol, veh/h	21	0	41	4	1	4	44	468	1	4	469	23
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	75	-	-	-	-	-	200	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	10	0	3	0	0	0	5	3	0	0	2	5
Mvmt Flow	22	0	42	4	1	4	45	482	1	4	484	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	836	1077	254	823	1089	242	508	0	0	483	0	0
Stage 1	504	504	-	573	573	-	-	-	-	-	-	-
Stage 2	332	573	-	250	516	-	-	-	-	-	-	-
Critical Hdwy	7.7	6.5	6.96	7.5	6.5	6.9	4.2	-	-	4.1	-	-
Critical Hdwy Stg 1	6.7	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.6	4	3.33	3.5	4	3.3	2.25	-	-	2.2	-	-
Pot Cap-1 Maneuver	247	221	742	269	217	765	1032	-	-	1090	-	-
Stage 1	498	544	-	477	507	-	-	-	-	-	-	-
Stage 2	634	507	-	738	538	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	236	210	742	245	207	765	1032	-	-	1090	-	-
Mov Cap-2 Maneuver	236	210	-	245	207	-	-	-	-	-	-	-
Stage 1	476	542	-	456	485	-	-	-	-	-	-	-
Stage 2	602	485	-	693	536	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.1	15.9	0.7	0.1
HCM LOS	B	C		

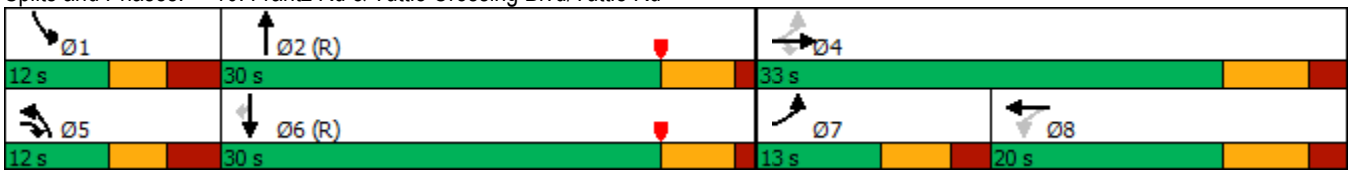
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1032	-	-	236	742	341	1090	-	-
HCM Lane V/C Ratio	0.044	-	-	0.092	0.057	0.027	0.004	-	-
HCM Control Delay (s)	8.6	-	-	21.8	10.1	15.9	8.3	-	-
HCM Lane LOS	A	-	-	C	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0.1	0	-	-

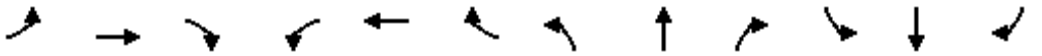
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	182	89	214	17	81	193	314	9	351	162
Future Volume (vph)	182	89	214	17	81	193	314	9	351	162
Lane Group Flow (vph)	194	95	228	18	109	205	358	10	373	172
Turn Type	pm+pt	NA	pm+ov	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	5		8	5	2	1	6	
Permitted Phases	4		4	8						6
Detector Phase	7	4	5	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	13.1	39.0	13.5	40.8	40.8	13.5	30.5	13.2	39.8	39.8
Total Split (s)	13.0	33.0	12.0	20.0	20.0	12.0	30.0	12.0	30.0	30.0
Total Split (%)	17.3%	44.0%	16.0%	26.7%	26.7%	16.0%	40.0%	16.0%	40.0%	40.0%
Yellow Time (s)	3.9	4.8	3.2	4.8	4.8	3.2	4.1	3.2	4.1	4.1
All-Red Time (s)	2.2	2.2	3.0	2.2	2.2	3.0	1.3	3.0	1.3	1.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	7.0	6.2	7.0	7.0	6.2	5.4	6.2	5.4	5.4
Lead/Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max	C-Max
v/c Ratio	0.59	0.18	0.16	0.11	0.41	0.58	0.20	0.09	0.29	0.23
Control Delay	27.6	19.3	1.8	28.8	29.5	40.8	11.9	33.8	18.8	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.6	19.3	1.8	28.8	29.5	40.8	11.9	33.8	18.8	1.8
Queue Length 50th (ft)	68	32	0	8	40	46	41	4	67	0
Queue Length 95th (ft)	113	61	16	24	82	#101	96	18	102	17
Internal Link Dist (ft)		1368			1219		1103		587	
Turn Bay Length (ft)	525		475	200		500		175		
Base Capacity (vph)	329	645	1428	204	318	355	1798	117	1295	735
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.15	0.16	0.09	0.34	0.58	0.20	0.09	0.29	0.23

Intersection Summary

Cycle Length: 75
Actuated Cycle Length: 75
Offset: 12 (16%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 10: Frantz Rd & Tuttle Crossing Blvd/Tuttle Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	182	89	214	17	81	22	193	314	23	9	351	162
Future Volume (veh/h)	182	89	214	17	81	22	193	314	23	9	351	162
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1841	1722	1885	1885	1870	1856	1856	1574	1870	1885
Adj Flow Rate, veh/h	194	95	228	18	86	23	205	334	24	10	373	172
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	2	4	12	1	1	2	3	3	22	2	1
Cap, veh/h	362	574	1054	226	191	51	267	1444	103	19	1308	588
Arrive On Green	0.09	0.31	0.31	0.13	0.13	0.13	0.08	0.43	0.43	0.01	0.37	0.37
Sat Flow, veh/h	1795	1870	2745	973	1433	383	3456	3337	239	1499	3554	1598
Grp Volume(v), veh/h	194	95	228	18	0	109	205	176	182	10	373	172
Grp Sat Flow(s),veh/h/ln	1795	1870	1373	973	0	1816	1728	1763	1813	1499	1777	1598
Q Serve(g_s), s	6.8	2.8	4.2	1.2	0.0	4.2	4.4	4.7	4.8	0.5	5.6	5.7
Cycle Q Clear(g_c), s	6.8	2.8	4.2	1.2	0.0	4.2	4.4	4.7	4.8	0.5	5.6	5.7
Prop In Lane	1.00		1.00	1.00		0.21	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	362	574	1054	226	0	242	267	763	785	19	1308	588
V/C Ratio(X)	0.54	0.17	0.22	0.08	0.00	0.45	0.77	0.23	0.23	0.53	0.29	0.29
Avail Cap(c_a), veh/h	362	648	1164	265	0	315	267	763	785	116	1308	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	19.0	15.5	28.7	0.0	30.0	33.9	13.4	13.4	36.8	16.7	16.8
Incr Delay (d2), s/veh	1.5	0.1	0.1	0.1	0.0	1.3	12.6	0.7	0.7	21.4	0.5	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	1.1	1.3	0.3	0.0	1.9	2.2	1.8	1.9	0.3	2.2	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.4	19.1	15.6	28.8	0.0	31.3	46.5	14.1	14.1	58.2	17.3	18.0
LnGrp LOS	C	B	B	C	A	C	D	B	B	E	B	B
Approach Vol, veh/h		517			127			563			555	
Approach Delay, s/veh		19.9			30.9			25.9			18.3	
Approach LOS		B			C			C			B	

Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.1	37.9		30.0	12.0	33.0	13.0	17.0				
Change Period (Y+Rc), s	* 6.2	* 5.4		* 7	* 6.2	* 5.4	* 6.1	* 7				
Max Green Setting (Gmax), s	* 5.8	* 25		* 26	* 5.8	* 25	* 6.9	* 13				
Max Q Clear Time (g_c+I1), s	2.5	6.8		6.2	6.4	7.7	8.8	6.2				
Green Ext Time (p_c), s	0.0	1.8		1.2	0.0	2.7	0.0	0.3				

Intersection Summary		
HCM 6th Ctrl Delay		22.1
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

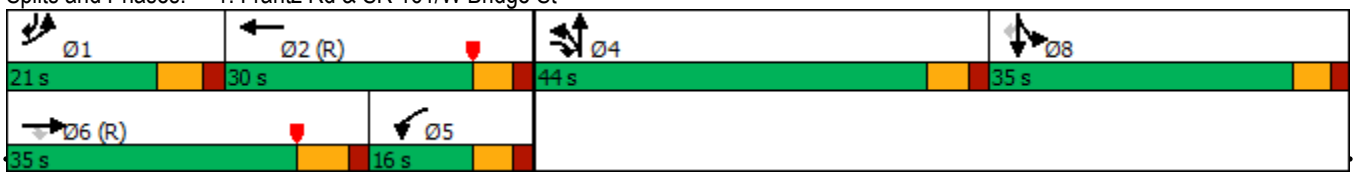
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

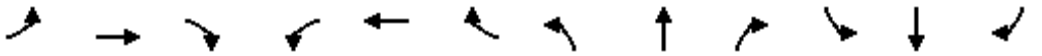
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	299	712	294	89	764	997	253	275	112	984
Future Volume (vph)	299	712	294	89	764	997	253	275	112	984
Lane Group Flow (vph)	305	727	300	91	924	1017	395	194	201	1004
Turn Type	Prot	NA	pm+ov	Prot	NA	Split	NA	Split	NA	pm+ov
Protected Phases	1	6	4	5	2	4	4	8	8	1
Permitted Phases			6							8
Detector Phase	1	6	4	5	2	4	4	8	8	1
Switch Phase										
Minimum Initial (s)	7.0	21.0	10.0	7.0	20.0	10.0	10.0	10.0	10.0	7.0
Minimum Split (s)	14.4	33.0	46.0	14.4	48.0	46.0	46.0	25.1	25.1	14.4
Total Split (s)	21.0	35.0	44.0	16.0	30.0	44.0	44.0	35.0	35.0	21.0
Total Split (%)	16.2%	26.9%	33.8%	12.3%	23.1%	33.8%	33.8%	26.9%	26.9%	16.2%
Yellow Time (s)	4.5	5.0	4.0	4.0	4.0	4.0	4.0	3.6	3.6	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	7.0	6.0	6.0	6.0	6.0	6.0	5.6	5.6	6.5
Lead/Lag	Lead	Lead		Lag	Lag					Lead
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	None	C-Max	None	None	Max	Max	None
v/c Ratio	0.80	0.95	0.19	0.34	0.96	0.99	0.38	0.50	0.51	0.87
Control Delay	72.5	71.9	1.2	60.8	72.4	78.4	41.6	49.2	49.2	42.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.5	71.9	1.2	60.8	72.4	78.4	41.6	49.2	49.2	42.1
Queue Length 50th (ft)	130	320	0	38	279	418	139	151	156	392
Queue Length 95th (ft)	#193	#441	15	67	#375	#606	m214	235	242	500
Internal Link Dist (ft)		1043			821		1271		568	
Turn Bay Length (ft)	650			375		575		425		325
Base Capacity (vph)	390	769	1595	264	959	1023	1040	387	397	1154
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.95	0.19	0.34	0.96	0.99	0.38	0.50	0.51	0.87

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
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: 1: Frantz Rd & SR 161/W Bridge St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	299	712	294	89	764	141	997	253	134	275	112	984
Future Volume (veh/h)	299	712	294	89	764	141	997	253	134	275	112	984
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1885	1885	1870	1885	1885	1900	1885	1885	1900	1885	1885
Adj Flow Rate, veh/h	305	727	300	91	780	144	1017	258	137	198	231	1004
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	1	1	2	1	1	0	1	1	0	1	1
Cap, veh/h	357	771	1428	266	850	156	1026	669	344	409	426	1048
Arrive On Green	0.10	0.22	0.22	0.08	0.19	0.19	0.10	0.10	0.10	0.23	0.23	0.23
Sat Flow, veh/h	3510	3582	2812	3456	4372	801	3510	2287	1177	1810	1885	3195
Grp Volume(v), veh/h	305	727	300	91	611	313	1017	200	195	198	231	1004
Grp Sat Flow(s),veh/h/ln	1755	1791	1406	1728	1716	1741	1755	1791	1673	1810	1885	1598
Q Serve(g_s), s	11.1	26.0	7.6	3.2	22.7	23.0	37.6	13.6	14.2	12.4	14.0	29.4
Cycle Q Clear(g_c), s	11.1	26.0	7.6	3.2	22.7	23.0	37.6	13.6	14.2	12.4	14.0	29.4
Prop In Lane	1.00		1.00	1.00		0.46	1.00		0.70	1.00		1.00
Lane Grp Cap(c), veh/h	357	771	1428	266	667	338	1026	524	489	409	426	1048
V/C Ratio(X)	0.85	0.94	0.21	0.34	0.92	0.93	0.99	0.38	0.40	0.48	0.54	0.96
Avail Cap(c_a), veh/h	392	771	1428	266	667	338	1026	524	489	409	426	1048
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.70	0.70	0.70	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.4	50.2	17.6	56.9	51.3	51.4	58.6	47.7	48.0	43.7	44.4	42.8
Incr Delay (d2), s/veh	15.0	21.1	0.3	0.6	19.5	33.2	21.3	0.1	0.1	4.1	4.9	19.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	13.8	4.3	1.4	11.5	13.0	20.8	6.6	6.4	6.0	7.1	18.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.4	71.3	18.0	57.4	70.8	84.7	79.9	47.8	48.1	47.8	49.2	62.2
LnGrp LOS	E	E	B	E	E	F	E	D	D	D	D	E
Approach Vol, veh/h		1332			1015			1412			1433	
Approach Delay, s/veh		59.5			73.9			70.9			58.1	
Approach LOS		E			E			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	19.7	31.3		44.0	16.0	35.0		35.0				
Change Period (Y+Rc), s	6.5	6.0		6.0	6.0	7.0		5.6				
Max Green Setting (Gmax), s	14.5	24.0		38.0	10.0	28.0		29.4				
Max Q Clear Time (g_c+I1), s	13.1	25.0		39.6	5.2	28.0		31.4				
Green Ext Time (p_c), s	0.1	0.0		0.0	0.1	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		65.0
HCM 6th LOS		E

Notes

User approved pedestrian interval to be less than phase max green.

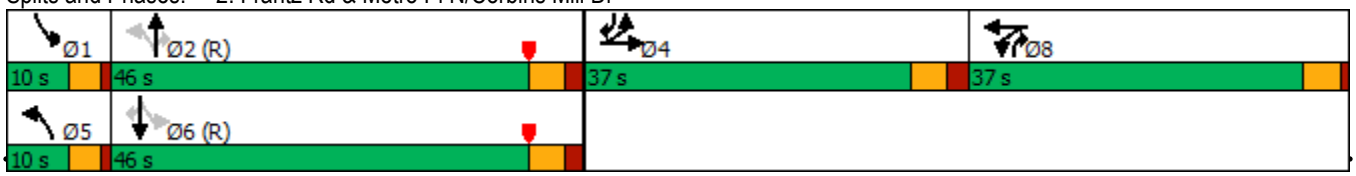
User approved volume balancing among the lanes for turning movement.

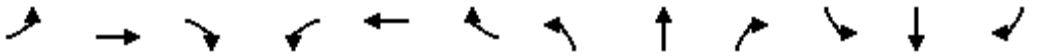
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	489	100	132	21	18	924	231	34	349	75
Future Volume (vph)	489	100	132	21	18	924	231	34	349	75
Lane Group Flow (vph)	343	343	140	54	19	983	246	36	371	80
Turn Type	Split	NA	Split	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	4	4	8	8	5	2	8	1	6	4
Permitted Phases					2		2	6		6
Detector Phase	4	4	8	8	5	2	8	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	7.0
Minimum Split (s)	38.0	38.0	37.0	37.0	10.0	35.0	37.0	10.0	35.0	38.0
Total Split (s)	37.0	37.0	37.0	37.0	10.0	46.0	37.0	10.0	46.0	37.0
Total Split (%)	28.5%	28.5%	28.5%	28.5%	7.7%	35.4%	28.5%	7.7%	35.4%	28.5%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	2.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	4.6	4.6	4.0	5.6	4.6	4.0	5.6	5.6
Lead/Lag					Lead	Lag		Lead	Lag	
Lead-Lag Optimize?					Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	C-Min	None	None	C-Min	None
v/c Ratio	0.88	0.87	0.63	0.22	0.03	0.58	0.22	0.14	0.21	0.07
Control Delay	72.6	69.3	65.6	26.5	17.3	32.5	3.7	21.6	24.4	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	69.3	65.6	26.5	17.3	32.5	3.7	21.6	24.4	0.9
Queue Length 50th (ft)	286	278	114	17	8	402	28	16	93	0
Queue Length 95th (ft)	#452	#443	174	54	m20	500	38	m36	183	7
Internal Link Dist (ft)		984		630		585			1271	
Turn Bay Length (ft)			225		125		175	100		185
Base Capacity (vph)	417	423	449	455	553	1695	1175	256	1765	1241
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.81	0.31	0.12	0.03	0.58	0.21	0.14	0.21	0.06

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 84 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 120
Control Type: Actuated-Coordinated
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: Frantz Rd & Metro Pl N/Corbins Mill Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	489	100	56	132	21	30	18	924	231	34	349	75
Future Volume (veh/h)	489	100	56	132	21	30	18	924	231	34	349	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1885	1900	1900	1885	1856
Adj Flow Rate, veh/h	343	354	60	140	22	32	19	983	246	36	371	80
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	0	0	1	3
Cap, veh/h	430	376	64	174	67	98	554	1740	937	322	1772	1152
Arrive On Green	0.24	0.24	0.24	0.10	0.10	0.10	0.04	0.97	0.97	0.06	0.99	0.99
Sat Flow, veh/h	1810	1583	268	1810	699	1017	1810	3582	1610	1810	3582	1572
Grp Volume(v), veh/h	343	0	414	140	0	54	19	983	246	36	371	80
Grp Sat Flow(s),veh/h/ln	1810	0	1852	1810	0	1717	1810	1791	1610	1810	1791	1572
Q Serve(g_s), s	23.2	0.0	28.5	9.9	0.0	3.8	0.7	2.2	0.7	1.3	0.2	0.0
Cycle Q Clear(g_c), s	23.2	0.0	28.5	9.9	0.0	3.8	0.7	2.2	0.7	1.3	0.2	0.0
Prop In Lane	1.00		0.14	1.00		0.59	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	430	0	440	174	0	165	554	1740	937	322	1772	1152
V/C Ratio(X)	0.80	0.00	0.94	0.80	0.00	0.33	0.03	0.56	0.26	0.11	0.21	0.07
Avail Cap(c_a), veh/h	437	0	447	451	0	428	603	1740	937	355	1772	1152
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.92	0.92	0.92	0.96	0.96	0.96
Uniform Delay (d), s/veh	46.6	0.0	48.6	57.6	0.0	54.8	15.8	1.0	0.6	15.2	0.3	0.1
Incr Delay (d2), s/veh	9.9	0.0	28.0	8.4	0.0	1.1	0.0	1.2	0.6	0.1	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	0.0	16.4	5.0	0.0	1.7	0.3	0.7	0.4	0.5	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.5	0.0	76.6	66.0	0.0	56.0	15.8	2.2	1.3	15.4	0.6	0.2
LnGrp LOS	E	A	E	E	A	E	B	A	A	B	A	A
Approach Vol, veh/h		757			194			1248			487	
Approach Delay, s/veh		67.5			63.2			2.2			1.6	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	68.8		36.5	6.5	69.9		17.1				
Change Period (Y+Rc), s	4.0	5.6		5.6	4.0	5.6		4.6				
Max Green Setting (Gmax), s	6.0	40.4		31.4	6.0	40.4		32.4				
Max Q Clear Time (g_c+I1), s	3.3	4.2		30.5	2.7	2.2		11.9				
Green Ext Time (p_c), s	0.0	9.5		0.4	0.0	2.8		0.7				

Intersection Summary		
HCM 6th Ctrl Delay		24.9
HCM 6th LOS		C

Notes

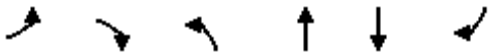
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	179	247	48	992	484	36
Future Volume (vph)	179	247	48	992	484	36
Lane Group Flow (vph)	203	281	55	1127	550	41
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	1	1	6	2	4
Permitted Phases		4	6			2
Detector Phase	4	1	1	6	2	4
Switch Phase						
Minimum Initial (s)	10.0	7.0	7.0	20.0	20.0	10.0
Minimum Split (s)	37.0	12.0	12.0	26.0	42.0	37.0
Total Split (s)	46.0	30.0	30.0	84.0	54.0	46.0
Total Split (%)	35.4%	23.1%	23.1%	64.6%	41.5%	35.4%
Yellow Time (s)	3.6	3.5	3.5	3.6	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.0	5.0	5.1	5.1	5.1
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	C-Min	C-Min	None
v/c Ratio	0.56	0.63	0.08	0.38	0.21	0.03
Control Delay	60.9	26.4	1.5	3.1	2.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	26.4	1.5	3.1	2.3	0.0
Queue Length 50th (ft)	85	93	1	34	23	0
Queue Length 95th (ft)	119	175	11	134	32	m0
Internal Link Dist (ft)	991			1198	585	
Turn Bay Length (ft)	350	400	425			400
Base Capacity (vph)	1090	644	840	2946	2608	1615
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	0.19	0.44	0.07	0.38	0.21	0.03

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 103 (79%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Frantz Rd & Metro Pl S



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	179	247	48	992	484	36
Future Volume (veh/h)	179	247	48	992	484	36
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1885	1900	1900	1900	1900
Adj Flow Rate, veh/h	203	281	55	1127	550	41
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	677	385	655	2626	2319	1347
Arrive On Green	0.19	0.19	0.06	0.97	0.85	0.85
Sat Flow, veh/h	3483	1598	1810	3705	3705	1610
Grp Volume(v), veh/h	203	281	55	1127	550	41
Grp Sat Flow(s),veh/h/ln	1742	1598	1810	1805	1805	1610
Q Serve(g_s), s	6.5	21.1	1.2	2.3	3.6	0.2
Cycle Q Clear(g_c), s	6.5	21.1	1.2	2.3	3.6	0.2
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	677	385	655	2626	2319	1347
V/C Ratio(X)	0.30	0.73	0.08	0.43	0.24	0.03
Avail Cap(c_a), veh/h	1096	577	919	2626	2319	1347
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.96	0.96
Uniform Delay (d), s/veh	44.8	45.5	5.9	0.6	3.6	0.7
Incr Delay (d2), s/veh	0.3	3.4	0.1	0.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	18.2	0.4	0.7	1.2	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	45.1	48.9	6.0	1.1	3.9	0.8
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	484			1182	591	
Approach Delay, s/veh	47.3			1.4	3.7	
Approach LOS	D			A	A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	11.0	88.6		30.4		99.6
Change Period (Y+Rc), s	5.0	5.1		5.1		5.1
Max Green Setting (Gmax), s	25.0	48.9		40.9		78.9
Max Q Clear Time (g_c+I1), s	3.2	5.6		23.1		4.3
Green Ext Time (p_c), s	0.1	8.4		2.2		24.7

Intersection Summary		
HCM 6th Ctrl Delay		11.8
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Vol, veh/h	9	26	1004	40	31	36	720
Future Vol, veh/h	9	26	1004	40	31	36	720
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-
Veh in Median Storage, #	1	-	0	-	-	-	0
Grade, %	0	-	0	-	-	-	0
Peak Hour Factor	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	3	1
Mvmt Flow	11	31	1181	47	36	42	847

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	1785	614	0	0	1228	1228	0
Stage 1	1205	-	-	-	-	-	-
Stage 2	580	-	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	6.4	4.16	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.5	2.23	-
Pot Cap-1 Maneuver	74	440	-	-	241	558	-
Stage 1	251	-	-	-	-	-	-
Stage 2	529	-	-	-	-	-	-
Platoon blocked, %			-	-			-
Mov Cap-1 Maneuver	41	440	-	-	333	333	-
Mov Cap-2 Maneuver	142	-	-	-	-	-	-
Stage 1	251	-	-	-	-	-	-
Stage 2	292	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.7	0	8.8
HCM LOS	C		

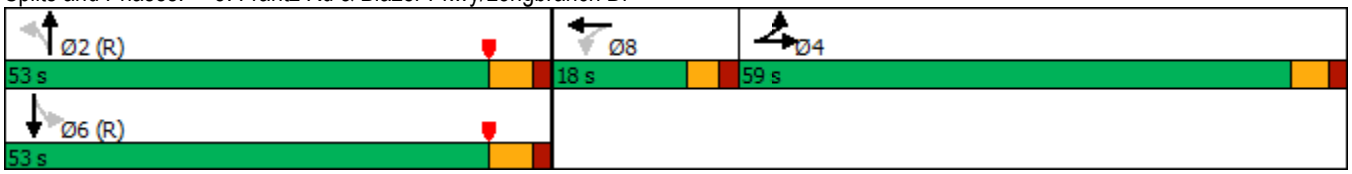
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	286	333	-
HCM Lane V/C Ratio	-	-	0.144	0.127	-
HCM Control Delay (s)	-	-	19.7	19.1	7.8
HCM Lane LOS	-	-	C	C	A
HCM 95th %tile Q(veh)	-	-	0.5	0.4	-

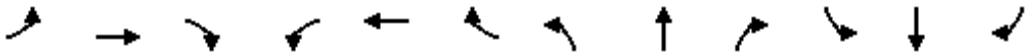
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	380	0	14	0	9	730	8	829
Future Volume (vph)	380	0	14	0	9	730	8	829
Lane Group Flow (vph)	270	256	0	25	10	864	9	997
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4	4		8		2		6
Permitted Phases			8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	8.0	8.0	15.0	15.0	15.0	15.0
Minimum Split (s)	40.0	40.0	15.0	15.0	25.2	25.2	25.2	25.2
Total Split (s)	59.0	59.0	18.0	18.0	53.0	53.0	53.0	53.0
Total Split (%)	45.4%	45.4%	13.8%	13.8%	40.8%	40.8%	40.8%	40.8%
Yellow Time (s)	3.6	3.6	3.0	3.0	4.2	4.2	4.2	4.2
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6		5.0	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.69	0.59		0.18	0.04	0.39	0.03	0.45
Control Delay	54.6	36.9		2.8	15.2	14.9	15.5	17.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	54.6	36.9		2.8	15.2	14.9	15.5	17.4
Queue Length 50th (ft)	221	148		0	3	201	4	296
Queue Length 95th (ft)	275	206		0	14	279	m14	346
Internal Link Dist (ft)		507		671		1105		467
Turn Bay Length (ft)	160				100		50	
Base Capacity (vph)	704	722		179	275	2237	333	2209
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.38	0.35		0.14	0.04	0.39	0.03	0.45

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 37 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Frantz Rd & Blazer Pkwy/Longbranch Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	380	0	72	14	0	8	9	730	13	8	829	28
Future Volume (veh/h)	380	0	72	14	0	8	9	730	13	8	829	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1885	1885
Adj Flow Rate, veh/h	520	0	0	16	0	9	10	849	15	9	964	33
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	1	1
Cap, veh/h	680	357	0	41	0	23	291	2346	41	406	2284	78
Arrive On Green	0.19	0.00	0.00	0.04	0.00	0.04	0.65	0.65	0.65	0.21	0.21	0.21
Sat Flow, veh/h	3619	1900	0	1109	0	624	574	3629	64	650	3533	121
Grp Volume(v), veh/h	520	0	0	25	0	0	10	422	442	9	489	508
Grp Sat Flow(s),veh/h/ln	1810	1900	0	1732	0	0	574	1805	1888	650	1791	1863
Q Serve(g_s), s	17.7	0.0	0.0	1.8	0.0	0.0	1.4	14.0	14.0	1.5	30.7	30.7
Cycle Q Clear(g_c), s	17.7	0.0	0.0	1.8	0.0	0.0	32.0	14.0	14.0	15.5	30.7	30.7
Prop In Lane	1.00		0.00	0.64		0.36	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	680	357	0	63	0	0	291	1167	1221	406	1158	1204
V/C Ratio(X)	0.77	0.00	0.00	0.39	0.00	0.00	0.03	0.36	0.36	0.02	0.42	0.42
Avail Cap(c_a), veh/h	1487	780	0	173	0	0	291	1167	1221	406	1158	1204
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.93	0.93	0.93	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.1	0.0	0.0	61.2	0.0	0.0	23.0	10.6	10.6	30.0	30.1	30.1
Incr Delay (d2), s/veh	3.8	0.0	0.0	3.9	0.0	0.0	0.2	0.8	0.8	0.1	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	0.0	0.0	0.9	0.0	0.0	0.2	5.6	5.8	0.3	15.1	15.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.9	0.0	0.0	65.2	0.0	0.0	23.2	11.4	11.4	30.1	31.3	31.2
LnGrp LOS	D	A	A	E	A	A	C	B	B	C	C	C
Approach Vol, veh/h		520			25			874			1006	
Approach Delay, s/veh		53.9			65.2			11.5			31.2	
Approach LOS		D			E			B			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		90.2		30.0		90.2		9.8				
Change Period (Y+Rc), s		6.2		5.6		6.2		5.0				
Max Green Setting (Gmax), s		46.8		53.4		46.8		13.0				
Max Q Clear Time (g_c+I1), s		34.0		19.7		32.7		3.8				
Green Ext Time (p_c), s		4.4		4.7		5.4		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			29.4									
HCM 6th LOS			C									

Notes

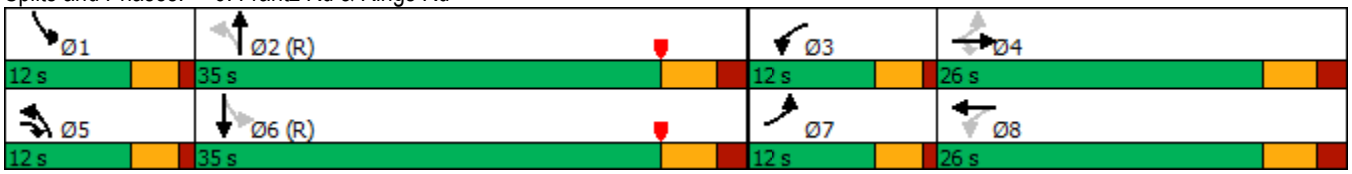
User approved volume balancing among the lanes for turning movement.

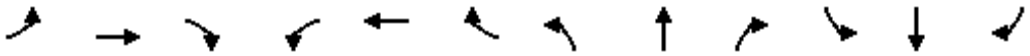
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	184	208	240	43	98	173	461	46	660
Future Volume (vph)	184	208	240	43	98	173	461	46	660
Lane Group Flow (vph)	202	229	264	47	162	190	574	51	906
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8	5	2	1	6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	5	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	7.0	11.0	7.0	7.0	11.0	7.0	12.0	7.0	12.0
Minimum Split (s)	11.0	40.0	11.0	11.0	42.0	11.0	39.0	11.0	41.0
Total Split (s)	12.0	26.0	12.0	12.0	26.0	12.0	35.0	12.0	35.0
Total Split (%)	14.1%	30.6%	14.1%	14.1%	30.6%	14.1%	41.2%	14.1%	41.2%
Yellow Time (s)	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.5	4.0	4.0	5.5	4.0	5.5	4.0	5.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.50	0.49	0.33	0.13	0.26	0.59	0.35	0.10	0.66
Control Delay	25.2	32.8	4.6	18.7	20.1	20.4	14.5	10.2	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.2	32.8	4.6	18.7	20.1	20.4	14.5	10.2	23.8
Queue Length 50th (ft)	81	115	9	17	26	21	130	11	193
Queue Length 95th (ft)	121	176	54	36	48	#102	206	30	284
Internal Link Dist (ft)		1352			734		584		1105
Turn Bay Length (ft)	140			175		300		200	
Base Capacity (vph)	404	498	809	379	868	324	1646	511	1363
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.46	0.33	0.12	0.19	0.59	0.35	0.10	0.66

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 36 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 105
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Frantz Rd & Rings Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	208	240	43	98	49	173	461	61	46	660	165
Future Volume (veh/h)	184	208	240	43	98	49	173	461	61	46	660	165
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1900	1900	1885	1885	1885	1900	1841	1841
Adj Flow Rate, veh/h	202	229	264	47	108	54	190	507	67	51	725	181
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	3	0	0	1	1	1	0	4	4
Cap, veh/h	379	346	424	245	341	161	396	1532	202	579	1269	317
Arrive On Green	0.09	0.18	0.18	0.06	0.14	0.14	0.16	0.96	0.96	0.06	0.46	0.46
Sat Flow, veh/h	1810	1900	1610	1767	2380	1123	1795	3182	419	1810	2773	692
Grp Volume(v), veh/h	202	229	264	47	80	82	190	285	289	51	457	449
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1767	1805	1698	1795	1791	1810	1810	1749	1716
Q Serve(g_s), s	8.0	9.5	12.3	1.9	3.4	3.7	4.8	0.7	0.7	1.2	16.3	16.3
Cycle Q Clear(g_c), s	8.0	9.5	12.3	1.9	3.4	3.7	4.8	0.7	0.7	1.2	16.3	16.3
Prop In Lane	1.00		1.00	1.00		0.66	1.00		0.23	1.00		0.40
Lane Grp Cap(c), veh/h	379	346	424	245	258	243	396	862	872	579	801	786
V/C Ratio(X)	0.53	0.66	0.62	0.19	0.31	0.34	0.48	0.33	0.33	0.09	0.57	0.57
Avail Cap(c_a), veh/h	379	458	519	314	435	409	419	862	872	645	801	786
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.89	0.89
Uniform Delay (d), s/veh	26.9	32.3	27.6	28.3	32.7	32.8	11.2	0.8	0.8	10.3	16.9	16.9
Incr Delay (d2), s/veh	1.2	2.2	1.6	0.3	0.7	0.8	0.7	1.0	1.0	0.0	2.6	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	4.4	4.7	0.8	1.5	1.5	1.6	0.4	0.4	0.4	6.6	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.1	34.5	29.2	28.6	33.3	33.6	11.9	1.8	1.8	10.3	19.5	19.6
LnGrp LOS	C	C	C	C	C	C	B	A	A	B	B	B
Approach Vol, veh/h		695			209			764			957	
Approach Delay, s/veh		30.6			32.4			4.3			19.1	
Approach LOS		C			C			A			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	46.4	8.7	21.0	10.9	44.4	12.0	17.7
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	8.0	29.5	8.0	20.5	8.0	29.5	8.0	20.5
Max Q Clear Time (g_c+I1), s	3.2	2.7	3.9	14.3	6.8	18.3	10.0	5.7
Green Ext Time (p_c), s	0.0	4.3	0.0	1.2	0.0	5.0	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	18.9
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	6	20	0	28	2	718	12	7	977	1
Future Vol, veh/h	0	0	6	20	0	28	2	718	12	7	977	1
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	-	-	-	-	-	-	50	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	0	0	6	22	0	30	2	772	13	8	1051	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1458	1857	526	1325	1851	393	1052	0	0	785	0	0
Stage 1	1068	1068	-	783	783	-	-	-	-	-	-	-
Stage 2	390	789	-	542	1068	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	92	74	502	116	75	612	669	-	-	843	-	-
Stage 1	240	301	-	357	407	-	-	-	-	-	-	-
Stage 2	611	405	-	497	301	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	87	73	502	113	74	612	669	-	-	843	-	-
Mov Cap-2 Maneuver	87	73	-	113	74	-	-	-	-	-	-	-
Stage 1	239	298	-	356	406	-	-	-	-	-	-	-
Stage 2	579	404	-	486	298	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.3	27	0	0.1
HCM LOS	B	D		

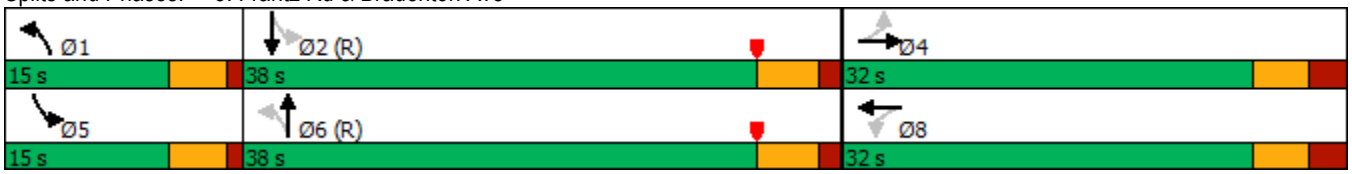
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	669	-	-	502	215	843	-	-
HCM Lane V/C Ratio	0.003	-	-	0.013	0.24	0.009	-	-
HCM Control Delay (s)	10.4	-	-	12.3	27	9.3	-	-
HCM Lane LOS	B	-	-	B	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.9	0	-	-

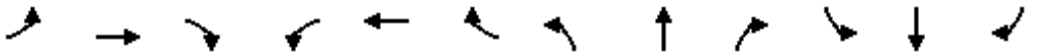
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	82	8	40	10	6	547	49	807
Future Volume (vph)	82	8	40	10	6	547	49	807
Lane Group Flow (vph)	99	43	0	123	7	696	59	997
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0	15.0	7.0	15.0
Minimum Split (s)	32.0	32.0	35.0	35.0	12.0	30.0	12.0	34.0
Total Split (s)	32.0	32.0	32.0	32.0	15.0	38.0	15.0	38.0
Total Split (%)	37.6%	37.6%	37.6%	37.6%	17.6%	44.7%	17.6%	44.7%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	4.0	3.6	4.0
All-Red Time (s)	2.5	2.5	2.5	2.5	1.0	1.5	1.0	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	4.6	5.5	4.6	5.5
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.53	0.16		0.45	0.01	0.29	0.10	0.37
Control Delay	43.7	15.1		22.4	7.7	15.2	1.9	4.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	43.7	15.1		22.4	7.7	15.2	1.9	4.8
Queue Length 50th (ft)	50	5		29	2	130	2	23
Queue Length 95th (ft)	85	27		66	m7	175	m5	277
Internal Link Dist (ft)		353		381		797		718
Turn Bay Length (ft)	200				145		145	
Base Capacity (vph)	389	535		503	554	2360	633	2666
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.25	0.08		0.24	0.01	0.29	0.09	0.37

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 12 (14%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Frantz Rd & Bradenton Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	8	27	40	10	52	6	547	31	49	807	21
Future Volume (veh/h)	82	8	27	40	10	52	6	547	31	49	807	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	99	10	33	48	12	63	7	659	37	59	972	25
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	238	46	150	115	33	94	365	2190	123	554	2443	63
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.00	0.21	0.21	0.02	0.22	0.22
Sat Flow, veh/h	1346	388	1281	480	285	803	1810	3475	195	1810	3596	92
Grp Volume(v), veh/h	99	0	43	123	0	0	7	342	354	59	488	509
Grp Sat Flow(s),veh/h/ln	1346	0	1669	1568	0	0	1810	1805	1865	1810	1805	1883
Q Serve(g_s), s	0.0	0.0	2.0	4.3	0.0	0.0	0.1	13.6	13.6	0.8	19.6	19.6
Cycle Q Clear(g_c), s	6.3	0.0	2.0	6.3	0.0	0.0	0.1	13.6	13.6	0.8	19.6	19.6
Prop In Lane	1.00		0.77	0.39		0.51	1.00		0.10	1.00		0.05
Lane Grp Cap(c), veh/h	238	0	196	243	0	0	365	1137	1175	554	1226	1280
V/C Ratio(X)	0.42	0.00	0.22	0.51	0.00	0.00	0.02	0.30	0.30	0.11	0.40	0.40
Avail Cap(c_a), veh/h	490	0	509	531	0	0	564	1137	1175	663	1226	1280
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	0.0	34.0	35.8	0.0	0.0	6.9	17.8	17.9	5.4	18.2	18.2
Incr Delay (d2), s/veh	1.2	0.0	0.6	1.6	0.0	0.0	0.0	0.7	0.7	0.1	1.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.8	2.5	0.0	0.0	0.0	6.7	6.9	0.2	9.6	10.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.0	0.0	34.5	37.4	0.0	0.0	6.9	18.5	18.5	5.5	19.1	19.1
LnGrp LOS	D	A	C	D	A	A	A	B	B	A	B	B
Approach Vol, veh/h		142			123			703			1056	
Approach Delay, s/veh		36.3			37.4			18.4			18.3	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	63.3		16.1	9.9	59.1		16.1				
Change Period (Y+Rc), s	4.6	5.5		6.1	4.6	5.5		6.1				
Max Green Setting (Gmax), s	10.4	32.5		25.9	10.4	32.5		25.9				
Max Q Clear Time (g_c+I1), s	2.1	21.6		8.3	2.8	15.6		8.3				
Green Ext Time (p_c), s	0.0	7.0		0.4	0.1	6.8		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			20.8									
HCM 6th LOS			C									

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	0	90	8	0	7	27	543	1	2	881	17
Future Vol, veh/h	23	0	90	8	0	7	27	543	1	2	881	17
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	75	-	-	-	-	-	200	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	11	1	0	0	0	0
Mvmt Flow	27	0	107	10	0	8	32	646	1	2	1049	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1450	1774	535	1240	1784	324	1069	0	0	647	0	0
Stage 1	1063	1063	-	711	711	-	-	-	-	-	-	-
Stage 2	387	711	-	529	1073	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.32	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.31	-	-	2.2	-	-
Pot Cap-1 Maneuver	94	84	495	134	83	678	597	-	-	948	-	-
Stage 1	242	302	-	395	439	-	-	-	-	-	-	-
Stage 2	614	439	-	506	299	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	89	79	495	101	78	678	597	-	-	948	-	-
Mov Cap-2 Maneuver	89	79	-	101	78	-	-	-	-	-	-	-
Stage 1	229	301	-	374	415	-	-	-	-	-	-	-
Stage 2	574	415	-	396	298	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.1	29	0.5	0
HCM LOS	C	D		

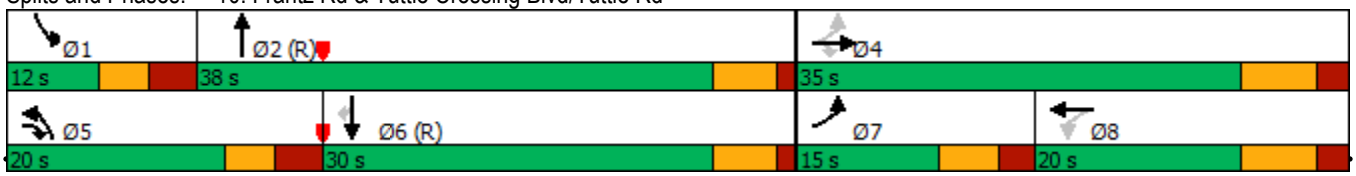
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	597	-	-	89	495	168	948	-	-
HCM Lane V/C Ratio	0.054	-	-	0.308	0.216	0.106	0.003	-	-
HCM Control Delay (s)	11.4	-	-	62.5	14.3	29	8.8	-	-
HCM Lane LOS	B	-	-	F	B	D	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.2	0.8	0.3	0	-	-

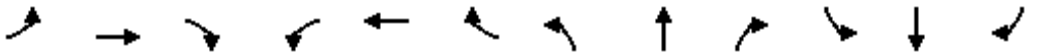
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	131	95	320	45	145	244	416	6	783	200
Future Volume (vph)	131	95	320	45	145	244	416	6	783	200
Lane Group Flow (vph)	144	104	352	49	186	268	475	7	860	220
Turn Type	pm+pt	NA	pm+ov	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	5		8	5	2	1	6	
Permitted Phases	4		4	8						6
Detector Phase	7	4	5	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	13.1	39.0	13.5	40.8	40.8	13.5	30.5	13.2	39.8	39.8
Total Split (s)	15.0	35.0	20.0	20.0	20.0	20.0	38.0	12.0	30.0	30.0
Total Split (%)	17.6%	41.2%	23.5%	23.5%	23.5%	23.5%	44.7%	14.1%	35.3%	35.3%
Yellow Time (s)	3.9	4.8	3.2	4.8	4.8	3.2	4.1	3.2	4.1	4.1
All-Red Time (s)	2.2	2.2	3.0	2.2	2.2	3.0	1.3	3.0	1.3	1.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	7.0	6.2	7.0	7.0	6.2	5.4	6.2	5.4	5.4
Lead/Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max	C-Max
v/c Ratio	0.42	0.17	0.23	0.26	0.69	0.58	0.26	0.06	0.74	0.30
Control Delay	24.6	21.5	9.3	36.0	47.4	39.1	13.3	48.8	26.0	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	21.5	9.3	36.0	47.4	39.1	13.3	48.8	26.0	4.1
Queue Length 50th (ft)	55	39	45	23	90	70	68	2	242	0
Queue Length 95th (ft)	99	76	66	56	#170	105	130	m12	#224	1
Internal Link Dist (ft)		1368			1219		1103		587	
Turn Bay Length (ft)	525		475	200		500		175		
Base Capacity (vph)	346	625	1590	200	288	546	1799	123	1168	722
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.17	0.22	0.24	0.65	0.49	0.26	0.06	0.74	0.30

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
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: 10: Frantz Rd & Tuttle Crossing Blvd/Tuttle Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	95	320	45	145	25	244	416	16	6	783	200
Future Volume (veh/h)	131	95	320	45	145	25	244	416	16	6	783	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1900	1885	1885	1841	1870	1870	1900	1885	1900
Adj Flow Rate, veh/h	144	104	352	49	159	27	268	457	18	7	860	220
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	1	0	1	1	4	2	2	0	1	0
Cap, veh/h	275	541	1095	204	197	34	357	1700	67	16	1403	631
Arrive On Green	0.09	0.28	0.28	0.13	0.13	0.13	0.10	0.49	0.49	0.02	0.78	0.78
Sat Flow, veh/h	1810	1900	2812	950	1570	267	3401	3485	137	1810	3582	1610
Grp Volume(v), veh/h	144	104	352	49	0	186	268	233	242	7	860	220
Grp Sat Flow(s),veh/h/ln	1810	1900	1406	950	0	1837	1700	1777	1846	1810	1791	1610
Q Serve(g_s), s	5.6	3.5	7.4	4.0	0.0	8.4	6.5	6.6	6.6	0.3	8.5	3.5
Cycle Q Clear(g_c), s	5.6	3.5	7.4	4.0	0.0	8.4	6.5	6.6	6.6	0.3	8.5	3.5
Prop In Lane	1.00		1.00	1.00		0.15	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	275	541	1095	204	0	231	357	867	900	16	1403	631
V/C Ratio(X)	0.52	0.19	0.32	0.24	0.00	0.81	0.75	0.27	0.27	0.43	0.61	0.35
Avail Cap(c_a), veh/h	307	626	1221	230	0	281	552	867	900	123	1403	631
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	23.0	18.1	34.3	0.0	36.1	37.0	12.8	12.8	41.5	6.5	6.0
Incr Delay (d2), s/veh	1.5	0.2	0.2	0.6	0.0	13.2	3.2	0.8	0.7	17.1	2.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	1.5	2.4	1.0	0.0	4.6	2.8	2.6	2.7	0.2	2.3	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.2	23.2	18.3	34.9	0.0	49.3	40.2	13.6	13.6	58.6	8.5	7.5
LnGrp LOS	C	C	B	C	A	D	D	B	B	E	A	A
Approach Vol, veh/h		600			235			743			1087	
Approach Delay, s/veh		21.8			46.3			23.2			8.6	
Approach LOS		C			D			C			A	

Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	46.9		31.2	15.1	38.7	13.5	17.7				
Change Period (Y+Rc), s	* 6.2	* 5.4		* 7	* 6.2	* 5.4	* 6.1	* 7				
Max Green Setting (Gmax), s	* 5.8	* 33		* 28	* 14	* 25	* 8.9	* 13				
Max Q Clear Time (g_c+I1), s	2.3	8.6		9.4	8.5	10.5	7.6	10.4				
Green Ext Time (p_c), s	0.0	2.7		1.8	0.4	5.7	0.0	0.3				

Intersection Summary			
HCM 6th Ctrl Delay		19.0	
HCM 6th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Capacity Analysis Results and Synchro Output

Design Year 2040 Traffic Volumes

[No-Build]

01 - Frantz Rd & US 33/W Bridge St [Signal]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2040 AM	NB	E	60.9	0.81	175
	SB	D	42.3	0.69	375
	EB	F	168.4	1.40	725
	WB	E	67.2	0.96	650
	Overall	**F**	**111.0**	--	--
2040 MD	NB	D	52.5	0.83	225
	SB	D	50.8	0.80	275
	EB	D	41.5	0.87	400
	WB	C	33.1	0.64	325
	Overall	**D**	**42.8**	--	--
2040 PM	NB	F	121.8	1.19	800
	SB	F	91.5	1.12	725
	EB	F	140.6	1.32	725
	WB	F	263.0	1.48	700
	Overall	**F**	**151.2**	--	--

XXX *indicates value exceeds threshold for acceptable operations*

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02 - Frantz Rd & Metro Pl N/Corbins Mill Dr [Signal]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2040 AM	NB	A	0.7	0.19	125
	SB	A	2.7	0.50	350
	EB	E	64.2	0.53	75
	WB	E	63.2	0.77	175
	Overall	**A**	**9.5**	--	--
2040 MD	NB	A	1.2	0.30	225
	SB	A	0.8	0.25	150
	EB	D	49.9	0.81	200
	WB	D	50.2	0.80	175
	Overall	**B**	**18.1**	--	--
2040 PM	NB	A	2.8	0.68	625
	SB	A	1.5	0.25	225
	EB	E	67.5	0.94	450
	WB	E	63.2	0.80	175
	Overall	**C**	**23.1**	--	--

XXX *indicates value exceeds threshold for acceptable operations*

03 - Frantz Rd & Metro Pl S [Signal]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2040 AM	NB	A	0.9	0.44	50
	SB	A	0.3	0.39	50
	EB	D	54.5	0.15	25
	WB	--	--	--	--
	Overall	**A**	**2.0**	**--**	**--**
2040 MD	NB	A	3.5	0.23	50
	SB	A	0.2	0.26	100
	EB	D	43.0	0.56	100
	WB	--	--	--	--
	Overall	**A**	**8.1**	**--**	**--**
2040 PM	NB	A	1.5	0.51	175
	SB	A	3.8	0.28	50
	EB	D	47.3	0.73	200
	WB	--	--	--	--
	Overall	**B**	**10.7**	**--**	**--**

04 - Frantz Rd & Monterey Dr [One-Way Stop]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2040 AM	NB	A	0.0	0.00	0
	SB*	B	12.5	0.02	0
	EB	--	--	--	--
	WB*	C	17.0	0.23	25
	Overall	**A**	**1.6**	**--**	**--**
2040 MD	NB	A	0.0	0.00	0
	SB*	B	12.4	0.03	25
	EB	--	--	--	--
	WB*	C	16.3	0.17	25
	Overall	**A**	**1.6**	**--**	**--**
2040 PM	NB	A	0.0	0.00	0
	SB*	D	30.8	0.22	25
	EB	--	--	--	--
	WB*	F	193.3	0.89	100
	Overall	**C**	**15.1**	**--**	**--**

**represents operations for left-turn movement only*

XXX *indicates value exceeds threshold for acceptable operations*

05 - Frantz Rd & Blazer Pkwy [Signal]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2040 AM	NB	A	5.5	0.44	250
	SB	A	1.7	0.56	375
	EB	E	59.8	0.28	50
	WB	E	66.3	0.36	0
	Overall	**A**	**5.1**	--	--
2040 MD	data not available				
2040 PM	NB	B	17.8	0.61	575
	SB	D	45.2	0.71	775
	EB	D	51.2	0.78	300
	WB	E	64.9	0.44	0
	Overall	**D**	**35.9**	--	--

XXX *indicates value exceeds threshold for acceptable operations*

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06 - Frantz Rd & Rings Rd [Signal]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2040 AM	NB	B	17.4	0.84	350
	SB	C	23.2	0.60	275
	EB	C	29.1	0.60	125
	WB	D	43.3	0.80	150
	Overall	**C**	**25.0**	--	--
2040 MD	data not available				
2040 PM	NB	D	42.8	1.20	300
	SB	F	92.8	1.14	625
	EB	D	46.6	0.90	375
	WB	C	28.0	0.39	75
	Overall	**E**	**60.1**	--	--

XXX *indicates value exceeds threshold for acceptable operations*

07 - Frantz Rd & Cramer Creek Ct [Two-Way Stop]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2040 AM	NB*	A	9.8	0.01	0
	SB*	B	13.3	0.04	25
	EB	A	0.0	0.00	0
	WB	F	82.0	0.07	25
	Overall	**A**	**0.2**	--	--
2040 MD	data not available				
2040 PM	NB*	B	14.4	0.01	0
	SB*	B	11.5	0.01	0
	EB	C	16.8	0.02	25
	WB	F	167.1	0.81	100
	Overall	**A**	**3.0**	--	--

**represents operations for left-turn movement only*

XXX *indicates value exceeds threshold for acceptable operations*

08 - Frantz Rd & Bradenton Ave [Signal]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2040 AM	NB	A	1.8	0.54	150
	SB	B	18.0	0.32	50
	EB	D	37.5	0.22	50
	WB	D	38.0	0.27	50
	Overall	**A**	**9.3**	--	--
2040 MD	NB	A	8.4	0.39	175
	SB	A	1.2	0.41	200
	EB	C	27.9	0.34	75
	WB	C	27.0	0.18	25
	Overall	**A**	**7.1**	--	--
2040 PM	NB	C	24.0	0.49	300
	SB	B	19.7	0.67	400
	EB	D	35.8	0.56	125
	WB	C	34.4	0.43	75
	Overall	**C**	**22.9**	--	--

09 - Frantz Rd & Parkcenter Ave [Two-Way Stop]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2040 AM	NB*	B	13.3	0.50	75
	SB*	B	12.3	0.01	0
	EB	F	>200	3.20	175
	WB	B	14.3	0.01	0
	Overall	**D**	**29.6**	--	--
2040 MD	NB*	B	11.3	0.24	25
	SB*	A	9.3	0.01	0
	EB	F	166.9	1.60	200
	WB	F	58.1	0.14	25
	Overall	**A**	**1.3**	--	--
2040 PM	NB*	C	24.1	0.41	50
	SB*	B	10.3	0.01	0
	EB	F	>200	10.95	600
	WB	D	29.0	0.11	25
	Overall	**F**	**196.2**	--	--

**represents operations for left-turn movement only*

XXX *indicates value exceeds threshold for acceptable operations*

10 - Frantz Rd & Tuttle Crossing Blvd/Tuttle Rd [Signal]

Peak Hour	Approach	LOS	Delay (sec/veh)	v/c	95th% Queue Length (ft)
2040 AM	NB	C	31.1	0.87	475
	SB	C	29.9	0.53	175
	EB	D	36.2	0.91	375
	WB	D	37.6	0.33	75
	Overall	**C**	**32.5**	--	--
2040 MD	NB	D	45.9	1.05	175
	SB	C	20.1	0.53	175
	EB	C	33.9	0.92	250
	WB	C	30.9	0.45	75
	Overall	**C**	**33.2**	--	--
2040 PM	NB	C	28.3	0.86	225
	SB	F	89.1	1.16	625
	EB	C	22.6	0.75	150
	WB	D	46.4	0.80	175
	Overall	**D**	**54.2**	--	--

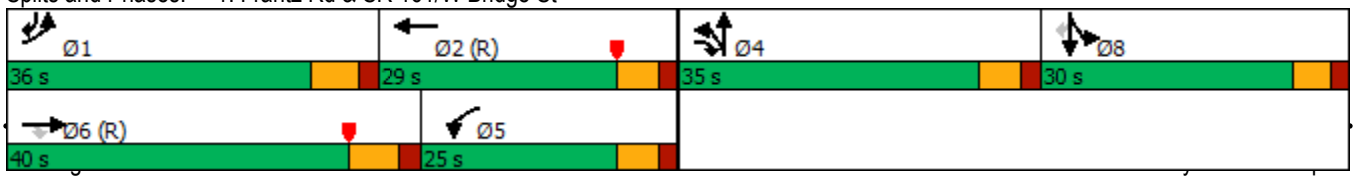
XXX *indicates value exceeds threshold for acceptable operations*

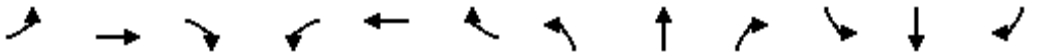
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	708	984	1392	234	1005	332	168	196	214	836
Future Volume (vph)	708	984	1392	234	1005	332	168	196	214	836
Lane Group Flow (vph)	778	1081	1530	257	1333	365	256	193	257	919
Turn Type	Prot	NA	pm+ov	Prot	NA	Split	NA	Split	NA	pm+ov
Protected Phases	1	6	4	5	2	4	4	8	8	1
Permitted Phases			6							8
Detector Phase	1	6	4	5	2	4	4	8	8	1
Switch Phase										
Minimum Initial (s)	7.0	21.0	10.0	7.0	20.0	10.0	10.0	10.0	10.0	7.0
Minimum Split (s)	15.7	33.0	46.1	17.4	26.0	46.1	46.1	26.0	26.0	15.7
Total Split (s)	36.0	40.0	35.0	25.0	29.0	35.0	35.0	30.0	30.0	36.0
Total Split (%)	27.7%	30.8%	26.9%	19.2%	22.3%	26.9%	26.9%	23.1%	23.1%	27.7%
Yellow Time (s)	4.5	5.0	4.0	4.0	4.0	4.0	4.0	3.6	3.6	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	7.0	6.0	6.0	6.0	6.0	6.0	5.6	5.6	6.5
Lead/Lag	Lead	Lead		Lag	Lag					Lead
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	None	C-Max	None	None	Max	Max	None
v/c Ratio	1.00	1.23	1.00	0.52	1.48	0.48	0.34	0.63	0.77	0.68
Control Delay	82.0	153.4	38.7	55.6	257.8	39.3	29.6	58.9	66.8	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.0	153.4	38.7	55.6	257.8	39.3	29.6	58.9	66.8	26.2
Queue Length 50th (ft)	340	~590	~309	104	~561	144	85	158	218	292
Queue Length 95th (ft)	#476	#726	#514	149	#660	180	110	248	#349	375
Internal Link Dist (ft)		1043			821		1271		568	
Turn Bay Length (ft)	650			375		575		425		325
Base Capacity (vph)	779	881	1527	492	902	765	763	306	332	1360
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	1.23	1.00	0.52	1.48	0.48	0.34	0.63	0.77	0.68

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 36 (28%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Frantz Rd & SR 161/W Bridge St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	708	984	1392	234	1005	208	332	168	65	196	214	836
Future Volume (veh/h)	708	984	1392	234	1005	208	332	168	65	196	214	836
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1900	1841	1885	1885	1870	1826	1826	1826	1885	1885
Adj Flow Rate, veh/h	778	1081	1530	257	1104	229	365	185	71	215	235	919
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	4	0	4	1	1	2	5	5	5	1	1
Cap, veh/h	784	888	1091	810	1149	238	453	325	120	326	354	1325
Arrive On Green	0.23	0.25	0.25	0.24	0.27	0.27	0.04	0.04	0.04	0.19	0.19	0.19
Sat Flow, veh/h	3456	3497	2834	3401	4271	886	3456	2477	918	1739	1885	3195
Grp Volume(v), veh/h	778	1081	1530	257	887	446	365	128	128	215	235	919
Grp Sat Flow(s),veh/h/ln	1728	1749	1417	1700	1716	1726	1728	1735	1661	1739	1885	1598
Q Serve(g_s), s	29.2	33.0	33.0	8.1	33.1	33.1	13.6	9.4	9.9	14.9	15.0	24.4
Cycle Q Clear(g_c), s	29.2	33.0	33.0	8.1	33.1	33.1	13.6	9.4	9.9	14.9	15.0	24.4
Prop In Lane	1.00		1.00	1.00		0.51	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	784	888	1091	810	923	464	453	227	218	326	354	1325
V/C Ratio(X)	0.99	1.22	1.40	0.32	0.96	0.96	0.81	0.56	0.59	0.66	0.66	0.69
Avail Cap(c_a), veh/h	784	888	1091	810	923	464	771	387	370	326	354	1325
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.1	48.5	34.7	40.8	46.8	46.9	60.6	58.5	58.8	48.9	49.0	31.3
Incr Delay (d2), s/veh	30.1	108.2	186.8	0.2	21.5	33.2	1.3	0.8	0.9	10.0	9.5	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.7	27.5	46.3	3.4	16.7	18.3	6.4	4.4	4.4	7.3	8.0	12.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.2	156.7	221.6	41.0	68.4	80.0	61.8	59.3	59.7	58.9	58.5	34.3
LnGrp LOS	F	F	F	D	E	F	E	E	E	E	E	C
Approach Vol, veh/h		3389			1590			621			1369	
Approach Delay, s/veh		168.4			67.2			60.9			42.3	
Approach LOS		F			E			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	36.0	41.0		23.0	37.0	40.0		30.0				
Change Period (Y+Rc), s	6.5	6.0		6.0	6.0	7.0		5.6				
Max Green Setting (Gmax), s	29.5	23.0		29.0	19.0	33.0		24.4				
Max Q Clear Time (g_c+I1), s	31.2	35.1		15.6	10.1	35.0		26.4				
Green Ext Time (p_c), s	0.0	0.0		1.4	0.4	0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			111.0									
HCM 6th LOS			F									

Notes

User approved pedestrian interval to be less than phase max green.

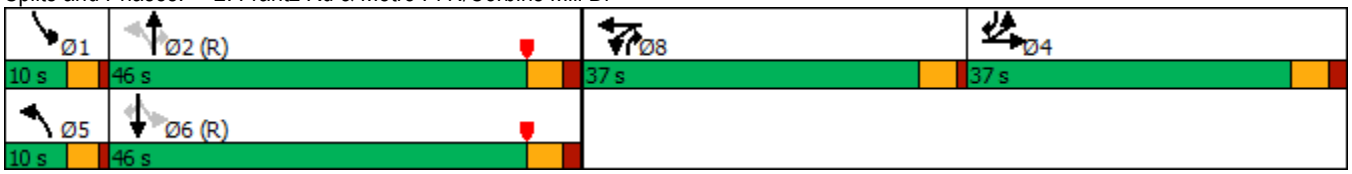
User approved volume balancing among the lanes for turning movement.

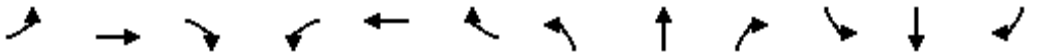
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	55	17	118	72	50	437	65	22	1140	500
Future Volume (vph)	55	17	118	72	50	437	65	22	1140	500
Lane Group Flow (vph)	46	45	124	94	53	460	68	23	1200	526
Turn Type	Split	NA	Split	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	4	4	8	8	5	2	8	1	6	4
Permitted Phases					2		2	6		6
Detector Phase	4	4	8	8	5	2	8	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	7.0
Minimum Split (s)	38.0	38.0	37.0	37.0	10.0	35.0	37.0	10.0	35.0	38.0
Total Split (s)	37.0	37.0	37.0	37.0	10.0	46.0	37.0	10.0	46.0	37.0
Total Split (%)	28.5%	28.5%	28.5%	28.5%	7.7%	35.4%	28.5%	7.7%	35.4%	28.5%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	2.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	4.6	4.6	4.0	5.6	4.6	4.0	5.6	5.6
Lead/Lag					Lead	Lag		Lead	Lag	
Lead-Lag Optimize?					Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	C-Min	None	None	C-Min	None
v/c Ratio	0.32	0.29	0.62	0.44	0.18	0.20	0.06	0.04	0.55	0.42
Control Delay	60.7	44.3	68.0	54.0	8.3	10.7	2.4	8.3	17.1	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.7	44.3	68.0	54.0	8.3	10.7	2.4	8.3	17.1	1.7
Queue Length 50th (ft)	40	25	102	68	14	91	0	5	295	27
Queue Length 95th (ft)	78	64	160	118	31	124	10	m9	m356	m15
Internal Link Dist (ft)		984		630		585			1271	
Turn Bay Length (ft)			225		125		175	100		185
Base Capacity (vph)	414	420	441	459	293	2245	1279	656	2195	1382
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.11	0.28	0.20	0.18	0.20	0.05	0.04	0.55	0.38

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 71 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 130
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Frantz Rd & Metro Pl N/Corbins Mill Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	17	14	118	72	17	50	437	65	22	1140	500
Future Volume (veh/h)	55	17	14	118	72	17	50	437	65	22	1140	500
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1900	1870	1663	1900	1885	1900
Adj Flow Rate, veh/h	46	35	15	124	76	18	53	460	68	23	1200	526
Peak Hour 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
Percent Heavy Veh, %	0	0	0	2	2	2	0	2	16	0	1	0
Cap, veh/h	94	66	28	160	131	31	289	2430	1090	693	2410	1167
Arrive On Green	0.05	0.05	0.05	0.09	0.09	0.09	0.07	1.00	1.00	0.03	0.89	0.89
Sat Flow, veh/h	1810	1262	541	1781	1462	346	1810	3554	1409	1810	3582	1610
Grp Volume(v), veh/h	46	0	50	124	0	94	53	460	68	23	1200	526
Grp Sat Flow(s),veh/h/ln	1810	0	1803	1781	0	1808	1810	1777	1409	1810	1791	1610
Q Serve(g_s), s	3.2	0.0	3.5	8.9	0.0	6.5	1.2	0.0	0.0	0.5	8.3	6.6
Cycle Q Clear(g_c), s	3.2	0.0	3.5	8.9	0.0	6.5	1.2	0.0	0.0	0.5	8.3	6.6
Prop In Lane	1.00		0.30	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	94	0	94	160	0	163	289	2430	1090	693	2410	1167
V/C Ratio(X)	0.49	0.00	0.53	0.77	0.00	0.58	0.18	0.19	0.06	0.03	0.50	0.45
Avail Cap(c_a), veh/h	437	0	435	444	0	451	313	2430	1090	737	2410	1167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.99	0.99	0.99	0.29	0.29	0.29
Uniform Delay (d), s/veh	59.9	0.0	60.1	57.9	0.0	56.8	5.9	0.0	0.0	6.1	2.7	1.9
Incr Delay (d2), s/veh	3.9	0.0	4.6	7.7	0.0	3.2	0.3	0.2	0.1	0.0	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	1.7	4.4	0.0	3.1	0.4	0.1	0.0	0.2	2.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.8	0.0	64.7	65.6	0.0	60.0	6.2	0.2	0.1	6.1	2.9	2.2
LnGrp LOS	E	A	E	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		96			218			581			1749	
Approach Delay, s/veh		64.2			63.2			0.7			2.7	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	94.5		12.4	8.3	93.1		16.3				
Change Period (Y+Rc), s	4.0	5.6		5.6	4.0	5.6		4.6				
Max Green Setting (Gmax), s	6.0	40.4		31.4	6.0	40.4		32.4				
Max Q Clear Time (g_c+I1), s	2.5	2.0		5.5	3.2	10.3		10.9				
Green Ext Time (p_c), s	0.0	3.5		0.3	0.0	13.4		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		9.5	
HCM 6th LOS		A	

Notes

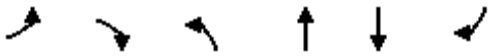
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	28	204	529	1020	208
Future Volume (vph)	29	28	204	529	1020	208
Lane Group Flow (vph)	30	29	213	551	1063	217
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	1	1	6	2	4
Permitted Phases		4	6			2
Detector Phase	4	1	1	6	2	4
Switch Phase						
Minimum Initial (s)	10.0	7.0	7.0	20.0	20.0	10.0
Minimum Split (s)	37.0	12.0	12.0	26.0	42.0	37.0
Total Split (s)	42.0	24.0	24.0	88.0	64.0	42.0
Total Split (%)	32.3%	18.5%	18.5%	67.7%	49.2%	32.3%
Yellow Time (s)	3.6	3.5	3.5	3.6	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.0	5.0	5.1	5.1	5.1
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	C-Min	C-Min	None
v/c Ratio	0.12	0.08	0.43	0.19	0.42	0.16
Control Delay	57.1	12.9	7.9	2.0	4.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0
Total Delay	57.1	12.9	7.9	2.0	4.8	0.3
Queue Length 50th (ft)	12	0	23	33	100	1
Queue Length 95th (ft)	28	25	48	43	58	1
Internal Link Dist (ft)	991			1198	585	
Turn Bay Length (ft)	350	400	425			400
Base Capacity (vph)	955	428	552	2931	2515	1612
Starvation Cap Reductn	0	0	0	0	247	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.07	0.39	0.19	0.47	0.13

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 95 (73%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated

Splits and Phases: 3: Frantz Rd & Metro Pl S



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	28	204	529	1020	208
Future Volume (veh/h)	29	28	204	529	1020	208
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1841	1885	1841	1885	1900
Adj Flow Rate, veh/h	30	29	212	551	1062	217
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	1	4	1	0
Cap, veh/h	231	190	484	2986	2727	1335
Arrive On Green	0.07	0.07	0.11	1.00	1.00	1.00
Sat Flow, veh/h	3401	1560	1795	3589	3676	1610
Grp Volume(v), veh/h	30	29	212	551	1062	217
Grp Sat Flow(s),veh/h/ln	1700	1560	1795	1749	1791	1610
Q Serve(g_s), s	1.1	2.2	3.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	2.2	3.2	0.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	231	190	484	2986	2727	1335
V/C Ratio(X)	0.13	0.15	0.44	0.18	0.39	0.16
Avail Cap(c_a), veh/h	965	527	650	2986	2727	1335
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.81	0.81
Uniform Delay (d), s/veh	57.0	51.1	2.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.5	0.8	0.1	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	2.0	0.8	0.1	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	57.3	51.6	2.8	0.1	0.3	0.2
LnGrp LOS	E	D	A	A	A	A
Approach Vol, veh/h	59			763	1279	
Approach Delay, s/veh	54.5			0.9	0.3	
Approach LOS	D			A	A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.0	104.1		13.9		116.1
Change Period (Y+Rc), s	5.0	5.1		5.1		5.1
Max Green Setting (Gmax), s	19.0	58.9		36.9		82.9
Max Q Clear Time (g_c+I1), s	5.2	2.0		4.2		2.0
Green Ext Time (p_c), s	0.7	24.5		0.2		8.6

Intersection Summary	
HCM 6th Ctrl Delay	2.0
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Vol, veh/h	32	53	751	13	10	7	1112
Future Vol, veh/h	32	53	751	13	10	7	1112
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-
Veh in Median Storage, #	1	-	0	-	-	-	0
Grade, %	0	-	0	-	-	-	0
Peak Hour Factor	95	95	95	95	95	95	95
Heavy Vehicles, %	0	3	3	0	0	17	1
Mvmt Flow	34	56	791	14	11	7	1171

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	1420	403	0	0	804	805	0
Stage 1	798	-	-	-	-	-	-
Stage 2	622	-	-	-	-	-	-
Critical Hdwy	6.8	6.96	-	-	6.4	4.44	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-	-
Follow-up Hdwy	3.5	3.33	-	-	2.5	2.37	-
Pot Cap-1 Maneuver	130	594	-	-	450	725	-
Stage 1	409	-	-	-	-	-	-
Stage 2	503	-	-	-	-	-	-
Platoon blocked, %			-	-			-
Mov Cap-1 Maneuver	117	594	-	-	499	499	-
Mov Cap-2 Maneuver	249	-	-	-	-	-	-
Stage 1	409	-	-	-	-	-	-
Stage 2	451	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17	0	1.5
HCM LOS	C		

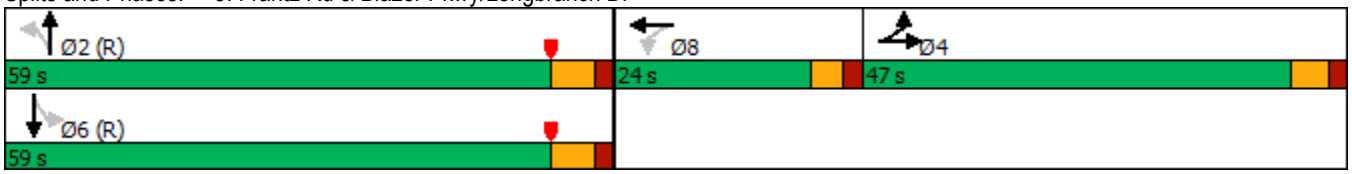
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	390	499	-
HCM Lane V/C Ratio	-	-	0.229	0.015	-
HCM Control Delay (s)	-	-	17	12.5	1.3
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.9	0	-

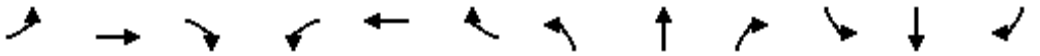
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	40	1	6	0	73	1104	2	816
Future Volume (vph)	40	1	6	0	73	1104	2	816
Lane Group Flow (vph)	29	27	0	18	80	1213	2	1449
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4	4		8		2		6
Permitted Phases			8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	8.0	8.0	15.0	15.0	15.0	15.0
Minimum Split (s)	40.0	40.0	15.0	15.0	25.2	25.2	25.2	25.2
Total Split (s)	47.0	47.0	24.0	24.0	59.0	59.0	59.0	59.0
Total Split (%)	36.2%	36.2%	18.5%	18.5%	45.4%	45.4%	45.4%	45.4%
Yellow Time (s)	3.6	3.6	3.0	3.0	4.2	4.2	4.2	4.2
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6		5.0	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.22	0.20		0.11	0.33	0.42	0.01	0.52
Control Delay	59.7	41.6		1.4	10.0	5.4	8.0	7.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	41.6		1.4	10.0	5.4	8.0	7.7
Queue Length 50th (ft)	24	13		0	12	106	0	161
Queue Length 95th (ft)	57	45		0	59	255	m2	376
Internal Link Dist (ft)		507		671		1105		467
Turn Bay Length (ft)	160				100		50	
Base Capacity (vph)	500	483		284	242	2902	327	2769
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.06	0.06		0.06	0.33	0.42	0.01	0.52

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 77 (59%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 125
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Frantz Rd & Blazer Pkwy/Longbranch Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1	10	6	0	10	73	1104	0	2	816	502
Future Volume (veh/h)	40	1	10	6	0	10	73	1104	0	2	816	502
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1900	1900	1900	1900	1900	1900	1870	1870	1900	1870	1870
Adj Flow Rate, veh/h	28	23	11	7	0	11	80	1213	0	2	897	552
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	9	0	0	0	0	0	0	2	2	0	2	2
Cap, veh/h	116	83	40	19	0	30	344	2746	0	362	1650	990
Arrive On Green	0.07	0.07	0.07	0.03	0.00	0.03	0.77	0.77	0.00	1.00	1.00	1.00
Sat Flow, veh/h	1682	1215	581	654	0	1028	373	3647	0	468	2135	1282
Grp Volume(v), veh/h	28	0	34	18	0	0	80	1213	0	2	743	706
Grp Sat Flow(s),veh/h/ln	1682	0	1795	1682	0	0	373	1777	0	468	1777	1640
Q Serve(g_s), s	2.0	0.0	2.3	1.4	0.0	0.0	8.1	15.3	0.0	0.1	0.0	0.0
Cycle Q Clear(g_c), s	2.0	0.0	2.3	1.4	0.0	0.0	8.1	15.3	0.0	15.4	0.0	0.0
Prop In Lane	1.00		0.32	0.39		0.61	1.00		0.00	1.00		0.78
Lane Grp Cap(c), veh/h	116	0	123	49	0	0	344	2746	0	362	1373	1267
V/C Ratio(X)	0.24	0.00	0.28	0.36	0.00	0.00	0.23	0.44	0.00	0.01	0.54	0.56
Avail Cap(c_a), veh/h	536	0	572	246	0	0	344	2746	0	362	1373	1267
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.78	0.78	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	0.0	57.5	61.9	0.0	0.0	4.3	5.1	0.0	1.2	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.0	2.5	4.4	0.0	0.0	1.2	0.4	0.0	0.0	1.5	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.1	0.6	0.0	0.0	0.6	4.9	0.0	0.0	0.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.6	0.0	60.0	66.3	0.0	0.0	5.5	5.5	0.0	1.2	1.5	1.8
LnGrp LOS	E	A	E	E	A	A	A	A	A	A	A	A
Approach Vol, veh/h		62			18			1293			1451	
Approach Delay, s/veh		59.8			66.3			5.5			1.7	
Approach LOS		E			E			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		106.6		14.5		106.6		8.8				
Change Period (Y+Rc), s		6.2		5.6		6.2		5.0				
Max Green Setting (Gmax), s		52.8		41.4		52.8		19.0				
Max Q Clear Time (g_c+I1), s		17.3		4.3		17.4		3.4				
Green Ext Time (p_c), s		13.4		0.5		14.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			5.1									
HCM 6th LOS			A									

Notes

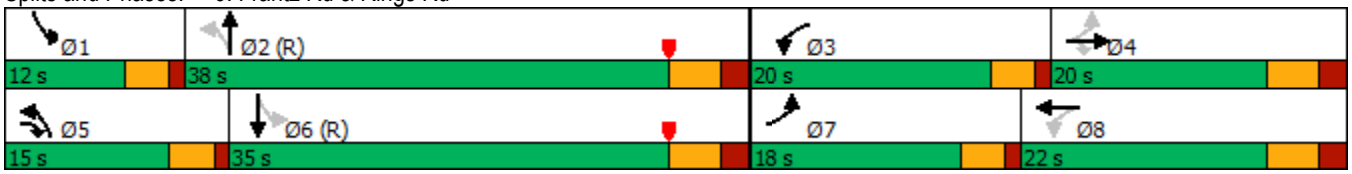
User approved volume balancing among the lanes for turning movement.

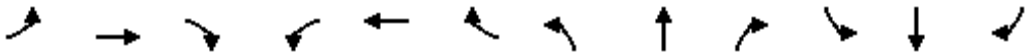
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	173	101	193	124	344	363	915	45	549
Future Volume (vph)	173	101	193	124	344	363	915	45	549
Lane Group Flow (vph)	177	103	197	127	420	370	977	46	852
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8	5	2	1	6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	5	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	7.0	11.0	7.0	7.0	11.0	7.0	12.0	7.0	12.0
Minimum Split (s)	11.0	40.0	11.0	11.0	42.0	11.0	39.0	11.0	41.0
Total Split (s)	18.0	20.0	15.0	20.0	22.0	15.0	38.0	12.0	35.0
Total Split (%)	20.0%	22.2%	16.7%	22.2%	24.4%	16.7%	42.2%	13.3%	38.9%
Yellow Time (s)	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.5	4.0	4.0	5.5	4.0	5.5	4.0	5.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.52	0.26	0.23	0.30	0.71	0.84	0.60	0.15	0.80
Control Delay	25.8	32.2	3.6	21.2	40.8	38.2	17.7	12.4	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	32.2	3.6	21.2	40.8	38.2	17.7	12.4	31.2
Queue Length 50th (ft)	69	50	0	48	112	138	270	12	200
Queue Length 95th (ft)	113	96	41	84	161	#362	361	29	264
Internal Link Dist (ft)		1352			734		584		1105
Turn Bay Length (ft)	140			175		300		200	
Base Capacity (vph)	371	391	839	542	656	439	1635	326	1172
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.26	0.23	0.23	0.64	0.84	0.60	0.14	0.73

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 8 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Frantz Rd & Rings Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	101	193	124	344	68	363	915	42	45	549	286
Future Volume (veh/h)	173	101	193	124	344	68	363	915	42	45	549	286
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1841	1841	1900	1900	1900	1870	1870	1870	1900	1856	1856
Adj Flow Rate, veh/h	177	103	197	127	351	69	370	934	43	46	560	292
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	4	4	0	0	0	2	2	2	0	3	3
Cap, veh/h	297	318	460	385	441	86	440	1675	77	372	930	484
Arrive On Green	0.11	0.17	0.17	0.08	0.15	0.15	0.16	0.64	0.64	0.05	0.42	0.42
Sat Flow, veh/h	1767	1841	1560	1810	3013	586	1781	3459	159	1810	2241	1167
Grp Volume(v), veh/h	177	103	197	127	209	211	370	480	497	46	440	412
Grp Sat Flow(s),veh/h/ln	1767	1841	1560	1810	1805	1795	1781	1777	1842	1810	1763	1645
Q Serve(g_s), s	7.5	4.4	9.2	5.3	10.0	10.3	10.9	13.5	13.5	1.2	17.5	17.6
Cycle Q Clear(g_c), s	7.5	4.4	9.2	5.3	10.0	10.3	10.9	13.5	13.5	1.2	17.5	17.6
Prop In Lane	1.00		1.00	1.00		0.33	1.00		0.09	1.00		0.71
Lane Grp Cap(c), veh/h	297	318	460	385	264	263	440	860	892	372	732	683
V/C Ratio(X)	0.60	0.32	0.43	0.33	0.79	0.80	0.84	0.56	0.56	0.12	0.60	0.60
Avail Cap(c_a), veh/h	386	318	460	564	331	329	440	860	892	436	732	683
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.84	0.84	0.84
Uniform Delay (d), s/veh	28.5	32.6	25.6	29.1	37.1	37.2	15.0	10.7	10.7	13.4	20.5	20.5
Incr Delay (d2), s/veh	1.4	0.6	0.6	0.4	9.8	11.0	13.4	2.6	2.5	0.1	3.1	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	2.0	3.3	2.3	5.0	5.2	5.1	4.6	4.8	0.5	7.4	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.9	33.2	26.2	29.5	46.9	48.2	28.4	13.3	13.2	13.5	23.6	23.8
LnGrp LOS	C	C	C	C	D	D	C	B	B	B	C	C
Approach Vol, veh/h		477			547			1347			898	
Approach Delay, s/veh		29.1			43.3			17.4			23.2	
Approach LOS		C			D			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	49.1	11.1	21.1	15.0	42.9	13.5	18.7
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	8.0	32.5	16.0	14.5	11.0	29.5	14.0	16.5
Max Q Clear Time (g_c+I1), s	3.2	15.5	7.3	11.2	12.9	19.6	9.5	12.3
Green Ext Time (p_c), s	0.0	6.8	0.1	0.4	0.0	4.4	0.1	0.9

Intersection Summary	
HCM 6th Ctrl Delay	25.0
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	0	1	6	1358	19	18	838	3
Future Vol, veh/h	0	0	0	2	0	1	6	1358	19	18	838	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	3	0
Mvmt Flow	0	0	0	2	0	1	7	1476	21	20	911	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1705	2464	457	1997	2455	749	914	0	0	1497	0	0
Stage 1	953	953	-	1501	1501	-	-	-	-	-	-	-
Stage 2	752	1511	-	496	954	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	60	31	556	36	31	359	754	-	-	454	-	-
Stage 1	282	340	-	130	187	-	-	-	-	-	-	-
Stage 2	373	185	-	529	340	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	57	29	556	35	29	359	754	-	-	454	-	-
Mov Cap-2 Maneuver	57	29	-	35	29	-	-	-	-	-	-	-
Stage 1	279	325	-	129	185	-	-	-	-	-	-	-
Stage 2	368	183	-	506	325	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	82	0	0.3
HCM LOS	A	F		

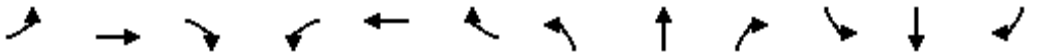
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	754	-	-	-	50	454	-	-
HCM Lane V/C Ratio	0.009	-	-	-	0.065	0.043	-	-
HCM Control Delay (s)	9.8	-	-	0	82	13.3	-	-
HCM Lane LOS	A	-	-	A	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0.1	-	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	48	3	13	11	34	1198	32	576
Future Volume (vph)	48	3	13	11	34	1198	32	576
Lane Group Flow (vph)	51	5	0	61	36	1315	34	743
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0	15.0	7.0	15.0
Minimum Split (s)	32.0	32.0	35.0	35.0	12.0	30.0	12.0	34.0
Total Split (s)	32.0	32.0	32.0	32.0	20.0	38.0	20.0	38.0
Total Split (%)	35.6%	35.6%	35.6%	35.6%	22.2%	42.2%	22.2%	42.2%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	4.0	3.6	4.0
All-Red Time (s)	2.5	2.5	2.5	2.5	1.0	1.5	1.0	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	4.6	5.5	4.6	5.5
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.26	0.02		0.28	0.06	0.51	0.10	0.30
Control Delay	39.2	29.2		22.4	2.5	5.6	2.3	3.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	29.2		22.4	2.5	5.6	2.3	3.1
Queue Length 50th (ft)	27	2		14	3	118	2	33
Queue Length 95th (ft)	60	12		49	m7	m160	m6	58
Internal Link Dist (ft)		353		381		797		718
Turn Bay Length (ft)	200				145		145	
Base Capacity (vph)	482	515		488	730	2572	491	2470
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.11	0.01		0.13	0.05	0.51	0.07	0.30

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 55.5 (62%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Frantz Rd & Bradenton Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	3	2	13	11	33	34	1198	39	32	576	122
Future Volume (veh/h)	48	3	2	13	11	33	34	1198	39	32	576	122
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1900	1900	1900	1900	1900	1885	1885	1856	1841	1841
Adj Flow Rate, veh/h	51	3	2	14	12	35	36	1274	41	34	613	130
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	0	0	0	0	0	0	1	1	3	4	4
Cap, veh/h	234	112	75	71	52	100	520	2374	76	436	1921	406
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.09	1.00	1.00	0.01	0.22	0.22
Sat Flow, veh/h	1337	1063	709	211	496	952	1810	3542	114	1767	2872	608
Grp Volume(v), veh/h	51	0	5	61	0	0	36	644	671	34	373	370
Grp Sat Flow(s),veh/h/ln	1337	0	1772	1660	0	0	1810	1791	1865	1767	1749	1731
Q Serve(g_s), s	0.0	0.0	0.2	0.0	0.0	0.0	0.5	0.0	0.0	0.5	16.1	16.1
Cycle Q Clear(g_c), s	2.4	0.0	0.2	3.0	0.0	0.0	0.5	0.0	0.0	0.5	16.1	16.1
Prop In Lane	1.00		0.40	0.23		0.57	1.00		0.06	1.00		0.35
Lane Grp Cap(c), veh/h	234	0	186	224	0	0	520	1200	1250	436	1169	1158
V/C Ratio(X)	0.22	0.00	0.03	0.27	0.00	0.00	0.07	0.54	0.54	0.08	0.32	0.32
Avail Cap(c_a), veh/h	478	0	510	518	0	0	746	1200	1250	660	1169	1158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	36.1	37.4	0.0	0.0	5.0	0.0	0.0	3.9	17.9	17.9
Incr Delay (d2), s/veh	0.5	0.0	0.1	0.7	0.0	0.0	0.1	1.7	1.7	0.1	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.1	1.3	0.0	0.0	0.1	0.6	0.6	0.2	7.7	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.6	0.0	36.2	38.0	0.0	0.0	5.1	1.7	1.7	4.0	18.6	18.6
LnGrp LOS	D	A	D	D	A	A	A	A	A	A	B	B
Approach Vol, veh/h		56			61			1351			777	
Approach Delay, s/veh		37.5			38.0			1.8			18.0	
Approach LOS		D			D			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	65.7		15.6	8.6	65.8		15.6				
Change Period (Y+Rc), s	4.6	5.5		6.1	4.6	5.5		6.1				
Max Green Setting (Gmax), s	15.4	32.5		25.9	15.4	32.5		25.9				
Max Q Clear Time (g_c+I1), s	2.5	18.1		4.4	2.5	2.0		5.0				
Green Ext Time (p_c), s	0.0	6.6		0.1	0.0	19.4		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			9.3									
HCM 6th LOS			A									

Intersection	
Int Delay, s/veh	29.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	0	68	0	0	1	384	1264	5	6	515	172
Future Vol, veh/h	44	0	68	0	0	1	384	1264	5	6	515	172
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	75	-	-	-	-	-	200	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	24	0	0	0	2	1	0	0	4	0
Mvmt Flow	48	0	75	0	0	1	422	1389	5	7	566	189

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2214	2913	378	2533	3005	697	755	0	0	1394	0	0
Stage 1	675	675	-	2236	2236	-	-	-	-	-	-	-
Stage 2	1539	2238	-	297	769	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.38	7.5	6.5	6.9	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.54	3.5	4	3.3	2.22	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 25	16	561	14	14	388	851	-	-	497	-	-
Stage 1	415	456	-	45	80	-	-	-	-	-	-	-
Stage 2	123	80	-	693	413	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 15	8	561	7	7	388	851	-	-	497	-	-
Mov Cap-2 Maneuver	~ 15	8	-	7	7	-	-	-	-	-	-	-
Stage 1	209	450	-	23	40	-	-	-	-	-	-	-
Stage 2	62	40	-	592	407	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 604.2	14.3	3.1	0.1
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	851	-	-	15	561	388	497	-	-
HCM Lane V/C Ratio	0.496	-	-	3.223	0.133	0.003	0.013	-	-
HCM Control Delay (s)	13.3	-	-	$ 1518.8	12.4	14.3	12.3	-	-
HCM Lane LOS	B	-	-	F	B	B	B	-	-
HCM 95th %tile Q(veh)	2.8	-	-	6.8	0.5	0	0	-	-

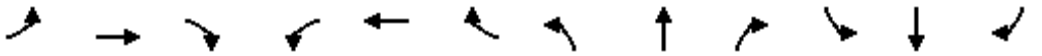
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	323	139	349	6	54	334	1168	22	392	80
Future Volume (vph)	323	139	349	6	54	334	1168	22	392	80
Lane Group Flow (vph)	347	149	375	6	67	359	1269	24	422	86
Turn Type	pm+pt	NA	pm+ov	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	5		8	5	2	1	6	
Permitted Phases	4		4	8						6
Detector Phase	7	4	5	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	13.1	39.0	13.5	40.8	40.8	13.5	30.5	13.2	39.8	39.8
Total Split (s)	16.0	38.0	17.0	22.0	22.0	17.0	40.0	12.0	35.0	35.0
Total Split (%)	17.8%	42.2%	18.9%	24.4%	24.4%	18.9%	44.4%	13.3%	38.9%	38.9%
Yellow Time (s)	3.9	4.8	3.2	4.8	4.8	3.2	4.1	3.2	4.1	4.1
All-Red Time (s)	2.2	2.2	3.0	2.2	2.2	3.0	1.3	3.0	1.3	1.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	7.0	6.2	7.0	7.0	6.2	5.4	6.2	5.4	5.4
Lead/Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max	C-Max
v/c Ratio	1.09	0.31	0.25	0.05	0.31	0.66	0.66	0.18	0.33	0.12
Control Delay	109.3	27.2	1.8	36.2	37.4	42.0	19.9	33.9	34.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.3	27.2	1.8	36.2	37.4	42.0	19.9	33.9	34.1	3.8
Queue Length 50th (ft)	~177	65	2	3	32	97	233	13	122	0
Queue Length 95th (ft)	#372	112	23	14	70	146	#487	38	174	20
Internal Link Dist (ft)		1368			1219		1103		587	
Turn Bay Length (ft)	525		475	200		500		175		
Base Capacity (vph)	317	654	1530	179	310	540	1936	136	1286	698
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.23	0.25	0.03	0.22	0.66	0.66	0.18	0.33	0.12

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 10: Frantz Rd & Tuttle Crossing Blvd/Tuttle Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	323	139	349	6	54	8	334	1168	12	22	392	80
Future Volume (veh/h)	323	139	349	6	54	8	334	1168	12	22	392	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1900	1841	1648	1900	1900	1856	1885	1885	1900	1811	1811
Adj Flow Rate, veh/h	347	149	375	6	58	9	359	1256	13	24	422	86
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	0	4	17	0	0	3	1	1	0	6	6
Cap, veh/h	380	549	1123	166	178	28	411	1741	18	45	1323	590
Arrive On Green	0.11	0.29	0.29	0.11	0.11	0.11	0.12	0.48	0.48	0.01	0.13	0.13
Sat Flow, veh/h	1781	1900	2745	774	1606	249	3428	3632	38	1810	3441	1535
Grp Volume(v), veh/h	347	149	375	6	0	67	359	619	650	24	422	86
Grp Sat Flow(s),veh/h/ln	1781	1900	1373	774	0	1855	1714	1791	1878	1810	1721	1535
Q Serve(g_s), s	9.9	5.4	8.4	0.6	0.0	3.0	9.3	24.8	24.8	1.2	10.0	4.5
Cycle Q Clear(g_c), s	9.9	5.4	8.4	0.6	0.0	3.0	9.3	24.8	24.8	1.2	10.0	4.5
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	380	549	1123	166	0	206	411	859	900	45	1323	590
V/C Ratio(X)	0.91	0.27	0.33	0.04	0.00	0.33	0.87	0.72	0.72	0.53	0.32	0.15
Avail Cap(c_a), veh/h	380	654	1275	209	0	309	411	859	900	117	1323	590
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	24.7	18.2	35.8	0.0	36.9	38.9	18.6	18.6	44.1	28.6	26.1
Incr Delay (d2), s/veh	26.0	0.3	0.2	0.1	0.0	0.9	18.2	5.2	5.0	9.2	0.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	2.3	2.7	0.1	0.0	1.4	4.8	10.6	11.1	0.6	4.6	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.4	25.0	18.4	35.9	0.0	37.8	57.1	23.9	23.6	53.3	29.2	26.7
LnGrp LOS	E	C	B	D	A	D	E	C	C	D	C	C
Approach Vol, veh/h		871			73			1628			532	
Approach Delay, s/veh		36.2			37.6			31.1			29.9	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	48.5		33.0	17.0	40.0	16.0	17.0				
Change Period (Y+Rc), s	* 6.2	* 5.4		* 7	* 6.2	* 5.4	* 6.1	* 7				
Max Green Setting (Gmax), s	* 5.8	* 35		* 31	* 11	* 30	* 9.9	* 15				
Max Q Clear Time (g_c+I1), s	3.2	26.8		10.4	11.3	12.0	11.9	5.0				
Green Ext Time (p_c), s	0.0	4.7		2.2	0.0	2.8	0.0	0.2				

Intersection Summary		
HCM 6th Ctrl Delay		32.5
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

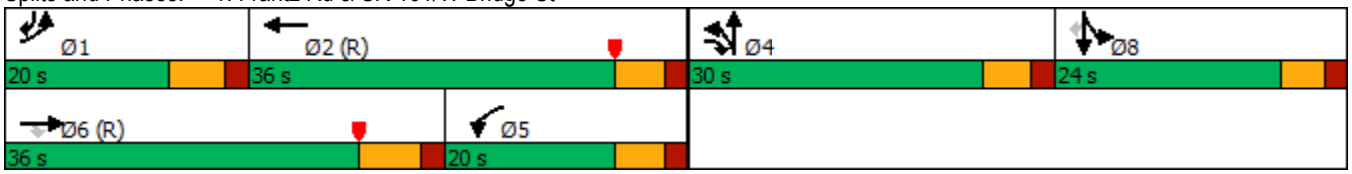
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

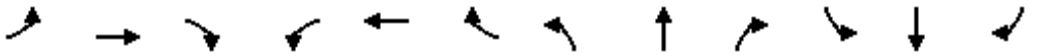
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	163	759	384	178	883	480	228	281	126	318
Future Volume (vph)	163	759	384	178	883	480	228	281	126	318
Lane Group Flow (vph)	172	799	404	187	1173	505	384	210	219	335
Turn Type	Prot	NA	pm+ov	Prot	NA	Split	NA	Split	NA	pm+ov
Protected Phases	1	6	4	5	2	4	4	8	8	1
Permitted Phases			6							8
Detector Phase	1	6	4	5	2	4	4	8	8	1
Switch Phase										
Minimum Initial (s)	7.0	21.0	10.0	7.0	20.0	10.0	10.0	10.0	10.0	7.0
Minimum Split (s)	14.4	33.0	46.1	14.4	48.0	46.1	46.1	20.0	20.0	14.4
Total Split (s)	20.0	36.0	30.0	20.0	36.0	30.0	30.0	24.0	24.0	20.0
Total Split (%)	18.2%	32.7%	27.3%	18.2%	32.7%	27.3%	27.3%	21.8%	21.8%	18.2%
Yellow Time (s)	4.5	5.0	4.0	4.0	4.0	4.0	4.0	3.6	3.6	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	7.0	6.0	6.0	6.0	6.0	6.0	5.6	5.6	6.5
Lead/Lag	Lead	Lead		Lag	Lag					Lead
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	None	C-Max	None	None	Max	Max	None
v/c Ratio	0.53	0.87	0.26	0.45	0.78	0.74	0.52	0.67	0.68	0.32
Control Delay	53.2	50.6	1.2	48.3	38.1	44.2	27.2	54.1	54.3	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.2	50.6	1.2	48.3	38.1	44.2	27.2	54.1	54.3	15.1
Queue Length 50th (ft)	60	284	0	63	263	98	46	149	156	51
Queue Length 95th (ft)	93	#388	13	100	333	230	153	#264	#275	88
Internal Link Dist (ft)		1043			821		1271		568	
Turn Bay Length (ft)	650			375		575		425		325
Base Capacity (vph)	425	915	1573	416	1499	749	805	315	323	1108
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.87	0.26	0.45	0.78	0.67	0.48	0.67	0.68	0.30

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Natural Cycle: 130
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Frantz Rd & SR 161/W Bridge St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	163	759	384	178	883	232	480	228	137	281	126	318
Future Volume (veh/h)	163	759	384	178	883	232	480	228	137	281	126	318
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1841	1870	1796	1841	1841	1870	1870	1870	1870	1856	1870
Adj Flow Rate, veh/h	172	799	404	187	929	244	505	240	144	214	247	335
Peak Hour 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
Percent Heavy Veh, %	1	4	2	7	4	4	2	2	2	2	3	2
Cap, veh/h	237	922	1228	561	1464	383	610	383	221	298	310	746
Arrive On Green	0.07	0.26	0.26	0.17	0.37	0.37	0.06	0.06	0.06	0.17	0.17	0.17
Sat Flow, veh/h	3483	3497	2790	3319	3966	1038	3456	2168	1254	1781	1856	3170
Grp Volume(v), veh/h	172	799	404	187	784	389	505	195	189	214	247	335
Grp Sat Flow(s),veh/h/ln	1742	1749	1395	1659	1675	1654	1728	1777	1645	1781	1856	1585
Q Serve(g_s), s	5.3	24.0	10.4	5.5	21.2	21.3	15.9	11.8	12.4	12.5	14.1	9.9
Cycle Q Clear(g_c), s	5.3	24.0	10.4	5.5	21.2	21.3	15.9	11.8	12.4	12.5	14.1	9.9
Prop In Lane	1.00		1.00	1.00		0.63	1.00		0.76	1.00		1.00
Lane Grp Cap(c), veh/h	237	922	1228	561	1236	610	610	314	290	298	310	746
V/C Ratio(X)	0.73	0.87	0.33	0.33	0.63	0.64	0.83	0.62	0.65	0.72	0.80	0.45
Avail Cap(c_a), veh/h	427	922	1228	561	1236	610	754	388	359	298	310	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.3	38.7	20.2	40.3	28.6	28.6	50.1	48.2	48.5	43.3	44.0	36.0
Incr Delay (d2), s/veh	3.1	10.8	0.7	0.3	2.5	5.0	4.8	0.7	1.3	13.9	18.8	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	11.4	4.7	2.2	8.7	9.1	7.8	5.7	5.6	6.6	8.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.4	49.4	20.9	40.5	31.1	33.6	54.9	48.9	49.8	57.2	62.8	37.9
LnGrp LOS	D	D	C	D	C	C	D	D	D	E	E	D
Approach Vol, veh/h		1375			1360			889			796	
Approach Delay, s/veh		41.5			33.1			52.5			50.8	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.0	46.6		25.4	24.6	36.0		24.0				
Change Period (Y+Rc), s	6.5	6.0		6.0	6.0	7.0		5.6				
Max Green Setting (Gmax), s	13.5	30.0		24.0	14.0	29.0		18.4				
Max Q Clear Time (g_c+I1), s	7.3	23.3		17.9	7.5	26.0		16.1				
Green Ext Time (p_c), s	0.2	5.2		1.5	0.2	2.4		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		42.8	
HCM 6th LOS		D	

Notes

User approved pedestrian interval to be less than phase max green.

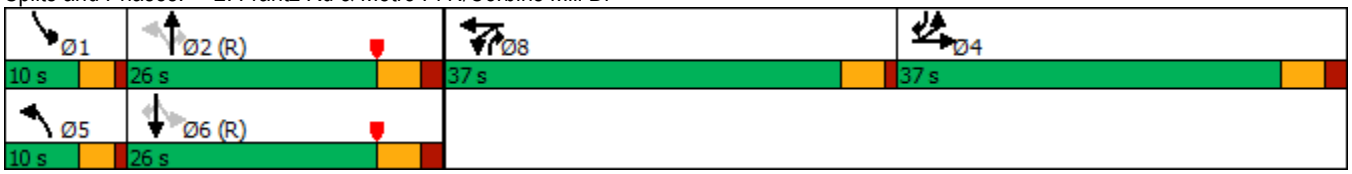
User approved volume balancing among the lanes for turning movement.

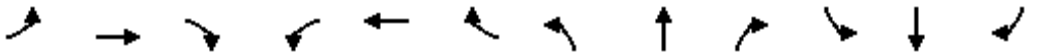
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	232	84	178	88	50	518	130	23	413	131
Future Volume (vph)	232	84	178	88	50	518	130	23	413	131
Lane Group Flow (vph)	200	195	189	118	53	551	138	24	439	139
Turn Type	Split	NA	Split	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	4	4	8	8	5	2	8	1	6	4
Permitted Phases					2		2	6		6
Detector Phase	4	4	8	8	5	2	8	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	7.0
Minimum Split (s)	38.0	38.0	37.0	37.0	10.0	26.0	37.0	10.0	26.0	38.0
Total Split (s)	37.0	37.0	37.0	37.0	10.0	26.0	37.0	10.0	26.0	37.0
Total Split (%)	33.6%	33.6%	33.6%	33.6%	9.1%	23.6%	33.6%	9.1%	23.6%	33.6%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	2.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	4.6	4.6	4.0	5.6	4.6	4.0	5.6	5.6
Lead/Lag					Lead	Lag		Lead	Lag	
Lead-Lag Optimize?					Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	C-Min	None	None	C-Min	None
v/c Ratio	0.68	0.63	0.66	0.39	0.11	0.34	0.12	0.05	0.29	0.14
Control Delay	54.1	46.2	53.6	39.5	17.1	23.8	5.4	13.4	19.8	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.1	46.2	53.6	39.5	17.1	23.8	5.4	13.4	19.8	0.6
Queue Length 50th (ft)	141	121	126	67	20	148	0	7	90	0
Queue Length 95th (ft)	206	186	187	115	54	237	45	m21	150	m0
Internal Link Dist (ft)		984		630		585			1271	
Turn Bay Length (ft)			225		125		175	100		185
Base Capacity (vph)	484	499	531	545	503	1631	1322	451	1527	1138
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.39	0.36	0.22	0.11	0.34	0.10	0.05	0.29	0.12

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 53 (48%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Frantz Rd & Metro Pl N/Corbins Mill Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	84	55	178	88	23	50	518	130	23	413	131
Future Volume (veh/h)	232	84	55	178	88	23	50	518	130	23	413	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1900	1900	1900	1900	1900	1900	1856	1885	1900	1841	1856
Adj Flow Rate, veh/h	198	158	59	189	94	24	53	551	138	24	439	139
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	0	0	0	0	3	1	0	4	3
Cap, veh/h	267	196	73	236	190	49	560	1824	1035	495	1764	1027
Arrive On Green	0.15	0.15	0.15	0.13	0.13	0.13	0.07	1.00	1.00	0.05	1.00	1.00
Sat Flow, veh/h	1795	1319	492	1810	1460	373	1810	3526	1598	1810	3497	1572
Grp Volume(v), veh/h	198	0	217	189	0	118	53	551	138	24	439	139
Grp Sat Flow(s),veh/h/ln	1795	0	1811	1810	0	1833	1810	1763	1598	1810	1749	1572
Q Serve(g_s), s	11.6	0.0	12.7	11.2	0.0	6.6	1.5	0.0	0.0	0.7	0.0	0.0
Cycle Q Clear(g_c), s	11.6	0.0	12.7	11.2	0.0	6.6	1.5	0.0	0.0	0.7	0.0	0.0
Prop In Lane	1.00		0.27	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	267	0	270	236	0	239	560	1824	1035	495	1764	1027
V/C Ratio(X)	0.74	0.00	0.81	0.80	0.00	0.49	0.09	0.30	0.13	0.05	0.25	0.14
Avail Cap(c_a), veh/h	513	0	517	533	0	540	592	1824	1035	550	1764	1027
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.98	0.98	0.98	0.91	0.91	0.91
Uniform Delay (d), s/veh	44.8	0.0	45.3	46.5	0.0	44.5	11.5	0.0	0.0	12.1	0.0	0.0
Incr Delay (d2), s/veh	4.0	0.0	5.6	6.3	0.0	1.6	0.1	0.4	0.3	0.0	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	6.1	5.5	0.0	3.1	0.6	0.1	0.1	0.3	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.8	0.0	50.9	52.7	0.0	46.1	11.6	0.4	0.3	12.1	0.3	0.2
LnGrp LOS	D	A	D	D	A	D	B	A	A	B	A	A
Approach Vol, veh/h		415			307			742			602	
Approach Delay, s/veh		49.9			50.2			1.2			0.8	
Approach LOS		D			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	62.5		22.0	8.0	61.1		18.9				
Change Period (Y+Rc), s	4.0	5.6		5.6	4.0	5.6		4.6				
Max Green Setting (Gmax), s	6.0	20.4		31.4	6.0	20.4		32.4				
Max Q Clear Time (g_c+I1), s	2.7	2.0		14.7	3.5	2.0		13.2				
Green Ext Time (p_c), s	0.0	3.9		1.6	0.0	3.1		1.2				

Intersection Summary			
HCM 6th Ctrl Delay		18.1	
HCM 6th LOS		B	

Notes

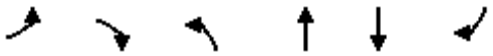
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	160	139	613	581	81
Future Volume (vph)	88	160	139	613	581	81
Lane Group Flow (vph)	93	168	146	645	612	85
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	1	1	6	2	4
Permitted Phases		4	6			2
Detector Phase	4	1	1	6	2	4
Switch Phase						
Minimum Initial (s)	10.0	7.0	7.0	20.0	20.0	10.0
Minimum Split (s)	37.0	12.0	12.0	26.0	42.0	37.0
Total Split (s)	41.0	25.0	25.0	69.0	44.0	41.0
Total Split (%)	37.3%	22.7%	22.7%	62.7%	40.0%	37.3%
Yellow Time (s)	3.6	3.5	3.5	3.6	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.0	5.0	5.1	5.1	5.1
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	C-Min	C-Min	None
v/c Ratio	0.29	0.40	0.22	0.22	0.25	0.06
Control Delay	49.0	16.8	2.9	2.5	5.9	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	16.8	2.9	2.5	5.9	1.7
Queue Length 50th (ft)	31	34	15	41	78	5
Queue Length 95th (ft)	57	93	28	56	91	12
Internal Link Dist (ft)	991			1198	585	
Turn Bay Length (ft)	350	400	425			400
Base Capacity (vph)	1109	583	780	2881	2437	1615
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	0.08	0.29	0.19	0.22	0.25	0.05

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 73 (66%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated

Splits and Phases: 3: Frantz Rd & Metro Pl S



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	88	160	139	613	581	81
Future Volume (veh/h)	88	160	139	613	581	81
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1870	1885	1870	1856	1900
Adj Flow Rate, veh/h	93	168	146	645	612	85
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	2	1	2	3	0
Cap, veh/h	429	298	687	2780	2376	1286
Arrive On Green	0.13	0.13	0.06	0.78	1.00	1.00
Sat Flow, veh/h	3428	1585	1795	3647	3618	1610
Grp Volume(v), veh/h	93	168	146	645	612	85
Grp Sat Flow(s),veh/h/ln	1714	1585	1795	1777	1763	1610
Q Serve(g_s), s	2.7	10.6	2.4	5.3	0.0	0.0
Cycle Q Clear(g_c), s	2.7	10.6	2.4	5.3	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	429	298	687	2780	2376	1286
V/C Ratio(X)	0.22	0.56	0.21	0.23	0.26	0.07
Avail Cap(c_a), veh/h	1119	617	900	2780	2376	1286
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.92	0.92
Uniform Delay (d), s/veh	43.3	40.6	3.6	3.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	2.2	0.2	0.2	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	9.5	0.7	1.5	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.6	42.7	3.8	3.4	0.2	0.1
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	261			791	697	
Approach Delay, s/veh	43.0			3.5	0.2	
Approach LOS	D			A	A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	11.9	79.2		18.9		91.1
Change Period (Y+Rc), s	5.0	5.1		5.1		5.1
Max Green Setting (Gmax), s	20.0	38.9		35.9		63.9
Max Q Clear Time (g_c+I1), s	4.4	2.0		12.6		7.3
Green Ext Time (p_c), s	0.4	9.7		1.2		10.2

Intersection Summary	
HCM 6th Ctrl Delay	8.1
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Vol, veh/h	31	32	760	19	22	13	751
Future Vol, veh/h	31	32	760	19	22	13	751
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-
Veh in Median Storage, #	1	-	0	-	-	-	0
Grade, %	0	-	0	-	-	-	0
Peak Hour Factor	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	2	0	0	0	2
Mvmt Flow	32	33	784	20	23	13	774

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	1253	402	0	0	803	804	0
Stage 1	794	-	-	-	-	-	-
Stage 2	459	-	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	6.4	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.5	2.2	-
Pot Cap-1 Maneuver	167	604	-	-	451	829	-
Stage 1	411	-	-	-	-	-	-
Stage 2	609	-	-	-	-	-	-
Platoon blocked, %			-	-			-
Mov Cap-1 Maneuver	147	604	-	-	521	521	-
Mov Cap-2 Maneuver	278	-	-	-	-	-	-
Stage 1	411	-	-	-	-	-	-
Stage 2	535	-	-	-	-	-	-

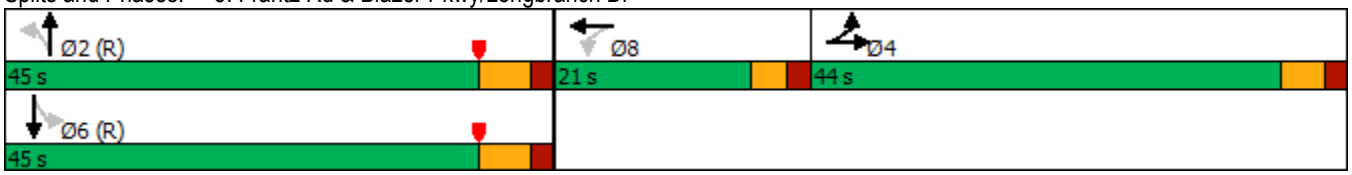
Approach	WB	NB	SB
HCM Control Delay, s	16.3	0	2
HCM LOS	C		

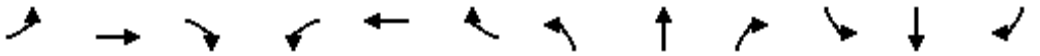
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	383	521	-
HCM Lane V/C Ratio	-	-	0.17	0.026	-
HCM Control Delay (s)	-	-	16.3	12.4	1.5
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-

Lane Group	Ø2	Ø4	Ø6	Ø8
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	2	4	6	8
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	15.0	10.0	15.0	8.0
Minimum Split (s)	25.2	40.0	25.2	18.0
Total Split (s)	45.0	44.0	45.0	21.0
Total Split (%)	41%	40%	41%	19%
Yellow Time (s)	4.2	3.6	4.2	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	None	C-Max	None
v/c Ratio				
Control Delay				
Queue Delay				
Total Delay				
Queue Length 50th (ft)				
Queue Length 95th (ft)				
Internal Link Dist (ft)				
Turn Bay Length (ft)				
Base Capacity (vph)				
Starvation Cap Reductn				
Spillback Cap Reductn				
Storage Cap Reductn				
Reduced v/c Ratio				

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 14 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 5: Frantz Rd & Blazer Pkwy/Longbranch Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0	0	0	0	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	2	2	0	0	2	0	65	3353	0	65	3353	0
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1781	1870	0	0	1870	0	1781	3647	0	1781	3647	0
Grp Volume(v), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	0	1870	0	1781	1777	0	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	2	2	0	0	2	0	65	3353	0	65	3353	0
V/C Ratio(X)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	622	653	0	0	272	0	65	3353	0	65	3353	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		0			0			0			0	
Approach Delay, s/veh		0.0			0.0			0.0			0.0	
Approach LOS												

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		110.0		0.0		110.0		0.0				
Change Period (Y+Rc), s		6.2		5.6		6.2		5.0				
Max Green Setting (Gmax), s		38.8		38.4		38.8		16.0				
Max Q Clear Time (g_c+I1), s		0.0		0.0		0.0		0.0				
Green Ext Time (p_c), s		0.0		0.0		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			0.0									
HCM 6th LOS			A									

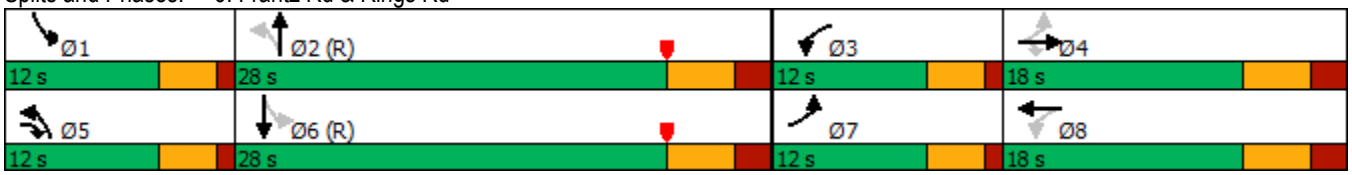
Notes

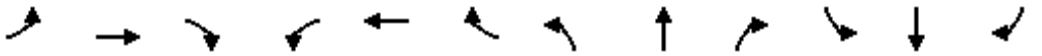
User approved volume balancing among the lanes for turning movement.

Lane Group	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8
Lane Configurations								
Traffic Volume (vph)								
Future Volume (vph)								
Lane Group Flow (vph)								
Turn Type								
Protected Phases	1	2	3	4	5	6	7	8
Permitted Phases								
Detector Phase								
Switch Phase								
Minimum Initial (s)	7.0	12.0	7.0	11.0	7.0	12.0	7.0	11.0
Minimum Split (s)	11.0	39.0	11.0	40.0	11.0	41.0	11.0	42.0
Total Split (s)	12.0	28.0	12.0	18.0	12.0	28.0	12.0	18.0
Total Split (%)	17%	40%	17%	26%	17%	40%	17%	26%
Yellow Time (s)	3.0	3.5	3.0	3.5	3.0	3.5	3.0	3.5
All-Red Time (s)	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)								
Total Lost Time (s)								
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	None	None	C-Min	None	None
v/c Ratio								
Control Delay								
Queue Delay								
Total Delay								
Queue Length 50th (ft)								
Queue Length 95th (ft)								
Internal Link Dist (ft)								
Turn Bay Length (ft)								
Base Capacity (vph)								
Starvation Cap Reductn								
Spillback Cap Reductn								
Storage Cap Reductn								
Reduced v/c Ratio								

Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 105
Control Type: Actuated-Coordinated

Splits and Phases: 6: Frantz Rd & Rings Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0	0	0	0	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	105	3	0	105	5	0	1412	3274	0	1412	3274	0
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1781	1870	1585	1781	3647	0	1781	3647	0	1781	3647	0
Grp Volume(v), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1777	0	1781	1777	0	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	105	3	-88	105	5	0	1412	3274	0	1412	3274	0
V/C Ratio(X)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	306	334	192	306	635	0	1613	3274	0	1613	3274	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		0			0			0			0	
Approach Delay, s/veh		0.0			0.0			0.0			0.0	
Approach LOS												

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	70.0	0.0	0.0	0.0	70.0	0.0	0.0
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	8.0	22.5	8.0	12.5	8.0	22.5	8.0	12.5
Max Q Clear Time (g_c+I1), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	0.0
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
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	-	-	-	-	-	-	50	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1	1	1	1	1	0	1	0	0	0	0	0
Stage 1	1	1	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	1	1	-	-	-	-	-	-	-
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	1021	894	1083	1021	894	-	1620	-	-	-	-	-
Stage 1	1021	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	1021	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	894	1083	1021	894	-	1620	-	-	-	-	-
Mov Cap-2 Maneuver	-	894	-	1021	894	-	-	-	-	-	-	-
Stage 1	1021	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	1021	895	-	-	-	-	-	-	-

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

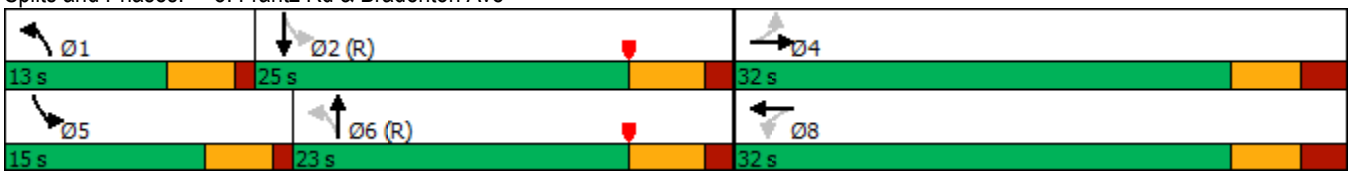
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1620	-	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-

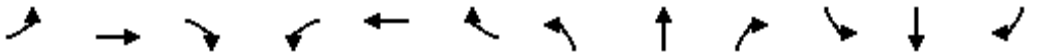
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	94	12	15	7	13	746	17	739
Future Volume (vph)	94	12	15	7	13	746	17	739
Lane Group Flow (vph)	103	46	0	54	14	835	19	889
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0	15.0	7.0	15.0
Minimum Split (s)	32.0	32.0	35.0	35.0	12.0	30.0	12.0	34.0
Total Split (s)	32.0	32.0	32.0	32.0	13.0	23.0	15.0	25.0
Total Split (%)	45.7%	45.7%	45.7%	45.7%	18.6%	32.9%	21.4%	35.7%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	4.0	3.6	4.0
All-Red Time (s)	2.5	2.5	2.5	2.5	1.0	1.5	1.0	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	4.6	5.5	4.6	5.5
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.46	0.15		0.19	0.03	0.34	0.04	0.37
Control Delay	32.5	13.0		15.4	4.6	7.4	4.6	7.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	13.0		15.4	4.6	7.4	4.6	7.5
Queue Length 50th (ft)	41	5		9	2	65	2	69
Queue Length 95th (ft)	80	28		35	8	181	9	193
Internal Link Dist (ft)		353		381		797		718
Turn Bay Length (ft)	200				145		145	
Base Capacity (vph)	497	632		584	543	2429	514	2429
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.21	0.07		0.09	0.03	0.34	0.04	0.37

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 8: Frantz Rd & Bradenton Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	12	30	15	7	27	13	746	14	17	739	70
Future Volume (veh/h)	94	12	30	15	7	27	13	746	14	17	739	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1767	1767	1900	1900	1900	1900	1856	1856	1633	1870	1870
Adj Flow Rate, veh/h	103	13	33	16	8	30	14	820	15	19	812	77
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	9	9	0	0	0	0	3	3	18	2	2
Cap, veh/h	306	62	157	106	62	127	526	2117	39	425	1983	188
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.02	0.60	0.60	0.06	1.00	1.00
Sat Flow, veh/h	1370	442	1122	280	445	907	1810	3542	65	1555	3280	311
Grp Volume(v), veh/h	103	0	46	54	0	0	14	408	427	19	440	449
Grp Sat Flow(s),veh/h/ln	1370	0	1565	1632	0	0	1810	1763	1844	1555	1777	1814
Q Serve(g_s), s	2.3	0.0	1.8	0.0	0.0	0.0	0.2	8.5	8.5	0.3	0.0	0.0
Cycle Q Clear(g_c), s	4.3	0.0	1.8	1.9	0.0	0.0	0.2	8.5	8.5	0.3	0.0	0.0
Prop In Lane	1.00		0.72	0.30		0.56	1.00		0.04	1.00		0.17
Lane Grp Cap(c), veh/h	306	0	219	295	0	0	526	1053	1102	425	1074	1097
V/C Ratio(X)	0.34	0.00	0.21	0.18	0.00	0.00	0.03	0.39	0.39	0.04	0.41	0.41
Avail Cap(c_a), veh/h	621	0	579	656	0	0	700	1053	1102	608	1074	1097
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.6	0.0	26.7	26.7	0.0	0.0	5.1	7.4	7.4	5.2	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.5	0.3	0.0	0.0	0.0	1.1	1.0	0.0	1.2	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.7	0.8	0.0	0.0	0.1	2.8	2.9	0.1	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.2	0.0	27.1	27.0	0.0	0.0	5.1	8.5	8.4	5.3	1.2	1.1
LnGrp LOS	C	A	C	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		149			54			849			908	
Approach Delay, s/veh		27.9			27.0			8.4			1.2	
Approach LOS		C			C			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	47.8		15.9	6.8	47.3		15.9				
Change Period (Y+Rc), s	4.6	5.5		6.1	4.6	5.5		6.1				
Max Green Setting (Gmax), s	8.4	19.5		25.9	10.4	17.5		25.9				
Max Q Clear Time (g_c+I1), s	2.2	2.0		6.3	2.3	10.5		3.9				
Green Ext Time (p_c), s	0.0	9.0		0.5	0.0	4.3		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		7.1
HCM 6th LOS		A

Intersection	
Int Delay, s/veh	21.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	84	0	164	5	1	5	176	749	1	5	750	92
Future Vol, veh/h	84	0	164	5	1	5	176	749	1	5	750	92
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	75	-	-	-	-	-	200	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	10	0	3	0	0	0	5	3	0	0	2	5
Mvmt Flow	87	0	169	5	1	5	181	772	1	5	773	95

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1580	1966	434	1532	2013	387	868	0	0	773	0	0
Stage 1	831	831	-	1135	1135	-	-	-	-	-	-	-
Stage 2	749	1135	-	397	878	-	-	-	-	-	-	-
Critical Hdwy	7.7	6.5	6.96	7.5	6.5	6.9	4.2	-	-	4.1	-	-
Critical Hdwy Stg 1	6.7	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.6	4	3.33	3.5	4	3.3	2.25	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 68	64	567	81	59	617	753	-	-	851	-	-
Stage 1	314	387	-	219	280	-	-	-	-	-	-	-
Stage 2	352	280	-	605	368	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 54	48	567	46	45	617	753	-	-	851	-	-
Mov Cap-2 Maneuver	~ 54	48	-	46	45	-	-	-	-	-	-	-
Stage 1	239	385	-	166	213	-	-	-	-	-	-	-
Stage 2	264	213	-	422	366	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	166.9	58.1	2.1	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	753	-	-	54	567	79	851	-	-
HCM Lane V/C Ratio	0.241	-	-	1.604	0.298	0.144	0.006	-	-
HCM Control Delay (s)	11.3	-	-	$ 465.5	14	58.1	9.3	-	-
HCM Lane LOS	B	-	-	F	B	F	A	-	-
HCM 95th %tile Q(veh)	0.9	-	-	8.1	1.2	0.5	0	-	-

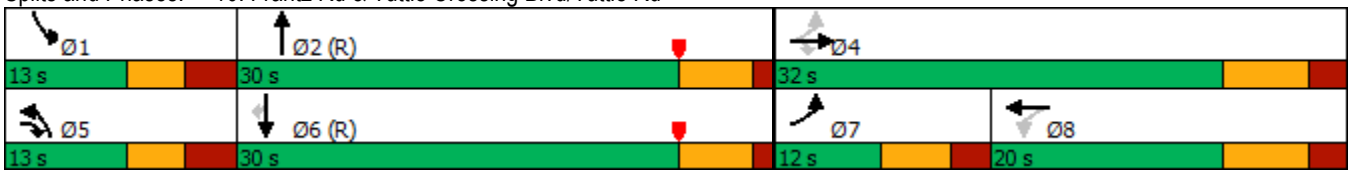
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

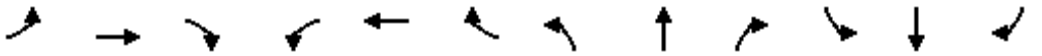
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	291	89	342	17	81	309	502	9	562	259
Future Volume (vph)	291	89	342	17	81	309	502	9	562	259
Lane Group Flow (vph)	310	95	364	18	109	329	558	10	598	276
Turn Type	pm+pt	NA	pm+ov	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	5		8	5	2	1	6	
Permitted Phases	4		4	8						6
Detector Phase	7	4	5	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	13.1	39.0	13.5	40.8	40.8	13.5	30.5	13.2	39.8	39.8
Total Split (s)	12.0	32.0	13.0	20.0	20.0	13.0	30.0	13.0	30.0	30.0
Total Split (%)	16.0%	42.7%	17.3%	26.7%	26.7%	17.3%	40.0%	17.3%	40.0%	40.0%
Yellow Time (s)	3.9	4.8	3.2	4.8	4.8	3.2	4.1	3.2	4.1	4.1
All-Red Time (s)	2.2	2.2	3.0	2.2	2.2	3.0	1.3	3.0	1.3	1.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	7.0	6.2	7.0	7.0	6.2	5.4	6.2	5.4	5.4
Lead/Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max	C-Max
v/c Ratio	1.00	0.19	0.25	0.11	0.41	0.73	0.30	0.08	0.48	0.37
Control Delay	78.6	20.1	5.6	28.8	29.5	44.7	12.5	33.2	21.3	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.6	20.1	5.6	28.8	29.5	44.7	12.5	33.2	21.3	4.3
Queue Length 50th (ft)	120	33	25	8	40	77	68	4	116	0
Queue Length 95th (ft)	#257	63	48	24	82	#165	152	18	164	49
Internal Link Dist (ft)		1368			1219		1103		587	
Turn Bay Length (ft)	525		475	200		500		175		
Base Capacity (vph)	310	621	1443	204	318	451	1835	134	1234	737
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.15	0.25	0.09	0.34	0.73	0.30	0.07	0.48	0.37

Intersection Summary

Cycle Length: 75
Actuated Cycle Length: 75
Offset: 13 (17%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow
Natural Cycle: 110
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 10: Frantz Rd & Tuttle Crossing Blvd/Tuttle Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	291	89	342	17	81	22	309	502	23	9	562	259
Future Volume (veh/h)	291	89	342	17	81	22	309	502	23	9	562	259
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1841	1722	1885	1885	1870	1856	1856	1574	1870	1885
Adj Flow Rate, veh/h	310	95	364	18	86	23	329	534	24	10	598	276
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	2	4	12	1	1	2	3	3	22	2	1
Cap, veh/h	338	549	1054	211	191	51	313	1533	69	19	1308	588
Arrive On Green	0.08	0.29	0.29	0.13	0.13	0.13	0.09	0.45	0.45	0.01	0.37	0.37
Sat Flow, veh/h	1795	1870	2745	859	1433	383	3456	3436	154	1499	3554	1598
Grp Volume(v), veh/h	310	95	364	18	0	109	329	274	284	10	598	276
Grp Sat Flow(s),veh/h/ln	1795	1870	1373	859	0	1816	1728	1763	1828	1499	1777	1598
Q Serve(g_s), s	5.9	2.8	7.1	1.4	0.0	4.2	6.8	7.6	7.7	0.5	9.6	9.9
Cycle Q Clear(g_c), s	5.9	2.8	7.1	1.4	0.0	4.2	6.8	7.6	7.7	0.5	9.6	9.9
Prop In Lane	1.00		1.00	1.00		0.21	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	338	549	1054	211	0	242	313	786	815	19	1308	588
V/C Ratio(X)	0.92	0.17	0.35	0.09	0.00	0.45	1.05	0.35	0.35	0.53	0.46	0.47
Avail Cap(c_a), veh/h	338	623	1164	245	0	315	313	786	815	136	1308	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	19.7	16.4	28.8	0.0	30.0	34.1	13.6	13.6	36.8	18.0	18.1
Incr Delay (d2), s/veh	28.8	0.1	0.2	0.2	0.0	1.3	64.6	1.2	1.2	21.4	1.2	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	1.1	2.2	0.3	0.0	1.9	5.5	3.0	3.1	0.3	3.8	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.5	19.9	16.6	28.9	0.0	31.3	98.7	14.8	14.8	58.2	19.2	20.8
LnGrp LOS	E	B	B	C	A	C	F	B	B	E	B	C
Approach Vol, veh/h		769			127			887			884	
Approach Delay, s/veh		33.9			30.9			45.9			20.1	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.1	38.9		29.0	13.0	33.0	12.0	17.0				
Change Period (Y+Rc), s	* 6.2	* 5.4		* 7	* 6.2	* 5.4	* 6.1	* 7				
Max Green Setting (Gmax), s	* 6.8	* 25		* 25	* 6.8	* 25	* 5.9	* 13				
Max Q Clear Time (g_c+I1), s	2.5	9.7		9.1	8.8	11.9	7.9	6.2				
Green Ext Time (p_c), s	0.0	2.8		1.7	0.0	4.0	0.0	0.3				

Intersection Summary		
HCM 6th Ctrl Delay		33.2
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

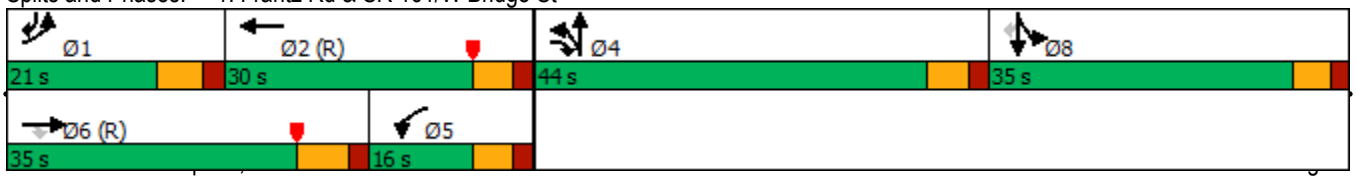
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

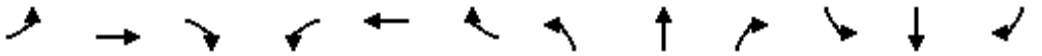
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	359	997	353	107	1222	1196	304	330	134	1181
Future Volume (vph)	359	997	353	107	1222	1196	304	330	134	1181
Lane Group Flow (vph)	366	1017	360	109	1419	1220	474	233	241	1205
Turn Type	Prot	NA	pm+ov	Prot	NA	Split	NA	Split	NA	pm+ov
Protected Phases	1	6	4	5	2	4	4	8	8	1
Permitted Phases			6							8
Detector Phase	1	6	4	5	2	4	4	8	8	1
Switch Phase										
Minimum Initial (s)	7.0	21.0	10.0	7.0	20.0	10.0	10.0	10.0	10.0	7.0
Minimum Split (s)	14.4	33.0	46.0	14.4	48.0	46.0	46.0	25.1	25.1	14.4
Total Split (s)	21.0	35.0	44.0	16.0	30.0	44.0	44.0	35.0	35.0	21.0
Total Split (%)	16.2%	26.9%	33.8%	12.3%	23.1%	33.8%	33.8%	26.9%	26.9%	16.2%
Yellow Time (s)	4.5	5.0	4.0	4.0	4.0	4.0	4.0	3.6	3.6	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	7.0	6.0	6.0	6.0	6.0	6.0	5.6	5.6	6.5
Lead/Lag	Lead	Lead		Lag	Lag					Lead
Lead-Lag Optimize?										
Recall Mode	None	C-Max	None	None	C-Max	None	None	Max	Max	None
v/c Ratio	0.94	1.32	0.22	0.41	1.50	1.19	0.46	0.60	0.61	1.04
Control Delay	89.6	194.4	1.2	62.3	267.7	140.1	45.0	52.6	52.6	73.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.6	194.4	1.2	62.3	267.7	140.1	45.0	52.6	52.6	73.8
Queue Length 50th (ft)	160	~582	0	45	~606	~624	177	186	193	~582
Queue Length 95th (ft)	#256	#717	15	77	#705	#798	m255	281	289	#734
Internal Link Dist (ft)		1043			821		1271		568	
Turn Bay Length (ft)	650			375		575		425		325
Base Capacity (vph)	390	769	1624	264	945	1023	1040	387	397	1154
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	1.32	0.22	0.41	1.50	1.19	0.46	0.60	0.61	1.04

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ 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: 1: Frantz Rd & SR 161/W Bridge St





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	359	997	353	107	1222	169	1196	304	161	330	134	1181
Future Volume (veh/h)	359	997	353	107	1222	169	1196	304	161	330	134	1181
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1885	1885	1870	1885	1885	1900	1885	1885	1900	1885	1885
Adj Flow Rate, veh/h	366	1017	360	109	1247	172	1220	310	164	237	277	1205
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	1	1	2	1	1	0	1	1	0	1	1
Cap, veh/h	392	771	1428	266	844	116	1026	668	345	409	426	1079
Arrive On Green	0.11	0.22	0.22	0.08	0.18	0.18	0.10	0.10	0.10	0.23	0.23	0.23
Sat Flow, veh/h	3510	3582	2812	3456	4572	631	3510	2284	1180	1810	1885	3195
Grp Volume(v), veh/h	366	1017	360	109	936	483	1220	242	232	237	277	1205
Grp Sat Flow(s),veh/h/ln	1755	1791	1406	1728	1716	1772	1755	1791	1673	1810	1885	1598
Q Serve(g_s), s	13.4	28.0	9.4	3.9	24.0	24.0	38.0	16.6	17.1	15.2	17.3	29.4
Cycle Q Clear(g_c), s	13.4	28.0	9.4	3.9	24.0	24.0	38.0	16.6	17.1	15.2	17.3	29.4
Prop In Lane	1.00		1.00	1.00		0.36	1.00		0.71	1.00		1.00
Lane Grp Cap(c), veh/h	392	771	1428	266	633	327	1026	524	489	409	426	1079
V/C Ratio(X)	0.93	1.32	0.25	0.41	1.48	1.48	1.19	0.46	0.48	0.58	0.65	1.12
Avail Cap(c_a), veh/h	392	771	1428	266	633	327	1026	524	489	409	426	1079
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.60	0.60	0.60	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	51.0	18.1	57.2	53.0	53.0	58.7	49.1	49.3	44.8	45.6	43.0
Incr Delay (d2), s/veh	29.3	152.3	0.4	0.8	223.3	230.7	91.2	0.1	0.2	5.9	7.5	65.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.5	28.7	5.3	1.7	29.9	31.5	30.9	8.0	7.7	7.4	8.9	26.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.6	203.3	18.5	57.9	276.3	283.7	149.9	49.2	49.5	50.7	53.1	108.4
LnGrp LOS	F	F	B	E	F	F	F	D	D	D	D	F
Approach Vol, veh/h		1743			1528			1694			1719	
Approach Delay, s/veh		140.6			263.0			121.8			91.5	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.0	30.0		44.0	16.0	35.0		35.0				
Change Period (Y+Rc), s	6.5	6.0		6.0	6.0	7.0		5.6				
Max Green Setting (Gmax), s	14.5	24.0		38.0	10.0	28.0		29.4				
Max Q Clear Time (g_c+I1), s	15.4	26.0		40.0	5.9	30.0		31.4				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.1	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		151.2
HCM 6th LOS		F

Notes

User approved pedestrian interval to be less than phase max green.

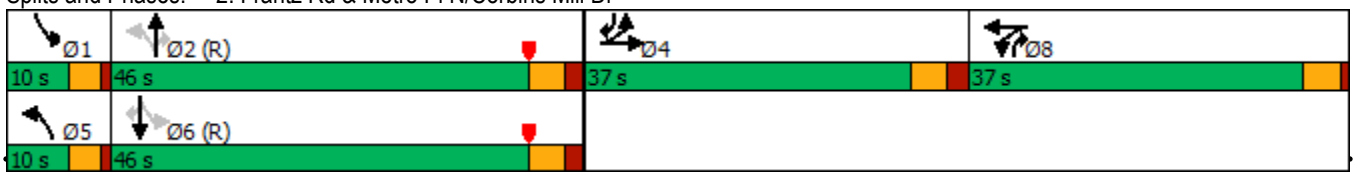
User approved volume balancing among the lanes for turning movement.

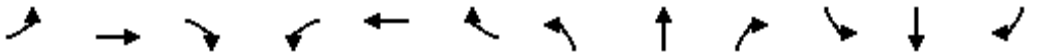
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	489	100	132	21	18	1109	231	34	419	75
Future Volume (vph)	489	100	132	21	18	1109	231	34	419	75
Lane Group Flow (vph)	343	343	140	54	19	1180	246	36	446	80
Turn Type	Split	NA	Split	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	4	4	8	8	5	2	8	1	6	4
Permitted Phases					2		2	6		6
Detector Phase	4	4	8	8	5	2	8	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	7.0
Minimum Split (s)	38.0	38.0	37.0	37.0	10.0	35.0	37.0	10.0	35.0	38.0
Total Split (s)	37.0	37.0	37.0	37.0	10.0	46.0	37.0	10.0	46.0	37.0
Total Split (%)	28.5%	28.5%	28.5%	28.5%	7.7%	35.4%	28.5%	7.7%	35.4%	28.5%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	2.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	4.6	4.6	4.0	5.6	4.6	4.0	5.6	5.6
Lead/Lag					Lead	Lag		Lead	Lag	
Lead-Lag Optimize?					Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	C-Min	None	None	C-Min	None
v/c Ratio	0.89	0.88	0.63	0.22	0.04	0.69	0.23	0.18	0.25	0.07
Control Delay	74.1	70.6	65.6	26.5	12.8	29.9	2.6	22.6	25.6	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.1	70.6	65.6	26.5	12.8	29.9	2.6	22.6	25.6	0.9
Queue Length 50th (ft)	290	283	114	17	6	492	29	16	112	0
Queue Length 95th (ft)	#452	#443	174	54	m15	#620	13	m35	216	m7
Internal Link Dist (ft)		984		630		585			1271	
Turn Bay Length (ft)			225		125		175	100		185
Base Capacity (vph)	414	420	449	455	508	1703	1165	199	1772	1241
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.82	0.31	0.12	0.04	0.69	0.21	0.18	0.25	0.06

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 84 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 130
Control Type: Actuated-Coordinated
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: Frantz Rd & Metro Pl N/Corbins Mill Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	489	100	56	132	21	30	18	1109	231	34	419	75
Future Volume (veh/h)	489	100	56	132	21	30	18	1109	231	34	419	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1885	1900	1900	1885	1856
Adj Flow Rate, veh/h	343	354	60	140	22	32	19	1180	246	36	446	80
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	0	0	1	3
Cap, veh/h	430	376	64	174	67	98	523	1740	937	281	1772	1152
Arrive On Green	0.24	0.24	0.24	0.10	0.10	0.10	0.04	0.97	0.97	0.06	0.99	0.99
Sat Flow, veh/h	1810	1583	268	1810	699	1017	1810	3582	1610	1810	3582	1572
Grp Volume(v), veh/h	343	0	414	140	0	54	19	1180	246	36	446	80
Grp Sat Flow(s),veh/h/ln	1810	0	1852	1810	0	1717	1810	1791	1610	1810	1791	1572
Q Serve(g_s), s	23.2	0.0	28.5	9.9	0.0	3.8	0.7	3.5	0.7	1.3	0.2	0.0
Cycle Q Clear(g_c), s	23.2	0.0	28.5	9.9	0.0	3.8	0.7	3.5	0.7	1.3	0.2	0.0
Prop In Lane	1.00		0.14	1.00		0.59	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	430	0	440	174	0	165	523	1740	937	281	1772	1152
V/C Ratio(X)	0.80	0.00	0.94	0.80	0.00	0.33	0.04	0.68	0.26	0.13	0.25	0.07
Avail Cap(c_a), veh/h	437	0	447	451	0	428	572	1740	937	314	1772	1152
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.88	0.88	0.88	0.93	0.93	0.93
Uniform Delay (d), s/veh	46.6	0.0	48.6	57.6	0.0	54.8	15.8	1.0	0.6	15.3	0.3	0.1
Incr Delay (d2), s/veh	9.9	0.0	28.0	8.4	0.0	1.1	0.0	1.9	0.6	0.2	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	0.0	16.4	5.0	0.0	1.7	0.3	1.0	0.4	0.5	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.5	0.0	76.6	66.0	0.0	56.0	15.8	2.9	1.2	15.5	0.7	0.2
LnGrp LOS	E	A	E	E	A	E	B	A	A	B	A	A
Approach Vol, veh/h		757			194			1445			562	
Approach Delay, s/veh		67.5			63.2			2.8			1.5	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	68.8		36.5	6.5	69.9		17.1				
Change Period (Y+Rc), s	4.0	5.6		5.6	4.0	5.6		4.6				
Max Green Setting (Gmax), s	6.0	40.4		31.4	6.0	40.4		32.4				
Max Q Clear Time (g_c+I1), s	3.3	5.5		30.5	2.7	2.2		11.9				
Green Ext Time (p_c), s	0.0	11.9		0.4	0.0	3.4		0.7				

Intersection Summary		
HCM 6th Ctrl Delay		23.1
HCM 6th LOS		C

Notes

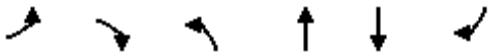
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	179	247	48	1190	581	36
Future Volume (vph)	179	247	48	1190	581	36
Lane Group Flow (vph)	203	281	55	1352	660	41
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	1	1	6	2	4
Permitted Phases		4	6			2
Detector Phase	4	1	1	6	2	4
Switch Phase						
Minimum Initial (s)	10.0	7.0	7.0	20.0	20.0	10.0
Minimum Split (s)	37.0	12.0	12.0	26.0	42.0	37.0
Total Split (s)	46.0	30.0	30.0	84.0	54.0	46.0
Total Split (%)	35.4%	23.1%	23.1%	64.6%	41.5%	35.4%
Yellow Time (s)	3.6	3.5	3.5	3.6	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.0	5.0	5.1	5.1	5.1
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	C-Min	C-Min	None
v/c Ratio	0.56	0.66	0.09	0.46	0.26	0.03
Control Delay	60.9	35.8	1.7	3.0	2.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	35.8	1.7	3.0	2.8	0.0
Queue Length 50th (ft)	85	139	1	42	31	0
Queue Length 95th (ft)	119	207	m12	167	49	m0
Internal Link Dist (ft)	991			1198	585	
Turn Bay Length (ft)	350	400	425			400
Base Capacity (vph)	1090	609	779	2946	2563	1613
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	0.19	0.46	0.07	0.46	0.26	0.03

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 103 (79%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Frantz Rd & Metro Pl S



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	179	247	48	1190	581	36
Future Volume (veh/h)	179	247	48	1190	581	36
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1885	1900	1900	1900	1900
Adj Flow Rate, veh/h	203	281	55	1352	660	41
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	677	385	599	2626	2319	1347
Arrive On Green	0.19	0.19	0.06	0.97	0.85	0.85
Sat Flow, veh/h	3483	1598	1810	3705	3705	1610
Grp Volume(v), veh/h	203	281	55	1352	660	41
Grp Sat Flow(s),veh/h/ln	1742	1598	1810	1805	1805	1610
Q Serve(g_s), s	6.5	21.1	1.2	3.2	4.6	0.2
Cycle Q Clear(g_c), s	6.5	21.1	1.2	3.2	4.6	0.2
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	677	385	599	2626	2319	1347
V/C Ratio(X)	0.30	0.73	0.09	0.51	0.28	0.03
Avail Cap(c_a), veh/h	1096	577	863	2626	2319	1347
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.95	0.95
Uniform Delay (d), s/veh	44.8	45.5	5.9	0.6	3.7	0.7
Incr Delay (d2), s/veh	0.3	3.4	0.1	0.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	18.2	0.4	0.8	1.5	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	45.1	48.9	6.0	1.4	4.0	0.8
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	484			1407	701	
Approach Delay, s/veh	47.3			1.5	3.8	
Approach LOS	D			A	A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	11.0	88.6		30.4		99.6
Change Period (Y+Rc), s	5.0	5.1		5.1		5.1
Max Green Setting (Gmax), s	25.0	48.9		40.9		78.9
Max Q Clear Time (g_c+I1), s	3.2	6.6		23.1		5.2
Green Ext Time (p_c), s	0.1	10.4		2.2		33.6

Intersection Summary		
HCM 6th Ctrl Delay		10.7
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	15.1

Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Vol, veh/h	16	31	1205	64	37	43	864
Future Vol, veh/h	16	31	1205	64	37	43	864
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-
Veh in Median Storage, #	1	-	0	-	-	-	0
Grade, %	0	-	0	-	-	-	0
Peak Hour Factor	85	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	3	1
Mvmt Flow	19	36	1418	75	44	51	1016

Major/Minor	Minor1		Major1		Major2		
Conflicting Flow All	2154	747	0	0	1493	1493	0
Stage 1	1456	-	-	-	-	-	-
Stage 2	698	-	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	6.4	4.16	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.5	2.23	-
Pot Cap-1 Maneuver	42	360	-	-	163	441	-
Stage 1	184	-	-	-	-	-	-
Stage 2	460	-	-	-	-	-	-
Platoon blocked, %			-	-			-
Mov Cap-1 Maneuver	~ 3	360	-	-	231	231	-
Mov Cap-2 Maneuver	24	-	-	-	-	-	-
Stage 1	184	-	-	-	-	-	-
Stage 2	30	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	193.3	0	26.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	62	231	-
HCM Lane V/C Ratio	-	-	0.892	0.219	-
HCM Control Delay (s)	-	-	193.3	30.8	26.2
HCM Lane LOS	-	-	F	D	D
HCM 95th %tile Q(veh)	-	-	4.2	0.8	-

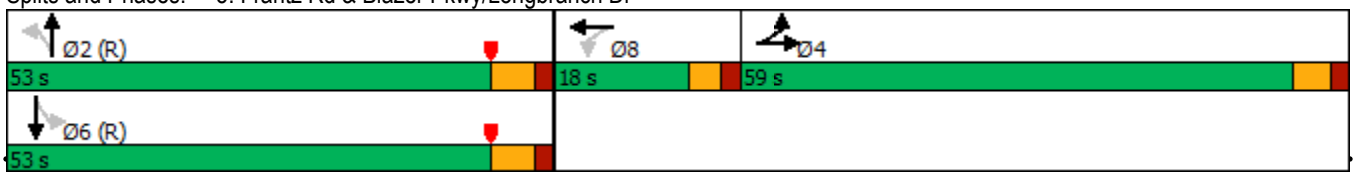
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

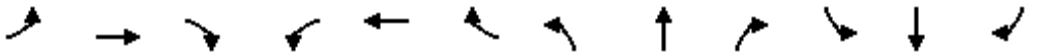
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	456	0	17	0	11	1168	10	1326
Future Volume (vph)	456	0	17	0	11	1168	10	1326
Lane Group Flow (vph)	323	307	0	32	13	1377	12	1582
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4	4		8		2		6
Permitted Phases			8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	8.0	8.0	15.0	15.0	15.0	15.0
Minimum Split (s)	40.0	40.0	15.0	15.0	25.2	25.2	25.2	25.2
Total Split (s)	59.0	59.0	18.0	18.0	53.0	53.0	53.0	53.0
Total Split (%)	45.4%	45.4%	13.8%	13.8%	40.8%	40.8%	40.8%	40.8%
Yellow Time (s)	3.6	3.6	3.0	3.0	4.2	4.2	4.2	4.2
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6		5.0	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.71	0.63		0.23	0.17	0.65	0.10	0.76
Control Delay	51.3	36.9		3.9	26.3	22.9	23.3	29.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	36.9		3.9	26.3	22.9	23.3	29.6
Queue Length 50th (ft)	260	187		0	5	433	6	607
Queue Length 95th (ft)	311	242		0	24	575	m22	#783
Internal Link Dist (ft)		507		671		1105		467
Turn Bay Length (ft)	160				100		50	
Base Capacity (vph)	704	722		178	76	2104	124	2078
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.46	0.43		0.18	0.17	0.65	0.10	0.76

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 37 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 105
Control Type: Actuated-Coordinated
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: 5: Frantz Rd & Blazer Pkwy/Longbranch Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	456	0	86	17	0	10	11	1168	16	10	1326	34
Future Volume (veh/h)	456	0	86	17	0	10	11	1168	16	10	1326	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1885	1885
Adj Flow Rate, veh/h	623	0	0	20	0	12	13	1358	19	12	1542	40
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	1	1
Cap, veh/h	800	420	0	46	0	27	122	2214	31	205	2167	56
Arrive On Green	0.22	0.00	0.00	0.04	0.00	0.04	0.61	0.61	0.61	0.20	0.20	0.20
Sat Flow, veh/h	3619	1900	0	1081	0	648	328	3645	51	400	3567	92
Grp Volume(v), veh/h	623	0	0	32	0	0	13	672	705	12	773	809
Grp Sat Flow(s),veh/h/ln	1810	1900	0	1729	0	0	328	1805	1891	400	1791	1869
Q Serve(g_s), s	21.1	0.0	0.0	2.3	0.0	0.0	4.3	30.3	30.3	3.5	52.3	52.5
Cycle Q Clear(g_c), s	21.1	0.0	0.0	2.3	0.0	0.0	56.8	30.3	30.3	33.8	52.3	52.5
Prop In Lane	1.00		0.00	0.62		0.37	1.00		0.03	1.00		0.05
Lane Grp Cap(c), veh/h	800	420	0	73	0	0	122	1097	1149	205	1088	1135
V/C Ratio(X)	0.78	0.00	0.00	0.44	0.00	0.00	0.11	0.61	0.61	0.06	0.71	0.71
Avail Cap(c_a), veh/h	1487	780	0	173	0	0	122	1097	1149	205	1088	1135
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.63	0.63	0.63	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.6	0.0	0.0	60.8	0.0	0.0	42.9	16.0	16.0	47.3	41.3	41.4
Incr Delay (d2), s/veh	3.5	0.0	0.0	4.1	0.0	0.0	1.1	1.6	1.6	0.5	3.9	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	0.0	0.0	1.1	0.0	0.0	0.4	12.4	12.9	0.4	26.3	27.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.2	0.0	0.0	64.9	0.0	0.0	44.0	17.6	17.5	47.9	45.2	45.2
LnGrp LOS	D	A	A	E	A	A	D	B	B	D	D	D
Approach Vol, veh/h		623			32			1390			1594	
Approach Delay, s/veh		51.2			64.9			17.8			45.2	
Approach LOS		D			E			B			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		85.2		34.3		85.2		10.5				
Change Period (Y+Rc), s		6.2		5.6		6.2		5.0				
Max Green Setting (Gmax), s		46.8		53.4		46.8		13.0				
Max Q Clear Time (g_c+I1), s		58.8		23.1		54.5		4.3				
Green Ext Time (p_c), s		0.0		5.7		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			35.9									
HCM 6th LOS			D									

Notes

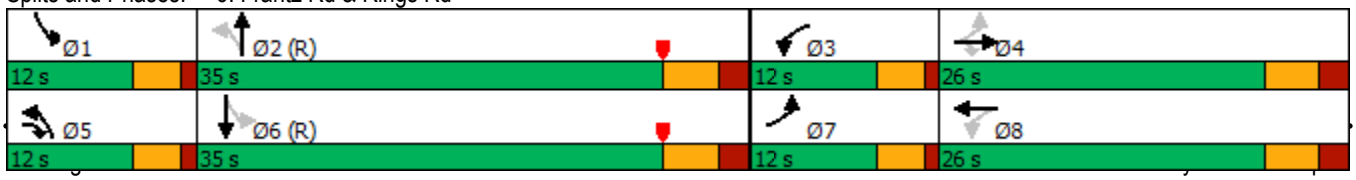
User approved volume balancing among the lanes for turning movement.

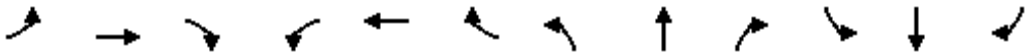
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	331	374	432	77	176	277	738	74	1056
Future Volume (vph)	331	374	432	77	176	277	738	74	1056
Lane Group Flow (vph)	364	411	475	85	290	304	919	81	1450
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8	5	2	1	6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	5	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	7.0	11.0	7.0	7.0	11.0	7.0	12.0	7.0	12.0
Minimum Split (s)	11.0	40.0	11.0	11.0	42.0	11.0	39.0	11.0	41.0
Total Split (s)	12.0	26.0	12.0	12.0	26.0	12.0	35.0	12.0	35.0
Total Split (%)	14.1%	30.6%	14.1%	14.1%	30.6%	14.1%	41.2%	14.1%	41.2%
Yellow Time (s)	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.5	4.0	4.0	5.5	4.0	5.5	4.0	5.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.89	0.87	0.62	0.34	0.35	1.03	0.65	0.27	1.21
Control Delay	48.7	51.1	18.8	20.4	19.0	82.8	24.0	13.4	127.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.7	51.1	18.8	20.4	19.0	82.8	24.0	13.4	127.6
Queue Length 50th (ft)	143	212	148	28	43	~149	215	21	~497
Queue Length 95th (ft)	#290	#378	257	57	77	#309	292	44	#632
Internal Link Dist (ft)		1352			734		584		1105
Turn Bay Length (ft)	140			175		300		200	
Base Capacity (vph)	409	475	766	258	900	295	1424	312	1203
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.87	0.62	0.33	0.32	1.03	0.65	0.26	1.21

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 36 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Frantz Rd & Rings Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	331	374	432	77	176	88	277	738	98	74	1056	264
Future Volume (veh/h)	331	374	432	77	176	88	277	738	98	74	1056	264
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1900	1900	1885	1885	1885	1900	1841	1841
Adj Flow Rate, veh/h	364	411	475	85	193	97	304	811	108	81	1160	290
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	3	0	0	1	1	1	0	4	4
Cap, veh/h	416	458	540	230	516	249	254	1251	167	387	1028	254
Arrive On Green	0.09	0.24	0.24	0.07	0.22	0.22	0.19	0.79	0.79	0.07	0.37	0.37
Sat Flow, veh/h	1810	1900	1610	1767	2361	1139	1795	3177	423	1810	2778	687
Grp Volume(v), veh/h	364	411	475	85	146	144	304	457	462	81	726	724
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1767	1805	1695	1795	1791	1809	1810	1749	1717
Q Serve(g_s), s	8.0	17.8	20.5	3.1	5.8	6.2	8.0	9.4	9.4	2.2	31.4	31.4
Cycle Q Clear(g_c), s	8.0	17.8	20.5	3.1	5.8	6.2	8.0	9.4	9.4	2.2	31.4	31.4
Prop In Lane	1.00		1.00	1.00		0.67	1.00		0.23	1.00		0.40
Lane Grp Cap(c), veh/h	416	458	540	230	394	370	254	705	712	387	647	635
V/C Ratio(X)	0.87	0.90	0.88	0.37	0.37	0.39	1.20	0.65	0.65	0.21	1.12	1.14
Avail Cap(c_a), veh/h	416	458	540	271	435	409	254	705	712	430	647	635
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.56	0.56	0.56
Uniform Delay (d), s/veh	29.2	31.2	26.6	24.2	28.2	28.4	18.1	6.5	6.5	14.3	26.8	26.8
Incr Delay (d2), s/veh	18.1	20.0	15.4	0.7	0.6	0.7	120.9	4.6	4.5	0.1	66.7	74.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	10.3	10.8	1.3	2.5	2.5	11.0	2.9	2.9	0.9	24.1	24.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.3	51.2	42.1	25.0	28.8	29.1	139.0	11.0	11.0	14.4	93.5	100.9
LnGrp LOS	D	D	D	C	C	C	F	B	B	B	F	F
Approach Vol, veh/h		1250			375			1223			1531	
Approach Delay, s/veh		46.6			28.0			42.8			92.8	
Approach LOS		D			C			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	39.0	10.1	26.0	12.0	36.9	12.0	24.1
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	8.0	29.5	8.0	20.5	8.0	29.5	8.0	20.5
Max Q Clear Time (g_c+I1), s	4.2	11.4	5.1	22.5	10.0	33.4	10.0	8.2
Green Ext Time (p_c), s	0.0	6.6	0.0	0.0	0.0	0.0	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	60.1
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	6	20	0	28	2	1149	12	7	1563	1
Future Vol, veh/h	0	0	6	20	0	28	2	1149	12	7	1563	1
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	-	-	-	-	-	-	50	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	0	0	6	22	0	30	2	1235	13	8	1681	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2320	2950	841	2103	2944	624	1682	0	0	1248	0	0
Stage 1	1698	1698	-	1246	1246	-	-	-	-	-	-	-
Stage 2	622	1252	-	857	1698	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	21	15	312	30	15	433	386	-	-	565	-	-
Stage 1	98	150	-	187	248	-	-	-	-	-	-	-
Stage 2	446	246	-	323	150	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	19	15	312	29	15	433	386	-	-	565	-	-
Mov Cap-2 Maneuver	19	15	-	29	15	-	-	-	-	-	-	-
Stage 1	98	148	-	186	247	-	-	-	-	-	-	-
Stage 2	413	245	-	312	148	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.8	167.1	0	0.1
HCM LOS	C	F		

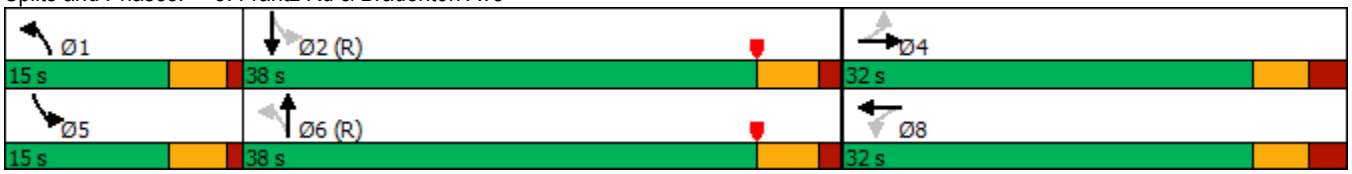
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	386	-	-	312	64	565	-	-
HCM Lane V/C Ratio	0.006	-	-	0.021	0.806	0.013	-	-
HCM Control Delay (s)	14.4	-	-	16.8	167.1	11.5	-	-
HCM Lane LOS	B	-	-	C	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	3.7	0	-	-

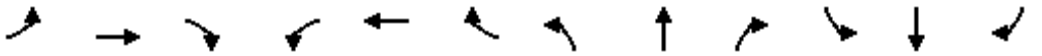
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	131	8	40	10	10	875	49	1291
Future Volume (vph)	131	8	40	10	10	875	49	1291
Lane Group Flow (vph)	158	62	0	123	12	1091	59	1596
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0	15.0	7.0	15.0
Minimum Split (s)	32.0	32.0	35.0	35.0	12.0	30.0	12.0	34.0
Total Split (s)	32.0	32.0	32.0	32.0	15.0	38.0	15.0	38.0
Total Split (%)	37.6%	37.6%	37.6%	37.6%	17.6%	44.7%	17.6%	44.7%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	4.0	3.6	4.0
All-Red Time (s)	2.5	2.5	2.5	2.5	1.0	1.5	1.0	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	4.6	5.5	4.6	5.5
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.55	0.20		0.40	0.02	0.57	0.19	0.75
Control Delay	40.5	30.8		26.3	7.3	16.8	7.2	15.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	40.5	30.8		26.3	7.3	16.8	7.2	15.6
Queue Length 50th (ft)	83	30		45	2	214	11	277
Queue Length 95th (ft)	121	55		79	m6	292	m15	m391
Internal Link Dist (ft)		353		381		797		718
Turn Bay Length (ft)	200				145		145	
Base Capacity (vph)	482	515		488	562	1917	366	2115
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.33	0.12		0.25	0.02	0.57	0.16	0.75

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 90
Offset: 12 (14%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Frantz Rd & Bradenton Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	8	43	40	10	52	10	875	31	49	1291	34
Future Volume (veh/h)	131	8	43	40	10	52	10	875	31	49	1291	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	158	10	52	48	12	63	12	1054	37	59	1555	41
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	280	39	202	125	46	118	217	2140	75	374	2311	61
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.01	0.20	0.20	0.04	0.43	0.43
Sat Flow, veh/h	1346	266	1385	456	312	806	1810	3558	125	1810	3593	95
Grp Volume(v), veh/h	158	0	62	123	0	0	12	535	556	59	780	816
Grp Sat Flow(s),veh/h/ln	1346	0	1651	1574	0	0	1810	1805	1878	1810	1805	1883
Q Serve(g_s), s	3.8	0.0	2.8	3.0	0.0	0.0	0.2	22.4	22.4	0.9	29.4	29.6
Cycle Q Clear(g_c), s	9.7	0.0	2.8	5.9	0.0	0.0	0.2	22.4	22.4	0.9	29.4	29.6
Prop In Lane	1.00		0.84	0.39		0.51	1.00		0.07	1.00		0.05
Lane Grp Cap(c), veh/h	280	0	241	289	0	0	217	1086	1129	374	1161	1211
V/C Ratio(X)	0.56	0.00	0.26	0.43	0.00	0.00	0.06	0.49	0.49	0.16	0.67	0.67
Avail Cap(c_a), veh/h	494	0	503	531	0	0	402	1086	1129	484	1161	1211
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.2	0.0	32.2	33.4	0.0	0.0	10.4	22.5	22.5	8.4	17.0	17.0
Incr Delay (d2), s/veh	1.8	0.0	0.6	1.0	0.0	0.0	0.1	1.6	1.5	0.2	3.1	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	1.2	2.4	0.0	0.0	0.1	11.1	11.5	0.3	13.5	14.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.9	0.0	32.8	34.4	0.0	0.0	10.5	24.1	24.1	8.6	20.1	20.1
LnGrp LOS	D	A	C	C	A	A	B	C	C	A	C	C
Approach Vol, veh/h		220			123			1103			1655	
Approach Delay, s/veh		35.8			34.4			24.0			19.7	
Approach LOS		D			C			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	60.2		18.5	9.9	56.6		18.5				
Change Period (Y+Rc), s	4.6	5.5		6.1	4.6	5.5		6.1				
Max Green Setting (Gmax), s	10.4	32.5		25.9	10.4	32.5		25.9				
Max Q Clear Time (g_c+I1), s	2.2	31.6		11.7	2.9	24.4		7.9				
Green Ext Time (p_c), s	0.0	0.9		0.7	0.1	5.9		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			22.9									
HCM 6th LOS			C									

Intersection	
Int Delay, s/veh	196.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	92	0	360	10	0	8	108	869	1	2	1410	68
Future Vol, veh/h	92	0	360	10	0	8	108	869	1	2	1410	68
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	75	-	-	-	-	-	200	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	11	1	0	0	0	0
Mvmt Flow	110	0	429	12	0	10	129	1035	1	2	1679	81

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2500	3018	880	2138	3058	518	1760	0	0	1036	0	0
Stage 1	1724	1724	-	1294	1294	-	-	-	-	-	-	-
Stage 2	776	1294	-	844	1764	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.32	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.31	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 15	13	~ 294	28	13	508	315	-	-	679	-	-
Stage 1	~ 94	145	-	175	235	-	-	-	-	-	-	-
Stage 2	361	235	-	328	139	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 10	8	~ 294	-	8	508	315	-	-	679	-	-
Mov Cap-2 Maneuver	~ 10	8	-	-	8	-	-	-	-	-	-	-
Stage 1	~ 55	145	-	103	139	-	-	-	-	-	-	-
Stage 2	209	139	-	-	139	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	1264.9		2.7	0
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	315	-	-	10	294	-	679	-	-
HCM Lane V/C Ratio	0.408	-	-	10.952	1.458	-	0.004	-	-
HCM Control Delay (s)	24.1	-	-	$ 5209.8	256.8	-	10.3	-	-
HCM Lane LOS	C	-	-	F	F	-	B	-	-
HCM 95th %tile Q(veh)	1.9	-	-	15.2	23.6	-	0	-	-

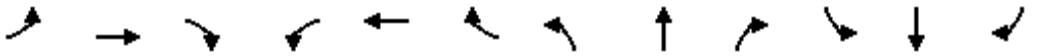
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	210	95	512	45	145	390	666	6	1253	320
Future Volume (vph)	210	95	512	45	145	390	666	6	1253	320
Lane Group Flow (vph)	231	104	563	49	186	429	750	7	1377	352
Turn Type	pm+pt	NA	pm+ov	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	5		8	5	2	1	6	
Permitted Phases	4		4	8						6
Detector Phase	7	4	5	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	13.1	39.0	13.5	40.8	40.8	13.5	30.5	13.2	39.8	39.8
Total Split (s)	15.0	35.0	19.0	20.0	20.0	19.0	38.0	12.0	31.0	31.0
Total Split (%)	17.6%	41.2%	22.4%	23.5%	23.5%	22.4%	44.7%	14.1%	36.5%	36.5%
Yellow Time (s)	3.9	4.8	3.2	4.8	4.8	3.2	4.1	3.2	4.1	4.1
All-Red Time (s)	2.2	2.2	3.0	2.2	2.2	3.0	1.3	3.0	1.3	1.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	7.0	6.2	7.0	7.0	6.2	5.4	6.2	5.4	5.4
Lead/Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	None	C-Max	C-Max
v/c Ratio	0.66	0.17	0.36	0.26	0.69	0.83	0.42	0.06	1.25	0.49
Control Delay	32.3	21.4	10.5	36.0	47.4	50.6	15.0	38.2	146.3	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.3	21.4	10.5	36.0	47.4	50.6	15.0	38.2	146.3	6.1
Queue Length 50th (ft)	92	39	80	23	90	116	119	4	~497	11
Queue Length 95th (ft)	154	76	116	56	#170	#192	216	m8	#626	m73
Internal Link Dist (ft)		1368			1219		1103		587	
Turn Bay Length (ft)	525		475	200		500		175		
Base Capacity (vph)	349	625	1576	200	288	519	1790	123	1105	722
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.17	0.36	0.24	0.65	0.83	0.42	0.06	1.25	0.49

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
~ 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: 10: Frantz Rd & Tuttle Crossing Blvd/Tuttle Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	95	512	45	145	25	390	666	16	6	1253	320
Future Volume (veh/h)	210	95	512	45	145	25	390	666	16	6	1253	320
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1900	1885	1885	1841	1870	1870	1900	1885	1900
Adj Flow Rate, veh/h	231	104	563	49	159	27	429	732	18	7	1377	352
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	1	0	1	1	4	2	2	0	1	0
Cap, veh/h	307	574	1264	183	198	34	501	1665	41	16	1187	534
Arrive On Green	0.10	0.30	0.30	0.13	0.13	0.13	0.15	0.47	0.47	0.01	0.44	0.44
Sat Flow, veh/h	1810	1900	2812	782	1570	267	3401	3544	87	1810	3582	1610
Grp Volume(v), veh/h	231	104	563	49	0	186	429	367	383	7	1377	352
Grp Sat Flow(s),veh/h/ln	1810	1900	1406	782	0	1837	1700	1777	1855	1810	1791	1610
Q Serve(g_s), s	8.9	3.4	11.7	5.0	0.0	8.4	10.5	11.7	11.7	0.3	28.2	14.6
Cycle Q Clear(g_c), s	8.9	3.4	11.7	5.0	0.0	8.4	10.5	11.7	11.7	0.3	28.2	14.6
Prop In Lane	1.00		1.00	1.00		0.15	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	307	574	1264	183	0	231	501	835	871	16	1187	534
V/C Ratio(X)	0.75	0.18	0.45	0.27	0.00	0.80	0.86	0.44	0.44	0.43	1.16	0.66
Avail Cap(c_a), veh/h	307	626	1341	204	0	281	512	835	871	123	1187	534
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.3	21.9	16.1	34.6	0.0	36.1	35.4	15.1	15.1	41.8	23.8	20.0
Incr Delay (d2), s/veh	9.9	0.1	0.2	0.8	0.0	13.1	13.2	1.7	1.6	17.1	81.6	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	1.4	3.7	1.0	0.0	4.6	5.1	4.7	4.9	0.2	23.1	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	22.0	16.3	35.4	0.0	49.2	48.6	16.7	16.7	58.9	105.4	26.3
LnGrp LOS	D	C	B	D	A	D	D	B	B	E	F	C
Approach Vol, veh/h		898			235			1179			1736	
Approach Delay, s/veh		22.6			46.4			28.3			89.1	
Approach LOS		C			D			C			F	

Timer - Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	45.3		32.7	18.7	33.6	15.0	17.7
Change Period (Y+Rc), s	* 6.2	* 5.4		* 7	* 6.2	* 5.4	* 6.1	* 7
Max Green Setting (Gmax), s	* 5.8	* 33		* 28	* 13	* 26	* 8.9	* 13
Max Q Clear Time (g_c+I1), s	2.3	13.7		13.7	12.5	30.2	10.9	10.4
Green Ext Time (p_c), s	0.0	4.4		2.5	0.1	0.0	0.0	0.3

Intersection Summary		
HCM 6th Ctrl Delay		54.2
HCM 6th LOS		D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Capacity Analysis Results and Synchro Output

Design Year 2040 Traffic Volumes

[Build Alternative 6]

Notes:

Alternatives 5 and 6 reflect the same capacity analysis

Analysis results provided for signalized intersections only

Lane reduction does not apply to:

01 – Frantz Rd & US 33/W Bridge St

10 – Frantz Rd & Tuttle Crossing Blvd/Tuttle Rd

Alternative 6 (NB 1-ln) - 2040 AM Peak Hour

No.	Intersection	LOS	Delay (sec/veh)	Critical v/c
2	Frantz Rd & Metro Pl N/Corbins Mill Dr	A	9.6	0.77
3	Frantz Rd & Metro Pl S	A	2.2	0.44
5	Frantz Rd & Blazer Pkwy/Longbranch Dr	A	7.1	0.84
6	Frantz Rd & Rings Rd	D	38.5	1.09
8	Frantz Rd & Bradenton Ave	C	31.1	1.05

XXX *indicates value exceeds threshold for acceptable operations*

Alternative 6 (NB 1-ln) - 2040 PM Peak Hour

No.	Intersection	LOS	Delay (sec/veh)	Critical v/c
2	Frantz Rd & Metro Pl N/Corbins Mill Dr	F	85.2	1.29
3	Frantz Rd & Metro Pl S	C	20.2	0.98
5	Frantz Rd & Blazer Pkwy/Longbranch Dr	E	72.8	1.20
6	Frantz Rd & Rings Rd	F	87.0	1.26
8	Frantz Rd & Bradenton Ave	C	26.9	0.96

XXX *indicates value exceeds threshold for acceptable operations*

Alternative 6 (SB 1-ln) - 2040 AM Peak Hour

No.	Intersection	LOS	Delay (sec/veh)	Critical v/c
2	Frantz Rd & Metro Pl N/Corbins Mill Dr	C	29.0	0.95
3	Frantz Rd & Metro Pl S	A	2.0	0.74
5	Frantz Rd & Blazer Pkwy/Longbranch Dr	C	32.8	1.08
6	Frantz Rd & Rings Rd	E	61.5	1.24
8	Frantz Rd & Bradenton Ave	B	12.2	0.62

XXX *indicates value exceeds threshold for acceptable operations*

Alternative 6 (SB 1-ln) - 2040 PM Peak Hour

No.	Intersection	LOS	Delay (sec/veh)	Critical v/c
2	Frantz Rd & Metro Pl N/Corbins Mill Dr	C	23.3	0.94
3	Frantz Rd & Metro Pl S	B	10.0	0.73
5	Frantz Rd & Blazer Pkwy/Longbranch Dr	F	105.6	1.39
6	Frantz Rd & Rings Rd	F	216.7	2.21
8	Frantz Rd & Bradenton Ave	F	91.2	1.31

XXX *indicates value exceeds threshold for acceptable operations*

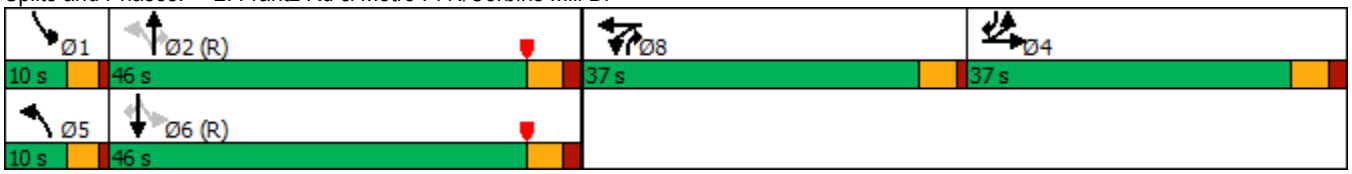
Note: Analysis is provided for signalized intersections only (excludes No. 1 and 10)
Results reflect overall intersection operations.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	55	17	118	72	50	437	65	22	1140	500
Future Volume (vph)	55	17	118	72	50	437	65	22	1140	500
Lane Group Flow (vph)	46	45	124	94	53	460	68	23	1200	526
Turn Type	Split	NA	Split	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	4	4	8	8	5	2	8	1	6	4
Permitted Phases					2		2	6		6
Detector Phase	4	4	8	8	5	2	8	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	7.0
Minimum Split (s)	38.0	38.0	37.0	37.0	10.0	35.0	37.0	10.0	35.0	38.0
Total Split (s)	37.0	37.0	37.0	37.0	10.0	46.0	37.0	10.0	46.0	37.0
Total Split (%)	28.5%	28.5%	28.5%	28.5%	7.7%	35.4%	28.5%	7.7%	35.4%	28.5%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	2.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	4.6	4.6	4.0	5.6	4.6	4.0	5.6	5.6
Lead/Lag					Lead	Lag		Lead	Lag	
Lead-Lag Optimize?					Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	C-Min	None	None	C-Min	None
v/c Ratio	0.32	0.29	0.62	0.44	0.18	0.39	0.06	0.04	0.55	0.42
Control Delay	60.7	44.3	68.0	54.0	9.4	15.6	2.3	8.3	17.1	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.7	44.3	68.0	54.0	9.4	15.6	2.3	8.3	17.1	1.7
Queue Length 50th (ft)	40	25	102	68	10	185	3	5	295	27
Queue Length 95th (ft)	78	64	160	118	33	329	17	m9	m356	m15
Internal Link Dist (ft)		984		630		585			1271	
Turn Bay Length (ft)			225		125		175	100		185
Base Capacity (vph)	414	420	441	459	293	1182	1279	602	2195	1382
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.11	0.28	0.20	0.18	0.39	0.05	0.04	0.55	0.38

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 71 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 130
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Frantz Rd & Metro Pl N/Corbins Mill Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	17	14	118	72	17	50	437	65	22	1140	500
Future Volume (veh/h)	55	17	14	118	72	17	50	437	65	22	1140	500
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1900	1870	1663	1900	1885	1900
Adj Flow Rate, veh/h	46	35	15	124	76	18	53	460	68	23	1200	526
Peak Hour 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
Percent Heavy Veh, %	0	0	0	2	2	2	0	2	16	0	1	0
Cap, veh/h	94	66	28	160	131	31	289	1279	1090	693	2410	1167
Arrive On Green	0.05	0.05	0.05	0.09	0.09	0.09	0.07	1.00	1.00	0.03	0.89	0.89
Sat Flow, veh/h	1810	1262	541	1781	1462	346	1810	1870	1409	1810	3582	1610
Grp Volume(v), veh/h	46	0	50	124	0	94	53	460	68	23	1200	526
Grp Sat Flow(s),veh/h/ln	1810	0	1803	1781	0	1808	1810	1870	1409	1810	1791	1610
Q Serve(g_s), s	3.2	0.0	3.5	8.9	0.0	6.5	1.2	0.0	0.0	0.5	8.3	6.6
Cycle Q Clear(g_c), s	3.2	0.0	3.5	8.9	0.0	6.5	1.2	0.0	0.0	0.5	8.3	6.6
Prop In Lane	1.00		0.30	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	94	0	94	160	0	163	289	1279	1090	693	2410	1167
V/C Ratio(X)	0.49	0.00	0.53	0.77	0.00	0.58	0.18	0.36	0.06	0.03	0.50	0.45
Avail Cap(c_a), veh/h	437	0	435	444	0	451	313	1279	1090	737	2410	1167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.95	0.95	0.95	0.29	0.29	0.29
Uniform Delay (d), s/veh	59.9	0.0	60.1	57.9	0.0	56.8	5.9	0.0	0.0	6.1	2.7	1.9
Incr Delay (d2), s/veh	3.9	0.0	4.6	7.7	0.0	3.2	0.3	0.7	0.1	0.0	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	1.7	4.4	0.0	3.1	0.4	0.3	0.0	0.2	2.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.8	0.0	64.7	65.6	0.0	60.0	6.2	0.7	0.1	6.1	2.9	2.2
LnGrp LOS	E	A	E	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		96			218			581			1749	
Approach Delay, s/veh		64.2			63.2			1.2			2.7	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	94.5		12.4	8.3	93.1		16.3				
Change Period (Y+Rc), s	4.0	5.6		5.6	4.0	5.6		4.6				
Max Green Setting (Gmax), s	6.0	40.4		31.4	6.0	40.4		32.4				
Max Q Clear Time (g_c+I1), s	2.5	2.0		5.5	3.2	10.3		10.9				
Green Ext Time (p_c), s	0.0	3.3		0.3	0.0	13.4		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		9.6	
HCM 6th LOS		A	

Notes

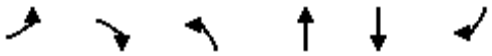
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	28	204	529	1020	208
Future Volume (vph)	29	28	204	529	1020	208
Lane Group Flow (vph)	30	29	213	551	1063	217
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	1	1	6	2	4
Permitted Phases		4	6			2
Detector Phase	4	1	1	6	2	4
Switch Phase						
Minimum Initial (s)	10.0	7.0	7.0	20.0	20.0	10.0
Minimum Split (s)	37.0	12.0	12.0	26.0	42.0	37.0
Total Split (s)	42.0	24.0	24.0	88.0	64.0	42.0
Total Split (%)	32.3%	18.5%	18.5%	67.7%	49.2%	32.3%
Yellow Time (s)	3.6	3.5	3.5	3.6	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.0	5.0	5.1	5.1	5.1
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	C-Min	C-Min	None
v/c Ratio	0.12	0.08	0.43	0.36	0.42	0.16
Control Delay	57.1	12.9	4.2	3.4	4.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0
Total Delay	57.1	12.9	4.2	3.4	4.8	0.3
Queue Length 50th (ft)	12	0	23	76	100	1
Queue Length 95th (ft)	28	25	m45	175	58	1
Internal Link Dist (ft)	991			1198	585	
Turn Bay Length (ft)	350	400	425			400
Base Capacity (vph)	955	428	552	1543	2515	1612
Starvation Cap Reductn	0	0	0	0	247	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.07	0.39	0.36	0.47	0.13

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 95 (73%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Frantz Rd & Metro Pl S



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	28	204	529	1020	208
Future Volume (veh/h)	29	28	204	529	1020	208
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1841	1885	1841	1885	1900
Adj Flow Rate, veh/h	30	29	212	551	1062	217
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	1	4	1	0
Cap, veh/h	231	190	484	1572	2727	1335
Arrive On Green	0.07	0.07	0.11	1.00	1.00	1.00
Sat Flow, veh/h	3401	1560	1795	1841	3676	1610
Grp Volume(v), veh/h	30	29	212	551	1062	217
Grp Sat Flow(s),veh/h/ln	1700	1560	1795	1841	1791	1610
Q Serve(g_s), s	1.1	2.2	3.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	2.2	3.2	0.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	231	190	484	1572	2727	1335
V/C Ratio(X)	0.13	0.15	0.44	0.35	0.39	0.16
Avail Cap(c_a), veh/h	965	527	650	1572	2727	1335
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.81	0.81
Uniform Delay (d), s/veh	57.0	51.1	2.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.5	0.8	0.6	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	2.0	0.8	0.3	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	57.3	51.6	2.8	0.6	0.3	0.2
LnGrp LOS	E	D	A	A	A	A
Approach Vol, veh/h	59			763	1279	
Approach Delay, s/veh	54.5			1.2	0.3	
Approach LOS	D			A	A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.0	104.1		13.9		116.1
Change Period (Y+Rc), s	5.0	5.1		5.1		5.1
Max Green Setting (Gmax), s	19.0	58.9		36.9		82.9
Max Q Clear Time (g_c+I1), s	5.2	2.0		4.2		2.0
Green Ext Time (p_c), s	0.7	24.5		0.2		8.9

Intersection Summary	
HCM 6th Ctrl Delay	2.2
HCM 6th LOS	A

Notes

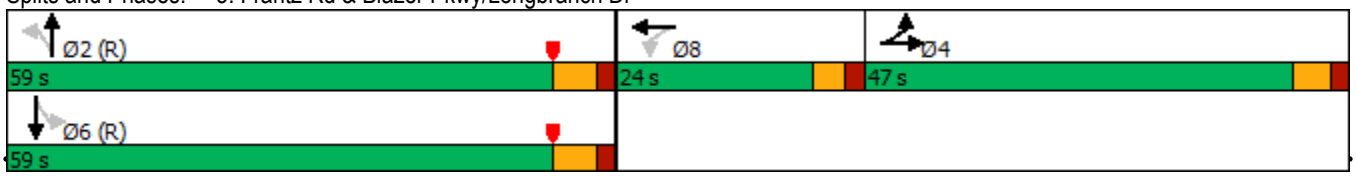
User approved pedestrian interval to be less than phase max green.

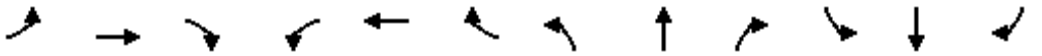
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	40	1	6	0	73	1104	2	816
Future Volume (vph)	40	1	6	0	73	1104	2	816
Lane Group Flow (vph)	29	27	0	18	80	1213	2	1449
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4	4		8		2		6
Permitted Phases			8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	8.0	8.0	15.0	15.0	15.0	15.0
Minimum Split (s)	40.0	40.0	15.0	15.0	25.2	25.2	25.2	25.2
Total Split (s)	47.0	47.0	24.0	24.0	59.0	59.0	59.0	59.0
Total Split (%)	36.2%	36.2%	18.5%	18.5%	45.4%	45.4%	45.4%	45.4%
Yellow Time (s)	3.6	3.6	3.0	3.0	4.2	4.2	4.2	4.2
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6		5.0	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.22	0.20		0.11	0.33	0.79	0.01	0.52
Control Delay	59.7	41.6		1.4	10.0	15.1	8.5	7.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	41.6		1.4	10.0	15.1	8.5	7.7
Queue Length 50th (ft)	24	13		0	12	383	0	161
Queue Length 95th (ft)	57	45		0	59	#1226	m2	376
Internal Link Dist (ft)		507		671		1105		467
Turn Bay Length (ft)	160				100		50	
Base Capacity (vph)	500	483		284	242	1527	181	2769
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.06	0.06		0.06	0.33	0.79	0.01	0.52

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 77 (59%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
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: 5: Frantz Rd & Blazer Pkwy/Longbranch Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1	10	6	0	10	73	1104	0	2	816	502
Future Volume (veh/h)	40	1	10	6	0	10	73	1104	0	2	816	502
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1900	1900	1900	1900	1900	1900	1870	1870	1900	1870	1870
Adj Flow Rate, veh/h	28	23	11	7	0	11	80	1213	0	2	897	552
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	9	0	0	0	0	0	0	2	2	0	2	2
Cap, veh/h	116	83	40	19	0	30	344	1445	0	221	1650	990
Arrive On Green	0.07	0.07	0.07	0.03	0.00	0.03	0.77	0.77	0.00	1.00	1.00	1.00
Sat Flow, veh/h	1682	1215	581	654	0	1028	373	1870	0	468	2135	1282
Grp Volume(v), veh/h	28	0	34	18	0	0	80	1213	0	2	743	706
Grp Sat Flow(s),veh/h/ln	1682	0	1795	1682	0	0	373	1870	0	468	1777	1640
Q Serve(g_s), s	2.0	0.0	2.3	1.4	0.0	0.0	8.1	54.5	0.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	2.0	0.0	2.3	1.4	0.0	0.0	8.1	54.5	0.0	54.8	0.0	0.0
Prop In Lane	1.00		0.32	0.39		0.61	1.00		0.00	1.00		0.78
Lane Grp Cap(c), veh/h	116	0	123	49	0	0	344	1445	0	221	1373	1267
V/C Ratio(X)	0.24	0.00	0.28	0.36	0.00	0.00	0.23	0.84	0.00	0.01	0.54	0.56
Avail Cap(c_a), veh/h	536	0	572	246	0	0	344	1445	0	221	1373	1267
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.09	0.09	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	0.0	57.5	61.9	0.0	0.0	4.3	9.6	0.0	14.9	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.0	2.5	4.4	0.0	0.0	0.1	0.6	0.0	0.1	1.5	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.1	0.6	0.0	0.0	0.5	17.9	0.0	0.0	0.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.6	0.0	60.0	66.3	0.0	0.0	4.4	10.1	0.0	15.0	1.5	1.8
LnGrp LOS	E	A	E	E	A	A	A	B	A	B	A	A
Approach Vol, veh/h		62			18			1293			1451	
Approach Delay, s/veh		59.8			66.3			9.8			1.7	
Approach LOS		E			E			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		106.6		14.5		106.6		8.8				
Change Period (Y+Rc), s		6.2		5.6		6.2		5.0				
Max Green Setting (Gmax), s		52.8		41.4		52.8		19.0				
Max Q Clear Time (g_c+I1), s		56.5		4.3		56.8		3.4				
Green Ext Time (p_c), s		0.0		0.5		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			7.1									
HCM 6th LOS			A									

Notes

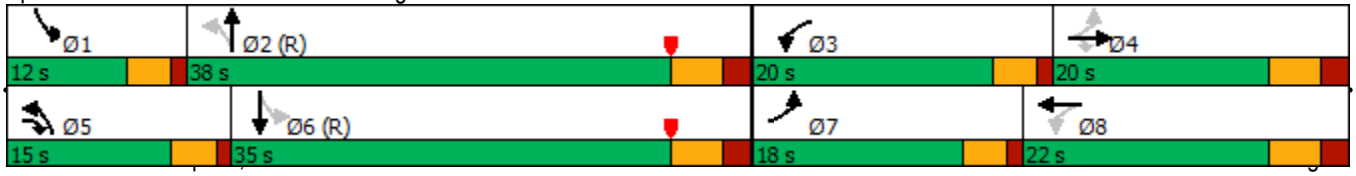
User approved volume balancing among the lanes for turning movement.

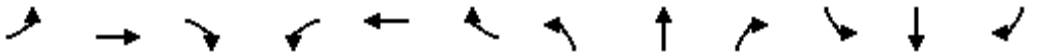
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	173	101	193	124	344	363	915	45	549
Future Volume (vph)	173	101	193	124	344	363	915	45	549
Lane Group Flow (vph)	177	103	197	127	420	370	977	46	852
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8	5	2	1	6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	5	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	7.0	11.0	7.0	7.0	11.0	7.0	12.0	7.0	12.0
Minimum Split (s)	11.0	40.0	11.0	11.0	42.0	11.0	39.0	11.0	41.0
Total Split (s)	18.0	20.0	15.0	20.0	22.0	15.0	38.0	12.0	35.0
Total Split (%)	20.0%	22.2%	16.7%	22.2%	24.4%	16.7%	42.2%	13.3%	38.9%
Yellow Time (s)	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.5	4.0	4.0	5.5	4.0	5.5	4.0	5.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.52	0.26	0.25	0.30	0.71	0.93	1.14	0.20	0.73
Control Delay	25.8	32.2	3.7	21.2	40.8	42.4	94.5	13.2	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	32.2	3.7	21.2	40.8	42.4	94.5	13.2	27.3
Queue Length 50th (ft)	69	50	0	48	112	135	~745	12	194
Queue Length 95th (ft)	113	96	41	84	161	m#225	m#844	29	264
Internal Link Dist (ft)		1352			734		584		1105
Turn Bay Length (ft)	140			175		300		200	
Base Capacity (vph)	372	390	795	541	656	396	860	251	1172
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.26	0.25	0.23	0.64	0.93	1.14	0.18	0.73

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 8 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 135
Control Type: Actuated-Coordinated
~ 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: 6: Frantz Rd & Rings Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	101	193	124	344	68	363	915	42	45	549	286
Future Volume (veh/h)	173	101	193	124	344	68	363	915	42	45	549	286
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1841	1841	1900	1900	1900	1870	1870	1870	1900	1856	1856
Adj Flow Rate, veh/h	177	103	197	127	351	69	370	934	43	46	560	292
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	4	4	0	0	0	2	2	2	0	3	3
Cap, veh/h	297	318	460	385	441	86	440	859	40	176	930	484
Arrive On Green	0.11	0.17	0.17	0.08	0.15	0.15	0.24	0.97	0.97	0.05	0.42	0.42
Sat Flow, veh/h	1767	1841	1560	1810	3013	586	1781	1774	82	1810	2241	1167
Grp Volume(v), veh/h	177	103	197	127	209	211	370	0	977	46	440	412
Grp Sat Flow(s),veh/h/ln	1767	1841	1560	1810	1805	1795	1781	0	1856	1810	1763	1645
Q Serve(g_s), s	7.5	4.4	9.2	5.3	10.0	10.3	11.0	0.0	43.6	1.2	17.5	17.6
Cycle Q Clear(g_c), s	7.5	4.4	9.2	5.3	10.0	10.3	11.0	0.0	43.6	1.2	17.5	17.6
Prop In Lane	1.00		1.00	1.00		0.33	1.00		0.04	1.00		0.71
Lane Grp Cap(c), veh/h	297	318	460	385	264	263	440	0	898	176	732	683
V/C Ratio(X)	0.60	0.32	0.43	0.33	0.79	0.80	0.84	0.00	1.09	0.26	0.60	0.60
Avail Cap(c_a), veh/h	386	318	460	564	331	329	440	0	898	241	732	683
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.84	0.84	0.84
Uniform Delay (d), s/veh	28.5	32.6	25.6	29.1	37.1	37.2	14.8	0.0	1.4	20.8	20.5	20.5
Incr Delay (d2), s/veh	1.4	0.6	0.6	0.4	9.8	11.0	13.4	0.0	56.7	0.5	3.1	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	2.0	3.3	2.3	5.0	5.2	4.7	0.0	14.7	0.5	7.4	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.9	33.2	26.2	29.5	46.9	48.2	28.1	0.0	58.2	21.3	23.6	23.8
LnGrp LOS	C	C	C	C	D	D	C	A	F	C	C	C
Approach Vol, veh/h		477			547			1347			898	
Approach Delay, s/veh		29.1			43.3			49.9			23.6	
Approach LOS		C			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	49.1	11.1	21.1	15.0	42.9	13.5	18.7
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	8.0	32.5	16.0	14.5	11.0	29.5	14.0	16.5
Max Q Clear Time (g_c+I1), s	3.2	45.6	7.3	11.2	13.0	19.6	9.5	12.3
Green Ext Time (p_c), s	0.0	0.0	0.1	0.4	0.0	4.4	0.1	0.9

Intersection Summary	
HCM 6th Ctrl Delay	38.5
HCM 6th LOS	D

Notes

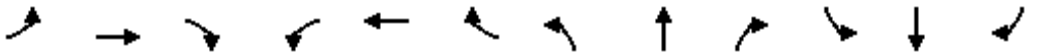
User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	48	3	13	11	34	1198	32	576
Future Volume (vph)	48	3	13	11	34	1198	32	576
Lane Group Flow (vph)	51	5	0	61	36	1315	34	743
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0	15.0	7.0	15.0
Minimum Split (s)	32.0	32.0	35.0	35.0	12.0	30.0	12.0	34.0
Total Split (s)	32.0	32.0	32.0	32.0	20.0	38.0	20.0	38.0
Total Split (%)	35.6%	35.6%	35.6%	35.6%	22.2%	42.2%	22.2%	42.2%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	4.0	3.6	4.0
All-Red Time (s)	2.5	2.5	2.5	2.5	1.0	1.5	1.0	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	4.6	5.5	4.6	5.5
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.26	0.02		0.28	0.06	0.97	0.15	0.30
Control Delay	39.2	29.2		22.4	2.5	31.9	4.7	3.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	29.2		22.4	2.5	31.9	4.7	3.1
Queue Length 50th (ft)	27	2		14	3	~877	2	33
Queue Length 95th (ft)	60	12		49	m7	m#1054	m6	58
Internal Link Dist (ft)		353		381		797		718
Turn Bay Length (ft)	200				145		145	
Base Capacity (vph)	482	515		488	730	1354	376	2470
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.11	0.01		0.13	0.05	0.97	0.09	0.30

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 55.5 (62%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ 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: 8: Frantz Rd & Bradenton Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	3	2	13	11	33	34	1198	39	32	576	122
Future Volume (veh/h)	48	3	2	13	11	33	34	1198	39	32	576	122
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1900	1900	1900	1900	1900	1885	1885	1856	1841	1841
Adj Flow Rate, veh/h	51	3	2	14	12	35	36	1274	41	34	613	130
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	0	0	0	0	0	0	1	1	3	4	4
Cap, veh/h	234	112	75	71	52	100	520	1217	39	168	1921	406
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.09	1.00	1.00	0.01	0.22	0.22
Sat Flow, veh/h	1337	1063	709	211	496	952	1810	1816	58	1767	2872	608
Grp Volume(v), veh/h	51	0	5	61	0	0	36	0	1315	34	373	370
Grp Sat Flow(s),veh/h/ln	1337	0	1772	1660	0	0	1810	0	1875	1767	1749	1731
Q Serve(g_s), s	0.0	0.0	0.2	0.0	0.0	0.0	0.5	0.0	58.4	0.5	16.1	16.1
Cycle Q Clear(g_c), s	2.4	0.0	0.2	3.0	0.0	0.0	0.5	0.0	58.4	0.5	16.1	16.1
Prop In Lane	1.00		0.40	0.23		0.57	1.00		0.03	1.00		0.35
Lane Grp Cap(c), veh/h	234	0	186	224	0	0	520	0	1257	168	1169	1158
V/C Ratio(X)	0.22	0.00	0.03	0.27	0.00	0.00	0.07	0.00	1.05	0.20	0.32	0.32
Avail Cap(c_a), veh/h	478	0	510	518	0	0	746	0	1257	391	1169	1158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	36.1	37.4	0.0	0.0	5.0	0.0	0.0	24.4	17.9	17.9
Incr Delay (d2), s/veh	0.5	0.0	0.1	0.7	0.0	0.0	0.1	0.0	38.5	0.6	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.1	1.3	0.0	0.0	0.1	0.0	13.4	0.5	7.7	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.6	0.0	36.2	38.0	0.0	0.0	5.1	0.0	38.5	25.0	18.6	18.6
LnGrp LOS	D	A	D	D	A	A	A	A	F	C	B	B
Approach Vol, veh/h		56			61			1351			777	
Approach Delay, s/veh		37.5			38.0			37.6			18.9	
Approach LOS		D			D			D			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	65.7		15.6	8.6	65.8		15.6				
Change Period (Y+Rc), s	4.6	5.5		6.1	4.6	5.5		6.1				
Max Green Setting (Gmax), s	15.4	32.5		25.9	15.4	32.5		25.9				
Max Q Clear Time (g_c+I1), s	2.5	18.1		4.4	2.5	60.4		5.0				
Green Ext Time (p_c), s	0.0	6.6		0.1	0.0	0.0		0.3				

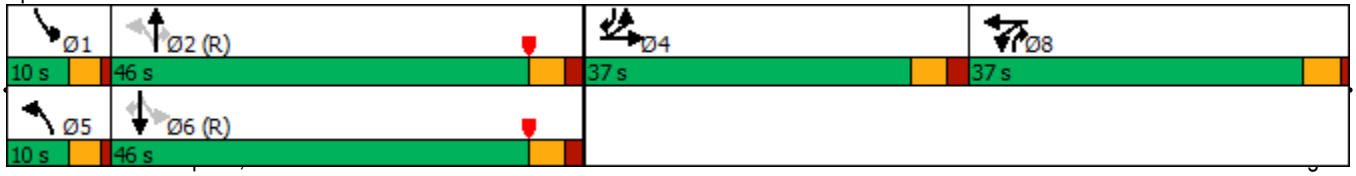
Intersection Summary												
HCM 6th Ctrl Delay			31.1									
HCM 6th LOS			C									

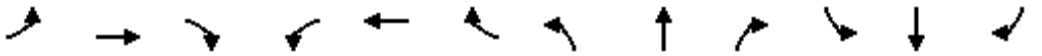
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	489	100	132	21	18	1109	231	34	419	75
Future Volume (vph)	489	100	132	21	18	1109	231	34	419	75
Lane Group Flow (vph)	343	343	140	54	19	1180	246	36	446	80
Turn Type	Split	NA	Split	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	4	4	8	8	5	2	8	1	6	4
Permitted Phases					2		2	6		6
Detector Phase	4	4	8	8	5	2	8	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	7.0
Minimum Split (s)	38.0	38.0	37.0	37.0	10.0	35.0	37.0	10.0	35.0	38.0
Total Split (s)	37.0	37.0	37.0	37.0	10.0	46.0	37.0	10.0	46.0	37.0
Total Split (%)	28.5%	28.5%	28.5%	28.5%	7.7%	35.4%	28.5%	7.7%	35.4%	28.5%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	2.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	4.6	4.6	4.0	5.6	4.6	4.0	5.6	5.6
Lead/Lag					Lead	Lag		Lead	Lag	
Lead-Lag Optimize?					Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	C-Min	None	None	C-Min	None
v/c Ratio	0.89	0.88	0.63	0.22	0.04	1.32	0.24	0.24	0.25	0.07
Control Delay	74.1	70.6	65.6	26.5	15.7	176.4	4.7	24.9	25.6	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.1	70.6	65.6	26.5	15.7	176.4	4.7	24.9	25.6	0.9
Queue Length 50th (ft)	290	283	114	17	5	~1363	14	16	112	0
Queue Length 95th (ft)	#452	#443	174	54	m10	#1741	m43	m35	216	m7
Internal Link Dist (ft)		984		630		585			1271	
Turn Bay Length (ft)			225		125		175	100		185
Base Capacity (vph)	414	420	449	455	508	896	1135	154	1772	1241
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.82	0.31	0.12	0.04	1.32	0.22	0.23	0.25	0.06

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 84 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ 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: 2: Frantz Rd & Metro Pl N/Corbins Mill Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	489	100	56	132	21	30	18	1109	231	34	419	75
Future Volume (veh/h)	489	100	56	132	21	30	18	1109	231	34	419	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1885	1900	1900	1885	1856
Adj Flow Rate, veh/h	343	354	60	140	22	32	19	1180	246	36	446	80
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	0	0	1	3
Cap, veh/h	430	376	64	174	67	98	523	916	937	106	1772	1152
Arrive On Green	0.24	0.24	0.24	0.10	0.10	0.10	0.03	0.65	0.65	0.06	0.99	0.99
Sat Flow, veh/h	1810	1583	268	1810	699	1017	1810	1885	1610	1810	3582	1572
Grp Volume(v), veh/h	343	0	414	140	0	54	19	1180	246	36	446	80
Grp Sat Flow(s),veh/h/ln	1810	0	1852	1810	0	1717	1810	1885	1610	1810	1791	1572
Q Serve(g_s), s	23.2	0.0	28.5	9.9	0.0	3.8	0.7	63.2	7.2	1.3	0.2	0.0
Cycle Q Clear(g_c), s	23.2	0.0	28.5	9.9	0.0	3.8	0.7	63.2	7.2	1.3	0.2	0.0
Prop In Lane	1.00		0.14	1.00		0.59	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	430	0	440	174	0	165	523	916	937	106	1772	1152
V/C Ratio(X)	0.80	0.00	0.94	0.80	0.00	0.33	0.04	1.29	0.26	0.34	0.25	0.07
Avail Cap(c_a), veh/h	437	0	447	451	0	428	572	916	937	139	1772	1152
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.45	0.45	0.45	0.93	0.93	0.93
Uniform Delay (d), s/veh	46.6	0.0	48.6	57.6	0.0	54.8	16.0	23.0	8.8	30.1	0.3	0.1
Incr Delay (d2), s/veh	9.9	0.0	28.0	8.4	0.0	1.1	0.0	133.5	0.3	1.7	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	0.0	16.4	5.0	0.0	1.7	0.3	56.3	3.0	0.6	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.5	0.0	76.6	66.0	0.0	56.0	16.0	156.5	9.2	31.9	0.7	0.2
LnGrp LOS	E	A	E	E	A	E	B	F	A	C	A	A
Approach Vol, veh/h		757			194			1445			562	
Approach Delay, s/veh		67.5			63.2			129.6			2.6	
Approach LOS		E			E			F			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	68.8		36.5	6.5	69.9		17.1				
Change Period (Y+Rc), s	4.0	5.6		5.6	4.0	5.6		4.6				
Max Green Setting (Gmax), s	6.0	40.4		31.4	6.0	40.4		32.4				
Max Q Clear Time (g_c+I1), s	3.3	65.2		30.5	2.7	2.2		11.9				
Green Ext Time (p_c), s	0.0	0.0		0.4	0.0	3.4		0.7				

Intersection Summary			
HCM 6th Ctrl Delay		85.2	
HCM 6th LOS		F	

Notes

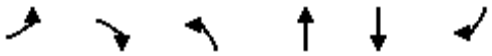
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	179	247	48	1190	581	36
Future Volume (vph)	179	247	48	1190	581	36
Lane Group Flow (vph)	203	281	55	1352	660	41
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	1	1	6	2	4
Permitted Phases		4	6			2
Detector Phase	4	1	1	6	2	4
Switch Phase						
Minimum Initial (s)	10.0	7.0	7.0	20.0	20.0	10.0
Minimum Split (s)	37.0	12.0	12.0	26.0	42.0	37.0
Total Split (s)	46.0	30.0	30.0	84.0	54.0	46.0
Total Split (%)	35.4%	23.1%	23.1%	64.6%	41.5%	35.4%
Yellow Time (s)	3.6	3.5	3.5	3.6	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.0	5.0	5.1	5.1	5.1
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	C-Min	C-Min	None
v/c Ratio	0.56	0.66	0.09	0.87	0.26	0.03
Control Delay	60.9	35.4	2.5	11.6	3.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	35.4	2.5	11.6	3.8	0.3
Queue Length 50th (ft)	85	138	6	646	32	0
Queue Length 95th (ft)	119	207	m9	m204	94	m3
Internal Link Dist (ft)	991			1198	585	
Turn Bay Length (ft)	350	400	425			400
Base Capacity (vph)	1090	609	779	1551	2555	1613
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	0.19	0.46	0.07	0.87	0.26	0.03

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 103 (79%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 135
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Frantz Rd & Metro Pl S



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	179	247	48	1190	581	36
Future Volume (veh/h)	179	247	48	1190	581	36
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1885	1900	1900	1900	1900
Adj Flow Rate, veh/h	203	281	55	1352	660	41
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	677	385	599	1382	2319	1347
Arrive On Green	0.19	0.19	0.09	1.00	0.85	0.85
Sat Flow, veh/h	3483	1598	1810	1900	3705	1610
Grp Volume(v), veh/h	203	281	55	1352	660	41
Grp Sat Flow(s),veh/h/ln	1742	1598	1810	1900	1805	1610
Q Serve(g_s), s	6.5	21.1	1.2	0.0	4.6	0.2
Cycle Q Clear(g_c), s	6.5	21.1	1.2	0.0	4.6	0.2
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	677	385	599	1382	2319	1347
V/C Ratio(X)	0.30	0.73	0.09	0.98	0.28	0.03
Avail Cap(c_a), veh/h	1096	577	863	1382	2319	1347
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.95	0.95
Uniform Delay (d), s/veh	44.8	45.5	5.7	0.0	3.7	0.7
Incr Delay (d2), s/veh	0.3	3.4	0.1	19.6	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	18.2	0.4	7.5	1.5	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	45.1	48.9	5.8	19.6	4.0	0.8
LnGrp LOS	D	D	A	B	A	A
Approach Vol, veh/h	484			1407	701	
Approach Delay, s/veh	47.3			19.0	3.8	
Approach LOS	D			B	A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	11.0	88.6		30.4		99.6
Change Period (Y+Rc), s	5.0	5.1		5.1		5.1
Max Green Setting (Gmax), s	25.0	48.9		40.9		78.9
Max Q Clear Time (g_c+I1), s	3.2	6.6		23.1		2.0
Green Ext Time (p_c), s	0.1	10.4		2.2		54.2

Intersection Summary			
HCM 6th Ctrl Delay		20.2	
HCM 6th LOS		C	

Notes

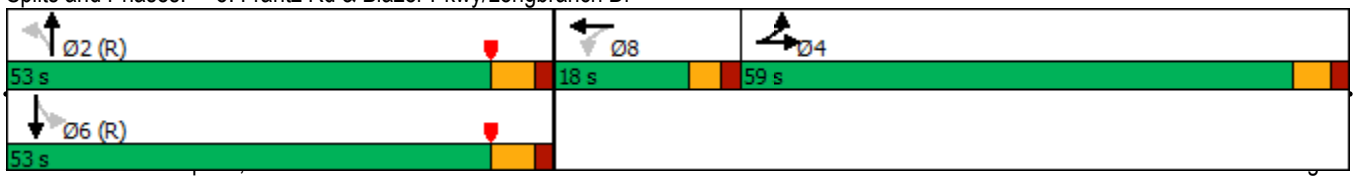
User approved pedestrian interval to be less than phase max green.

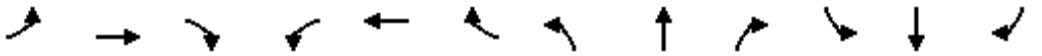
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	456	0	17	0	11	1168	10	1326
Future Volume (vph)	456	0	17	0	11	1168	10	1326
Lane Group Flow (vph)	323	307	0	32	13	1377	12	1582
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4	4		8		2		6
Permitted Phases			8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	8.0	8.0	15.0	15.0	15.0	15.0
Minimum Split (s)	40.0	40.0	15.0	15.0	25.2	25.2	25.2	25.2
Total Split (s)	59.0	59.0	18.0	18.0	53.0	53.0	53.0	53.0
Total Split (%)	45.4%	45.4%	13.8%	13.8%	40.8%	40.8%	40.8%	40.8%
Yellow Time (s)	3.6	3.6	3.0	3.0	4.2	4.2	4.2	4.2
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6		5.0	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.71	0.63		0.23	0.17	1.24	0.20	0.76
Control Delay	51.3	36.9		3.9	26.3	144.1	34.1	30.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	36.9		3.9	26.3	144.1	34.1	30.8
Queue Length 50th (ft)	260	187		0	5	~1517	7	580
Queue Length 95th (ft)	311	242		0	24	#1808	m25	#740
Internal Link Dist (ft)		507		671		1105		467
Turn Bay Length (ft)	160				100		50	
Base Capacity (vph)	704	722		178	76	1107	60	2078
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.46	0.43		0.18	0.17	1.24	0.20	0.76

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 37 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ 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: 5: Frantz Rd & Blazer Pkwy/Longbranch Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	456	0	86	17	0	10	11	1168	16	10	1326	34
Future Volume (veh/h)	456	0	86	17	0	10	11	1168	16	10	1326	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1885	1885
Adj Flow Rate, veh/h	623	0	0	20	0	12	13	1358	19	12	1542	40
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	1	1
Cap, veh/h	800	420	0	46	0	27	122	1136	16	55	2167	56
Arrive On Green	0.22	0.00	0.00	0.04	0.00	0.04	0.61	0.61	0.61	0.20	0.20	0.20
Sat Flow, veh/h	3619	1900	0	1081	0	648	328	1869	26	400	3567	92
Grp Volume(v), veh/h	623	0	0	32	0	0	13	0	1377	12	773	809
Grp Sat Flow(s),veh/h/ln	1810	1900	0	1729	0	0	328	0	1895	400	1791	1869
Q Serve(g_s), s	21.1	0.0	0.0	2.3	0.0	0.0	4.3	0.0	79.0	0.0	52.3	52.5
Cycle Q Clear(g_c), s	21.1	0.0	0.0	2.3	0.0	0.0	56.8	0.0	79.0	79.0	52.3	52.5
Prop In Lane	1.00		0.00	0.62		0.37	1.00		0.01	1.00		0.05
Lane Grp Cap(c), veh/h	800	420	0	73	0	0	122	0	1151	55	1088	1135
V/C Ratio(X)	0.78	0.00	0.00	0.44	0.00	0.00	0.11	0.00	1.20	0.22	0.71	0.71
Avail Cap(c_a), veh/h	1487	780	0	173	0	0	122	0	1151	55	1088	1135
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.09	0.00	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.6	0.0	0.0	60.8	0.0	0.0	42.9	0.0	25.5	91.5	41.3	41.4
Incr Delay (d2), s/veh	3.5	0.0	0.0	4.1	0.0	0.0	0.2	0.0	89.0	8.8	3.9	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	0.0	0.0	1.1	0.0	0.0	0.4	0.0	61.0	0.6	26.3	27.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.2	0.0	0.0	64.9	0.0	0.0	43.1	0.0	114.5	100.2	45.2	45.2
LnGrp LOS	D	A	A	E	A	A	D	A	F	F	D	D
Approach Vol, veh/h		623			32			1390			1594	
Approach Delay, s/veh		51.2			64.9			113.9			45.6	
Approach LOS		D			E			F			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		85.2		34.3		85.2		10.5				
Change Period (Y+Rc), s		6.2		5.6		6.2		5.0				
Max Green Setting (Gmax), s		46.8		53.4		46.8		13.0				
Max Q Clear Time (g_c+I1), s		81.0		23.1		81.0		4.3				
Green Ext Time (p_c), s		0.0		5.7		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			72.8									
HCM 6th LOS			E									

Notes

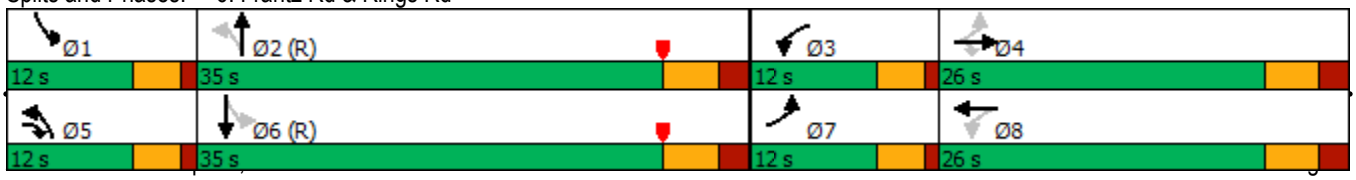
User approved volume balancing among the lanes for turning movement.

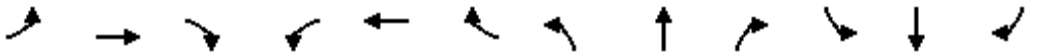
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	331	374	432	77	176	277	738	74	1056
Future Volume (vph)	331	374	432	77	176	277	738	74	1056
Lane Group Flow (vph)	364	411	475	85	290	304	919	81	1450
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8	5	2	1	6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	5	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	7.0	11.0	7.0	7.0	11.0	7.0	12.0	7.0	12.0
Minimum Split (s)	11.0	40.0	11.0	11.0	42.0	11.0	39.0	11.0	41.0
Total Split (s)	12.0	26.0	12.0	12.0	26.0	12.0	35.0	12.0	35.0
Total Split (%)	14.1%	30.6%	14.1%	14.1%	30.6%	14.1%	41.2%	14.1%	41.2%
Yellow Time (s)	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.5	4.0	4.0	5.5	4.0	5.5	4.0	5.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.89	0.87	0.62	0.34	0.35	1.03	1.23	0.32	1.21
Control Delay	48.7	51.1	18.8	20.4	19.0	76.1	131.9	14.6	127.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.7	51.1	18.8	20.4	19.0	76.1	131.9	14.6	127.6
Queue Length 50th (ft)	143	212	148	28	43	~145	~650	21	~497
Queue Length 95th (ft)	#290	#378	257	57	77	m#183	m#692	44	#632
Internal Link Dist (ft)		1352			734		584		1105
Turn Bay Length (ft)	140			175		300		200	
Base Capacity (vph)	409	475	766	258	900	295	748	266	1203
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.87	0.62	0.33	0.32	1.03	1.23	0.30	1.21

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 36 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ 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: 6: Frantz Rd & Rings Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	331	374	432	77	176	88	277	738	98	74	1056	264
Future Volume (veh/h)	331	374	432	77	176	88	277	738	98	74	1056	264
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1900	1900	1885	1885	1885	1900	1841	1841
Adj Flow Rate, veh/h	364	411	475	85	193	97	304	811	108	81	1160	290
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	3	0	0	1	1	1	0	4	4
Cap, veh/h	416	458	540	230	516	249	254	642	85	212	1028	254
Arrive On Green	0.09	0.24	0.24	0.07	0.22	0.22	0.19	0.79	0.79	0.07	0.37	0.37
Sat Flow, veh/h	1810	1900	1610	1767	2361	1139	1795	1629	217	1810	2778	687
Grp Volume(v), veh/h	364	411	475	85	146	144	304	0	919	81	726	724
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1767	1805	1695	1795	0	1846	1810	1749	1717
Q Serve(g_s), s	8.0	17.8	20.5	3.1	5.8	6.2	8.0	0.0	33.5	2.2	31.4	31.4
Cycle Q Clear(g_c), s	8.0	17.8	20.5	3.1	5.8	6.2	8.0	0.0	33.5	2.2	31.4	31.4
Prop In Lane	1.00		1.00	1.00		0.67	1.00		0.12	1.00		0.40
Lane Grp Cap(c), veh/h	416	458	540	230	394	370	254	0	727	212	647	635
V/C Ratio(X)	0.87	0.90	0.88	0.37	0.37	0.39	1.20	0.00	1.26	0.38	1.12	1.14
Avail Cap(c_a), veh/h	416	458	540	271	435	409	254	0	727	255	647	635
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.56	0.56	0.56
Uniform Delay (d), s/veh	29.2	31.2	26.6	24.2	28.2	28.4	18.1	0.0	9.0	19.8	26.8	26.8
Incr Delay (d2), s/veh	18.1	20.0	15.4	0.7	0.6	0.7	120.9	0.0	129.7	0.5	66.7	74.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	10.3	10.8	1.3	2.5	2.5	11.0	0.0	29.5	0.9	24.1	24.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.3	51.2	42.1	25.0	28.8	29.1	139.0	0.0	138.7	20.2	93.5	100.9
LnGrp LOS	D	D	D	C	C	C	F	A	F	C	F	F
Approach Vol, veh/h		1250			375			1223			1531	
Approach Delay, s/veh		46.6			28.0			138.8			93.1	
Approach LOS		D			C			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	39.0	10.1	26.0	12.0	36.9	12.0	24.1
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	8.0	29.5	8.0	20.5	8.0	29.5	8.0	20.5
Max Q Clear Time (g_c+I1), s	4.2	35.5	5.1	22.5	10.0	33.4	10.0	8.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	87.0
HCM 6th LOS	F

Notes

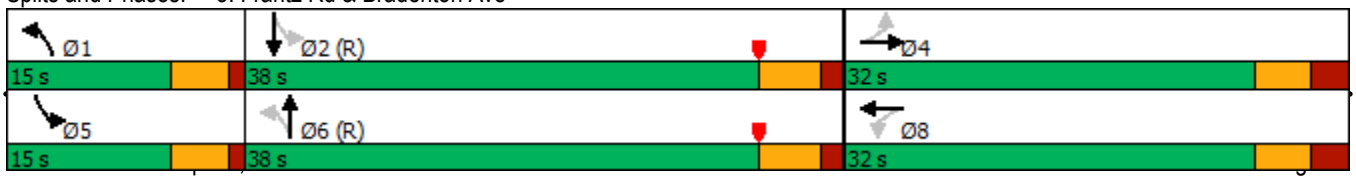
User approved pedestrian interval to be less than phase max green.

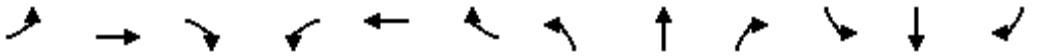
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	131	8	40	10	10	875	49	1291
Future Volume (vph)	131	8	40	10	10	875	49	1291
Lane Group Flow (vph)	158	62	0	123	12	1091	59	1596
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0	15.0	7.0	15.0
Minimum Split (s)	32.0	32.0	35.0	35.0	12.0	30.0	12.0	34.0
Total Split (s)	32.0	32.0	32.0	32.0	15.0	38.0	15.0	38.0
Total Split (%)	37.6%	37.6%	37.6%	37.6%	17.6%	44.7%	17.6%	44.7%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	4.0	3.6	4.0
All-Red Time (s)	2.5	2.5	2.5	2.5	1.0	1.5	1.0	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	4.6	5.5	4.6	5.5
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.66	0.18		0.38	0.05	1.01	0.25	0.68
Control Delay	44.9	11.2		18.5	8.7	60.1	4.8	11.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	44.9	11.2		18.5	8.7	60.1	4.8	11.0
Queue Length 50th (ft)	80	5		28	3	~651	2	117
Queue Length 95th (ft)	119	29		61	m8	#892	m10	m386
Internal Link Dist (ft)		353		381		797		718
Turn Bay Length (ft)	200				145		145	
Base Capacity (vph)	401	542		499	320	1079	303	2354
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.39	0.11		0.25	0.04	1.01	0.19	0.68

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 12 (14%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow
Natural Cycle: 115
Control Type: Actuated-Coordinated
~ 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: 8: Frantz Rd & Bradenton Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	8	43	40	10	52	10	875	31	49	1291	34
Future Volume (veh/h)	131	8	43	40	10	52	10	875	31	49	1291	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	158	10	52	48	12	63	12	1054	37	59	1555	41
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	280	39	202	125	46	118	217	1097	39	226	2311	61
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.02	0.60	0.60	0.04	0.43	0.43
Sat Flow, veh/h	1346	266	1385	456	312	806	1810	1824	64	1810	3593	95
Grp Volume(v), veh/h	158	0	62	123	0	0	12	0	1091	59	780	816
Grp Sat Flow(s),veh/h/ln	1346	0	1651	1574	0	0	1810	0	1888	1810	1805	1883
Q Serve(g_s), s	3.8	0.0	2.8	3.0	0.0	0.0	0.2	0.0	46.3	0.9	29.4	29.6
Cycle Q Clear(g_c), s	9.7	0.0	2.8	5.9	0.0	0.0	0.2	0.0	46.3	0.9	29.4	29.6
Prop In Lane	1.00		0.84	0.39		0.51	1.00		0.03	1.00		0.05
Lane Grp Cap(c), veh/h	280	0	241	289	0	0	217	0	1136	226	1161	1211
V/C Ratio(X)	0.56	0.00	0.26	0.43	0.00	0.00	0.06	0.00	0.96	0.26	0.67	0.67
Avail Cap(c_a), veh/h	494	0	503	531	0	0	402	0	1136	336	1161	1211
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.2	0.0	32.2	33.4	0.0	0.0	10.3	0.0	16.0	19.9	17.0	17.0
Incr Delay (d2), s/veh	1.8	0.0	0.6	1.0	0.0	0.0	0.1	0.0	18.7	0.6	3.1	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	1.2	2.4	0.0	0.0	0.1	0.0	22.2	0.7	13.5	14.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.9	0.0	32.8	34.4	0.0	0.0	10.4	0.0	34.7	20.5	20.1	20.1
LnGrp LOS	D	A	C	C	A	A	B	A	C	C	C	C
Approach Vol, veh/h		220			123			1103			1655	
Approach Delay, s/veh		35.8			34.4			34.5			20.1	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	60.2		18.5	9.9	56.6		18.5				
Change Period (Y+Rc), s	4.6	5.5		6.1	4.6	5.5		6.1				
Max Green Setting (Gmax), s	10.4	32.5		25.9	10.4	32.5		25.9				
Max Q Clear Time (g_c+I1), s	2.2	31.6		11.7	2.9	48.3		7.9				
Green Ext Time (p_c), s	0.0	0.9		0.7	0.1	0.0		0.6				

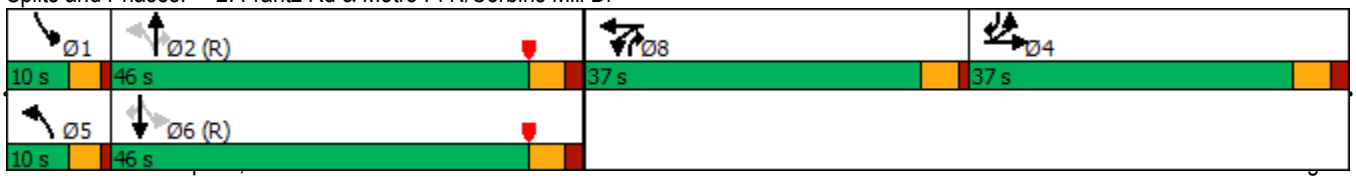
Intersection Summary												
HCM 6th Ctrl Delay			26.9									
HCM 6th LOS			C									

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	55	17	118	72	50	437	65	22	1140	500
Future Volume (vph)	55	17	118	72	50	437	65	22	1140	500
Lane Group Flow (vph)	46	45	124	94	53	460	68	23	1200	526
Turn Type	Split	NA	Split	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	4	4	8	8	5	2	8	1	6	4
Permitted Phases					2		2	6		6
Detector Phase	4	4	8	8	5	2	8	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	7.0
Minimum Split (s)	38.0	38.0	37.0	37.0	10.0	35.0	37.0	10.0	35.0	38.0
Total Split (s)	37.0	37.0	37.0	37.0	10.0	46.0	37.0	10.0	46.0	37.0
Total Split (%)	28.5%	28.5%	28.5%	28.5%	7.7%	35.4%	28.5%	7.7%	35.4%	28.5%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	2.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	4.6	4.6	4.0	5.6	4.6	4.0	5.6	5.6
Lead/Lag					Lead	Lag		Lead	Lag	
Lead-Lag Optimize?					Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	C-Min	None	None	C-Min	None
v/c Ratio	0.27	0.25	0.62	0.44	0.34	0.21	0.06	0.04	1.07	0.43
Control Delay	55.7	40.6	68.0	54.0	24.8	11.6	0.9	9.6	66.2	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.7	40.6	68.0	54.0	24.8	11.6	0.9	9.6	66.2	2.7
Queue Length 50th (ft)	38	25	102	68	12	68	0	5	~1128	43
Queue Length 95th (ft)	75	61	160	118	51	124	2	m10	m#1433	m24
Internal Link Dist (ft)		984		630		585			1271	
Turn Bay Length (ft)			225		125		175	100		185
Base Capacity (vph)	414	420	441	459	156	2186	1260	640	1123	1345
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.11	0.28	0.20	0.34	0.21	0.05	0.04	1.07	0.39

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 71 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ 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: 2: Frantz Rd & Metro Pl N/Corbins Mill Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	17	14	118	72	17	50	437	65	22	1140	500
Future Volume (veh/h)	55	17	14	118	72	17	50	437	65	22	1140	500
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	1870	1870	1900	1870	1663	1900	1885	1900
Adj Flow Rate, veh/h	46	35	15	124	76	18	53	460	68	23	1200	526
Peak Hour 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
Percent Heavy Veh, %	0	0	0	2	2	2	0	2	16	0	1	0
Cap, veh/h	94	66	28	160	131	31	133	2430	1090	693	1268	1167
Arrive On Green	0.05	0.05	0.05	0.09	0.09	0.09	0.07	1.00	1.00	0.01	0.45	0.45
Sat Flow, veh/h	1810	1262	541	1781	1462	346	1810	3554	1409	1810	1885	1610
Grp Volume(v), veh/h	46	0	50	124	0	94	53	460	68	23	1200	526
Grp Sat Flow(s),veh/h/ln	1810	0	1803	1781	0	1808	1810	1777	1409	1810	1885	1610
Q Serve(g_s), s	3.2	0.0	3.5	8.9	0.0	6.5	1.2	0.0	0.0	0.5	79.2	25.1
Cycle Q Clear(g_c), s	3.2	0.0	3.5	8.9	0.0	6.5	1.2	0.0	0.0	0.5	79.2	25.1
Prop In Lane	1.00		0.30	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	94	0	94	160	0	163	133	2430	1090	693	1268	1167
V/C Ratio(X)	0.49	0.00	0.53	0.77	0.00	0.58	0.40	0.19	0.06	0.03	0.95	0.45
Avail Cap(c_a), veh/h	437	0	435	444	0	451	157	2430	1090	737	1268	1167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.99	0.99	0.99	0.29	0.29	0.29
Uniform Delay (d), s/veh	59.9	0.0	60.1	57.9	0.0	56.8	32.6	0.0	0.0	6.2	33.4	14.0
Incr Delay (d2), s/veh	3.9	0.0	4.6	7.7	0.0	3.2	1.9	0.2	0.1	0.0	5.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	1.7	4.4	0.0	3.1	1.2	0.1	0.0	0.2	39.2	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.8	0.0	64.7	65.6	0.0	60.0	34.5	0.2	0.1	6.2	39.3	14.4
LnGrp LOS	E	A	E	E	A	E	C	A	A	A	D	B
Approach Vol, veh/h		96			218			581			1749	
Approach Delay, s/veh		64.2			63.2			3.3			31.4	
Approach LOS		E			E			A			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.8	94.5		12.4	8.3	93.1		16.3				
Change Period (Y+Rc), s	4.0	5.6		5.6	4.0	5.6		4.6				
Max Green Setting (Gmax), s	6.0	40.4		31.4	6.0	40.4		32.4				
Max Q Clear Time (g_c+I1), s	2.5	2.0		5.5	3.2	81.2		10.9				
Green Ext Time (p_c), s	0.0	3.5		0.3	0.0	0.0		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			29.0									
HCM 6th LOS			C									

Notes

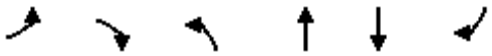
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	28	204	529	1020	208
Future Volume (vph)	29	28	204	529	1020	208
Lane Group Flow (vph)	30	29	213	551	1063	217
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	1	1	6	2	4
Permitted Phases		4	6			2
Detector Phase	4	1	1	6	2	4
Switch Phase						
Minimum Initial (s)	10.0	7.0	7.0	20.0	20.0	10.0
Minimum Split (s)	37.0	12.0	12.0	26.0	42.0	37.0
Total Split (s)	42.0	24.0	24.0	88.0	64.0	42.0
Total Split (%)	32.3%	18.5%	18.5%	67.7%	49.2%	32.3%
Yellow Time (s)	3.6	3.5	3.5	3.6	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.0	5.0	5.1	5.1	5.1
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	C-Min	C-Min	None
v/c Ratio	0.12	0.07	0.59	0.19	0.82	0.16
Control Delay	57.1	11.9	30.4	1.9	7.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	8.6	0.0
Total Delay	57.1	11.9	30.4	1.9	16.4	0.1
Queue Length 50th (ft)	12	0	59	33	45	0
Queue Length 95th (ft)	28	24	m157	m42	m63	m0
Internal Link Dist (ft)	991			1198	585	
Turn Bay Length (ft)	350	400	425			400
Base Capacity (vph)	955	436	408	2931	1289	1599
Starvation Cap Reductn	0	0	0	0	201	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.07	0.52	0.19	0.98	0.14

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 95 (73%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 125
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Frantz Rd & Metro Pl S



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	28	204	529	1020	208
Future Volume (veh/h)	29	28	204	529	1020	208
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1841	1885	1841	1885	1900
Adj Flow Rate, veh/h	30	29	212	551	1062	217
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	4	4	1	4	1	0
Cap, veh/h	231	190	484	2986	1436	1335
Arrive On Green	0.07	0.07	0.11	1.00	1.00	1.00
Sat Flow, veh/h	3401	1560	1795	3589	1885	1610
Grp Volume(v), veh/h	30	29	212	551	1062	217
Grp Sat Flow(s),veh/h/ln	1700	1560	1795	1749	1885	1610
Q Serve(g_s), s	1.1	2.2	3.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	2.2	3.2	0.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	231	190	484	2986	1436	1335
V/C Ratio(X)	0.13	0.15	0.44	0.18	0.74	0.16
Avail Cap(c_a), veh/h	965	527	650	2986	1436	1335
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.09	0.09
Uniform Delay (d), s/veh	57.0	51.1	2.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.5	0.8	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	2.0	0.8	0.1	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	57.3	51.6	2.8	0.1	0.3	0.0
LnGrp LOS	E	D	A	A	A	A
Approach Vol, veh/h	59			763	1279	
Approach Delay, s/veh	54.5			0.9	0.3	
Approach LOS	D			A	A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	12.0	104.1		13.9		116.1
Change Period (Y+Rc), s	5.0	5.1		5.1		5.1
Max Green Setting (Gmax), s	19.0	58.9		36.9		82.9
Max Q Clear Time (g_c+I1), s	5.2	2.0		4.2		2.0
Green Ext Time (p_c), s	0.7	30.8		0.2		8.6

Intersection Summary	
HCM 6th Ctrl Delay	2.0
HCM 6th LOS	A

Notes

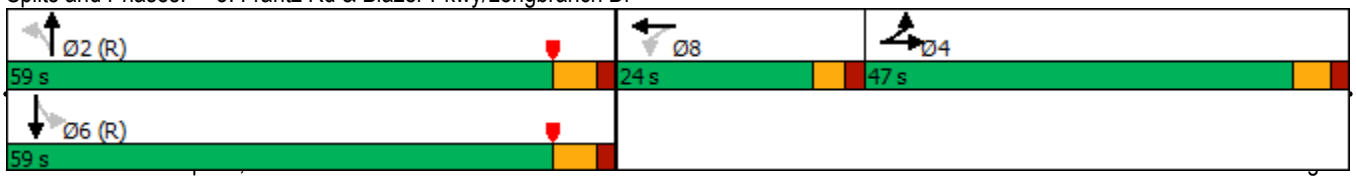
User approved pedestrian interval to be less than phase max green.

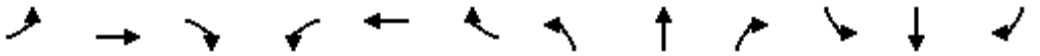
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	40	1	6	0	73	1104	2	816
Future Volume (vph)	40	1	6	0	73	1104	2	816
Lane Group Flow (vph)	29	27	0	18	80	1213	2	1449
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4	4		8		2		6
Permitted Phases			8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	8.0	8.0	15.0	15.0	15.0	15.0
Minimum Split (s)	40.0	40.0	15.0	15.0	25.2	25.2	25.2	25.2
Total Split (s)	47.0	47.0	24.0	24.0	59.0	59.0	59.0	59.0
Total Split (%)	36.2%	36.2%	18.5%	18.5%	45.4%	45.4%	45.4%	45.4%
Yellow Time (s)	3.6	3.6	3.0	3.0	4.2	4.2	4.2	4.2
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6		5.0	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.22	0.20		0.11	1.33	0.42	0.01	1.00
Control Delay	59.7	41.6		1.4	250.2	5.4	8.0	42.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	59.7	41.6		1.4	250.2	5.4	8.0	42.4
Queue Length 50th (ft)	24	13		0	~33	106	0	966
Queue Length 95th (ft)	57	45		0	#158	255	m2	#1686
Internal Link Dist (ft)		507		671		1105		467
Turn Bay Length (ft)	160				100		50	
Base Capacity (vph)	500	483		284	60	2902	327	1451
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.06	0.06		0.06	1.33	0.42	0.01	1.00

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 77 (59%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ 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: 5: Frantz Rd & Blazer Pkwy/Longbranch Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1	10	6	0	10	73	1104	0	2	816	502
Future Volume (veh/h)	40	1	10	6	0	10	73	1104	0	2	816	502
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1900	1900	1900	1900	1900	1900	1870	1870	1900	1870	1870
Adj Flow Rate, veh/h	28	23	11	7	0	11	80	1213	0	2	897	552
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	9	0	0	0	0	0	0	2	2	0	2	2
Cap, veh/h	116	83	40	19	0	30	74	2746	0	362	837	515
Arrive On Green	0.07	0.07	0.07	0.03	0.00	0.03	0.77	0.77	0.00	1.00	1.00	1.00
Sat Flow, veh/h	1682	1215	581	654	0	1028	373	3647	0	468	1084	667
Grp Volume(v), veh/h	28	0	34	18	0	0	80	1213	0	2	0	1449
Grp Sat Flow(s),veh/h/ln	1682	0	1795	1682	0	0	373	1777	0	468	0	1750
Q Serve(g_s), s	2.0	0.0	2.3	1.4	0.0	0.0	6.6	15.3	0.0	0.1	0.0	93.8
Cycle Q Clear(g_c), s	2.0	0.0	2.3	1.4	0.0	0.0	100.4	15.3	0.0	15.4	0.0	93.8
Prop In Lane	1.00		0.32	0.39		0.61	1.00		0.00	1.00		0.38
Lane Grp Cap(c), veh/h	116	0	123	49	0	0	74	2746	0	362	0	1352
V/C Ratio(X)	0.24	0.00	0.28	0.36	0.00	0.00	1.08	0.44	0.00	0.01	0.00	1.07
Avail Cap(c_a), veh/h	536	0	572	246	0	0	74	2746	0	362	0	1352
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.78	0.78	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.3	0.0	57.5	61.9	0.0	0.0	64.2	5.1	0.0	1.2	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.0	2.5	4.4	0.0	0.0	114.4	0.4	0.0	0.0	0.0	46.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.1	0.6	0.0	0.0	4.8	4.9	0.0	0.0	0.0	17.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.6	0.0	60.0	66.3	0.0	0.0	178.6	5.5	0.0	1.2	0.0	46.1
LnGrp LOS	E	A	E	E	A	A	F	A	A	A	A	F
Approach Vol, veh/h		62			18			1293			1451	
Approach Delay, s/veh		59.8			66.3			16.2			46.0	
Approach LOS		E			E			B			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		106.6		14.5		106.6		8.8				
Change Period (Y+Rc), s		6.2		5.6		6.2		5.0				
Max Green Setting (Gmax), s		52.8		41.4		52.8		19.0				
Max Q Clear Time (g_c+I1), s		102.4		4.3		95.8		3.4				
Green Ext Time (p_c), s		0.0		0.5		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			32.8									
HCM 6th LOS			C									

Notes

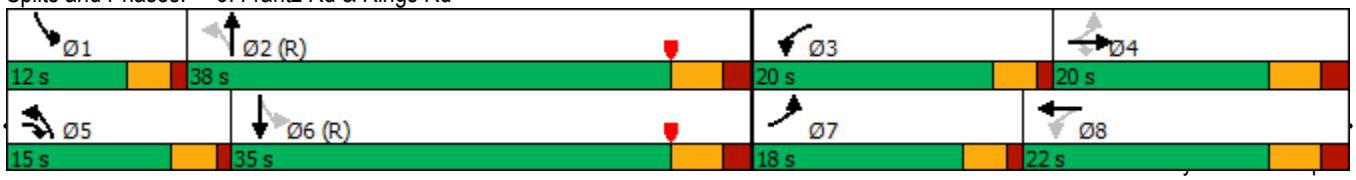
User approved volume balancing among the lanes for turning movement.

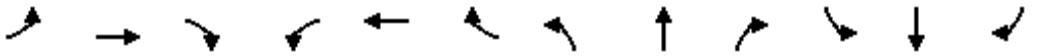
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	173	101	193	124	344	363	915	45	549
Future Volume (vph)	173	101	193	124	344	363	915	45	549
Lane Group Flow (vph)	177	103	197	127	420	370	977	46	852
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8	5	2	1	6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	5	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	7.0	11.0	7.0	7.0	11.0	7.0	12.0	7.0	12.0
Minimum Split (s)	11.0	40.0	11.0	11.0	42.0	11.0	39.0	11.0	41.0
Total Split (s)	18.0	20.0	15.0	20.0	22.0	15.0	38.0	12.0	35.0
Total Split (%)	20.0%	22.2%	16.7%	22.2%	24.4%	16.7%	42.2%	13.3%	38.9%
Yellow Time (s)	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.5	4.0	4.0	5.5	4.0	5.5	4.0	5.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.52	0.26	0.25	0.30	0.71	0.97	0.60	0.15	1.42
Control Delay	25.8	32.2	3.7	21.2	40.8	60.4	18.8	12.2	227.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	32.2	3.7	21.2	40.8	60.4	18.8	12.2	227.4
Queue Length 50th (ft)	69	50	0	48	112	~175	275	12	~655
Queue Length 95th (ft)	113	96	41	84	161	#373	361	29	#885
Internal Link Dist (ft)		1352			734		584		1105
Turn Bay Length (ft)	140			175		300		200	
Base Capacity (vph)	372	390	795	541	656	383	1635	325	598
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.26	0.25	0.23	0.64	0.97	0.60	0.14	1.42

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 8 (9%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Frantz Rd & Rings Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	173	101	193	124	344	68	363	915	42	45	549	286
Future Volume (veh/h)	173	101	193	124	344	68	363	915	42	45	549	286
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1841	1841	1900	1900	1900	1870	1870	1870	1900	1856	1856
Adj Flow Rate, veh/h	177	103	197	127	351	69	370	934	43	46	560	292
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	4	4	0	0	0	2	2	2	0	3	3
Cap, veh/h	297	318	460	385	441	86	298	1675	77	372	477	249
Arrive On Green	0.11	0.17	0.17	0.08	0.15	0.15	0.16	0.64	0.64	0.05	0.42	0.42
Sat Flow, veh/h	1767	1841	1560	1810	3013	586	1781	3459	159	1810	1149	599
Grp Volume(v), veh/h	177	103	197	127	209	211	370	480	497	46	0	852
Grp Sat Flow(s),veh/h/ln	1767	1841	1560	1810	1805	1795	1781	1777	1842	1810	0	1748
Q Serve(g_s), s	7.5	4.4	9.2	5.3	10.0	10.3	11.0	13.5	13.5	1.2	0.0	37.4
Cycle Q Clear(g_c), s	7.5	4.4	9.2	5.3	10.0	10.3	11.0	13.5	13.5	1.2	0.0	37.4
Prop In Lane	1.00		1.00	1.00		0.33	1.00		0.09	1.00		0.34
Lane Grp Cap(c), veh/h	297	318	460	385	264	263	298	860	892	372	0	725
V/C Ratio(X)	0.60	0.32	0.43	0.33	0.79	0.80	1.24	0.56	0.56	0.12	0.00	1.17
Avail Cap(c_a), veh/h	386	318	460	564	331	329	298	860	892	436	0	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.09	0.00	0.09
Uniform Delay (d), s/veh	28.5	32.6	25.6	29.1	37.1	37.2	25.6	10.7	10.7	13.4	0.0	26.3
Incr Delay (d2), s/veh	1.4	0.6	0.6	0.4	9.8	11.0	134.4	2.6	2.5	0.0	0.0	80.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	2.0	3.3	2.3	5.0	5.2	17.1	4.6	4.8	0.5	0.0	30.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.9	33.2	26.2	29.5	46.9	48.2	160.0	13.3	13.2	13.4	0.0	106.4
LnGrp LOS	C	C	C	C	D	D	F	B	B	B	A	F
Approach Vol, veh/h		477			547			1347			898	
Approach Delay, s/veh		29.1			43.3			53.5			101.6	
Approach LOS		C			D			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	49.1	11.1	21.1	15.0	42.9	13.5	18.7
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	8.0	32.5	16.0	14.5	11.0	29.5	14.0	16.5
Max Q Clear Time (g_c+I1), s	3.2	15.5	7.3	11.2	13.0	39.4	9.5	12.3
Green Ext Time (p_c), s	0.0	6.8	0.1	0.4	0.0	0.0	0.1	0.9

Intersection Summary	
HCM 6th Ctrl Delay	61.5
HCM 6th LOS	E

Notes

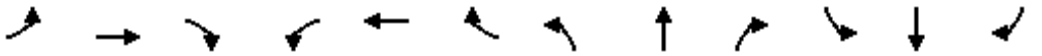
User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	48	3	13	11	34	1198	32	576
Future Volume (vph)	48	3	13	11	34	1198	32	576
Lane Group Flow (vph)	51	5	0	61	36	1315	34	743
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0	15.0	7.0	15.0
Minimum Split (s)	32.0	32.0	35.0	35.0	12.0	30.0	12.0	34.0
Total Split (s)	32.0	32.0	32.0	32.0	20.0	38.0	20.0	38.0
Total Split (%)	35.6%	35.6%	35.6%	35.6%	22.2%	42.2%	22.2%	42.2%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	4.0	3.6	4.0
All-Red Time (s)	2.5	2.5	2.5	2.5	1.0	1.5	1.0	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	4.6	5.5	4.6	5.5
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.26	0.02		0.28	0.07	0.51	0.10	0.57
Control Delay	39.2	29.2		22.4	2.5	5.6	1.9	4.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	39.2	29.2		22.4	2.5	5.6	1.9	4.3
Queue Length 50th (ft)	27	2		14	3	118	2	63
Queue Length 95th (ft)	60	12		49	m7	m160	m4	m83
Internal Link Dist (ft)		353		381		797		718
Turn Bay Length (ft)	200				145		145	
Base Capacity (vph)	482	515		488	653	2572	491	1299
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.11	0.01		0.13	0.06	0.51	0.07	0.57

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 55.5 (62%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow
Natural Cycle: 85
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 8: Frantz Rd & Bradenton Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	3	2	13	11	33	34	1198	39	32	576	122
Future Volume (veh/h)	48	3	2	13	11	33	34	1198	39	32	576	122
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1900	1900	1900	1900	1900	1900	1885	1885	1856	1841	1841
Adj Flow Rate, veh/h	51	3	2	14	12	35	36	1274	41	34	613	130
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	0	0	0	0	0	0	1	1	3	4	4
Cap, veh/h	234	112	75	71	52	100	377	2374	76	436	985	209
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.09	1.00	1.00	0.01	0.22	0.22
Sat Flow, veh/h	1337	1063	709	211	496	952	1810	3542	114	1767	1472	312
Grp Volume(v), veh/h	51	0	5	61	0	0	36	644	671	34	0	743
Grp Sat Flow(s),veh/h/ln	1337	0	1772	1660	0	0	1810	1791	1865	1767	0	1785
Q Serve(g_s), s	0.0	0.0	0.2	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0	33.9
Cycle Q Clear(g_c), s	2.4	0.0	0.2	3.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0	33.9
Prop In Lane	1.00		0.40	0.23		0.57	1.00		0.06	1.00		0.17
Lane Grp Cap(c), veh/h	234	0	186	224	0	0	377	1200	1250	436	0	1193
V/C Ratio(X)	0.22	0.00	0.03	0.27	0.00	0.00	0.10	0.54	0.54	0.08	0.00	0.62
Avail Cap(c_a), veh/h	478	0	510	518	0	0	603	1200	1250	660	0	1193
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	36.1	37.4	0.0	0.0	9.9	0.0	0.0	3.9	0.0	24.8
Incr Delay (d2), s/veh	0.5	0.0	0.1	0.7	0.0	0.0	0.1	1.7	1.7	0.1	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.1	1.3	0.0	0.0	0.2	0.6	0.6	0.2	0.0	16.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.6	0.0	36.2	38.0	0.0	0.0	10.0	1.7	1.7	4.0	0.0	27.3
LnGrp LOS	D	A	D	D	A	A	B	A	A	A	A	C
Approach Vol, veh/h		56			61			1351			777	
Approach Delay, s/veh		37.5			38.0			1.9			26.2	
Approach LOS		D			D			A			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	65.7		15.6	8.6	65.8		15.6				
Change Period (Y+Rc), s	4.6	5.5		6.1	4.6	5.5		6.1				
Max Green Setting (Gmax), s	15.4	32.5		25.9	15.4	32.5		25.9				
Max Q Clear Time (g_c+I1), s	2.5	35.9		4.4	2.5	2.0		5.0				
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	19.4		0.3				

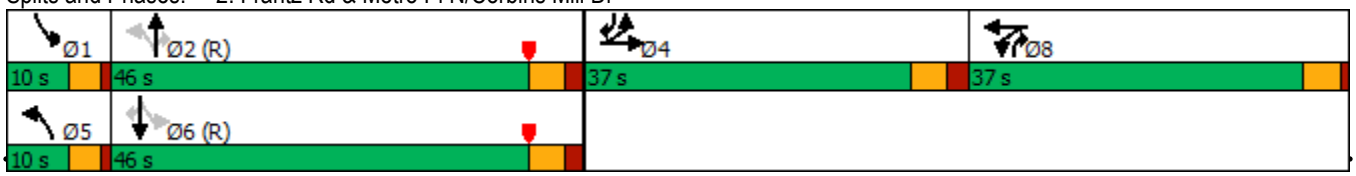
Intersection Summary			
HCM 6th Ctrl Delay		12.2	
HCM 6th LOS		B	

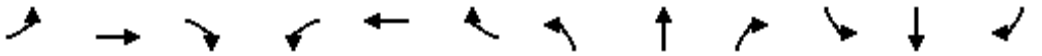
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	489	100	132	21	18	1109	231	34	419	75
Future Volume (vph)	489	100	132	21	18	1109	231	34	419	75
Lane Group Flow (vph)	343	343	140	54	19	1180	246	36	446	80
Turn Type	Split	NA	Split	NA	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov
Protected Phases	4	4	8	8	5	2	8	1	6	4
Permitted Phases					2		2	6		6
Detector Phase	4	4	8	8	5	2	8	1	6	4
Switch Phase										
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	7.0
Minimum Split (s)	38.0	38.0	37.0	37.0	10.0	35.0	37.0	10.0	35.0	38.0
Total Split (s)	37.0	37.0	37.0	37.0	10.0	46.0	37.0	10.0	46.0	37.0
Total Split (%)	28.5%	28.5%	28.5%	28.5%	7.7%	35.4%	28.5%	7.7%	35.4%	28.5%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.0	3.6	3.6	3.0	3.6	3.6
All-Red Time (s)	2.0	2.0	1.0	1.0	1.0	2.0	1.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	4.6	4.6	4.0	5.6	4.6	4.0	5.6	5.6
Lead/Lag					Lead	Lag		Lead	Lag	
Lead-Lag Optimize?					Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	C-Min	None	None	C-Min	None
v/c Ratio	0.89	0.88	0.63	0.22	0.04	0.69	0.23	0.18	0.48	0.07
Control Delay	74.1	70.6	65.6	26.5	9.4	27.1	1.6	22.6	31.6	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.1	70.6	65.6	26.5	9.4	27.1	1.6	22.6	31.6	0.9
Queue Length 50th (ft)	290	283	114	17	6	491	11	16	230	0
Queue Length 95th (ft)	#452	#443	174	54	m13	#620	13	m35	468	m7
Internal Link Dist (ft)		984		630		585			1271	
Turn Bay Length (ft)			225		125		175	100		185
Base Capacity (vph)	414	420	449	455	427	1703	1165	199	933	1241
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.82	0.31	0.12	0.04	0.69	0.21	0.18	0.48	0.06

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 84 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 130
Control Type: Actuated-Coordinated
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: Frantz Rd & Metro Pl N/Corbins Mill Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	489	100	56	132	21	30	18	1109	231	34	419	75
Future Volume (veh/h)	489	100	56	132	21	30	18	1109	231	34	419	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1885	1900	1900	1885	1856
Adj Flow Rate, veh/h	343	354	60	140	22	32	19	1180	246	36	446	80
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	1	0	0	1	3
Cap, veh/h	430	376	64	174	67	98	523	1740	937	281	933	1152
Arrive On Green	0.24	0.24	0.24	0.10	0.10	0.10	0.04	0.97	0.97	0.06	0.99	0.99
Sat Flow, veh/h	1810	1583	268	1810	699	1017	1810	3582	1610	1810	1885	1572
Grp Volume(v), veh/h	343	0	414	140	0	54	19	1180	246	36	446	80
Grp Sat Flow(s),veh/h/ln	1810	0	1852	1810	0	1717	1810	1791	1610	1810	1885	1572
Q Serve(g_s), s	23.2	0.0	28.5	9.9	0.0	3.8	0.7	3.5	0.7	1.3	0.6	0.0
Cycle Q Clear(g_c), s	23.2	0.0	28.5	9.9	0.0	3.8	0.7	3.5	0.7	1.3	0.6	0.0
Prop In Lane	1.00		0.14	1.00		0.59	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	430	0	440	174	0	165	523	1740	937	281	933	1152
V/C Ratio(X)	0.80	0.00	0.94	0.80	0.00	0.33	0.04	0.68	0.26	0.13	0.48	0.07
Avail Cap(c_a), veh/h	437	0	447	451	0	428	572	1740	937	314	933	1152
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.88	0.88	0.88	0.93	0.93	0.93
Uniform Delay (d), s/veh	46.6	0.0	48.6	57.6	0.0	54.8	15.8	1.0	0.6	15.3	0.3	0.1
Incr Delay (d2), s/veh	9.9	0.0	28.0	8.4	0.0	1.1	0.0	1.9	0.6	0.2	1.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	0.0	16.4	5.0	0.0	1.7	0.3	1.0	0.4	0.5	0.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.5	0.0	76.6	66.0	0.0	56.0	15.8	2.9	1.2	15.5	2.0	0.2
LnGrp LOS	E	A	E	E	A	E	B	A	A	B	A	A
Approach Vol, veh/h		757			194			1445			562	
Approach Delay, s/veh		67.5			63.2			2.8			2.6	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	68.8		36.5	6.5	69.9		17.1				
Change Period (Y+Rc), s	4.0	5.6		5.6	4.0	5.6		4.6				
Max Green Setting (Gmax), s	6.0	40.4		31.4	6.0	40.4		32.4				
Max Q Clear Time (g_c+I1), s	3.3	5.5		30.5	2.7	2.6		11.9				
Green Ext Time (p_c), s	0.0	11.9		0.4	0.0	3.2		0.7				

Intersection Summary			
HCM 6th Ctrl Delay		23.3	
HCM 6th LOS		C	

Notes

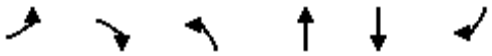
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	179	247	48	1190	581	36
Future Volume (vph)	179	247	48	1190	581	36
Lane Group Flow (vph)	203	281	55	1352	660	41
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	4	1	1	6	2	4
Permitted Phases		4	6			2
Detector Phase	4	1	1	6	2	4
Switch Phase						
Minimum Initial (s)	10.0	7.0	7.0	20.0	20.0	10.0
Minimum Split (s)	37.0	12.0	12.0	26.0	42.0	37.0
Total Split (s)	46.0	30.0	30.0	84.0	54.0	46.0
Total Split (%)	35.4%	23.1%	23.1%	64.6%	41.5%	35.4%
Yellow Time (s)	3.6	3.5	3.5	3.6	3.6	3.6
All-Red Time (s)	1.5	1.5	1.5	1.5	1.5	1.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.0	5.0	5.1	5.1	5.1
Lead/Lag		Lead	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Recall Mode	None	None	None	C-Min	C-Min	None
v/c Ratio	0.56	0.66	0.09	0.46	0.49	0.03
Control Delay	60.9	35.4	3.3	4.6	4.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0
Total Delay	60.9	35.4	3.3	4.6	4.4	0.1
Queue Length 50th (ft)	85	138	9	160	69	0
Queue Length 95th (ft)	119	207	m15	143	217	m0
Internal Link Dist (ft)	991			1198	585	
Turn Bay Length (ft)	350	400	425			400
Base Capacity (vph)	1090	609	728	2946	1345	1613
Starvation Cap Reductn	0	0	0	0	75	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	0.46	0.08	0.46	0.52	0.03

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 103 (79%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 95
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Frantz Rd & Metro Pl S



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	179	247	48	1190	581	36
Future Volume (veh/h)	179	247	48	1190	581	36
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1885	1900	1900	1900	1900
Adj Flow Rate, veh/h	203	281	55	1352	660	41
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	1	1	0	0	0	0
Cap, veh/h	677	385	626	2626	1221	1347
Arrive On Green	0.19	0.19	0.06	0.97	1.00	1.00
Sat Flow, veh/h	3483	1598	1810	3705	1900	1610
Grp Volume(v), veh/h	203	281	55	1352	660	41
Grp Sat Flow(s),veh/h/ln	1742	1598	1810	1805	1900	1610
Q Serve(g_s), s	6.5	21.1	1.2	3.2	0.0	0.0
Cycle Q Clear(g_c), s	6.5	21.1	1.2	3.2	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	677	385	626	2626	1221	1347
V/C Ratio(X)	0.30	0.73	0.09	0.51	0.54	0.03
Avail Cap(c_a), veh/h	1096	577	890	2626	1221	1347
HCM Platoon Ratio	1.00	1.00	1.33	1.33	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.85	0.85
Uniform Delay (d), s/veh	44.8	45.5	5.8	0.6	0.0	0.0
Incr Delay (d2), s/veh	0.3	3.4	0.1	0.7	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	18.2	0.4	0.8	0.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	45.1	48.9	5.9	1.4	1.5	0.0
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	484			1407	701	
Approach Delay, s/veh	47.3			1.5	1.4	
Approach LOS	D			A	A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	11.0	88.6		30.4		99.6
Change Period (Y+Rc), s	5.0	5.1		5.1		5.1
Max Green Setting (Gmax), s	25.0	48.9		40.9		78.9
Max Q Clear Time (g_c+I1), s	3.2	2.0		23.1		5.2
Green Ext Time (p_c), s	0.1	11.4		2.2		33.6

Intersection Summary	
HCM 6th Ctrl Delay	10.0
HCM 6th LOS	B

Notes

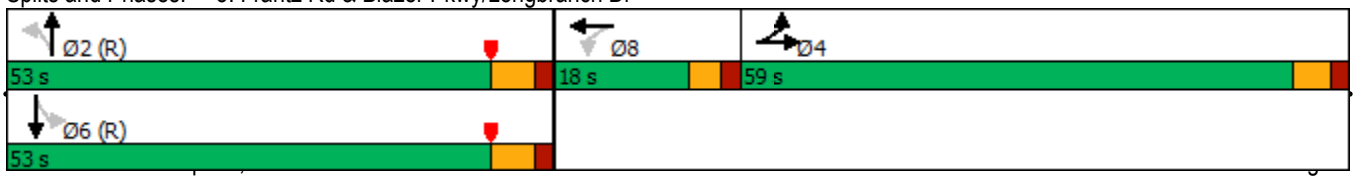
User approved pedestrian interval to be less than phase max green.

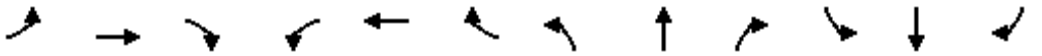
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	456	0	17	0	11	1168	10	1326
Future Volume (vph)	456	0	17	0	11	1168	10	1326
Lane Group Flow (vph)	323	307	0	32	13	1377	12	1582
Turn Type	Split	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4	4		8		2		6
Permitted Phases			8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	8.0	8.0	15.0	15.0	15.0	15.0
Minimum Split (s)	40.0	40.0	15.0	15.0	25.2	25.2	25.2	25.2
Total Split (s)	59.0	59.0	18.0	18.0	53.0	53.0	53.0	53.0
Total Split (%)	45.4%	45.4%	13.8%	13.8%	40.8%	40.8%	40.8%	40.8%
Yellow Time (s)	3.6	3.6	3.0	3.0	4.2	4.2	4.2	4.2
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6		5.0	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.71	0.63		0.23	0.22	0.65	0.10	1.45
Control Delay	51.3	36.9		3.9	31.6	22.9	21.6	233.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	36.9		3.9	31.6	22.9	21.6	233.4
Queue Length 50th (ft)	260	187		0	6	433	6	~1876
Queue Length 95th (ft)	311	242		0	27	575	m16	#2186
Internal Link Dist (ft)		507		671		1105		467
Turn Bay Length (ft)	160				100		50	
Base Capacity (vph)	704	722		178	60	2104	124	1093
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.46	0.43		0.18	0.22	0.65	0.10	1.45

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 37 (28%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ 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: 5: Frantz Rd & Blazer Pkwy/Longbranch Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	456	0	86	17	0	10	11	1168	16	10	1326	34
Future Volume (veh/h)	456	0	86	17	0	10	11	1168	16	10	1326	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1885	1885
Adj Flow Rate, veh/h	623	0	0	20	0	12	13	1358	19	12	1542	40
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	1	1
Cap, veh/h	800	420	0	46	0	27	55	2214	31	205	1111	29
Arrive On Green	0.22	0.00	0.00	0.04	0.00	0.04	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	3619	1900	0	1081	0	648	328	3645	51	400	1829	47
Grp Volume(v), veh/h	623	0	0	32	0	0	13	672	705	12	0	1582
Grp Sat Flow(s),veh/h/ln	1810	1900	0	1729	0	0	328	1805	1891	400	0	1877
Q Serve(g_s), s	21.1	0.0	0.0	2.3	0.0	0.0	0.0	30.3	30.3	2.5	0.0	79.0
Cycle Q Clear(g_c), s	21.1	0.0	0.0	2.3	0.0	0.0	79.0	30.3	30.3	32.8	0.0	79.0
Prop In Lane	1.00		0.00	0.62		0.37	1.00		0.03	1.00		0.03
Lane Grp Cap(c), veh/h	800	420	0	73	0	0	55	1097	1149	205	0	1140
V/C Ratio(X)	0.78	0.00	0.00	0.44	0.00	0.00	0.23	0.61	0.61	0.06	0.00	1.39
Avail Cap(c_a), veh/h	1487	780	0	173	0	0	55	1097	1149	205	0	1140
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.63	0.63	0.63	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.6	0.0	0.0	60.8	0.0	0.0	65.0	16.0	16.0	26.2	0.0	25.5
Incr Delay (d2), s/veh	3.5	0.0	0.0	4.1	0.0	0.0	6.2	1.6	1.6	0.5	0.0	179.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	0.0	0.0	1.1	0.0	0.0	0.5	12.4	12.9	0.3	0.0	89.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.2	0.0	0.0	64.9	0.0	0.0	71.2	17.6	17.5	26.8	0.0	205.4
LnGrp LOS	D	A	A	E	A	A	E	B	B	C	A	F
Approach Vol, veh/h		623			32			1390			1594	
Approach Delay, s/veh		51.2			64.9			18.0			204.1	
Approach LOS		D			E			B			F	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		85.2		34.3		85.2		10.5				
Change Period (Y+Rc), s		6.2		5.6		6.2		5.0				
Max Green Setting (Gmax), s		46.8		53.4		46.8		13.0				
Max Q Clear Time (g_c+I1), s		81.0		23.1		81.0		4.3				
Green Ext Time (p_c), s		0.0		5.7		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			105.6									
HCM 6th LOS			F									

Notes

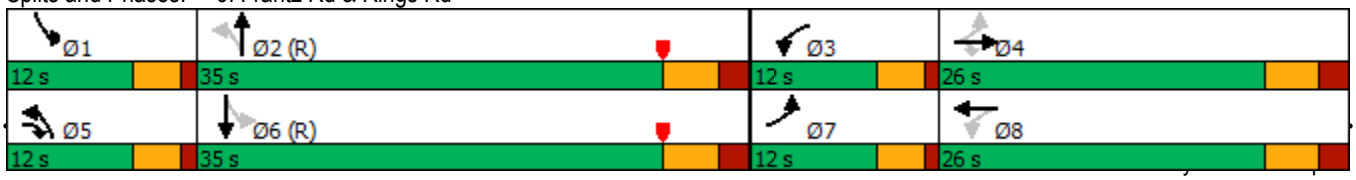
User approved volume balancing among the lanes for turning movement.

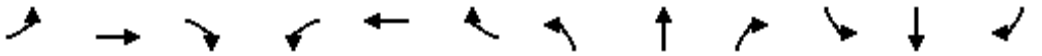
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	331	374	432	77	176	277	738	74	1056
Future Volume (vph)	331	374	432	77	176	277	738	74	1056
Lane Group Flow (vph)	364	411	475	85	290	304	919	81	1450
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	5	3	8	5	2	1	6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	5	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	7.0	11.0	7.0	7.0	11.0	7.0	12.0	7.0	12.0
Minimum Split (s)	11.0	40.0	11.0	11.0	42.0	11.0	39.0	11.0	41.0
Total Split (s)	12.0	26.0	12.0	12.0	26.0	12.0	35.0	12.0	35.0
Total Split (%)	14.1%	30.6%	14.1%	14.1%	30.6%	14.1%	41.2%	14.1%	41.2%
Yellow Time (s)	3.0	3.5	3.0	3.0	3.5	3.0	3.5	3.0	3.5
All-Red Time (s)	1.0	2.0	1.0	1.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.5	4.0	4.0	5.5	4.0	5.5	4.0	5.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.89	0.87	0.62	0.34	0.35	1.03	0.65	0.27	2.30
Control Delay	48.7	51.1	18.8	20.4	19.0	88.5	17.8	13.4	610.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.7	51.1	18.8	20.4	19.0	88.5	17.8	13.4	610.6
Queue Length 50th (ft)	143	212	148	28	43	~135	257	21	~1294
Queue Length 95th (ft)	#290	#378	257	57	77	#312	184	44	#1550
Internal Link Dist (ft)		1352			734		584		1105
Turn Bay Length (ft)	140			175		300		200	
Base Capacity (vph)	409	475	766	258	900	295	1424	312	630
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.87	0.62	0.33	0.32	1.03	0.65	0.26	2.30

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 36 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Frantz Rd & Rings Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	331	374	432	77	176	88	277	738	98	74	1056	264
Future Volume (veh/h)	331	374	432	77	176	88	277	738	98	74	1056	264
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1900	1900	1885	1885	1885	1900	1841	1841
Adj Flow Rate, veh/h	364	411	475	85	193	97	304	811	108	81	1160	290
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	3	0	0	1	1	1	0	4	4
Cap, veh/h	416	458	540	230	516	249	254	1251	167	387	526	131
Arrive On Green	0.09	0.24	0.24	0.07	0.22	0.22	0.19	0.79	0.79	0.07	0.37	0.37
Sat Flow, veh/h	1810	1900	1610	1767	2361	1139	1795	3177	423	1810	1421	355
Grp Volume(v), veh/h	364	411	475	85	146	144	304	457	462	81	0	1450
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1767	1805	1695	1795	1791	1809	1810	0	1777
Q Serve(g_s), s	8.0	17.8	20.5	3.1	5.8	6.2	8.0	9.4	9.4	2.2	0.0	31.4
Cycle Q Clear(g_c), s	8.0	17.8	20.5	3.1	5.8	6.2	8.0	9.4	9.4	2.2	0.0	31.4
Prop In Lane	1.00		1.00	1.00		0.67	1.00		0.23	1.00		0.20
Lane Grp Cap(c), veh/h	416	458	540	230	394	370	254	705	712	387	0	657
V/C Ratio(X)	0.87	0.90	0.88	0.37	0.37	0.39	1.20	0.65	0.65	0.21	0.00	2.21
Avail Cap(c_a), veh/h	416	458	540	271	435	409	254	705	712	430	0	657
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.09	0.00	0.09
Uniform Delay (d), s/veh	29.2	31.2	26.6	24.2	28.2	28.4	18.1	6.5	6.5	14.3	0.0	26.8
Incr Delay (d2), s/veh	18.1	20.0	15.4	0.7	0.6	0.7	120.9	4.6	4.5	0.0	0.0	543.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	10.3	10.8	1.3	2.5	2.5	11.0	2.9	2.9	0.9	0.0	111.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.3	51.2	42.1	25.0	28.8	29.1	139.0	11.0	11.0	14.3	0.0	570.1
LnGrp LOS	D	D	D	C	C	C	F	B	B	B	A	F
Approach Vol, veh/h		1250			375			1223			1531	
Approach Delay, s/veh		46.6			28.0			42.8			540.7	
Approach LOS		D			C			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	39.0	10.1	26.0	12.0	36.9	12.0	24.1
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	8.0	29.5	8.0	20.5	8.0	29.5	8.0	20.5
Max Q Clear Time (g_c+I1), s	4.2	11.4	5.1	22.5	10.0	33.4	10.0	8.2
Green Ext Time (p_c), s	0.0	6.6	0.0	0.0	0.0	0.0	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	216.7
HCM 6th LOS	F

Notes

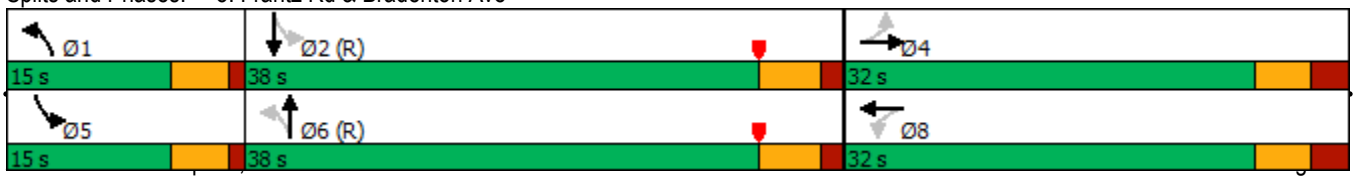
User approved pedestrian interval to be less than phase max green.

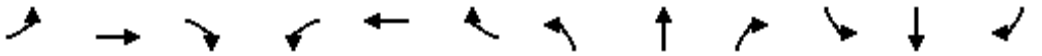
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	131	8	40	10	10	875	49	1291
Future Volume (vph)	131	8	40	10	10	875	49	1291
Lane Group Flow (vph)	158	62	0	123	12	1091	59	1596
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	1	6	5	2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	1	6	5	2
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	7.0	15.0	7.0	15.0
Minimum Split (s)	32.0	32.0	35.0	35.0	12.0	30.0	12.0	34.0
Total Split (s)	32.0	32.0	32.0	32.0	15.0	38.0	15.0	38.0
Total Split (%)	37.6%	37.6%	37.6%	37.6%	17.6%	44.7%	17.6%	44.7%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	4.0	3.6	4.0
All-Red Time (s)	2.5	2.5	2.5	2.5	1.0	1.5	1.0	1.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	4.6	5.5	4.6	5.5
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio	0.66	0.18		0.38	0.05	0.53	0.17	1.29
Control Delay	44.9	11.2		18.5	8.8	20.8	3.5	149.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	44.9	11.2		18.5	8.8	20.8	3.5	149.8
Queue Length 50th (ft)	80	5		28	3	235	3	~1077
Queue Length 95th (ft)	119	29		61	m8	321	m8	m#664
Internal Link Dist (ft)		353		381		797		718
Turn Bay Length (ft)	200				145		145	
Base Capacity (vph)	401	542		499	310	2051	413	1238
Starvation Cap Reductn	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0
Reduced v/c Ratio	0.39	0.11		0.25	0.04	0.53	0.14	1.29

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 12 (14%), Referenced to phase 2:SBTL and 6:NBTL, Start of Yellow
Natural Cycle: 145
Control Type: Actuated-Coordinated
~ 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: 8: Frantz Rd & Bradenton Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	8	43	40	10	52	10	875	31	49	1291	34
Future Volume (veh/h)	131	8	43	40	10	52	10	875	31	49	1291	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	158	10	52	48	12	63	12	1054	37	59	1555	41
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	280	39	202	125	46	118	121	2140	75	374	1185	31
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.01	0.20	0.20	0.08	0.86	0.86
Sat Flow, veh/h	1346	266	1385	456	312	806	1810	3558	125	1810	1843	49
Grp Volume(v), veh/h	158	0	62	123	0	0	12	535	556	59	0	1596
Grp Sat Flow(s),veh/h/ln	1346	0	1651	1574	0	0	1810	1805	1878	1810	0	1891
Q Serve(g_s), s	3.8	0.0	2.8	3.0	0.0	0.0	0.2	22.4	22.4	0.9	0.0	54.7
Cycle Q Clear(g_c), s	9.7	0.0	2.8	5.9	0.0	0.0	0.2	22.4	22.4	0.9	0.0	54.7
Prop In Lane	1.00		0.84	0.39		0.51	1.00		0.07	1.00		0.03
Lane Grp Cap(c), veh/h	280	0	241	289	0	0	121	1086	1129	374	0	1216
V/C Ratio(X)	0.56	0.00	0.26	0.43	0.00	0.00	0.10	0.49	0.49	0.16	0.00	1.31
Avail Cap(c_a), veh/h	494	0	503	531	0	0	306	1086	1129	484	0	1216
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.2	0.0	32.2	33.4	0.0	0.0	21.8	22.5	22.5	8.1	0.0	6.1
Incr Delay (d2), s/veh	1.8	0.0	0.6	1.0	0.0	0.0	0.4	1.6	1.5	0.2	0.0	146.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	1.2	2.4	0.0	0.0	0.1	11.1	11.5	0.3	0.0	53.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.9	0.0	32.8	34.4	0.0	0.0	22.1	24.1	24.1	8.3	0.0	152.6
LnGrp LOS	D	A	C	C	A	A	C	C	C	A	A	F
Approach Vol, veh/h		220			123			1103			1655	
Approach Delay, s/veh		35.8			34.4			24.1			147.5	
Approach LOS		D			C			C			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	60.2		18.5	9.9	56.6		18.5				
Change Period (Y+Rc), s	4.6	5.5		6.1	4.6	5.5		6.1				
Max Green Setting (Gmax), s	10.4	32.5		25.9	10.4	32.5		25.9				
Max Q Clear Time (g_c+I1), s	2.2	56.7		11.7	2.9	24.4		7.9				
Green Ext Time (p_c), s	0.0	0.0		0.7	0.1	5.9		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			91.2									
HCM 6th LOS			F									

City of Dublin

Office of the City Manager
5555 Perimeter Drive • Dublin, OH 43017
Phone: 614.410.4400

Memo

To: Public Services Committee of Dublin City Council

From: Dana L. McDaniel, City Manager

Date: February 10, 2022

Initiated By: Megan O'Callaghan, Deputy City Manager/Finance and Development Officer
Jennifer M. Rauch, AICP, Director of Planning
Jean-Ellen Willis, PE, Deputy Director of Transportation and Mobility
J.M. Rayburn, Planner II

Re: Mobility Study Update – Micro-mobility Demonstration Pilot Update

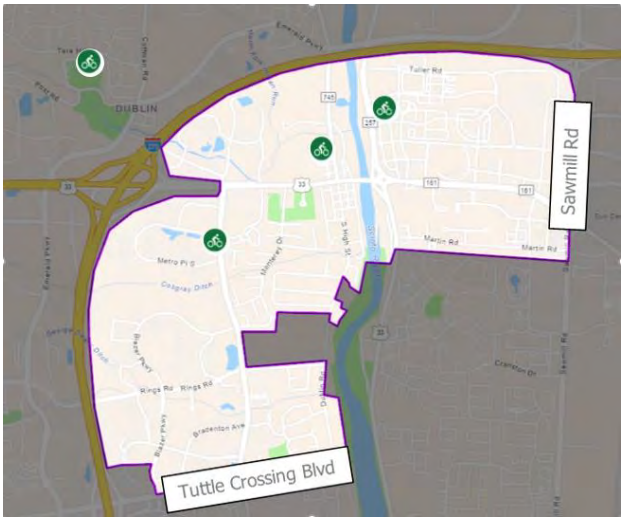
Background

This memo provides an update on the micro-mobility demonstration pilot. This proposed pilot project is consistent with previous discussions with the Public Services Committee in 2021 when the topic of micro-mobility vehicles, and specifically Bird scooters operating in Dublin, were contemplated and received favorable feedback. Given the recommendations of the Frantz Road Alternative Transportation Lane Study combined with the interest of Bird to operate in Dublin, staff proposed to merge the two into a single pilot project at the November 2021 meeting of the Public Services Committee. The Public Services Committee requested staff provide follow up information regarding the Demonstration Pilot boundaries, timeline, Bird e-scooters phasing, speed limits, parking management, and sidewalk congestion mitigation.

Pilot Boundaries

Staff proposed a two-phase approach for the pilot boundaries. Phase 1 would extend south from Interstate 270 to Tuttle Crossing Boulevard and west from Sawmill Road to Interstate 270, as shown in Figure 1. Phase 1 has a minimum three-month duration. During this phase, staff will monitor and evaluate micro-mobility activity in conjunction with an education and marketing campaign. Should Phase 1 prove successful, the pilot boundaries would be expanded citywide.

Figure 1: Pilot Boundaries for Phase 1 (purple) and CoGo Stations (green)



Demonstration Pilot - Timeline

Staff is proposing the following:

Pilot Planning and Approvals (February 2022 to April 2022)

- Review demonstration project with the Public Services Committee
- Finalize goals, scope, timeline and evaluation
- Create an engagement and communications plan to educate the public on boundaries of the pilot, expectations of drivers and micro-mobility users, and enforcement practices
- Staff anticipates to provide City Council the demonstration project parameters and details and request that Council temporarily suspend Code at the April 11, 2022 meeting

Phase 1 (May 2022 to July 2022)

- Demonstration pilot commences in May 2022 in recognition of National Bike Month
- Pilot launched within defined Phase 1 boundaries
- Monitor and evaluate Phase 1 area for a minimum of 3 months
- Implement communications plan

Phase 2 (August 2022 to May 2023)

- Expand pilot boundaries citywide
- Monitor and evaluate Phase 2 area for 9 months
- Continue communications plan

Pilot Concludes (June 2023)

- Conclude demonstration pilot
- Report findings to the Public Services Committee and City Council and provide recommendations for next steps

Proposed Code Section for Temporary Suspension

As mentioned previously, staff identified one section of the Dublin Code that would need to be suspended as part of the demonstration pilot. With the support of the Committee, staff will request that Council temporarily suspend this section of Code at the meeting scheduled for April 11, 2022.

- § 72.061 Driving upon sidewalks, bike paths, street lawns or other areas
    - *No person shall drive or operate any vehicle, other than a bicycle, upon a sidewalk or sidewalk area, or bike path, except upon a permanent or duly authorized temporary driveway*.

Bird and CoGo

Bird plans to start with 50 e-scooters in the Phase 1 pilot area. As useage grows and the operating zone expands citywide, Bird would look to increase based on utilization. Bird has proposed to increase its fleet by 20 scooters when the average rides-per-day exceeds two (2) over the duration of a month. It is anticipated that with the larger citywide zone, the fleet of Bird e-scooters would grow to about 100-125 scooters. With respect to CoGo Bike Share, staff plans to deploy four bike share stations this year at the DCRC, the parking garage at the library, North Market Bridge Park, and at Frantz Road and Metro Place North. Staff will request funding in the 2023-2027 CIP to expand the CoGo system at five locations including Dublin City Hall, the Dale Drive COTA Park & Ride, the DCS Emerald Campus, the East Plaza at Riverside Crossing Park, and Frantz Road & Rings Road. Each of these stations will have 11 docks for parking CoGo bikes.

Tools that Bird uses to encourage safe riding and parking include geo-fencing, Community Safety Zones, and in-app notifications and incentives. Geo-fences and Community Safety Zones were described in the November 10, 2021 memo and is attached for reference.

The Public Services Committee requested staff consider limiting parking areas, especially in pedestrian zones. Bird recommends embedding virtual parking locations in Historic Dublin and the Bridge Street District, as shown in Figure 3. This feature allows acceptable parking locations to be highlighted in the Bird app with a photo for the rider to reference in addition to in-app incentives such as a credit. This feature will help educate riders on acceptable parking locations in order to mitigate sidewalk clutter and congestion. In the event that a Bird e-scooter parks outside a recommended location, a notification is sent to the local Fleet Manager to rebalance the scooters back to the designated locations. Furthermore, Bird has confirmed the capability to implement No Ride Zones for streets such as Longshore Street and special events such as the Dublin Market at Bridge Park and the Irish Festival.

The Public Services Committee requested staff explore sidewalk congestion mitigation measures in areas with narrow sidewalks. This is being addressed in two areas and includes five components: a mobility boulevard, parking management, targeted scooter parking, a pedestrian only zone, and new signage.

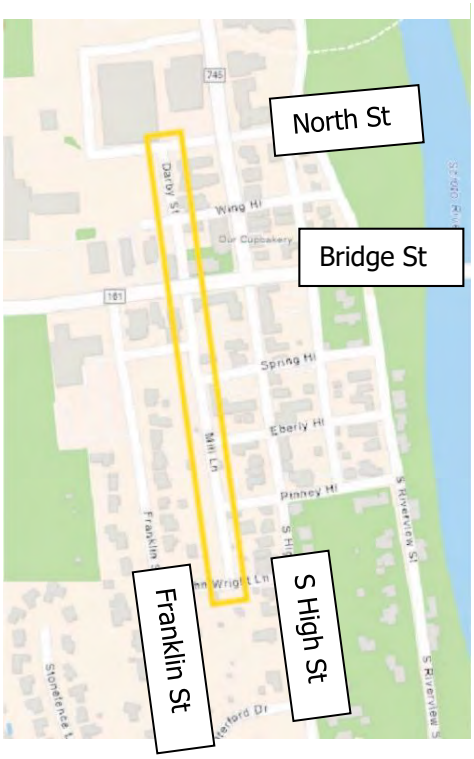
Figure 2: Example of Bird's in-app messaging

Figure 3: Embedded Parking Locations in Bird's app

Historic Dublin

Staff is proposing a 'mobility boulevard' to create designated corridors for micro-mobility traffic that parallel streets with narrow sidewalks. Mobility boulevards are in essence bike boulevards but are inclusive for all micro-mobility users. According to the National Association of City Transportation Officials (NACTO), bike boulevards should be designed for streets with motor vehicle volumes under 1,500 vehicles per day (VPD), with up to 3,000 VPD allowed in limited sections of a bike boulevard corridor. Based on this criteria, staff has identified a potential route on low volume streets within Historic Dublin as a start.

Figure 4: Proposed Mobility Boulevard (yellow) in the Historic District



For the timeframe of the demonstration pilot, Darby Street (2,000 VPD) and Mill Lane (1,000 VPD) provide a parallel route to High Street and have traffic volumes under the 3,000 max VPD guidance from NACTO. The mobility boulevard would extend from North Street to John Wright Lane as a low-stress alternative to High Street, as shown in Figure 4. Both Darby Street and Mill Lane are designated as alleyways and have a speed limit of 15 MPH. According to recent speed surveys, the average speed for both segments is approximately 14 MPH. Lower speed limits can increase comfort and safety for users. Additionally, users of this proposed Mobility Boulevard could use the existing enhanced crosswalk for crossing Bridge Street.

With the establishment of the Historic Dublin Mobility Boulevard, staff proposes a parking management plan for micro-mobility vehicles that builds off existing facilities within the district, as shown in red in Figure 5. Specifically, staff is proposing micro-mobility parking at existing public bike racks at six (6) locations. These include bike racks at Gateway Brewing Company, at The Avenue, at the southwest corner of the intersection of North Street and North High Street, inside the library parking garage, at the Darby Street parking lot, and adjacent to the Franklin Street Parking lot. Additionally, staff is proposing the conversion of an on-street parking space on Mill Lane to a micro-mobility parking space, as shown in Figures 5, 6, and 7.

Figure 5: Proposed Micro-mobility Parking Management Plan in Historic Dublin

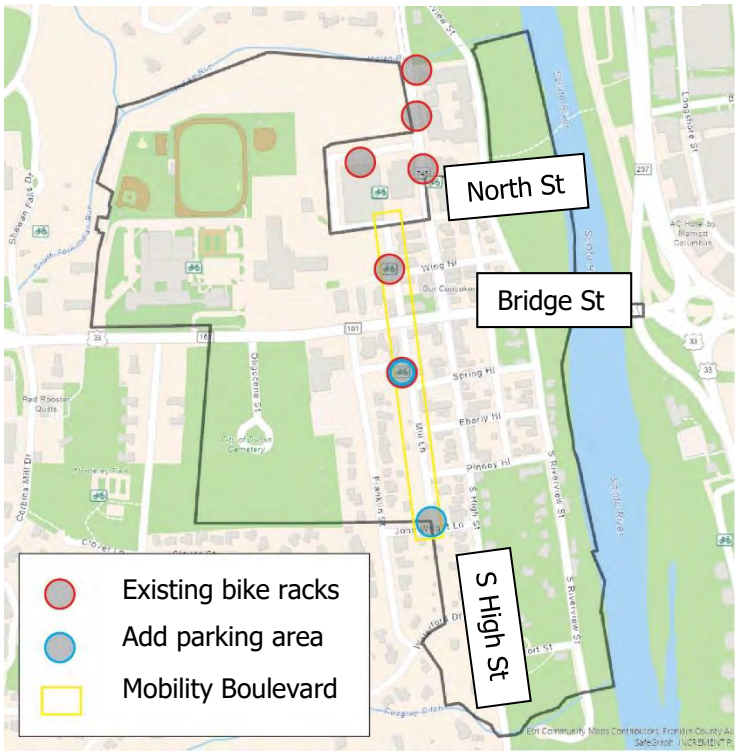
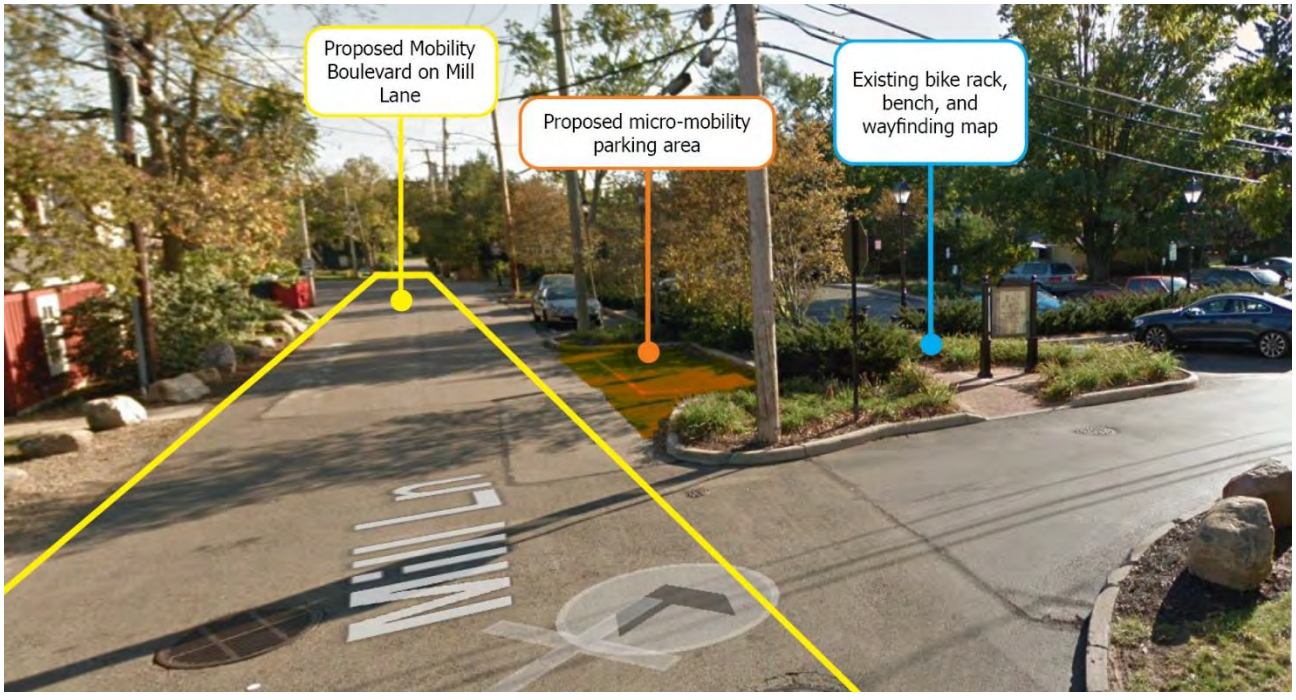


Figure 6: Proposed conversion of one (1) vehicular parking space on Mill Lane (orange) to micro-mobility parking area

Figure 7: Street view of proposed micro-mobility parking area (orange) on Mill Lane



Finally, staff is proposing the addition of a scooter parking area at the intersection of John Wright Lane and Mill Lane, as shown in Figures 8 and 9. At this time, staff is not proposing the conversion of a parking space at the John Wright Parking Lot; however, staff would propose the conversion of one parking space for a temporary bike rack, if demand warrants it, as shown in Figure 10.

Figure 8: Aerial view of proposed scooter parking (orange) at the intersection of John Wright Lane and Mill Lane

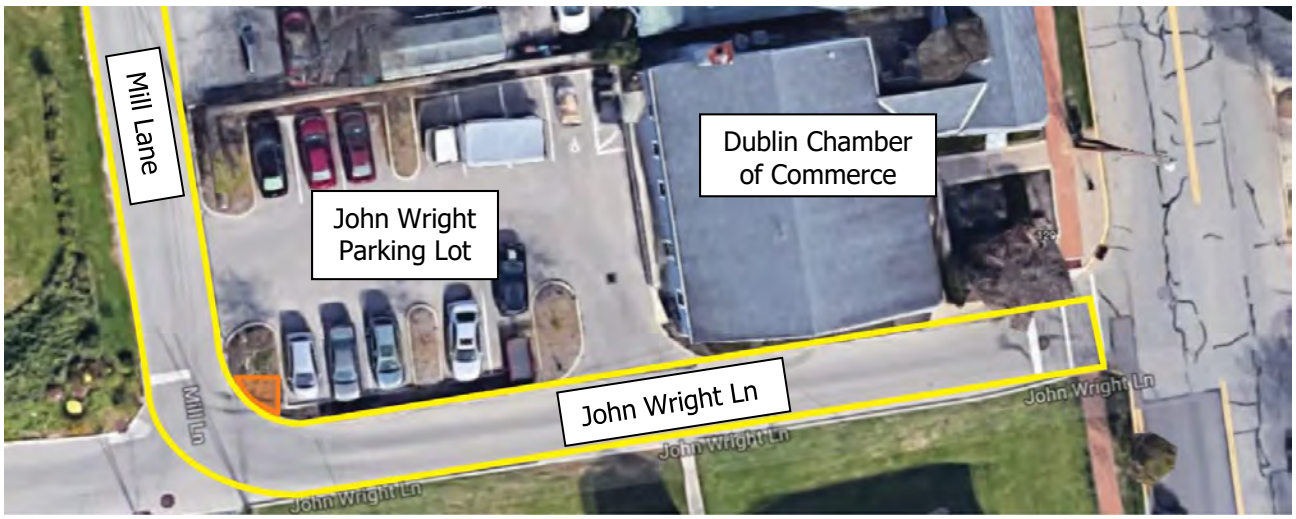
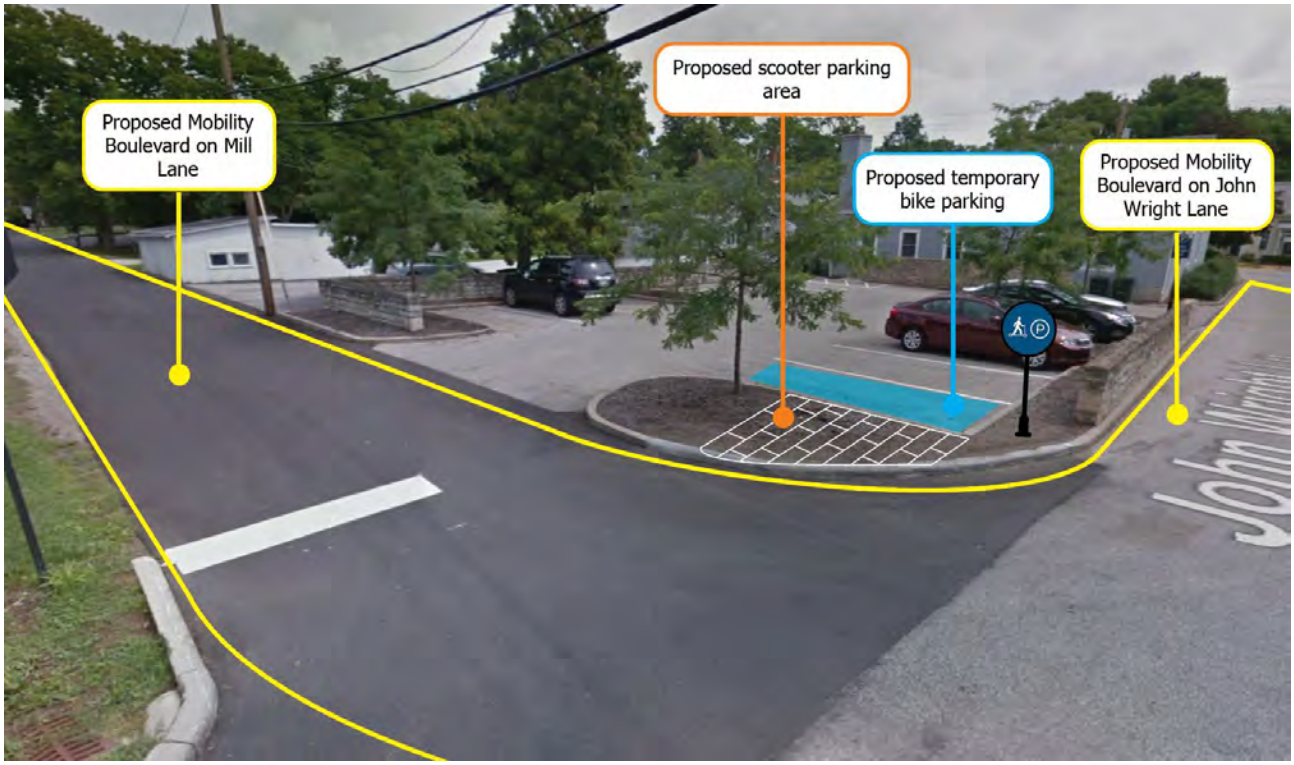


Figure 9: Street view of proposed scooter parking area at John Wright Parking Lot

Figure 10: Street view of proposed scooter parking with proposed space for a temporary bike rack



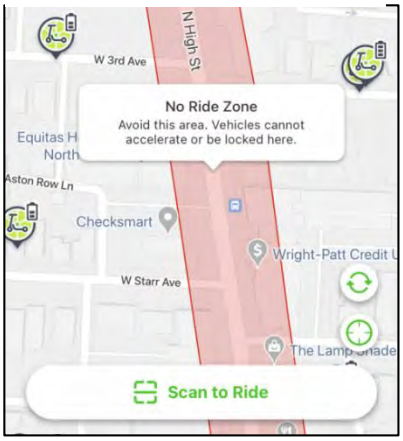
Bridge Park

Staff is proposing a series of micro-mobility parking locations at existing pocket parks lining Longshore Street. A total of five (5) pocket parks line Longshore Street; three (3) linking to Riverside Drive to the west and two (2) linking to Mooney Street to the east, as shown in Figure 11. These pocket parks feature accessible paths spanning the width of each block, which permits access for micro-mobility vehicles. Concurrently, staff proposes a 'No Ride Zone' on Longshore Street, spanning from John Shields Parkway to Banker Drive. This is similar to a policy adopted by the City of Columbus in September 2021 for High Street in the Short North Arts District. Columbus users are not able to park or ride rentable scooters along North High Street between Goodale Street and Fifth Avenue. Messaging could appear in apps for Bird and CoGo that designate Longshore Street as a 'No Ride Zone' for scooters and bicycles, as shown in Figure 12. Micro-mobility traffic would be funneled to Mooney Street and to the Emerald Trail on Riverside Drive. Micro-mobility parking would be designated at the east and west end of each pocket park and at the corners of each intersection of Longshore Street at Banker Drive, Bridge Park Avenue, Tuller Ridge Drive, and John Shields Parkway. Under this scenario, if micro-mobility users want to access Longshore Street, they would have to complete their trip in a designated parking area

Figure 11: Existing pocket parks (magenta) and Longshore 'No Ride Zone' (yellow) in Bridge Park

and travel Longshore Street as a pedestrian. Staff is coordinating the specific locations within the pocket parks for micro-mobility parking with Crawford Hoying. Furthermore, City staff will work with Crawford Hoying, Bird and CoGo to educate riders and the general public to park their vehicles at bike racks and designated areas. For example, Bird has the ability to customize in-app messaging and can link riders to a City webpage outlining appropriate parking and safe riding, prior to the first ride.

Figure 12: High Street 'No Ride Zone' in Lime app



Demonstration Pilot Cost Estimates – Signs, Light Poles, and Materials

In order to implement the demonstration pilot as proposed, there would be costs associated with new signs, replacement light poles, and materials such as the glow pavers.

Further efforts to mitigate sidewalk congestion point to looking at existing infrastructure with a new lens, specifically the Bridge Street District cycle track. To enhance safety and amplify awareness of the existing cycle track in the Bridge Street District, staff is proposing a collection of signs that will be strategically placed along the cycle track route. These proposed signs may be cantilevered on existing public infrastructure, as shown in Figures 13 through 17, or exist independently within the right-of-way. These signs could be retroreflective or possibly illuminated.

Staff estimates the costs for each of these signs could range from approximately $200 to $15,000. For a standard two-inch square post sign with sheeting in aluminum, much like a speed limit sign, the cost would be closer to $200 and can be made in-house by City staff. For a more complex sign, similar to the wayfinding signs shown in Figures 16 and 17, the cost is about $15,000. The higher costs of the wayfinding signs include the concrete base, powder coated aluminum pole, and decorative pole base as well as the costs for labor. For the demonstration pilot, staff recommends making the lower cost signs in house and then implementing the rest of the signs pending a successful pilot.

Additionally, some of the proposed cantilevered signs would most likely require the replacement of some existing light poles that are not designed structurally to withstand the extra weight of additional signage. Staff would identify a suitable replacement light pole structure that would also support the proposed signs. There is funding available in this year's CIP to upgrade a few light poles for this purpose.

Figure 13: Example of sign to amplify awareness of Downtown Dublin Cycle Track

Figure 14: Example of sign to amplify awareness of Downtown Dublin Cycle Track

Figure 15: Example of sign to amplify awareness of Downtown Dublin Cycle Track

Figure 16: Example of rectangular sign on existing wayfinding signs

Figure 17: Example of circular sign on existing wayfinding signs

Staff is proposing the 70-square-foot scooter parking area to be identified with pervious or permeable pavers, which the City has in supply. Figure 18 provides an example of a pervious paver treatment, showing two different pattern styles. Another option for the Committee to consider is a paver product

that has glow-in-the-dark components, as shown in Figures 19 and 20. This location provides an opportunity to test glow-in-the-dark pavers for possible application in future mobility projects. The example shown below is from a manufacturer called Glow Path Pavers, which claim a continuous glow of their pavers for six (6) to eight (8) hours after dark. Staff is investigating the cost of installing 70 square feet of glow pavers.

Figure 18: Example of pervious pavers

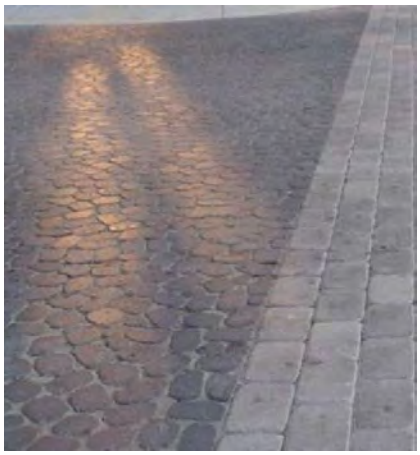


Figure 19: Examples of Glow Path Pavers

Figure 20: Glow Path Pavers after dark

If the Committee supports the use of glow pavers, staff could use funding from the Shared Micro-mobility allocation in the 2022-2026 CIP, which provides funding to develop a bike and/or scooter share program. For supplemental pavement markings to indicate designated parking areas and the Historic Dublin Mobility Boulevard, there is funding available in the 2022-2026 CIP.

Recommendation

Staff would like to review several discussion topics with the Public Services Committee including:

1. Is the Committee supportive of the proposed timeline and components outlined for the demonstration pilot?
2. Is the Public Services Committee supportive of the proposed Bird and CoGo Bike Share fleet sizes?
3. Is the Public Services Committee supportive of the proposed sidewalk congestion mitigation measures and locations?
4. Does the Public Services Committee have a preference for traditional pervious pavers or glow pavers?
5. Does the Public Services Committee have a preference for signs associated with the demonstration project?
6. Does the Committee have a preference for retroreflective signs or illuminated signs or a mix?
7. Other considerations.