BAGBY STREET IMPROVEMENT PLAN

APRIL

2018

Downtown
Redevelopment
Authority

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Traffic Engineers, Inc | F-003158
4/20/2018

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EXECUTIVE SUMMARY

Figure E.01 View of Proposed Corridor Looking East from IH-45 towards Allen Center

As the first street encountered when entering from the west, the Bagby Street corridor is a key gateway into Downtown Houston. The street is the spine of western Downtown connecting the broader Theater District and key civic institutions including City Hall, the Houston Library, and the Heritage Society at Sam Houston Park. Bagby also connects nine parks and public spaces, requiring careful thought as to how the street and the park spaces interact at their edges. **Figure E.02** highlights key destinations along the corridor.

The Downtown Redevelopment Authority (TIRZ 3) has prioritized Bagby Street for the corridor design to match its importance. There are many projects planned adjacent to or near Bagby in Downtown. The street redesign is the first major project in a series of transformative projects that will change the look and feel of the area. A thoughtfully designed Bagby Street can be a common thread and platform to tie all the projects together, therefore strengthening the west side of Downtown.

Bagby Street is one of the few two-way streets in Downtown. Vehicular volume distribution is two-thirds northbound and one-third southbound. All intersections currently operate at an acceptable or better level-of-service (LOS) with the exception of Walker Street due to the close proximity of the IH 45 on-ramp. The majority of trips along the corridor occur during the PM peak hour and during special events.

The existing wide street creates an opportunity to thoughtfully allocate space to multimodal mobility, landscaping, art, lighting and aesthetic improvements. Even with the many park and civic

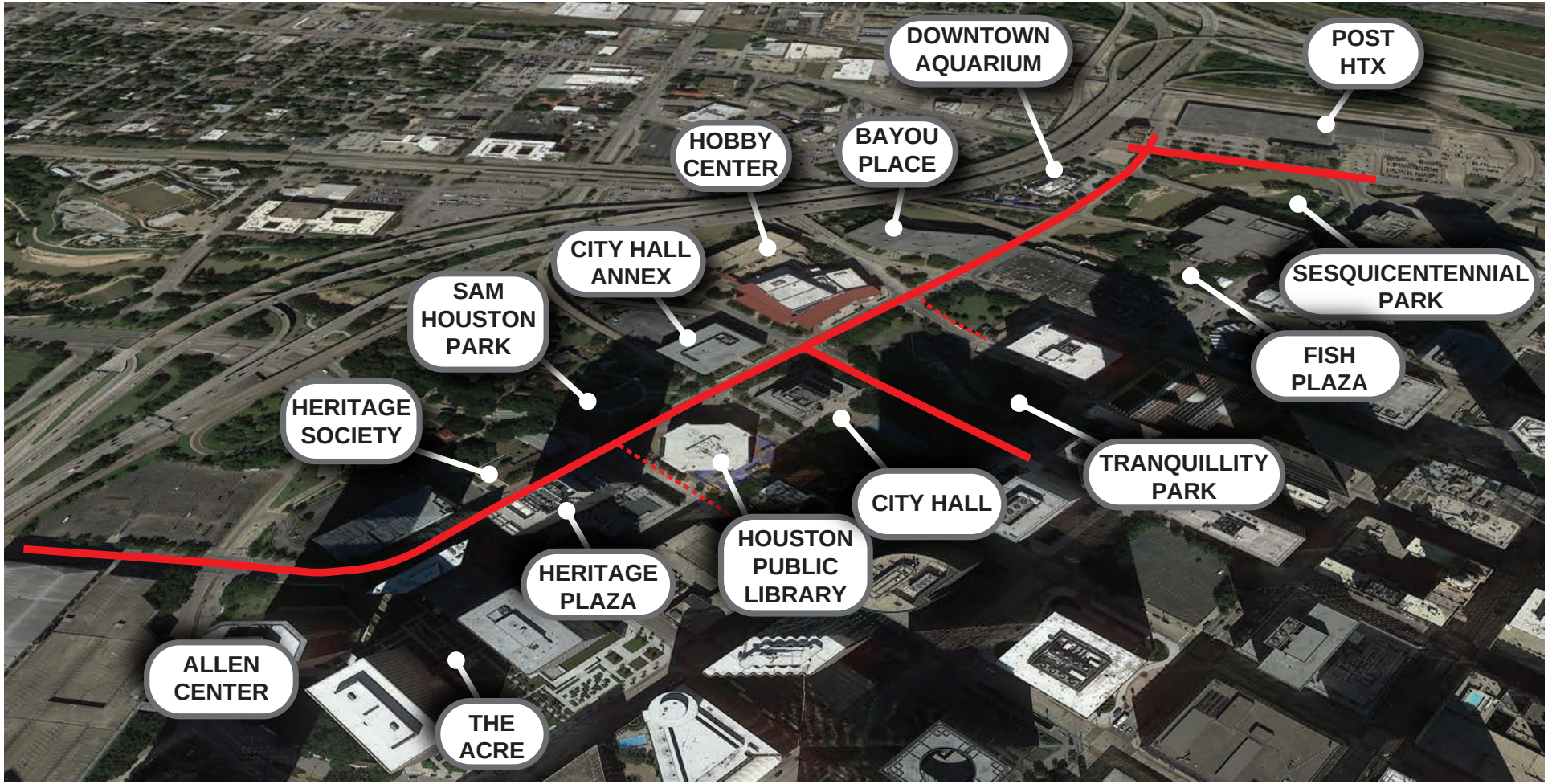


Figure E.02 Corridor Context of Bagby Street

spaces, the experience for persons walking down the corridor does not compare to other areas in Downtown or the opportunity for a great walkable street. Several studies, including *Plan Downtown* and the *Theater District Master Plan*, have identified Bagby as a key walkable corridor.

The existing corridor crash rate is six times greater than the state average for similar streets. This rate includes fifteen pedestrian related crashes and four bicycle related crashes between 2011 and 2015. Redesigning Bagby Street provides an opportunity to improve safety along the corridor.

The corridor has been highlighted in the *City of Houston Bike Plan* as a future bikeway location and the one north-south bike corridor west of Main Street in Downtown. The corridor provides connections to Buffalo Bayou in several locations, linking Downtown to the broader greenways network.

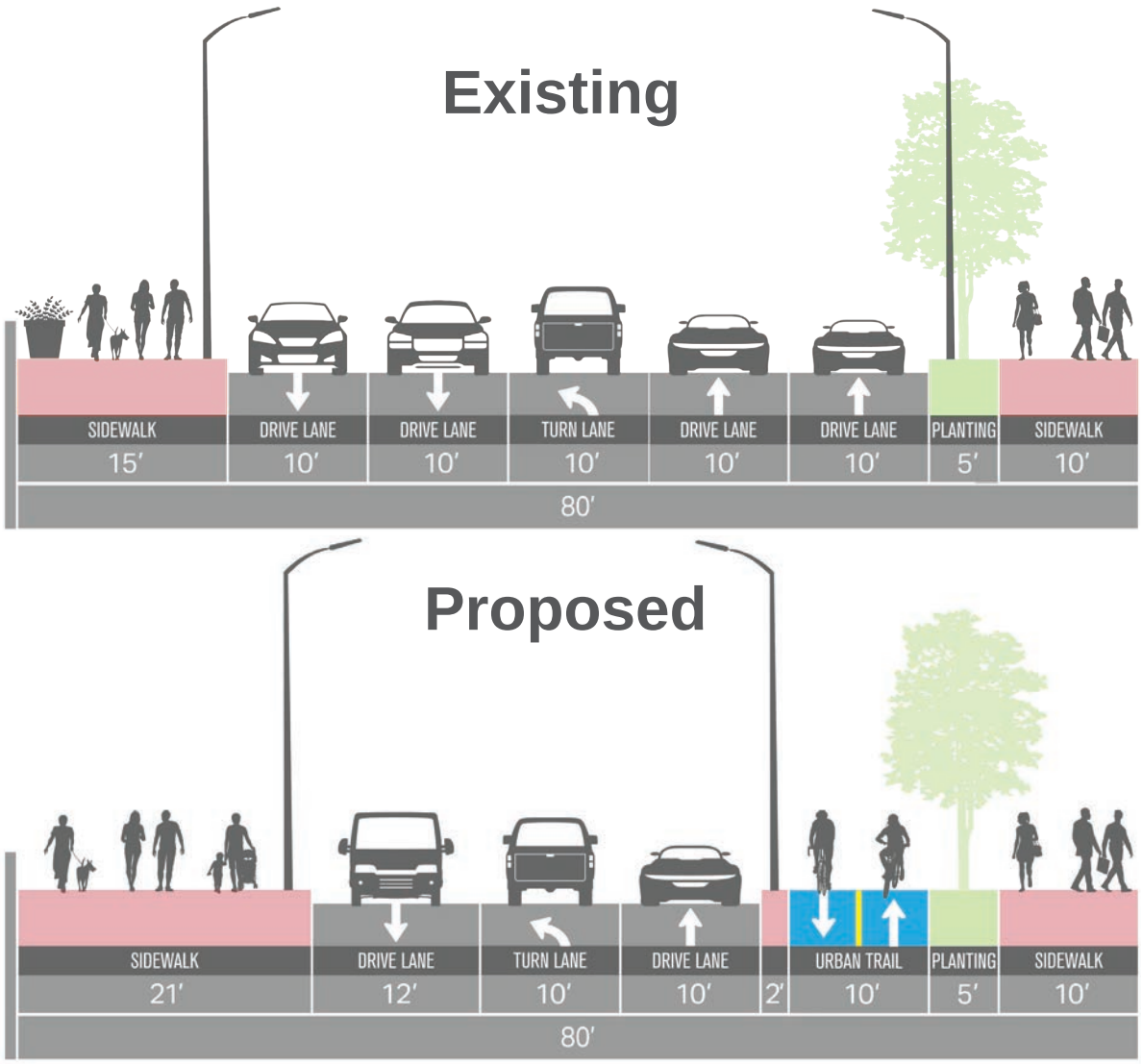


Figure E.03 Recommended Typical Section at 900 block of Bagby Street

Design Approach

Four design alternatives for the corridor were developed based on a thorough existing conditions analysis and guidance from the Stakeholder Advisory Committee (SAC) involved with the project. The four alternatives were then evaluated based on the goals and desires for the Bagby Street corridor, and a final conceptual design was developed. The four developed alternatives were presented to the SAC to discuss opportunities and limitations of each alternative. A preferred alternative was chosen. The recommended conceptual design builds on the preferred alternative based on input from members of the SAC.

The Recommended Conceptual Design balances the needs of each mode by providing a narrower vehicular section to better match existing and projected demand. The roadway will continue to provide access to adjacent destinations in the near future and likely benefit from changes in traffic circulation after completion of TxDOT's North Houston Highway Improvement Project (NHHIP). In particular, the intersection of Bagby at Walker will benefit from reduced queues of vehicles trying to access IH-45 via the new Downtown Connector.

The Recommended Conceptual Design provides reallocated space for persons walking, more landscaped areas, and adds a high comfort bikeway to align with the broader vision for a bikeable Downtown. **Figure E.03** shows the existing cross-section and proposed future cross-section for the 900 block of Bagby Street adjacent to City Hall and City Hall Annex.

The design allows for Bagby Street to support the destinations along the corridor, and to also become a destination itself.

Figure E.04 shows a potential vision of the future corridor from the perspective looking south toward Hobby Center, Tranquillity Park, and City Hall. The design rendering is illustrative of the intent for landscaping and paving materials that will be defined in detail in the next phase of the project. **Figure E.05** shows the recommended design alternative for the full corridor. It also shows how Walker Street and Franklin Street are conceptually designed to seamlessly connect to Bagby and support adjacent development and mobility needs.

The recommendations for the corridor also include an evaluation of the existing stormwater system and utilities along the corridor. Based on the drainage analysis, there are no significant storm sewer upgrades recommended with the exception of increasing pipe sizing and adding storm inlets to the system. Additional inlets are recommended to allow more stormwater flow access to the main trunkline to utilize its full capacity. Any existing pipe that is under 24" in diameter is recommended to be replaced with a 24" or greater to meet current design criteria. The remaining trunkline pipes meet current City standards and will remain in place. A new 42" RCP pipe is proposed for Walker Street as it is reconstructed from Bagby to Smith Street.

Figure E.04 View of Proposed Corridor looking south from Capitol Street Intersection

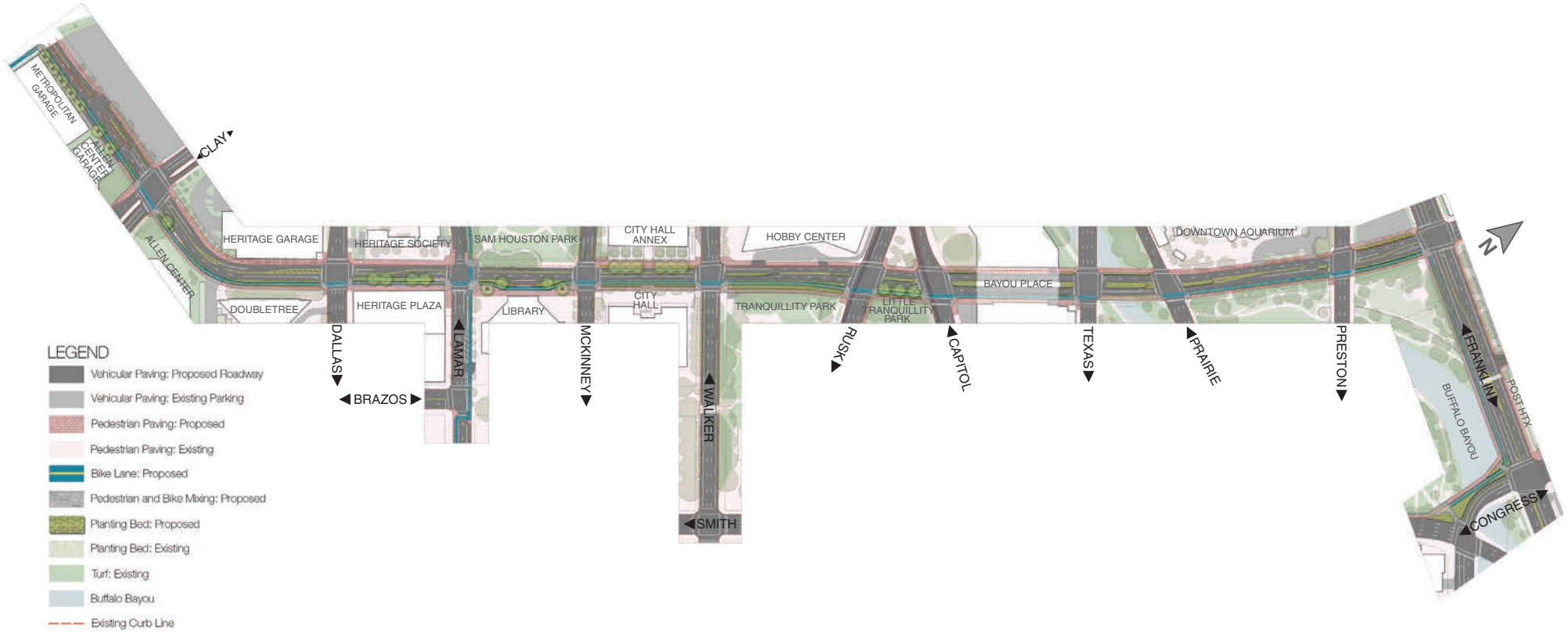


Figure E.05 Recommended Bagby Street Conceptual Design

During Final Design, a CCTV inspection of the existing pipe will need to be conducted to determine the condition of the pipe, whether it is in good condition and can remain as is or in poor condition and needs to be fully replaced or rehabilitated in order to prolong the pipe's life to match the life of the roadway.

Recommendations for water lines and sanitary sewer lines were developed to meet City standards. All existing water and wastewater lines along Bagby Street will be replaced to match existing sizes as they have exceeded the typical useful service life.

The burying of overhead communication/power lines at the northwestern corner of Bagby Street and Dallas Street is also included in the recommendations.

A bridge assessment identifies minor improvements for the Bagby Street Bridge between Texas Avenue and Prairie Street. The project also includes the installation of a new sidewalk along the Rusk Street bridge east of Bagby Street, where currently there is no sidewalk. A cantilevered sidewalk, similar to the south side of the bridge, is recommended.

Figure E.06 shows the estimated construction costs for the corridor plus a contingency for various scenarios. These scenarios are based on the level of finishes for elements like pavers for the street, sidewalk and trail, landscaping, lighting, and street trees. These construction costs will be refined as the full corridor design is completed.

Bagby Street Improvements Cost Estimates 4/20/2018			Scenario 1 *COH standard materials; basic landscaping*		Scenario 2 *Sidewalk and trail with concrete pavers, upgraded lighting and landscaping*		Scenario 3 *Sidewalk and trail with stone pavers, concrete pavers crosswalks, upgraded landscaping, custom ped lighting*		Scenario 4 *Concrete paver roadway, sidewalk and trail with stone pavers, stone pavers crosswalks, upgraded landscaping, integrated lighting*	
Construction Costs				**Subtotal**		**Subtotal**		**Subtotal**		**Subtotal**
Street/Sidewalks/Trails				$3,993,236		$4,697,496		$5,542,608		$7,323,757
	Roadway			$2,454,716		$2,454,716		$2,454,716		$4,235,865
	Sidewalks+Mixing Areas			$1,103,150		$1,604,710		$2,206,594		$2,206,594
	Trail			$435,380		$638,070		$881,298		$881,298
Landscape/Streetscape Cost				$566,987		$1,597,373		$2,945,373		$3,108,973
Traffic Signals Cost				$4,000,000		$4,000,000		$4,312,000		$4,436,800
Utility Cost				$3,379,550		$3,379,550		$3,379,550		$3,379,550
	Water			$1,155,000		$1,155,000		$1,155,000		$1,155,000
	Sanitary			$688,600		$688,600		$688,600		$688,600
	Storm Sewer*			$1,287,950		$1,287,950		$1,287,950		$1,287,950
	Overhead Utility Burial			$248,000		$248,000		$248,000		$248,000
Mobilization				$300,000		$300,000		$300,000		$300,000
Traffic Control				$250,000		$250,000		$250,000		$250,000
Project Subtotal				**$12,489,773**		**$14,224,419**		**$16,729,531**		**$18,799,080**
Contingency		20%		$2,497,955		$2,844,884		$3,345,906		$3,759,816
Estimated Construction Cost				**$14,987,728**		**$17,069,303**		**$20,075,437**		**$22,558,896**

* Potential Saving from existing Storm Sewer remaining in place estimated at approximately $300K - $400K.

Figure E.06 Cost Estimates

BAGBY STREET OVERVIEW

The Bagby Street corridor is a gateway into Downtown, as the first street encountered from the west. The street is a spine of western Downtown Houston connecting key civic institutions including City Hall, the Hobby Center, the Houston Library, and the Heritage Society at Sam Houston Park. Bagby also connects nine parks and public spaces, requiring careful thought as to how the street and the park spaces interact at their edges.

As one of the few two-way corridors in Downtown, traffic volumes on the street are relatively low. This creates opportunities to best allocate space for multimodal mobility, landscaping, art, lighting and aesthetic improvements. Even with the many park and civic spaces, the experience for persons walking down the corridor does not compare to other areas in Downtown. The corridor has been highlighted in the *City of Houston Bike Plan* as a future bikeway and the one north-south bike corridor west of Main Street. The corridor provides a connection to Buffalo Bayou in several locations, linking Downtown to the broader greenways network.

For these reasons, the Downtown Redevelopment Authority (TIRZ 3) has prioritized the Bagby Street corridor for redesign and rebuilding. There are many projects planned to enhance the west side of Downtown. Bagby Street is the first major project in a series of transformative projects that will change the look and feel of the area. A thoughtfully designed Bagby Street can be a common platform to tie all the projects together. A transformed Bagby Street will be a signature corridor that strengthens the western side of Downtown.

Project Extents

The Bagby Street Improvement Plan includes the Bagby Street corridor from Franklin Street to the West Dallas Street/Allen Parkway intersection and West Dallas Street from the Bagby Street/Allen Parkway intersection to IH-45. The study area initially terminated at Clay Street, however, the section between Clay Street and IH-45 was added after the first Stakeholder Advisory Committee Meeting to allow for a more comprehensive design that addressed changes to IH-45 resulting from the North Houston Highway Improvement Project (NHHIP). The study area is shown in **Figure 1.01**.

The study area also includes:

- Franklin Street from Bagby Street to Congress Street.
- Walker Street from Bagby Street to Smith Street.
- The north side of Rusk Street to study the feasibility of installing a sidewalk along the existing Rusk Street bridge adjacent to Little Tranquillity Park.
- Lamar Street from Bagby Street to Smith Street for bicycle facility design integration.

The study area includes approximately 1.2 centerline miles of roadway. The study area extent from Franklin Street to IH-45 is refereed to as the Bagby Street corridor in this report.

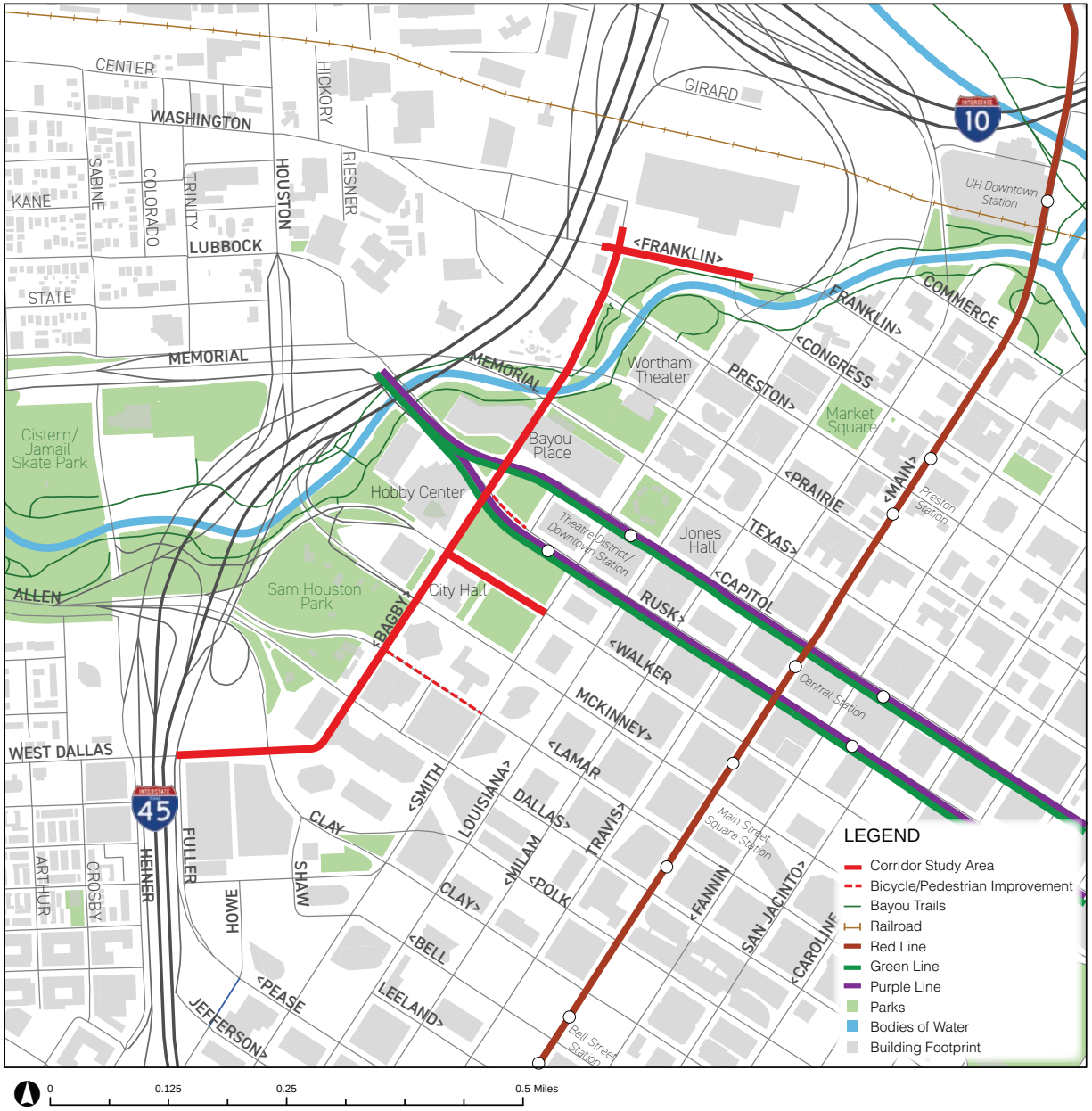
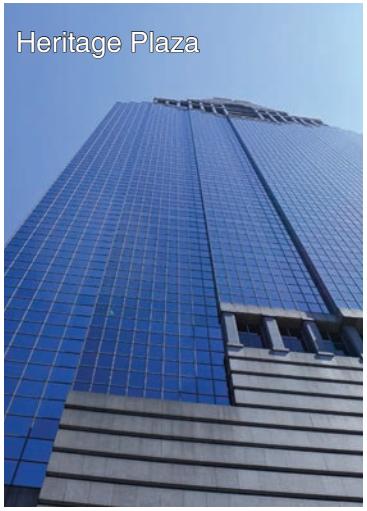
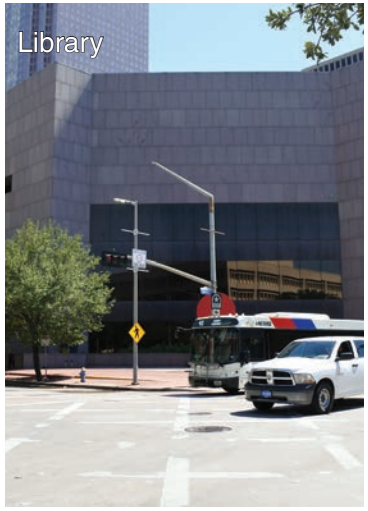


Figure 1.01 Project Extents and Surrounding Area





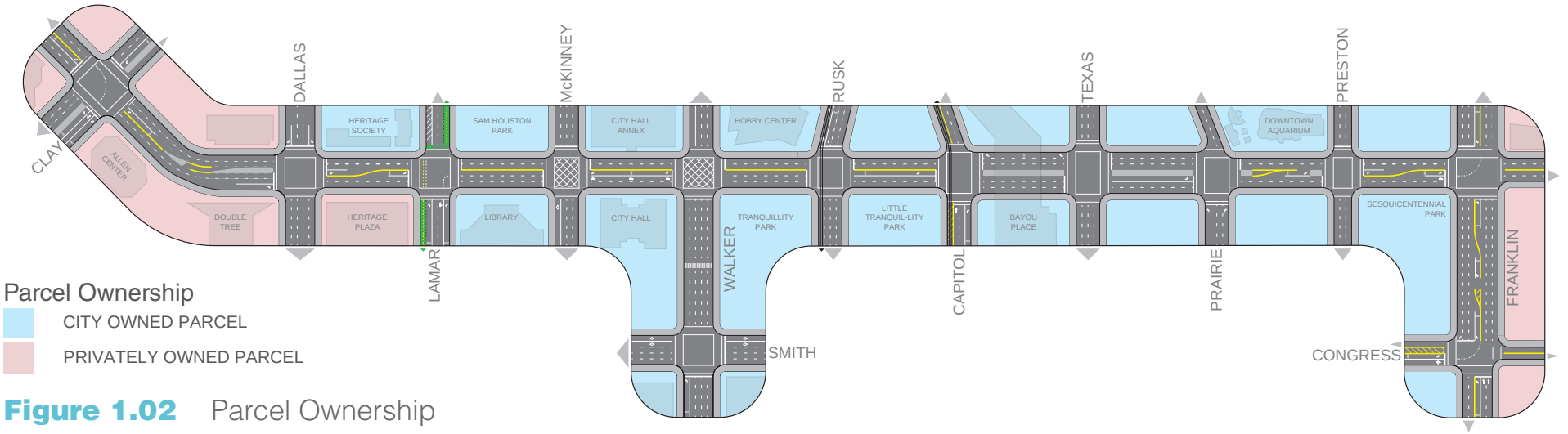


Figure 1.02 Parcel Ownership

Land Use Context

The Bagby Street corridor is primarily lined with City of Houston owned parcels and anchored by privately owned development at the north and south ends, as shown in **Figure 1.02**. Allen Center and Heritage Plaza, owned by Brookfield Property Partners, are located along the southern section of the Bagby Street corridor on the northern end. The former downtown Post Office, owned by Lovett Commercial, has hosted multiple music and arts festivals. Lovett Commercial has plans to develop the site, now called Post HTX, into a mixed-use development.

Civic buildings along the corridor include: City Hall, City Hall Annex, the Hobby Center, and the Heritage Society at Sam Houston Park. Bayou Place, an entertainment center, extends across Bagby Street between Capitol Street and Texas Avenue. The Downtown Aquarium, operated by Landry's Restaurants Inc., is located between Prairie Street and Preston Street. Four City parks have direct access to Bagby Street. These adjacent land owners and facilities informed the Stakeholder Advisory Committee assembled for this project.

Stakeholder Advisory Committee

A Stakeholder Advisory Committee (SAC) was developed to help guide the Bagby Street Improvement Plan. The committee included a variety of organizations and City of Houston departments that are invested and engaged in the future of Bagby Street. Representatives from adjacent land owners and facilities, key Downtown organizations, and public agencies were included. **Figure 1.03** lists the organizations included on the SAC. City of Houston departments represented include: Interagency Coordination, the Mayor's Office, Mayor's Office of Special Events, Public Works & Engineering, Houston Parks & Recreation, Planning & Development, General Services, and the Library.

Three stakeholder meetings were held during the course of the project. The project team also conducted many one-on-one and small group meetings with stakeholders during key points throughout the project.

Stakeholder Meeting #1

The first stakeholder meeting was held on October 27, 2017. During the meeting, the project team presented the findings from an Existing Conditions Analysis summarized in the next chapter. During this meeting the project team culled recommendations and future visions for the Bagby Street corridor. The primary theme endorsed by the SAC was to be bold and develop Bagby Street as a signature street for Downtown and the City.

Stakeholder Meeting #2

The second stakeholder meeting was held on February 13, 2018. During the meeting the project team presented the four conceptual alternatives based on the existing conditions analysis and developed with input from Stakeholder Meeting #1. Opportunities and challenges associated with each design alternative were discussed. Input from the SAC informed the final recommended conceptual design developed for the Bagby Street corridor. **Appendix D** presents the four proposed alternatives.

Stakeholder Meeting #3

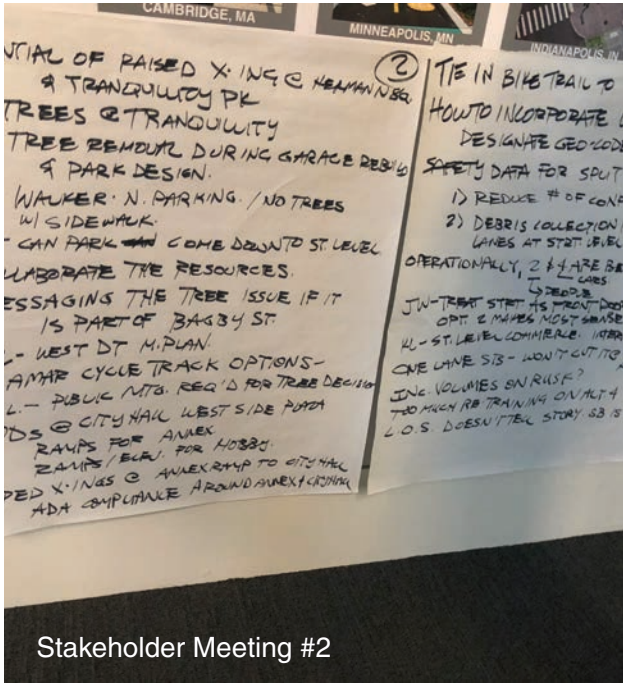
The final stakeholder meeting was held on March 20, 2018. The Recommended Conceptual Design, shown in the **Corridor Recommendations Chapter**, was presented. The path forward for implementation was the key focus of this meeting.

- Bayou Place
- Brookfield Property Partners
- Buffalo Bayou Partnership
- Central Houston, Inc.
- CenterPoint Energy
- City of Houston
- Downtown District
- Downtown Redevelopment Authority/TIRZ 3
- Hobby Center for the Performing Arts
- Houston First Corporation
- Houston Public Library System
- Landry's Restaurants, Inc.
- Lovett Commercial
- Metropolitan Transit Authority
- The Heritage Society
- Theater District Houston
- Theater Under the Stars

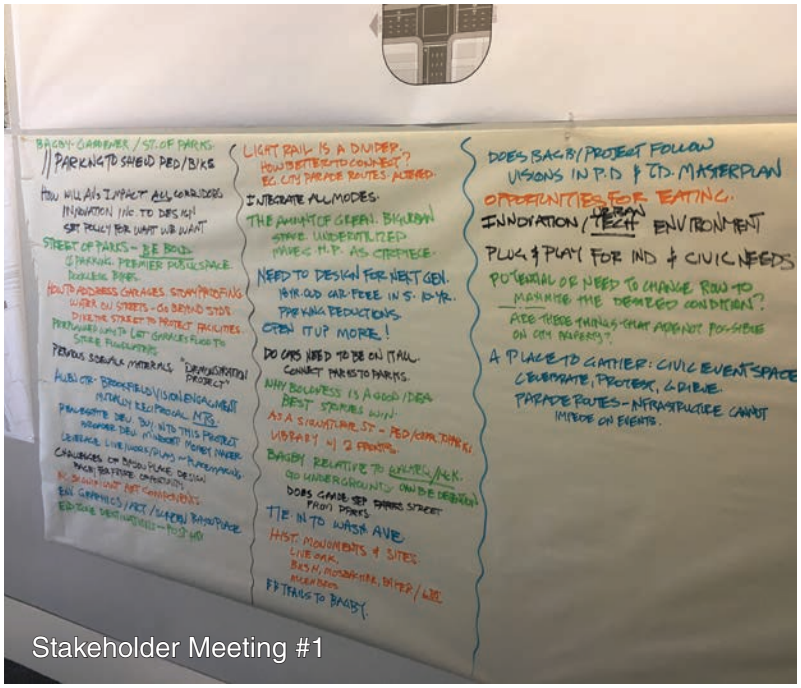
Figure 1.03 Stakeholder Advisory Committee (SAC) Organization List

Stakeholder Meeting #1

Stakeholder Meeting #3



Stakeholder Meeting #2



Stakeholder Meeting #1

Stakeholder Meeting #2

Project Goals

The SAC helped inform the project goals for the Bagby Street Improvement Plan. Three overarching goals were developed and used to guide the design process for Bagby Street. The three goals are listed in **Figure 1.04**.

1. Be bold in developing Bagby Street as a signature street for Downtown and the City.
2. Develop Bagby Street into a destination that aligns with the surrounding civic and park context and special events.
3. Design Bagby Street as a premier multimodal corridor for all users.

Figure 1.04 Project Goals


Hobby Center for the Performing Arts

Bagby Reconstruction Timeline

The Bagby Street Improvement Plan is Phase 1 of a two phase design process planned for the Bagby Street corridor. The Downtown Redevelopment Authority plans to start Phase 2 of design immediately following the release of the *Bagby Street Improvement Plan* Final Report. Phase 2 will use the findings of this report to develop the engineering and urban design construction documents for the corridor. The engineering design will lead to the construction phase of the project.

The Downtown Redevelopment Authority intends to complete construction by June 2021. The timeline shown in **Figure 1.05** highlights the urgency to rebuild the Bagby Street corridor and the drive to reimagine Bagby Street as a signature street that aligns with the surrounding civic context.

Phase 1 - Bagby Street Improvement Plan
August 2017 - March 2018
(Current Phase)

Phase 2 - Engineering Design
April 2018 - March 2019

Construction
June 2019 - June 2021

Figure 1.05 Project Timeline

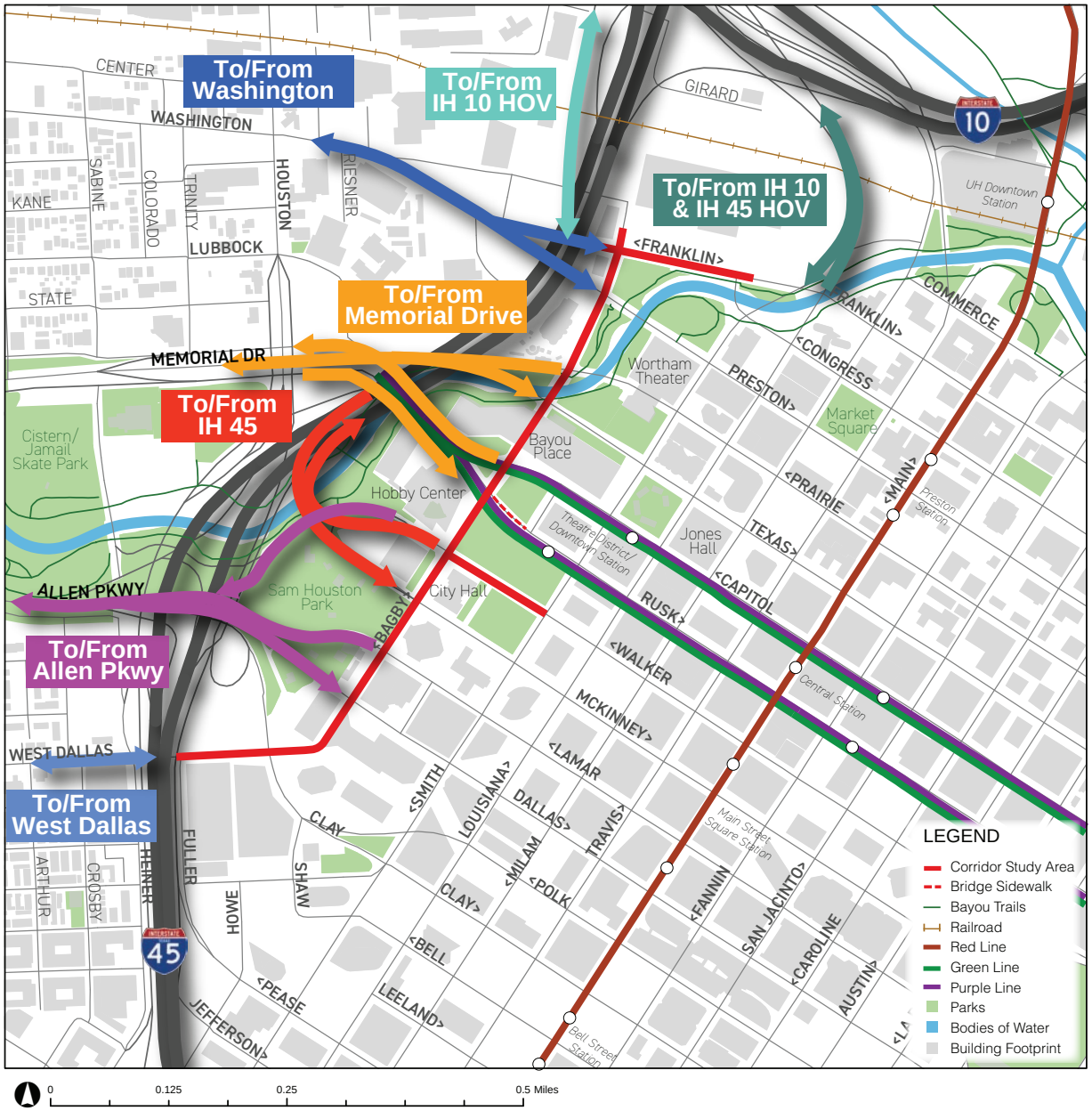


Figure 1.06 Gateway into Downtown

The Gateway into Downtown

There are many characteristics that make Bagby Street such an important corridor in Downtown Houston. For most who enter Downtown from the west or north, Bagby Street is the first street they encounter. Bagby Street is the Gateway into Downtown. **Figure 1.06** depicts all the key access points that intersect the study area.

The way these ingress and egress points intersect Bagby Street drives many of the vehicular characteristics of the street. Traffic volumes, presented in the next chapter, vary considerably block by block due to drivers using Bagby Street as a way to sort themselves to reach the major ingress and egress points.

Walker Street access to IH-45 Northbound west of Bagby Street

A Street of Parks

Bagby Street is not only a main connection into Downtown but it provides a connection between key City parks in western Downtown and links Downtown to Buffalo Bayou and the broader Greenway network. The Bagby Street corridor connects with the following City parks & public spaces:

- Buffalo Bayou Park
- Sabine Promenade
- Sam Houston Park
- Barbara Bush Literacy Plaza
- Hermann Square
- Tranquillity Park
- Little Tranquillity Park
- Jones Plaza
- Fish Plaza
- Sesquicentennial Park

This “street of parks” provides an opportunity for these public spaces to engage with each other, with Bagby Street, and all of western Downtown.

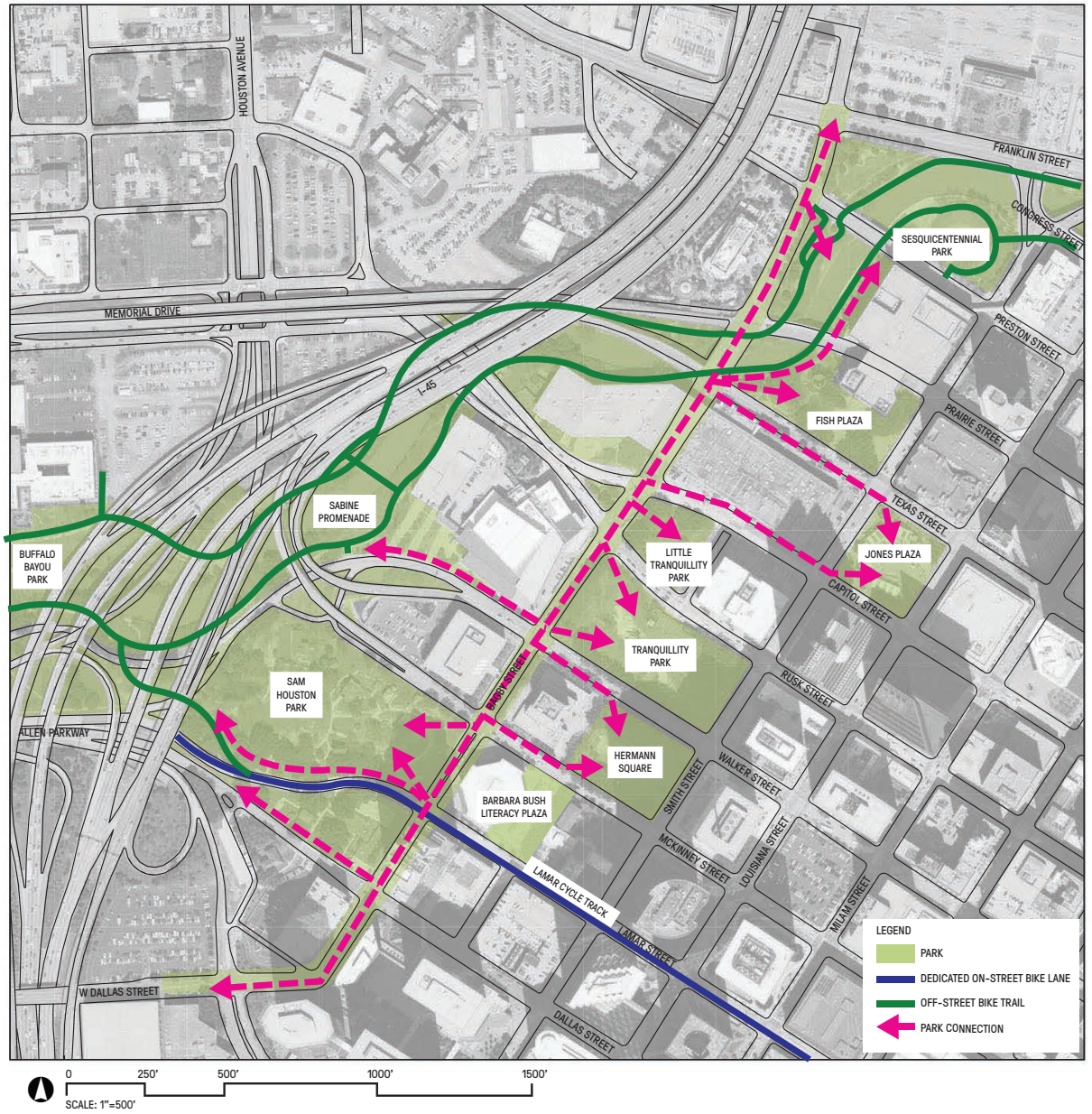


Figure 1.07 A Street of Parks

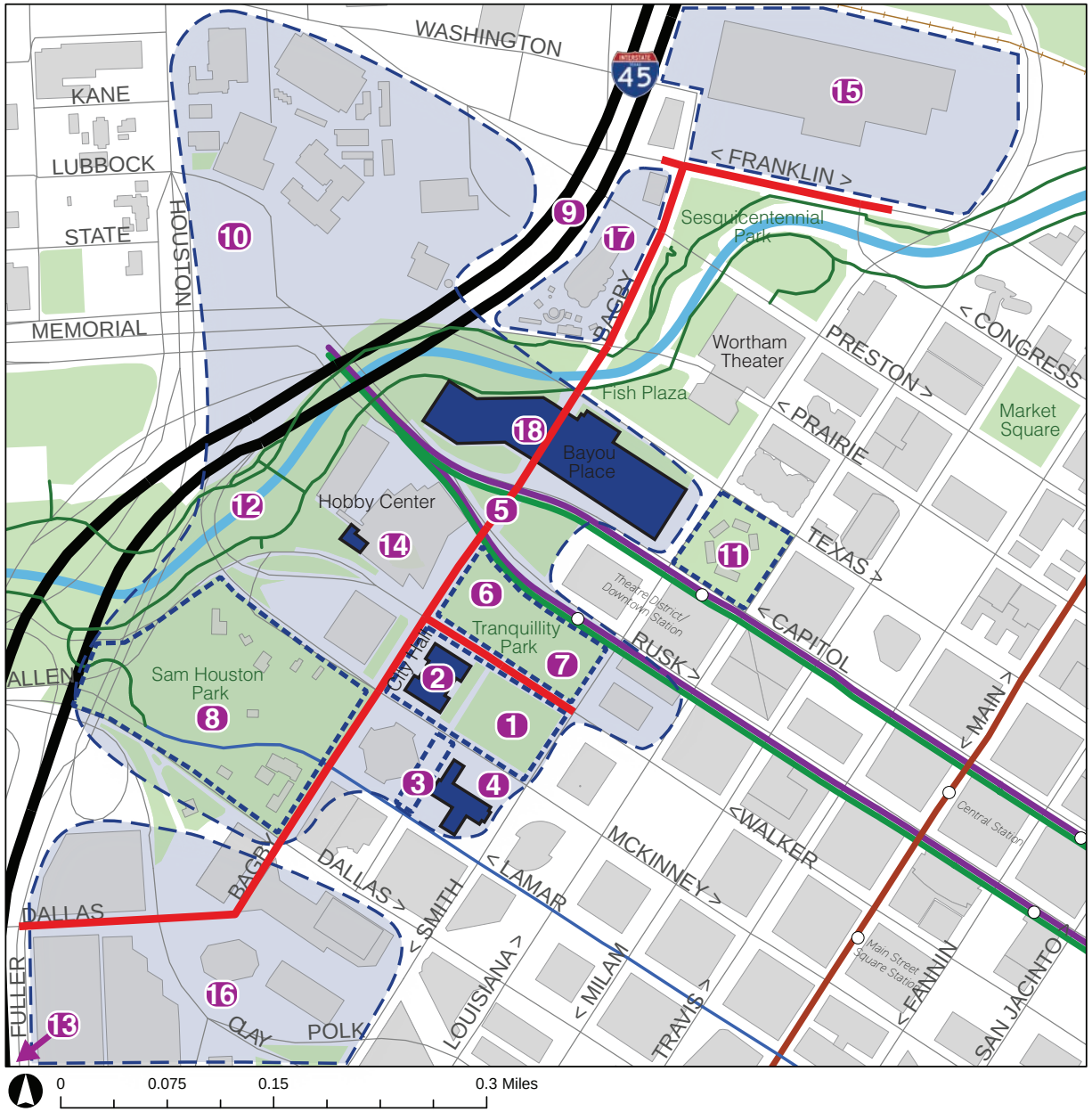


Figure 1.08 Surrounding Projects

Projects Coordination

There are multiple projects currently underway near the corridor area with more planned for the near future. The map in **Figure 1.08** depicts 18 projects near the Bagby Street. Moving forward, coordination with each of these organizations and agencies is key to ensuring effective collaboration and to maximize the benefits of these investments.

Surrounding Projects:

1. Hermann Square Perimeter Pavers [Parks/GSD]
2. City Hall Structural/Exterior [GSD]
3. Barbara Bush Literacy Plaza [Library/GSD/Library Foundation]
4. Julia Ideson Building Structural Work [Library/GSD]
5. Bagby Street [DRA]
6. Tranquillity Garage Roof [Houston First/Parks]
7. Tranquillity Park and Little Tranquillity Park [Parks/GSD/Houston First]
8. Sam Houston Park [Parks/Heritage Society/Houston First]
9. North Houston Highway Improvement Project [TxDOT]
10. Western Downtown Facilities Master Plan for City of Houston [DRA/GSD/Parks/PWE/Library/HFD/HPD/Municipal Courts]
11. Jones Plaza [Houston First/DRA]
12. Buffalo Bayou improvements
13. Fourth Ward Downtown Access [4th Ward Redevelopment Authority]
14. Margaret Alkek Educational Building [TUTS]
15. Post HTX [Lovett]
16. Allen Center [Brookfield]
17. Downtown Aquarium [Landry's]
18. Bayou Place [City of Houston]

Western Downtown Facilities Master Plan

The *Western Downtown Facilities Master Plan for City of Houston* is a planning effort funded by the Downtown Redevelopment Authority and lead by the City's General Services Department to initiate intensive planning for City-owned facilities in western Downtown. The project was kicked off in March 2018. Bagby Street is a central corridor in the study area shown in **Figure 1.09**. The project's Request for Qualifications (RFQ) emphases the importance of this planning initiative:

> "Due to the physical space challenges and 21st century needs confronting the City's administration and multiple departments, 2018 is the prime opportunity for the City of Houston to assess its significant land and facility holdings in western Downtown and determine how these assets need to be improved. Additionally, the complimentary cultural, commercial, residential and community uses that contribute to Downtown's vital mix of attractions is of high importance for continued economic development within and adjacent to the Study Area. Mayor Sylvester Turner, Department Directors and the Authority encourage qualifying consultants to consider the Master Plan for Western Downtown as visionary, creative, forward-thinking, and ambitious while also pragmatic, analytical, based on current/ future needs, fiscally responsible, and ultimately supportive of delivering open and transparent governance for all Houstonians."

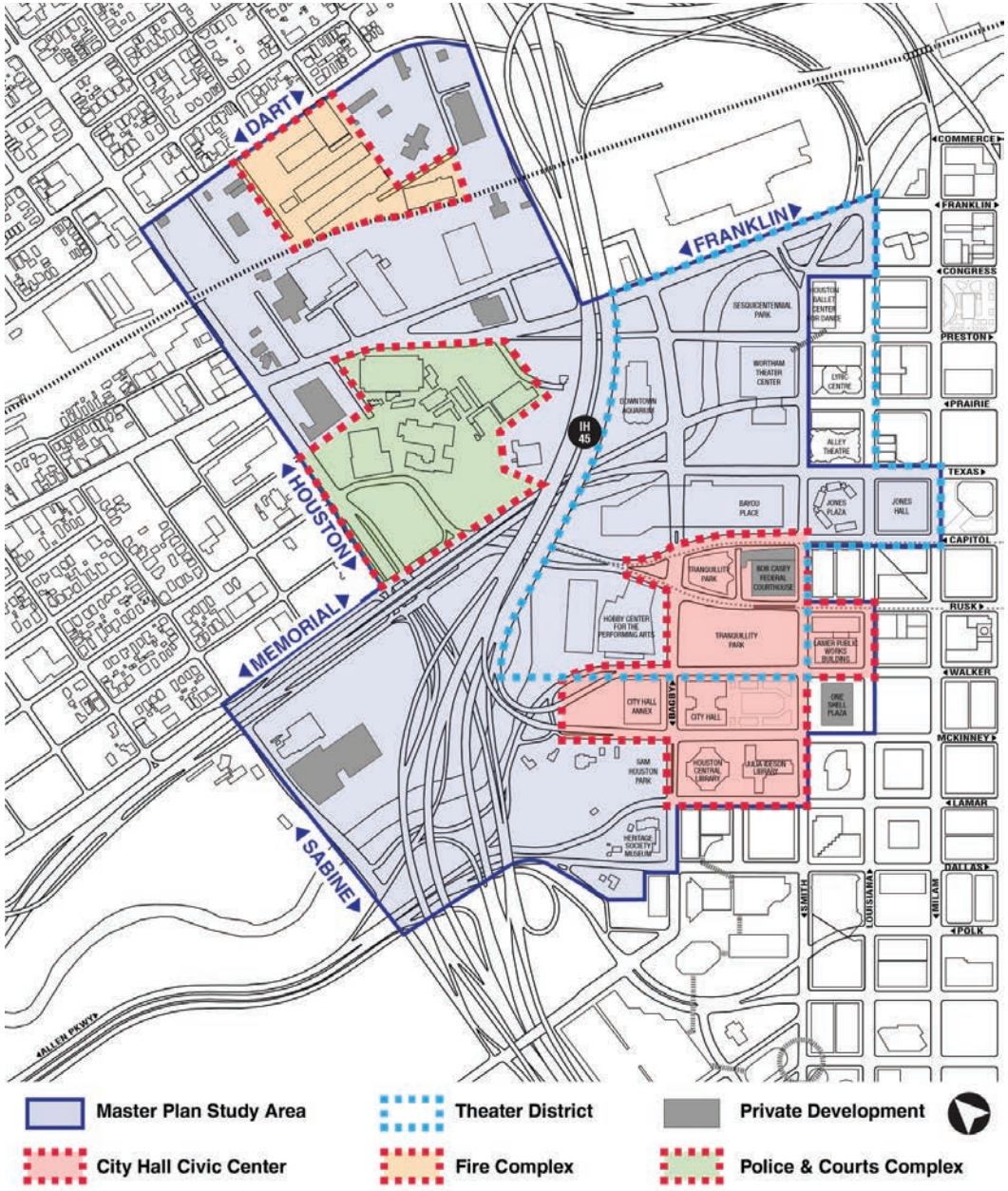


Figure 1.09 Plan Study Area as Outlined in Exhibit B of the Project's RFP

Coordinating Study Area Plans

There have been multiple planning efforts that include or directly affect the Bagby Street corridor. Four of those key plans were evaluated as part of this study: *Plan Downtown*, *Theater District Master Plan*, Tranquillity Park Conceptual Plan, and the North Houston Highway Improvement Project.

Plan Downtown

Plan Downtown is a planning initiative funded by the Houston Downtown Management District (Downtown District), Houston First Corporation, and the Downtown Redevelopment Authority. The plan, completed in 2017, is a 20-year vision that outlines recommendations for both the short and long-term; specifically, development and design to improve visitor appeal, business climate, livability, and connectivity within and around Downtown Houston leading up to the city's bicentennial in 2036.

One of the plan's four pillars presents Downtown as the innovative leader in connectivity. The plan highlights Bagby Street as an opportunity to enhance walking and biking friendly design and create connections to the broader Green Loop encircling Downtown.

The plan recommends:

"Rebuild Bagby Street as a welcoming gateway to Downtown from the west."

Figure 1.10 Bagby Street Rendering from *Plan Downtown*

Source: Plan Downtown, 2017

Theater District Master Plan

The *2025 Theater District Master Plan* outlines strategies for revitalizing Houston's Theater District. Within the plan, Bagby Street is presented as a Focus Area. The plan highlights the importance of Bagby Street and its function as a spine within the district. The plan proposes that Bagby Street be rebuilt as a narrow boulevard with an expanded pedestrian realm

The plan recommends:

"Proposed Bagby Street; featuring widened pedestrian spaces, curb extensions, improved crossings, and a median to encourage walkability."

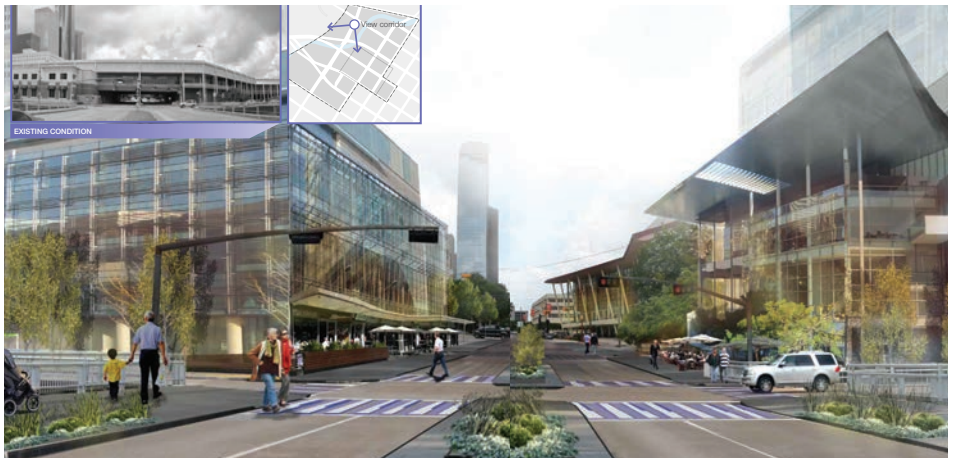


Figure 1.11 Bagby Street Rendering from *Theater District Master Plan*

Source: Theater District Master Plan, 2015

Tranquillity Park Conceptual Plan

A plan to redesign Tranquillity Park was developed in 2011. Design changes would transform and open up the park. The existing edge conditions provide many challenges for accessing the park and further diminishes the current park environment.

The park sits atop the Civic Center parking garage, which flooded during Hurricane Harvey. There are plans to fix the garage and potentially reconstruct the park into a more welcoming, open, and active space, as highlighted in **Figure 1.12**. Plans are in early development; however, coordination between the Bagby Street Improvement Plan and the park improvements is necessary for success.

Figure 1.12 2011 Tranquillity Park Conceptual Plan

Source: White Oak Studio

Walker Street & Tranquillity Park Edge

Walker Street & Tranquillity Park Edge

Bagby Street & Tranquillity Park Edge

North Houston Highway Improvement Project (NHHIP)

The North Houston Highway Improvement Project is a Texas Department of Transportation (TxDOT) project currently in development. The project stretches from IH-45 North at Beltway 8 to IH-69 at Spur 527. The Downtown section of NHHIP proposes reconstructing and relocating IH-45 to the north and east side of Downtown to follow the alignment of IH-10 and IH-69 as shown in **Figure 1.13**. Moving IH-45 will allow the Pierce Elevated section if IH-45 in Midtown to be decommissioned, therefore converting the section west of Downtown into a spur referred to as the Downtown Connector. Construction on the project is expected to begin as early as 2020.

Converting IH-45 west of Bagby Street from main lanes of the highway to connection ramps will have a large impact on vehicular trip distribution on the west side of Downtown as access points to IH-45 and circulation will change. In addition, with the new highway only acting as a spur, it is expected to carry fewer vehicles per day, which is anticipated to mitigate much of the existing traffic congestion witnessed at the on-ramp to IH-45 from Walker Street.

Three traffic scenarios were evaluated based on existing and future street networks and all developed Bagby alternatives. One of the scenarios is for year 2040 after the NHHIP has been completed. The detailed traffic analysis discussing the 2040 scenario is included in **Appendix B**.

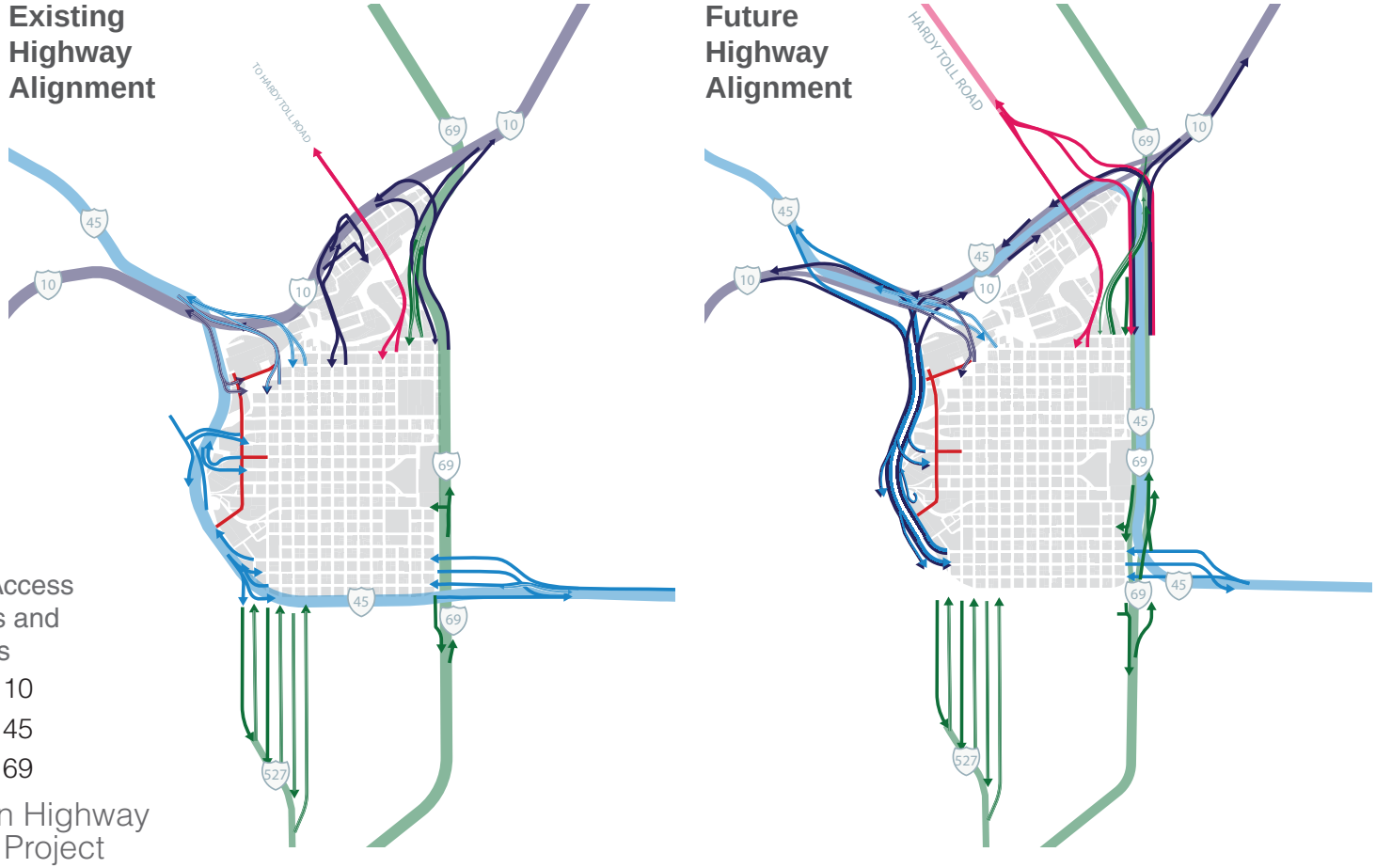
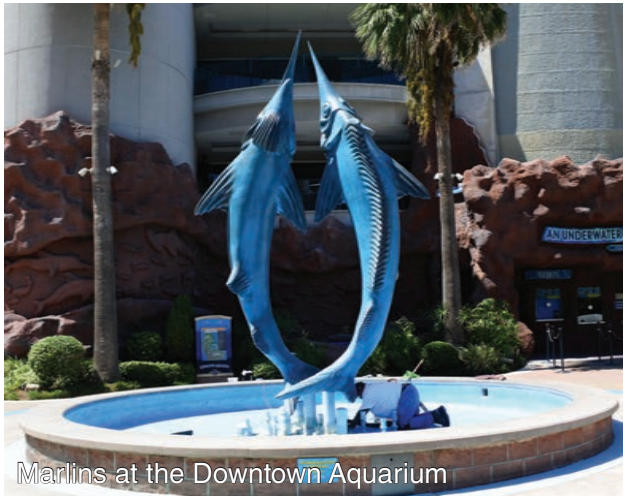


Figure 1.13 North Houston Highway Improvement Project

Source: TxDOT, 2017


The Hobby Center Sculpture


Water Valve


Marlins at the Downtown Aquarium


Pillot House at Sam Houston Park


Houston History

Historic Traffic Control Boxes


Mosbacher Bridge & Trail Access


Via Colori


Water height marker under Franklin Street

EXISTING CONDITIONS ANALYSIS

An in-depth existing conditions review of the Bagby Street corridor was conducted. The review included:

- Existing vehicular traffic volumes and corridor capacity
- Projected traffic operations for future scenarios
- Pavement quality
- A safety review including intersection and corridor crash rates and a review of pedestrian and bicycle related crashes by location
- Current walking environment
- Existing and proposed bicycle network
- Transit operations highlighting local transit and rail access near the study area
- Existing on-street and off-street parking and driveway access points along the Bagby corridor
- An urban tree evaluation
- Utility assessments for stormwater, water, wastewater, and private utilities
- Bridge evaluations for both the Bagby Street and Rusk Street bridges

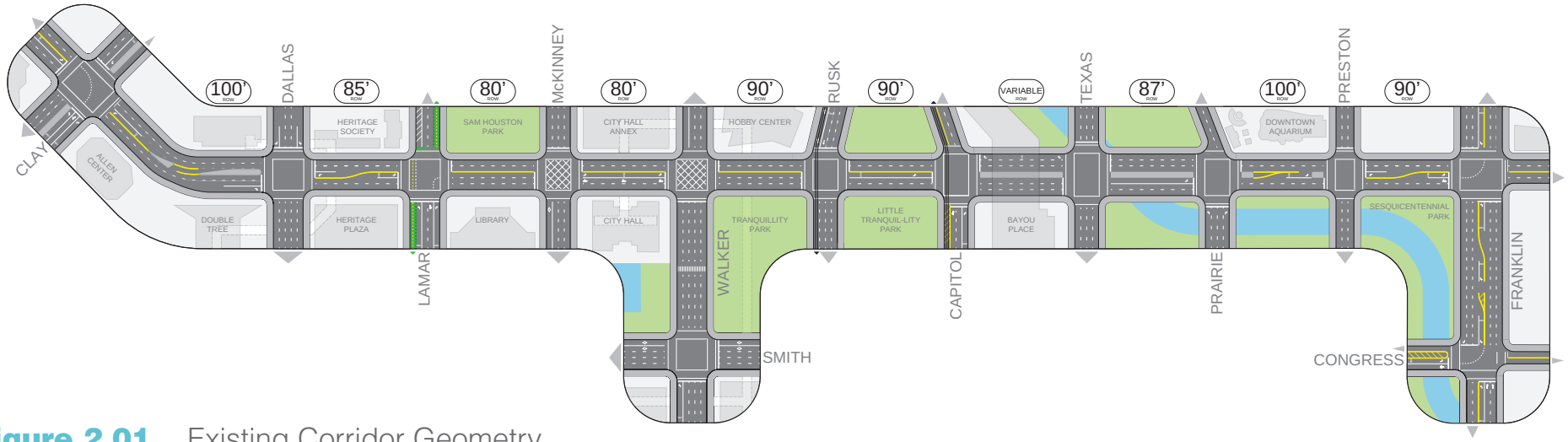


Figure 2.01 Existing Corridor Geometry

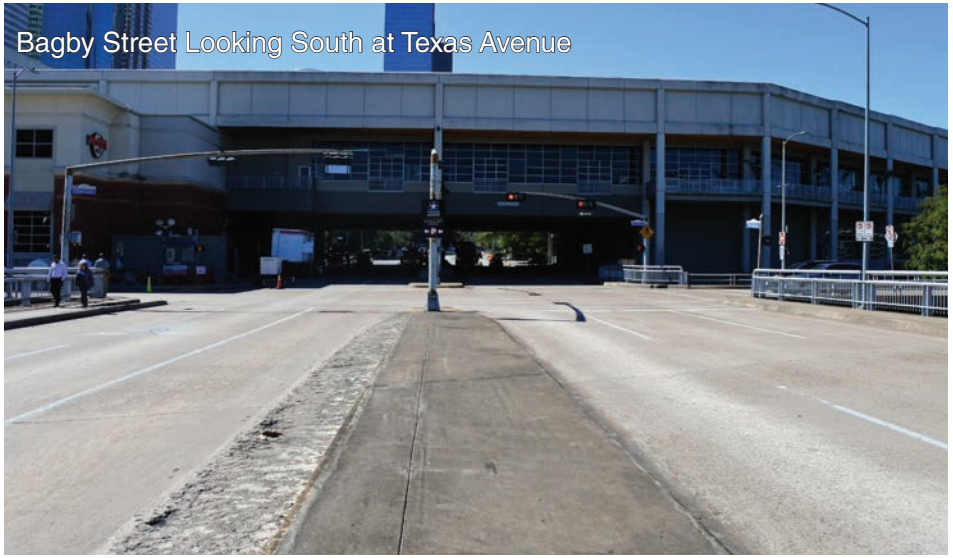
Corridor Geometry

Bagby Street is a two-way street, which is uncommon in Downtown Houston. The number of lanes along Bagby Street varies block by block from four lanes to six lanes, and right-of-way (ROW) varies from 80 feet at the narrowest point between Lamar Street and Walker Street to 100 feet between Prairie Street and Preston Street. **Figure 2.01** depicts the lane geometry and ROW along the corridor. **Appendix C** includes a block by block assessment of the existing conditions analysis.

Some blocks are divided with raised medians. The corridor intersects the Lamar Cycle Track and the Green/Purple Metro Light Rail Line at Rusk Street and Capitol Street.

Walker Street is a five-lane, one-way (westbound) roadway with parallel parking on both sides. There is an existing mid-block crossing that connects Tranquillity Park with City Hall.

Franklin Street is a 7-lane, two-way, undivided roadway with off-peak parking and a METRO bus layover location.



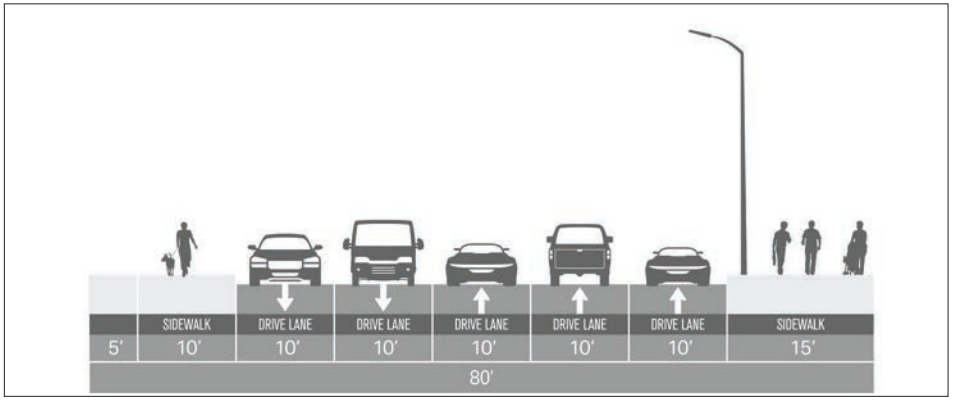


Figure 2.02 Between Lamar Street and McKinney Street

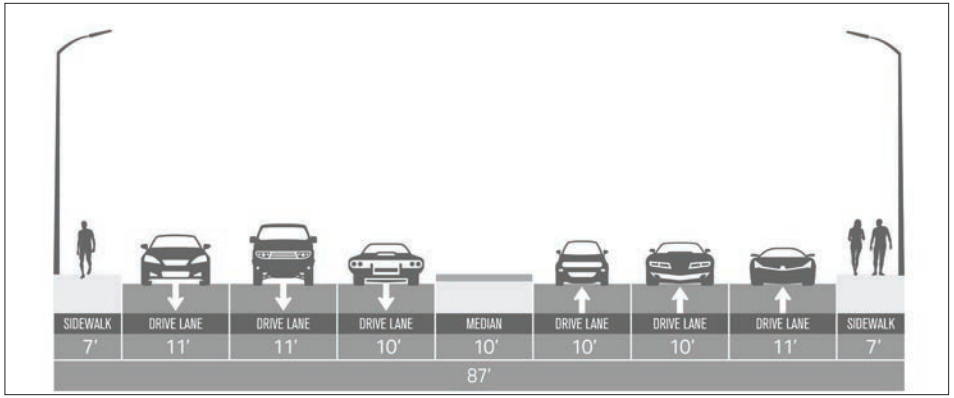


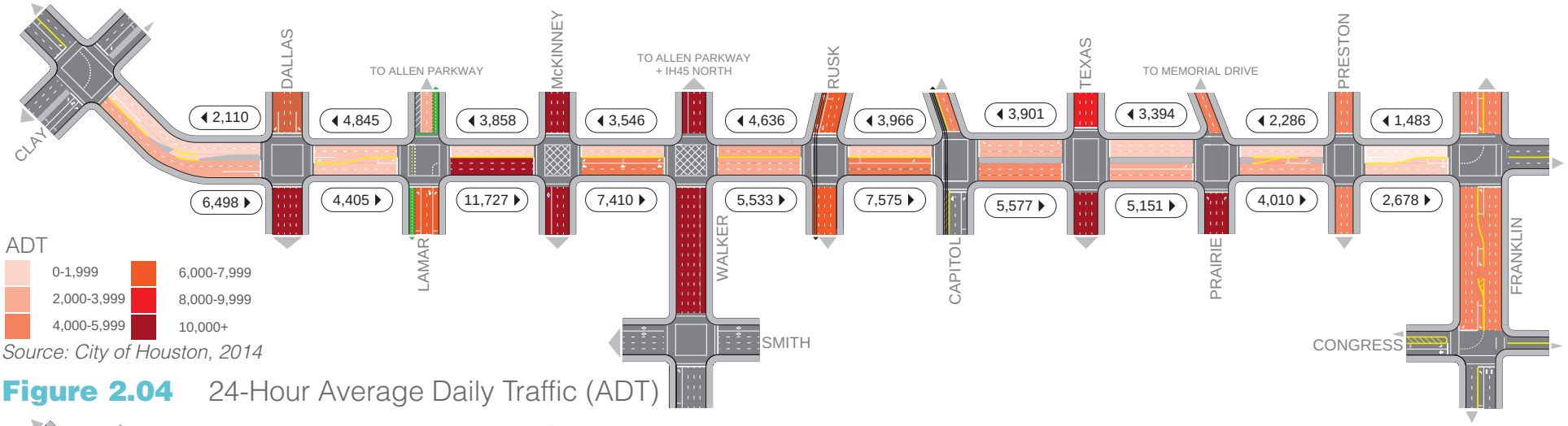
Figure 2.03 Between Texas Avenue and Prairie Street

5-lane Section

Figure 2.02 depicts the mid-block cross-section (looking north) between Lamar Street and McKinney Street adjacent to Sam Houston Park (west side) and the Central Library (east side).

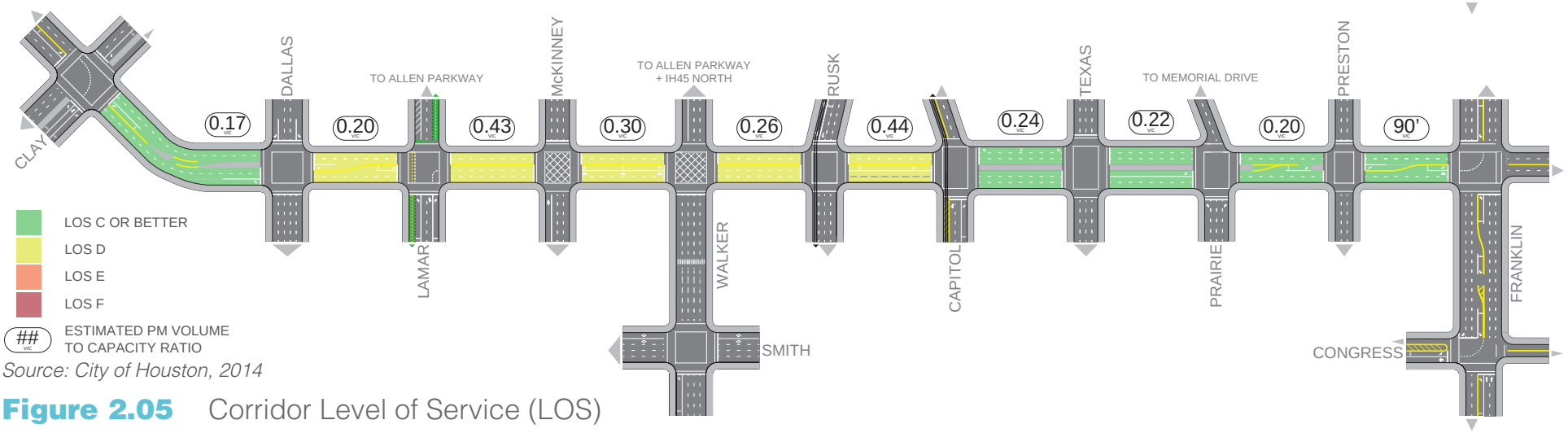
6-lane Section

Figure 2.03 depicts the mid-block cross-section (looking north) between Texas Avenue and Prairie Street. This block is on a bridge structure over Buffalo Bayou. The bridge structures along the Bagby Street corridor were evaluated as part of this study and are discussed later in this chapter.



Source: City of Houston, 2014

Figure 2.04 24-Hour Average Daily Traffic (ADT)



Source: City of Houston, 2014

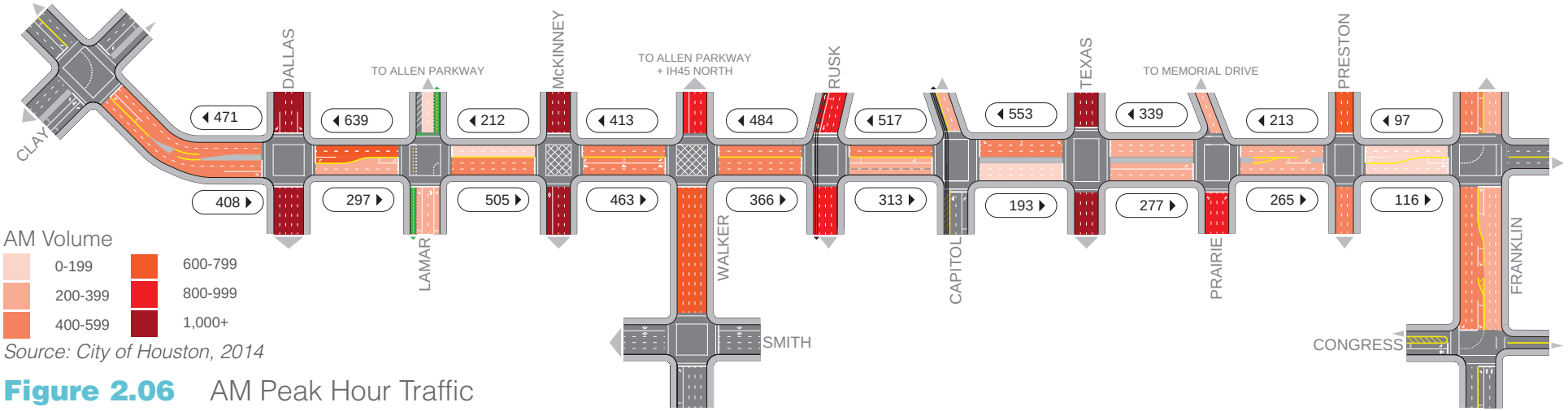
Figure 2.05 Corridor Level of Service (LOS)

Vehicular Volumes

Twenty-four hour average daily traffic (ADT) volumes were evaluated for the Bagby Street corridor and cross streets. **Figure 2.04** depicts the block-by-block ADT volumes and **Figure 2.05** is the corresponding planning level corridor level-of-service (LOS) based on existing volumes and capacity of the roadway. Corridor LOS is based on Exhibit 16-14 from the 2010 *Highway Capacity Manual* (HCM). All blocks are operating at LOS D or better which is acceptable for urban streets, especially those located in the Central Business District.

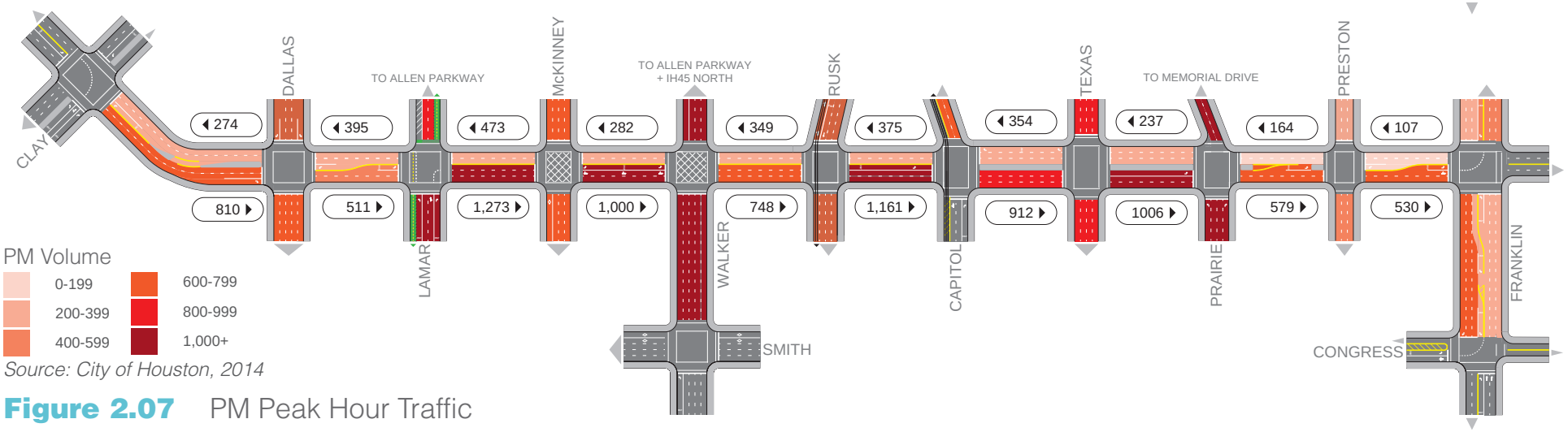
The overall directional volume distribution is two-thirds northbound and one-third southbound. This is representative of the role Bagby Street plays within the Downtown grid. Drivers wishing to travel southbound through Downtown are likely to prefer Smith Street, a one-way southbound street one block east of Bagby Street.

Volumes vary substantially block to block. Blocks with the highest volumes are Bagby Street northbound between Lamar Street and Walker Street, due primarily to the IH-45 on-ramp at Walker Street. Northbound Bagby Street at Walker Street provides a dual left turn movement to accommodate the



Source: City of Houston, 2014

Figure 2.06 AM Peak Hour Traffic



Source: City of Houston, 2014

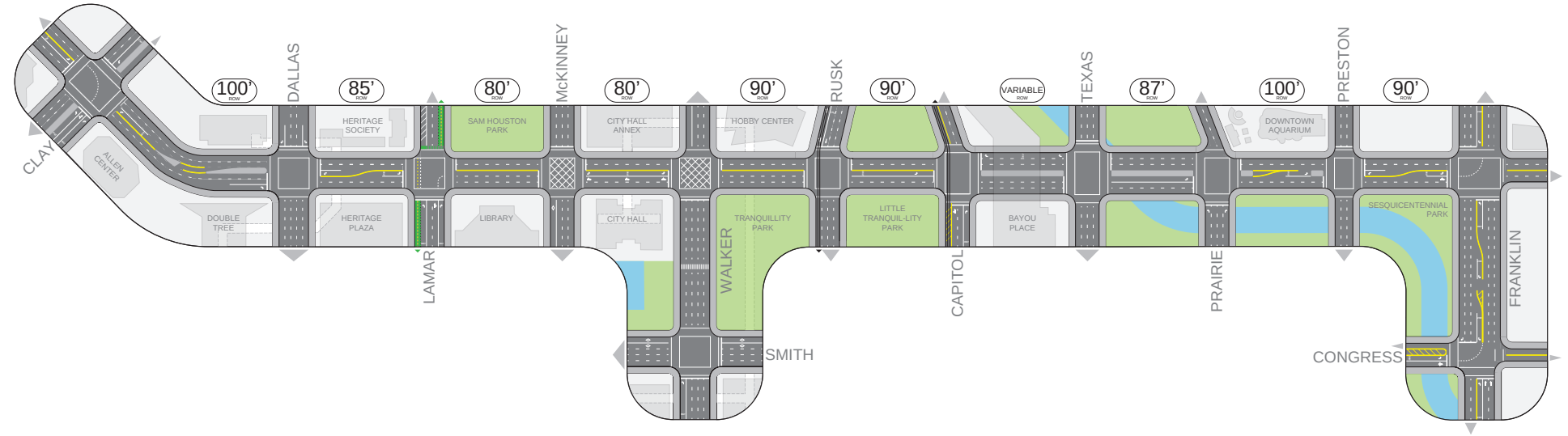
Figure 2.07 PM Peak Hour Traffic

high volume of turning vehicles to access IH-45 northbound. There are currently "Don't Block the Box" markings at Walker Street and McKinney Street intersections to combat queuing in the intersection caused by the highway creating gridlock.

The variation in volume by block contributes to the characterization of Bagby Street as a sorting and access street. Drivers travel Bagby for a few blocks to then turn onto a cross-street or into a destination, and few drivers travel a significant length of Bagby Street.

The AM peak hour (7:00am to 8:00am), depicted in **Figure 2.06**, experiences a more equal distribution of northbound and southbound vehicles than the PM Peak Hour. For most blocks, the highest hourly volumes along the corridor are during the PM peak hour (5:00pm to 6:00pm), depicted in **Figure 2.07**. The highest PM Peak hour volume occurs at blocks near key egress points of west Downtown (IH-45, Allen Parkway, and Memorial Drive).

The volumes used for analysis are from 2014. Volumes collected in 2016, 2017, and 2018 show a trend of decreasing volumes on Bagby Street.



	West Dallas at Clay	Bagby at Dallas	Bagby at Lamar	Bagby at McKinney	Bagby at Walker	Bagby at Rusk	Bagby at Capitol	Bagby at Texas	Bagby at Prairie	Bagby at Preston	Bagby at Franklin
2020	C 0.558	B 0.397	B 0.235	C 0.474	C 0.378	B 0.479	B 0.303	C 0.438	B 0.231	C 0.254	B 0.170
2040 NHHIP	C 0.603	B 0.440	A 0.263	C 0.599	C 0.439	B 0.475	A 0.293	B 0.494	B 0.256	B 0.163	B 0.263

Figure 2.08 AM Peak Hour Analysis for Key Corridor Intersections

LOS V/C Level of Service Volume/Capacity Ratio

Intersection Capacity Analysis

Intersections are the key element that affects how a corridor operates. Intersection capacity analyses were performed at all intersections for both the AM and PM peak hours. The analyses provide a measure of level-of-service (LOS) for an intersection based on total delay estimated for vehicles traveling through the intersection. LOS methodology used is based on the 2010 *HCM*. The 2020 analysis used existing turning movement counts and the existing signal timing data acquired from the City of Houston.

In general, a signalized intersection operating at LOS D or better in an urban area is characterized by acceptable delays. Intersections can also be evaluated by the volume-to-capacity (V/C) ratio of the intersection. Intersections with a V/C ratio value less than 0.7 indicate there is adequate or potentially excess capacity. Potential excess capacity presents opportunities to reallocate space to other uses such as sidewalks, bikeways, and landscape enhancements. **Figure 2.08** and **Figure 2.09** depict the LOS and V/C ratio for key corridor intersections. (All studied intersections are included in the detailed analysis tables in **Figure 2.10** and **Figure 2.11**.)

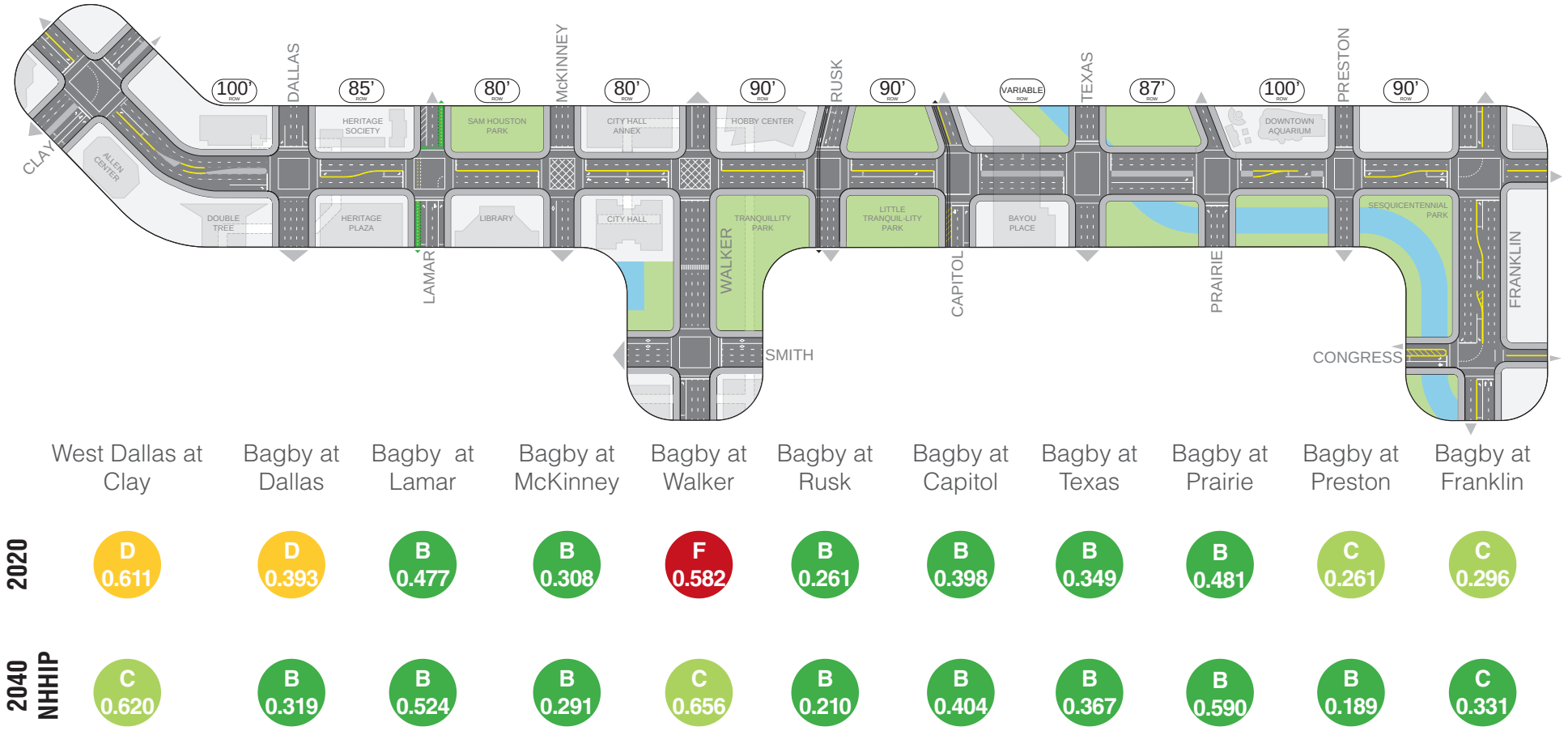


Figure 2.09 PM Peak Hour Analysis for Key Corridor Intersections

LOS V/C Level of Service Volume/Capacity Ratio

2020 Scenario: The 2020 scenario illustrates the existing operations of the intersections which mirror what is expected to occur at the completion of the Bagby Street redesign in 2021. Intersections operate between LOS B and D, with one intersection operating at LOS F. Bagby Street at Walker Street has a low LOS resulting from high delay directly related to queues backing up from the IH-45 northbound ramp on Walker Street during the PM peak. (Note a relatively low V/C ratio indicates adequate capacity.)

2040 NHHIP Scenario : With the planned NHHIP, the roadway network and driver behavior is expected to change substantially by 2040. This scenario addresses changes to traffic distribution and the expected vehicular operations along Bagby Street. This scenario includes a yearly compounded growth rate of 0.5% to all vehicular traffic over a 20 year period.

A 2040 growth-only scenario was also conducted to understand 2040 operations if the NHHIP does not move forward. This scenario assumed the roadway network surrounding Bagby Street does not change between today and 2040. The traffic report detailing all three scenarios is included in **Appendix B**.

AM PEAK HOUR		2020			2040 NHHIP	
Intersection	**LOS**	**V/C**	**Delay**	**LOS**	**V/C**	**Delay**
Franklin Street at Congress Street	C	0.234	21.84	C	0.327	21.21
Bagby Street at Franklin Street	B	0.170	17.32	B	0.263	15.91
Bagby Street at Preston Street	C	0.254	21.57	B	0.163	18.06
Bagby Street at Prairie Street/Memorial Drive	B	0.231	14.00	B	0.256	12.96
Bagby Street at Texas Ave/Memorial Drive	C	0.438	21.33	B	0.494	13.02
Bagby Street at Capitol Street	B	0.303	14.67	A	0.293	8.92
Bagby Street at Rusk Street	B	0.479	16.51	B	0.475	16.12
Bagby Street at Walker Street	C	0.378	31.61	C	0.439	23.20
Bagby Street at McKinney Street	C	0.474	20.84	C	0.599	22.50
Bagby Street at Lamar Street	B	0.235	13.67	A	0.263	8.56
West Dallas Street at Bagby Street/Allen Parkway	B	0.397	16.27	B	0.440	15.46
West Dallas Street at Clay Street	C	0.558	31.64	C	0.603	27.56
West Dallas Street at IH-45 Frontage NB	B	0.409	14.75	B	0.444	14.74
West Dallas Street at IH-45 Frontage SB/Heiner Street	C	0.380	23.14	C	0.409	21.90

Figure 2.10 Intersection Capacity Analyses Summary Tables for All Intersections during the AM Peak Hour

Notes:
- Delay calculated in seconds per vehicle
- 2040 Growth Scenario maintains existing signal timings
- 2040 NHHIP Scenario optimizes splits while maintaining existing cycle lengths

PM PEAK HOUR		2020			2040 NHHIP	
Intersection	**LOS**	**V/C**	**Delay**	**LOS**	**V/C**	**Delay**
Franklin Street at Congress Street	C	0.247	24.61	C	0.272	20.12
Bagby Street at Franklin Street	C	0.296	23.54	C	0.331	20.82
Bagby Street at Preston Street	C	0.261	24.62	B	0.189	15.18
Bagby Street at Prairie Street/Memorial Drive	B	0.481	12.76	B	0.590	14.24
Bagby Street at Texas Ave/Memorial Drive	B	0.349	14.7	B	0.367	15.09
Bagby Street at Capitol Street	B	0.398	11.04	B	0.404	13.44
Bagby Street at Rusk Street	B	0.261	12.79	B	0.210	10.96
Bagby Street at Walker Street	F	0.582	108.94	C	0.656	29.56
Bagby Street at McKinney Street	B	0.308	16.55	B	0.291	17.20
Bagby Street at Lamar Street	B	0.477	14.00	B	0.524	11.54
West Dallas Street at Bagby Street/Allen Parkway	D	0.393	38.62	B	0.319	13.66
West Dallas Street at Clay Street	D	0.611	38.4	C	0.620	30.63
West Dallas Street at IH-45 Frontage NB	B	0.267	13.76	B	0.449	15.32
West Dallas Street at IH-45 Frontage SB/Heiner Street	C	0.625	25.87	C	0.725	29.19

Figure 2.11 Intersection Capacity Analyses Summary Tables for All Intersections during the PM Peak Hour

Notes:
- *Delay calculated in seconds per vehicle*
- *Bagby Street at Walker Street intersection calibrated to real world conditions in 2020 and 2040 Growth Scenario by adding additional start up to delay resulting from queuing at the IH-45 northbound on ramp. Delays associated with queuing are expected to minimize in 2040 NHHIP due to IH-45 removal and the on-ramp at Walker Street providing access to the Downtown Connector.*
- *2040 Growth Scenario maintains existing signal timings*
- *2040 NHHIP Scenario optimizes splits while maintaining existing cycle lengths*

Special Events

When evaluating the traffic conditions along Bagby Street, it is critical to evaluate more than just the AM and PM peak hour due to the nature of the corridor. The study team observed many events to determine operational needs in the study area.

Bagby Street is a key spine through Houston's Theater District and there are many evenings with multiple events occurring. This results in many patrons arriving at similar times and circulating along Bagby Street to access valets, complete drop-offs, or park. Members of the SAC mentioned increasing need for rideshare pick-up and drop-offs such as Uber and Lyft.

The main access point to the Hobby Center is on Bagby Street. During events at the Hobby Center, a minimum of six police officers are on site to manage operations. The outside southbound lane becomes the main ingress and egress for the valet. At the Walker Street intersection, police officers force all vehicles to turn right. In addition, the Hobby Center parking garage is located behind the Hobby Center, resulting in drivers who self-park to primarily use the outside southbound lane.

Other special events were observed to utilize Bagby Street in different ways. Proposed alternatives for the project take these needs into account. A variety of special events including festivals and markets can be enhanced with the addition of "Plug & Play" capabilities, specifically along Sam Houston Park, Tranquillity Park, and Hermann Square. "Plug & Play" provides necessary hookups for power and lighting at key locations to allow for quick and low maintenance set ups.

Below are a select few special events observed by the study team.

Parades

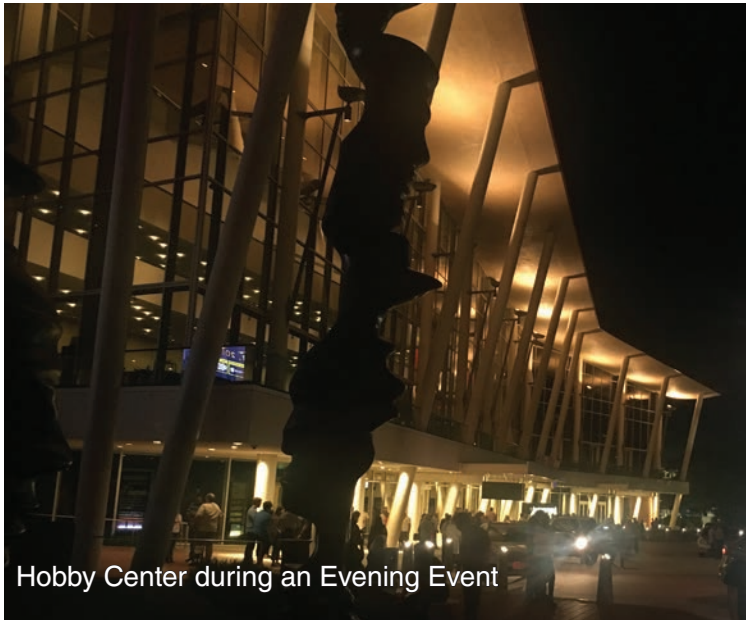
Bagby Street is used as a staging area for the many parades hosted in Downtown. Parades include: Thanksgiving Day Parade, Rodeo Parade, Art Car Parade, Pride Parade, and most recently the 2017 World Series Parade.

The Marathon

The current route for the Houston Marathon intersects Bagby Street at Lamar Street and Dallas Street.

The Bayou City Arts Festival

The Fall Bayou City Arts Festival is based along Bagby Street and Sam Houston Park.



Hobby Center during an Evening Event

RodeoHouston Parade Staging on Bagby Street (Source: RodeoHouston)

RodeoHouston Parade Staging on Bagby Street (Source: RodeoHouston)

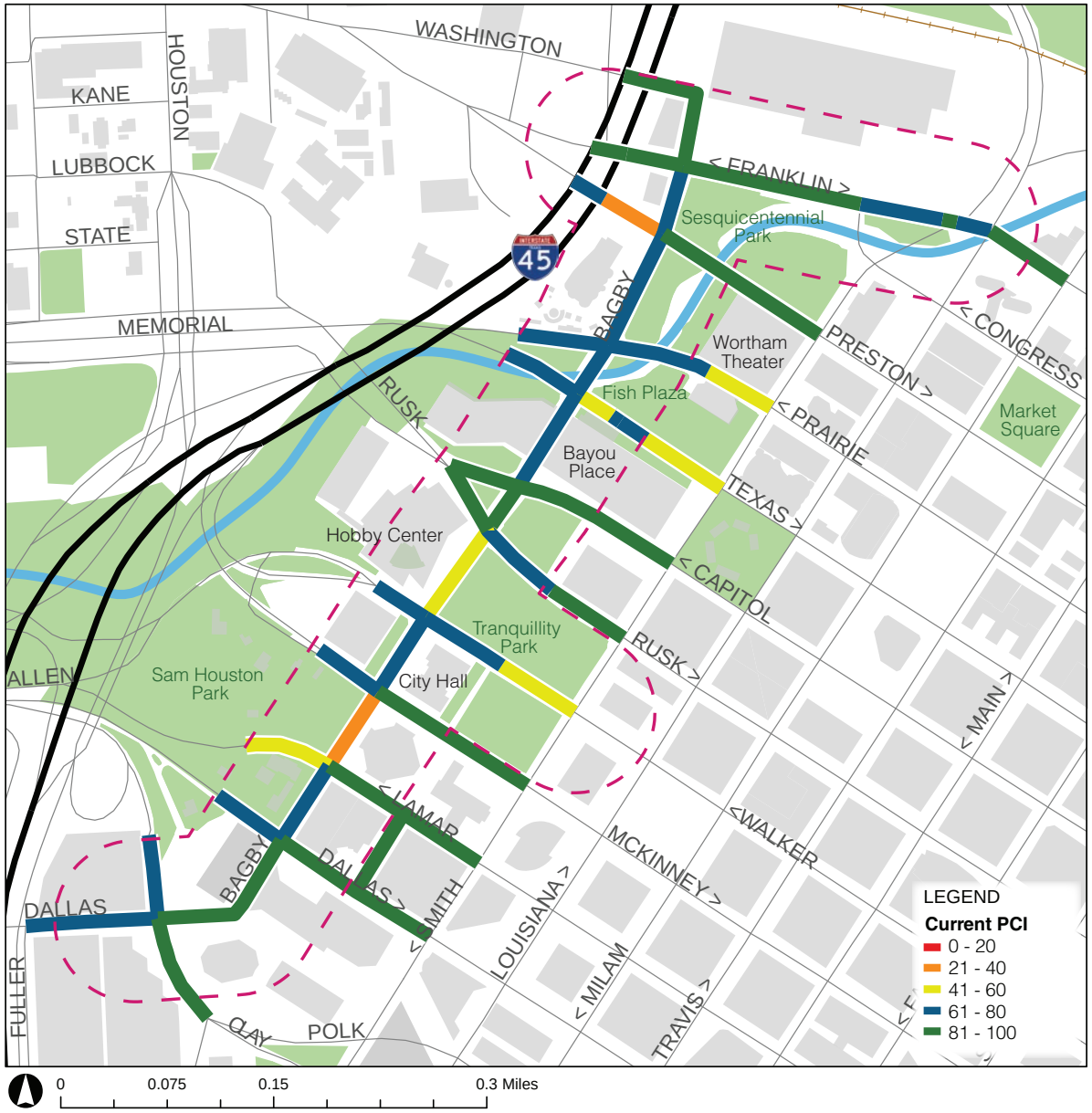


Figure 2.12 Pavement Condition Index (PCI)

Source: City of Houston, 2017

Pavement Quality

Pavement Condition Index (PCI) is a City of Houston metric used to evaluate pavement quality, with higher values indicating good pavement and lower values indicating pavement in poor condition. **Figure 2.12** depicts the PCI values for the study area. Pavement within the study area ranges from good to poor with a composite PCI score of 73.2 which is in the good range.

Despite a PCI ranking in the good range, it is important to note that PCI is a relative measurement to all City of Houston streets. Field inspections along the corridor indicated cracks in the pavement and asphalt patches at pothole locations.

Crash Analysis

Crash data between 2011 and 2015 was collected from the TxDOT Crash Records Information System (CRIS) database. The CRIS database includes crashes that result in over $1000 in damages or a recorded injury.

The corridor crash rate for Bagby Street is 2,110 crashes per 100 Million Entering Vehicles (MEV). This value is approximately 6 times greater than the state average for a four-lane undivided urban roadway (356.03 crashes per 100 MEV).

Intersection crash rates were calculated and summarized in **Figure 2.13**. Crash rates vary by intersection. The intersection of Bagby Street and Walker Street has an intersection crash rate exceeding 1.10 crashes per MEV, a relatively high value.

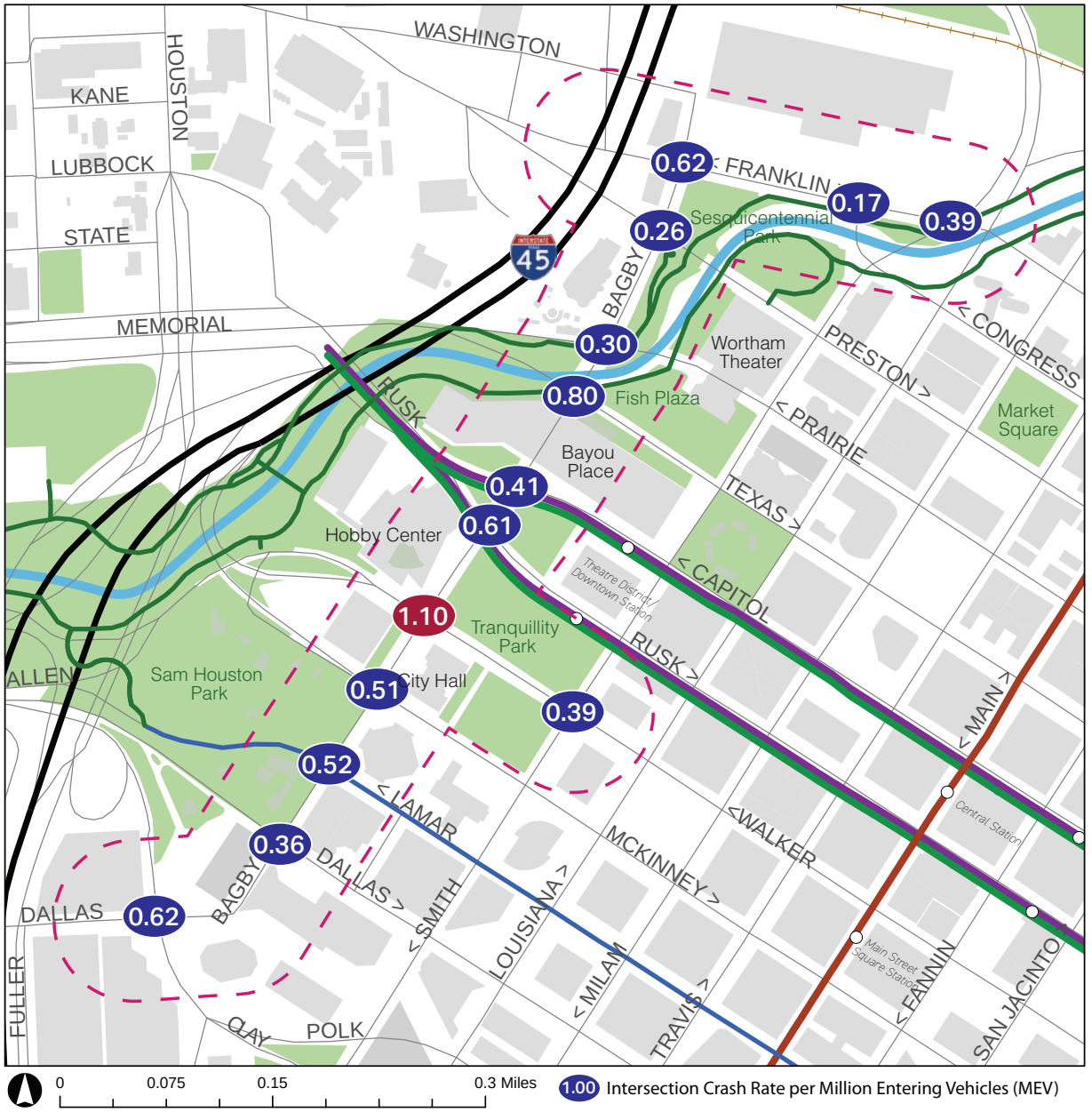


Figure 2.13 Intersection Crash Rates

Source: TxDOT CRIS Database, 2017

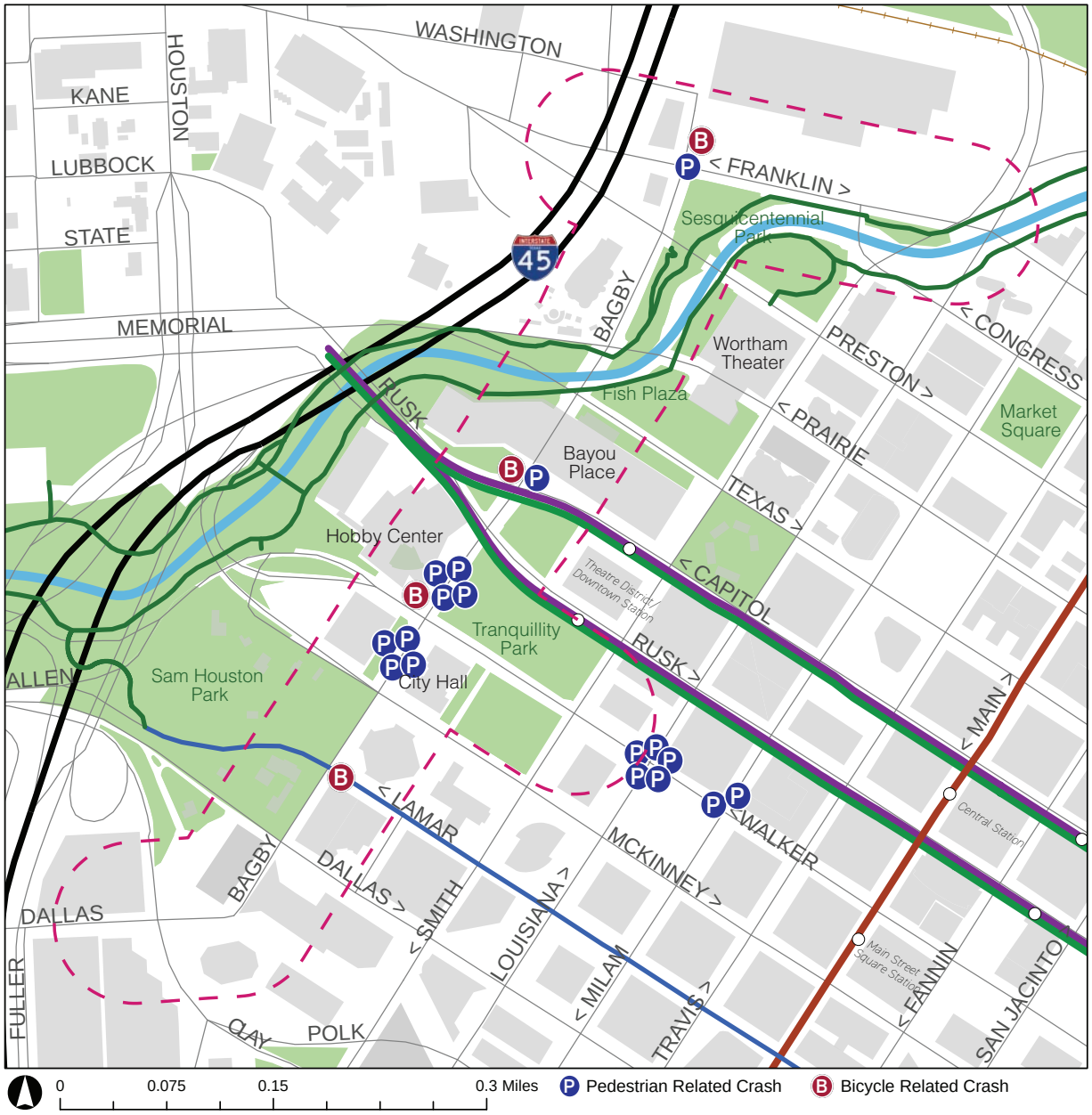


Figure 2.14 Pedestrian and Bicycle Crashes

Source: TxDOT CRIS Database, 2017

Pedestrian & Bicycle Crashes

All crashes between 2011 and 2015 in the study area involving a person walking or bicycling are mapped in **Figure 2.14**. There are 15 crashes recorded: 11 pedestrian related and four bicycle related.

Five of the pedestrian crashes occurred along Walker Street and nine occurred along Bagby Street. All crashes with a person walking occurred at an intersection and involved a single moving vehicle turning left. Dual left turning lanes are present at both northbound Bagby Street at Walker Street and northbound Walker Street at Louisiana Street.

The proposed design alternatives for Bagby Street were developed to provide safer mobility and access to adjacent destinations for all modes of travel along the corridor.

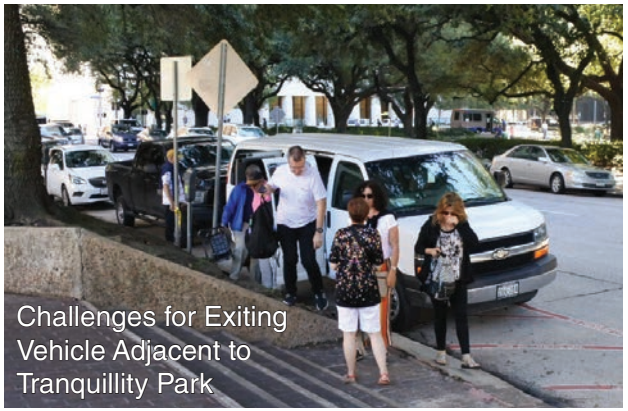
Walking Environment

Bagby Street should be a premier walkable street. The current walking environment along Bagby Street varies block by block. Some locations provide a pleasant walking environment with a wide sidewalk and shade trees, while other blocks have narrow sidewalks and limited shade. There are multiple points along the corridor that provide a challenge when designing for an improved walking environment.

- Curb ramp conditions vary substantially along the corridor, with ramps missing or in poor condition at most intersections. The ramp conditions are summarized in **Figure 2.15**.
- The existing Buffalo Bayou Bridge between Preston Street and Texas Avenue is not a pleasant walk. The sidewalks are narrow and curb ramps are missing or in poor condition.
- Bayou Place extends over Bagby Street. While this provides shade, the walking experience under the building can be dark and unwelcoming. Art has been installed along Bagby Street between Texas Avenue and Capitol Street to provide more interesting engagement for persons walking.
- Rusk Street east of Bagby Street currently has a sidewalk along the south side of the block along the existing bridge. This sidewalk was a METRO light rail retrofit to the bridge and is cantilevered off the existing structure. To provide a sidewalk along the north side of Rusk Street east of Bagby Street, this project proposes the opportunity to cantilever a new sidewalk along the north side of the existing bridge.


Walking along Bridges


Walker Street along Tranquillity Park


Challenges for Exiting Vehicle Adjacent to Tranquillity Park


Walking through Bayou Place


Large Area with No Shade Adjacent to Heritage Plaza

Intersection Striping and Way Finding near Hobby Center


Walking along Little Tranquillity Park


Missing Curb Ramp at Preston Street


Narrow sidewalk through Allen Center

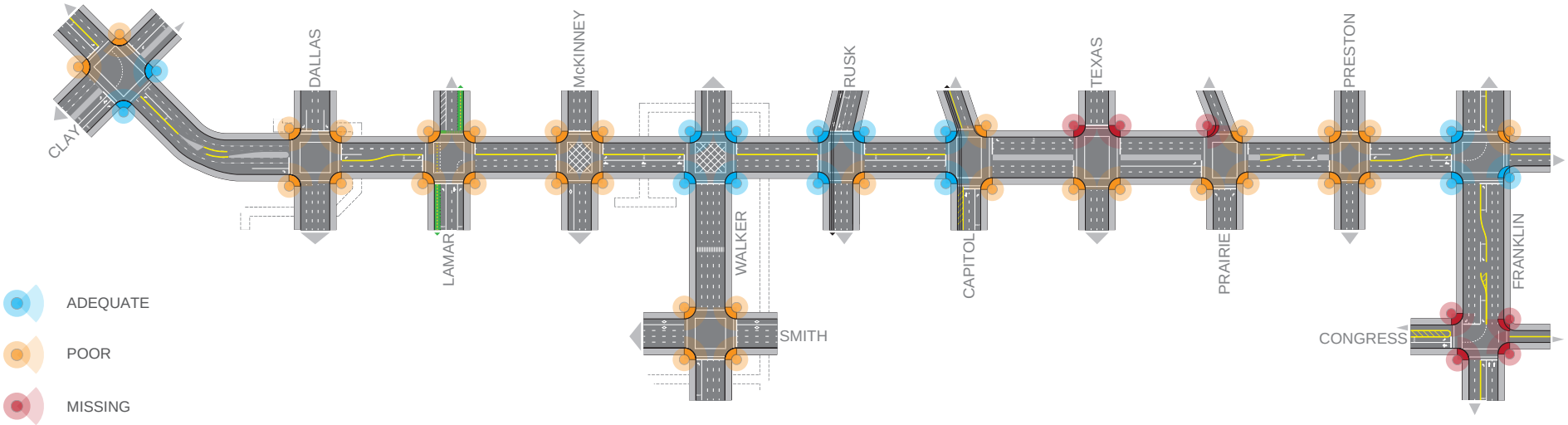


Figure 2.15 Ramp and Tunnel Conditions

- The existing Tranquillity Park edge along Walker Street provides a challenge for people exiting parked cars in the existing parking lane. The slope embankment provides little space for persons exiting vehicles and limits accessibility for persons who are not agile. Also, there is an existing mid-block crossing across Walker Street between Bagby Street and Smith Street. Mid-block crossings are part of the Brazos Street pedestrian corridor that connects Allen Center, Library, City Hall, and Tranquillity Park.
- "Don't Block the Box" markings are at the Walker Street and McKinney Street intersections to combat queuing through intersections. These queues across crosswalks can also create challenges for persons attempting to cross the street.
- There are currently three tunnels that intersect Bagby Street: between City Hall and City Hall Annex, between the Hobby Center and the Tranquillity Park parking garage, and between Heritage Plaza and the parking garage.

Bicycle Network

The *City of Houston Bike Plan* Long Range Vision highlighted Bagby Street for a dedicated bikeway facility. The proposed facility provides major north/south connectivity for west Downtown, by filling a network gap between Buffalo Bayou and Main Street.

A bikeway along Bagby Street will support connectivity to many key destinations inside and outside of Downtown. **Figure 2.16** shows future network connections including the *Plan Downtown* proposed Green Loop and new routes into Midtown, Near Northside, and EaDo. Bagby Street strengthens access to Midtown by connecting into the proposed trail on Brazos via a Greenway on the edge of the 4th Ward currently identified as part of NHHIP discussions.

Current Network

The Lamar Cycle Track intersects the study area. The cycle track was recently extended west along Lamar Street adjacent to Sam Houston Park to connect to the Buffalo Bayou trail system. The cycle track switches from the south side of Lamar Street to the north side at the Bagby Street intersection.

The Buffalo Bayou trail network intersects Bagby Street at two locations: Sesquicentennial Park for the north and south side of the Bayou and at Walker Street behind Hobby Center to the south Bayou trail.

Currently, there are three BCycle bike share stations near the study area. The closest station is at City Hall. The other two stations are located at Clay Street and Smith Street in Allen Center and at Smith Street and Capitol Street in front of Bayou Place.

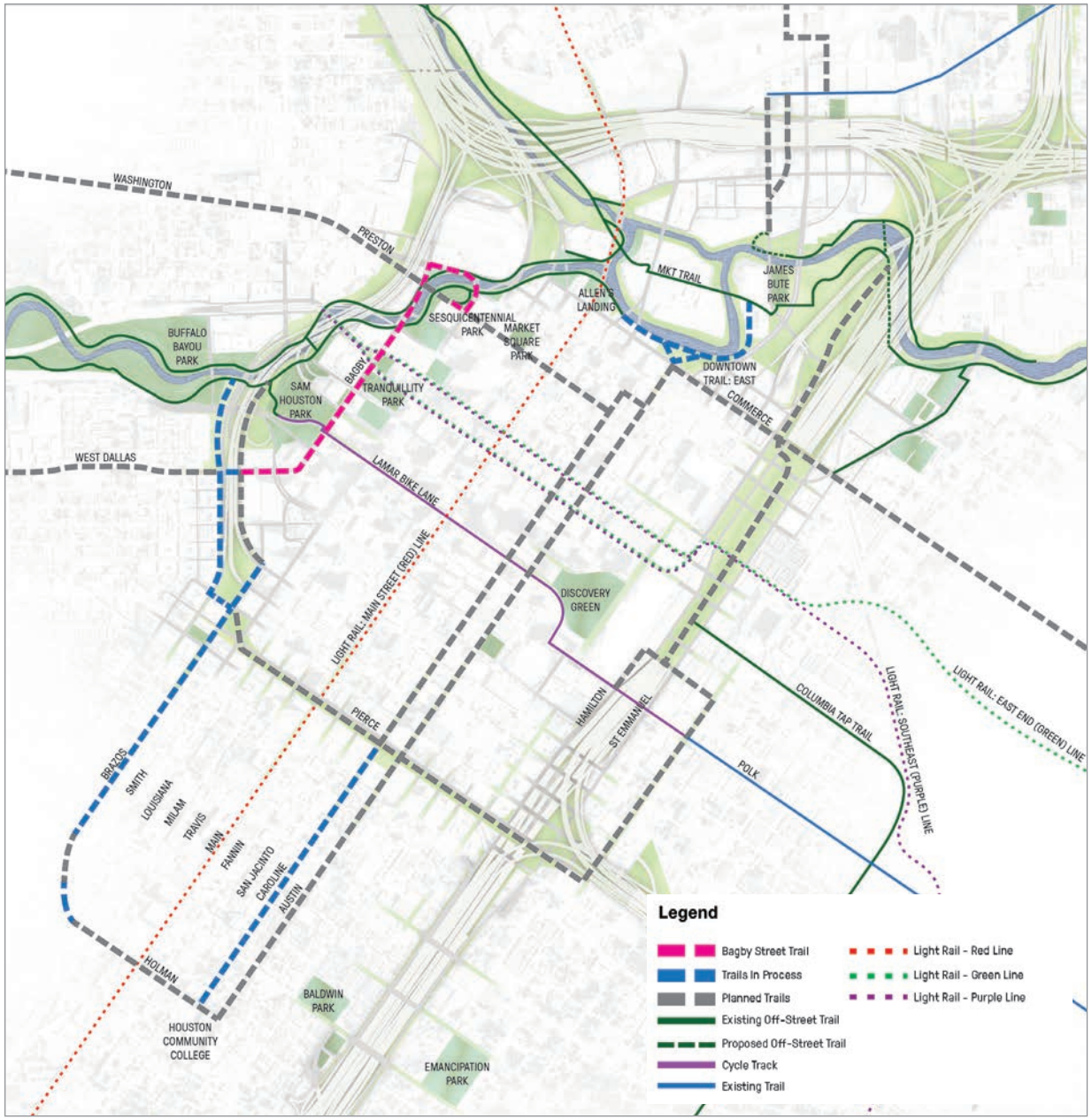
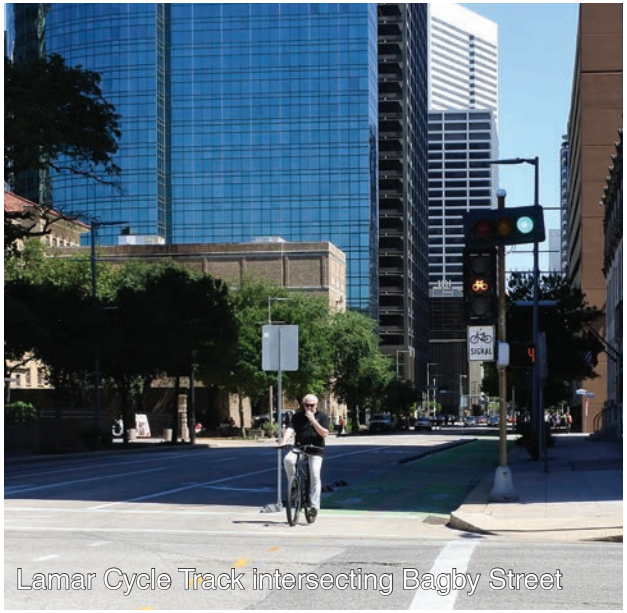


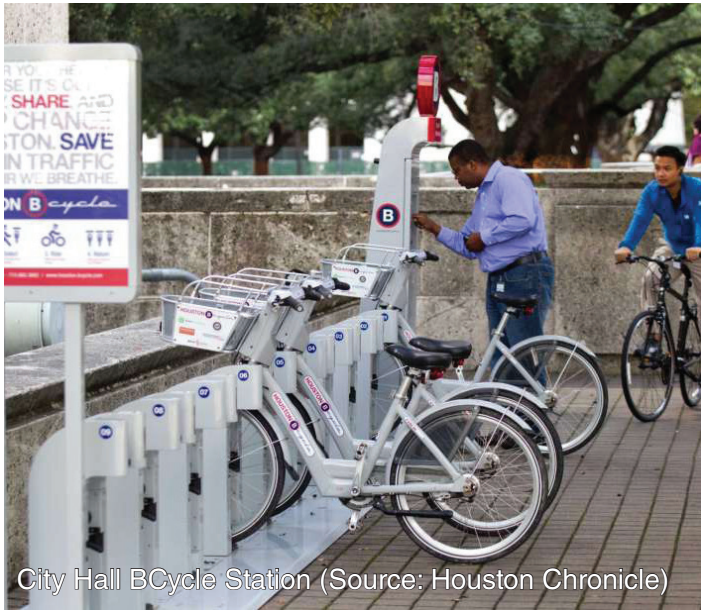
Figure 2.16 Proposed Bicycle Network Around Downtown

Lamar Cycle Track

Buffalo Bayou Trails (Source: BBP)



Lamar Cycle Track intersecting Bagby Street



City Hall BCycle Station (Source: Houston Chronicle)

Buffalo Bayou Trail Connection
at Mosbacher Bridge

Local Transit Network

Two coordinated METRO local routes run along the southern portion of the study area. The routes are the 41 Kirby/Polk & 40 Telephone/Heights. The two routes run at a combined 15-minute frequency. Several local routes intersect Bagby Street: 20 Canal/Memorial, 30 Clinton/Ella, 44 Acres Homes, and 85 Antoine/Washington. Local routes are shown on **Figure 2.17.**

Bagby Street intersects the Green/Purple Line on Capitol (westbound) and Rusk (eastbound) with the closest stop being the Theater District Station, the last/first stop on the Green/Purple Line. The operation of the rail line with the Hobby Center, Theater District garage and walkability was noted as a challenge by several members of the SAC.

Multiple Park & Ride routes intersect the north end of the corridor: IH-10 Park & Ride Routes (22x), US 290 Park & Ride Routes (21x) and Express routes (160s). These routes are likely to change when the IH-10 HOV ramp is moved as part of the NHHIP.

Route 41

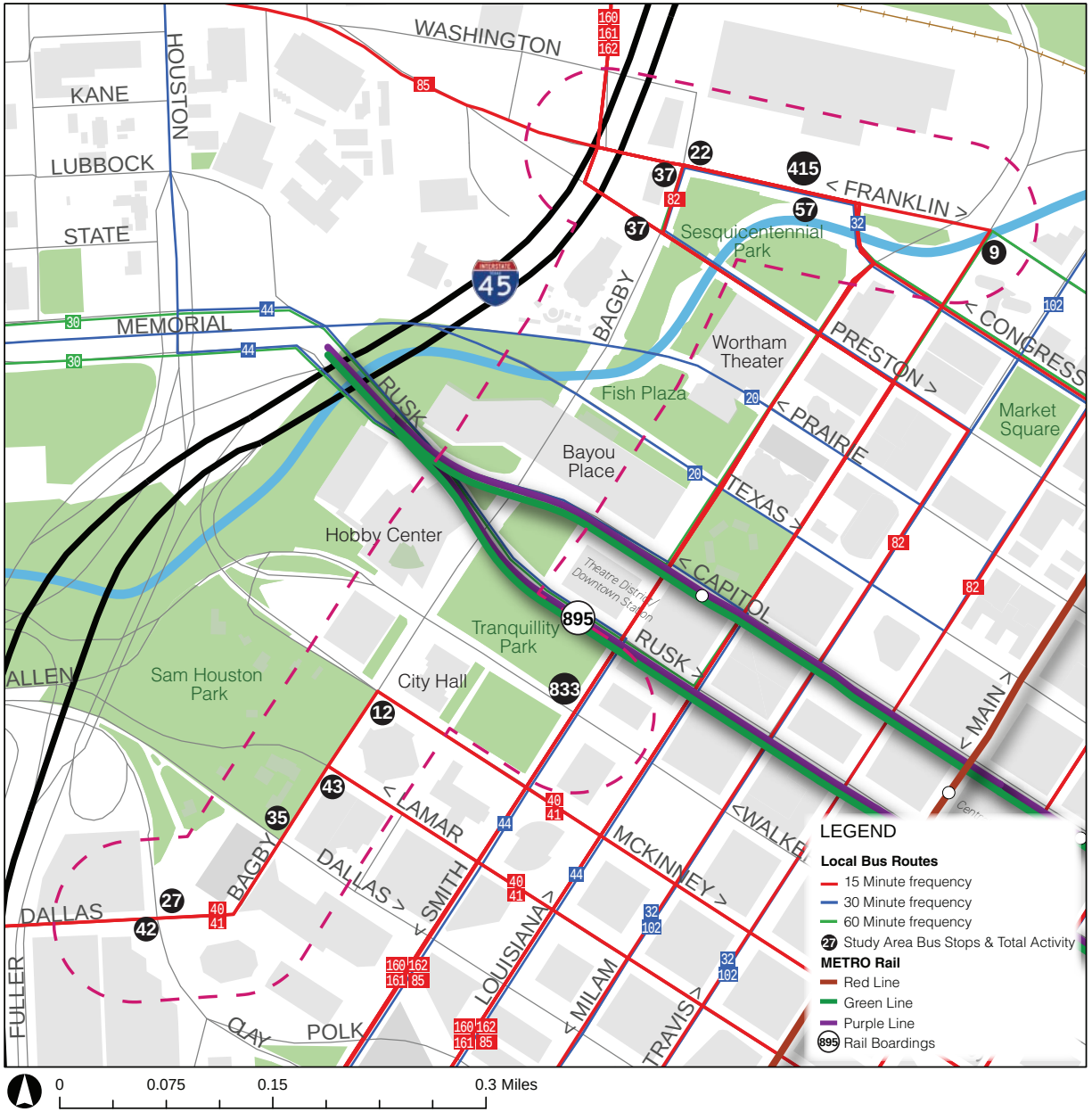


Figure 2.17 Local Transit Network

Source: METRO, 2016


Library Book Drop

City Hall Annex Ramp near IH-45 Entrance


Hobby Center Valet Lane

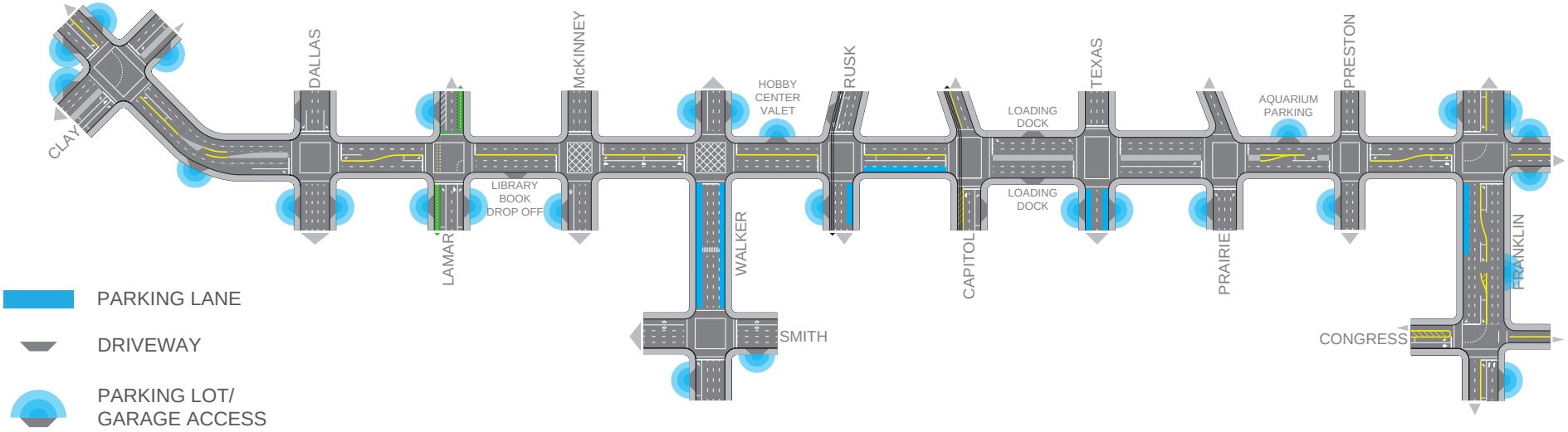


Figure 2.18 Driveway Access and On-street Parking

Driveways

Bagby Street is somewhat unique in Downtown in that there are a limited number of driveways along the corridor. South of Clay Street, Bagby Street is a main access point to the Allen Center and Metropolitan Parking garages. Between Clay Street and Franklin Street, there are only six driveways in the ten-block stretch. Two of the six driveways are loading docks at Bayou Place. A third is the book drop for the Library. The three driveways have lighter daily traffic than the access points for parking or valet.

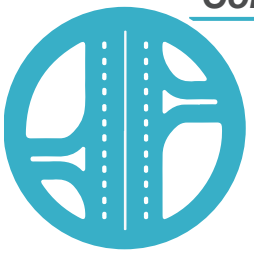
The limited number of access points makes Bagby Street a strong candidate for a bicycle facility. Fewer driveways means less conflict points for persons bicycling.

Figure 2.18 depicts the driveways along the Bagby Street corridor and driveways to key parking lots and garages on adjacent streets. Many of the cross streets provide access to large parking garages. This contributes to Bagby Street operating as a sorting street. The Figure also depicts the one block of existing on-street parking along Bagby Street between Rusk Street and Capitol Street, which is rare for Downtown.

Existing Mobility Summary

Access & Context

- Key west Downtown corridor that intersects and provides access to major ingress and egress points; access points along corridor will change with the North Houston Highway Improvement Project.
- Street of parks; primary land owner along corridor is City of Houston with single private owner along south end of corridor.



Corridor Operations

- Existing cross-sections range from 4 to 6 lanes depending on block.
- Overall directional volume distribution is 2/3 northbound and 1/3 southbound.
- Existing daily volumes are low, with majority of volume traveling along the corridor during the PM peak hour.
- Estimated PM peak hour (highest hourly volumes) intersection volume to capacity ratio (v/c) values are less than 0.6, indicating capacity for growth and/or geometric changes.
- With the exception of the Bagby Street at Walker Street intersection in the 2020 scenario, LOS values are D or better (acceptable for an urban context) for existing and projected conditions.
- Corridor crash rate for Bagby Street is 2,110 crashes per 100 Million MEV; 6 times greater than the state average for a four-lane undivided urban roadway (356 crashes per 100 MEV).
- Few driveways along Bagby Street primarily serve drop-offs (Hobby Center, Downtown Aquarium, Library Book Drop).

Multimodal Access & Connectivity

- Proposed dedicated bicycle facility along Bagby Street in the *Houston Bike Plan* with connections to parks and destinations.
- Two coordinated Metro local routes run along the southern portion of the study area: 41 Kirby/Polk & 40 Telephone/Heights; Green/Purple Line crossing.
- Sidewalk and curb ramp conditions vary (from poor to adequate) along the corridor.
- 15 pedestrian related crashes & 4 bicycle related crashes between 2011 and 2015.

Tree Evaluation

C.N. Koehl Urban Forestry Inc conducted a preliminary analysis of anticipated impacts on existing trees within the public right of way along Bagby Street. The inventory summary includes a total of 113 trees within the subject project area. Of these trees, twenty-five are protected trees of 20” diameter or larger of the live oak or bald cypress species. There is a 49” live oak located in the building setback at the northwest corner of Capitol Street and Bagby Street. Furthermore, an additional 69 trees less than 20” diameter and greater than 1.5” diameter were found within the project area.

The majority of the trees are protected by the Street Tree Ordinance. Therefore, if design requires removal and replacement planting, the methods must comply with the ordinance. If trees are to be preserved in place, it is recommended that the proposed curb is no closer to base of trees than existing, or slightly higher than existing, top of curb. A potential approach would be for street to be constructed with Zero Curb Cutback method in critical locations.

For the tree relocation analysis, and specific to Tranquillity Park, sixteen live oak trees were identified within the diameter range of 13” to 34”. On-site relocation was estimated to cost $100,000- $150,000 per tree. Poor condition of several trees does not make them good candidates for relocation as they would most likely not survive the stress of the relocation process. Alternatively, new trees planted would be approximately $35,000.00 per tree and include a one-year warranty.

Trees along Sam Houston Park

Trees on north side of Walker with roots at back of curb and elevation change from curb to retaining wall

Monumental Oak: 49” Live Oak in Raised Bed

Existing Type B Inlet


Existing Type BB Inlet


Existing Type BB Inlet

Buffalo Bayou Bridge during Hurricane Harvey

Existing Stormwater Results

An extensive stormwater drainage report was conducted for the corridor and is included in **Appendix A**.

2-Year Event

Per the City of Houston design standards, the 2-year, 24-hour duration storm event should be completely contained within the subsurface stormwater infrastructure. There is surface ponding present throughout the study area, which indicates the stormwater infrastructure for the area does not meet current City requirements for a 2-year level of service in all areas. The main trunk line has additional capacity but the stormwater is unable to enter due to a limited number of inlets. There are topographic low points in the ponding area with stormwater unable to reach the existing inlets.

10-Year Event

During the 10-year, 24-hour event, ponding is present throughout the study area. The storm sewer system has additional capacity but an inadequate number of inlets to sufficiently capture and convey flow to Buffalo Bayou. Ponding leaves the right-of-way on Bagby Street southeast of Dallas Street as well as northeast of the intersection at Bagby Street and Walker Street.

100-Year Event

During the 100-year, 24-hour event, street ponding and conveyance is expected but should comply with the City of Houston Drainage Criteria Manual which states that the maximum ponding elevations for the 100-year event should not exceed the natural ground elevation at the right-of-way line. There is ponding outside of the right-of-way and portions of Bagby Street are unpassable. Ponding most noticeably exceeds street right-of-way and depth requirements west of Buffalo Bayou at Preston Street but is present throughout the rest of the study area. Deep ponding is due to topographical low points, lack of street inlets, and the corridor's location in the floodplain.

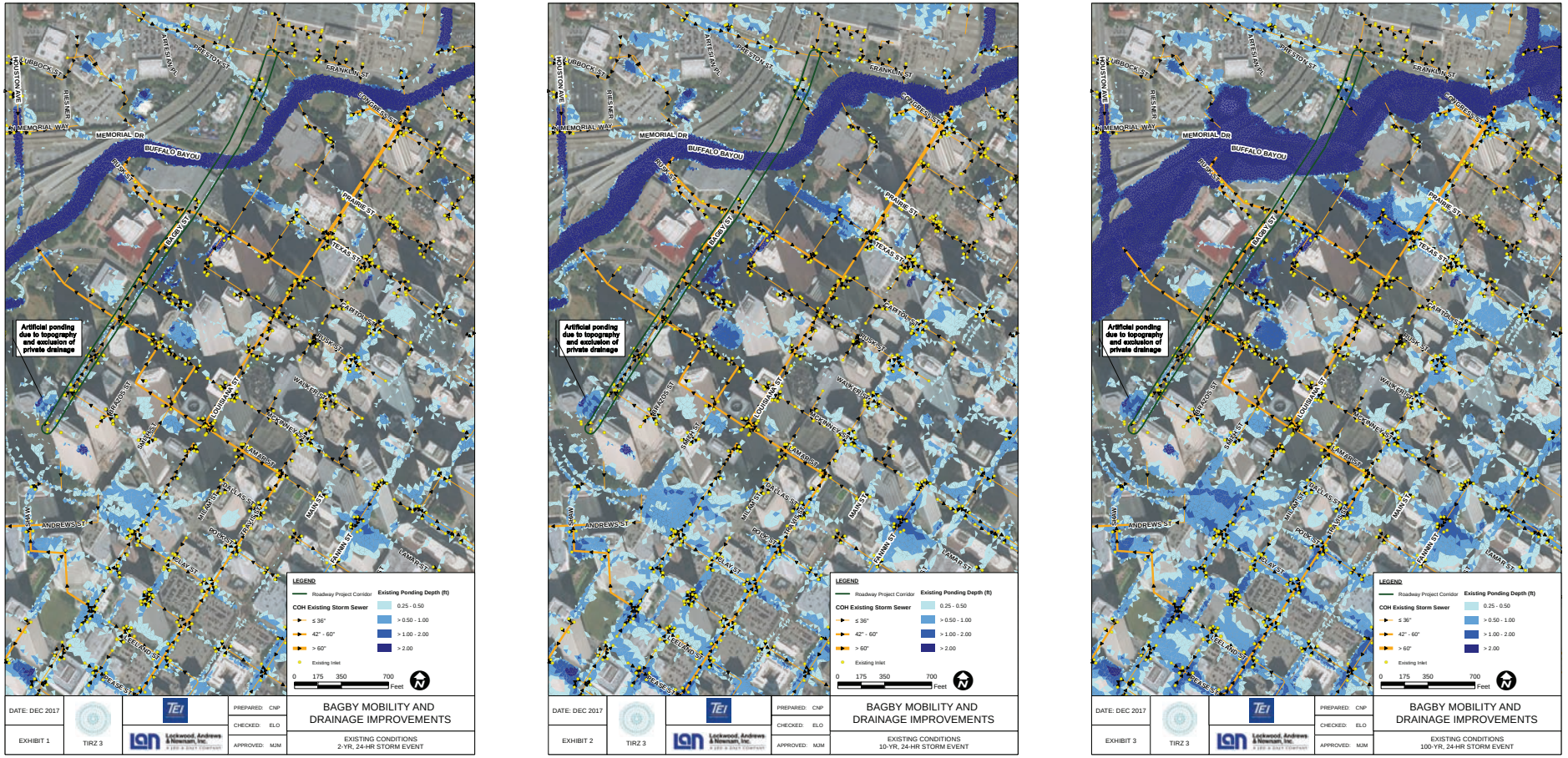


Figure 2.19 Sample exhibits from **Appendix A** of Existing Conditions for 2-year, 10-year, 100-year Storm Events


Girders on Bagby Bridge over Buffalo Bayou


Rusk Street Bridge Elevation looking South


Sidewalk on South Side of Rusk Street Bridge, Similar to Proposed

Bridge Evaluation

Bagby Street Bridge

A bridge condition assessment was conducted to outline the existing conditions of the bridges along Bagby Street between Texas Avenue and Prairie Street and provide recommendations for maintenance and upgrades. The evaluation consisted of reviewing record drawings, brinsap reports, and site visits.

As part of the assessment, a new proposed retrofitted walking path was evaluated along Rusk Street between Bagby Street and Smith Street. This cantilevered pedestrian sidewalk would create another walking path from east to west similar to the pedestrian cantilever walkway on the south side of Rusk Street.

Both the Bagby Bridge and the Rusk Street Bridge were observed to be in overall satisfactory condition based on visual observations. Some of the preliminary findings include:

- The existing bridge rails appear to not be rated to current traffic impacts
- Deterioration of steel girders
- Minor cracks along the Rusk Street bridge

Any modifications to the existing bridges require structural analysis including a load rating on the bridge. This may include assessment for traffic signal pole placement or relocation as part of signal upgrades. An underwater bridge inspection is also warranted to identify significant scouring at the bridge columns due to the recent Hurricane Harvey flooding.

Refer to the Bridge Assessment Report in **Appendix A** for more details.

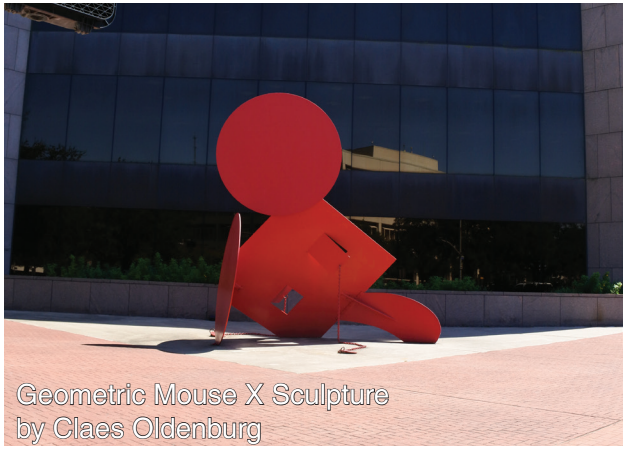
Utilities Summary

The majority of the existing public utilities were built in the 1960s with few built/rehabilitated sanitary sewers between the 1980's to the 2000. LAN has coordinated with the City of Houston Water Planning and Waste Water Infrastructure Planning personnel on all items related to the sanitary sewer and water lines. These recommendations should be incorporated into the next phase of the street design along with the burial of one segment of aerial utilities near Dallas Street and Bagby Street. Below in **Figure 2.20** is a summary of utilities existing conditions and proposed lines. The full utilities report is included in **Appendix A.**

Water Lines	Existing • 6, 8, 12 and 24-inch cast iron water lines • Built in the 1960s • Approaching useful service life Proposed • Replace all water lines with same existing size per City of Houston direction
Sanitary Sewer Lines	Existing • 6, 8,12,18 and 24-inch cast iron lines • Built in 1950s and 1960s • Some sections rehabilitated in 1980s and 1990s • Approaching useful service life Proposed • Replace all lines with same existing size per City of Houston direction
Private Utilities	Existing • Large and multiple AT&T conduits • Large and multiple Centerpoint energy conduits • 2 to 8-inch Centerpoint gas lines Proposed • Relocate during Final Design if conflict exists with proposed improvements • Every attempt must be made to avoid impacting large conduits • Convert overhead lines to underground at Bagby Street and Dallas Street intersection

Figure 2.20 Utilities Summary

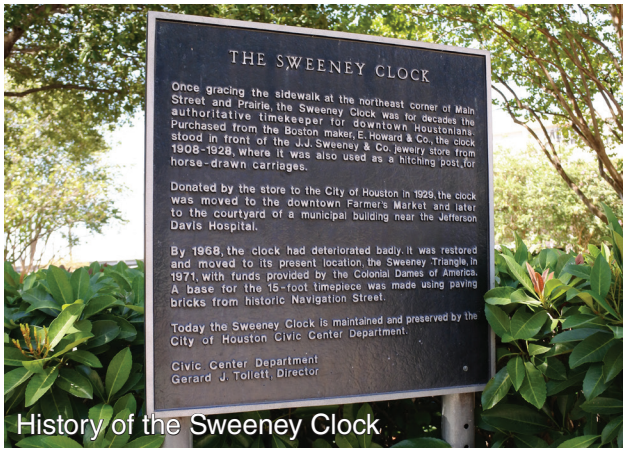
Source: City of Houston and Team Analysis



Geometric Mouse X Sculpture
by Claes Oldenburg

City Hall

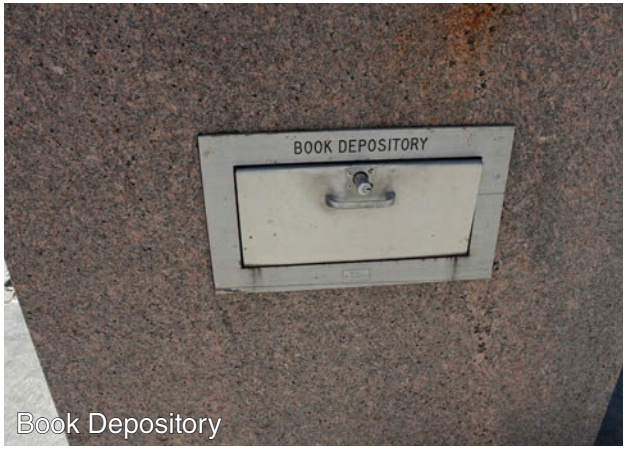
Art Installation at Bayou Place



History of the Sweeney Clock

Event at Hobby Center

City Hall Annex



Book Depository

Quotes in the Pavement

Sam Houston Park

CORRIDOR ALTERNATIVES

Four alternative designs for Bagby Street were developed based on the analysis of the previous chapters along with input and guidance from the SAC. The four alternatives are presented in **Figure 3.02**, **Figure 3.05**, **Figure 3.08**, and **Figure 3.11**. These figures show the assumed cross-section for the block of Bagby Street between McKinney Street and Walker Street as a representative of the design for the broader corridor. These alternatives were presented to the stakeholders for feedback and prioritization.

The four alternatives were then evaluated based on the goals and desires for the Bagby Street corridor, and a final Recommended Conceptual Design was developed. The final conceptual design is presented and discussed in the next chapter, **Corridor Recommendations**. The design also includes recommendations for segments of Franklin Street, Congress Street, Walker Street, and Lamar Street that are proposed to improve as part of the project. **Appendix D** discusses the four design alternatives in-depth.

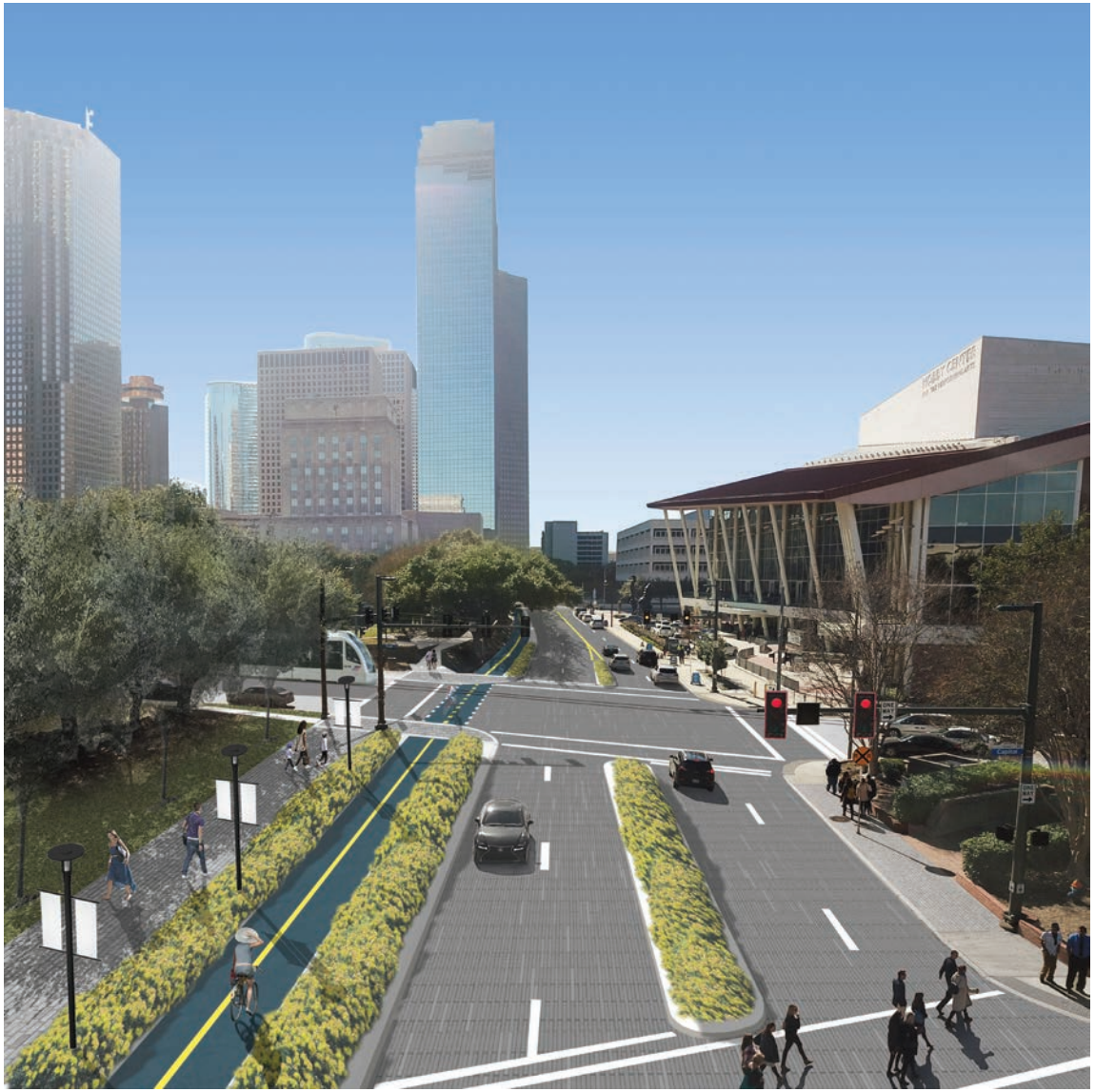


Figure 3.01 Alternative 1 Vision

Alternative 1

Alternative 1 provides vehicular capacity that will meet existing demand. The cross section for the 900 block of Bagby Street between City Hall and City Hall Annex is shown in **Figure 3.02**.

The typical cross-section provides two vehicular lanes for northbound traffic and one or two lanes for southbound traffic, depending on the location. The proposed cross-section includes a two-way bikeway outside the curb, at sidewalk level, along the east side of the corridor.

Alternative 1 will require new curb alignments at locations where the existing street width is not sufficient, primarily in the vicinity of the Hobby Center and City Hall Annex. **Figure 3.03** shows the corridor plan.

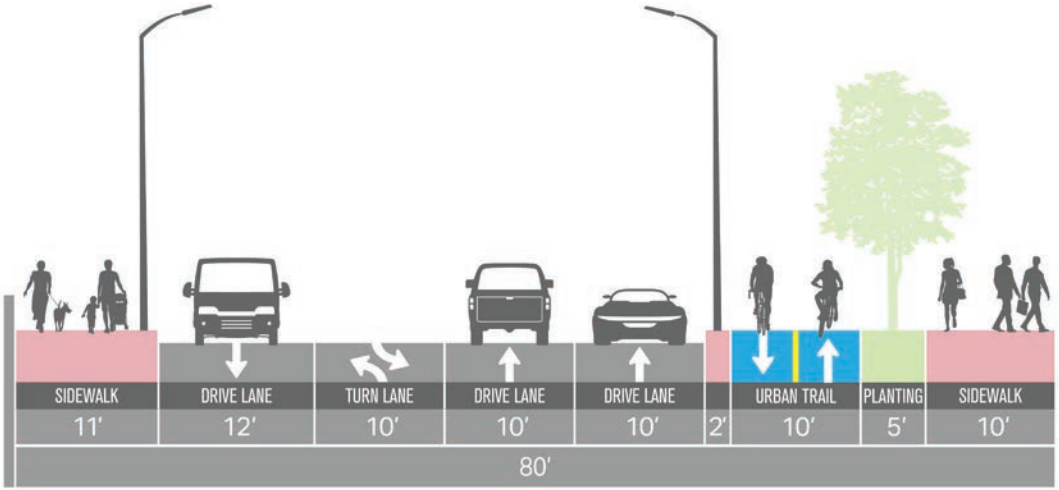


Figure 3.02 Alternative 1 Typical Section at 900 block of Bagby Street*

**Typical cross-section for the 900 block of Bagby Street between McKinney Street and Walker Street adjacent to City Hall and City Hall Annex where ROW is 80'.*

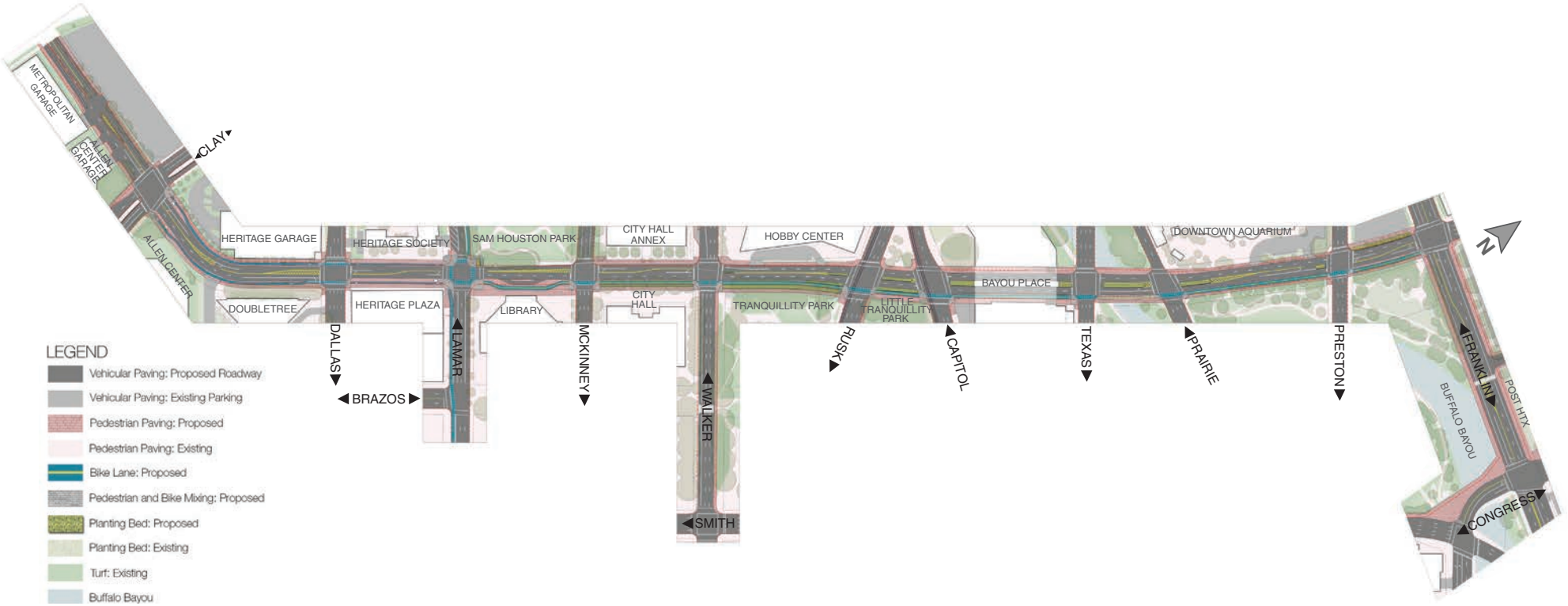


Figure 3.03 Alternative 1 Schematic Corridor Plan

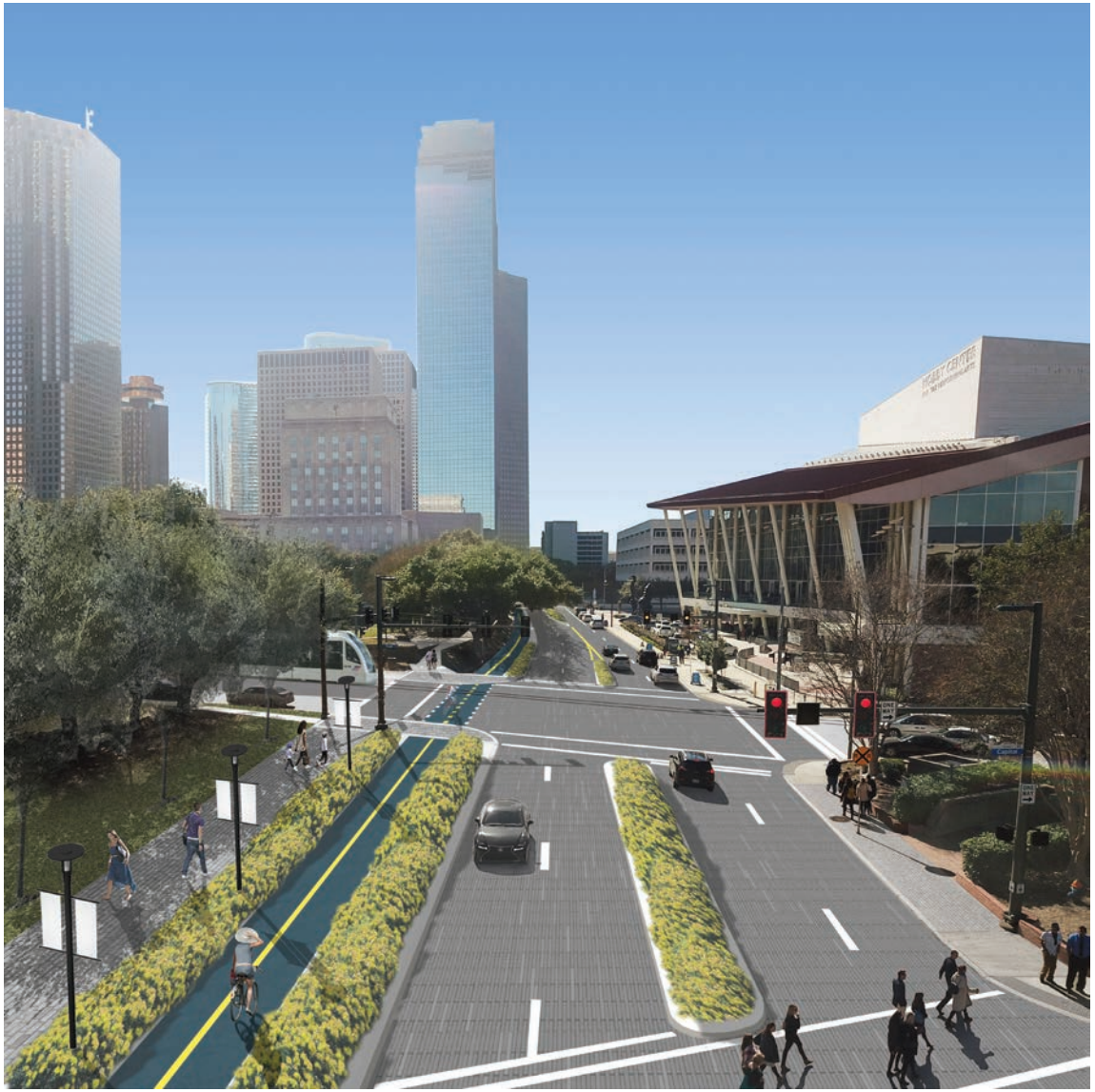


Figure 3.04 Alternative 2 Vision

Alternative 2

Alternative 2 has a narrower vehicular section than Alternative 1 which provides added space for landscaping and persons walking or bicycling. Alternative 2 aligns with stakeholder input to be bold and rethink how Bagby Street operates as an access street within western Downtown.

Alternative 2 provides a two-way bikeway outside the curb, at sidewalk level, similar to Alternative 1, but with fewer vehicle lanes.

The cross-section for the 900 block of Bagby Street between City Hall and City Hall Annex is shown in **Figure 3.05** and an in-depth review of the alternative is included in **Appendix D. Figure 3.06** shows the corridor schematic.

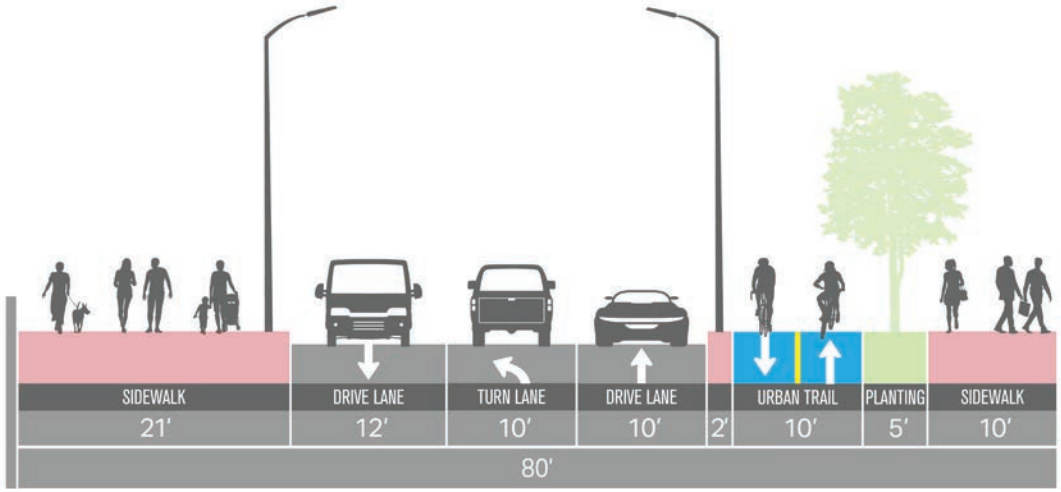


Figure 3.05 Alternative 2 Typical Section at 900 block of Bagby Street*

**Typical cross-section for the 900 block of Bagby Street between McKinney Street and Walker Street adjacent to City Hall and City Hall Annex where ROW is 80'.*

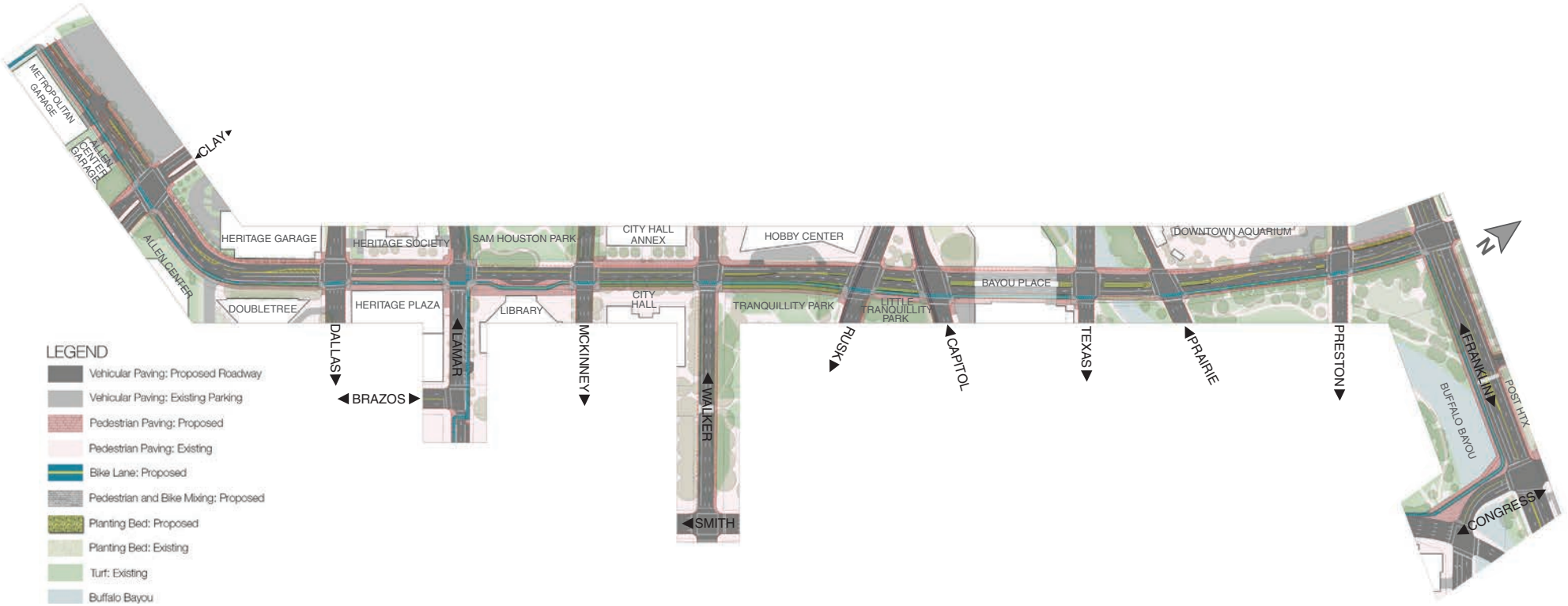


Figure 3.06 Alternative 2 Schematic Corridor Plan

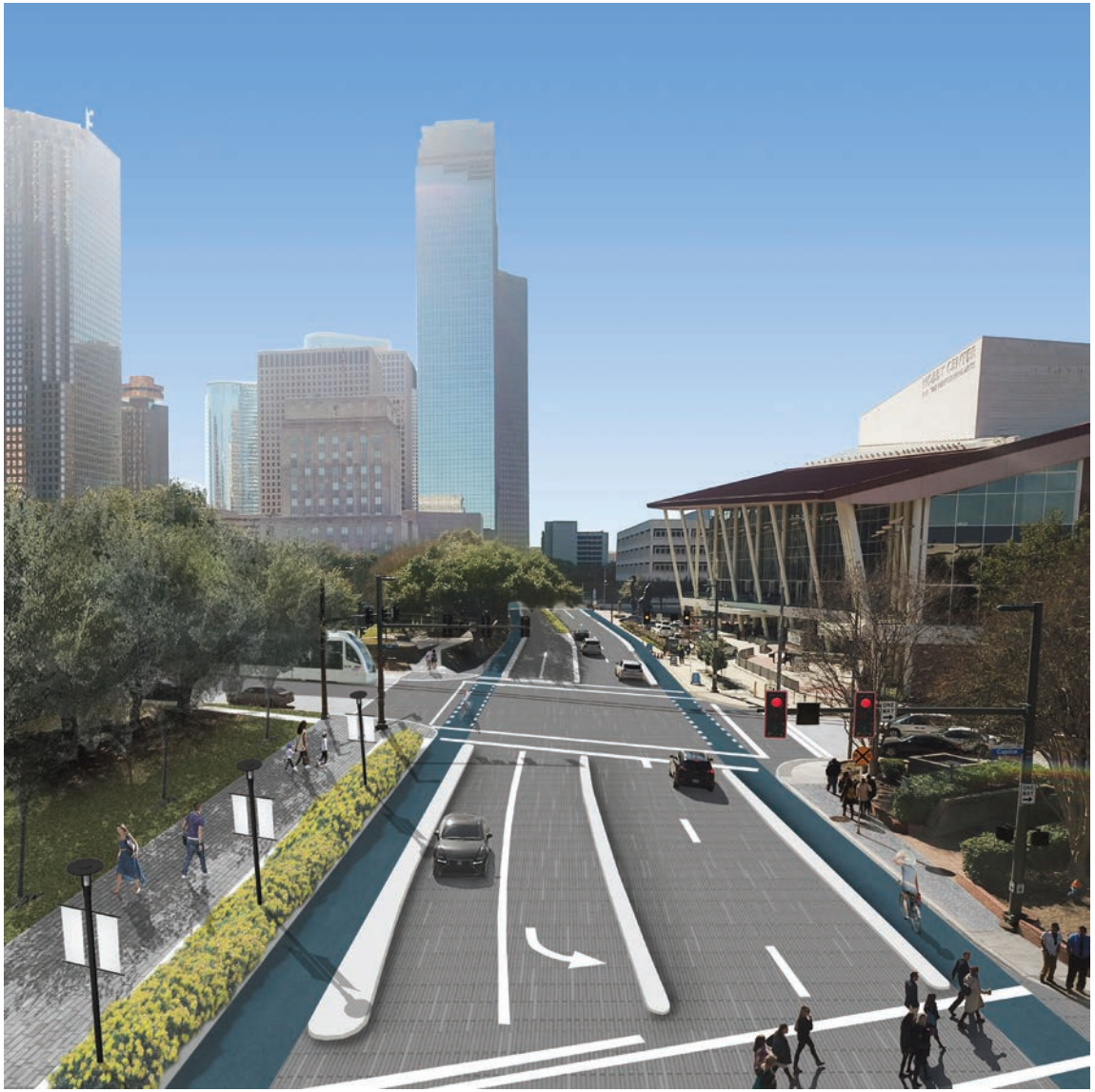


Figure 3.07 Alternative 3 Vision

Alternative 3

Alternative 3 provides similar vehicular capacity to Alternative 2. Alternative 3 provides a separated bikeway on each side of the street between the curbs. The separated bicycle lanes require more space than the proposed bi-directional bikeway in the other alternatives. This results in less space for sidewalks and landscaping.

The separated bicycle lanes result in more complicated Bagby Street at Lamar Street intersection with the existing cycle track.

The proposed cross-section for the 900 block of Bagby Street between City Hall and City Hall Annex is shown in **Figure 3.08** and the in-depth review of the alternative is included in **Appendix D. Figure 3.09** shows the corridor schematic.

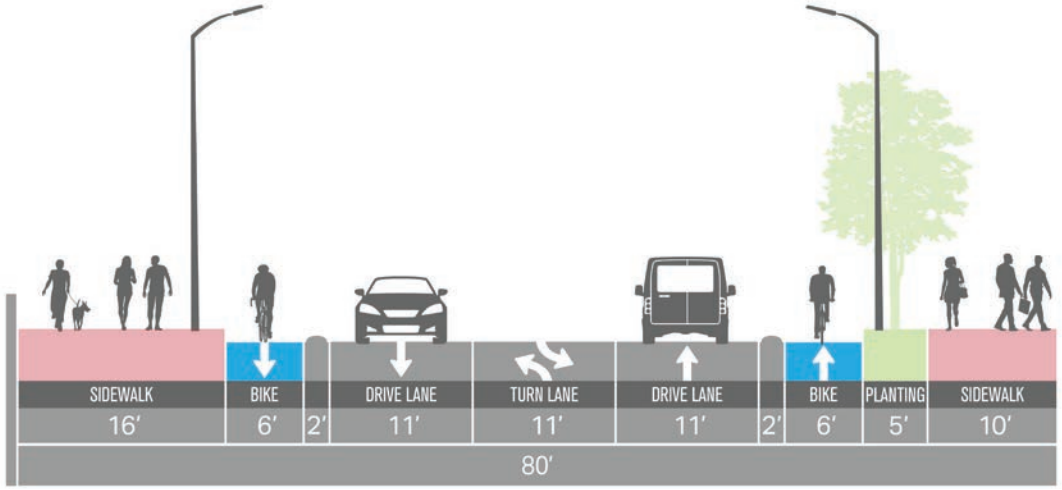


Figure 3.08 Alternative 3 Typical Section at 900 block of Bagby Street*

**Typical cross-section for the 900 block of Bagby Street between McKinney Street and Walker Street adjacent to City Hall and City Hall Annex where ROW is 80'.*

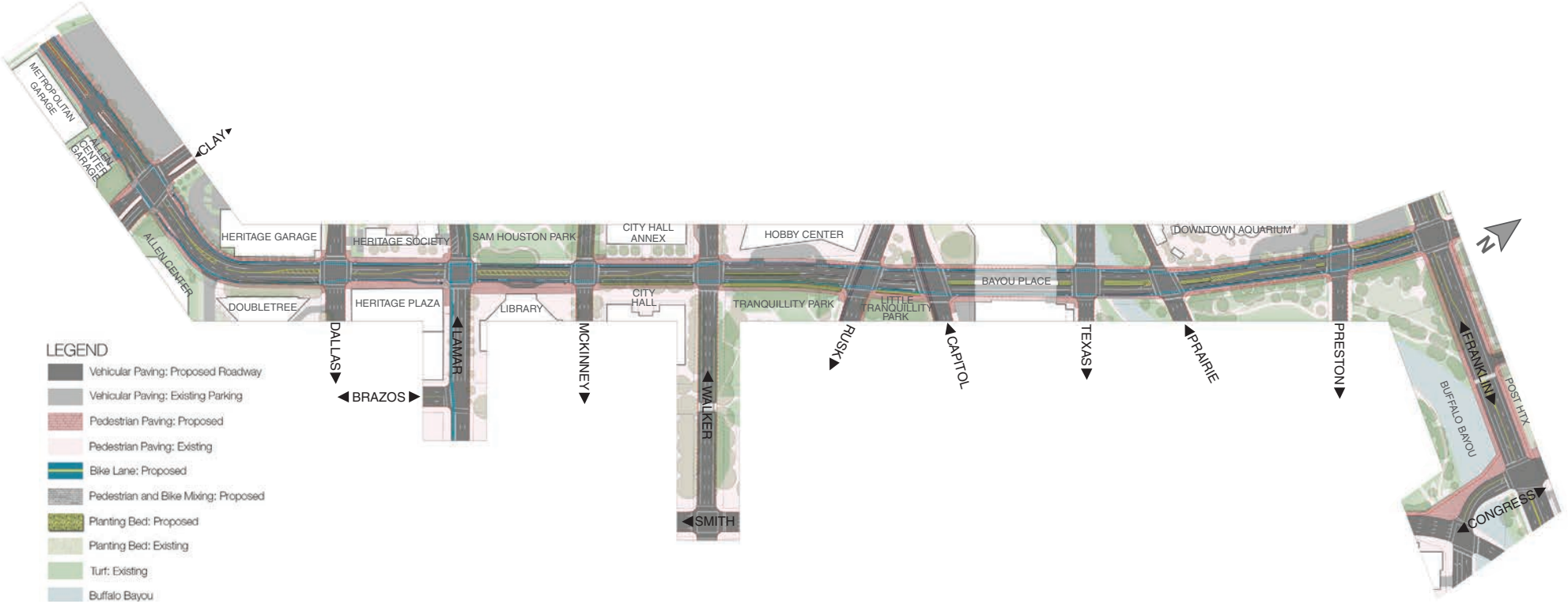


Figure 3.09 Alternative 3 Schematic Corridor Plan

Figure 3.10 Alternative 4 Vision

Alternative 4

Alternative 4 is a one-way alternative, which converts five blocks of the 11-block study corridor of Bagby Street to a one-way northbound corridor. Due to operations and driveways at some adjacent buildings, all blocks are unable to be northbound only. Converting five blocks along Bagby Street to one-way may result in legibility issues for drivers.

Alternative 4 provides a bicycle facility similar to Alternative 1 and Alternative 2. Blocks where southbound traffic has been removed provide for a substantially expanded pedestrian realm.

The proposed cross-section for the 900 block of Bagby Street between City Hall and City Hall Annex is shown in **Figure 3.11** and the in-depth review of the alternative is included in **Appendix D.** **Figure 3.12** shows the corridor schematic.

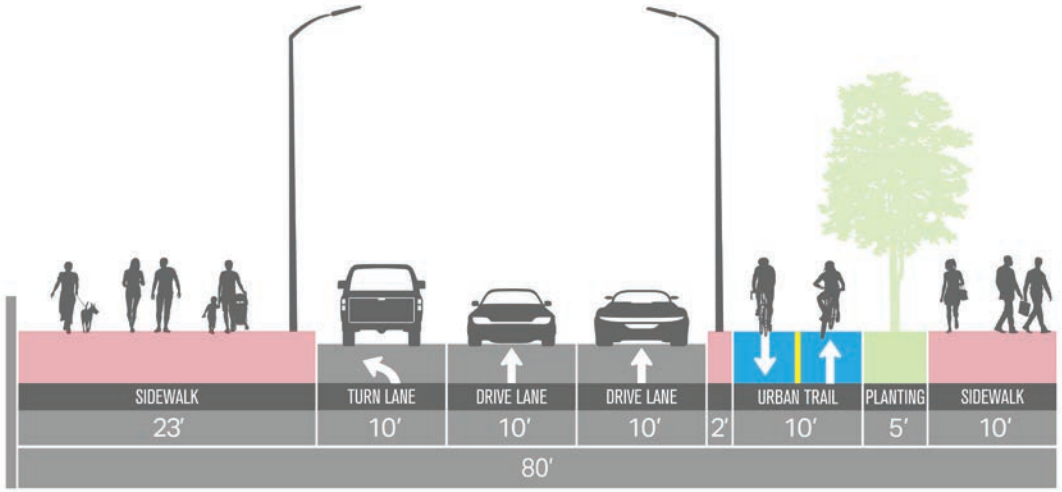


Figure 3.11 Alternative 4 Typical Section at 900 block of Bagby Street*

**Typical cross-section for the 900 block of Bagby Street between McKinney Street and Walker Street adjacent to City Hall and City Hall Annex where ROW is 80'.*

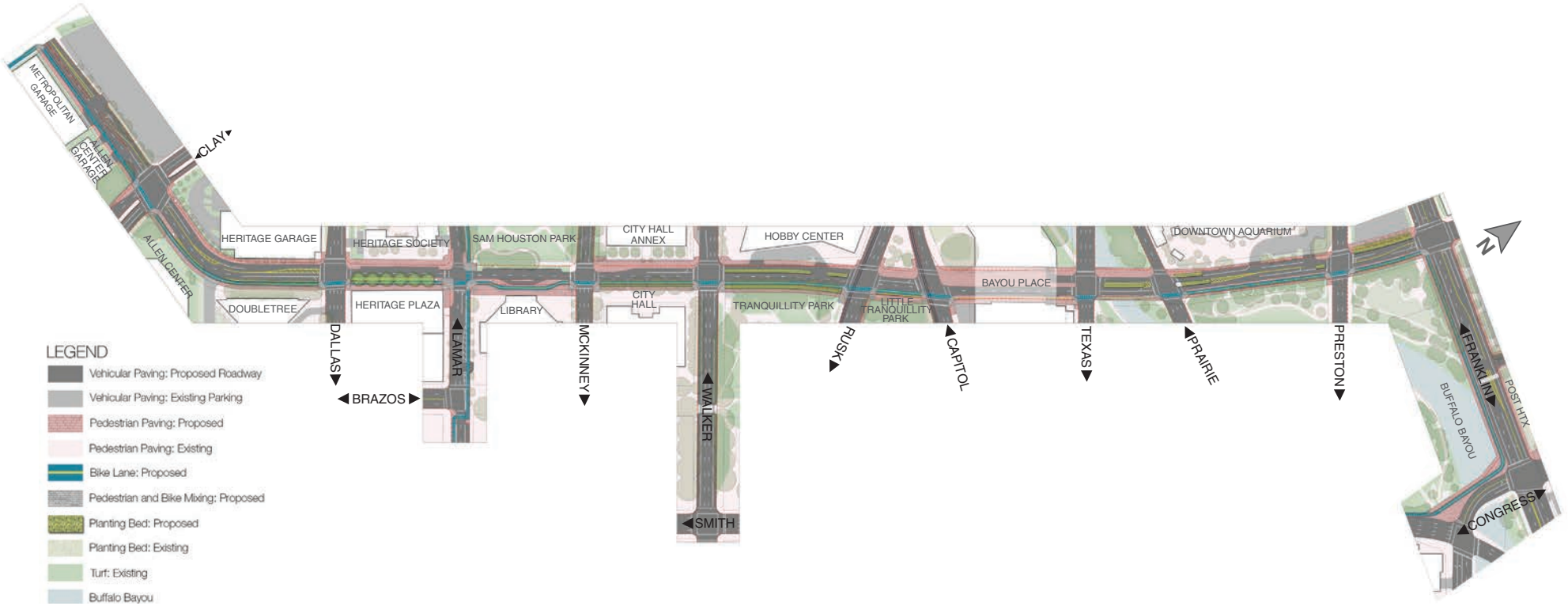


Figure 3.12 Alternative 4 Schematic Corridor Plan

Bikeway Typology

All four alternatives propose high-comfort bicycle facilities to meet the recommendation in the *City of Houston Bike Plan* (**Figure 2.16**). The SAC advocated for the intergeneration of art, culture, and history into the design of the proposed bicycle facility and the overall corridor.

Providing a place to bike on Bagby Street is not only intended to complete vital connections within the region's bicycle network, including several connections to Buffalo Bayou, but also to provide a safe and enjoyable way to visit destinations along the corridor. To see the greatest benefit from investment in bicycle infrastructure, proposed bikeways have been defined to provide a comfortable experience for all. Some methods to increase safety and appeal to a broader set of users include:

- Implement separated bikeway from vehicle travel lanes
- Elevate bicycle facility to sidewalk level
- Provide well marked bicycle crossings at intersections
- Provide bicycle crossing signals that may allow people bicycling to enter the intersection before vehicles.

The completion of an on-street integral bikeway along Bagby Street will result in Houston's first intersection of signature street-level bicycle facilities. Bagby Street crosses Downtown Houston's first cycle track at Lamar Street. This intersection requires detailed consideration of how connections from one facility to the other will occur.

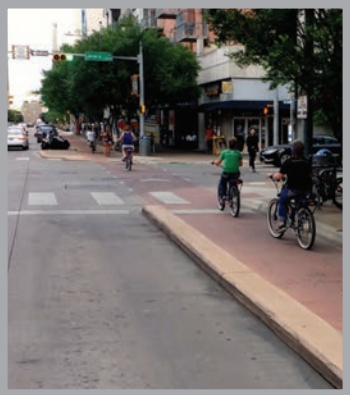
Two types of high-comfort bicycle facilities have been proposed for Bagby Street. Alternatives 1, 2 and 4 propose a two-way outside curb bikeway. Alternative 3 proposes inside curb directional bike lanes with curbed buffers.

Indianapolis Cultural Trail (Example of Alternative 1, 2, and 4 Proposed Facility)

MINNEAPOLIS, MN

INDIANAPOLIS, IN

AUSTIN, TX



AUSTIN, TX

CHICAGO, IL

Two-way Outside Curb Bikeway

Shown in Alternatives 1, 2 and 4

Example two-way outside curb bikeways are shown to the left. The bikeways are at sidewalk elevation behind the curb of the roadway. A bikeway outside the curb separates vehicular traffic and bicycle traffic to reduce conflicts.

Combining the northbound and southbound bicycle traffic into one facility provides advantages over directional bicycle lanes for the Bagby Street corridor. The geometry of the two-way bikeway is more space efficient than a pair of one-way facilities because they share the same buffered space, providing more opportunities for landscaping. Bagby Street is unique in that many of the access driveways are along the west side of the street and many of the turning movements are cars heading west, resulting in less conflict points along the east side of the street for people walking and biking.

Directional Bike Lanes with Curbed Buffer

Shown in Alternative 3

Alternative 3 proposes inside curb bicycle lanes on the roadway. To improve the comfort and safety, a raised curb is proposed to separate bicycles from cars. Austin, Texas has built many inside curb bicycle lanes with raised curbs. These examples are shown to the left. A minimum six-foot lane with two-foot buffer is recommended. The minimum space requirements for bike lanes with curbed buffers is greater than the minimum space requirements for a two-way bikeway.

There are maintenance challenges related to bike lanes inside the curb that are buffered with a raised curb. Traditional street sweeping equipment is unable to keep the bike lanes clear of debris which can reduce usability.

Intersecting Bikeways

Location: Bagby at Lamar

The intersection of two, two-way bikeways at Bagby and Lamar presents a design challenge, but showcases the progress the City is making to become more bicycle friendly. The crossing requires enough space for people bicycling to queue in each direction. Well-designed crossings throughout the intersection will be needed to ensure it operates for persons biking, walking, and driving. It should also consider adjacent access points for parking garages and Sam Houston Park. Several options were assessed as part of the study and will need to be refined in the final corridor design.

CORRIDOR RECOMMENDATIONS

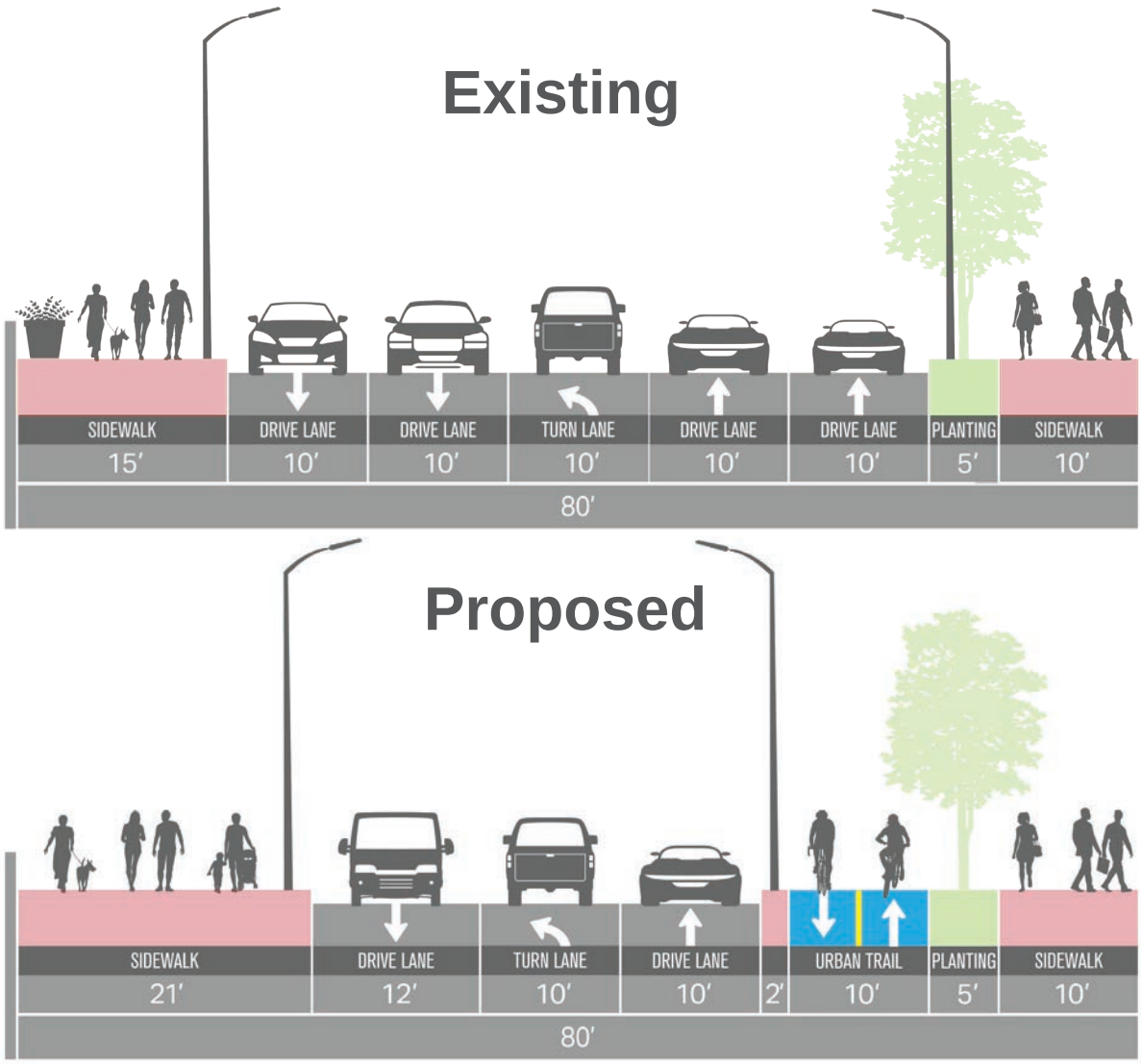


Figure 4.01 Recommended Typical Section at 900 block of Bagby Street

(Typical cross-section for the 900 block of Bagby Street between McKinney Street and Walker Street adjacent to City Hall and City Hall Annex where ROW is 80′.)

Recommended Conceptual Design

The four developed alternatives were presented to the Stakeholder Advisory Committee (SAC) to discuss the opportunities and limitations of each alternative. The most popular alternative was Alternative 2.

The recommended conceptual design builds on Alternative 2 and includes desired adjustments and enhancements recommended by the SAC.

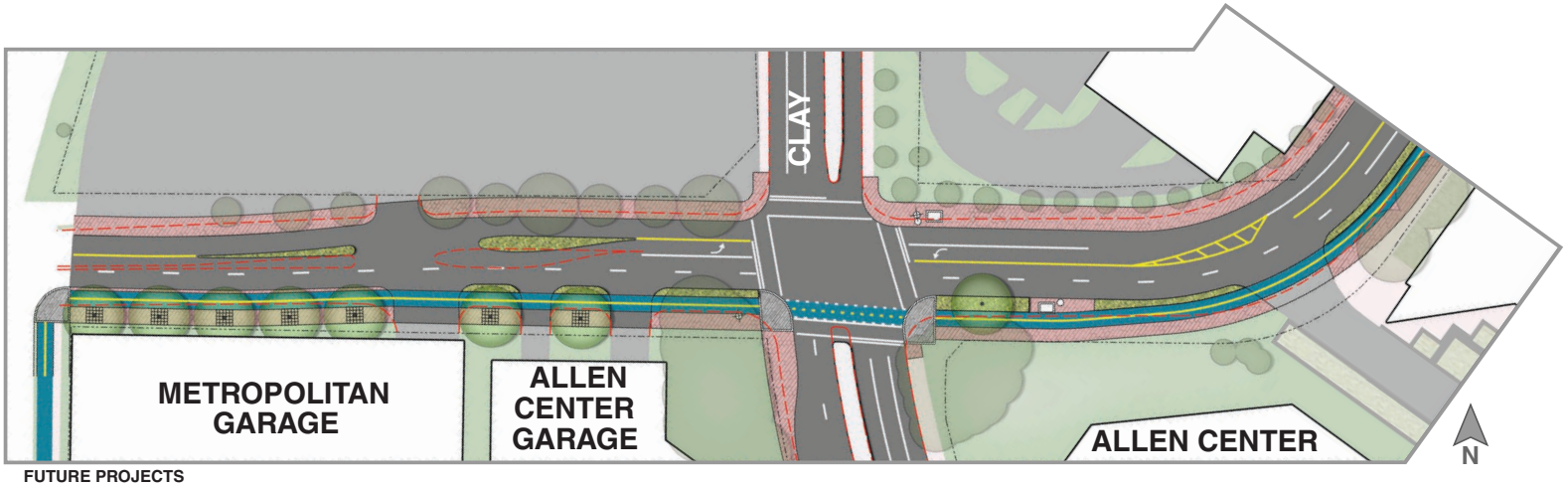
The recommended conceptual design balances the needs of each mode by providing a narrower vehicular section to better meet existing and projected demand. The roadway will continue to provide access to adjacent destinations in the near-term and likely benefit from changes in traffic circulation after completion of the NHHIP. In particular, the intersection of Bagby Street at Walker Street will benefit from reduced queues trying to access IH-45 via the new Downtown Connector.

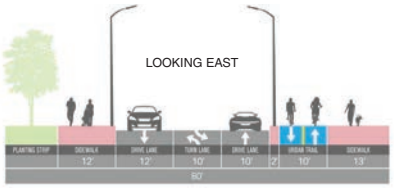
The recommended design provides reallocated space for persons walking, more landscaped areas and a high-comfort bikeway to align with the broader vision for a bikeable Downtown.

The design allows for Bagby Street to support the destinations along the corridor, and to also become a destination itself with public space that supports the parks and civic uses along the corridor.

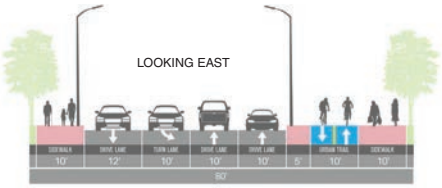
The facing page provides the vision of the recommended conceptual design looking north from the Bagby Street at Lamar Street intersection. **Figure 4.02** through **Figure 4.07** show the block-by-block proposed design.

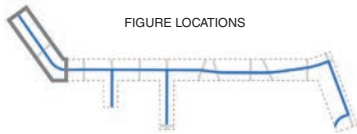
IH-45 TO DALLAS STREET





TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY



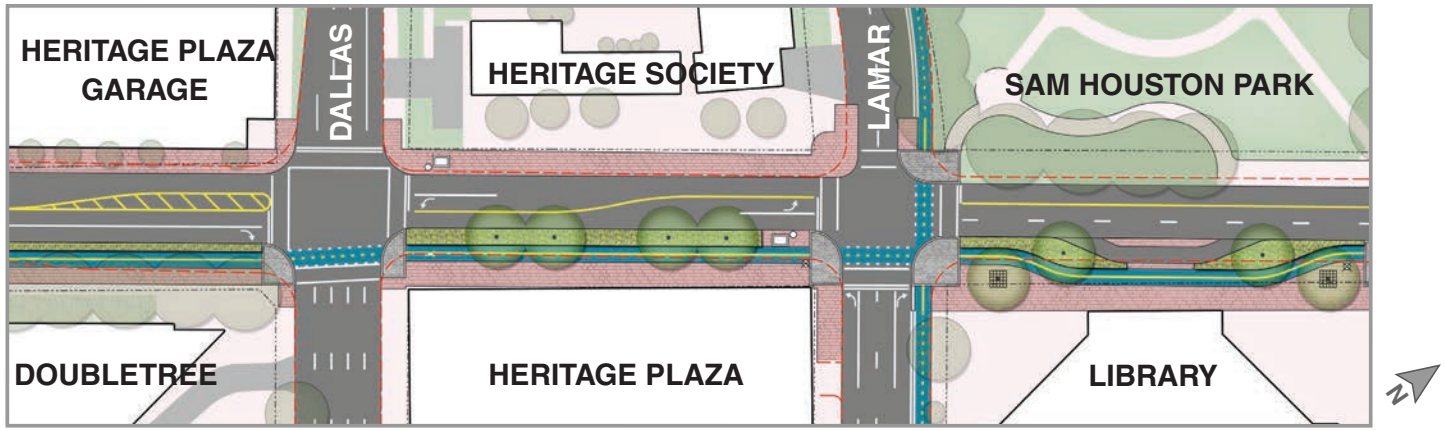


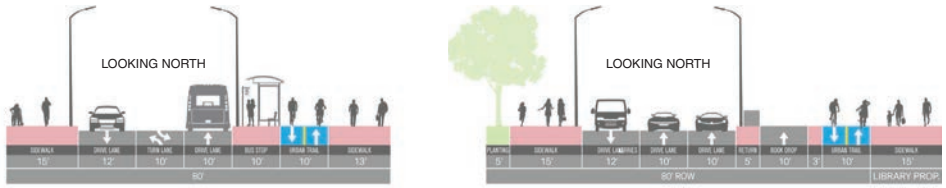
FIGURES ARE NOT TO SCALE

- Access to Allen Center and Met garages will be maintained.
- Proposed bikeway to connect to Fourth Ward, W. Dallas Street and proposed Brazos Street corridor trail in Midtown.
- Proposed bikeway will continue the entire Bagby Street corridor passing many important and historical City sites. The SAC advocated for the intergeneration of art, culture, and history into the design of the proposed bicycle facility and the overall corridor to complement adjacent sites.
- DRA should plan on coordination with TxDOT as NHHIP moves forward to minimize effects of potential reconstruction of West Dallas Street between Heiner Street and Clay Street. (Alternative 1 provides a re-stripe only option for West Dallas Street between Heiner Street and Clay Street.)

Figure 4.02

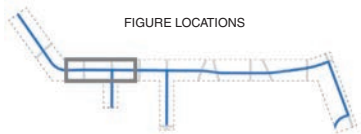
WEST DALLAS STREET TO MCKINNEY STREET





TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY

FIGURE LOCATIONS

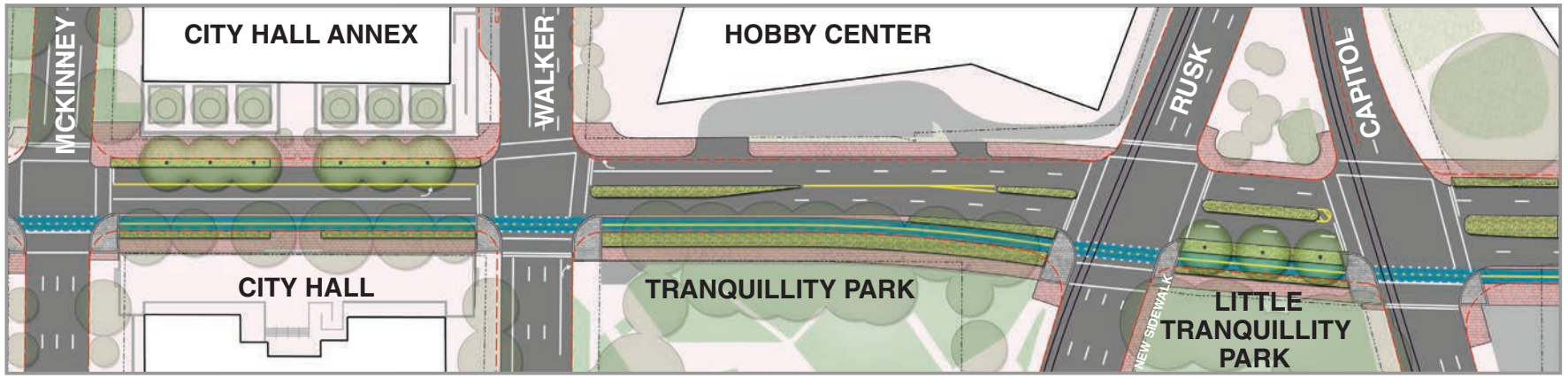


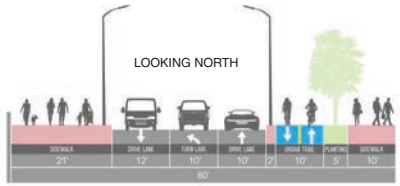
FIGURES ARE NOT TO SCALE

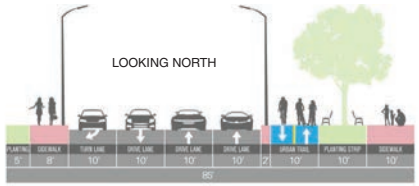
- Maintains northbound right-turn lane at Dallas Street with a three-lane cross-section north of Dallas Street.
- Design shifts Library book drop to the west. Phase 2 design should address changes to book drop and possibility of shifting book drop to another location.
- East shift of curbline between Lamar Street and McKinney Street provides additional space for existing live oak trees in Sam Houston Park.
- Proposed shift of Lamar Cycle track to north side of Lamar Street depicted in **Figure 4.07**.
- Design includes bikeway traveling behind proposed bus shelter at southeast corner of Bagby Street at Lamar Street to minimize conflict.
- Bus stops between Lamar Street and Dallas Street to remain.

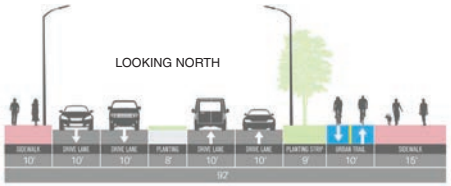
Figure 4.03

MCKINNEY STREET TO TEXAS AVENUE





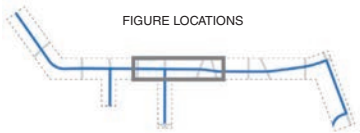




TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY

- Vehicular Paving: Proposed
- Parking: Existing
- Pedestrian Paving: Proposed
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

FIGURE LOCATIONS

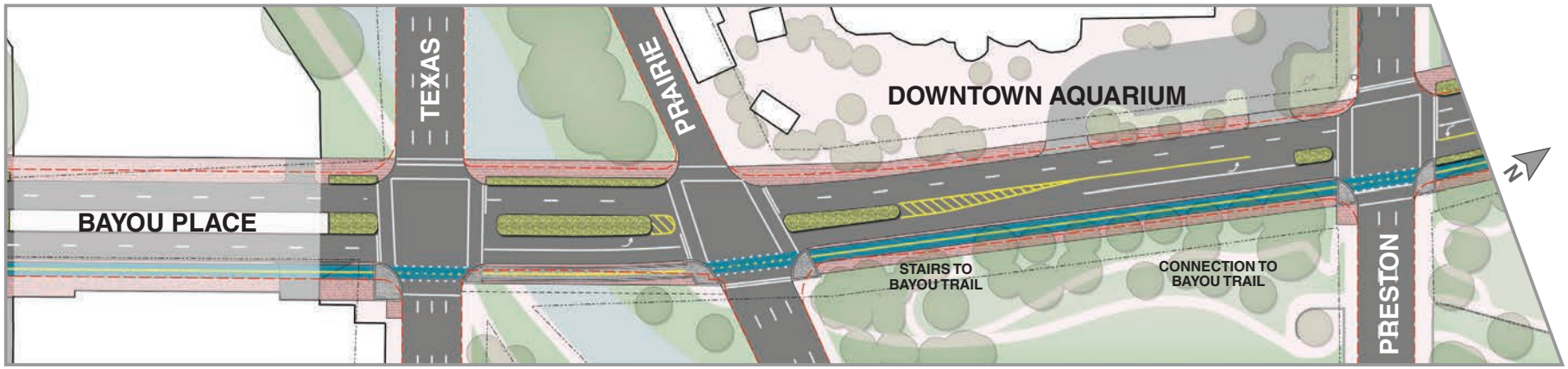


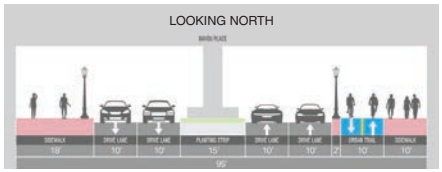
FIGURES ARE NOT TO SCALE

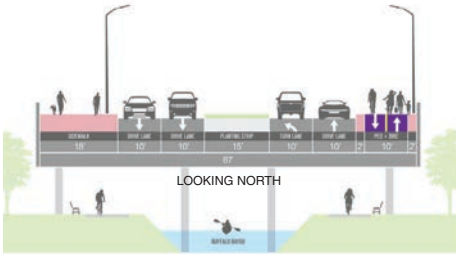
- Southbound right-turn lane provided at Hobby Center to support event operations and highway access.
- Potential for future coordination for the design at City Hall and integration of the sidewalk, trees, proposed bikeway, and elevated plaza during Final Design.
- Final Design should address additional improvements with intersection operations related to Green/Purple METRORail lines at Capitol Street and Rusk Street, including a new sidewalk cantilevered to the north side of Rusk Street bridge.
- Approaches of Walker Street and McKinney Street to Bagby Street need to be assessed for future NHHIP design, as changes will impact traffic patterns and merging distances.
- Design team should coordinate with City on potential tunnel improvements between City Hall and the Annex that could be made while Bagby is under construction.

Figure 4.04

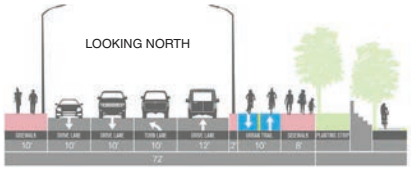
TEXAS AVENUE TO FRANKLIN STREET

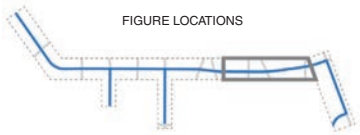






TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY



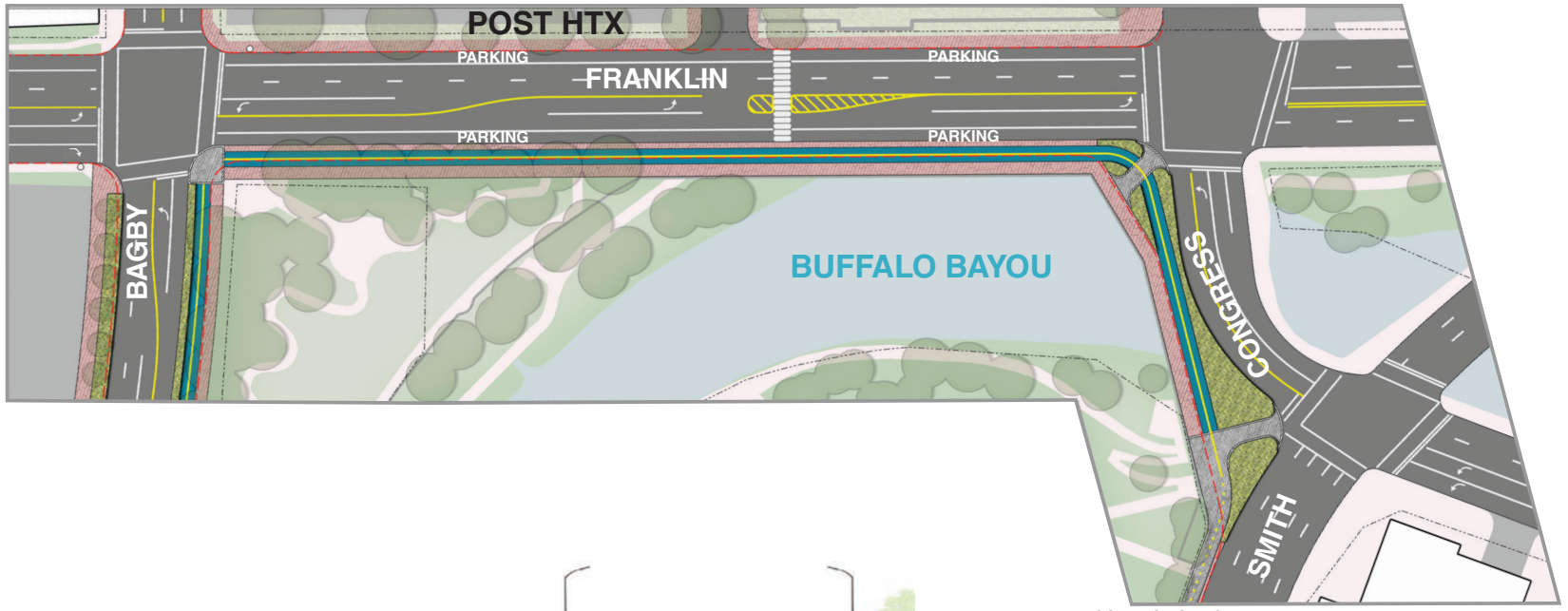


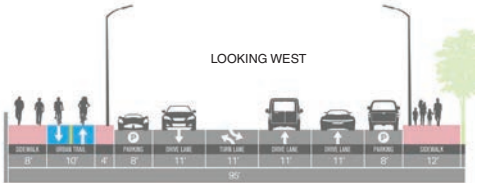
FIGURES ARE NOT TO SCALE

- Bagby Street proposed with median beginning north of Capitol Street due to Bayou Place building columns and access to Downtown Aquarium.
- Limited space on bridge between Texas Avenue and Prairie Street requires shared trail on the east side for pedestrians and bicyclists for one block.
- Final Design needs to address possible changes to signal poles and street lights on bridges.
- Potential to provide added parking space on west side of Bagby Street underneath Bayou Place in lieu of widened sidewalk.
- Trail connection to north side of Buffalo Bayou possible at Preston Street.

Figure 4.05

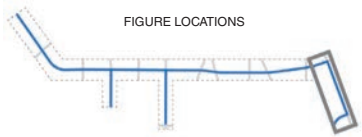
FRANKLIN STREET





TYPICAL CROSS-SECTION
WIDTHS WILL VARY

- Franklin Street proposed as a four-lane street with parking to match existing and projected traffic demands that support redeveloped Post Office site (Post HTX).
- Congress Street bridge modified to maintain traffic lanes and improve walking and bike connectivity.
- Bikeway planned to continue along south side of redesigned Franklin Street and the Congress Street bridge to connect to Sesquicentennial Park.
- As Post HTX develops, connection between the development and the bikeway can be integrated into the design.



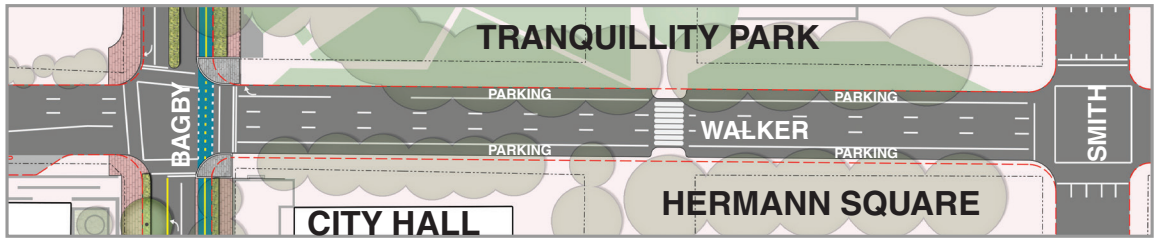
FIGURES ARE NOT TO SCALE

- Vehicular Paving: Proposed
- Parking: Existing
- Pedestrian Paving: Proposed
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

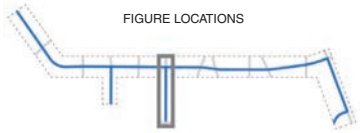
Figure 4.06

LAMAR STREET & WALKER STREET

Walker Street

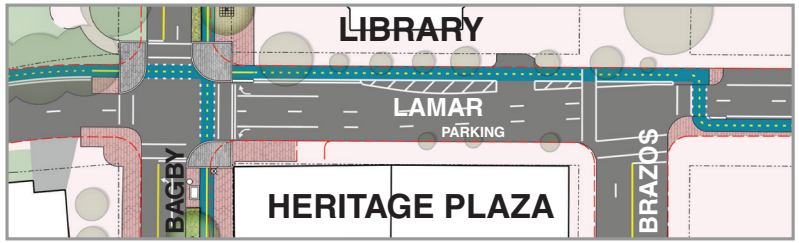


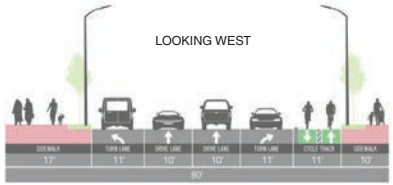
TYPICAL CROSS-SECTION
WIDTHS WILL VARY



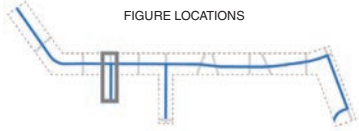
FIGURES ARE NOT TO SCALE

Lamar Street





TYPICAL CROSS-SECTION
WIDTHS WILL VARY



FIGURES ARE NOT TO SCALE

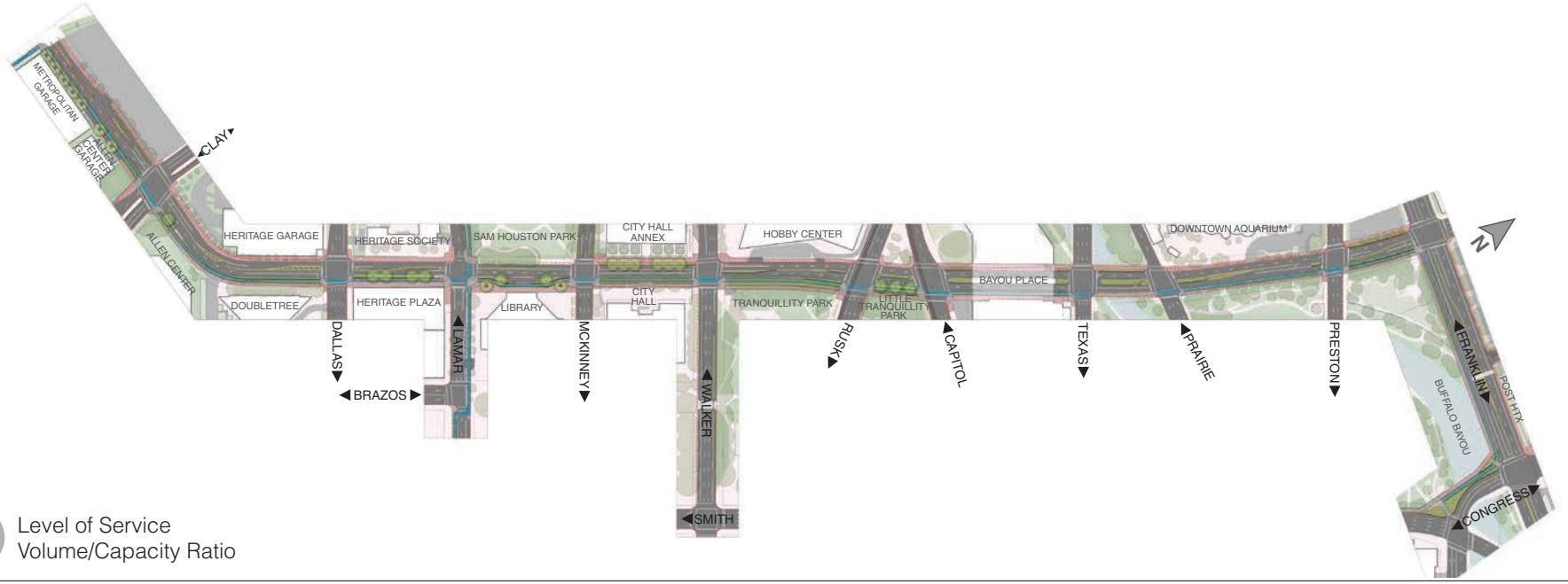
- Walker Street proposed to be reconstructed as a three-lane street with parking on each side, similar to today.
- Pedestrian crossing between Hermann Square and Tranquillity Park to be improved and include curb extensions to shorten crossing.
- As Tranquillity Park redevelops, improved sidewalks and access for on-street parking along the north curb should be addressed.
- Recommended design includes an option for realigning the Lamar cycle track to north side at Brazos Street to simplify Bagby Street intersection operations and minimize conflicts at Heritage Plaza garage exit. Based on growth assumptions, the intersection at Lamar Street at Brazos Street is projected to warrant traffic signal control in the future. Traffic signal would support Brazos Street as a walkable north/south corridor connecting Allen Center, Library, City Hall, and Tranquillity Park. Cycle Track realignment and intersection traffic control should be further studied in Final Design.

Figure 4.07

Recommended Vision | Looking East from IH-45 towards Allen Center

Recommended Vision | Looking South from Bayou Place

Recommended Vision | Franklin Street Connection to Sesquicentennial Park



LOS / V/C — Level of Service / Volume/Capacity Ratio

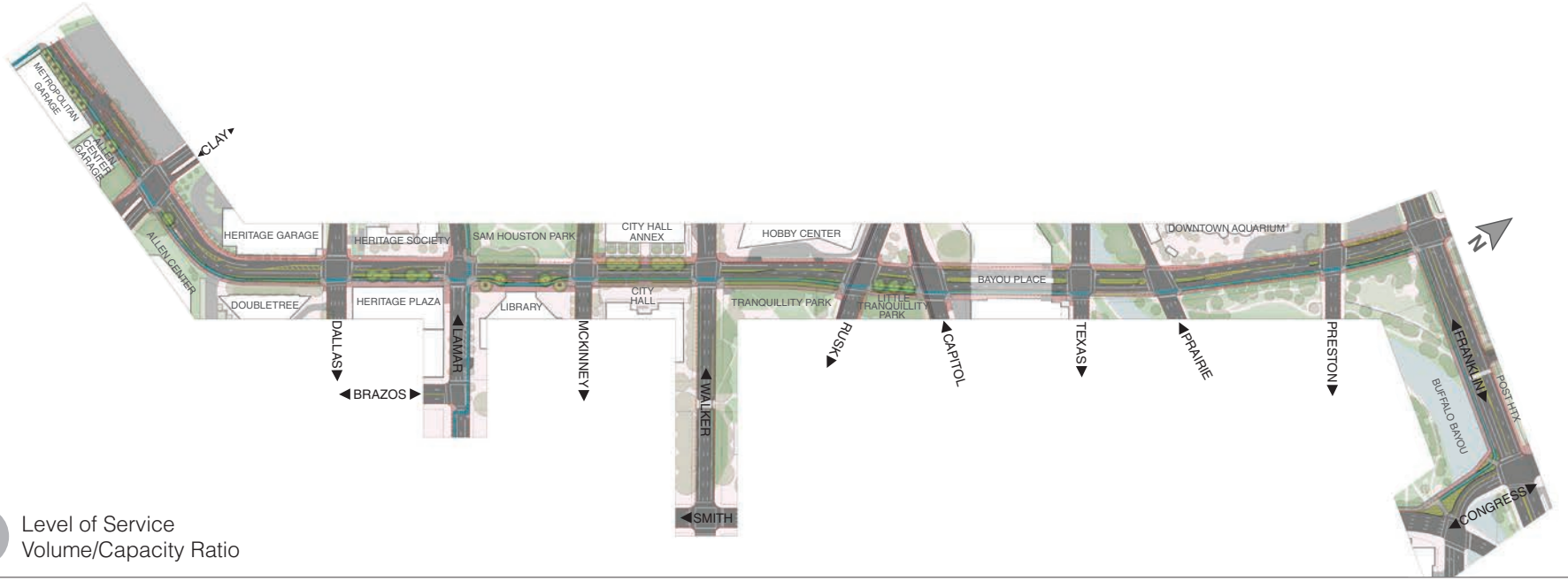
	West Dallas at Clay	Bagby at Dallas	Bagby at Lamar	Bagby at McKinney	Bagby at Walker	Bagby at Rusk	Bagby at Capitol	Bagby at Texas	Bagby at Prairie	Bagby at Preston	Bagby at Franklin
2020	C 0.571	B 0.467	B 0.426	C 0.520	C 0.523	B 0.493	B 0.307	B 0.472	B 0.229	B 0.305	B 0.176
2040 NHHIP	C 0.603	B 0.523	B 0.470	D 0.649	C 0.605	B 0.497	A 0.298	B 0.523	B 0.256	B 0.178	B 0.272

Figure 4.08 AM Peak Hour Intersection Capacity Analysis Results

Intersection Operations

Intersection capacity analyses were conducted for all proposed intersections along the recommended corridor. The AM peak hour results are shown in **Figure 4.08** and the PM peak hour results are shown in **Figure 4.09** Capacity analyses were conducted for three scenarios. In the 2020 scenario, a forecast of operations near the expected year of completion, the corridor operates at LOS C or better for all intersections, except for the Walker Street intersection in the PM peak hour. The high projected delay for the Bagby Street at Walker Street intersection is due to the queuing from the IH-45 northbound on ramp. The queuing at the ramp causes additional delay at the intersection, which drops the LOS to E. However, the V/C of 0.792 indicates there is still excess capacity at the intersection even with the recommend reduction in lanes.

For the 2040 NHHIP scenario, vehicular trips were redistributed along the roadway network to project the expected changes in driver behavior after the completion of the highway realignment. The redistributed trips were accounted for in the 2040 NHHIP model results, along with an



LOS V/C Level of Service Volume/Capacity Ratio

	West Dallas at Clay	Bagby at Dallas	Bagby at Lamar	Bagby at McKinney	Bagby at Walker	Bagby at Rusk	Bagby at Capitol	Bagby at Texas	Bagby at Prairie	Bagby at Preston	Bagby at Franklin
2020	C 0.610	C 0.581	B 0.760	B 0.408	F 0.792	B 0.268	B 0.485	B 0.434	B 0.578	B 0.442	C 0.463
2040 NHHIP	C 0.620	B 0.473	B 0.600	B 0.364	D 0.873	B 0.213	B 0.489	B 0.436	B 0.590	B 0.308	C 0.413

Figure 4.09 PM Peak Hour Intersection Capacity Analysis Results

estimated vehicular traffic growth of 0.5% compounded per year for the twenty years. All intersections along the corridor will operate at LOS D or better in the 2040 NHHIP scenario.

A 2040 growth only scenario was also conducted to understand 2040 operations if the NHHIP does not move forward. This scenario assumed the roadway network surrounding Bagby Street does not change between today and 2040.

In the 2040 NHHIP scenarios, the realignment of IH-45 to the north and east side of Downtown changes how the on-ramp at Walker Street will operate. The ramp will connect to the Downtown Connector, which serves as a spur from IH-45 to connect to the west side of Downtown. Queuing is not expected to extend into the intersection in this scenario as motorists will no longer need to merge onto the congested IH-45 main lanes.

Figure 4.10 and **Figure 4.11** compare the results of the analysis of the recommended alternative to the results of the analysis on the existing roadway condition from the **Existing Conditions Analysis Chapter**. The detailed traffic report including all three scenarios is included in **Appendix B**.

AM PEAK HOUR	2020 Scenario						2040 NHHIP					
	Existing Geometry			Recommended Design			Existing Geometry			Recommended Design		
Intersection	**LOS**	**VC**	**Delay**	**LOS**	**VC**	**Delay**	**LOS**	**VC**	**Delay**	**LOS**	**VC**	**Delay**
Franklin Street at Congress Street	C	0.234	21.84	C	0.234	22.1	C	0.327	21.21	C	0.327	21.21
Bagby Street at Franklin Street	B	0.170	17.32	B	0.176	15.55	B	0.263	15.91	B	0.272	16.17
Bagby Street at Preston Street	C	0.254	21.57	B	0.305	19.56	B	0.163	18.06	B	0.178	18.84
Bagby Street at Prairie Street/Memorial Drive	B	0.231	14.00	B	0.229	12.62	B	0.256	12.96	B	0.256	12.95
Bagby Street at Texas Ave/Memorial Drive	C	0.438	21.33	B	0.472	13.09	B	0.494	13.02	B	0.523	13.54
Bagby Street at Capitol Street	B	0.303	14.67	B	0.307	10.66	A	0.293	8.92	A	0.298	9.42
Bagby Street at Rusk Street	B	0.479	16.51	B	0.493	16.46	B	0.475	16.12	B	0.497	16.67
Bagby Street at Walker Street	C	0.378	31.61	C	0.523	27.94	C	0.439	23.20	C	0.605	28.6
Bagby Street at McKinney Street	C	0.474	20.84	C	0.52	25.74	C	0.599	22.50	D	0.649	37.48
Bagby Street at Lamar Street	B	0.235	13.67	B	0.426	10.36	A	0.263	8.56	B	0.470	11.02
West Dallas Street at Bagby Street/Allen Parkway	B	0.397	16.27	B	0.467	19.06	B	0.440	15.46	B	0.523	19.6
West Dallas Street at Clay Street	C	0.558	31.64	C	0.571	30.74	C	0.603	27.56	C	0.603	28.18
West Dallas Street at IH-45 Frontage NB	B	0.409	14.75	B	0.409	13.97	B	0.444	14.74	B	0.444	14.74
West Dallas Street at IH-45 Frontage SB/ Heiner Street	C	0.380	23.14	C	0.376	21.39	C	0.409	21.9	C	0.409	21.9

Figure 4.10 AM Peak Hour Comparison between Recommended and Existing Geometry

PM PEAK HOUR	2020 Scenario						2040 NHHIP					
	Existing Geometry			Recommended Design			Existing Geometry			Recommended Design		
Intersection	**LOS**	**VC**	**Delay**	**LOS**	**VC**	**Delay**	**LOS**	**VC**	**Delay**	**LOS**	**VC**	**Delay**
Franklin Street at Congress Street	C	0.247	24.61	C	0.247	22.12	C	0.272	20.12	C	0.272	20.12
Bagby Street at Franklin Street	C	0.296	23.54	C	0.463	28.28	C	0.331	20.82	C	0.413	25.09
Bagby Street at Preston Street	C	0.261	24.62	B	0.442	17.88	B	0.189	15.18	B	0.308	16.21
Bagby Street at Prairie Street/Memorial Drive	B	0.481	12.76	B	0.578	13.90	B	0.59	14.24	B	0.590	14.49
Bagby Street at Texas Ave/Memorial Drive	B	0.349	14.70	B	0.434	16.23	B	0.367	15.09	B	0.436	16.88
Bagby Street at Capitol Street	B	0.398	11.04	B	0.485	12.19	B	0.404	13.44	B	0.489	13.83
Bagby Street at Rusk Street	B	0.261	12.79	B	0.268	10.42	B	0.21	10.96	B	0.213	11.11
Bagby Street at Walker Street	F	0.582	108.94	F	0.792	80.76	C	0.656	29.56	D	0.873	53.10
Bagby Street at McKinney Street	B	0.308	16.55	B	0.408	16.26	B	0.291	17.20	B	0.364	18.62
Bagby Street at Lamar Street	B	0.477	14.00	B	0.760	18.21	B	0.524	11.54	B	0.600	13.74
West Dallas Street at Bagby Street/Allen Parkway	D	0.393	38.62	C	0.581	20.60	B	0.319	13.66	B	0.473	15.48
West Dallas Street at Clay Street	D	0.611	38.40	C	0.610	31.09	C	0.620	30.63	C	0.620	30.76
West Dallas Street at IH-45 Frontage NB	B	0.267	13.76	B	0.267	13.45	B	0.449	15.32	B	0.449	14.60
West Dallas Street at IH-45 Frontage SB/ Heiner Street	C	0.625	25.87	C	0.648	25.88	C	0.725	29.19	C	0.725	29.30

Figure 4.11 PM Peak Hour Comparison between Recommended and Existing Geometry

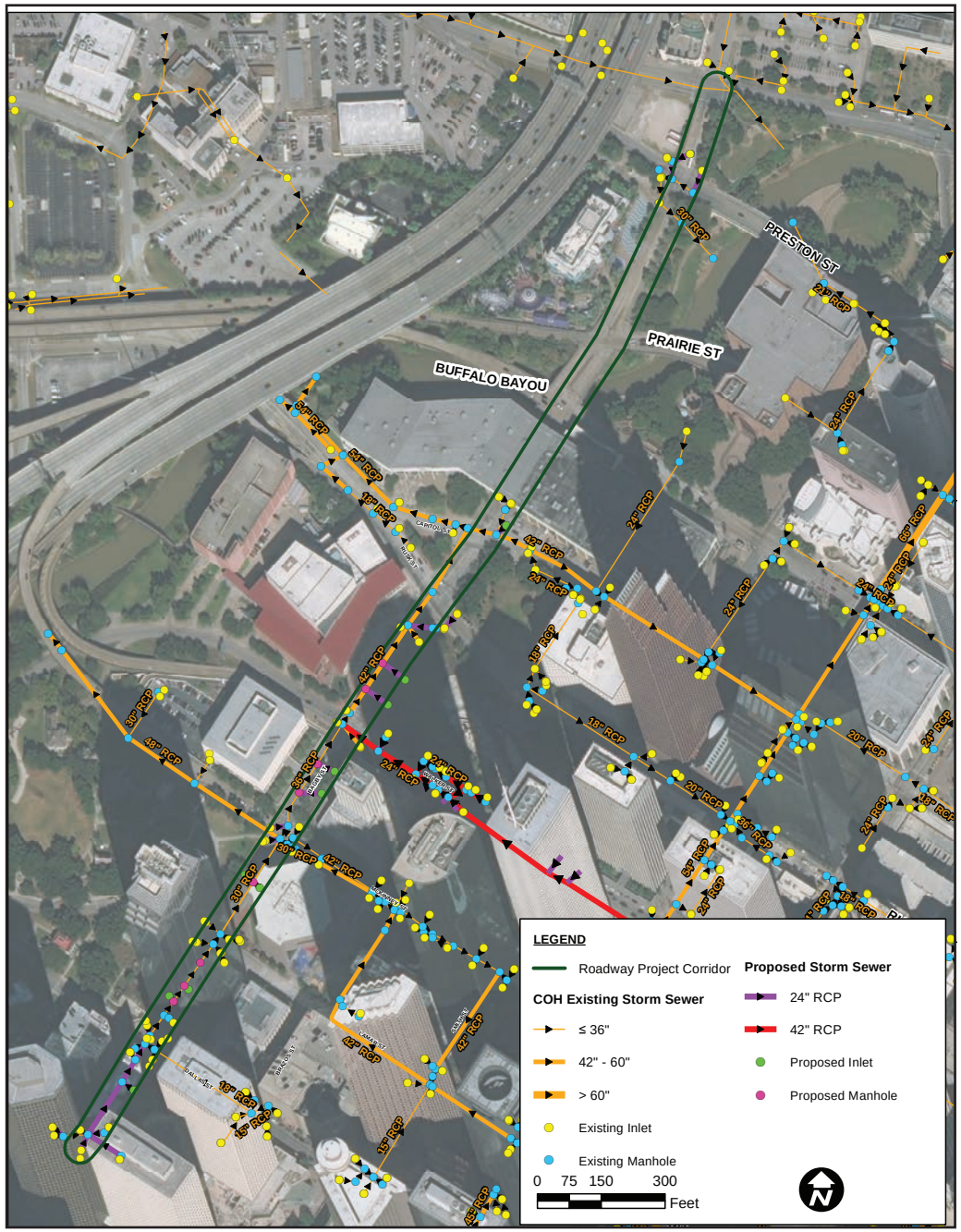


Figure 4.12 Storm Sewer Recommendations

Storm Sewer Recommendations

Figure 4.12 shows the proposed storm sewer recommendations. The proposed improvements allow Bagby Street to meet City of Houston criteria for all of the analyzed events with the exception of the flood plain area north of Rusk Street. Based on the drainage analysis, there are no significant storm sewer upgrades to pipe sizes with the exception of adding inlets to the system. For the drainage analysis, proposed inlets were added along Bagby Street to allow more stormwater flow to the main trunkline and utilize its full capacity. All existing B inlets were proposed to be upgraded to BB inlets.

Any existing condition pipe that is under 24" in diameter is to be replaced with a 24" or greater diameter pipe to meet current design criteria. The existing trunkline pipes that meet current City standards will remain. A new 42" RCP pipe is proposed for Walker Street as it is reconstructed from Bagby to Smith Street.

During Final Design, a CCTV inspection of the existing pipe will need to be conducted to determine the condition of the pipe, whether it is in good condition and can remain as is or in poor condition and needs to be fully replaced or rehabilitated to prolong the pipe's life to match the life of the roadway.

Utility Recommendations

The majority of the existing public utilities were built in the 1960's with few built/rehabilitated sanitary sewers between the 1980's to the 2000's. LAN has coordinated with the City of Houston Water Planning and Waste Water Infrastructure Planning personnel on all items related to the sanitary sewer and water lines. Below are the water line and sanitary sewer recommendations approved by the City.

Water Lines

- All existing small and large water lines along Bagby Street will be replaced to match existing sizes, as they have exceeded the typical useful service life. Pipe sizes are included in **Figure 2.20**.

Sanitary Sewer

- All existing sanitary sewer lines will be replaced to match existing sizes as they have exceeded the typical useful service life. Pipe sizes are included in **Figure 2.20**.

Private Utilities

Overhead power lines are located at the intersections of Bagby Street at Clay Street and Dallas Street. Also, there are existing aerial street light cables crossing Bagby Street at different locations between Clay Street and Walker Street. During Final Design, the overhead lines at the northwestern intersection of Bagby Street and Dallas Street will be further evaluated and designed as underground service. The relocation may include placing lines inside ducts/casings and the use of pull boxes or manholes for line splices. It is anticipated that some private utilities may be required to be relocated during Final Design depending on the final improvements and relocations.

Pavement and Bridge Recommendations

Pavement Considerations

The Final Design should perform concrete panel replacement along McKinney Street east of Bagby Street to remediate roadway settlement. Roadway settlement concerns and costs associated with remediation are included in **Appendix A.**

Bridge Assessment Reports Items

Based on the bridge assessment reports, minor improvements are recommended on the Bagby Street Bridge between Texas Avenue and Prairie Street. Improvements include replacing existing bridge rails with current standard crash-tested rails and cleaning and repainting existing bridge girders for long-term maintenance. An underwater inspection is recommended to verify that no significant scour has occurred at the bridge columns due to the recent Hurricane Harvey storm event. Any structural improvements/modifications will require performing structural analysis, including a load rating of the bridge. Refer to the Bridge Assessment Reports in **Appendix A** for details of improvements recommendations.

Cost Estimates

To help inform budgeting and design decisions, four cost estimate scenarios were created with varying types of construction materials and finishes, and are summarized in **Figure 4.13**. Scenario 1 was priced with materials that would be standard for a City of Houston roadway project and basic landscape improvements, while each subsequent scenario includes higher quality materials, landscaping and finishes.

The Bagby roadway was priced with standard concrete for Scenarios 1, 2, and 3, while Scenario 4 has more expensive concrete pavers. Rebuilt sidewalks, the proposed trail and the corners at intersections where sidewalk and trail mix are priced with the same type of materials in each option. Scenario 1 has standard poured concrete, Scenario 2 was priced with concrete pavers, and Scenarios 3 and 4 with stone pavers.

Landscaping costs, which include estimates for irrigation, account for trees, groundcover and shrubs planted in the medians, adjacent to the roadway and along the trail where space allows. Scenario 1 has base costs for trees and plantings. Scenarios 2, 3 and 4 were priced with upgraded ground coverings and more mature trees.

Four different street and pedestrian realm lighting schemes were developed, and it was assumed that overhead street lights would be included on all traffic signal poles. Scenario 1 was priced with standard city light poles and did not include any additional pedestrian lighting. Scenarios 2 and 3 include the same street lighting and add basic pedestrian light in Scenario 2 and an upgraded pedestrian lighting for Scenario 3. The lighting scheme for Scenario 4 has integrated street and pedestrian lights, similar to that which was used on Dallas Street, which reduces the total number of poles and foundations, saving some cost. These were assumed to have the highest cost level per installed unit.

All four scenarios include the same cost estimates for traffic signal reconstruction. The intersections of Capitol and Rusk were not assumed to include roadway or signal reconstruction, because of the presence of light rail, however some modification for the pedestrian and bicycle signaling were assumed along the trail. Scenarios 3 and 4 have slightly higher intersection costs due to the inclusion of crosswalks with concrete and stone pavers, respectively.

Water lines, sanitary sewers, storm sewers and overhead utility burial costs are identical for all four options. After sewer inspection in the design phase of the project, there is a potential savings of approximately $300,000 to $400,000 if lines are in satisfactory condition and can be rehabilitated rather than replaced. Costs for mobilization and traffic control are also included in all scenarios.

All of the roadway, pedestrian realm, landscaping, lighting, signal, utility, mobilization, and traffic control costs were summed into the Project Construction Subtotal estimate. In addition to this value a 20% contingency was added to account for unforeseen issues.

These scenarios are intended to demonstrate the range of costs associated with different levels of finishes. During Final Design, it may be determined to use components of multiple scenarios, or differing materials on certain segments of the project resulting in a different final cost than any of the proposed Scenarios.

Bagby Street Improvements			Scenario 1		Scenario 2		Scenario 3		Scenario 4	
Cost Estimates			*COH standard materials; basic landscaping*		*Sidewalk and trail with concrete pavers, upgraded lighting and landscaping*		*Sidewalk and trail with stone pavers, concrete pavers crosswalks, upgraded landscaping, custom ped lighting*		*Concrete paver roadway, sidewalk and trail with stone pavers, stone pavers crosswalks, upgraded landscaping, integrated lighting*	
4/20/2018										
Construction Costs				**Subtotal**		**Subtotal**		**Subtotal**		**Subtotal**
Street/Sidewalks/Trails				$3,993,236		$4,697,496		$5,542,608		$7,323,757
	Roadway			$2,454,716		$2,454,716		$2,454,716		$4,235,865
	Sidewalks+Mixing Areas			$1,103,150		$1,604,710		$2,206,594		$2,206,594
	Trail			$435,380		$638,070		$881,298		$881,298
Landscape/Streetscape Cost				$566,987		$1,597,373		$2,945,373		$3,108,973
Traffic Signals Cost				$4,000,000		$4,000,000		$4,312,000		$4,436,800
Utility Cost				$3,379,550		$3,379,550		$3,379,550		$3,379,550
	Water			$1,155,000		$1,155,000		$1,155,000		$1,155,000
	Sanitary			$688,600		$688,600		$688,600		$688,600
	Storm Sewer*			$1,287,950		$1,287,950		$1,287,950		$1,287,950
	Overhead Utility Burial			$248,000		$248,000		$248,000		$248,000
Mobilization				$300,000		$300,000		$300,000		$300,000
Traffic Control				$250,000		$250,000		$250,000		$250,000
Project Subtotal				**$12,489,773**		**$14,224,419**		**$16,729,531**		**$18,799,080**
Contingency		20%		$2,497,955		$2,844,884		$3,345,906		$3,759,816
Estimated Construction Cost				**$14,987,728**		**$17,069,303**		**$20,075,437**		**$22,558,896**

* Potential Saving from existing Storm Sewer remaining in place estimated at approximately $300K - $400K.

Figure 4.13 Corridor Cost Estimate Scenarios

APPENDIX A

Utilities & Bridge Reports

This Appendix includes the ***Utilities Technical Memorandum*** and the ***Bridge Assessment Report***. The ***Utilities Technical Memorandum*** developed by Lockwood, Andrews & Newnam, Inc. (LAN) evaluates the existing public utilities (water and wastewater), existing private utilities, and the existing storm sewer system. The evaluation involved obtaining record drawings, conducting site visits, City of Houston Water & Wastewater Infrastructure Planning coordination, private and public utilities request, and conducting a high-level 2D analysis on the existing storm sewer system.

The ***Bridge Assessment Report*** conducted by LAN evaluated the Bagby Street Bridge and the Rusk Street Bridge and is included as **Appendix A-3** of the ***Utilities Technical Memorandum***.

STATE OF TEXAS
MATTHEW J. MANGES
108735
LICENSED
PROFESSIONAL ENGINEER

Firm: Lockwood, Andrews & Newnam, Inc.
Firm ID: 2614
Date: 04/20/2018
For Drainage

STATE OF TEXAS
JONATHAN W. MCCULLEY
107544
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PROFESSIONAL ENGINEER

Firm: Lockwood, Andrews & Newnam, Inc.
Firm ID: 2614
Date: 04/20/2018
For Structures

STATE OF TEXAS
MUHAMMAD ALI
98146
LICENSED
PROFESSIONAL ENGINEER

Firm: Lockwood, Andrews & Newnam, Inc.
Firm ID: 2614
Date: 4/20/2018
For Utilities

Utilities Technical Memorandum

Scope of Work

TEI retained Lockwood, Andrews & Newnam, Inc. (LAN) to assist in evaluating the existing public utilities (water and wastewater), existing bridges, existing private utilities, and the existing storm sewer system. The evaluation involved obtaining record drawings, bridge brinsaps, conducting site visits, City of Houston Water & Wastewater Infrastructure Planning coordination, private and public utilities request and conducting a high-level 2D analysis on the existing storm sewer system.

Bagby, Walker and Franklin Streets are generally located in downtown Houston, close to Hobby Center/City Hall area within the Key Map Nos. 493K, L, P & Q. The project area is defined as the Bagby Street corridor, originated at the 200 block (Franklin Street intersection) through the 1100 block (Dallas Street/Allen Parkway intersection) and terminating at the intersection of West Dallas at the Gulf Freeway northbound frontage road.

Buffalo Bayou crosses Bagby Street between Texas Avenue and Prairie Street.

Data Collection

This Technical Memorandum is a general overview of the existing public and private utilities along Bagby Street and West Dallas Street from IH-45 to Franklin Street. The evaluation reflects items such as current City of Houston CIP projects adjacent to Bagby Street, updated City of Houston design criteria, and age of existing utilities.

Data was collected, reviewed, and analyzed for the entire project corridor. The data collected consists of Geographic Information Management Systems (GIMS) data, photographs, site visit field notes, Harris County Appraisal District (HCAD) information, utility block maps, City of Houston and Metropolitan Transit Authority of Harris County (METRO) record drawings, and bridge brinsaps reports.

Additionally, the City's Capital Improvements Plan (CIP) was reviewed to identify opportunities to couple this project with other planned infrastructure improvements.

Coordination with Other Planned City Projects

Based on the location of Bagby Street, there are no anticipated major potential conflicts with this project. There are currently no projects planned or in construction for Bagby Street based on the City of Houston Geographical Information Management System (GIMS) or the City of Houston Capital Improvement Project Management System (CIPMS).

Some minor coordination will be required such as adding water line stub outs for future work within adjacent streets for new connections instead of disturbing the same area twice.

Existing Public & Private Utilities

The majority of the existing public utilities were built in the 1960s with few built/rehabilitated sanitary sewers between the 1980's to the 2000. LAN has coordinated with the City of Houston Water Planning and Waste Water Infrastructure Planning personnel on all items related to the sanitary sewer and water lines.

Water Line Improvements

Small Diameter Water Lines

The existing water line ranges from 8- to 24-inch in diameter and the material is cast iron with a few repairs utilizing PVC and steel pipe. Based on discussions with the Houston Water Planning Group and the water line installation and rehabilitation dates, the small diameter water lines will soon exceed their useful service life and will need to be replaced. In addition, the existing pipe materials are not to current City standards. Therefore, as part of the Bagby Street improvement project, all existing small diameter water lines will be replaced to match existing sizes.

Water Meter Vaults

There are a few water meter vaults within the existing ROW along Bagby Street. Based on current City of Houston standards, any replaced vaults will have to be relocated to a dedicated water meter easement abutting the existing ROW. Water meter easement locations will need to be explored during the Final Design; a design variance may be needed at locations where the building setbacks are substandard or for other reasons such as the presence of structures.

Large Diameter Water Lines

Per City of Houston Design Manual, water lines 24-inch in diameter or larger are identified as large diameter. Based on discussions with the City and the installation year (1964), the existing 24-inch water line will soon exceed its useful service life and will need to be replaced. During design, cathodic protection will need to be explored to preserve the proposed 24-inch water line by protecting it against corrosion. In addition, the existing 24-inch water line replacement will have to be modeled and coordinated with the City of Houston Modeling group during final design to determine the ideal time to shut down the water line during construction. Therefore, the 24-inch water line along Bagby Street will be replaced to match existing size.

Construction Methods

A combination of open-cut and trenchless construction methods will be utilized to construct both small and large diameter water lines. See **Table A.01** for existing water lines.

Table A.01 Existing Water Lines Along Bagby Street

Utility	Size (inch)	Material	Street Limits		
Water	6 & 8	UNK & CI	Clay Street	to	Dallas Street
	8 & 24	CI, PVC	Dallas Street	to	Lamar Street
	8 & 24	CI, PVC	Lamar Street	to	McKinney Street
	8 & 24	CI	McKinney Street	to	Walker Street
	8 & 24	CI	Walker Street	to	Rusk Street
	24	CI	Rusk Street	to	Capitol Street
	NONE	NONE	Capitol Street	to	Texas Avenue
	NONE	NONE	Texas Avenue	to	Prairie Street
	NONE	NONE	Prairie Street	to	Preston Street
	NONE	NONE	Preston Street	to	Franklin Street
	12	CI	Franklin Street	to	Washington Avenue

Sanitary Sewer Improvements

Sanitary Sewer Lines

The available data indicates that the existing pipe materials appear to be PEP (polyethylene pipe) and RCP (reinforced concrete pipe) and range in size from 8- to 24-inch in diameter. The existing sanitary sewer will soon exceed its useful life based on the installation date and rehabilitation work performed within the last 30 years and will need to be replaced. Therefore, as part of the Bagby Street improvement project, all existing sanitary sewers will be replaced to match existing sizes.

Force Main (FM)

An existing 6-inch force main exists between Capitol Street and Texas Avenue. There were no record drawings available for this FM; however, it is indicated on Houston GIMS. The City is currently investigating to determine if the FM is still active or decommissioned. Furthermore, if the FM is active then it will soon exceed its useful service life based on its assumed installation date and will need to be replaced. Additional coordination with the Waste Water maintenance group during Final Design is required to determine the ideal time for shut downs. In addition, corrosion protection manholes are required for force mains.

Construction Methods

There are several construction methods for replacing the existing sanitary sewer line such as pipe bursting, trenchless and open cut installation. The construction method will be determined during Final Design.

Other Items

During Final Design, it is recommended to either obtain the City's closed-circuit television videos (CCTV) if available or perform a separate CCTV service to determine the number of lateral connections. See **Table A.02** for existing sanitary sewer lines.

Table A.02 Existing Sanitary Sewers Along Bagby Street

Utility	Size (inch)	Material	Street Limits		
Sanitary Sewer	8, 18 & 24	Conc, UNK & RCP	Clay Street	to	Dallas Street
	8	PEP	Dallas Street	to	Lamar Street
	8	PEP	Lamar Street	to	McKinney Street
	8	PEP	McKinney Street	to	Walker Street
	12	RCP	Walker Street	to	Rusk Street
	NONE	NONE	Rusk Street	to	Capitol Street
	6 & 8	UNK	Capitol Street	to	Texas Avenue
	NONE	NONE	Texas Avenue	to	Prairie Street
	NONE	NONE	Prairie Street	to	Preston Street
	NONE	NONE	Preston Street	to	Franklin Street
	24	UNK	Franklin Street	to	Washington Avenue

Storm Sewer Improvements

Existing Conditions

Pipe Sizes: Bagby Street is served by a system of storm sewers. The main trunkline on Bagby street southwest of Buffalo Bayou starts and ranges from 18-inch to 54-inch reinforced concrete pipes (RCP) and was installed in the 1960s. The portion northeast of Buffalo Bayou ranges from 18-inch to 30-inch RCPs. See **Table A.03** for existing storm sewers.

Outfalls: The area has outfalls at Buffalo Bayou near McKinney Street with a 48-inch RCP and Capitol Street with a 54-inch RCP. The portion of Bagby Street northeast of Buffalo Bayou has a 30-inch RCP outfall near Preston Street.

Overall Performance: Bagby Street southwest of Buffalo Bayou experiences topographical benefits as the street is a relative high point compared to surrounding streets and does not receive significant overland flow from adjacent areas.

The performance of stormwater infrastructure within the study area was evaluated for the 100-, 10-, and 2-year, 24 hour storm events and was found to be functionally deficient in several locations.

Table A.03 Existing Storm Sewers Along Bagby Street

Utility	Size (inch)	Material	Street Limits		
Storm Sewer	15, 18 & 20	Conc	Clay Street	to	Dallas Street
	20 & 30	Conc	Dallas Street	to	Lamar Street
	30	Conc	Lamar Street	to	McKinney Street
	36	Conc	McKinney Street	to	Walker Street
	42	Conc	Walker Street	to	Rusk Street
	42	Conc	Rusk Street	to	Capitol Street
	24	RCP	Capitol Street	to	Texas Avenue
	NONE	NONE	Texas Avenue	to	Prairie Street
	NONE	NONE	Prairie Street	to	Preston Street
	18	Conc	Preston Street	to	Franklin Street
	15 & 36	Conc	Franklin Street	to	Washington Avenue

Model Development

InfoWorks-ICM Version 8.0 2-dimensional models were created in order to better understand the drainage issues observed in the study area. The models simulated the storm runoff carried by Buffalo Bayou, the subsurface storm sewer infrastructure at major roadways, and their interaction with the ground surface.

In the 2D model, a triangular mesh was generated to perform the surface flow analysis using the built-in InfoWorks mesh creation process. Elevations at the vertices of and areas within the generated mesh elements were developed from the LiDAR available from the HGAC. Overland roughness zones were incorporated into the 2D mesh surface to account for variations in surface roughness such as the change from concrete areas to grassed areas. Roughness zones were generated based on building footprints and aerial imagery.

Buffalo Bayou was modeled as part of the 2D surface with 2D mesh cells at different elevations representing its conveyance capacity. Storm sewer connectivity, sizes, and flowlines from GIS data were adjusted in order to

match the as-built information and field reconnaissance. Size information was taken from the City of Houston GIMS data. Missing or obviously incorrect storm sewer flowlines were inferred in InfoWorks-ICM based on flow directions and pipe size to provide positive drainage.

Specific inlet capacity was not evaluated as part of this analysis. The focus of this study was to understand the overall system capacity and evaluate the stormwater functionality of the region as a whole. Inlet locations were included in the model as "2D" nodes with unlimited capacity.

Manning's Roughness parameters for conduits were established as 0.013 for precast concrete pipe.

Rainfall hyetographs were taken from Harris Country Flood Control (HCFCD) M3 HEC-HMS models and converted to intensities for use within InfoWorks ICM. The intensities were then entered in the InfoWorks-ICM model for the 100-,10-, and 2-year 24-hour synthetic storms.

Existing Conditions Performance Evaluation

2-Year Event: Per the City of Houston design standards, the 2-year, 24-hour duration storm event should be completely contained within the subsurface stormwater infrastructure. As seen in **Exhibit 1** in **Appendix A-1** there is surface ponding present throughout the study area. Since there is surface ponding present, the stormwater infrastructure for the area does not meet current City requirements to have a 2-year level of service in all areas. The main trunk line has additional capacity but the stormwater is unable to enter due to limited number of inlets. There are topographic low points in the areas that have ponding and are unable to reach the existing inlets. The ponding generally pools in relative low points in the system and causes ponding. Ponding is generally under 12-inches for this event.

10-Year Event: During the 10-year, 24 hour event, ponding is present throughout the study area as seen in **Exhibit 2** in **Appendix A-1**. The storm sewer system has additional capacity but has inadequate number of inlets to sufficiently capture and convey flow to Buffalo Bayou. Ponding leaves the right-of-way on Bagby Street southeast of Dallas Street as well as northeast of the intersection at Bagby Street and Walker Street. Topographically low points within the roadways, as well as outside the roadways, collect additional ponding. Ponding is generally under 18-inches for this area.

100-Year Event: During the 100-year, 24 hour event, street ponding and conveyance is expected but should comply with the City of Houston Drainage Criteria Manual which states that the maximum ponding elevations for the 100-year event should not exceed the natural ground elevation at the right-of-way line. As seen in **Exhibit 3** in **Appendix A-1**, there is ponding outside of the right-of-way and portions of Bagby Street are unpassable. Ponding most noticeably exceeds street right-of-way and depth requirements west of Buffalo Bayou at Preston Street but is present throughout the rest of the study area. Deep ponding is due to topographical low points, lack of street inlets and the area's location in the floodplain. While ponding forms on the surface, storm sewer trunk lines have additional capacity southwest of Buffalo Bayou. Northeast of Buffalo Bayou, Bagby Street roadway is located in the floodplain and has substantial ponding due to elevated tailwaters.

Proposed Conditions

The roadway improvement offers an opportunity to install additional storm infrastructure. Proposed storm sewer systems and their benefits were analyzed using 2D InfoWorks-ICM 2D Model. The following improvements were modeled and are recommended for the Final Design:

- Inlets were added along Bagby Street to allow more stormwater flow to the main trunkline and utilize its full capacity.
- One inlet was added south of Dallas Street.
- Four inlets were added northeast of Dallas Street and southwest of Lamar Street.
- Two inlets were added northeast of McKinney Street and southwest of Capitol Street.
- One inlet was added at the intersection of Capitol Street and Bagby Street.
- Upgrade existing B inlets to BB inlets.
- Any existing condition pipe that is under 24-inch in diameter will be replaced to a 24-inch or greater to meet current design criteria.

- Remaining trunkline pipes that meet current City standards are to remain in place. During Final Design, a CCTV inspection of the existing pipe will need to be conducted to determine the condition of the pipe, whether it is in good condition and can remain as is or in poor condition and needs to be fully replaced or rehabilitated to prolong the life of pipe to match the life of the roadway.

Proposed conditions were modeled under the assumption that the existing condition passes a condition assessment test. Sizing concepts for these storm sewer improvements can be found in **Exhibits 4** and **5** in **Appendix A-1**. Proposed improvements were implemented southwest of Buffalo Bayou. The northern portion of Bagby Street is located in the floodplain and therefore had no reasonable improvement options. Additional pipes along Bagby Street located in the floodplain would provide a minor increase in storage and result in no change in ponding due to elevated tailwaters.

Proposed Conditions Performance Evaluation

The performance of the proposed stormwater infrastructure within the study area was evaluated for the 100-, 10-, and 2-year, 24-hour storm events.

2-Year Event: During the 2-year, 24-hour event, proposed ponding is generally contained to the street right-of-way and reduced in depth throughout the project corridor, however minor ponding is still present on Bagby Street due to the nature of the high-level modeling. In order to more accurately represent the 2-yr event, a more detailed analysis will need to be conducted during Final Design; it is anticipated that the storm system will fully meet the 2-yr criteria. The additional inlets improve conveyance and reduce surface ponding. In addition to a reduction of ponding extents, ponding depths were reduced as well. Bagby Street experienced a maximum reduction of ponding of approximately 6-inches north of Walker Street. Proposed ponding and ponding comparison points for the 2-year event is shown in **Exhibit 6** in **Appendix A-1**.

10-Year Event: For the proposed conditions, ponding reductions are seen throughout the corridor for the 10-year event. This reduction is due to improved conveyance by adding additional inlets to the Bagby storm sewer infrastructure. Proposed conditions and reduction of depths for the 10-year event can be seen in **Exhibit 7** in **Appendix A-1** and range from approximately 0- to 7-inches. While there are improvements in the study area, there are still offsite drainage areas that have ponding present.

100-Year Event: For the 100-year, 24-hour event, ponding is present throughout the study area but is mostly contained to the right-of-way. **Exhibit 8** in **Appendix A-1** shows the extent reduction throughout the study area with proposed ponding less than existing ponding. In addition to a reduction in extents, there is also a reduction in ponding depths as seen in **Exhibit 8** in **Appendix A-1**, which shows the ponding reduction between the existing and proposed system. The areas with the greatest reductions occur south of McKinney Street and have reductions of approximately 7-inches.

The proposed improvements allow Bagby Street to generally meet criteria for all of the analyzed events with the exception of the flood plain area. Retrofitting existing systems to meet current design criteria in all aspects in all areas for extreme events can be a difficult process without substantial reconstruction of the entire area. It is for this reason the proposed improvements will benefit the area but not meet criteria in all places. While improvements are evident, there is still ponding on the roads and outside of the right-of-way. A more detailed impact analysis would need to be performed to ensure no adverse impact to the downstream areas.

Private Utilities

Coordination with AT&T and Centerpoint Energy is required during Final Design to confirm the location and size of their facilities and verify the extents of private facilities. Based on record drawings, there appears to be major AT&T and Centerpoint facility conduits along Bagby Street from Clay Street to Washington Avenue and also along adjacent streets to Bagby Street. See **Tables A.04, A.05,** and **A.06** for existing private utilities along Franklin Street, Walker Street, and Bagby Street.

Overhead power lines are located at the intersections of West Dallas Street at Clay Street and at Bagby Street at Dallas Street. Also, there are existing aerial street light cables crossing the corridor at different locations from Clay Street to Walker Street. During Final Design, the overhead lines at the northwestern intersection of Bagby Street and Dallas Street will need to be further evaluated and designed as underground facilities. Part of the design may include the placement of lines in ducts/casings and splice kits to be located in either pull boxes or manholes. See **Figure A.01** for location and identification of overhead utilities at Dallas Street.

Public & Private Utilities Exhibits

Refer to the existing utility Exhibits in **Appendix A-2** for a detailed layout depicting all public and private utilities gathered from conducting site visits, City's GIMS and record drawings.

Figure A.01 Overhead Lines at Bagby and Dallas Street

Table A.04 Franklin Street Private Utilities

Utility	Size	Street Limits		
AT&T	UNK	Bagby Street	to	Smith Street
Centerpoint	3" IP STL Gas Line & Electrical Conduits	Bagby Street	to	Smith Street

Table A.05 Walker Street Private Utilities

Utility	Size	Street Limits		
AT&T	4-4" Conduits	Bagby Street	to	Smith Street
Centerpoint	4" IP STL Gas Line & Electrical Conduits	Bagby Street	to	Smith Street

Table A.06 Bagby Street Private Utilities

Utility	Size	Street Limits		
AT&T	8-4” & 24-4” Ducts	Clay Street	to	Dallas Street
	16-4” Ducts	Dallas Street	to	Lamar Street
	8-4” & 12-4” Ducts & 9 MTD	Lamar Street	to	McKinney Street
	4-4” Ducts	McKinney Street	to	Walker Street
	12-31/2” Ducts	Walker Street	to	Rusk Street
	18-1/2”, 18-4” & 40-4” Conduits	Rusk Street	to	Capitol Street
	18-31/2” Ducts	Capitol Street	to	Texas Avenue
	UNK	Texas Avenue	to	Prairie Street
	2-4” Duct, 24”-MTD Conduits	Prairie Street	to	Preston Street
	1-2” GIP, 2-3” CWD, 4-4” PVC, 9-4” PVC & 15-4” PVC Conduit	Preston Street	to	Franklin Street
	1-3” GIP	Franklin Street	to	Washington Avenue
Centerpoint	2” STL Gas Line & Electrical Conduits	Clay Street	to	Dallas Street
	4” IP STL Gas Line & Electrical Conduits	Dallas Street	to	Lamar Street
	2” IP STL Gas Line & Electrical Conduits	Lamar Street	to	McKinney Street
	4” IP STL Gas Line & Electrical Conduits	McKinney Street	to	Walker Street
	Electrical Conduits	Walker Street	to	Rusk Street
	Electrical Conduits	Rusk Street	to	Capitol Street
	UNK	Capitol Street	to	Texas Avenue
	UNK	Texas Avenue	to	Prairie Street
	None	Prairie Street	to	Preston Street
	8” IP STL Gas Line & Electrical Conduits	Preston Street	to	Franklin Street
	6” Gas Line & Electrical Conduits	Franklin Street	to	Washington Avenue

Walker Street Roadway Evaluation

Existing Conditions

Walker Street is located between Tranquillity Park/Civic Center garage on the north and City Hall/Hermann Square on the south. A pedestrian underground tunnel crosses Walker Street perpendicular to connect the underground parking garage to City Hall. Several mature tress with overhanging canopies exist along both the northern and southern ROW. The northern ROW existing ground is several feet higher than existing top of curb. Currently a steep incline exists from the northern ROW to the top of curb and exposed tree roots are visible within the Walker Street limits. A signed midway crossing exists approximately half-way between Bagby Street and Smith Street.

Walker Street is a 3 lane concrete with asphalt overlay roadway with on-street side metered parking on both sides of the roadway. The total pavement width is approximately 52-foot wide. Walker Street appears to have been overlaid several times and evidence of poor pavement condition is visible at some locations with cracks and potholes visible at multiple locations.

The average pavement condition rating (PCR) along Walker Street is approximately 63% (05/15/2016) which is categorized as a low pavement condition based on the City's criteria.

All existing utilities will soon have exceeded their useful life based on the installation date. The installation date ranges from the 1950's for sanitary, 1960's for water, and 1970's for storm sewer. See **Table A.07** for existing utilities along Walker Street.

Table A.07 Walker Street Public Utilities

Utility	Size (inch)	Material	Street Limits		
Storm Sewer	15 & 24	RCP	Bagby Street	to	Smith Street
Water	24	CI	Bagby Street	to	Smith Street
Wastewater	12	RCP	Bagby Street	to	Smith Street

Recommendation

Fully reconstruct Walker Street from Bagby Street to Smith Street and replace all existing public utilities such as water, sanitary and storm sewer to match the life of the roadway.

Construct an 8- or 12-inch water line (n the tree zones) parallel to the 24-inch water line (located in the center of pavement) along Walker Street. Currently the 24-inch water line is served as a transmission, fire protection, and distribution line. This will convert the 24-inch line to a transmission line and make the small diameter line a distribution and fire protection line. During Final Design, modeling will be required to confirm the need and size of the parallel line. There is currently an existing 12-inch stub-out crossing Smith Street and the parallel line can be connected to this line if required.

McKinney Street Panel Replacement

Existing Conditions

McKinney Street was rebuilt during the early 2000's. Based on site observations, it appears that the pavement is in good condition with a very high PCR of 89 (05/15/2016). However, a few panels (approximately 160-FT long) have settled along the longitudinal joints and patchwork has been performed to remediate the settling in elevation difference east of Bagby Street. A settling elevation difference continues to exist along the longitudinal joints. See **Figure A.02** for location and identification of paving settlement along McKinney Street east of Bagby Street.

Recommendation

Replace some of the panels during the Bagby reconstruction project to avoid further settlement.

Figure A.02 Concrete Panels Settlement along McKinney Street east of Bagby Street

Franklin Street Roadway Evaluation

Existing Conditions

Franklin Street between Bagby Street and Smith Street has 15, 18, 21 & 24-inch storm sewers running adjacent to the north right-of-way line. In addition, there is a 36-inch storm sewer that outfalls to Buffalo Bayou. There are no water and sanitary sewer lines along Franklin Street. (Note, the Post HTX site is serviced by water and sanitary sewer lines off Louisiana Street and the section of Bagby Street north of the Franklin Street/Bagby Street intersection, this section is not part of the project scope.) See **Table A.08** for existing utilities along Franklin Street.

According to record drawings, the existing 36-inch outfall pipe is a corrugated metal pipe with a 12 gage fully coated asbestos material installed in the 1960's. Also, it appears that the existing outfalls pipe is located in proximity to the George Bush Monument and connected to a large concrete retaining wall close to the bank of Buffalo Bayou.

Recommendation

The existing storm sewers will be upsized to 24-inch in diameter to meet current City design criteria. All existing B inlets will be upgraded to BB inlets. During Final Design, a CCTV inspection of the existing 36-inch outfall pipe will be conducted to determine the condition of the pipe, whether it is in good condition and can remain as is or in poor condition and needs to be fully replaced or rehabilitated to prolong the pipe's life to match the life of the roadway.

Currently, the recommendation is to only replace the 36-inch pipe within pavement improvement limits with reinforced concrete pipe and the remainder to be evaluated to recommend a rehab solution rather than replacing the entire pipe. Typically, corrugated metal pipes that are not properly protected have a higher tendency to corrode and fail.

Any modifications to the outfall structure will potentially require coordination with Harris County Flood Control District and the Army Corps of Engineers.

Table A.08 Franklin Street Public Utilities

Utility	Size (inch)	Material	Street Limits		
Storm Sewer	15,18, 21, 24 & 36	Conc, CMP	Bagby Street	to	Smith Street
Water	2 & 4	PVC	Bagby Street	to	Smith Street
Wastewater	NONE	NONE	Bagby Street	to	Smith Street

Bridge Assessments

A bridge condition assessment was also conducted to outline the existing conditions of the bridge along Bagby Street between Texas Avenue and Prairie Street and to provide recommendations for maintenance and upgrades. The evaluation consisted of reviewing record drawings, brinsaps, and site visits. Replacing the existing traffic signals on the bridge is recommended but not structurally evaluated.

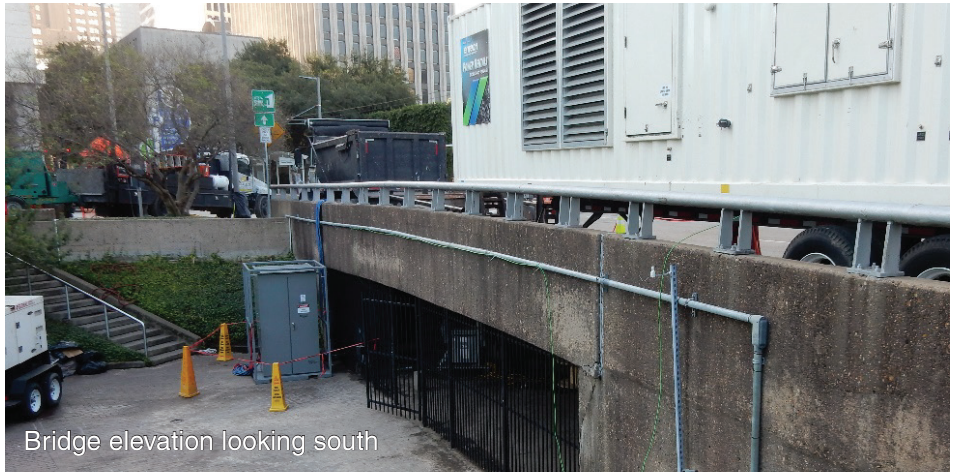
Also, as part of the assessment, a new proposed retrofitted walk path was evaluated along Rusk Street between Bagby Street and Smith Street. This additional cantilever pedestrian sidewalk will create another walking path from east to west similar to the pedestrian cantilever walkway on the south side of Rusk Street.

Both the Bagby Bridge and the Rusk Street Bridge were observed to be in overall satisfactory condition based on visual observations. Some of the preliminary findings included the existing bridge rails appear to be not rated to current traffic impacts, steel girders deterioration, and minor cracks along the Rusk bridge.

Any modifications to the existing bridges require structural analysis including a load rating on the bridge. An underwater bridge inspection is also warranted to identify significant scouring at the bridge columns due to the recent Hurricane Harvey flooding.

Refer to the Bridge Assessment Report in **Appendix A-3** for more details.

Girders on Bagby Bridge over Buffalo Bayou



Bridge elevation looking south

Sidewalk on west side of bridge, similar to proposed

Preliminary Utility Cost Estimates

Preliminary cost estimates for water, sanitary sewer, storm sewers, and burial of overhead utilities are based on pipe length, construction method, private utility relocations, groundwater control, cathodic protection systems, and trench safety. Unit costs from previous bids and recently constructed projects were used to generate the estimates. See **Table A.09** to **A.12** for overall Preliminary Cost Estimates. These prices are the base estimate.

Table A.09 Preliminary Utility Cost Estimates

Water Items	
Bagby Street Subtotal	$ 853,000.00
Walker Street Subtotal	$ 302,000.00
Subtotal	**$ 1,155,000.00**
Contingency	20%
Estimated Construction Cost	**$ 1,386,000.00***

Table A.10 Preliminary Utility Cost Estimates

Sanitary Items	
Bagby Street Subtotal	$ 579,600.00
Walker Street Subtotal	$ 109,000.00
Subtotal	**$ 688,600.00**
Contingency	20%
Estimated Construction Cost	**$ 826,320.00***

Table A.11 Preliminary Utility Cost Estimates

Storm Sewer Items	
Bagby Street Subtotal	$ 901,300.00
Walker Street Subtotal	$ 169,900.00
Franklin Street Subtotal	$ 216,750.00
Subtotal	**$ 1,287,950.00**
Contingency	20%
Estimated Construction Cost	**$ 1,545,540.00***

Table A.12 Preliminary Utility Cost Estimates

Overhead Utility Burial	
Bagby Street Subtotal	$ 248,000.00
Subtotal	**$ 248,000.00**
Contingency	20%
Estimated Construction Cost	**$ 297,600.00***

* These preliminary utility cost estimates do not include Construction Management & Observation, or Engineering & Survey Fees.

Conclusion

Water Lines

- All existing small and large water lines along Bagby Street will be replaced to match existing sizes as they have exceeded the typical useful service life.

Sanitary Sewer

- All existing sanitary sewer lines will be replaced to match existing sizes as they have exceeded the typical useful service life.

Storm Sewer

- The proposed improvements allow Bagby Street to generally meet City's criteria for all of the analyzed events with the exception of the flood plain area. Based on the drainage analysis, there are no significant storm sewer upgrades to pipe sizes with the exception of adding inlets to the system.
- Inlets added along Bagby Street will allow more stormwater flow to the main trunkline and utilize its full capacity. Convert all existing B inlets to BB inlets.
- Any existing condition pipe that is under 24-inch in diameter will be replaced to a 24-inch or greater to meet current design criteria.
- The remaining trunkline pipes that meet current City standards will remain in place. During Final Design, a CCTV inspection of the existing pipe will need to be conducted to determine the condition of the pipe, whether it is in good condition and can remain as is or in poor condition and needs to be fully replaced or rehabilitated to prolong the pipe's life to match the life of the roadway.
- Along Franklin Street, the existing storm sewer less than 24-inch in diameter will be up-sized to at least a 24-inch storm sewer pipe. The 36-inch corrugated metal pipe will be replaced within pavements replacement limits. In addition, all existing B inlets will be upgraded to BB inlets.

Private Utilities

- Bury overhead communications/power lines at the northwestern corner of Bagby and Dallas Street. The relocation may include placing lines inside ducts/casings and the use of pull boxes or manholes for line splices.
- Bury overhead street light wires crossing Bagby Street between Dallas Street and Walker Street.
- It is anticipated that some private utilities may require to be relocated during Final Design depending on the final improvements and relocations.

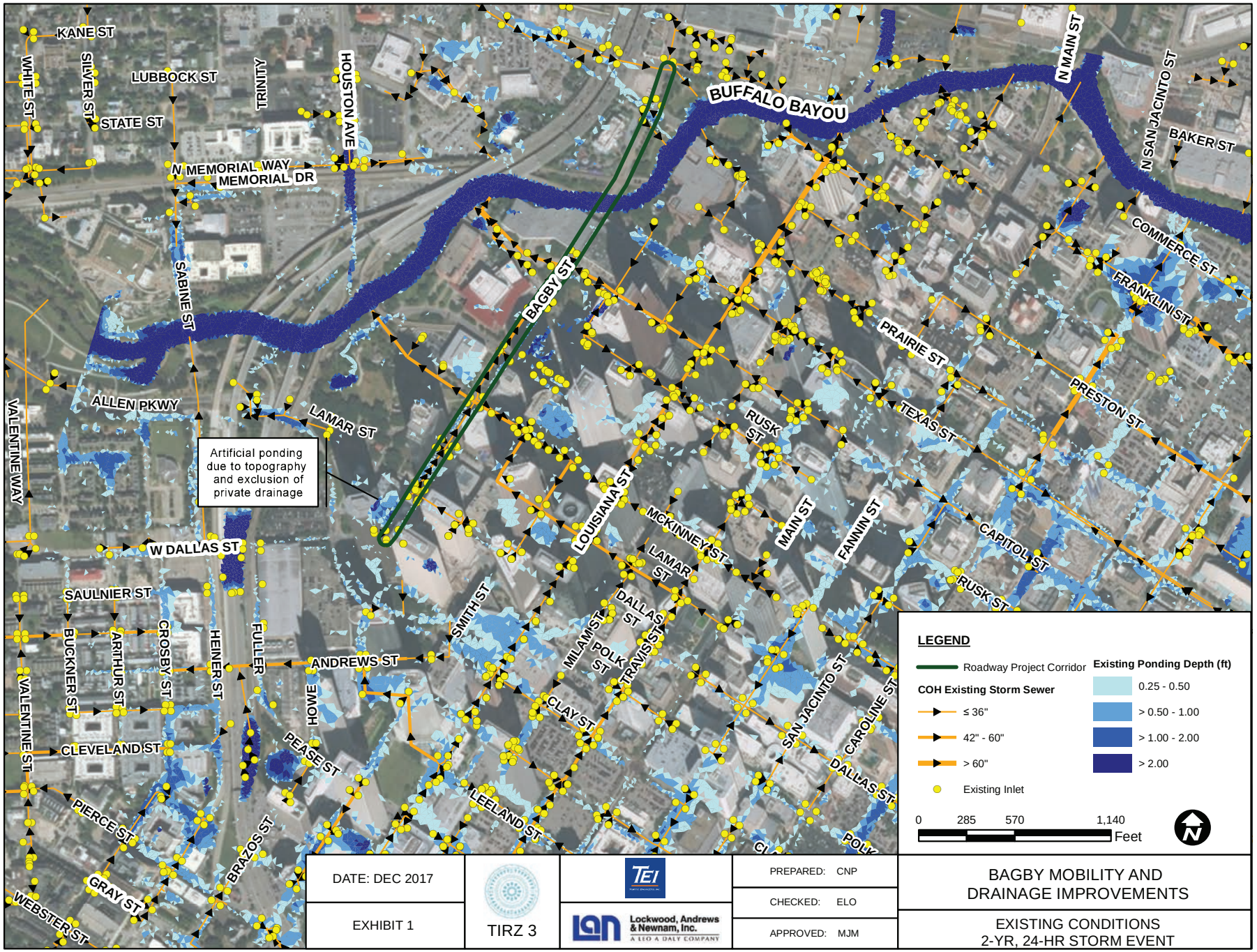
Walker Street, McKinney Street & Franklin Street

- Full reconstruction of Walker Street from Bagby Street to Smith Street.
- Perform concrete panel replacement along McKinney Street east of Bagby Street to remediate roadway settlement.
- Re-stripe and reconfigure Franklin Street based on the ultimate Bagby Street cross section and proposed roadway improvements realignments.

Bridge Assessment Reports Items

- Based on the bridge assessment reports, minor improvements are recommended on the Bagby Street Bridge between Texas Avenue and Prairie Street.
- Improvements include replacing existing bridge rails with current standard crash-tested rails and cleaning and repainting existing bridge girders for long-term maintenance.
- An underwater inspection is recommended to verify no significant scour has occurred at the bridge columns due to the recent Hurricane Harvey storm event.
- Any structural improvements/modifications will require performing structural analysis, including a load rating of the bridge.
- Refer to the Bridge Assessment Reports in **Appendix A-3** for details of improvements recommendations.

APPENDIX A-1
DRAINAGE EXHIBITS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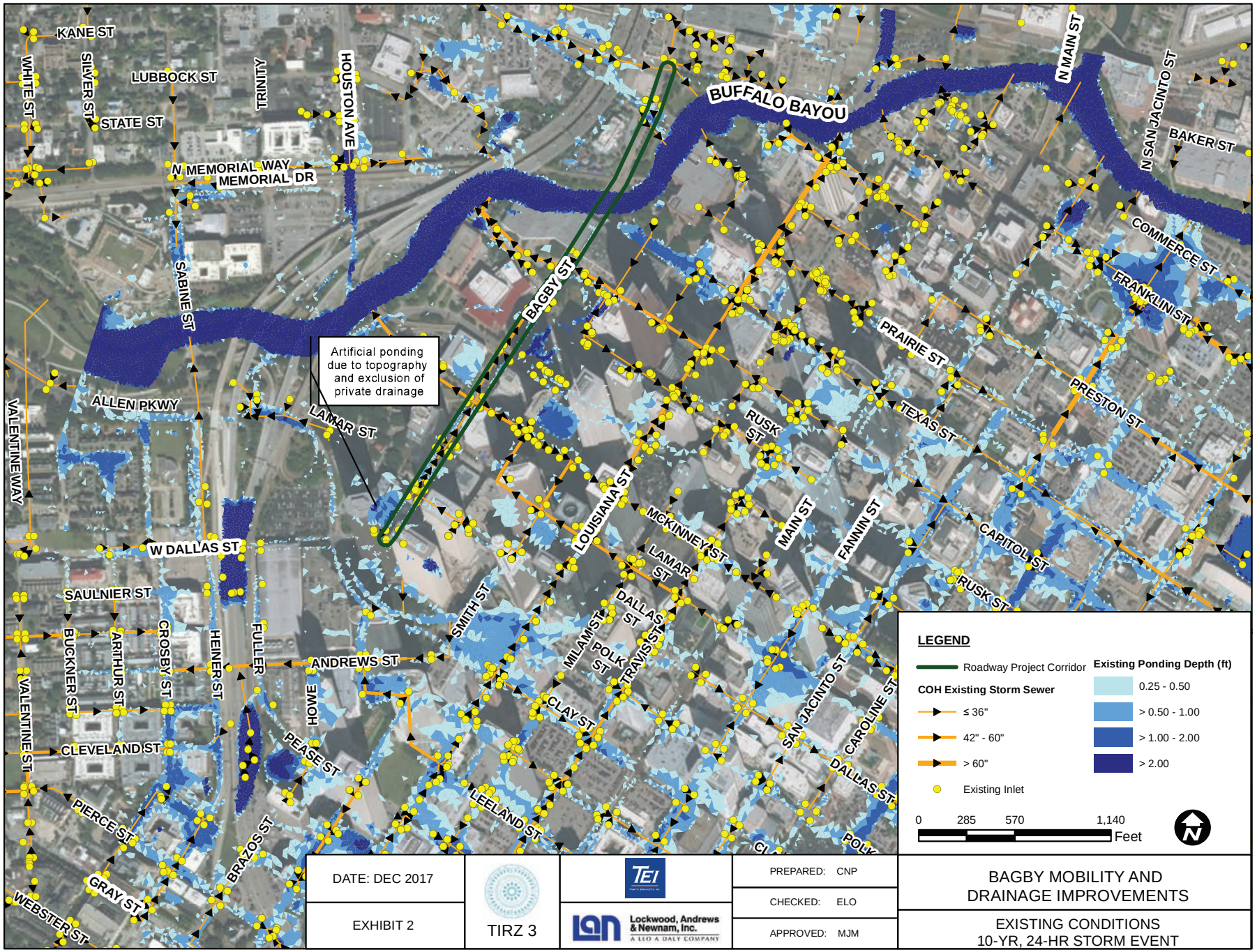
WHITE ST
SILVER ST
LUBBOCK ST
STATE ST
TRINITY
HOUSTON AVE
N MEMORIAL WAY
MEMORIAL DR
BUFFALO BAYOU
N MAIN ST
N SAN JACINTO ST
BAKER ST
COMMERCE ST
FRANKLIN ST
PRAIRIE ST
PRESTON ST
TEXAS ST
RUSK ST
SABINE ST
BAGBY ST
ALLEN PKWY
LAMAR ST
VALENTINE WAY
Artificial ponding due to topography and exclusion of private drainage
W DALLAS ST
LOUISIANA ST
MCKINNEY ST
MAIN ST
FANNIN ST
CAPITOL ST
RUSK ST
LAMAR ST
DALLAS ST
SAULNIER ST
BUCKNER ST
ARTHUR ST
CROSBY ST
HEINER ST
FULLER
SMITH ST
ANDREWS ST
MILAM ST
POLK ST
TRAVIS ST
CLAY ST
SAN JACINTO ST
CAROLINE ST
DALLAS ST
VALENTINE ST
CLEVELAND ST
HOWE
PEASE ST
LEELAND ST
PIERCE ST
BRAZOS ST
GRAY ST
WEBSTER ST
LEGEND
Roadway Project Corridor
COH Existing Storm Sewer
≤ 36"
42" - 60"
> 60"
Existing Inlet
Existing Ponding Depth (ft)
0.25 - 0.50
> 0.50 - 1.00
> 1.00 - 2.00
> 2.00
0
285
570
1,140
Feet
DATE: DEC 2017
EXHIBIT 1
TIRZ 3
Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
PREPARED: CNP
CHECKED: ELO
APPROVED: MJM
BAGBY MOBILITY AND DRAINAGE IMPROVEMENTS
EXISTING CONDITIONS
2-YR, 24-HR STORM EVENT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WHITE ST
SILVER ST
LUBBOCK ST
TRINITY
HOUSTON AVE
STATE ST
N MEMORIAL WAY
MEMORIAL DR
BUFFALO BAYOU
N MAIN ST
N SAN JACINTO ST
BAKER ST
COMMERCE ST
FRANKLIN ST
SABINE ST
BAGBY ST
PRAIRIE ST
PRESTON ST
TEXAS ST
RUSK ST
Artificial ponding due to topography and exclusion of private drainage
ALLEN PKWY
LAMAR ST
VALENTINE WAY
LOUISIANA ST
MCKINNEY ST
MAIN ST
FANNIN ST
CAPITOL ST
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SMITH ST
DALLAS ST
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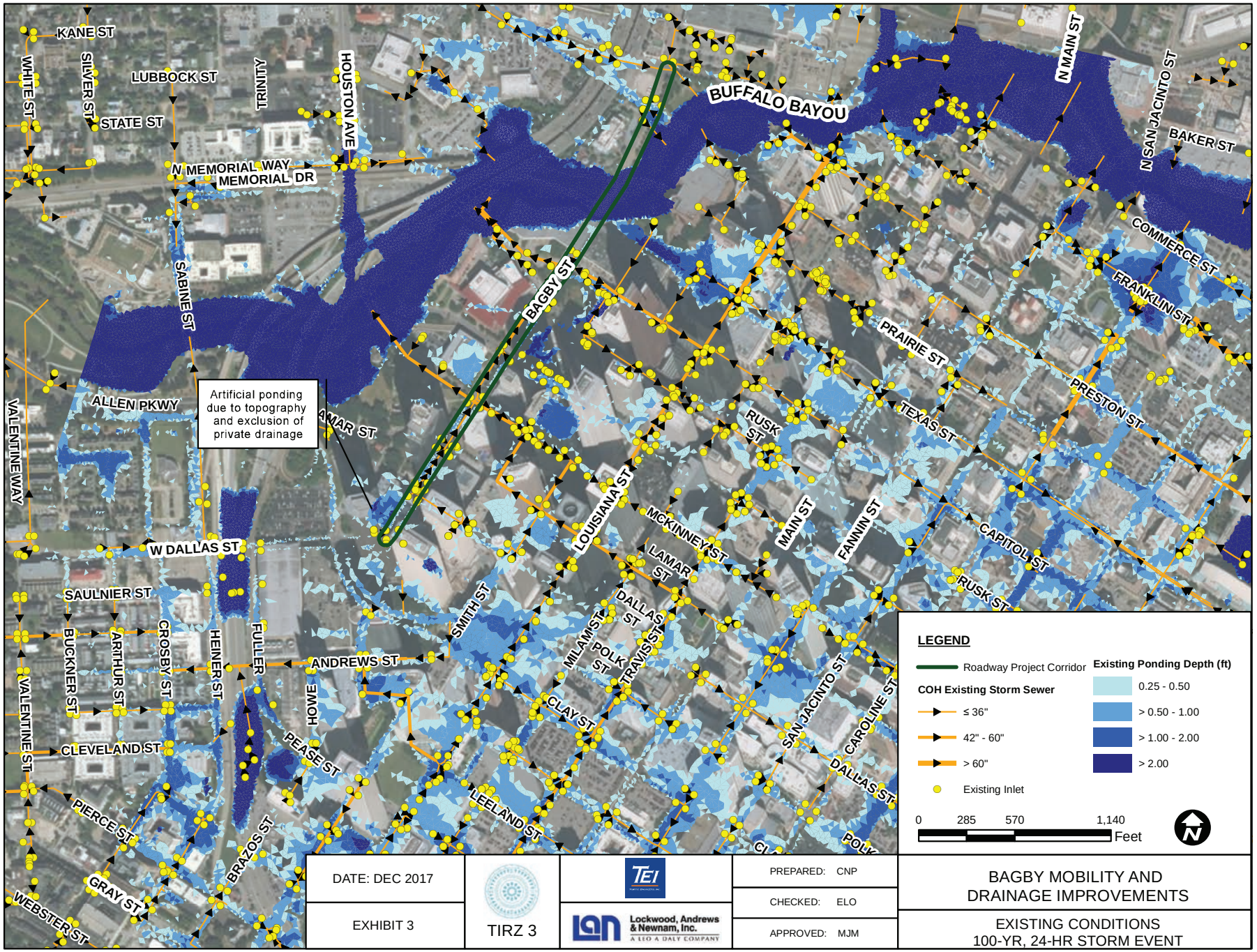
ANDREWS ST
HOWE
CLAY ST
SAN JACINTO ST
CAROLINE ST
VALENTINE ST
CLEVELAND ST
PEASE ST
DALLAS ST
PIERCE ST
LEELAND ST
BRAZOS ST
GRAY ST
WEBSTER ST
LEGEND
Roadway Project Corridor
COH Existing Storm Sewer
≤ 36"
42" - 60"
> 60"
Existing Inlet
Existing Ponding Depth (ft)
0.25 - 0.50
> 0.50 - 1.00
> 1.00 - 2.00
> 2.00
0
285
570
1,140
Feet
DATE: DEC 2017
EXHIBIT 2
TIRZ 3
Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
PREPARED: CNP
CHECKED: ELO
APPROVED: MJM
BAGBY MOBILITY AND DRAINAGE IMPROVEMENTS
EXISTING CONDITIONS
10-YR, 24-HR STORM EVENT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SILVER ST
LUBBOCK ST
STATE ST
TRINITY
HOUSTON AVE
N MEMORIAL WAY
MEMORIAL DR
BUFFALO BAYOU
N MAIN ST
N SAN JACINTO ST
BAKER ST
COMMERCE ST
FRANKLIN ST
SABINE ST
BAGBY ST
PRAIRIE ST
PRESTON ST
TEXAS ST
RUSK ST
ALLEN PKWY
Artificial ponding due to topography and exclusion of private drainage
AMAR ST
VALENTINE WAY
LOUISIANA ST
MCKINNEY ST
MAIN ST
FANNIN ST
CAPITOL ST
RUSK ST
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LAMAR ST
SAULNIER ST
SMITH ST
DALLAS ST
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POLK ST
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ARTHUR ST
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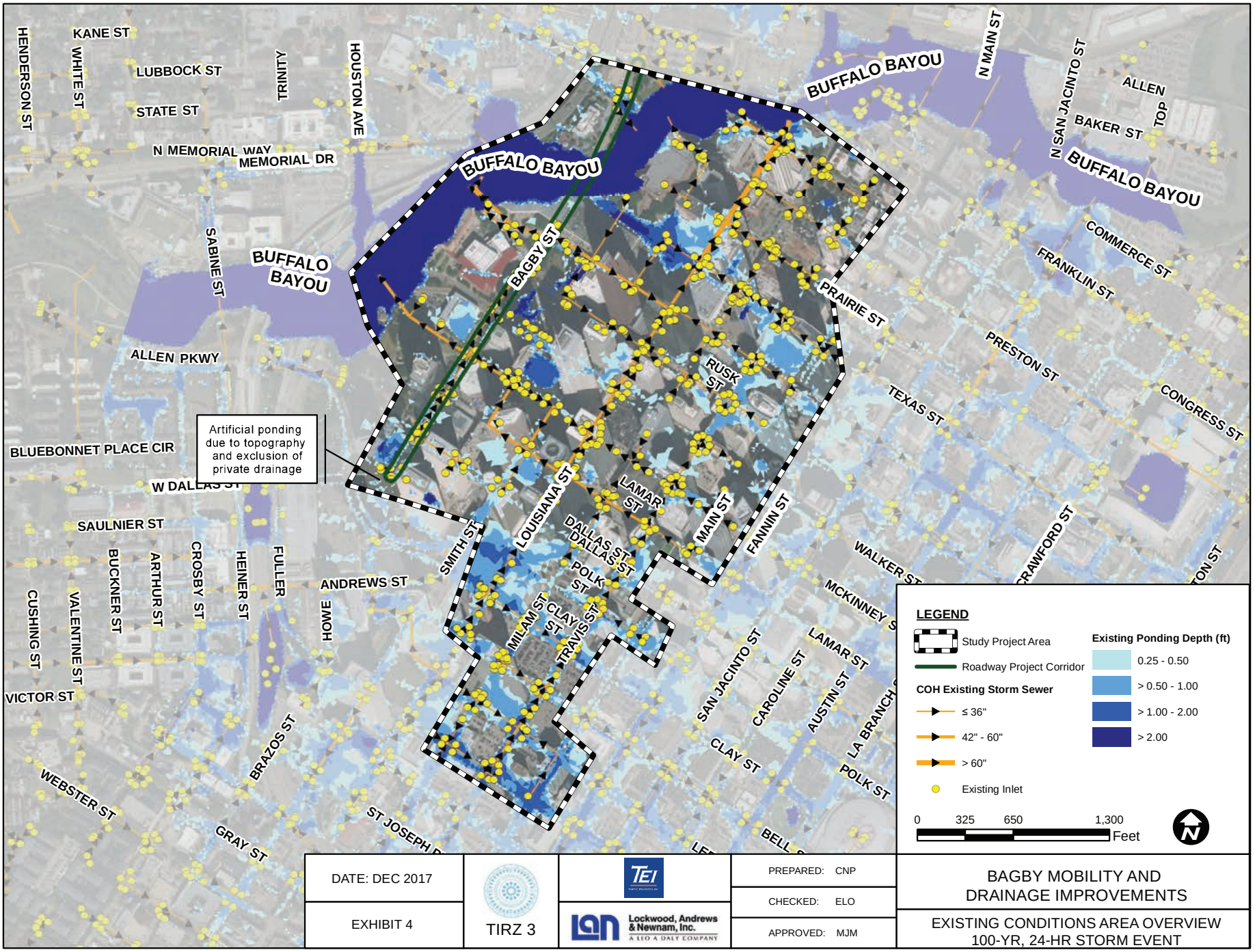
CLAY ST
SAN JACINTO ST
CAROLINE ST
VALENTINE ST
CLEVELAND ST
PEASE ST
LEELAND ST
DALLAS ST
PIERCE ST
BRAZOS ST
GRAY ST
WEBSTER ST
LEGEND
Roadway Project Corridor
COH Existing Storm Sewer
≤ 36"
42" - 60"
> 60"
Existing Inlet
Existing Ponding Depth (ft)
0.25 - 0.50
> 0.50 - 1.00
> 1.00 - 2.00
> 2.00
0
285
570
1,140
Feet
DATE: DEC 2017
EXHIBIT 3
TIRZ 3
Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
PREPARED: CNP
CHECKED: ELO
APPROVED: MJM
BAGBY MOBILITY AND DRAINAGE IMPROVEMENTS
EXISTING CONDITIONS
100-YR, 24-HR STORM EVENT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KANE ST
WHITE ST
LUBBOCK ST
STATE ST
TRINITY
HOUSTON AVE
N MEMORIAL WAY
MEMORIAL DR
BUFFALO BAYOU
SABINE ST
BUFFALO BAYOU
ALLEN PKWY
BLUEBONNET PLACE CIR
W DALLAS ST
SAULNIER ST
BUCKNER ST
ARTHUR ST
CROSBY ST
HEINER ST
FULLER
ANDREWS ST
HOWE
CUSHING ST
VALENTINE ST
VICTOR ST
WEBSTER ST
BRAZOS ST
GRAY ST
ST JOSEPH
BUFFALO BAYOU
N MAIN ST
N SAN JACINTO ST
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TOP
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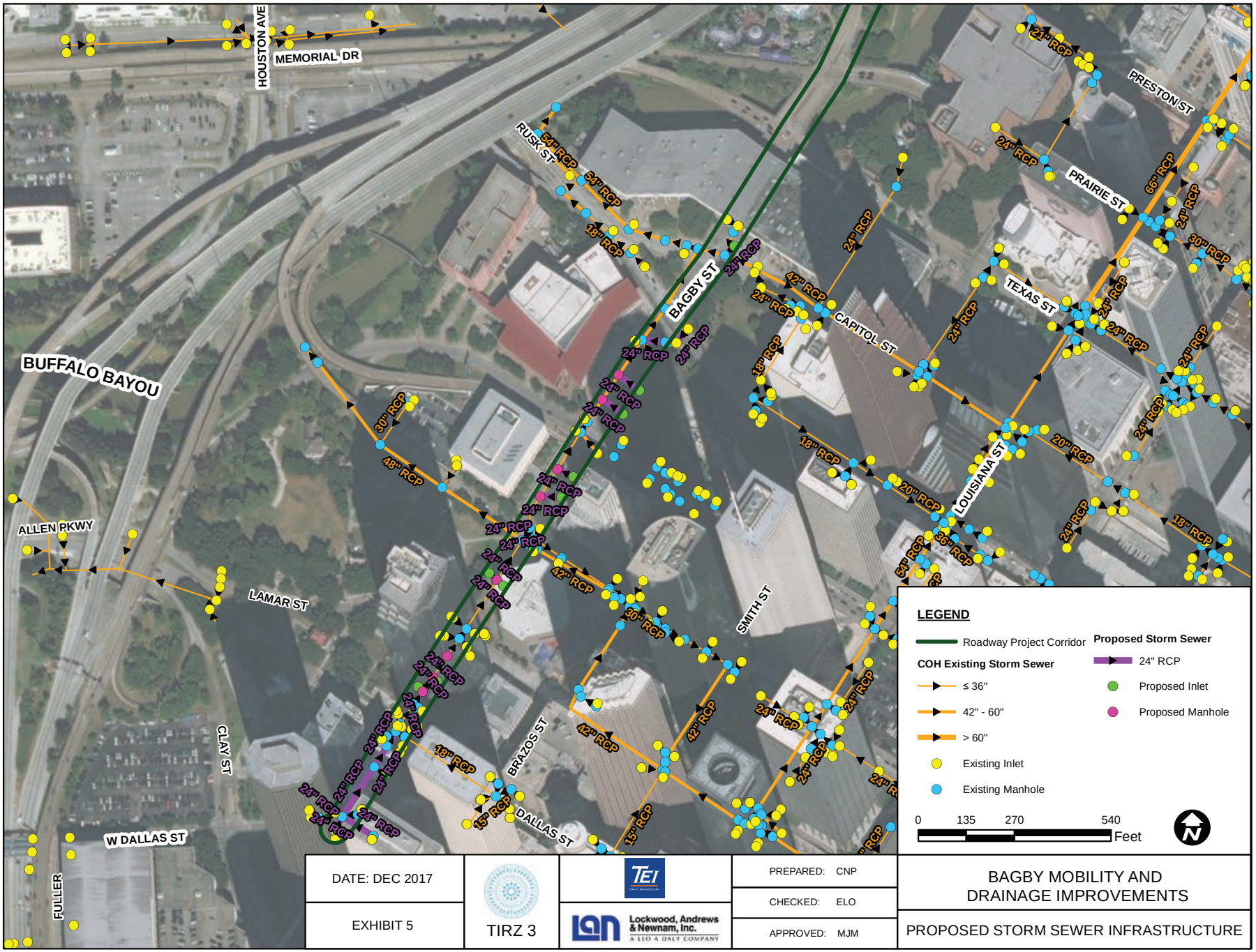
COMMERCE ST
FRANKLIN ST
PRAIRIE ST
PRESTON ST
CONGRESS ST
TEXAS ST
RUSK ST
BAGBY ST
Artificial ponding due to topography and exclusion of private drainage
LOUISIANA ST
LAMAR ST
MAIN ST
FANNIN ST
SMITH ST
DALLAS ST
DALLAS ST
POLK ST
MILAM ST
CLAY ST
TRAVIS ST
WALKER ST
MCKINNEY S
LAMAR ST
SAN JACINTO ST
CAROLINE ST
AUSTIN ST
LA BRANCH
CLAY ST
POLK ST
BELL
CRAWFORD ST
LEGEND
Study Project Area
Roadway Project Corridor
COH Existing Storm Sewer
≤ 36"
42" - 60"
> 60"
Existing Inlet
Existing Ponding Depth (ft)
0.25 - 0.50
> 0.50 - 1.00
> 1.00 - 2.00
> 2.00
0 325 650 1,300
Feet
DATE: DEC 2017
EXHIBIT 4
TIRZ 3
TEI
Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
PREPARED: CNP
CHECKED: ELO
APPROVED: MJM
BAGBY MOBILITY AND DRAINAGE IMPROVEMENTS
EXISTING CONDITIONS AREA OVERVIEW
100-YR, 24-HR STORM EVENT


HOUSTON AVE
MEMORIAL DR
RUSK ST
PRESTON ST
PRAIRIE ST
BAGBY ST
CAPITOL ST
TEXAS ST
LOUISIANA ST
BUFFALO BAYOU
ALLEN PKWY
LAMAR ST
SMITH ST
CLAY ST
BRAZOS ST
DALLAS ST
W DALLAS ST
FULLER
LEGEND
Roadway Project Corridor
COH Existing Storm Sewer
≤ 36"
42" - 60"
> 60"
Existing Inlet
Existing Manhole
Proposed Storm Sewer
24" RCP
Proposed Inlet
Proposed Manhole
0 135 270 540
Feet
N
DATE: DEC 2017
EXHIBIT 5
TIRZ 3
PREPARED: CNP
CHECKED: ELO
APPROVED: MJM
BAGBY MOBILITY AND DRAINAGE IMPROVEMENTS
PROPOSED STORM SEWER INFRASTRUCTURE

PONDING DEPTH POINT	PONDING REDUCTION (FT) 2-YEAR
1	-0.49
2	-0.26
3	-0.37
4	-0.27
5	-0.56
6	-0.23
7	-0.17
8	-0.36
9	-0.48
10	-0.18
11	-0.17
12	-0.37

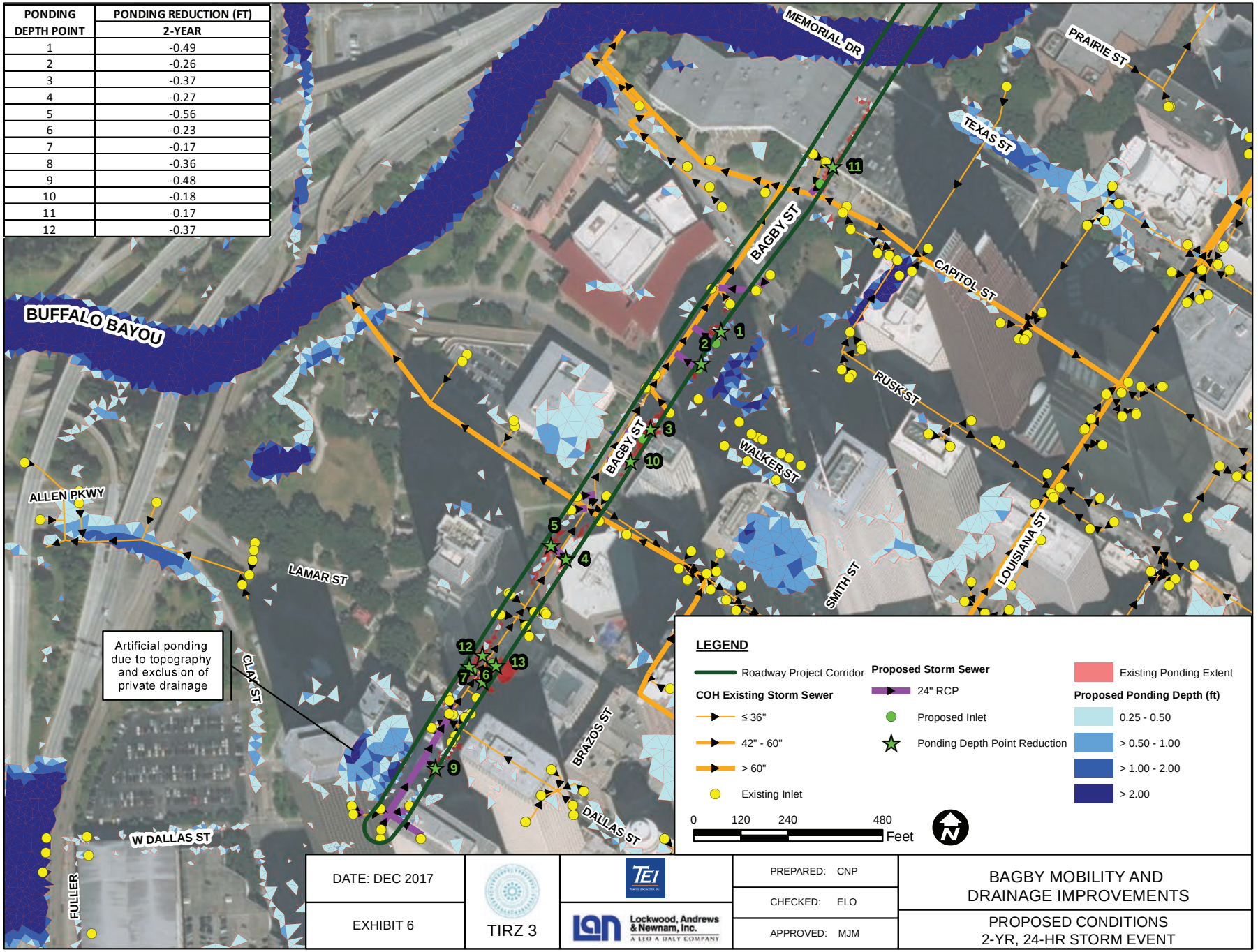


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EXHIBIT 6		Lockwood, Andrews & Newnam, Inc. A LEO A DALY COMPANY	CHECKED: ELO APPROVED: MJM	PROPOSED CONDITIONS 2-YR, 24-HR STORM EVENT

PONDING DEPTH POINT	PONDING REDUCTION (FT) 10-YEAR
1	-0.51
2	-0.28
3	-0.36
4	-0.30
5	-0.59
6	-0.24
7	-0.18
8	-0.39
9	-0.50
10	-0.30
11	-0.21
12	-0.37

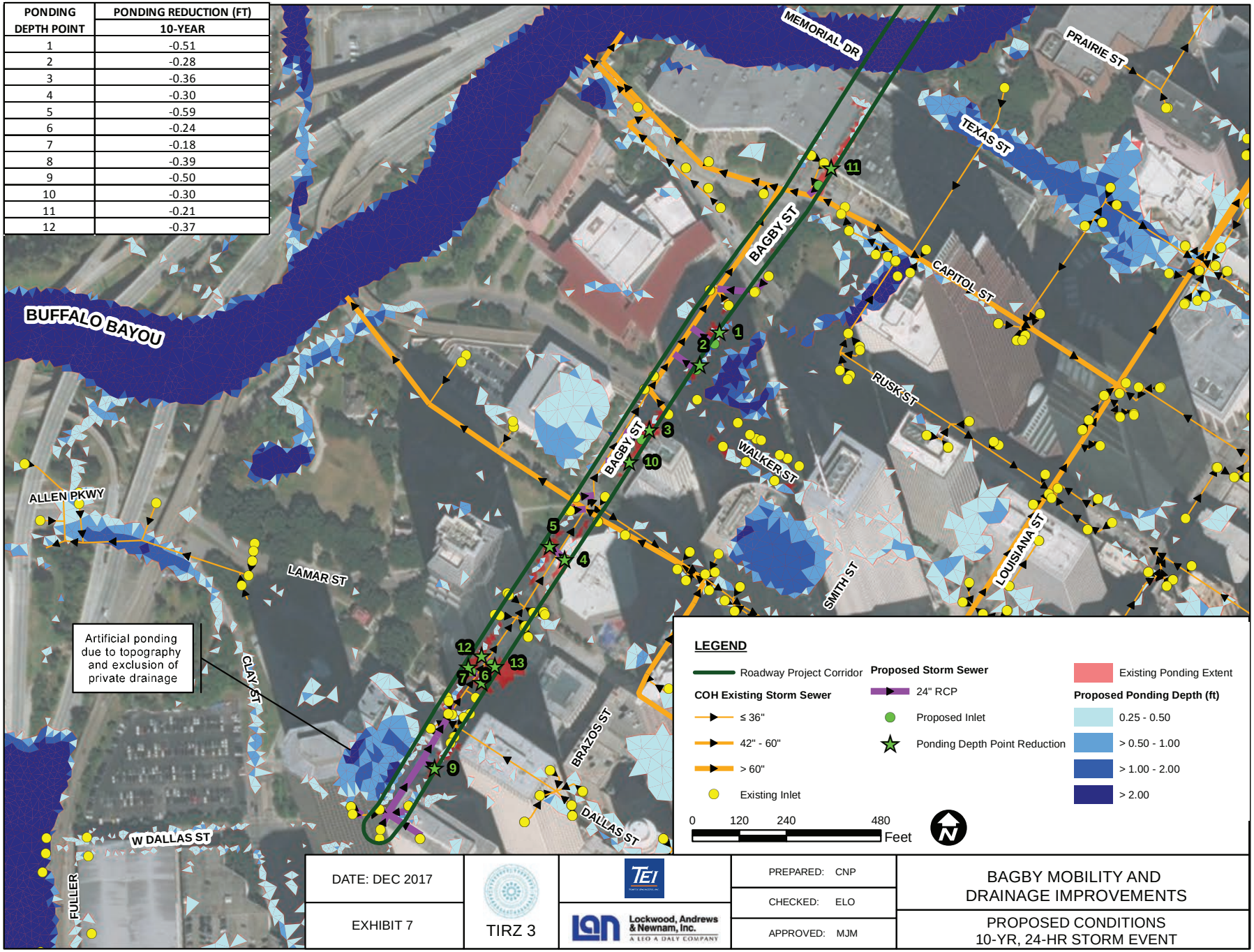

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EXHIBIT 7				PROPOSED CONDITIONS 10-YR, 24-HR STORM EVENT

PONDING DEPTH POINT	PONDING REDUCTION (FT) 100-YEAR
1	-0.54
2	-0.30
3	-0.36
4	-0.32
5	-0.61
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7	-0.19
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9	-0.52
10	-0.37
11	-0.24
12	-0.37

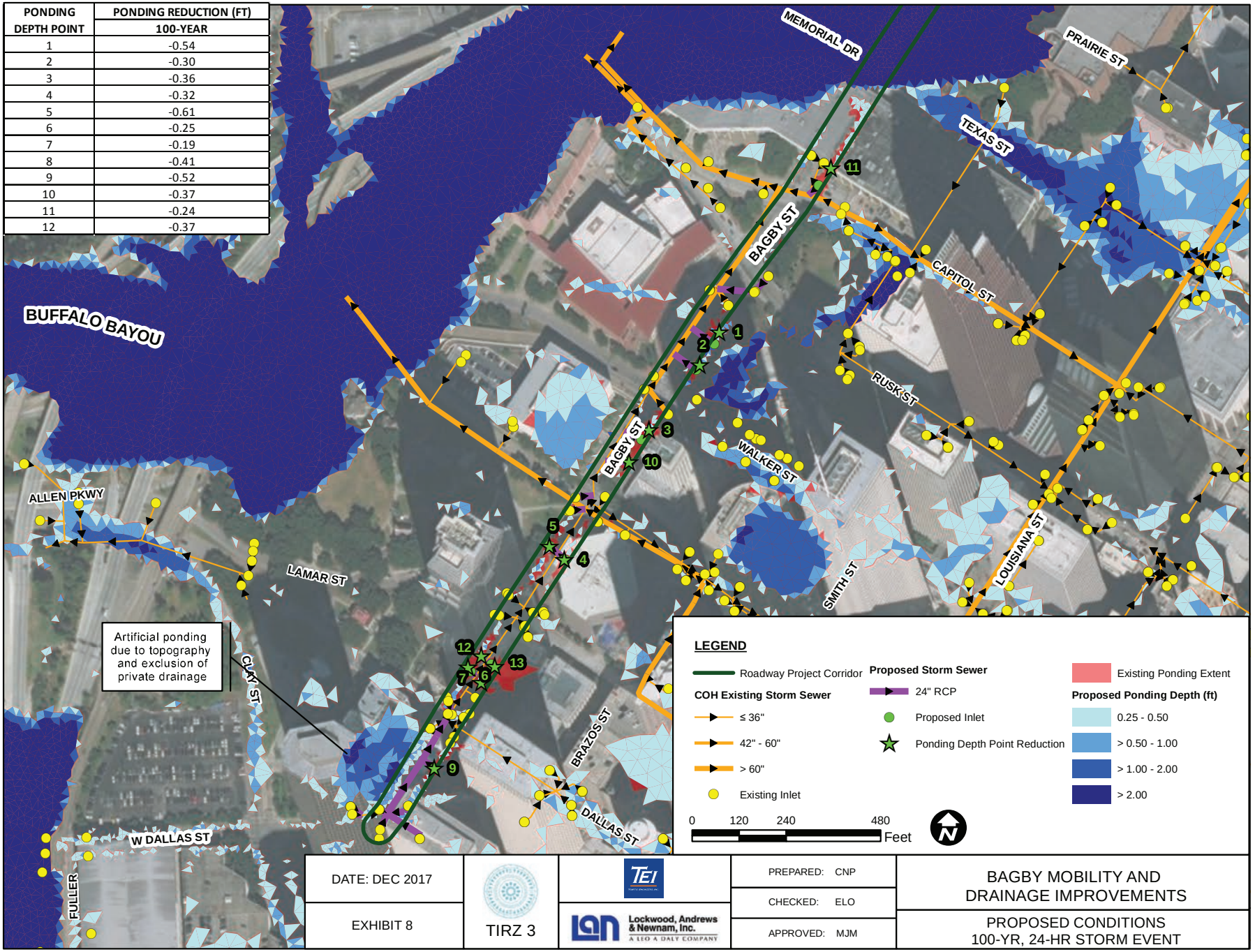

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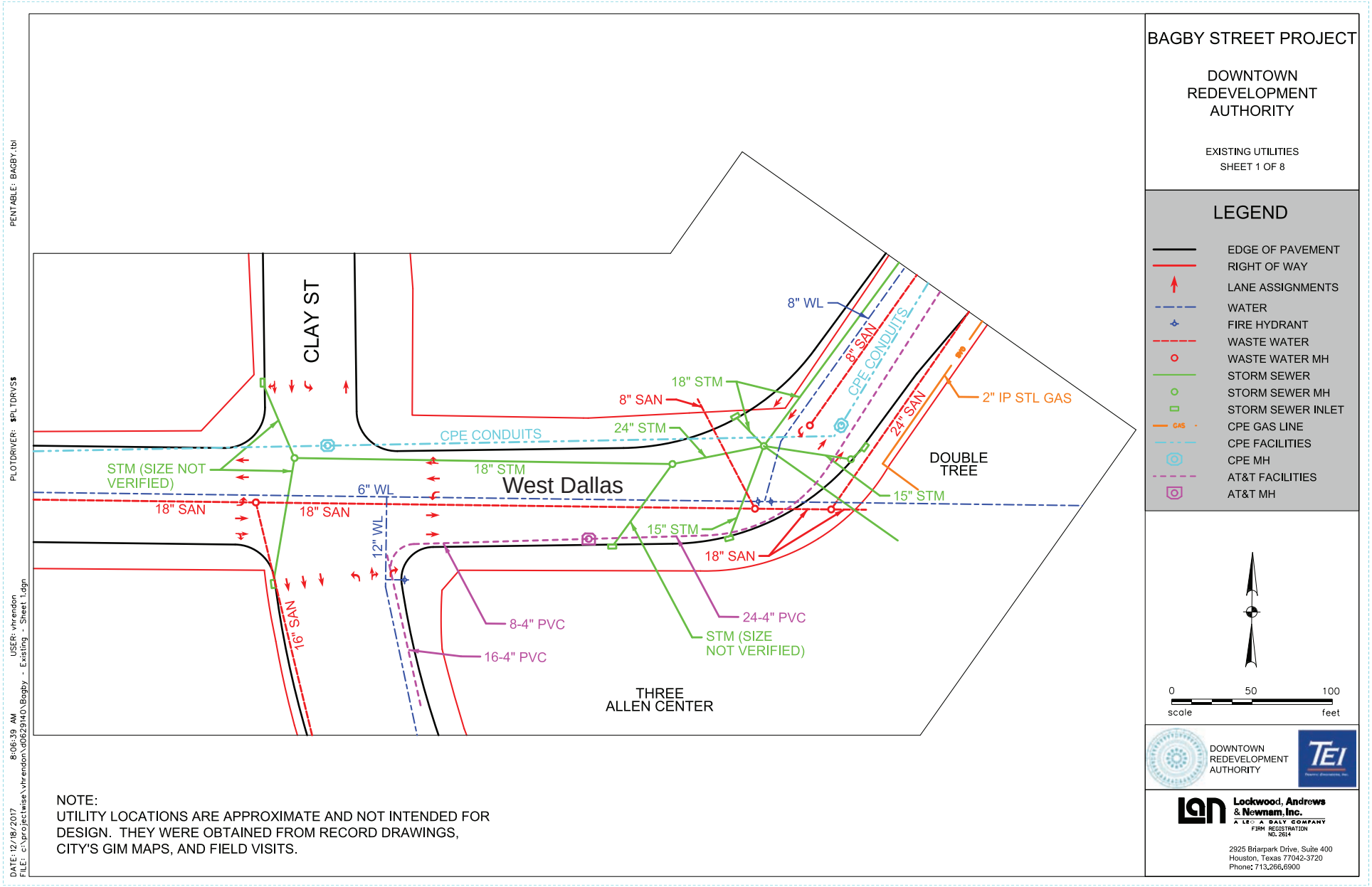
EXHIBIT 8		Lockwood, Andrews & Newnam, Inc. A LEO A DALY COMPANY	CHECKED: ELO APPROVED: MJM	PROPOSED CONDITIONS 100-YR, 24-HR STORM EVENT

APPENDIX A-2
EXISTING UTILITIES



BAGBY STREET PROJECT

DOWNTOWN REDEVELOPMENT AUTHORITY

EXISTING UTILITIES
SHEET 1 OF 8

LEGEND

- EDGE OF PAVEMENT
- RIGHT OF WAY
- LANE ASSIGNMENTS
- WATER
- FIRE HYDRANT
- WASTE WATER
- WASTE WATER MH
- STORM SEWER
- STORM SEWER MH
- STORM SEWER INLET
- CPE GAS LINE
- CPE FACILITIES
- CPE MH
- AT&T FACILITIES
- AT&T MH

0 50 100
scale feet

NOTE:
UTILITY LOCATIONS ARE APPROXIMATE AND NOT INTENDED FOR DESIGN. THEY WERE OBTAINED FROM RECORD DRAWINGS, CITY'S GIM MAPS, AND FIELD VISITS.

DOWNTOWN REDEVELOPMENT AUTHORITY

Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
FIRM REGISTRATION NO. 2614
2925 Briarpark Drive, Suite 400
Houston, Texas 77042-3720
Phone: 713.266.6900

DATE: 12/18/2017 8:06:39 AM USER: vhrendon
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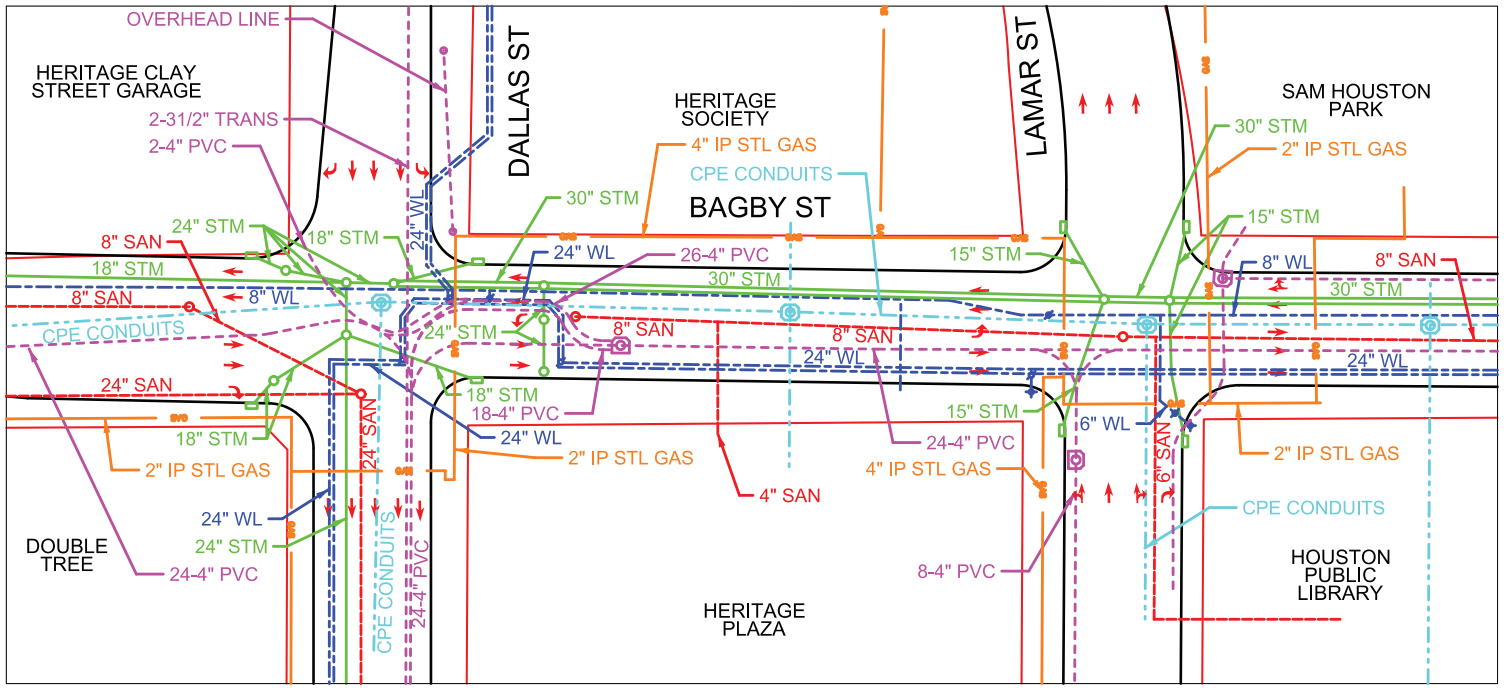

NOTE:
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BAGBY STREET PROJECT

DOWNTOWN REDEVELOPMENT AUTHORITY

EXISTING UTILITIES
SHEET 2 OF 8

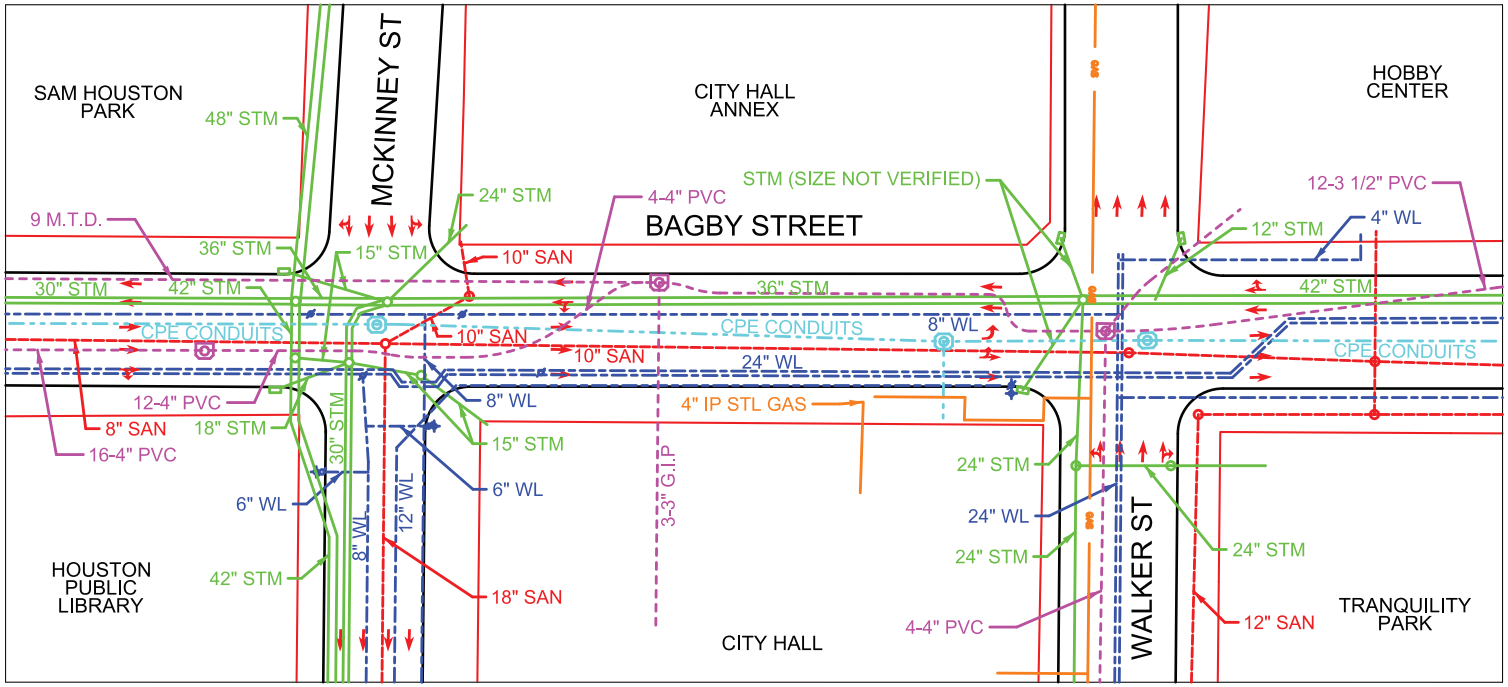
LEGEND

- EDGE OF PAVEMENT
- RIGHT OF WAY
- LANE ASSIGNMENTS
- WATER
- FIRE HYDRANT
- WASTE WATER
- WASTE WATER MH
- STORM SEWER
- STORM SEWER MH
- STORM SEWER INLET
- CPE GAS LINE
- CPE FACILITIES
- CPE MH
- AT&T FACILITIES
- AT&T MH

0 50 100
scale feet

DOWNTOWN REDEVELOPMENT AUTHORITY

Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
FIRM REGISTRATION NO. 2614
2925 Briarpark Drive, Suite 400
Houston, Texas 77042-3720
Phone: 713.266.6900



NOTE:
UTILITY LOCATIONS ARE APPROXIMATE AND NOT INTENDED FOR DESIGN. THEY WERE OBTAINED FROM RECORD DRAWINGS, CITY'S GIM MAPS, AND FIELD VISITS.

BAGBY STREET PROJECT

DOWNTOWN REDEVELOPMENT AUTHORITY

EXISTING UTILITIES
SHEET 3 OF 8

LEGEND

- EDGE OF PAVEMENT
- RIGHT OF WAY
- LANE ASSIGNMENTS
- WATER
- FIRE HYDRANT
- WASTE WATER
- WASTE WATER MH
- STORM SEWER
- STORM SEWER MH
- STORM SEWER INLET
- CPE GAS LINE
- CPE FACILITIES
- CPE MH
- AT&T FACILITIES
- AT&T MH

0 50 100
scale feet

DOWNTOWN REDEVELOPMENT AUTHORITY

Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
FIRM REGISTRATION NO. 2614
2925 Briarpark Drive, Suite 400
Houston, Texas 77042-3720
Phone: 713.266.6900

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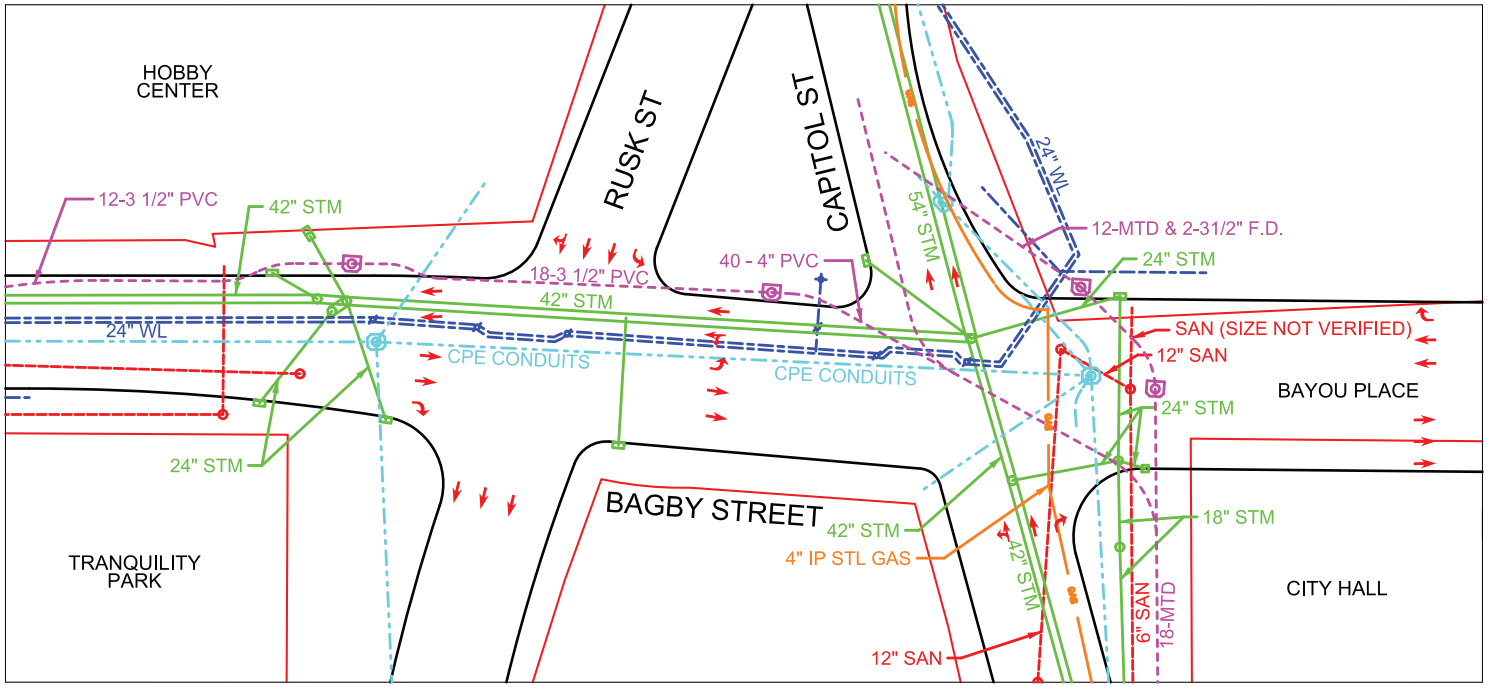

NOTE:
UTILITY LOCATIONS ARE APPROXIMATE AND NOT INTENDED FOR DESIGN. THEY WERE OBTAINED FROM RECORD DRAWINGS, CITY'S GIM MAPS, AND FIELD VISITS.

BAGBY STREET PROJECT

DOWNTOWN REDEVELOPMENT AUTHORITY

EXISTING UTILITIES
SHEET 4 OF 8

LEGEND

- EDGE OF PAVEMENT
- RIGHT OF WAY
- LANE ASSIGNMENTS
- WATER
- FIRE HYDRANT
- WASTE WATER
- WASTE WATER MH
- STORM SEWER
- STORM SEWER MH
- STORM SEWER INLET
- CPE GAS LINE
- CPE FACILITIES
- CPE MH
- AT&T FACILITIES
- AT&T MH

0 50 100
scale feet

DOWNTOWN REDEVELOPMENT AUTHORITY

Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
FIRM REGISTRATION NO. 2614
2925 Briarpark Drive, Suite 400
Houston, Texas 77042-3720
Phone: 713.266.6900

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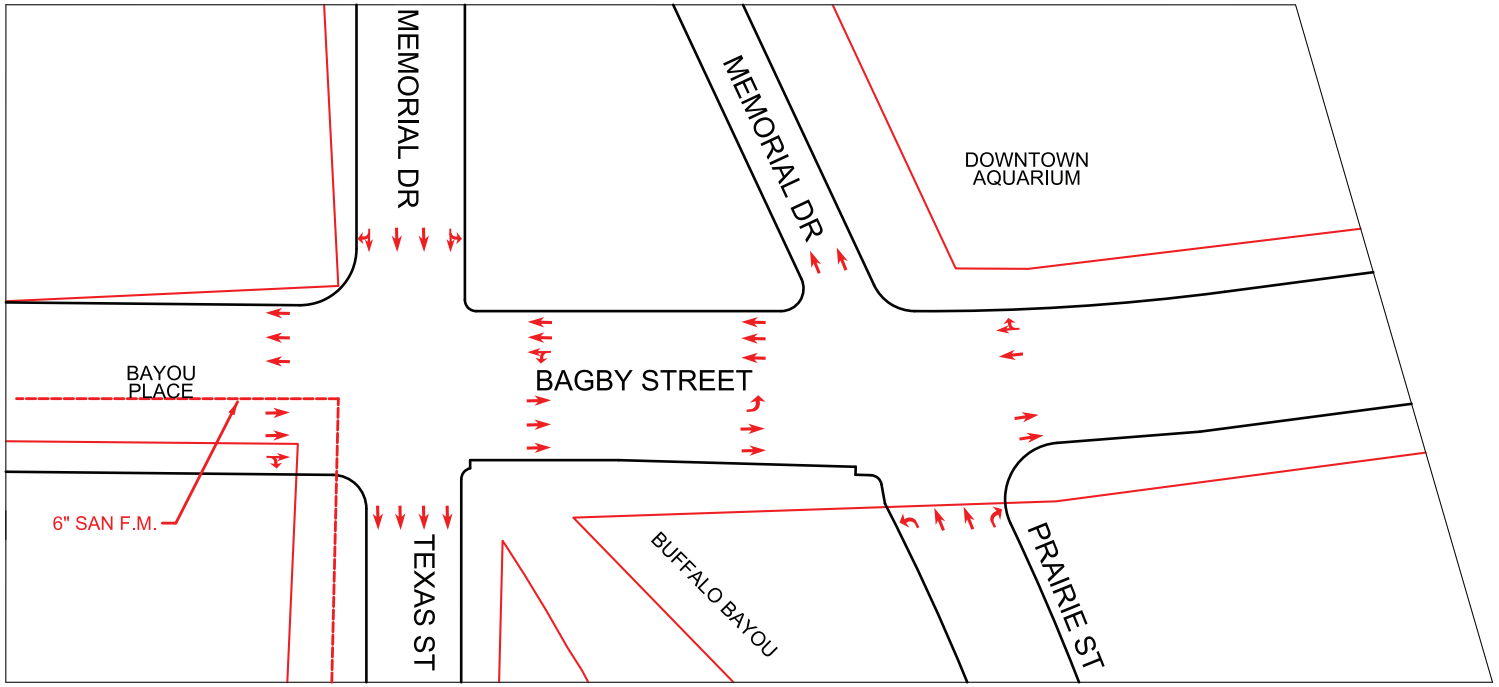

NOTE:
UTILITY LOCATIONS ARE APPROXIMATE AND NOT INTENDED FOR DESIGN. THEY WERE OBTAINED FROM RECORD DRAWINGS, CITY'S GIM MAPS, AND FIELD VISITS.

BAGBY STREET PROJECT

DOWNTOWN
REDEVELOPMENT
AUTHORITY

EXISTING UTILITIES
SHEET 5 OF 8

LEGEND

- EDGE OF PAVEMENT
- RIGHT OF WAY
- LANE ASSIGNMENTS
- WATER
- FIRE HYDRANT
- WASTE WATER
- WASTE WATER MH
- STORM SEWER
- STORM SEWER MH
- STORM SEWER INLET
- CPE GAS LINE
- CPE FACILITIES
- CPE MH
- AT&T FACILITIES
- AT&T MH

0 50 100
scale feet

DOWNTOWN
REDEVELOPMENT
AUTHORITY

TEI

Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
FIRM REGISTRATION NO. 2614

2925 Briarpark Drive, Suite 400
Houston, Texas 77042-3720
Phone: 713.266.6900

PENTABLE: $PENTBLS$
PLOTDRIVER: $PLTDRVS$
USER: $USER$
DATE: 12/18/2017 8:27:49 AM
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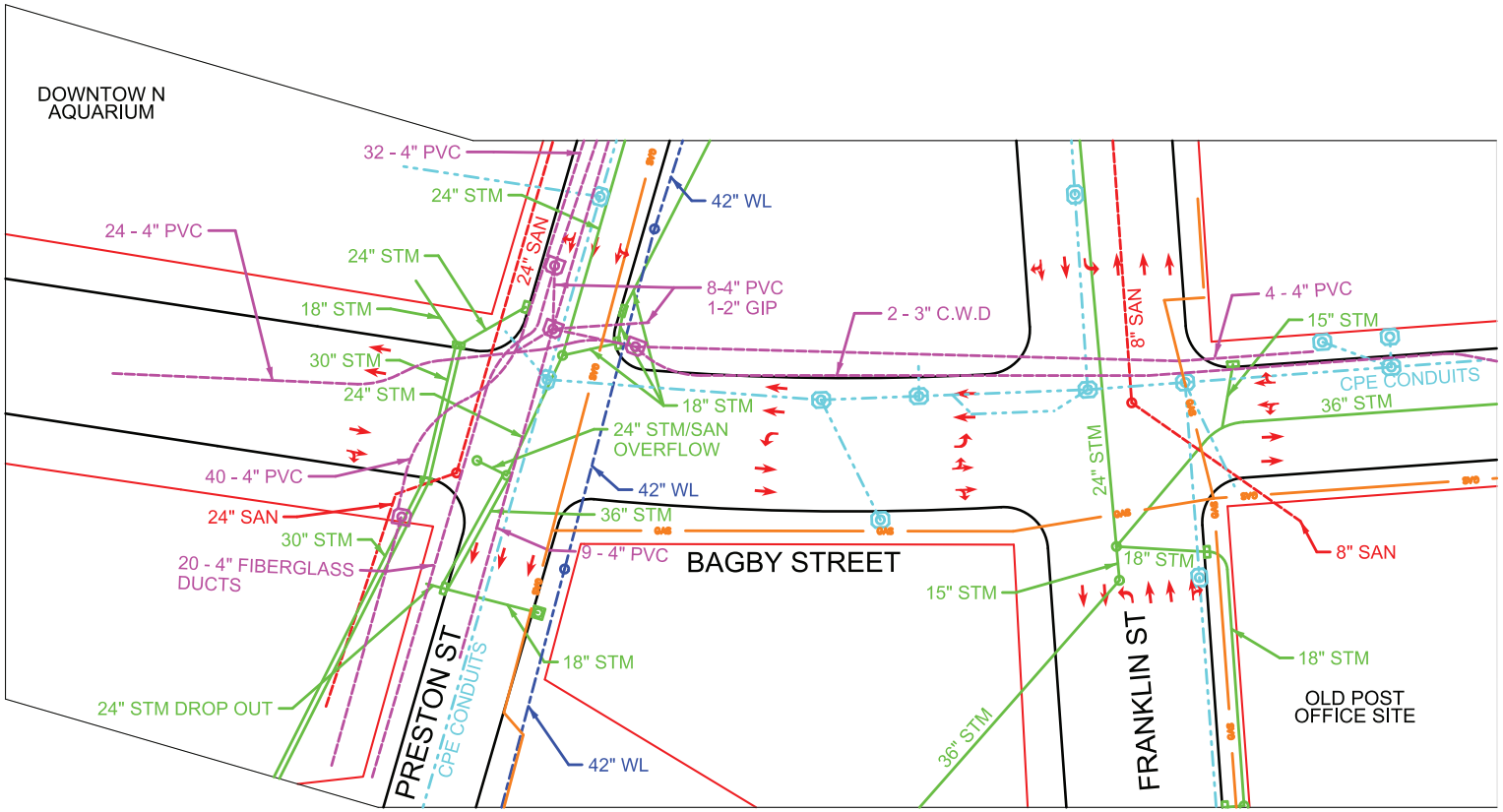

NOTE:
UTILITY LOCATIONS ARE APPROXIMATE AND NOT INTENDED FOR DESIGN. THEY WERE OBTAINED FROM RECORD DRAWINGS, CITY'S GIM MAPS, AND FIELD VISITS.

BAGBY STREET PROJECT

DOWNTOWN
REDEVELOPMENT
AUTHORITY

EXISTING UTILITIES
SHEET 6 OF 8

LEGEND

- EDGE OF PAVEMENT
- RIGHT OF WAY
- LANE ASSIGNMENTS
- WATER
- FIRE HYDRANT
- WASTE WATER
- WASTE WATER MH
- STORM SEWER
- STORM SEWER MH
- STORM SEWER INLET
- CPE GAS LINE
- CPE FACILITIES
- CPE MH
- AT&T FACILITIES
- AT&T MH

0 50 100
scale feet

DOWNTOWN
REDEVELOPMENT
AUTHORITY

TEI

Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
FIRM REGISTRATION NO. 2614
2925 Briarpark Drive, Suite 400
Houston, Texas 77042-3720
Phone: 713.266.6900

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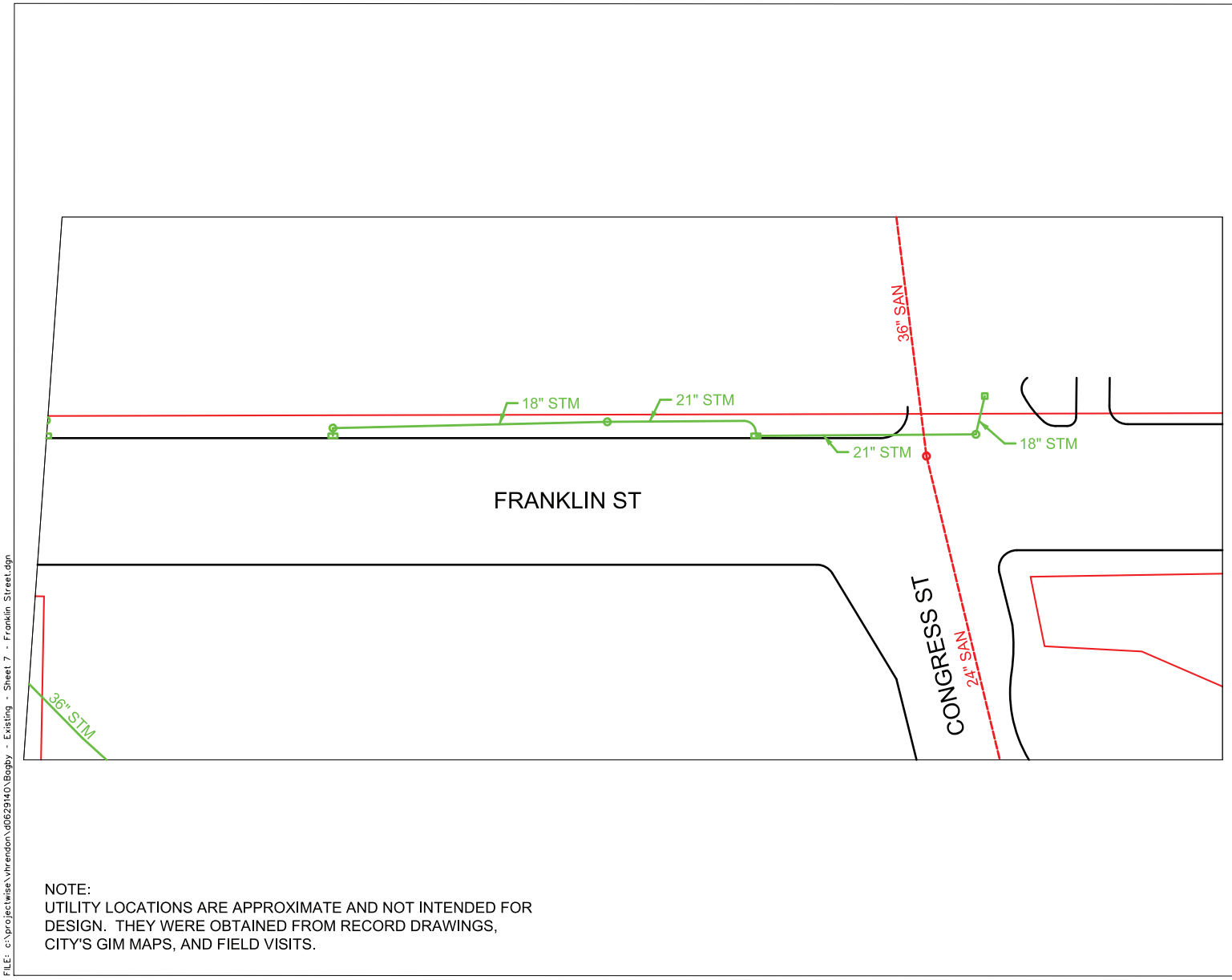

NOTE:
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BAGBY STREET PROJECT

DOWNTOWN REDEVELOPMENT AUTHORITY

EXISTING UTILITIES
SHEET 7 OF 8

LEGEND

- EDGE OF PAVEMENT
- RIGHT OF WAY
- LANE ASSIGNMENTS
- WATER
- FIRE HYDRANT
- WASTE WATER
- WASTE WATER MH
- STORM SEWER
- STORM SEWER MH
- STORM SEWER INLET
- CPE GAS LINE
- CPE FACILITIES
- CPE MH
- AT&T FACILITIES
- AT&T MH

0 50 100
scale feet

DOWNTOWN REDEVELOPMENT AUTHORITY

TEI

Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
FIRM REGISTRATION NO. 2614
2925 Briarpark Drive, Suite 400
Houston, Texas 77042-3720
Phone: 713.266.6900

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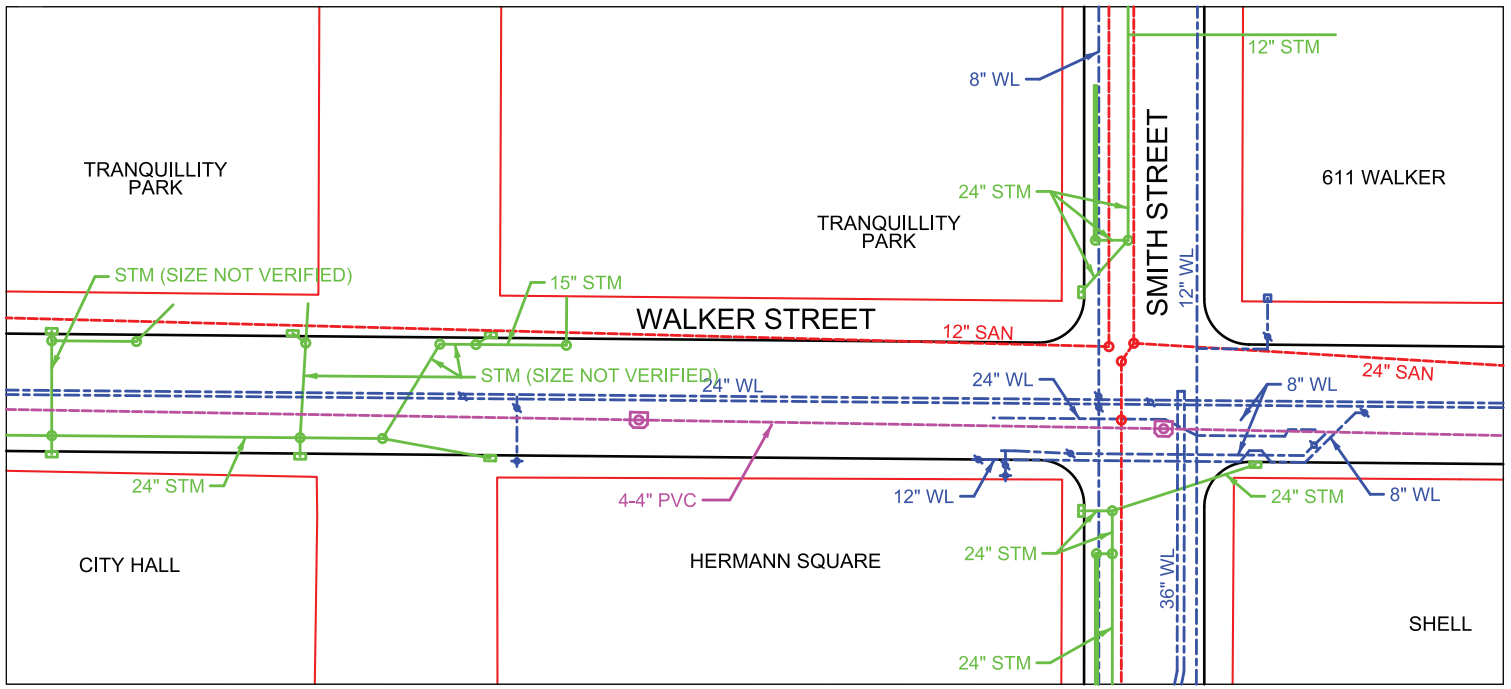

NOTE:
UTILITY LOCATIONS ARE APPROXIMATE AND NOT INTENDED FOR DESIGN. THEY WERE OBTAINED FROM RECORD DRAWINGS, CITY'S GIM MAPS, AND FIELD VISITS.

BAGBY STREET PROJECT

DOWNTOWN REDEVELOPMENT AUTHORITY

EXISTING UTILITIES
SHEET 8 OF 8

LEGEND

- EDGE OF PAVEMENT
- RIGHT OF WAY
- LANE ASSIGNMENTS
- WATER
- FIRE HYDRANT
- WASTE WATER
- WASTE WATER MH
- STORM SEWER
- STORM SEWER MH
- STORM SEWER INLET
- CPE GAS LINE
- CPE FACILITIES
- CPE MH
- AT&T FACILITIES
- AT&T MH

0 50 100
scale feet

DOWNTOWN REDEVELOPMENT AUTHORITY

Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
FIRM REGISTRATION NO. 2614
2925 Briarpark Drive, Suite 400
Houston, Texas 77042-3720
Phone: 713.266.6900

DATE: 12/18/2017 8:31:04 AM USER: $USER$ PLOTDRIVER: $PLTDRV$ PENTABLE: $PENTBL$
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APPENDIX A-3
BRIDGE ASSESSMENT REPORT

Summary

On October 5, 2017 LAN visited the Bagby Street Bridge at Buffalo Bayou and Rusk Street Bridge at Tranquillity Park. A visual observation of the bridges from the ground and on the deck was performed. Detailed structural inspections were not conducted. This Condition Assessment Report was prepared to outline the existing conditions at the sites and provide recommendations for upgrades and maintenance. Previous inspection reports are included in **Appendix A-4**. As-built drawings were evaluated as part of the assessment.

Bagby Street at Buffalo Bayou

The Bagby Street bridge was observed to be in satisfactory condition based on a visual observation. Recommendations for improvement are detailed in the Condition Assessment Report on the following pages.

Rusk Street at Tranquillity Park

The Rusk Street bridge was observed to be in satisfactory condition based on a visual observation. Recommendations for improvement are detailed in the Condition Assessment Report.

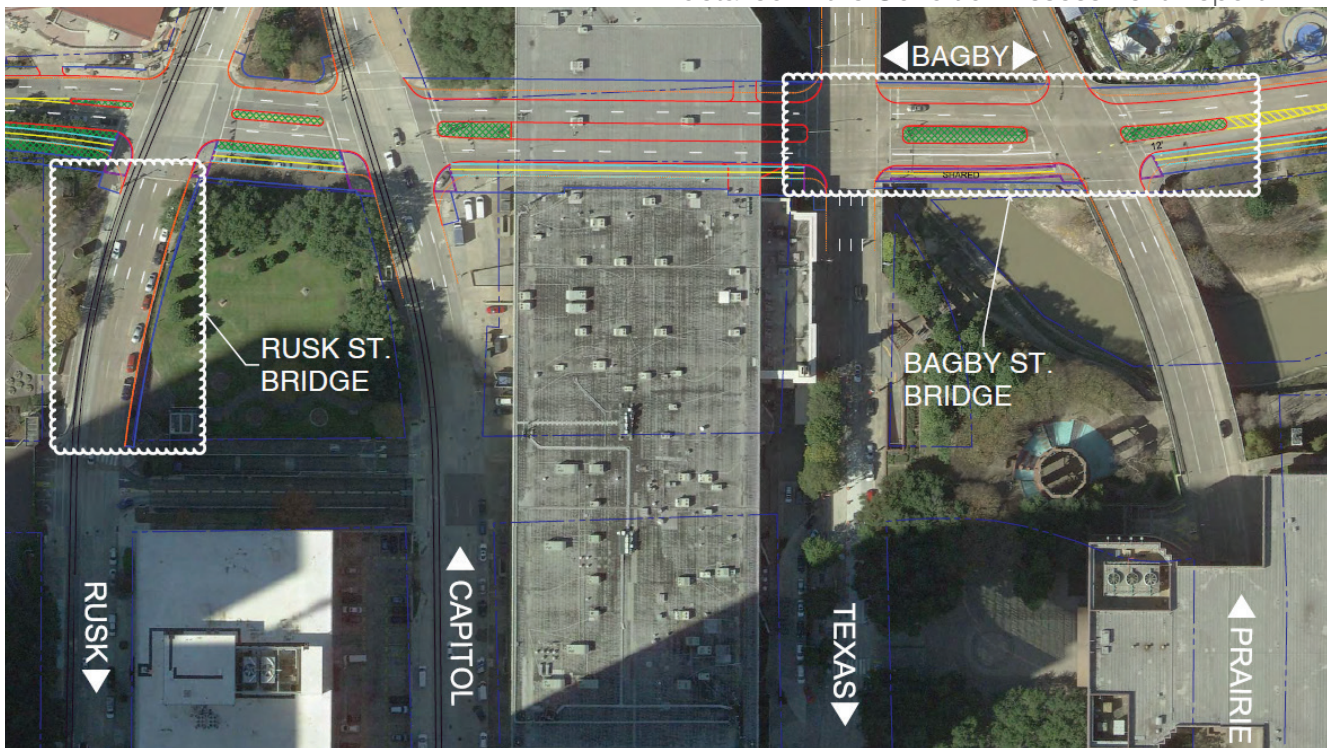


Figure A.03 Project Location Map

Condition Assessment Report

Bagby Street at Buffalo Bayou

Bagby Street at Buffalo Bayou is a multi-span, steel girder bridge with a concrete deck and substructure. The as-built drawings are dated 1967. The bridge transitions into additional bridges at each end, north of Prairie Street and south of Texas Avenue.

Figure A.04 Roadway Over Bridge Looking North

Figure A.05 Superstructure & Substructure Looking North

Figure A.06 East Sidewalk Looking South

Figure A.07 West Sidewalk Looking North

A visual observation showed the bridge was in satisfactory condition. Minor paint deterioration was present on many of the steel girders and rocker bearings (**Figure A.08**). Concrete spalls in the sidewalk are present at several rail posts (**Figure A.09**). The existing rails do not appear to be rated for impact traffic. At some point, the east sidewalk was widened to accommodate sidewalk ramps.

The concrete deck overhang is only 6-inches thick according to the record drawings. Based on current TxDOT criteria, a rail retrofit requires a 6.5 inches existing slab, which is not present. Therefore, a rail retrofit is not possible, instead replacement of the deck overhang and possibly the deck bay between the exterior beam and the first interior beam with an 8-inch slab will be required.

See inspection reports (**Appendix A-4**) for additional information.

Figure A.08 Steel Paint Deterioration

Figure A.09 Concrete Spall at Rail Post on West Sidewalk

Figure A.10 North Bridge Transition

Figure A.11 South Bridge Transition

Rusk Street at Tranquillity Park

Rusk Street at Tranquillity Park is a multi-span, concrete box and slab beam bridge with a concrete deck and substructure. The as-built drawings are dated 1973. A visual observation showed the bridge appeared to be in satisfactory condition. Minor to moderate cracks appear throughout the deck and walls.

The bridge was retrofitted for a light rail transit line (**Figure A.12**), as shown in METRO's Rusk Street at Tranquillity Park as-builts (2011).

Much of the bridge was unable to be observed because it is concealed behind walls. The purpose of the walls remains unclear, but from the as-builts the walls appear to have been built with the existing bridge. The bridge is also built on top of a parking garage, providing limited access.

Figure A.12 Roadway Looking East

Figure A.13 Roadway Looking West

Figure A.14 Elevation Looking Southeast

Figure A.15 Elevation Looking Northwest

The bridge was additionally retrofitted for a slightly wider sidewalk on the south side of the bridge (**Figure A.18**), partially overhanging the existing walls (**Figure A.19**). See as-builts for additional information.

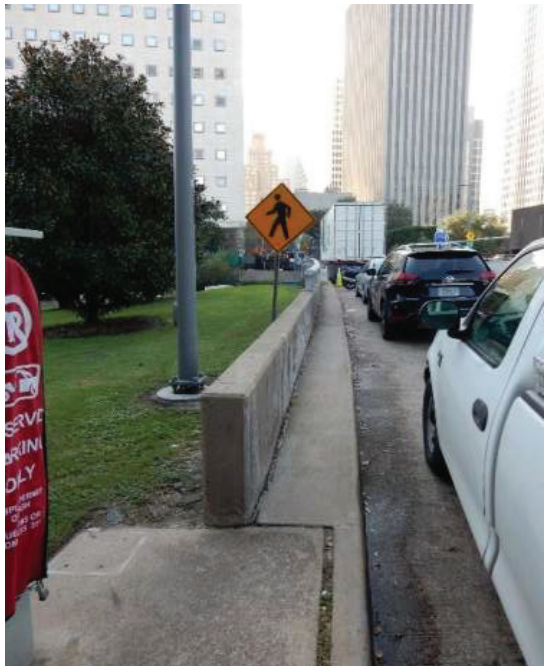


Figure A.16 North Sidewalk Looking East

Figure A.17 Moderate Cracking in Retaining Wall

Figure A.18 South Sidewalk Looking West

Figure A.19 Retrofitted South Sidewalk Overhanging Wall

Recommendations

Bagby Street at Buffalo Bayou

LAN recommends the following:

- Replacing the existing rail with a crash-tested rail per section 13.7.1.1 of the AASHTO LRFD Bridge Design Specifications (2014). This requires replacing all cantilever sidewalks with a slab at least 8-inch thick, since the existing 6-inch slab does not meet TxDOT criteria for a retrofit.
- A high-level unit cost estimate for the rail replacements is $470/LF, which includes demolition of a portion of the existing deck, the new rail, and the new deck. For the Bagby Street Bridge from south of Texas Avenue to north of Prairie Street the total improvement length is approximately 590 LF equaling an approximate cost of $280,000.
    - Includes: 110-FT on West north of Prairie Street and 110-FT on the East; 140-FT on the West between Prairie Street and Texas Avenue and 180-FT on the East; 50-FT on West south of Texas Avenue.
- Modifications made to the bridge between Texas and Prairie should also be applied to the approach bridges. At a minimum, LAN recommends repairing the concrete spalls at rail post base plates in accordance with the TxDOT Concrete Repair Manual (2017). A high-level cost estimate for this repair work is $40,000.
- Long-term maintenance needs to include the cleaning and repainting of steel girders.
- An underwater inspection is recommended to verify no significant scour has occurred at the bridge columns due to the recent Hurricane Harvey.
- With the potential of replacing signals at both intersections, a high-level cost estimate for a single replacement signalized intersection on a bridge is $600,000. Structural analysis during the design phase would be required to determine if the corbels supporting existing signals would be sufficient to support the replacement signals.
- Any structural modifications such as bridge widening, sidewalk widening, or rail retrofits will require structural analysis, including a load rating of the bridge.

Rusk Street at Tranquillity Park

The intent was to have the existing curb on the north side retrofitted into a cantilever sidewalk similar to the south side of the bridge. From LAN's limited observation of the structure, it is feasible to extend the existing slab as a cantilever sidewalk; however, due to the parking garage below, widening the substructure (bents, abutments, and columns) will most likely not be feasible. A structural analysis will be required during Final Design to evaluate the maximum deck/sidewalk cantilever tolerances; this will directly affect the maximum width of the sidewalk. Any structural modifications will require structural analysis, including a load rating of the bridge.

APPENDIX A-4

BAGBY STREET AT BUFFALO BAYOU

PREVIOUS INSPECTION REPORT

Texas Department of Transportation

Modified (12-5-2000)
for Microsoft Word 7.0, WIN95 & NT

Bridge Summary Sheet

#885

District: 12 County: 102 Cont-Sec: B050-73 Structure: 002 Route: Bagby St
Feature Crossed: Buffalo Bayou Inspector's Signature: Emily A. Schwartz, P.E. Date: 12/9/2015
Company Name: HDR Engineering, Inc. (F-754)

Selected Component Description and Rating:	Inspection Rating (1085)	Inventory Rating H	Inventory Rating HS	Operating Rating H	Operating Rating HS
Steel Stringer	7		>20		>27
We concur with previous calculations dated 2/7/12.					

Comments and/or Upgrade Recommendations (if applicable):
Repair damaged guardrail base.

STATE OF TEXAS PETER J. HARRISON 109425 LICENSED PROFESSIONAL ENGINEER

Load Posting Limits for Present Condition (if applicable):

Inventory	Operating
- lbs Gross	- lbs Gross
- lbs Tandem Axle	- lbs Tandem Axle
- lbs Axle or Tandem	- lbs Axle or Tandem
- Sign Code	- Sign Code

OTHER (1) | R12-2Tb (2) | R12-2Tc (3) | R12-4Tb (4) | R12-4Tc (5) | W12-5 (6)

Posting Recommendation: None - Load posting is not required.

Previous Load Posting Recommendations:

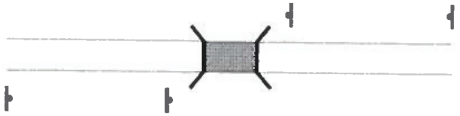
R12-2Tb	X	None
R12-2Tc		lbs Gross
R12-4Tb		lbs Tandem Axle
R12-4Tc		lbs Axle or Tandem

Observed Load Posting at Bridge:

R12-2Tb	X	None
R12-2Tc		lbs Gross
R12-4Tb		lbs Tandem Axle
R12-4Tc		lbs Axle or Tandem
Other (desc.):		

Material Needed
- R12-2Tb
- R12-2Tc
- R12-4Tb
- R12-4Tc
- W12-5
- Posts
- Hardware Sets
- Decals

COMPASS



	Advanced Warning (optional)	Bridge Approach	Bridge Approach	Advanced Warning (optional)
Sign Code				
Condition Code				
Maintenance Need				

Visible & Legible
Obscured by Vegetation
C. Sign Needs Cleaning
D. Improper Position
E. Damaged Beyond Repair
F. Sign Down
G. Sign Missing
H. Sign & Post Missing
J. Clear Vegetation
K. Clean Sign
L. Reposition Sign
M. Reposition Sign & Post
N. None
P. Replace Sign
S. Replace Sign & Post

Texas Department of Transportation
Form 1085-R

Bridge Inspection Record

District: 12 County: 102 Cont-Sec: B050-73 Structure: 002 Route: BAGBY ST Maint Sect:
Description: 2 simple span steel stringer bridge; 26° RFS
Feature Crossed: BUFFALO BAYOU Inspector's Signature: Date: 12/9/2015
Company Name: HDR Engineering, Inc. [754] Inspector: Emily Schwartz

Rating	Description
-	Not Applicable
9	Excellent condition
8	Very good condition
7	Good condition - some minor problems
6	Satisfactory condition - minor deterioration of structural elements (limited)
5	Fair condition - minor deterioration of structural elements (extensive)
4	Poor condition - deterioration significantly affects structural capacity
3	Serious condition - deterioration seriously affects structural capacity
2	Critical condition - bridge should be closed until repaired
1	Failing condition - bridge closed but repairable
0	Failed condition - bridge closed but beyond repair

STATE OF TEXAS PETER J. HARRISON 109425 LICENSED PROFESSIONAL ENGINEER

Deck (Item 58)

Min.			Rating
1	Deck - Rating	(1)	6
6	Wearing - Surface		-
6	Joints, Expansion, Open		8
6	Joints, Expansion, Sealed		-
6	Joints, Other		8
6	Drainage System	(2)	7
6	Curbs, Sidewalks & Parapets	(3)	7
6	Median Barrier		8
6	Railings	(4)	7
7	Railing Protective Coating	(5)	7
7	Delineation (curve markers)		-
	Other		-

Comments:
(1) Top of deck has widespread minor transverse cracks, scaling, and isolated spalls. Underside of deck overhangs have minor transverse cracks with efflorescence.
(2) Drain holes are partly blocked by dirt and debris.
(3) Sidewalks have minor cracks and scaling.
(4) The northwest rail has minor impact damage at the ends with minor spalling with exposed rebar at base of several rail posts (see View 7).
(5) Steel rails have isolated paint failures with minor rust.

Superstructure (Item 59)

Min.			Rating
0	Main Members - Steel	(1)	7
0	Main Members - Concrete		-
0	Main Members - Timber		-
0	Main Members - Connections		-
1	Floor System Members		-
1	Floor System Connections		-
5	Secondary Members	(2)	7
5	Secondary Member Connections		8
6	Expansion Bearings	(3)	7
6	Fixed Bearings	(4)	7
6	Steel Protective Coating	(5)	6
	Other		-
	Component rating		6

Comments:
(1) Steel members have minor paint failures with minor rust.
(2) See comment 1.
(3) See comment 1.
(4) See comment 1.
(5) See comment 1.

DO NOT DISCLOSE - INFORMATION CONFIDENTIAL UNDER THE TEXAS HOMELAND SECURITY ACT AND 23 USC SECTION 409, SAFETY SENSITIVE INFORMATION

District: 12 County: 102 Cont-Sec: B050-73 Structure: 002 Route: BAGBY ST Maint Sect:

Substructure (Item 60)

Min.			Rating
0	Abutment Caps		-
0	Above Ground		-
0	Below Ground or Foundation		-
0	Backwalls & Wingwalls		-
0	Intermediate Supports		
	Caps - Concrete	(1)	7
	Caps - Steel		-
	Caps - Timber		-
	Above Ground - Concrete	(2)	7
	Above Ground - Steel		-
	Above Ground - Timber		-
	Above Ground - Masonry		-
	Below Ground or Foundation		8
5	Collision Protection System		-
6	Steel Protective Coating		-
	Component rating		7

Comments:
(1) Concrete caps have minor vertical cracks.
(2) Columns have minor scaling and spalls.

Channel (Item 61)

Min.		Rating
0	Channel Banks	8
0	Channel Bed	8
5	Rip Rap, Toe Walls & Apron	8
5	Dikes	-
5	Jetties	-
	Other	-
	Component rating	8

Culverts (Item 62)

Min.		Rating
0	Top Slabs	-
0	Bottom Slab or Footing	-
0	Abutments & Intermediate Supports	-
5	Headwalls & Wingwalls	-
	Other	-
	Component rating	N

District: 12 County: 102 Cont-Sec: B050-73 Structure: 002 Route: BAGBY ST Maint Sect:

Approaches (Item 65)

Min.		Rating
0	Embankments	-
4	Embankment Retaining Walls	-
5	Slope Protection	-
5	Roadway	-
6	Relief Joints	-
6	Drainage	8
6	Guardfence	-
7	Delineation	-
7	Sight Distance	8
	Other	-
	Component rating	8

Miscellaneous

Min.		Rating
7	Signs	-
7	Illumination	8
7	Warning Devices	-
7	Utility Lines	8
	Other	-

Traffic Safety (Item 36)

	Rating	Comments:
Traffic Safety Bridge Railings (036.1)	0	Non-standard steel railing
Traffic Safety Transitions (036.2)	0	
Traffic Safety Approach Guardrail (036.3)	0	No guardrail
Traffic Safety Approach Guardrail Ends (036.4)	0	

Appraisal Ratings

	Rating	Comments:
Waterway Adequacy (071)	6	Bridge deck overflooding every 11 to 100 years.
Approach Roadway Alignment (072)	8	

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AND 23 USC SECTION 409, SAFETY SENSITIVE INFORMATION

Texas Department of Transportation

Modified 12-5-2000)
for Microsoft Word 7.0, WIN95 & NT

Bridge Inventory Record

District: 12 County: 102 Cont-Sec: B050-73 Structure: 002 Route: Bagby St
Feature Crossed: Buffalo Bayou Inspector's Signature: L. E. Howell, Jr., P.E. Date: 1/8/2012
Company Name: XR Structural (F-758)
Location: At Memorial Dr & Bagby St Maintenance Section: City of Houston #885
Latitude: N 29° 45' 46.99" Longitude: W 95° 22' 2.92" Milepoint: 0.350
General Description:
2 simple span steel stringer bridge on concrete supports. Non-standard steel rail. No guardfence. Bridge is on a low-speed, paved road with very high ADT (~ 30,000 vpd).

Bridge Length: 158 ft. Deck Width: 89.5 ft. Lanes On: 6 Lanes Under: 0
Skew Angle: 26 Deg. ☐ Lf. Fwd. ☒ Rt. Fwd. Bridge Rail: Obsolete steel pedestrian rail
Clear Width Between: 2@33 ft. ☒ Curbs, ☐ Rails, ☐ Pvmt Edges Approach Rdway Wid: 66 ft.
Deck Type: Concrete
Surfacing: No separately applied wearing surface Vertical Over-Clearance: ____ ft. ☒ Unimpaired
Stringers: Spans: 1 and 2
Type: Steel Size: See Plans Number: 11
Spacing: 8'-0" Controlling Span Length (C-C bearings): 68-74 ft.
Stringers: Spans: ____
Type: ____ Size: ____ Number: ____
Spacing: ____ Controlling Span Length (C-C bearings): ____ ft.
Stringers: Spans: ____
Type: ____ Size: ____ Number: ____
Spacing: ____ Controlling Span Length (C-C bearings): ____ ft.

Est Deck Overtopping Freq:	☐ >100	☒ 11 - 100	☐ 3 - 10	☐ <3
Est Approach Overtop. Freq:	☐ >100	☒ 11 - 100	☐ 3 - 10	☐ <3

Horizontal / Vertical Alignment: Good / Good
Date Built / Design Load: 1959 / H20
Regulatory / Advisory Speeds: 30 mph / 30 mph
Posted Load Restriction: ____ ☒ None
Comments:

STATE OF TEXAS
L. E. HOWELL, JR.
58362
REGISTERED
REGIONAL ENGINEER

L E Howell 1/26/2012
Signature Date

Texas Department of Transportation

Modified (12-7-2000)
for Microsoft Word 7.0, WIN95 & NT

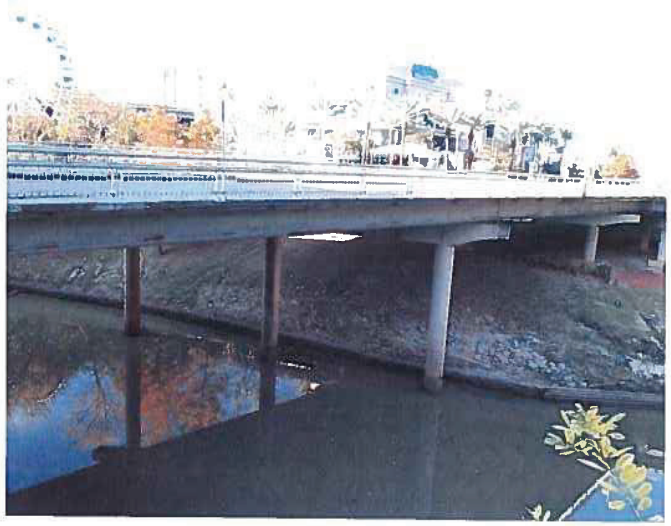
Revision to Bridge Inventory Record

District: 12 County: 102 Cont-Sec: B050-73 Structure: 002 Route: Bagby St
Feature Crossed: Buffalo Bayou Original Bridge Inventory Record Date: 1/8/2012

Company Name:	NOTES OF CHANGES:
Pickett, Kelm & Associates, Inc. (F-1491) Signature Date: 1/14/2014	No Revisions
Company Name: HDR Engineering, Inc. (F-754) Signature Date: 12/9/2015	NO REVISIONS
Company Name: Signature Date:	NOTES OF CHANGES:
Company Name: Signature Date:	NOTES OF CHANGES:
Company Name: Signature Date:	NOTES OF CHANGES:

Roadway Over Bridge

View 1
Looking
Northwest



Elevation

View 2
Looking
West

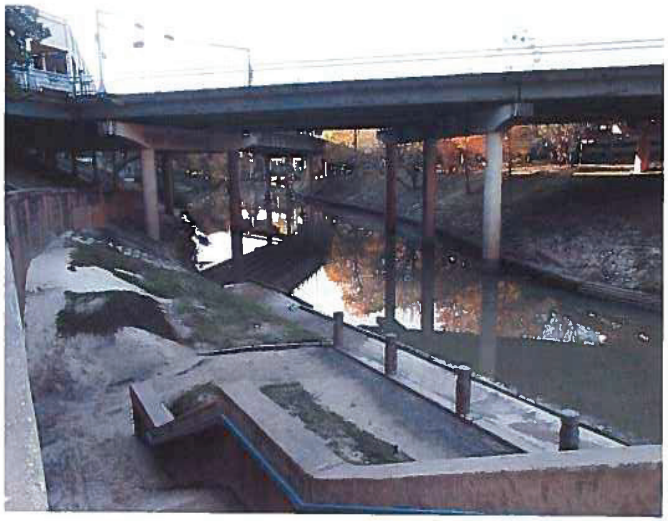
STRUCTURE NO.: 12-102-B050-73-002
HOUSTON DISTRICT - HARRIS COUNTY (102)

BAGBY ST OVER BUFFALO BAYOU
INSPECTION DATE 12/9/2015

PREPARED BY HDR ENGINEERING, INC. FOR THE TEXAS DEPARTMENT OF TRANSPORTATION

Superstructure

View 3
Looking
Northeast



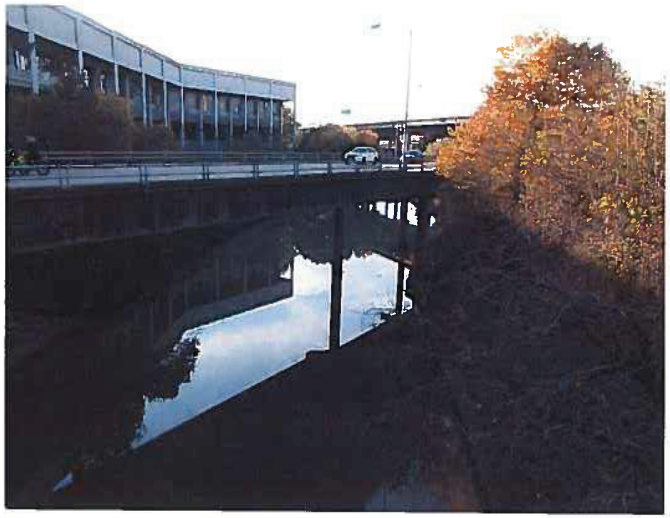
Stream Under Bridge

View 4
Looking
Upstream

STRUCTURE NO.: 12-102-B050-73-002
HOUSTON DISTRICT - HARRIS COUNTY (102)

BAGBY ST OVER BUFFALO BAYOU
INSPECTION DATE 12/9/2015

PREPARED BY HDR ENGINEERING, INC. FOR THE TEXAS DEPARTMENT OF TRANSPORTATION



Upstream View From Bridge

View 5
Looking
West

Downstream View From Bridge

View 6
Looking
East

STRUCTURE NO.: 12-102-B050-73-002
HOUSTON DISTRICT - HARRIS COUNTY (102)

BAGBY ST OVER BUFFALO BAYOU
INSPECTION DATE 12/9/2015

PREPARED BY HDR ENGINEERING, INC. FOR THE TEXAS DEPARTMENT OF TRANSPORTATION

Northwest rail has minor impact damage at northeast end with minor spalling at base of a few rail posts

View 7
Looking
West

STRUCTURE NO.: 12-102-B050-73-002
HOUSTON DISTRICT - HARRIS COUNTY (102)

BAGBY ST OVER BUFFALO BAYOU
INSPECTION DATE 12/9/2015

PREPARED BY HDR ENGINEERING, INC. FOR THE TEXAS DEPARTMENT OF TRANSPORTATION

STRUCTURE NUMBER: 12-102-0-B050-73-002 0010 RT 1 0
BRIDGE STATUS: Active
INSPECTION STATUS: Approved
(006-1) FEATURE: BUFFALO BAYOU

Texas Department of Transportation
Bridge Division
PonTex Detail Bridge Report

Run Date: 1/11/2016
As of Date: 12/1/2015

(007-0) FACILITY: BAGBY ST
(009-0) LOCATION: AT MEMORIAL DRIVE

ITEM #	DESCRIPTION	VALUE
(005-1)	STRUCTURE FUNCTION	1
(004-0)	CITY CODE	19750
(005-2)	HWY. SYS	31
(005-3)	RT. DESIGN	1
(005-4)	HWY NO	0000
(005-5)	ROUTE DIR	0
(005-6)	ROUTE SUFFIX	
(006-2)	CRIT. BRDG	
(010-0)	RT.MIN VERT CLR	99FT 99IN
(011-0)	MI-POINT	00.350
(011-1)	MIPT DATE (PRI)	198807
(011-2)	REF-MKR and DISP	
(011-A1)	MIPT DATE (IR)	
(012-0)	BASE HWY NETWORK	
(013-1)	LRS INVENTORY	
(013-2)	LRS SUB RT.	
(016-0)	LATITUDE (D / M / S)	29° 45' 46.99"
(016-1)	GPS LAT (DEG.)	29.76305204
(017-0)	LONGITUDE (D / M / S)	95° 22' 02.92"
(017-1)	GPS LONG (DEG.)	95.3674765
(017-2)	COLLECTION METHOD	3
(019-0)	BYPASS LENGTH	1
(020-0)	TOLL	3
(021-0)	MAINT. RESPON	04
(022-0)	OWNER	04
(022-1)	MAINT.SECT NO	
(023-1)	PROJECT TYPE	9
(023-2)	CONT / SECT / JOB	8055-12-000
(026-0)	FUNCT.CLASS	43
(027-0)	YR ORGIN BUILT	1959
(028-1)	LANES ON STR	06
(028-2)	LANES UNDER STR	00
(029-0)	AADT	34842 ~~32940~~
(030-0)	YR OF AADT	2015 ~~2008~~
(031-0)	DESIGN LOAD	4
(032-0)	APPROACH WIDTH	66
(033-0)	MEDIAN	2
(034-0)	SKEW	26
(035-0)	STR.FLARED	0
(036-0)	TRAF.SAFETY FEAT	0000
(037-0)	HISTORICAL SIGNIF	3
(038-0)	NAVIG CNTL	0
(039-0)	NAVIG VERT CLR	0
(040-0)	NAVIG HORIZ CLR	0
(041-0)	OPER.STATUS	A
(041-1)	LOAD TYPE	N
(041-2)	LOAD IN 1000 LBS	NNN
(042-0)	TYPE SERVICE	15
(043-1)	MAIN SPAN TYPE	1111
(043-2)	MAJ.APP SPAN TYPE	
(043-3)	MIN.APP SPAN TYPE	
(043-4)	CULVERT TYPE	
(043-5)	TUNNEL TYPE	
(044-1)	SUBSTR MAIN SPAN	361
(044-2)	SUBSTR MAJ APP SPAN	
(044-3)	SUBSTR MIN APP SPAN	
(045-1)	NO.MAIN SPAN	2
(045-2)	NO.MAJ APPR SPAN	

ITEM #	DESCRIPTION	VALUE
(045-3)	NO.MIN APPR SPAN	
(046-0)	TOTAL NUMBER SPANS	2
(047-0)	TOTAL HORIZ CLR	033.0
(048-0)	MAX.SPAN LENGTH	82
(049-0)	STR.LENGTH	158
(050-1)	LEFT SIDEWALK	05.0
(050-2)	RIGHT SIDEWALK	08.5
(051-0)	ROADWAY WIDTH	066.0
(052-0)	DECK WIDTH	089.5
(053-0)	VERT.CLR OV	99FT 99IN
(054-1)	VERT.CLR REF FEAT	N
(054-2)	VERT.CLR UND	0 FT IN
(055-1)	LAT.CLR REF FEAT	N
(055-2)	RIGHT LAT CLEAR	99.9
(056-0)	LEFT LAT CLEAR	00.0
(058-0)	DECK COND	6
(059-0)	SUPERSTR COND	6
(060-0)	SUBSTR COND	7
(061-0)	CHANN-PROTECT	8
(062-0)	CULVERT	N
(063-0)	METHOD OPR.RATING	1
(064-0)	OPERATIONAL RATING	249
(065-0)	RDWY APPR COND	8
(065-1)	METHOD INV.RATING	1
(066-0)	INVENTORY RATING	236
(067-0)	STR.EVALUATION	6
(068-0)	DECK GEOMETRY	2
(069-0)	UND.CLR VERT / HORIZ	N
(070-0)	BRIDGE POSTING	5
(071-0)	WATERWAY ADEQUACY	6
(072-0)	APPR RDWY ALIGN	8
(075-0)	TYPE WORK-REPLACE	381
(076-0)	LENGTH IMPROVEMENT	158
(088-0)	ST-FRAC-CRIT/STEEL	NNN2
(090-0)	LAST INSP(MMDDYYYY)	12/9/2015 ~~1/14/2014~~
(091-0)	DESIGNAT INSP FREQ	24
(092-1)	FRACT/CRITI DETAIL	N
(092-2)	UNDERWATER INSP	N
(092-3)	OTHER SPECIAL INSP	N
(092-1-2)	FRACT/CRIT FREQUENCY	
(092-2-2)	UNDERWATER FREQUENCY	
(092-3-2)	OTHER SPECIAL FREQUENCY	
(093-1)	FRACT/CRITI (MMYYYY)	
(093-2)	UN/WATER INSP (MMYYYY)	
(093-3)	OT/SPEC.INSP (MMYYYY)	
(094-0)	BDG IMPROVE COST	000021
(095-0)	RDWY IMPROVE COST	000005
(096-0)	TOTAL PROJECT COST	C 000026
(097-0)	YR IMPROVE COST EST	2010
(098-0)	BORDER BRIDGE	
(099-0)	BORDER STR NO	
(100-0)	DEFENSE HWY DESIGN	0
(101-0)	PARALLEL STR DESIGN	N
(102-0)	DIR OF TRAFFIC	2
(103-0)	TEMP STR DESIGN	
(104-0)	N H S	0
(105-0)	FED LANDS HWY	0
(106-0)	YR RECONST	0

ITEM #	DESCRIPTION	VALUE
(106-1)	WIDENING CODE	0
(107-1)	DECK STR TYPE MAIN SPAN	1
(108-1)	MAIN SPAN WEAR SF	188
(107-2)	STR.TYP MAJ APP SP	N
(108-2)	MAJ.APP SPN WEAR SF	NNN
(107-3)	STR.TYP MIN APP SP	N
(108-3)	MIN.APP SPN WEAR SF	NNN
(109-0)	AADT TRK PRECENT	0
(110-0)	DESIGN NATION NETWORK	0
(111-0)	PIER/ABUT PROTECT	
(112-0)	NBIS BRIDGE LENGTH	Y
(113-0)	SCOUR CRITI BRDG	5
(113-1)	SCOUR VULNERABILITY	A
(114-0)	FUTURE AADT	44084 ~~38670~~
(115-0)	FUTURE AADT YEAR	2035 ~~2028~~
(116-0)	MIN.NAVIG VERT CLR	
(119-0)	COST ORIGN CONSTR	
(120-0)	DEFI / OBSO / 10YR RULE	O
(121-0)	SUFF.RATING	074.0
(122-0)	X-REF. PRIMARY RT ID	
(123-0)	X-REF STR FUNC PRIMARY RT	
(124-0)	X-REF IR ID	
(125-0)	X-REF STR FUNC IR	
(126-0)	DIST USE	669 493L 018
(128-0)	OV HEIGHT DAMAGE	N
(008-4A)	IR.CONTROL	
(008-5A)	IR.SECTION	
(011-0A)	IR.MILEPOINT	
(008-6A)	IR.STR NO	
(008-3A)	IR.DUPL OVER	0
(005-1A)	IR.FUNCTION	
(005-3A)	IR.DESIGNAT	
(005-2A)	IR.HWY SYS	
(005-4A)	IR.HWY NO	
(005-5A)	IR.DIR	
(005-6A)	IR. ROUTE SUFFIX	
(011-2A)	IR.REF-MKR / DISP	
(047-0A)	IR.HORIZ CLR	
(010-0A)	IR.RT.MIN VERT CLR	FT IN
(012-0A)	IR.BASE HWY NETWK	
(013-1A)	IR.LRS HWY	
(013-2A)	IR.LRS SUB RT	
(019-0A)	IR.BYPASS LGTH	
(020-0A)	IR.TOLL	
(026-0A)	IR.FUNCT CLASS	
(029-0A)	IR.AADT	
(030-0A)	IR.YEAR OF ADT	
(100-0A)	IR.DEF HWY DESIGN	
(101-0A)	IR.PAR STR DESIG	
(102-0A)	IR.DIR OF TRAF	
(103-0A)	IR.TEMP STR DESIGN	
(104-0A)	IR.N H S	
(109-0A)	IR.AADT TRK PCT	
(110-0A)	IR.DESIG NAT NETWK	
(114-0A)	IR.FUTURE AADT	
(115-0A)	IR.YEAR OF AADT	

APPENDIX B

Traffic Operations Analysis

This report analyzes existing and future traffic operations for the Bagby Street Corridor between Franklin Street and IH-45 Southbound Frontage Road/Heiner Street. The analysis also includes the intersection of Franklin Street and Congress Street and has been completed for a number of design alternatives and design years.

Introduction

Bagby Street is primarily a 4-lane to 6-lane, two-way roadway. The ROW varies from 80 foot to 100 foot. Bagby Street is a curb and gutter, undivided roadway. The prima facie speed limit is 30 miles per hour.

Purpose and Scope

The purpose of this study is to assess traffic operations at signalized intersections along the Bagby Street corridor under existing conditions and examine alternatives for accommodating projected future traffic volumes.

The following tasks were conducted as part of the analysis:

- Collect turning movement counts during weekday morning and evening peak hours at signalized intersections.
- Collect available traffic signal timing data from the City of Houston.

- Develop future growth rate for the study area.
- Develop trip distribution after completion of the North Houston Highway Improvement Project (NHHIP).
- Analyze traffic operations under existing roadway geometry, traffic volume, and signal control conditions.
- Analyze traffic operations for future projected traffic volumes and various roadway geometry alternatives.

Study Area

Intersection capacity analyses were conducted at the following locations:

- Franklin Street at Congress Street
- Bagby Street at Franklin Street
- Bagby Street at Preston Street
- Bagby Street at Prairie Street/Memorial Drive
- Bagby Street at Texas Avenue/Memorial Drive
- Bagby Street at Capitol Street (Light rail interface)
- Bagby Street at Rusk Street (Light rail interface)
- Bagby Street at Walker Street
- Bagby Street at McKinney Street
- Bagby Street at Lamar Street (Cycle track interface)
- West Dallas Street at Bagby Street/Allen Parkway
- West Dallas Street at Clay Street
- West Dallas Street at IH-45 NB Frontage Road
- West Dallas Street at IH-45 SB Frontage Road/Heiner Street

The study area contains amenities for other modes of transportation. The Lamar Cycle Track is located along Lamar Street and connects Discovery Green to Sam Houston Park and Buffalo Bayou. The cycle track is located on the south side of Lamar Street to the east of Bagby Street and then changes to the north side of Allen Parkway to west of Bagby Street. Additionally, the METRORail Green Line and METRORail Purple Line travel westbound along Capitol Street and eastbound on Rusk Street.

Traffic Data

Existing Vehicle Traffic (2020)

Turning Movement Counts (TMCs) were collected at all signalized intersections within the study corridor. Counts were collected for the morning and evening peak periods on January 9, 2018. TMCs help provide an understanding of vehicle traffic patterns, intersection capacity constraints, and peak hours of traffic volume. The AM peak hour for each intersection is based on the appropriate peak hour between 7:00AM and 9:00AM. The PM peak hour for each intersection is based on the appropriate peak hour between 4:00PM and 6:00PM. A summary of TMCs in the recommend design geometry is presented in **Appendix B-1.**

Projected Future Vehicle Traffic (2040)

Projections for 2040 intersection turning movements were developed by scaling the observed 2018 turning movement counts by the calculated compound annual growth rate (CAGR). The CAGR was calculated for a 0.5% growth for 22 years which resulted in a total growth of 11.6%. **Appendix B-2** shows the 2040 traffic projections due to growth in the recommended design geometry.

The future traffic projections for Bagby Street will be impacted by the NHHIP. The NHHIP is summarized in the **Bagby Street Overview Chapter** and **Figure 1.13**. A future distribution was developed for each alternative based on assumed future conditions. These included:

- The Downtown section of NHHIP proposes reconstructing and relocating IH-45 to the north and east side of Downtown to follow the alignment of IH-10 and IH-69. Moving IH-45 will allow the Pierce Elevated section of IH-45 in Midtown to be decommissioned, therefore converting the section west of Downtown into a spur called the Downtown Connector. With the new highway serving as a spur, it is expected to carry fewer vehicles per day, which is anticipated to mitigate the existing queues witnessed at the on-ramp to IH-45 from Walker Street.
- Walker Street and McKinney Street currently serve as the ingress and egress point for IH-45 and Allen Parkway. In the future, both streets are proposed to connect directly to Houston Avenue in addition to

being access points to the future Downtown Connector.

- Houston Avenue will no longer provide a direct connection to IH-45 Southbound. This will redistribute traffic from these trip alternate routes including IH-69 Southbound, Jefferson Street in south Downtown, or to the Downtown Connector.
- Heiner Street will extend to north of West Dallas Street and become a new two-way frontage road that continues along the west side of the Downtown Connector and connects to a new intersection with Houston Avenue.
- IH-10 HOV ramp will be moved from west of Franklin Street at Bagby Street to Smith Street/Louisiana Street at Franklin Street to align with the existing IH-10 Westbound main lanes. The existing IH-45 HOV ramps at Smith Street/Louisiana Street will be moved to Milam Street/ Travis Street to align with the existing IH-45 Northbound main lanes.

Appendix B-3 shows the 2040 traffic projections due to traffic growth and the trip distribution projected to result from the NHHIP for the recommended design.

Traffic Analyses

Capacity Analysis Methodology

Signalized intersections were analyzed according to the ***Transportation Research Board 6th Edition Highway Capacity Manual*** (HCM 6th Edition) methodology. The analyses were conducted using PTV VISTRO traffic analysis software.

The outputs reported for each intersection approach are Delay and Level of Service (LOS). Delay represents the average signal delay in seconds experienced by a vehicle on the approach. Level of Service translates the delay into a qualitative rating on an A through F scale. LOS A represents free flow conditions and LOS F represents highly congested conditions associated with high vehicular delay.

Outputs reported for each intersection as a whole are Delay, Level of Service, and Volume to Capacity. Delay is taken as the average of all vehicles approaching the intersection and forms the basis for overall LOS. In general, LOS D or better for a signalized intersection in an urban area is considered an acceptable level of delay. Volume to Capacity (V/C) is the ratio of the analysis volume to the theoretical capacity of the intersection. A value greater than 1 indicates the intersection is over capacity.

All these outputs are influenced by the timing of the signal. For the existing conditions analysis, the existing signal timings are used. In all future scenarios, the existing standard cycle length is maintained but the timing split is optimized for the volume of traffic analyzed.

It should be noted that vehicle LOS is not the only factor to be optimized depending on the demands placed on the intersection. Lower vehicle traffic LOS may be justified when a priority is to provide improved service for transit vehicle, bicycle, and/or pedestrian traffic.

Capacity Analysis Results

Capacity and Level of Service analyses for signalized intersections were conducted for three scenarios, existing volumes, future growth for 2040, and future growth with NHHIP distribution. All three scenarios were applied to the existing geometry and each of the four alternatives (summarized in **Corridor Recommendations Chapter** and shown in-depth in **Appendix D**). Results of these analyses are summarized in **Table B.1** through **Table B.10.**

The four developed alternatives were presented to the Stakeholder Advisory Committee to discuss the opportunities and limitations of each alternative. The most popular alternative was Alternative 2. The Recommended Conceptual Design builds on Alternative 2 and includes desired adjustments and enhancements recommended by stakeholders; however, the intersection geometry for the recommend design matches Alternative 2. The full analysis summary sheets for the recommended design are included **Appendix B-1**, **Appendix B-2**, and, **Appendix B-3**.

AM PEAK HOUR	2020			2040 Growth			2040 NHHIP		
Intersection	**LOS**	**VC**	**Delay**	**LOS**	**VC**	**Delay**	**LOS**	**VC**	**Delay**
Franklin Street at Congress Street	C	0.234	21.84	C	0.261	22.55	C	0.327	21.21
Bagby Street at Franklin Street	B	0.17	17.32	B	0.19	15.4	B	0.263	15.91
Bagby Street at Preston Street	C	0.254	21.57	B	0.284	16.9	B	0.163	18.06
Bagby Street at Prairie Street/Memorial Drive	B	0.231	14	B	0.256	12.76	B	0.256	12.96
Bagby Street at Texas Ave/Memorial Drive	C	0.438	21.33	B	0.497	13.15	B	0.494	13.02
Bagby Street at Capitol Street	B	0.303	14.67	B	0.339	10.66	A	0.293	8.92
Bagby Street at Rusk Street	B	0.479	16.51	B	0.531	17.09	B	0.475	16.12
Bagby Street at Walker Street	C	0.378	31.61	C	0.424	25.23	C	0.439	23.2
Bagby Street at McKinney Street	C	0.474	20.84	C	0.51	21.52	C	0.599	22.5
Bagby Street at Lamar Street	B	0.235	13.67	A	0.262	8.83	A	0.263	8.56
West Dallas Street at Bagby Street/Allen Parkway	B	0.397	16.27	B	0.44	15.61	B	0.44	15.46
West Dallas Street at Clay Street	C	0.558	31.64	C	0.631	28.67	C	0.603	27.56
West Dallas Street at IH-45 Frontage NB	B	0.409	14.75	B	0.458	14.72	B	0.444	14.74
West Dallas Street at IH-45 Frontage SB/Heiner Street	C	0.38	23.14	C	0.421	22.28	C	0.409	21.9

Table B.1 Intersection Capacity Analyses Table for Existing Configuration in the AM Peak Hour

PM PEAK HOUR	2020			2040 Growth			2040 NHHIP		
Intersection	**LOS**	**VC**	**Delay**	**LOS**	**VC**	**Delay**	**LOS**	**VC**	**Delay**
Franklin Street at Congress Street	C	0.247	24.61	C	0.278	22.63	C	0.272	20.12
Bagby Street at Franklin Street	C	0.296	23.54	C	0.33	23.92	C	0.331	20.82
Bagby Street at Preston Street	C	0.261	24.62	B	0.292	15.77	B	0.189	15.18
Bagby Street at Prairie Street/Memorial Drive	B	0.481	12.76	B	0.59	14.04	B	0.59	14.24
Bagby Street at Texas Ave/Memorial Drive	B	0.349	14.7	B	0.39	15.2	B	0.367	15.09
Bagby Street at Capitol Street	B	0.398	11.04	B	0.445	11.8	B	0.404	13.44
Bagby Street at Rusk Street	B	0.261	12.79	B	0.291	10.44	B	0.21	10.96
Bagby Street at Walker Street	F	0.582	108.94	D	0.65	38.41	C	0.656	29.56
Bagby Street at McKinney Street	B	0.308	16.55	B	0.344	15.57	B	0.291	17.2
Bagby Street at Lamar Street	B	0.477	14	B	0.535	12.69	B	0.524	11.54
West Dallas Street at Bagby Street/Allen Parkway	D	0.393	38.62	B	0.41	13.57	B	0.319	13.66
West Dallas Street at Clay Street	D	0.611	38.4	D	0.683	39.57	C	0.62	30.63
West Dallas Street at IH-45 Frontage NB	B	0.267	13.76	B	0.299	13.81	B	0.449	15.32
West Dallas Street at IH-45 Frontage SB/Heiner Street	C	0.625	25.87	C	0.724	30.1	C	0.725	29.19

Table B.2 Intersection Capacity Analyses Table for Existing Configuration in the PM Peak Hour

AM PEAK HOUR	2020			2040 Growth			2040 NHHIP		
Intersection	LOS	VC	Delay	LOS	VC	Delay	LOS	VC	Delay
Franklin Street at Congress Street	C	0.234	22.1	C	0.261	22.55	C	0.327	21.21
Bagby Street at Franklin Street	B	0.176	15.55	B	0.198	15.9	B	0.272	16.17
Bagby Street at Preston Street	B	0.305	19.56	C	0.341	20.33	B	0.178	18.84
Bagby Street at Prairie Street/Memorial Drive	B	0.229	12.62	B	0.256	12.83	B	0.256	12.95
Bagby Street at Texas Ave/Memorial Drive	B	0.472	13.09	B	0.531	13.91	B	0.523	13.54
Bagby Street at Capitol Street	B	0.307	10.66	B	0.344	11.07	A	0.298	9.42
Bagby Street at Rusk Street	B	0.493	16.46	B	0.556	17.72	B	0.497	16.67
Bagby Street at Walker Street	C	0.493	27.57	C	0.552	29.88	C	0.582	28.5
Bagby Street at McKinney Street	B	0.454	19.92	C	0.508	21.02	C	0.583	21.8
Bagby Street at Lamar Street	B	0.426	10.36	B	0.477	11.06	B	0.47	11.02
West Dallas Street at Bagby Street/Allen Parkway	B	0.455	16.79	B	0.509	17.51	B	0.509	17.54
West Dallas Street at Clay Street	C	0.571	30.74	D	0.638	35.85	C	0.603	28.18
West Dallas Street at IH-45 Frontage NB	B	0.409	13.97	B	0.458	14.72	B	0.444	14.74
West Dallas Street at IH-45 Frontage SB/Heiner Street	C	0.376	21.39	C	0.421	22.28	C	0.409	21.9

Table B.3 Intersection Capacity Analyses Table for Alternative 1 in the AM Peak Hour

PM PEAK HOUR	2020			2040 Growth			2040 NHHIP		
Intersection	LOS	VC	Delay	LOS	VC	Delay	LOS	VC	Delay
Franklin Street at Congress Street	C	0.247	22.12	C	0.278	22.63	C	0.272	20.12
Bagby Street at Franklin Street	C	0.463	28.28	C	0.518	30.09	C	0.413	25.09
Bagby Street at Preston Street	B	0.442	17.88	B	0.495	19.47	B	0.308	16.21
Bagby Street at Prairie Street/Memorial Drive	B	0.578	13.9	B	0.648	15.63	B	0.59	14.49
Bagby Street at Texas Ave/Memorial Drive	B	0.434	16.23	B	0.485	17.06	B	0.436	16.88
Bagby Street at Capitol Street	B	0.485	12.19	B	0.547	13.16	B	0.489	13.83
Bagby Street at Rusk Street	B	0.268	10.42	B	0.3	10.68	B	0.213	11.11
Bagby Street at Walker Street	D	0.642	43.89	D	0.719	48.81	C	0.769	29.7
Bagby Street at McKinney Street	B	0.387	16.22	B	0.432	17.12	B	0.331	18.54
Bagby Street at Lamar Street	B	0.76	18.21	C	0.851	24.02	B	0.6	13.74
West Dallas Street at Bagby Street/Allen Parkway	C	0.581	20.59	C	0.651	28.89	B	0.473	15.46
West Dallas Street at Clay Street	C	0.61	31.09	D	0.683	39.7	C	0.62	30.76
West Dallas Street at IH-45 Frontage NB	B	0.267	13.45	B	0.299	13.81	B	0.449	14.6
West Dallas Street at IH-45 Frontage SB/Heiner Street	C	0.648	25.88	C	0.724	30.1	C	0.725	29.3

Table B.4 Intersection Capacity Analyses Table for Alternative 1 in the PM Peak Hour

AM PEAK HOUR	2020			2040 Growth			2040 NHHIP		
Intersection	LOS	VC	Delay	LOS	VC	Delay	LOS	VC	Delay
Franklin Street at Congress Street	C	0.234	22.1	C	0.261	22.55	C	0.327	21.21
Bagby Street at Franklin Street	B	0.176	15.55	B	0.198	15.9	B	0.272	16.17
Bagby Street at Preston Street	B	0.305	19.56	C	0.341	20.33	B	0.178	18.84
Bagby Street at Prairie Street/Memorial Drive	B	0.229	12.62	B	0.256	12.83	B	0.256	12.95
Bagby Street at Texas Ave/Memorial Drive	B	0.472	13.09	B	0.531	13.91	B	0.523	13.54
Bagby Street at Capitol Street	B	0.307	10.66	B	0.344	11.07	A	0.298	9.42
Bagby Street at Rusk Street	B	0.493	16.46	B	0.556	17.72	B	0.497	16.67
Bagby Street at Walker Street	C	0.523	27.94	C	0.586	30.51	C	0.605	28.6
Bagby Street at McKinney Street	C	0.52	25.74	C	0.584	30.67	D	0.649	37.48
Bagby Street at Lamar Street	B	0.426	10.36	B	0.477	11.06	B	0.47	11.02
West Dallas Street at Bagby Street/Allen Parkway	B	0.467	19.06	B	0.523	19.93	B	0.523	19.6
West Dallas Street at Clay Street	C	0.571	30.74	D	0.638	35.85	C	0.603	28.18
West Dallas Street at IH-45 Frontage NB	B	0.409	13.97	B	0.458	14.72	B	0.444	14.74
West Dallas Street at IH-45 Frontage SB/Heiner Street	C	0.376	21.39	C	0.421	22.28	C	0.409	21.9

Table B.5 Intersection Capacity Analyses Table for Alternative 2 in the AM Peak Hour

PM PEAK HOUR	2020			2040 Growth			2040 NHHIP		
Intersection	LOS	VC	Delay	LOS	VC	Delay	LOS	VC	Delay
Franklin Street at Congress Street	C	0.247	22.12	C	0.278	22.63	C	0.272	20.12
Bagby Street at Franklin Street	C	0.463	28.28	C	0.518	30.09	C	0.413	25.09
Bagby Street at Preston Street	B	0.442	17.88	B	0.495	19.47	B	0.308	16.21
Bagby Street at Prairie Street/Memorial Drive	B	0.578	13.9	B	0.648	15.63	B	0.59	14.49
Bagby Street at Texas Ave/Memorial Drive	B	0.434	16.23	B	0.485	17.06	B	0.436	16.88
Bagby Street at Capitol Street	B	0.485	12.19	B	0.547	13.16	B	0.489	13.83
Bagby Street at Rusk Street	B	0.268	10.42	B	0.3	10.68	B	0.213	11.11
Bagby Street at Walker Street	F	0.792	80.76	F	0.886	93.06	D	0.873	53.1
Bagby Street at McKinney Street	B	0.408	16.26	B	0.456	17.17	B	0.364	18.62
Bagby Street at Lamar Street	B	0.76	18.21	C	0.851	24.02	B	0.6	13.74
West Dallas Street at Bagby Street/Allen Parkway	C	0.581	20.6	C	0.651	28.9	B	0.473	15.48
West Dallas Street at Clay Street	C	0.61	31.09	D	0.683	39.7	C	0.62	30.76
West Dallas Street at IH-45 Frontage NB	B	0.267	13.45	B	0.299	13.81	B	0.449	14.6
West Dallas Street at IH-45 Frontage SB/Heiner Street	C	0.648	25.88	C	0.724	30.1	C	0.725	29.3

Table B.6 Intersection Capacity Analyses Table for Alternative 2 in the PM Peak Hour

AM PEAK HOUR	2020			2040 Growth			2040 NHHIP		
Intersection	LOS	VC	Delay	LOS	VC	Delay	LOS	VC	Delay
Franklin Street at Congress Street	C	0.234	22.1	C	0.261	22.55	C	0.327	21.21
Bagby Street at Franklin Street	B	0.277	16.63	B	0.311	17.23	C	0.483	25.7
Bagby Street at Preston Street	B	0.305	19.6	C	0.341	20.37	B	0.178	18.89
Bagby Street at Prairie Street/Memorial Drive	B	0.312	14.18	B	0.348	14.6	B	0.348	15.28
Bagby Street at Texas Ave/Memorial Drive	B	0.472	13.09	B	0.531	13.91	B	0.523	13.54
Bagby Street at Capitol Street	B	0.307	10.71	B	0.344	11.11	A	0.298	9.47
Bagby Street at Rusk Street	B	0.493	16.46	B	0.556	17.72	B	0.497	16.67
Bagby Street at Walker Street	C	0.523	27.94	C	0.586	30.51	C	0.605	29.1
Bagby Street at McKinney Street	C	0.556	22.46	C	0.621	24.5	C	0.615	22.83
Bagby Street at Lamar Street	B	0.426	10.36	B	0.477	11.06	B	0.47	11.02
West Dallas Street at Bagby Street/Allen Parkway	B	0.467	19.06	B	0.523	19.93	B	0.523	19.6
West Dallas Street at Clay Street	C	0.571	30.74	D	0.638	35.85	C	0.603	28.18
West Dallas Street at IH-45 Frontage NB	B	0.409	13.97	B	0.458	14.72	B	0.444	14.74
West Dallas Street at IH-45 Frontage SB/Heiner Street	C	0.376	21.39	C	0.421	22.28	C	0.409	21.9

Table B.7 Intersection Capacity Analyses Table for Alternative 3 in the AM Peak Hour

PM PEAK HOUR	2020			2040 Growth			2040 NHHIP		
Intersection	LOS	VC	Delay	LOS	VC	Delay	LOS	VC	Delay
Franklin Street at Congress Street	C	0.247	22.12	C	0.278	22.63	C	0.272	20.12
Bagby Street at Franklin Street	D	0.516	49.74	E	0.577	65.52	C	0.579	27.79
Bagby Street at Preston Street	B	0.442	17.88	B	0.495	19.48	B	0.308	16.22
Bagby Street at Prairie Street/Memorial Drive	B	0.578	14.62	B	0.648	16.44	B	0.628	15.43
Bagby Street at Texas Ave/Memorial Drive	B	0.434	16.23	B	0.485	17.06	B	0.436	16.88
Bagby Street at Capitol Street	B	0.548	13.31	B	0.613	14.53	B	0.448	13.34
Bagby Street at Rusk Street	B	0.268	10.42	B	0.3	10.68	B	0.213	11.11
Bagby Street at Walker Street	F	0.792	80.76	F	0.886	93.06	D	0.873	53.1
Bagby Street at McKinney Street	C	0.656	23.75	C	0.735	33.73	C	0.488	23.53
Bagby Street at Lamar Street	B	0.76	18.21	C	0.851	24.02	B	0.6	13.74
West Dallas Street at Bagby Street/Allen Parkway	C	0.581	20.6	C	0.651	28.9	B	0.473	15.48
West Dallas Street at Clay Street	C	0.61	31.09	D	0.683	39.7	C	0.62	30.76
West Dallas Street at IH-45 Frontage NB	B	0.267	13.45	B	0.299	13.81	B	0.449	14.6
West Dallas Street at IH-45 Frontage SB/Heiner Street	C	0.648	25.88	C	0.724	30.1	C	0.725	29.3

Table B.8 Intersection Capacity Analyses Table for Alternative 3 in the PM Peak Hour

AM PEAK HOUR	2020			2040 Growth			2040 NHHIP		
Intersection	LOS	VC	Delay	LOS	VC	Delay	LOS	VC	Delay
Franklin Street at Congress Street	C	0.234	22.1	C	0.261	22.55	C	0.27	22.61
Bagby Street at Franklin Street	B	0.298	18.49	B	0.333	19.46	C	0.503	29.28
Bagby Street at Preston Street	B	0.287	19.92	C	0.325	20.27	B	0.22	18.52
Bagby Street at Prairie Street/Memorial Drive	A	0.185	8.54	A	0.22	9.29	A	0.22	8.54
Bagby Street at Texas Ave/Memorial Drive	A	0.318	9.46	A	0.351	9.88	B	0.404	10.23
Bagby Street at Capitol Street	A	0.094	7.36	A	0.105	7.4	A	0.052	6.87
Bagby Street at Rusk Street	A	0.211	9.03	A	0.24	9.21	A	0.205	9.52
Bagby Street at Walker Street	A	0.246	9.83	B	0.272	10.12	A	0.328	7.91
Bagby Street at McKinney Street	B	0.357	13.18	B	0.395	13.7	B	0.464	11.61
Bagby Street at Lamar Street	A	0.156	8.81	A	0.174	9.01	A	0.142	8.58
West Dallas Street at Bagby Street/Allen Parkway	A	0.337	9.01	A	0.367	9.62	A	0.367	9.24
West Dallas Street at Clay Street	D	0.742	40.14	D	0.808	49.89	D	0.808	50.06
West Dallas Street at IH-45 Frontage NB	B	0.409	13.97	B	0.458	14.72	B	0.444	14.74
West Dallas Street at IH-45 Frontage SB/Heiner Street	C	0.376	21.39	C	0.421	22.28	C	0.409	21.9

Table B.9 Intersection Capacity Analyses Table for Alternative 4 in the AM Peak Hour

PM PEAK HOUR	2020			2040 Growth			2040 NHHIP		
Intersection	LOS	VC	Delay	LOS	VC	Delay	LOS	VC	Delay
Franklin Street at Congress Street	C	0.254	22.23	C	0.285	22.74	C	0.285	22.74
Bagby Street at Franklin Street	D	0.616	52.49	E	0.689	69.19	D	0.682	45..18
Bagby Street at Preston Street	B	0.423	16.85	B	0.476	18.56	B	0.43	17.68
Bagby Street at Prairie Street/Memorial Drive	B	0.578	13.32	B	0.648	14.98	B	0.602	14.28
Bagby Street at Texas Ave/Memorial Drive	B	0.418	15.86	B	0.464	16.43	B	0.481	17.44
Bagby Street at Capitol Street	A	0.398	9.23	A	0.445	9.61	B	0.422	10.58
Bagby Street at Rusk Street	B	0.261	11.63	B	0.293	11.91	B	0.271	12.01
Bagby Street at Walker Street	C	0.73	30.21	C	0.815	29.91	B	0.669	15.42
Bagby Street at McKinney Street	B	0.376	13.43	B	0.418	13.86	B	0.308	14.55
Bagby Street at Lamar Street	B	0.614	13.23	B	0.688	15.33	B	0.561	11.63
West Dallas Street at Bagby Street/Allen Parkway	B	0.561	13.22	B	0.625	14.17	B	0.499	14.04
West Dallas Street at Clay Street	D	0.697	43.22	E	0.77	59.58	E	0.77	56.67
West Dallas Street at IH-45 Frontage NB	B	0.267	13.45	B	0.299	13.81	B	0.299	13.81
West Dallas Street at IH-45 Frontage SB/Heiner Street	C	0.648	25.88	C	0.724	30.1	C	0.725	29.3

Table B.10 Intersection Capacity Analyses Table for Alternative 4 in the PM Peak Hour

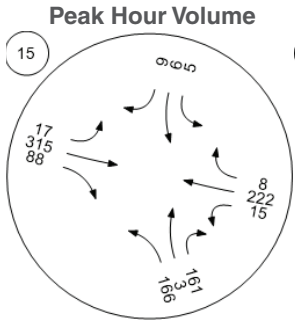
APPENDIX B-1

EXISTING TRAFFIC VOLUMES FOR RECOMMENDED CONCEPTUAL DESIGN

Franklin Street at Congress Street

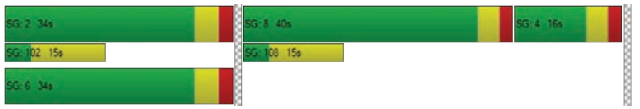
Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence

Ring 1	2	8	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

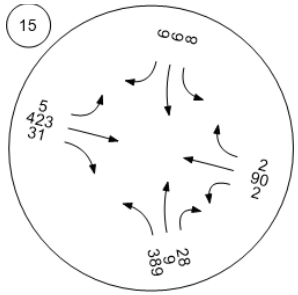
Name	Congress Street			Post Office Driveway			Franklin Street			Franklin Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	166	3	161	5	6	9	17	315	88	15	222	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	3	161	5	6	9	17	315	88	15	222	8
Peak Hour Factor	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.24	19.75	19.75	35.30	35.30	35.30	25.55	22.84	23.65	27.01	22.45	22.47
Movement LOS	B	B	B	D	D	D	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.49			35.30			23.12			22.74		
Approach LOS	B			D			C			C		
d_I, Intersection Delay [s/veh]	22.10											
Intersection LOS	C											
Intersection V/C	0.234											

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence

Ring 1	2	8	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Congress Street			Post Office Driveway			Franklin Street			Franklin Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	389	9	28	8	6	6	5	423	31	2	90	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	389	9	28	8	6	6	5	423	31	2	90	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500

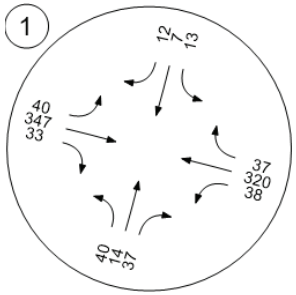
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.57	18.58	18.58	35.06	35.06	35.06	24.20	24.78	25.41	28.04	22.29	22.30
Movement LOS	B	B	B	D	D	D	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	18.57			35.06			24.82			22.41		
Approach LOS	B			D			C			C		
d_I, Intersection Delay [s/veh]	22.12											
Intersection LOS	C											
Intersection V/C	0.247											

Bagby Street at Franklin Street

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

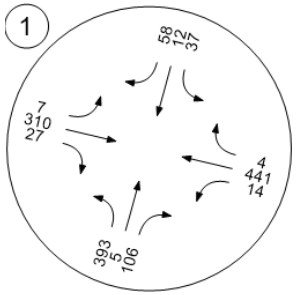
Name	Bagby Street			Bagby Street			Franklin Street			Franklin Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	40	14	37	13	7	12	40	347	33	38	320	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	14	37	13	7	12	40	347	33	38	320	37
Peak Hour Factor	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.13	31.08	31.08	31.20	31.27	31.36	16.19	12.99	13.01	16.41	12.84	12.87
Movement LOS	C	C	C	C	C	C	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	30.66			31.28			13.30			13.19		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.55											
Intersection LOS	B											
Intersection V/C	0.176											

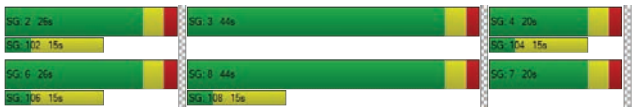
Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

Name	Bagby Street			Bagby Street			Franklin Street			Franklin Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	393	5	106	37	12	58	7	310	27	14	441	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	393	5	106	37	12	58	7	310	27	14	441	4
Peak Hour Factor	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110

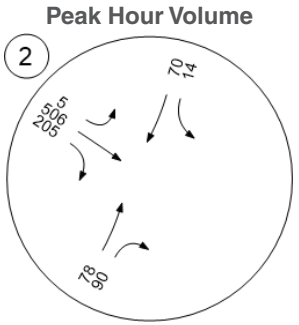
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.27	11.55	11.55	32.90	32.90	34.94	37.93	32.57	32.69	35.65	36.25	36.27
Movement LOS	B	B	B	C	C	C	D	C	C	D	D	D
d_A, Approach Delay [s/veh]	16.79			34.01			32.69			36.23		
Approach LOS	B			C			C			D		
d_I, Intersection Delay [s/veh]	28.28											
Intersection LOS	C											
Intersection V/C	0.463											

Bagby Street at Preston Street

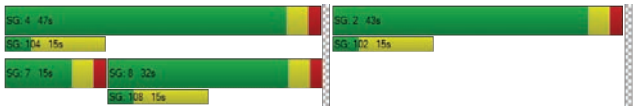
Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence

Ring 1	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

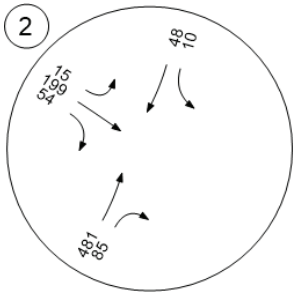
Name	Bagby Street			Bagby Street			Preston Street			Preston Street		
Approach	Southbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	14	70	0	0	78	90	0	0	0	5	506	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	70	0	0	78	90	0	0	0	5	506	205
Peak Hour Factor	0.9030	0.9030	1.0000	1.0000	0.9030	0.9030	1.0000	1.0000	1.0000	0.9030	0.9030	0.9030

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.84	12.64	0.00	0.00	22.74	22.74	0.00	0.00	0.00	18.91	19.02	19.54
Movement LOS	D	B			C	C				B	B	B
d_A, Approach Delay [s/veh]	16.59			22.74			0.00			19.17		
Approach LOS	B			C			A			B		
d_I, Intersection Delay [s/veh]	19.56											
Intersection LOS	B											
Intersection V/C	0.305											

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence

Ring 1	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Bagby Street			Bagby Street			Preston Street			Preston Street		
Approach	Southbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	10	48	0	0	481	85	0	0	0	15	199	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	48	0	0	481	85	0	0	0	15	199	54
Peak Hour Factor	0.9300	0.9300	1.0000	1.0000	0.9300	0.9300	1.0000	1.0000	1.0000	0.9300	0.9300	0.9300

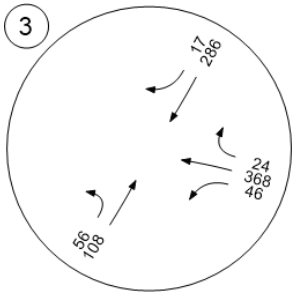
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.46	3.27	0.00	0.00	10.32	10.32	0.00	0.00	0.00	35.32	35.65	36.43
Movement LOS	D	A			B	B				D	D	D
d_A, Approach Delay [s/veh]	8.89			10.32			0.00			35.79		
Approach LOS	A			B			A			D		
d_I, Intersection Delay [s/veh]	17.88											
Intersection LOS	B											
Intersection V/C	0.442											

Bagby Street at Prairie Street/WB Memorial Drive

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence

Ring 1	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

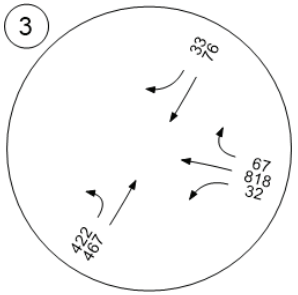
Name	Memorial Drive			Prairie Street			Bagby Street			Bagby Street		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	46	368	24	56	108	0	0	286	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	46	368	24	56	108	0	0	286	17
Peak Hour Factor	1.0000	1.0000	1.0000	0.9690	0.9690	0.9690	0.9690	0.9690	1.0000	1.0000	0.9690	0.9690

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	6.15	6.72	6.06	10.96	10.52	0.00	0.00	22.32	22.37
Movement LOS				A	A	A	B	B			C	C
d_A, Approach Delay [s/veh]	0.00			6.62			10.67			22.33		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	12.62											
Intersection LOS	B											
Intersection V/C	0.229											

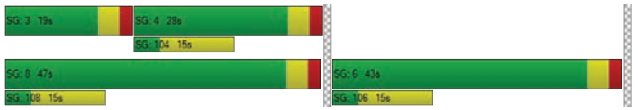
Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence

Ring 1	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

Name	Memorial Drive			Prairie Street			Bagby Street			Bagby Street		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	32	818	67	422	467	0	0	76	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	32	818	67	422	467	0	0	76	33
Peak Hour Factor	1.0000	1.0000	1.0000	0.9210	0.9210	0.9210	0.9210	0.9210	1.0000	1.0000	0.9210	0.9210

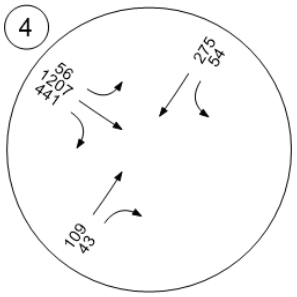
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.30	11.14	7.66	16.19	15.25	0.00	0.00	25.68	25.85
Movement LOS				A	B	A	B	B			C	C
d_A, Approach Delay [s/veh]	0.00			10.75			15.70			25.73		
Approach LOS	A			B			B			C		
d_I, Intersection Delay [s/veh]	13.90											
Intersection LOS	B											
Intersection V/C	0.578											

Bagby Street at Texas Avenue/EB Memorial Drive

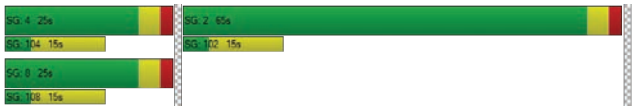
Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence

Ring 1	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

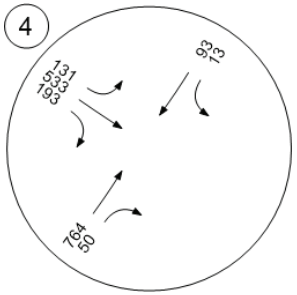
Name	Bagby Street			Bagby Street			Texas Avenue			Memorial Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	109	43	54	275	0	0	0	0	56	1207	441
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	109	43	54	275	0	0	0	0	56	1207	441
Peak Hour Factor	1.0000	0.9690	0.9690	0.9690	0.9690	1.0000	1.0000	1.0000	1.0000	0.9690	0.9690	0.9690

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	26.07	26.34	34.00	34.13	0.00	0.00	0.00	0.00	7.67	7.35	9.33
Movement LOS		C	C	C	C					A	A	A
d_A, Approach Delay [s/veh]		26.15			34.11			0.00			7.87	
Approach LOS		C			C			A			A	
d_I, Intersection Delay [s/veh]	13.09											
Intersection LOS	B											
Intersection V/C	0.472											

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence

Ring 1	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Bagby Street			Bagby Street			Texas Avenue			Memorial Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	764	50	13	93	0	0	0	0	131	533	193
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	764	50	13	93	0	0	0	0	131	533	193
Peak Hour Factor	1.0000	0.9160	0.9160	0.9160	0.9160	1.0000	1.0000	1.0000	1.0000	0.9160	0.9160	0.9160

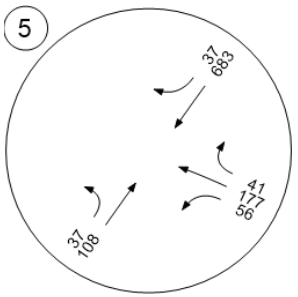
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.57	7.64	9.16	9.04	0.00	0.00	0.00	0.00	25.71	24.74	26.75
Movement LOS		A	A	A	A					C	C	C
d_A, Approach Delay [s/veh]		7.57			9.05			0.00			25.34	
Approach LOS		A			A			A			C	
d_I, Intersection Delay [s/veh]	16.23											
Intersection LOS	B											
Intersection V/C	0.434											

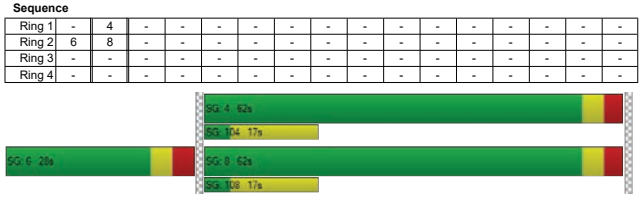
Bagby Street at Capitol Street

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence



Intersection Setup

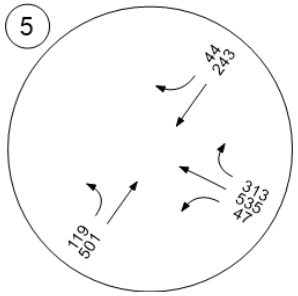
Name	Capitol Street			Bagby Street			Bagby Street			Capitol Street		
Approach	Eastbound			Northeastbound			Southwestbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	37	108	0	0	683	37	56	177	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	37	108	0	0	683	37	56	177	41
Peak Hour Factor	1.0000	1.0000	1.0000	0.9490	0.9490	1.0000	1.0000	0.9490	0.9490	0.9490	0.9490	0.9490

Movement, Approach, & Intersection Results

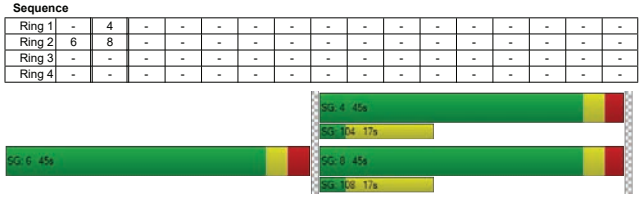
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	3.63	2.75	0.00	0.00	8.27	8.32	21.26	21.31	19.37
Movement LOS				A	A			A	A	C	C	B
d_A, Approach Delay [s/veh]	0.00			2.97			8.28			21.01		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	10.66											
Intersection LOS	B											
Intersection V/C	0.307											

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence



Intersection Setup

Name	Bagby Street			Bagby Street			Capitol Street			Capitol Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	119	501	0	0	243	44	47	535	313	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	501	0	0	243	44	47	535	313	0	0	0
Peak Hour Factor	0.9440	0.9440	1.0000	1.0000	0.9440	0.9440	0.9440	0.9440	0.9440	1.0000	1.0000	1.0000

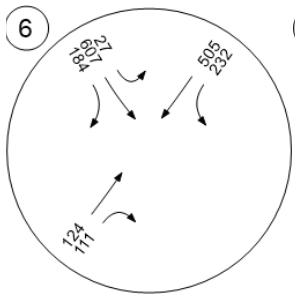
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.47	15.31	0.00	0.00	15.31	15.40	8.36	8.44	9.72	0.00	0.00	0.00
Movement LOS	B	B			B	B	A	A	A			
d_A, Approach Delay [s/veh]	15.53			15.32			8.88			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	12.19											
Intersection LOS	B											
Intersection V/C	0.485											

Bagby Street at Rusk Street

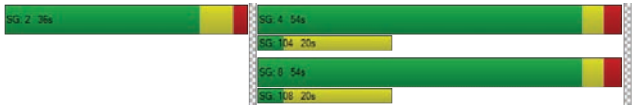
Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

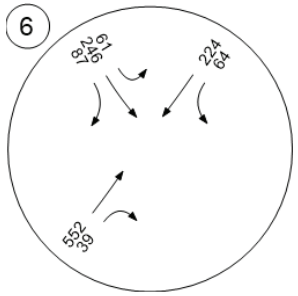
Name	Bagby Street			Bagby Street			Rusk Street			Rusk Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	124	111	232	505	0	0	0	0	27	607	184
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	124	111	232	505	0	0	0	0	27	607	184
Peak Hour Factor	1.0000	0.9510	0.9510	0.9510	0.9510	1.0000	1.0000	1.0000	1.0000	0.9510	0.9510	0.9510

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	5.73	5.89	17.26	15.13	0.00	0.00	0.00	0.00	15.64	19.87	21.58
Movement LOS		A	A	B	B					B	B	C
d_A, Approach Delay [s/veh]		5.81			15.80			0.00			20.12	
Approach LOS		A			B			A			C	
d_I, Intersection Delay [s/veh]	16.46											
Intersection LOS	B											
Intersection V/C	0.493											

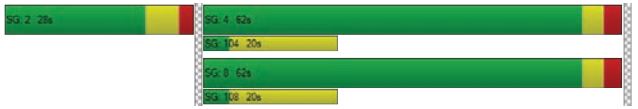
Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

Name	Bagby Street			Bagby Street			Rusk Street			Rusk Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	552	39	64	224	0	0	0	0	61	246	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	552	39	64	224	0	0	0	0	61	246	87
Peak Hour Factor	1.0000	0.9470	0.9470	0.9470	0.9470	1.0000	1.0000	1.0000	1.0000	0.9470	0.9470	0.9470

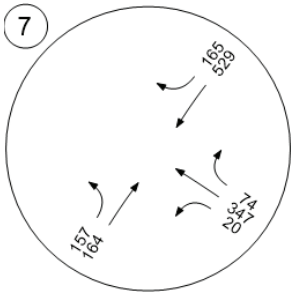
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	3.16	3.18	7.31	6.92	0.00	0.00	0.00	0.00	22.80	23.71	24.81
Movement LOS		A	A	A	A					C	C	C
d_A, Approach Delay [s/veh]		3.16			7.01			0.00			23.81	
Approach LOS		A			A			A			C	
d_I, Intersection Delay [s/veh]	10.42											
Intersection LOS	B											
Intersection V/C	0.268											

Bagby Street at Walker Street

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence

Ring 1	3	4	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

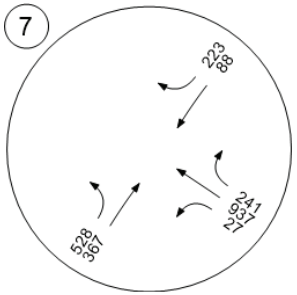
Name	Bagby Street			Bagby Street			Walker Street					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	157	164	0	0	529	165	20	347	74	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	164	0	0	529	165	20	347	74	0	0	0
Peak Hour Factor	0.9760	0.9760	1.0000	1.0000	0.9760	0.9760	0.9760	0.9760	0.9760	1.0000	1.0000	1.0000

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.62	44.87	0.00	0.00	22.59	14.78	26.28	26.57	27.27	0.00	0.00	0.00
Movement LOS	D	D			C	B	C	C	C			
d_A, Approach Delay [s/veh]	45.24			20.74			26.68			0.00		
Approach LOS	D			C			C			A		
d_I, Intersection Delay [s/veh]	27.94											
Intersection LOS	C											
Intersection V/C	0.523											

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence

Ring 1	3	4	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Bagby Street			Bagby Street			Walker Street					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	528	367	0	0	88	223	27	937	241	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	528	367	0	0	88	223	27	937	241	0	0	0
Peak Hour Factor	0.9460	0.9460	1.0000	1.0000	0.9460	0.9460	0.9460	0.9460	0.9460	1.0000	1.0000	1.0000

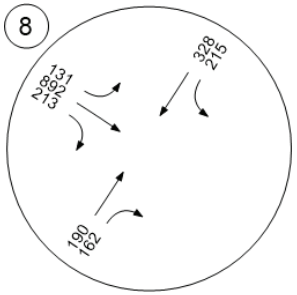
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.75	23.28	0.00	0.00	34.89	76.96	114.24	115.67	119.21	0.00	0.00	0.00
Movement LOS	D	C			C	E	F	F	F			
d_A, Approach Delay [s/veh]	38.30			65.07			116.35			0.00		
Approach LOS	D			E			F			A		
d_I, Intersection Delay [s/veh]	80.76											
Intersection LOS	F											
Intersection V/C	0.792											

Bagby Street at McKinney Street

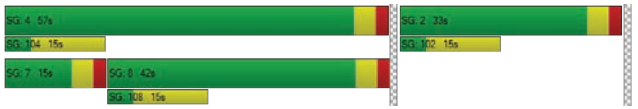
Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence

Ring 1	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

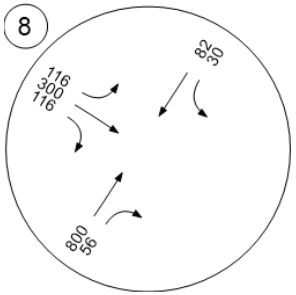
Name	Bagby Street			Bagby Street			McKinney Street			MicKinney Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	190	162	215	328	0	0	0	0	131	892	213
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	190	162	215	328	0	0	0	0	131	892	213
Peak Hour Factor	1.0000	0.9410	0.9410	0.9410	0.9410	1.0000	1.0000	1.0000	1.0000	0.9410	0.9410	0.9410

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	13.43	14.00	18.04	18.04	0.00	0.00	0.00	0.00	33.63	31.72	35.45
Movement LOS		B	B	B	B					C	C	D
d_A, Approach Delay [s/veh]		13.69			18.04			0.00			32.56	
Approach LOS		B			B			A			C	
d_I, Intersection Delay [s/veh]	25.74											
Intersection LOS	C											
Intersection V/C	0.520											

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence

Ring 1	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Bagby Street			Bagby Street			McKinney Street			McKinney Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	800	56	30	82	0	0	0	0	116	300	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	800	56	30	82	0	0	0	0	116	300	116
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	0.9400

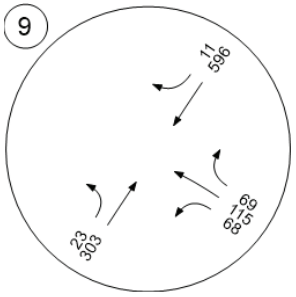
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.06	7.14	5.47	5.47	0.00	0.00	0.00	0.00	33.89	32.39	35.37
Movement LOS		A	A	A	A					C	C	D
d_A, Approach Delay [s/veh]		7.06			5.47			0.00			33.37	
Approach LOS		A			A			A			C	
d_I, Intersection Delay [s/veh]	16.26											
Intersection LOS	B											
Intersection V/C	0.408											

Bagby Street at Lamar Street

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence

Ring 1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

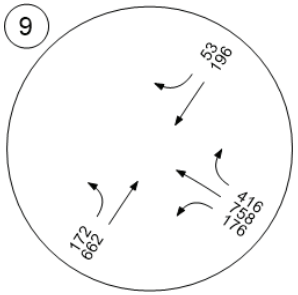
Name	Bagby Street			Bagby Street			Lamar Street					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	23	303	0	0	596	11	68	115	69	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	303	0	0	596	11	68	115	69	0	0	0
Peak Hour Factor	0.9620	0.9620	1.0000	1.0000	0.9620	0.9620	0.9620	0.9620	0.9620	1.0000	1.0000	1.0000

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.59	2.10	0.00	0.00	9.44	9.44	23.01	22.21	23.48	0.00	0.00	0.00
Movement LOS	A	A			A	A	C	C	C			
d_A, Approach Delay [s/veh]	2.42			9.44			22.78			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	10.36											
Intersection LOS	B											
Intersection V/C	0.426											

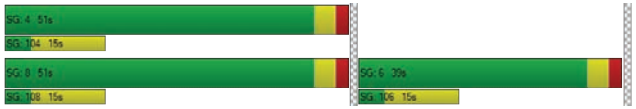
Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence

Ring 1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

Name	Bagby Street			Bagby Street			Lamar Street					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	172	662	0	0	196	53	176	758	416	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	172	662	0	0	196	53	176	758	416	0	0	0
Peak Hour Factor	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000	1.0000

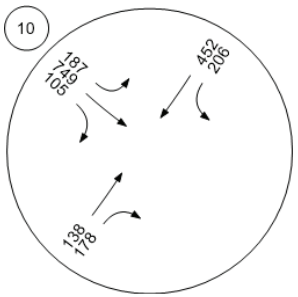
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.69	20.24	0.00	0.00	13.42	13.42	11.85	15.23	27.04	0.00	0.00	0.00
Movement LOS	B	C			B	B	B	B	C			
d_A, Approach Delay [s/veh]	19.30			13.42			18.43			0.00		
Approach LOS	B			B			B			A		
d_I, Intersection Delay [s/veh]	18.21											
Intersection LOS	B											
Intersection V/C	0.760											

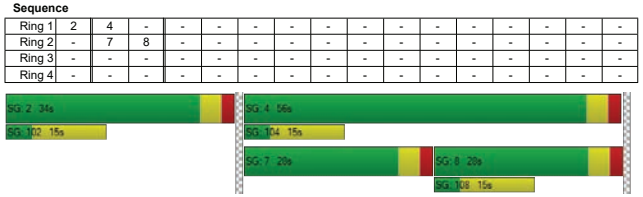
West Dallas Street at Bagby Street/Allen Parkway

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence



Intersection Setup

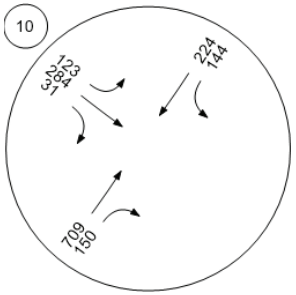
Name	West Dallas Street			Bagby Street			Dallas Street			Dallas Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	138	178	206	452	0	0	0	0	187	749	105
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	138	178	206	452	0	0	0	0	187	749	105
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500

Movement, Approach, & Intersection Results

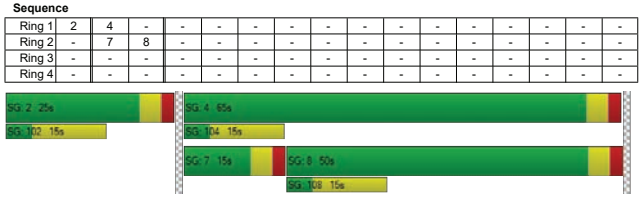
d_M, Delay for Movement [s/veh]	0.00	24.99	28.68	10.76	13.36	0.00	0.00	0.00	0.00	20.66	21.01	19.01
Movement LOS		C	C	B	B					C	C	B
d_A, Approach Delay [s/veh]		27.07			12.55			0.00			20.75	
Approach LOS		C			B			A			C	
d_I, Intersection Delay [s/veh]	19.06											
Intersection LOS	B											
Intersection V/C	0.467											

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence



Intersection Setup

Name	West Dallas Street			Bagby Street			Dallas Street			Dallas Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	709	150	144	224	0	0	0	0	123	284	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	709	150	144	224	0	0	0	0	123	284	31
Peak Hour Factor	1.0000	0.9310	0.9310	0.9310	0.9310	1.0000	1.0000	1.0000	1.0000	0.9310	0.9310	0.9310

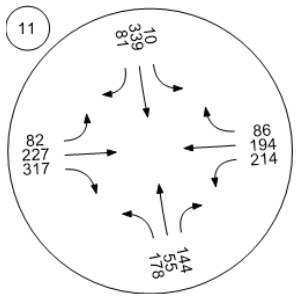
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	25.19	8.31	15.46	5.95	0.00	0.00	0.00	0.00	28.34	26.00	24.87
Movement LOS		C	A	B	A					C	C	C
d_A, Approach Delay [s/veh]		22.24			9.67			0.00			26.58	
Approach LOS		C			A			A			C	
d_I, Intersection Delay [s/veh]	20.60											
Intersection LOS	C											
Intersection V/C	0.581											

West Dallas Street at Clay Street

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

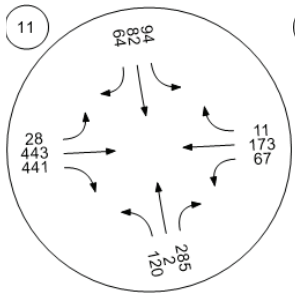
Name	Clay Street			Clay Street			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	178	55	144	10	339	81	82	227	317	214	194	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	178	55	144	10	339	81	82	227	317	214	194	86
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.35	36.21	51.75	24.55	43.70	44.98	28.46	21.29	34.61	14.93	11.63	11.63
Movement LOS	D	D	D	C	D	D	C	C	C	B	B	B
d_A, Approach Delay [s/veh]	42.21			43.51			28.98			13.06		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	30.74											
Intersection LOS	C											
Intersection V/C	0.571											

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Clay Street			Clay Street			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	120	2	285	94	82	64	28	443	441	67	173	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	2	285	94	82	64	28	443	441	67	173	11
Peak Hour Factor	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690

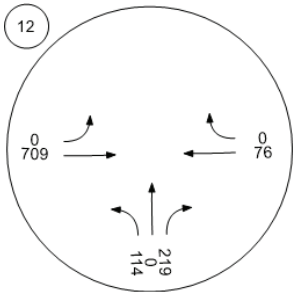
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.49	20.49	48.67	61.14	47.16	52.14	15.62	22.16	31.53	13.52	10.20	10.20
Movement LOS	C	C	D	E	D	D	B	C	C	B	B	B
d_A, Approach Delay [s/veh]	40.22			53.96			26.49			11.08		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	31.09											
Intersection LOS	C											
Intersection V/C	0.610											

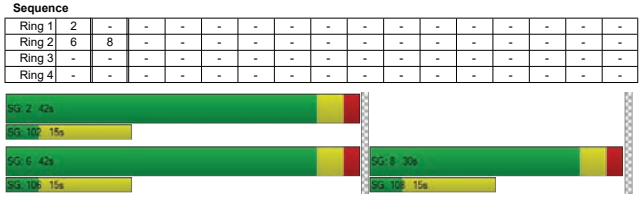
West Dallas Street at IH45 Northbound Frontage Road

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence



Intersection Setup

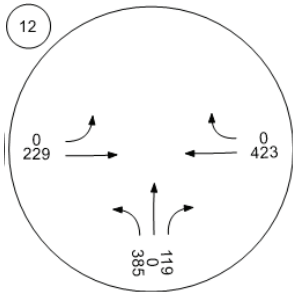
Name	IH45 NB Frontage Road			IH45 NB Frontage Road			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	114	0	219	0	0	0	0	709	0	0	76	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	0	219	0	0	0	0	709	0	0	76	0
Peak Hour Factor	0.9130	0.9130	0.9130	1.0000	1.0000	1.0000	0.9130	0.9130	1.0000	1.0000	0.9130	0.9130

Movement, Approach, & Intersection Results

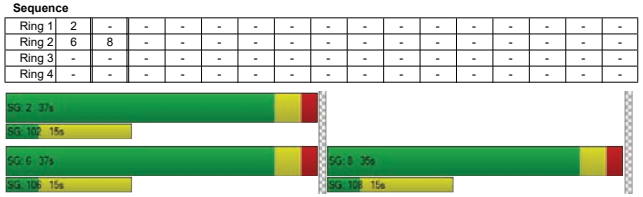
d_M, Delay for Movement [s/veh]	15.67	15.67	20.64	0.00	0.00	0.00	12.05	12.24	0.00	0.00	8.33	8.33
Movement LOS	B	B	C				B	B			A	A
d_A, Approach Delay [s/veh]	18.94			0.00			12.24			8.33		
Approach LOS	B			A			B			A		
d_I, Intersection Delay [s/veh]	13.97											
Intersection LOS	B											
Intersection V/C	0.409											

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence



Intersection Setup

Name	IH45 NB Frontage Road			IH45 NB Frontage Road			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	385	0	119	0	0	0	0	229	0	0	423	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	385	0	119	0	0	0	0	229	0	0	423	0
Peak Hour Factor	0.9200	0.9200	0.9200	1.0000	1.0000	1.0000	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200

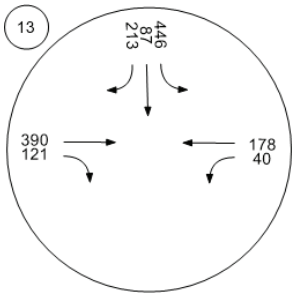
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.55	14.55	13.60	0.00	0.00	0.00	11.86	11.91	0.00	0.00	13.22	13.22
Movement LOS	B	B	B				B	B			B	B
d_A, Approach Delay [s/veh]	14.33			0.00			11.91			13.22		
Approach LOS	B			A			B			B		
d_I, Intersection Delay [s/veh]	13.45											
Intersection LOS	B											
Intersection V/C	0.267											

West Dallas Street at IH45 Southbound Frontage Road

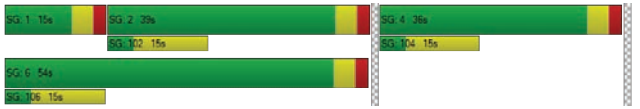
Corridor	Preferred Alternative
Traffic Volume	Existing
Period	AM

Peak Hour Volume



Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

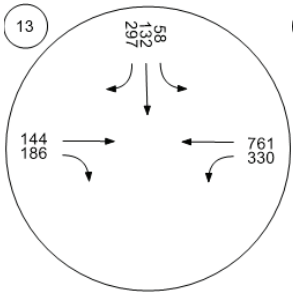
Name	He/IH			He/IH			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	446	87	213	0	390	121	40	178	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	446	87	213	0	390	121	40	178	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9380	0.9380	0.9380	1.0000	0.9380	0.9380	0.9380	0.9380	1.0000

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	24.18	19.48	25.03	0.00	22.28	22.81	11.10	10.40	0.00
Movement LOS				C	B	C		C	C	B	B	
d_A, Approach Delay [s/veh]	0.00			23.87			22.40			10.53		
Approach LOS	A			C			C			B		
d_I, Intersection Delay [s/veh]	21.39											
Intersection LOS	C											
Intersection V/C	0.376											

Corridor	Preferred Alternative
Traffic Volume	Existing
Period	PM

Peak Hour Volume



Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	He/IH			He/IH			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	58	132	297	0	144	186	330	761	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	58	132	297	0	144	186	330	761	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9240	0.9240	0.9240	1.0000	0.9240	0.9240	0.9240	0.9240	1.0000

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	22.54	22.38	37.25	0.00	37.96	51.32	19.49	16.60	0.00
Movement LOS				C	C	D		D	D	B	B	
d_A, Approach Delay [s/veh]	0.00			31.45			45.48			17.47		
Approach LOS	A			C			D			B		
d_I, Intersection Delay [s/veh]	25.88											
Intersection LOS	C											
Intersection V/C	0.648											

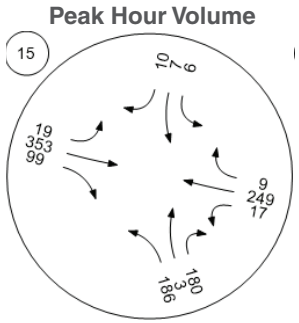
APPENDIX B-2

2040 GROWTH TRAFFIC VOLUMES FOR RECOMMENDED CONCEPTUAL DESIGN

Franklin Street at Congress Street

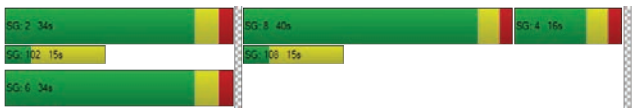
Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM

Peak Hour Volume



Sequence

Ring 1	2	8	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

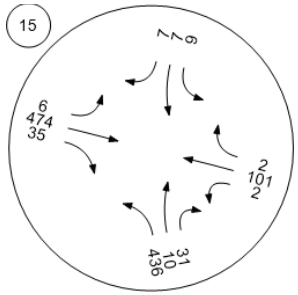
Name	Congress Street			Post Office Driveway			Franklin Street			Franklin Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	166	3	161	5	6	9	17	315	88	15	222	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	186	3	180	6	7	10	19	353	99	17	249	9
Peak Hour Factor	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.69	20.28	20.28	35.51	35.51	35.51	26.16	23.27	24.21	27.92	22.80	22.82
Movement LOS	B	C	C	D	D	D	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.98			35.51			23.58			23.12		
Approach LOS	B			D			C			C		
d_I, Intersection Delay [s/veh]	22.55											
Intersection LOS	C											
Intersection V/C	0.261											

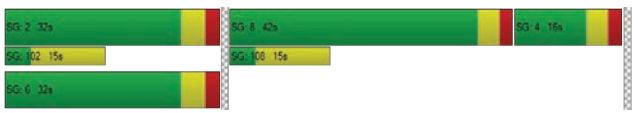
Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM

Peak Hour Volume



Sequence

Ring 1	2	8	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

Name	Congress Street			Post Office Driveway			Franklin Street			Franklin Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	389	9	28	8	6	6	5	423	31	2	90	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	436	10	31	9	7	7	6	474	35	2	101	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500

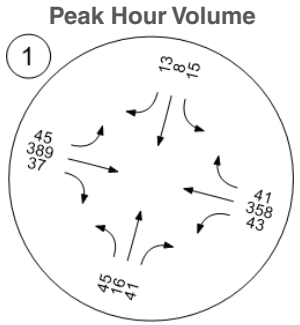
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.15	19.16	19.16	35.26	35.26	35.26	24.39	25.30	26.04	28.79	22.40	22.41
Movement LOS	B	B	B	D	D	D	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.15			35.26			25.34			22.52		
Approach LOS	B			D			C			C		
d_I, Intersection Delay [s/veh]	22.63											
Intersection LOS	C											
Intersection V/C	0.278											

Bagby Street at Franklin Street

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM

Peak Hour Volume



Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Bagby Street			Bagby Street			Franklin Street			Franklin Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	40	14	37	13	7	12	40	347	33	38	320	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	16	41	15	8	13	45	389	37	43	358	41
Peak Hour Factor	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120

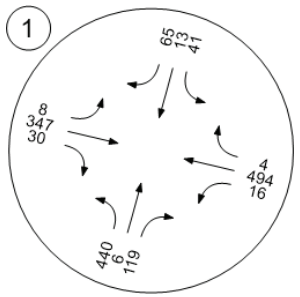
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.37	31.49	31.49	31.29	31.38	31.47	16.93	13.33	13.36	17.24	13.14	13.17
Movement LOS	C	C	C	C	C	C	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	31.00			31.38			13.67			13.54		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	15.90											
Intersection LOS	B											
Intersection V/C	0.198											

Bagby Street at Franklin Street

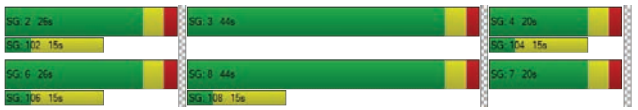
Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM

Peak Hour Volume



Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

Name	Bagby Street			Bagby Street			Franklin Street			Franklin Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	393	5	106	37	12	58	7	310	27	14	441	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	440	6	119	41	13	65	8	347	30	16	494	4
Peak Hour Factor	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110

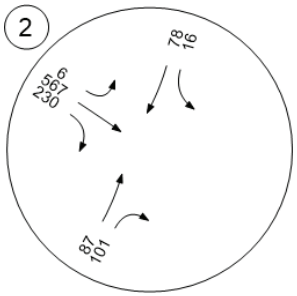
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.49	11.77	11.77	33.17	33.17	35.58	39.80	33.87	34.00	37.18	38.90	38.91
Movement LOS	C	B	B	C	C	D	D	C	C	D	D	D
d_A, Approach Delay [s/veh]	18.55			34.49			34.01			38.84		
Approach LOS	B			C			C			D		
d_I, Intersection Delay [s/veh]	30.09											
Intersection LOS	C											
Intersection V/C	0.518											

Bagby Street at Preston Street

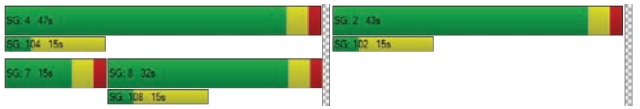
Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM

Peak Hour Volume



Sequence

Ring 1	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

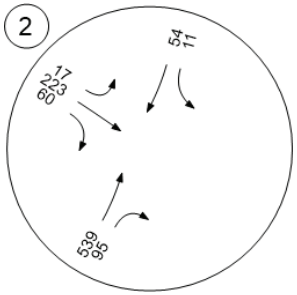
Name	Bagby Street			Bagby Street			Preston Street			Preston Street		
Approach	Southbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	14	70	0	0	78	90	0	0	0	5	506	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	78	0	0	87	101	0	0	0	6	567	230
Peak Hour Factor	0.9030	0.9030	1.0000	1.0000	0.9030	0.9030	1.0000	1.0000	1.0000	0.9030	0.9030	0.9030

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.99	12.68	0.00	0.00	23.55	23.55	0.00	0.00	0.00	19.70	19.83	20.41
Movement LOS	D	B			C	C				B	B	C
d_A, Approach Delay [s/veh]	16.72			23.55			0.00			20.00		
Approach LOS	B			C			A			B		
d_I, Intersection Delay [s/veh]	20.33											
Intersection LOS	C											
Intersection V/C	0.341											

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM

Peak Hour Volume



Sequence

Ring 1	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Bagby Street			Bagby Street			Preston Street			Preston Street		
Approach	Southbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	10	48	0	0	481	85	0	0	0	15	199	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	54	0	0	539	95	0	0	0	17	223	60
Peak Hour Factor	0.9300	0.9300	1.0000	1.0000	0.9300	0.9300	1.0000	1.0000	1.0000	0.9300	0.9300	0.9300

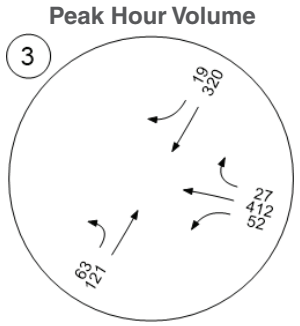
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.53	3.28	0.00	0.00	12.40	12.40	0.00	0.00	0.00	36.16	36.54	37.46
Movement LOS	D	A			B	B				D	D	D
d_A, Approach Delay [s/veh]	8.81			12.40			0.00			36.71		
Approach LOS	A			B			A			D		
d_I, Intersection Delay [s/veh]	19.47											
Intersection LOS	B											
Intersection V/C	0.495											

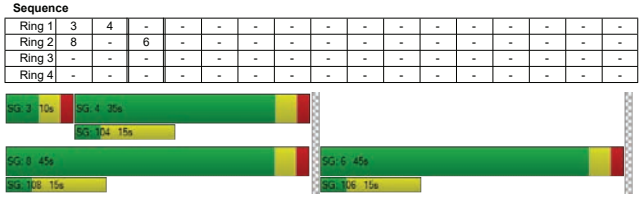
Bagby Street at Prairie Street/WB Memorial Drive

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM

Peak Hour Volume



Sequence



Intersection Setup

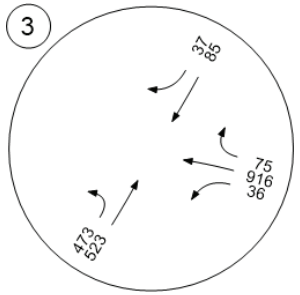
Name	Memorial Drive			Prairie Street			Bagby Street			Bagby Street		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	46	368	24	56	108	0	0	286	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	52	412	27	63	121	0	0	320	19
Peak Hour Factor	1.0000	1.0000	1.0000	0.9690	0.9690	0.9690	0.9690	0.9690	1.0000	1.0000	0.9690	0.9690

Movement, Approach, & Intersection Results

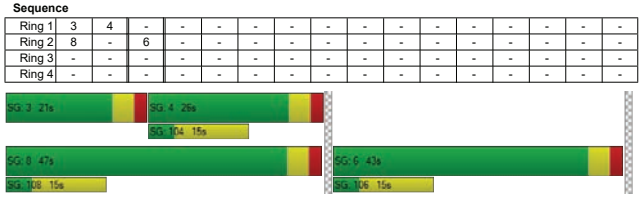
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	6.19	6.85	6.07	11.17	10.65	0.00	0.00	22.75	22.81
Movement LOS				A	A	A	B	B			C	C
d_A, Approach Delay [s/veh]	0.00			6.73			10.83			22.76		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	12.83											
Intersection LOS	B											
Intersection V/C	0.256											

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM

Peak Hour Volume



Sequence



Intersection Setup

Name	Memorial Drive			Prairie Street			Bagby Street			Bagby Street		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	32	818	67	422	467	0	0	76	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	36	916	75	473	523	0	0	85	37
Peak Hour Factor	1.0000	1.0000	1.0000	0.9210	0.9210	0.9210	0.9210	0.9210	1.0000	1.0000	0.9210	0.9210

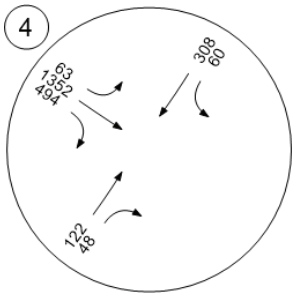
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.33	12.52	7.74	18.54	17.35	0.00	0.00	27.55	27.76
Movement LOS				A	B	A	B	B			C	C
d_A, Approach Delay [s/veh]	0.00			11.99			17.91			27.61		
Approach LOS	A			B			B			C		
d_I, Intersection Delay [s/veh]	15.63											
Intersection LOS	B											
Intersection V/C	0.648											

Bagby Street at Texas Avenue/EB Memorial Drive

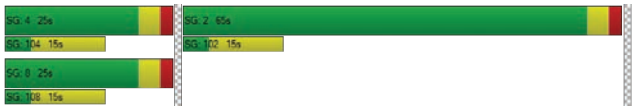
Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM

Peak Hour Volume



Sequence

Ring 1	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

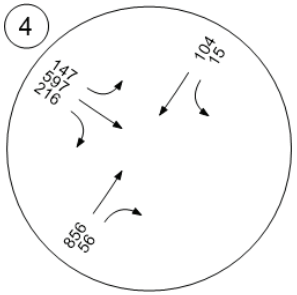
Name	Bagby Street			Bagby Street			Texas Avenue			Memorial Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	109	43	54	275	0	0	0	0	56	1207	441
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	122	48	60	308	0	0	0	0	63	1352	494
Peak Hour Factor	1.0000	0.9690	0.9690	0.9690	0.9690	1.0000	1.0000	1.0000	1.0000	0.9690	0.9690	0.9690

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	26.42	26.74	35.86	35.96	0.00	0.00	0.00	0.00	8.25	7.85	10.44
Movement LOS		C	C	D	D					A	A	B
d_A, Approach Delay [s/veh]		26.51			35.94			0.00			8.54	
Approach LOS		C			D			A			A	
d_I, Intersection Delay [s/veh]	13.91											
Intersection LOS	B											
Intersection V/C	0.531											

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM

Peak Hour Volume



Sequence

Ring 1	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Bagby Street			Bagby Street			Texas Avenue			Memorial Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	764	50	13	93	0	0	0	0	131	533	193
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	856	56	15	104	0	0	0	0	147	597	216
Peak Hour Factor	1.0000	0.9160	0.9160	0.9160	0.9160	1.0000	1.0000	1.0000	1.0000	0.9160	0.9160	0.9160

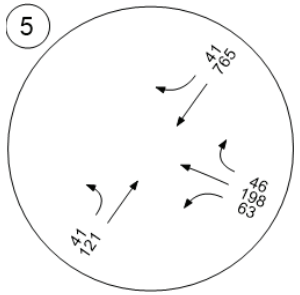
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	8.20	8.30	9.45	9.20	0.00	0.00	0.00	0.00	26.91	25.71	28.13
Movement LOS		A	A	A	A					C	C	C
d_A, Approach Delay [s/veh]		8.21			9.23			0.00			26.44	
Approach LOS		A			A			A			C	
d_I, Intersection Delay [s/veh]	17.06											
Intersection LOS	B											
Intersection V/C	0.485											

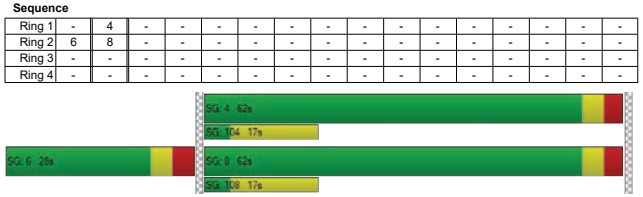
Bagby Street at Capitol Street

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM

Peak Hour Volume



Sequence



Intersection Setup

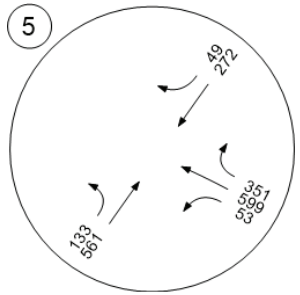
Name	Capitol Street			Bagby Street			Bagby Street			Capitol Street		
Approach	Eastbound			Northeastbound			Southwestbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	37	108	0	0	683	37	56	177	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.12	1.12	1.00	1.00	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	41	121	0	0	765	41	63	198	46
Peak Hour Factor	1.0000	1.0000	1.0000	0.9490	0.9490	1.0000	1.0000	0.9490	0.9490	0.9490	0.9490	0.9490

Movement, Approach, & Intersection Results

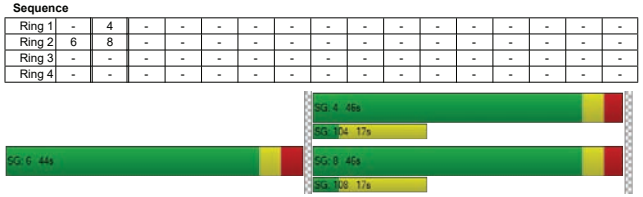
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	4.11	2.85	0.00	0.00	8.72	8.77	21.72	21.78	19.50
Movement LOS				A	A			A	A	C	C	B
d_A, Approach Delay [s/veh]	0.00			3.17			8.72			21.43		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	11.07											
Intersection LOS	B											
Intersection V/C	0.344											

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM

Peak Hour Volume



Sequence



Intersection Setup

Name	Bagby Street			Bagby Street			Capitol Street			Capitol Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	119	501	0	0	243	44	47	535	313	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	133	561	0	0	272	49	53	599	351	0	0	0
Peak Hour Factor	0.9440	0.9440	1.0000	1.0000	0.9440	0.9440	0.9440	0.9440	0.9440	1.0000	1.0000	1.0000

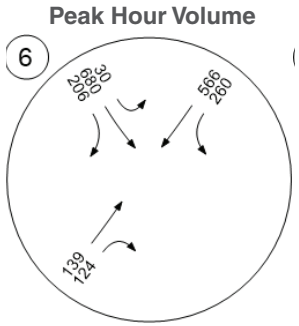
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.33	15.83	0.00	0.00	14.94	15.04	9.77	9.87	11.78	0.00	0.00	0.00
Movement LOS	B	B			B	B	A	A	B			
d_A, Approach Delay [s/veh]	16.12			14.95			10.54			0.00		
Approach LOS	B			B			B			A		
d_I, Intersection Delay [s/veh]	13.16											
Intersection LOS	B											
Intersection V/C	0.547											

Bagby Street at Rusk Street

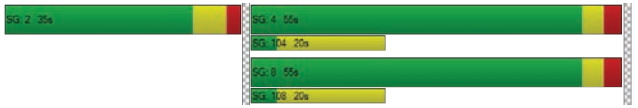
Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM

Peak Hour Volume



Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

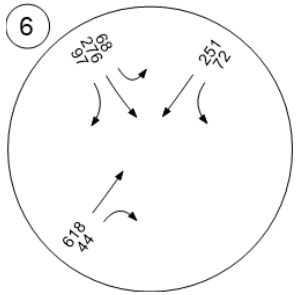
Name	Bagby Street			Bagby Street			Rusk Street			Rusk Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	124	111	232	505	0	0	0	0	27	607	184
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	139	124	260	566	0	0	0	0	30	680	206
Peak Hour Factor	1.0000	0.9510	0.9510	0.9510	0.9510	1.0000	1.0000	1.0000	1.0000	0.9510	0.9510	0.9510

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	5.34	5.51	18.22	15.77	0.00	0.00	0.00	0.00	16.42	21.95	24.29
Movement LOS		A	A	B	B					B	C	C
d_A, Approach Delay [s/veh]		5.42			16.54			0.00			22.30	
Approach LOS		A			B			A			C	
d_I, Intersection Delay [s/veh]	17.72											
Intersection LOS	B											
Intersection V/C	0.556											

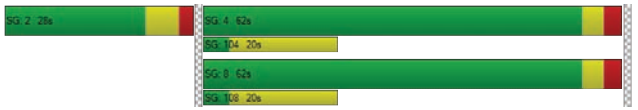
Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM

Peak Hour Volume



Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

Name	Bagby Street			Bagby Street			Rusk Street			Rusk Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	552	39	64	224	0	0	0	0	61	246	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	618	44	72	251	0	0	0	0	68	276	97
Peak Hour Factor	1.0000	0.9470	0.9470	0.9470	0.9470	1.0000	1.0000	1.0000	1.0000	0.9470	0.9470	0.9470

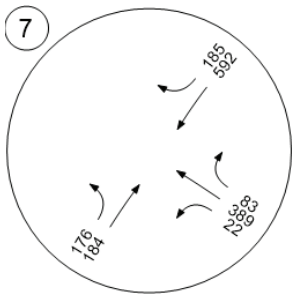
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	3.32	3.35	7.88	7.21	0.00	0.00	0.00	0.00	23.01	24.06	25.32
Movement LOS		A	A	A	A					C	C	C
d_A, Approach Delay [s/veh]		3.32			7.36			0.00			24.18	
Approach LOS		A			A			A			C	
d_I, Intersection Delay [s/veh]	10.68											
Intersection LOS	B											
Intersection V/C	0.300											

Bagby Street at Walker Street

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM

Peak Hour Volume



Sequence

Ring 1	3	4	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

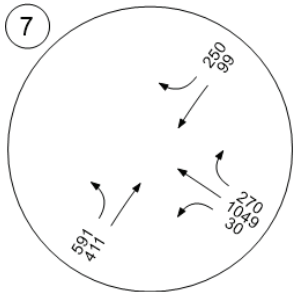
Name	Bagby Street			Bagby Street			Walker Street					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	157	164	0	0	529	165	20	347	74	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	176	184	0	0	592	185	22	389	83	0	0	0
Peak Hour Factor	0.9760	0.9760	1.0000	1.0000	0.9760	0.9760	0.9760	0.9760	0.9760	1.0000	1.0000	1.0000

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.41	49.70	0.00	0.00	25.71	15.16	27.31	27.66	28.49	0.00	0.00	0.00
Movement LOS	D	D			C	B	C	C	C			
d_A, Approach Delay [s/veh]	50.04			23.19			27.78			0.00		
Approach LOS	D			C			C			A		
d_I, Intersection Delay [s/veh]	30.51											
Intersection LOS	C											
Intersection V/C	0.586											

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM

Peak Hour Volume



Sequence

Ring 1	3	4	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Bagby Street			Bagby Street			Walker Street					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	528	367	0	0	88	223	27	937	241	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	591	411	0	0	99	250	30	1049	270	0	0	0
Peak Hour Factor	0.9460	0.9460	1.0000	1.0000	0.9460	0.9460	0.9460	0.9460	0.9460	1.0000	1.0000	1.0000

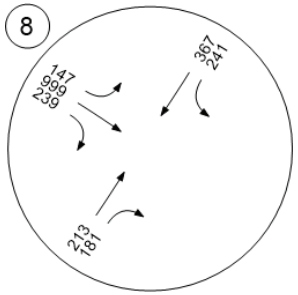
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	104.48	29.72	0.00	0.00	37.12	127.55	103.26	104.54	107.34	0.00	0.00	0.00
Movement LOS	F	C			D	F	F	F	F			
d_A, Approach Delay [s/veh]	73.84			101.82			105.07			0.00		
Approach LOS	E			F			F			A		
d_I, Intersection Delay [s/veh]	93.06											
Intersection LOS	F											
Intersection V/C	0.886											

Bagby Street at McKinney Street

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM

Peak Hour Volume



Sequence

Ring 1	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

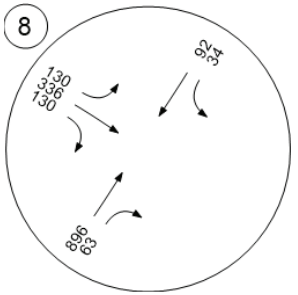
Name	Bagby Street			Bagby Street			McKinney Street			MicKinney Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	190	162	215	328	0	0	0	0	131	892	213
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	213	181	241	367	0	0	0	0	147	999	239
Peak Hour Factor	1.0000	0.9410	0.9410	0.9410	0.9410	1.0000	1.0000	1.0000	1.0000	0.9410	0.9410	0.9410

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	13.00	13.63	23.32	23.32	0.00	0.00	0.00	0.00	40.66	37.47	43.42
Movement LOS		B	B	C	C					D	D	D
d_A, Approach Delay [s/veh]		13.29			23.32			0.00			38.83	
Approach LOS		B			C			A			D	
d_I, Intersection Delay [s/veh]	30.67											
Intersection LOS	C											
Intersection V/C	0.584											

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM

Peak Hour Volume



Sequence

Ring 1	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Bagby Street			Bagby Street			McKinney Street			McKinney Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	800	56	30	82	0	0	0	0	116	300	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	896	63	34	92	0	0	0	0	130	336	130
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	0.9400

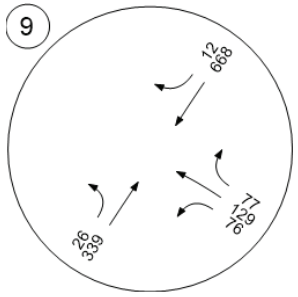
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.02	7.12	5.34	5.34	0.00	0.00	0.00	0.00	36.77	34.64	38.83
Movement LOS		A	A	A	A					D	C	D
d_A, Approach Delay [s/veh]		7.03			5.34			0.00			36.02	
Approach LOS		A			A			A			D	
d_I, Intersection Delay [s/veh]	17.17											
Intersection LOS	B											
Intersection V/C	0.456											

Bagby Street at Lamar Street

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM

Peak Hour Volume



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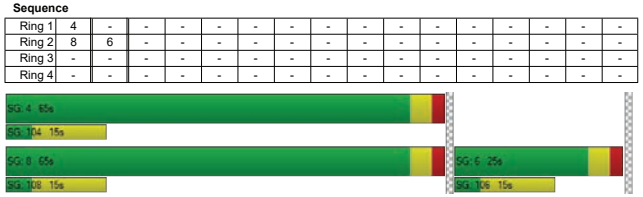


Intersection Setup

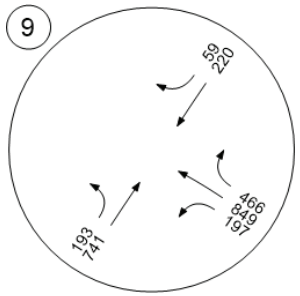
Name	Bagby Street			Bagby Street			Lamar Street					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	23	303	0	0	596	11	68	115	69	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	339	0	0	668	12	76	129	77	0	0	0
Peak Hour Factor	0.9620	0.9620	1.0000	1.0000	0.9620	0.9620	0.9620	0.9620	0.9620	1.0000	1.0000	1.0000

Movement, Approach, & Intersection Results

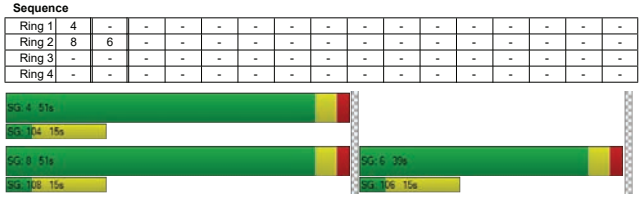
d_M, Delay for Movement [s/veh]	8.33	2.22	0.00	0.00	10.62	10.62	23.27	22.36	23.81	0.00	0.00	0.00
Movement LOS	A	A			B	B	C	C	C			
d_A, Approach Delay [s/veh]	2.66			10.62			23.00			0.00		
Approach LOS	A			B			C			A		
d_I, Intersection Delay [s/veh]	11.06											
Intersection LOS	B											
Intersection V/C	0.477											

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM

Peak Hour Volume



Sequence



Intersection Setup

Name	Bagby Street			Bagby Street			Lamar Street					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	172	662	0	0	196	53	176	758	416	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	193	741	0	0	220	59	197	849	466	0	0	0
Peak Hour Factor	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000	1.0000

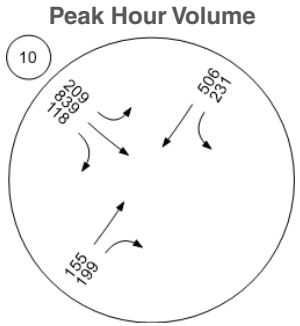
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.16	30.73	0.00	0.00	13.92	13.92	12.22	17.22	39.21	0.00	0.00	0.00
Movement LOS	B	C			B	B	B	B	D			
d_A, Approach Delay [s/veh]	28.14			13.92			23.35			0.00		
Approach LOS	C			B			C			A		
d_I, Intersection Delay [s/veh]	24.02											
Intersection LOS	C											
Intersection V/C	0.851											

West Dallas Street at Bagby Street/Allen Parkway

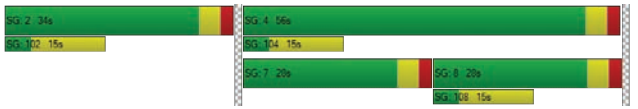
Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM

Peak Hour Volume



Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

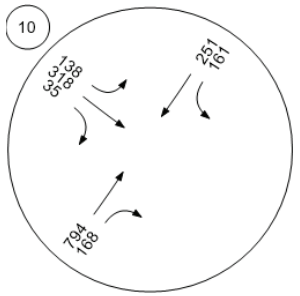
Name	West Dallas Street			Bagby Street			Dallas Street			Dallas Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	138	178	206	452	0	0	0	0	187	749	105
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	155	199	231	506	0	0	0	0	209	839	118
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	25.61	30.22	11.18	14.50	0.00	0.00	0.00	0.00	21.34	21.86	19.35
Movement LOS		C	C	B	B					C	C	B
d_A, Approach Delay [s/veh]		28.20			13.46			0.00			21.52	
Approach LOS		C			B			A			C	
d_I, Intersection Delay [s/veh]	19.93											
Intersection LOS	B											
Intersection V/C	0.523											

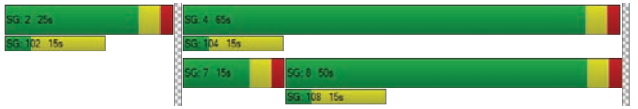
Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM

Peak Hour Volume



Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

Name	West Dallas Street			Bagby Street			Dallas Street			Dallas Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	709	150	144	224	0	0	0	0	123	284	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	794	168	161	251	0	0	0	0	138	318	35
Peak Hour Factor	1.0000	0.9310	0.9310	0.9310	0.9310	1.0000	1.0000	1.0000	1.0000	0.9310	0.9310	0.9310

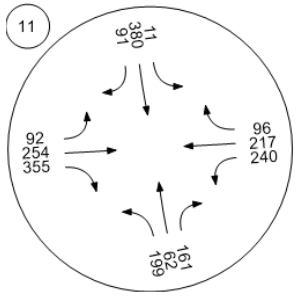
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	42.88	8.50	22.49	6.15	0.00	0.00	0.00	0.00	29.13	26.32	25.05
Movement LOS		D	A	C	A					C	C	C
d_A, Approach Delay [s/veh]		36.89			12.53			0.00			27.02	
Approach LOS		D			B			A			C	
d_I, Intersection Delay [s/veh]	28.90											
Intersection LOS	C											
Intersection V/C	0.651											

West Dallas Street at Clay Street

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM

Peak Hour Volume



Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

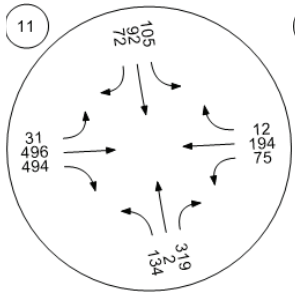
Name	Clay Street			Clay Street			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	178	55	144	10	339	81	82	227	317	214	194	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	199	62	161	11	380	91	92	254	355	240	217	96
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.12	38.95	62.06	24.62	51.91	53.69	31.64	22.53	44.43	17.09	12.14	12.14
Movement LOS	D	D	E	C	D	D	C	C	D	B	B	B
d_A, Approach Delay [s/veh]	47.83			51.60			34.81			14.29		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	35.85											
Intersection LOS	D											
Intersection V/C	0.638											

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM

Peak Hour Volume



Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Clay Street			Clay Street			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	120	2	285	94	82	64	28	443	441	67	173	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	2	319	105	92	72	31	496	494	75	194	12
Peak Hour Factor	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690

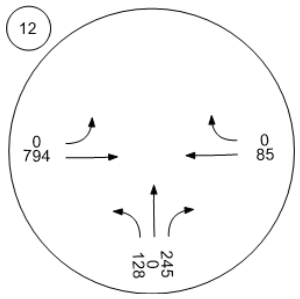
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.70	20.70	67.29	71.57	51.67	58.08	16.13	26.72	45.75	15.78	10.44	10.44
Movement LOS	C	C	E	E	D	E	B	C	D	B	B	B
d_A, Approach Delay [s/veh]	53.38			61.14			35.61			11.86		
Approach LOS	D			E			D			B		
d_I, Intersection Delay [s/veh]	39.70											
Intersection LOS	D											
Intersection V/C	0.683											

West Dallas Street at IH45 Northbound Frontage Road

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM

Peak Hour Volume



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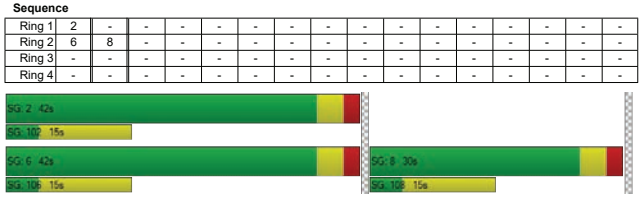


Intersection Setup

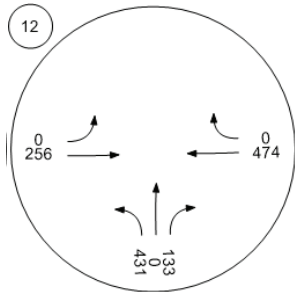
Name	IH45 NB Frontage Road			IH45 NB Frontage Road			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	114	0	219	0	0	0	0	709	0	0	76	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.00	1.00	1.00	1.12	1.12	1.00	1.00	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	128	0	245	0	0	0	0	794	0	0	85	0
Peak Hour Factor	0.9130	0.9130	0.9130	1.0000	1.0000	1.0000	0.9130	0.9130	1.0000	1.0000	0.9130	0.9130

Movement, Approach, & Intersection Results

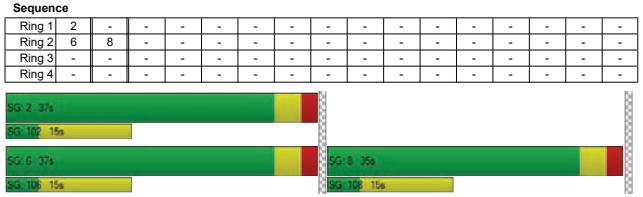
d_M, Delay for Movement [s/veh]	15.79	15.79	21.78	0.00	0.00	0.00	12.80	13.05	0.00	0.00	8.37	8.37
Movement LOS	B	B	C				B	B			A	A
d_A, Approach Delay [s/veh]	19.72			0.00			13.05			8.37		
Approach LOS	B			A			B			A		
d_I, Intersection Delay [s/veh]	14.72											
Intersection LOS	B											
Intersection V/C	0.458											

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM

Peak Hour Volume



Sequence



Intersection Setup

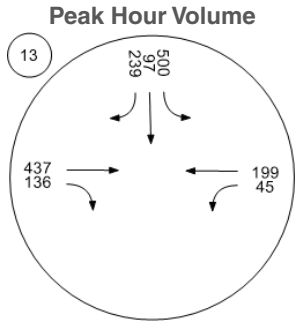
Name	IH45 NB Frontage Road			IH45 NB Frontage Road			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	385	0	119	0	0	0	0	229	0	0	423	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.00	1.00	1.00	1.12	1.12	1.00	1.00	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	431	0	133	0	0	0	0	256	0	0	474	0
Peak Hour Factor	0.9200	0.9200	0.9200	1.0000	1.0000	1.0000	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200

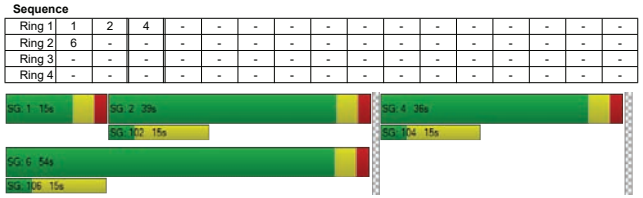
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.00	15.00	13.89	0.00	0.00	0.00	12.03	12.09	0.00	0.00	13.64	13.64
Movement LOS	B	B	B				B	B			B	B
d_A, Approach Delay [s/veh]	14.74			0.00			12.09			13.64		
Approach LOS	B			A			B			B		
d_I, Intersection Delay [s/veh]	13.81											
Intersection LOS	B											
Intersection V/C	0.299											

West Dallas Street at IH45 Southbound Frontage Road

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	AM





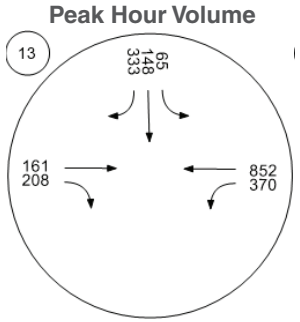
Intersection Setup

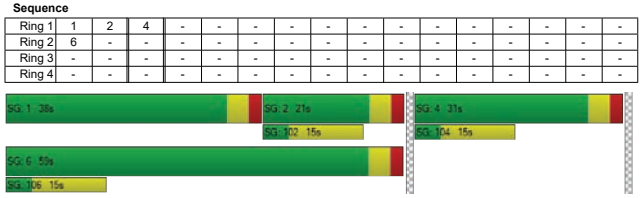
Name	He/IH			He/IH			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	446	87	213	0	390	121	40	178	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.12	1.12	1.12	1.00	1.12	1.12	1.12	1.12	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	500	97	239	0	437	136	45	199	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9380	0.9380	0.9380	1.0000	0.9380	0.9380	0.9380	0.9380	1.0000

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	25.16	19.56	26.25	0.00	23.27	23.93	11.60	10.68	0.00
Movement LOS				C	B	C		C	C	B	B	
d_A, Approach Delay [s/veh]	0.00			24.82			23.42			10.85		
Approach LOS	A			C			C			B		
d_I, Intersection Delay [s/veh]	22.28											
Intersection LOS	C											
Intersection V/C	0.421											

Corridor	Preferred Alternative
Traffic Volume	2040 Growth Only
Period	PM





Intersection Setup

Name	He/IH			He/IH			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	58	132	297	0	144	186	330	761	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.12	1.12	1.12	1.00	1.12	1.12	1.12	1.12	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	65	148	333	0	161	208	370	852	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9240	0.9240	0.9240	1.0000	0.9240	0.9240	0.9240	0.9240	1.0000

Movement, Approach, & Intersection Results

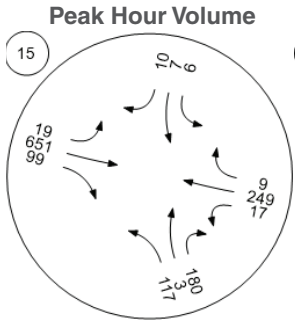
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	23.45	23.26	47.04	0.00	39.65	60.04	23.68	18.84	0.00
Movement LOS				C	C	D		D	E	C	B	
d_A, Approach Delay [s/veh]	0.00			37.79			51.15			20.31		
Approach LOS	A			D			D			C		
d_I, Intersection Delay [s/veh]	30.10											
Intersection LOS	C											
Intersection V/C	0.724											

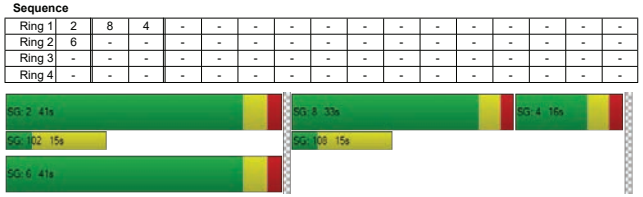
APPENDIX B-3

2040 NHHIP DISTRIBUTION TRAFFIC VOLUMES FOR RECOMMENDED CONCEPTUAL DESIGN

Franklin Street at Congress Street

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM





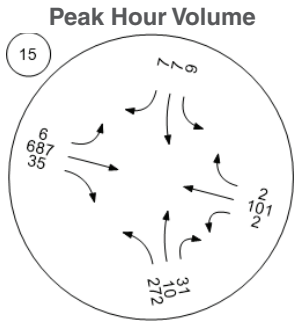
Intersection Setup

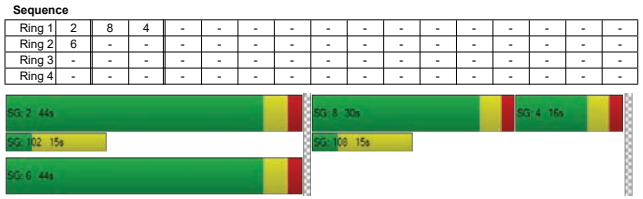
Name	Congress Street			Post Office Driveway			Franklin Street			Franklin Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	166	3	161	5	6	9	17	315	88	15	222	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	-69	0	0	0	0	0	0	298	0	0	0	0
Total Hourly Volume [veh/h]	117	3	180	6	7	10	19	651	99	17	249	9
Peak Hour Factor	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030	0.9030

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.49	26.60	26.60	35.51	35.51	35.51	20.51	20.12	20.98	25.86	17.63	17.64
Movement LOS	C	C	C	D	D	D	C	C	C	C	B	B
d_A, Approach Delay [s/veh]	25.38			35.51			20.24			18.14		
Approach LOS	C			D			C			B		
d_I, Intersection Delay [s/veh]	21.21											
Intersection LOS	C											
Intersection V/C	0.327											

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM





Intersection Setup

Name	Congress Street			Post Office Driveway			Franklin Street			Franklin Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	389	9	28	8	6	6	5	423	31	2	90	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	-164	0	0	0	0	0	0	213	0	0	0	0
Total Hourly Volume [veh/h]	272	10	31	9	7	7	6	687	35	2	101	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500

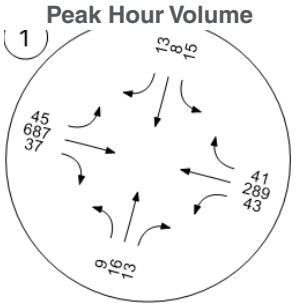
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.27	27.30	27.30	35.26	35.26	35.26	16.08	17.36	17.83	21.02	14.51	14.51
Movement LOS	C	C	C	D	D	D	B	B	B	C	B	B
d_A, Approach Delay [s/veh]	27.27			35.26			17.37			14.62		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	20.12											
Intersection LOS	C											
Intersection V/C	0.272											

Bagby Street at Franklin Street

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM

Peak Hour Volume



Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

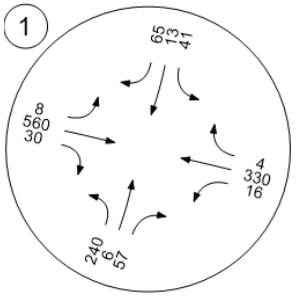
Name	Bagby Street			Bagby Street			Franklin Street			Franklin Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	40	14	37	13	7	12	40	347	33	38	320	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	-36	0	-28	0	0	0	0	298	0	0	-69	0
Total Hourly Volume [veh/h]	9	16	13	15	8	13	45	687	37	43	289	41
Peak Hour Factor	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120	0.9120

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.62	29.62	29.62	31.29	31.38	31.47	15.99	15.94	15.96	22.70	12.66	12.70
Movement LOS	C	C	C	C	C	C	B	B	B	C	B	B
d_A, Approach Delay [s/veh]	29.39			31.38			15.95			13.82		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	16.17											
Intersection LOS	B											
Intersection V/C	0.272											

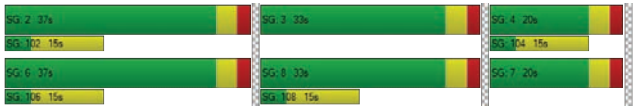
Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM

Peak Hour Volume



Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

Name	Bagby Street			Bagby Street			Franklin Street			Franklin Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	393	5	106	37	12	58	7	310	27	14	441	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	-200	0	-62	0	0	0	0	213	0	0	-164	0
Total Hourly Volume [veh/h]	240	6	57	41	13	65	8	560	30	16	330	4
Peak Hour Factor	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110	0.9110

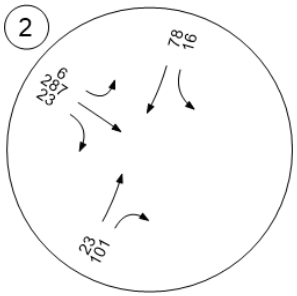
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.33	18.83	18.83	33.17	33.17	35.58	24.58	25.66	25.71	30.94	21.49	21.49
Movement LOS	C	B	B	C	C	D	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	23.96			34.49			25.65			21.93		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	25.09											
Intersection LOS	C											
Intersection V/C	0.413											

Bagby Street at Preston Street

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM

Peak Hour Volume



Sequence

Ring 1	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

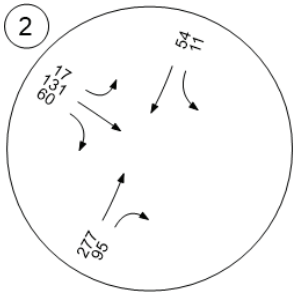
Name	Bagby Street			Bagby Street			Preston Street			Preston Street		
Approach	Southbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	14	70	0	0	78	90	0	0	0	5	506	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	-64	0	0	0	0	0	-280	-207
Total Hourly Volume [veh/h]	16	78	0	0	23	101	0	0	0	6	287	23
Peak Hour Factor	0.9030	0.9030	1.0000	1.0000	0.9030	0.9030	1.0000	1.0000	1.0000	0.9030	0.9030	0.9030

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.99	8.29	0.00	0.00	13.82	13.82	0.00	0.00	0.00	22.41	22.50	22.59
Movement LOS	D	A			B	B				C	C	C
d_A, Approach Delay [s/veh]	13.09			13.82			0.00			22.51		
Approach LOS	B			B			A			C		
d_I, Intersection Delay [s/veh]	18.84											
Intersection LOS	B											
Intersection V/C	0.178											

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM

Peak Hour Volume



Sequence

Ring 1	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Bagby Street			Bagby Street			Preston Street			Preston Street		
Approach	Southbound			Northeastbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	10	48	0	0	481	85	0	0	0	15	199	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	-262	0	0	0	0	0	-92	0
Total Hourly Volume [veh/h]	11	54	0	0	277	95	0	0	0	17	131	60
Peak Hour Factor	0.9300	0.9300	1.0000	1.0000	0.9300	0.9300	1.0000	1.0000	1.0000	0.9300	0.9300	0.9300

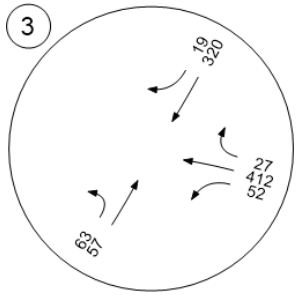
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.53	3.28	0.00	0.00	7.29	7.29	0.00	0.00	0.00	34.02	34.18	35.10
Movement LOS	D	A			A	A				C	C	D
d_A, Approach Delay [s/veh]	8.81			7.29			0.00			34.43		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	16.21											
Intersection LOS	B											
Intersection V/C	0.308											

Bagby Street at Prairie Street/WB Memorial Drive

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM

Peak Hour Volume



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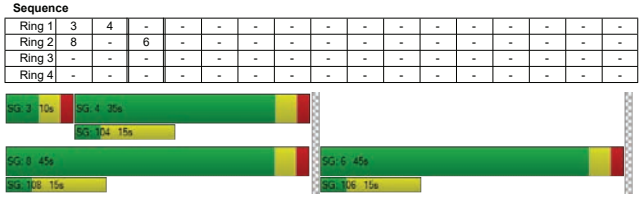


Intersection Setup

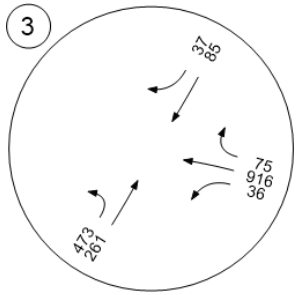
Name	Memorial Drive			Prairie Street			Bagby Street			Bagby Street		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	46	368	24	56	108	0	0	286	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	-64	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	52	412	27	63	57	0	0	320	19
Peak Hour Factor	1.0000	1.0000	1.0000	0.9690	0.9690	0.9690	0.9690	0.9690	1.0000	1.0000	0.9690	0.9690

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	6.19	6.85	6.07	11.17	10.07	0.00	0.00	22.75	22.81
Movement LOS				A	A	A	B	B			C	C
d_A, Approach Delay [s/veh]	0.00			6.73			10.64			22.76		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	12.95											
Intersection LOS	B											
Intersection V/C	0.256											

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM

Peak Hour Volume



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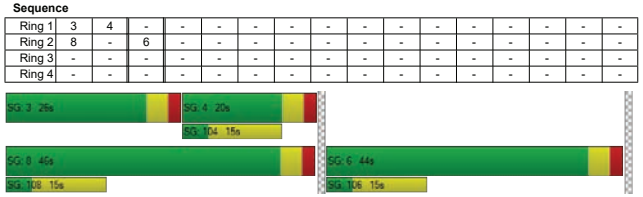


Intersection Setup

Name	Memorial Drive			Prairie Street			Bagby Street			Bagby Street		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	32	818	67	422	467	0	0	76	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	-262	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	36	916	75	473	261	0	0	85	37
Peak Hour Factor	1.0000	1.0000	1.0000	0.9210	0.9210	0.9210	0.9210	0.9210	1.0000	1.0000	0.9210	0.9210

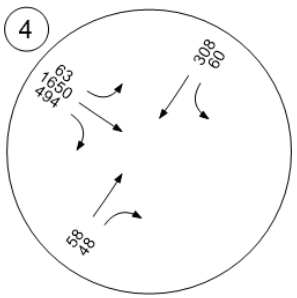
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	6.70	11.30	7.08	19.06	11.74	0.00	0.00	33.32	33.70
Movement LOS				A	B	A	B	B			C	C
d_A, Approach Delay [s/veh]	0.00			10.83			16.46			33.43		
Approach LOS	A			B			B			C		
d_I, Intersection Delay [s/veh]	14.49											
Intersection LOS	B											
Intersection V/C	0.590											

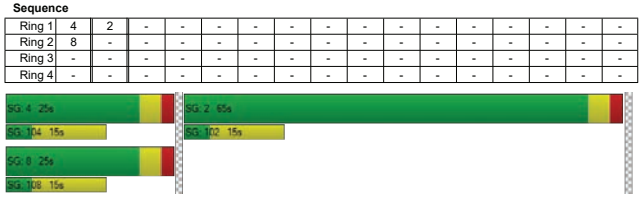
Bagby Street at Texas Avenue/EB Memorial Drive

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM

Peak Hour Volume



Sequence



Intersection Setup

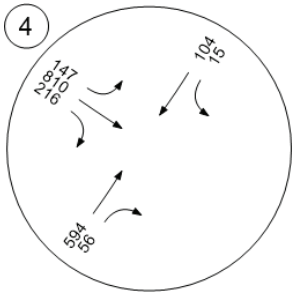
Name	Bagby Street			Bagby Street			Texas Avenue			Memorial Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	109	43	54	275	0	0	0	0	56	1207	441
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-64	0	0	0	0	0	0	0	0	298	0
Total Hourly Volume [veh/h]	0	58	48	60	308	0	0	0	0	63	1650	494
Peak Hour Factor	1.0000	0.9690	0.9690	0.9690	0.9690	1.0000	1.0000	1.0000	1.0000	0.9690	0.9690	0.9690

Movement, Approach, & Intersection Results

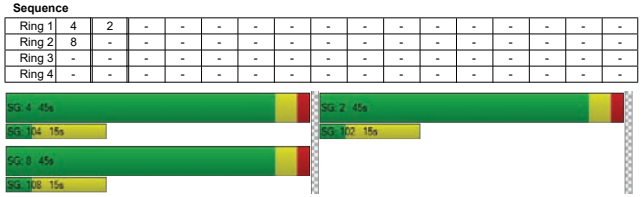
d_M, Delay for Movement [s/veh]	0.00	25.28	25.65	34.39	34.93	0.00	0.00	0.00	0.00	9.67	9.09	10.44
Movement LOS		C	C	C	C					A	A	B
d_A, Approach Delay [s/veh]		25.45			34.84			0.00			9.41	
Approach LOS		C			C			A			A	
d_I, Intersection Delay [s/veh]	13.54											
Intersection LOS	B											
Intersection V/C	0.523											

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM

Peak Hour Volume



Sequence



Intersection Setup

Name	Bagby Street			Bagby Street			Texas Avenue			Memorial Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	764	50	13	93	0	0	0	0	131	533	193
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-262	0	0	0	0	0	0	0	0	213	0
Total Hourly Volume [veh/h]	0	594	56	15	104	0	0	0	0	147	810	216
Peak Hour Factor	1.0000	0.9160	0.9160	0.9160	0.9160	1.0000	1.0000	1.0000	1.0000	0.9160	0.9160	0.9160

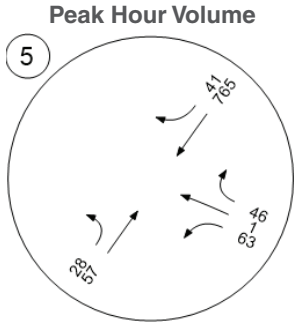
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	13.77	13.92	14.58	14.39	0.00	0.00	0.00	0.00	19.18	18.54	19.78
Movement LOS		B	B	B	B					B	B	B
d_A, Approach Delay [s/veh]		13.79			14.41			0.00			18.85	
Approach LOS		B			B			A			B	
d_I, Intersection Delay [s/veh]	16.88											
Intersection LOS	B											
Intersection V/C	0.436											

Bagby Street at Capitol Street

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM

Peak Hour Volume



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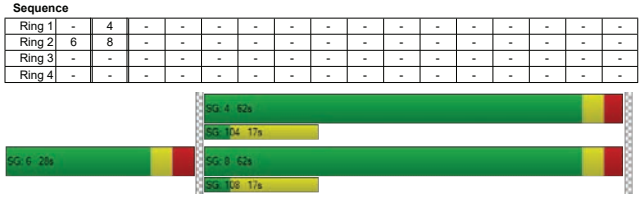


Intersection Setup

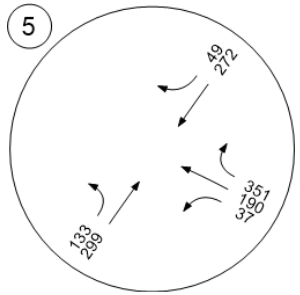
Name	Capitol Street			Bagby Street			Bagby Street			Capitol Street		
Approach	Eastbound			Northeastbound			Southwestbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	37	108	0	0	683	37	56	177	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.12	1.12	1.00	1.00	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	-13	-64	0	0	0	0	0	-197	0
Total Hourly Volume [veh/h]	0	0	0	28	57	0	0	765	41	63	1	46
Peak Hour Factor	1.0000	1.0000	1.0000	0.9490	0.9490	1.0000	1.0000	0.9490	0.9490	0.9490	0.9490	0.9490

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	3.95	2.60	0.00	0.00	8.72	8.77	19.71	18.35	19.50
Movement LOS				A	A			A	A	B	B	B
d_A, Approach Delay [s/veh]	0.00			3.05			8.72			19.62		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	9.42											
Intersection LOS	A											
Intersection V/C	0.298											

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM

Peak Hour Volume



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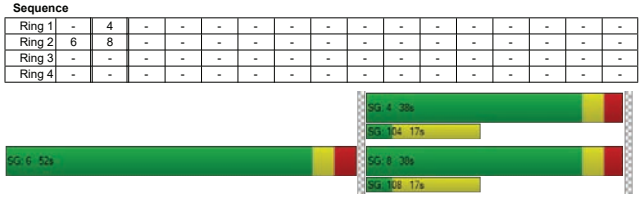


Intersection Setup

Name	Bagby Street			Bagby Street			Capitol Street			Capitol Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	119	501	0	0	243	44	47	535	313	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-262	0	0	0	0	-16	-409	0	0	0	0
Total Hourly Volume [veh/h]	133	299	0	0	272	49	37	190	351	0	0	0
Peak Hour Factor	0.9440	0.9440	1.0000	1.0000	0.9440	0.9440	0.9440	0.9440	0.9440	1.0000	1.0000	1.0000

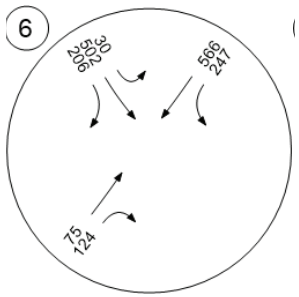
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.05	20.18	0.00	0.00	20.51	20.66	2.72	2.73	4.81	0.00	0.00	0.00
Movement LOS	C	C			C	C	A	A	A			
d_A, Approach Delay [s/veh]	21.98			20.54			3.99			0.00		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	13.83											
Intersection LOS	B											
Intersection V/C	0.489											

Bagby Street at Rusk Street

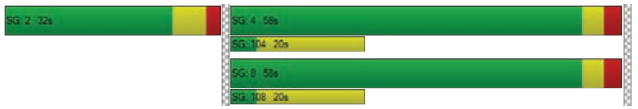
Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM

Peak Hour Volume



Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

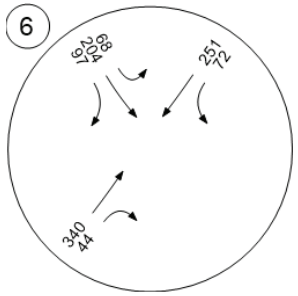
Name	Bagby Street			Bagby Street			Rusk Street			Rusk Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	124	111	232	505	0	0	0	0	27	607	184
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-64	0	-13	0	0	0	0	0	0	-178	0
Total Hourly Volume [veh/h]	0	75	124	247	566	0	0	0	0	30	502	206
Peak Hour Factor	1.0000	0.9510	0.9510	0.9510	0.9510	1.0000	1.0000	1.0000	1.0000	0.9510	0.9510	0.9510

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	3.84	4.16	14.40	12.90	0.00	0.00	0.00	0.00	18.70	23.20	25.70
Movement LOS		A	A	B	B					B	C	C
d_A, Approach Delay [s/veh]		4.04			13.36			0.00			23.71	
Approach LOS		A			B			A			C	
d_I, Intersection Delay [s/veh]	16.67											
Intersection LOS	B											
Intersection V/C	0.497											

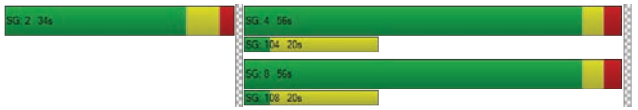
Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM

Peak Hour Volume



Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

Name	Bagby Street			Bagby Street			Rusk Street			Rusk Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	552	39	64	224	0	0	0	0	61	246	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-278	0	0	0	0	0	0	0	0	-72	0
Total Hourly Volume [veh/h]	0	340	44	72	251	0	0	0	0	68	204	97
Peak Hour Factor	1.0000	0.9470	0.9470	0.9470	0.9470	1.0000	1.0000	1.0000	1.0000	0.9470	0.9470	0.9470

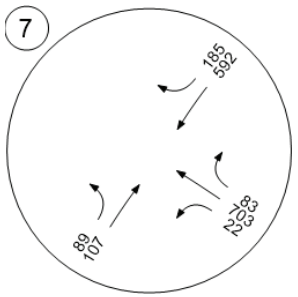
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	5.22	5.25	10.37	9.86	0.00	0.00	0.00	0.00	17.85	18.11	18.82
Movement LOS		A	A	B	A					B	B	B
d_A, Approach Delay [s/veh]		5.22			9.97			0.00			18.25	
Approach LOS		A			A			A			B	
d_I, Intersection Delay [s/veh]	11.11											
Intersection LOS	B											
Intersection V/C	0.213											

Bagby Street at Walker Street

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM

Peak Hour Volume



Sequence

Ring 1	3	4	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

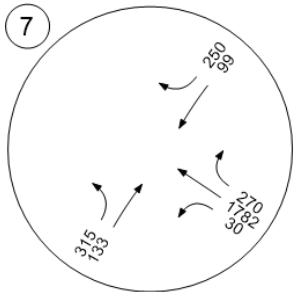
Name	Bagby Street			Bagby Street			Walker Street					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	157	164	0	0	529	165	20	347	74	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	-87	-77	0	0	0	0	0	314	0	0	0	0
Total Hourly Volume [veh/h]	89	107	0	0	592	185	22	703	83	0	0	0
Peak Hour Factor	0.9760	0.9760	1.0000	1.0000	0.9760	0.9760	0.9760	0.9760	0.9760	1.0000	1.0000	1.0000

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.95	55.60	0.00	0.00	22.91	13.88	29.44	30.04	30.86	0.00	0.00	0.00
Movement LOS	D	E			C	B	C	C	C			
d_A, Approach Delay [s/veh]	53.50			20.76			30.10			0.00		
Approach LOS	D			C			C			A		
d_I, Intersection Delay [s/veh]	28.60											
Intersection LOS	C											
Intersection V/C	0.605											

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM

Peak Hour Volume



Sequence

Ring 1	3	4	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Bagby Street			Bagby Street			Walker Street					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	528	367	0	0	88	223	27	937	241	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	-276	-278	0	0	0	0	0	733	0	0	0	0
Total Hourly Volume [veh/h]	315	133	0	0	99	250	30	1782	270	0	0	0
Peak Hour Factor	0.9460	0.9460	1.0000	1.0000	0.9460	0.9460	0.9460	0.9460	0.9460	1.0000	1.0000	1.0000

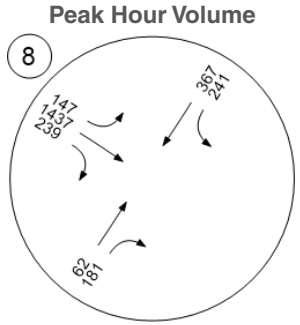
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	77.28	30.99	0.00	0.00	34.34	85.50	45.07	47.20	52.59	0.00	0.00	0.00
Movement LOS	E	C			C	F	D	D	D			
d_A, Approach Delay [s/veh]	63.51			70.94			47.87			0.00		
Approach LOS	E			E			D			A		
d_I, Intersection Delay [s/veh]	53.10											
Intersection LOS	D											
Intersection V/C	0.873											

Bagby Street at McKinney Street

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM

Peak Hour Volume



Sequence

Ring 1	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

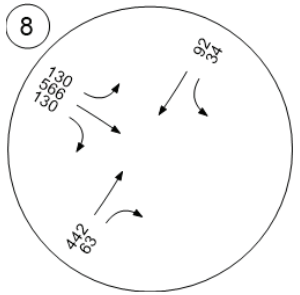
Name	Bagby Street			Bagby Street			McKinney Street			MicKinney Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	190	162	215	328	0	0	0	0	131	892	213
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-151	0	0	0	0	0	0	0	0	438	0
Total Hourly Volume [veh/h]	0	62	181	241	367	0	0	0	0	147	1437	239
Peak Hour Factor	1.0000	0.9410	0.9410	0.9410	0.9410	1.0000	1.0000	1.0000	1.0000	0.9410	0.9410	0.9410

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	14.68	17.53	33.32	33.32	0.00	0.00	0.00	0.00	43.85	40.22	46.39
Movement LOS		B	B	C	C					D	D	D
d_A, Approach Delay [s/veh]		16.80			33.32			0.00			41.32	
Approach LOS		B			C			A			D	
d_I, Intersection Delay [s/veh]	37.28											
Intersection LOS	D											
Intersection V/C	0.649											

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM

Peak Hour Volume



Sequence

Ring 1	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Bagby Street			Bagby Street			McKinney Street			McKinney Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	800	56	30	82	0	0	0	0	116	300	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-454	0	0	0	0	0	0	0	0	230	0
Total Hourly Volume [veh/h]	0	442	63	34	92	0	0	0	0	130	566	130
Peak Hour Factor	1.0000	0.9400	0.9400	0.9400	0.9400	1.0000	1.0000	1.0000	1.0000	0.9400	0.9400	0.9400

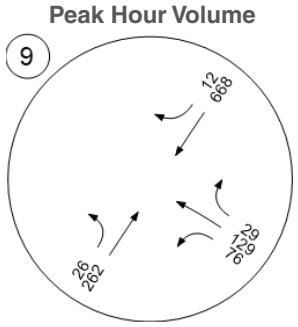
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	14.76	14.92	11.76	11.76	0.00	0.00	0.00	0.00	22.31	21.76	22.84
Movement LOS		B	B	B	B					C	C	C
d_A, Approach Delay [s/veh]		14.78			11.76			0.00			22.02	
Approach LOS		B			B			A			C	
d_I, Intersection Delay [s/veh]	18.62											
Intersection LOS	B											
Intersection V/C	0.364											

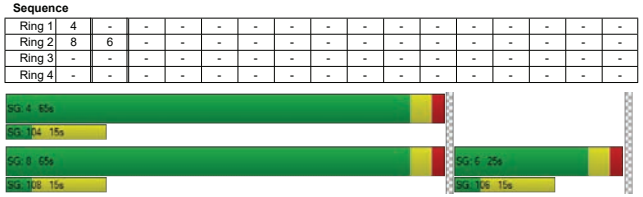
Bagby Street at Lamar Street

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM

Peak Hour Volume



Sequence



Intersection Setup

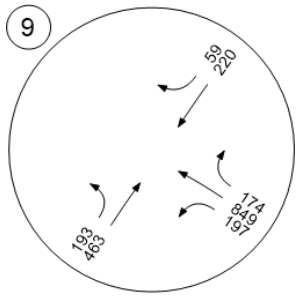
Name	Bagby Street			Bagby Street			Lamar Street					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	23	303	0	0	596	11	68	115	69	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-77	0	0	0	0	0	0	-48	0	0	0
Total Hourly Volume [veh/h]	26	262	0	0	668	12	76	129	29	0	0	0
Peak Hour Factor	0.9620	0.9620	1.0000	1.0000	0.9620	0.9620	0.9620	0.9620	0.9620	1.0000	1.0000	1.0000

Movement, Approach, & Intersection Results

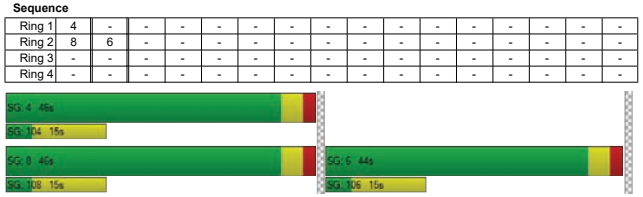
d_M, Delay for Movement [s/veh]	8.33	1.98	0.00	0.00	10.62	10.62	23.27	22.36	21.98	0.00	0.00	0.00
Movement LOS	A	A			B	B	C	C	C			
d_A, Approach Delay [s/veh]	2.55			10.62			22.61			0.00		
Approach LOS	A			B			C			A		
d_I, Intersection Delay [s/veh]	11.02											
Intersection LOS	B											
Intersection V/C	0.470											

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM

Peak Hour Volume



Sequence



Intersection Setup

Name	Bagby Street			Bagby Street			Lamar Street					
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	172	662	0	0	196	53	176	758	416	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.00	1.00	1.12	1.12	1.12	1.12	1.12	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-278	0	0	0	0	0	0	-292	0	0	0
Total Hourly Volume [veh/h]	193	463	0	0	220	59	197	849	174	0	0	0
Peak Hour Factor	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000	1.0000	1.0000	1.0000

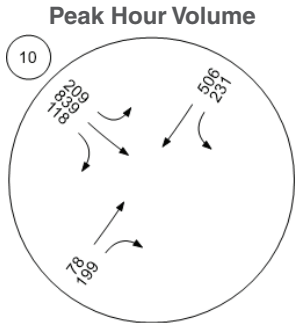
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.76	16.60	0.00	0.00	17.46	17.46	8.13	10.67	8.24	0.00	0.00	0.00
Movement LOS	C	B			B	B	A	B	A			
d_A, Approach Delay [s/veh]	19.29			17.46			9.91			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	13.74											
Intersection LOS	B											
Intersection V/C	0.600											

West Dallas Street at Bagby Street/Allen Parkway

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM

Peak Hour Volume



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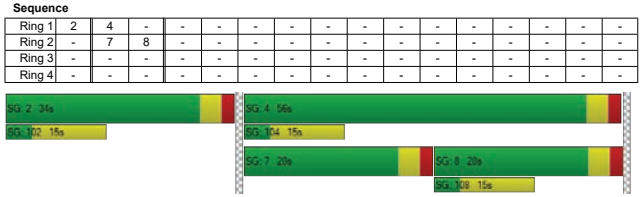


Intersection Setup

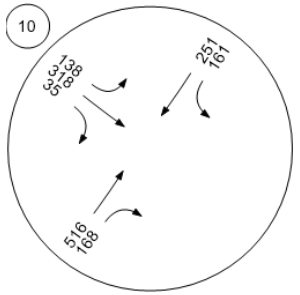
Name	West Dallas Street			Bagby Street			Dallas Street			Dallas Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	138	178	206	452	0	0	0	0	187	749	105
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-77	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	78	199	231	506	0	0	0	0	209	839	118
Peak Hour Factor	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	23.13	30.22	10.80	14.50	0.00	0.00	0.00	0.00	21.34	21.86	19.35
Movement LOS		C	C	B	B					C	C	B
d_A, Approach Delay [s/veh]		28.23			13.34			0.00			21.52	
Approach LOS		C			B			A			C	
d_I, Intersection Delay [s/veh]	19.60											
Intersection LOS	B											
Intersection V/C	0.523											

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM

Peak Hour Volume



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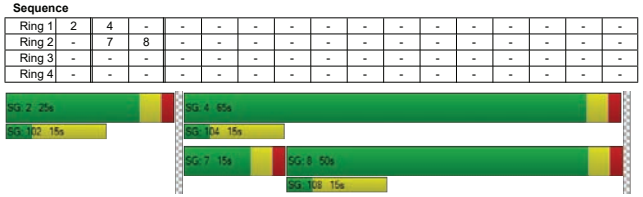


Intersection Setup

Name	West Dallas Street			Bagby Street			Dallas Street			Dallas Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	709	150	144	224	0	0	0	0	123	284	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.12	1.12	1.12	1.12	1.00	1.00	1.00	1.00	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	-278	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	516	168	161	251	0	0	0	0	138	318	35
Peak Hour Factor	1.0000	0.9310	0.9310	0.9310	0.9310	1.0000	1.0000	1.0000	1.0000	0.9310	0.9310	0.9310

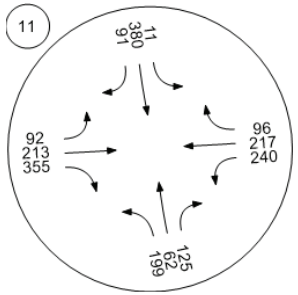
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	13.39	8.50	8.78	6.15	0.00	0.00	0.00	0.00	29.13	26.32	25.05
Movement LOS		B	A	A	A					C	C	C
d_A, Approach Delay [s/veh]		12.19			7.18			0.00			27.02	
Approach LOS		B			A			A			C	
d_I, Intersection Delay [s/veh]	15.48											
Intersection LOS	B											
Intersection V/C	0.473											

West Dallas Street at Clay Street

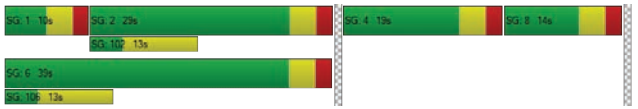
Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM

Peak Hour Volume



Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Setup

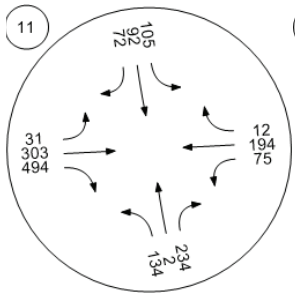
Name	Clay Street			Clay Street			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	178	55	144	10	339	81	82	227	317	214	194	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	-36	0	0	0	0	-41	0	0	0	0
Total Hourly Volume [veh/h]	199	62	125	11	380	91	92	213	355	240	217	96
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.12	38.95	43.64	22.93	39.12	40.06	25.82	16.18	26.58	19.54	13.63	13.63
Movement LOS	D	D	D	C	D	D	C	B	C	B	B	B
d_A, Approach Delay [s/veh]	40.56			38.91			23.11			16.20		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	28.18											
Intersection LOS	C											
Intersection V/C	0.603											

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM

Peak Hour Volume



Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Setup

Name	Clay Street			Clay Street			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	120	2	285	94	82	64	28	443	441	67	173	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	-85	0	0	0	0	-193	0	0	0	0
Total Hourly Volume [veh/h]	134	2	234	105	92	72	31	303	494	75	194	12
Peak Hour Factor	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690

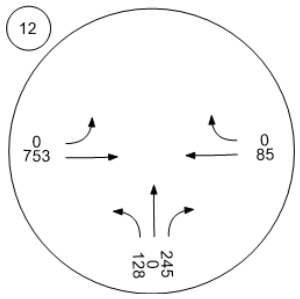
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.06	24.06	54.25	71.57	51.67	58.08	13.39	13.14	28.78	12.74	8.72	8.72
Movement LOS	C	C	D	E	D	E	B	B	C	B	A	A
d_A, Approach Delay [s/veh]	43.16			61.14			22.48			9.79		
Approach LOS	D			E			C			A		
d_I, Intersection Delay [s/veh]	30.76											
Intersection LOS	C											
Intersection V/C	0.620											

West Dallas Street at IH45 Northbound Frontage Road

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM

Peak Hour Volume



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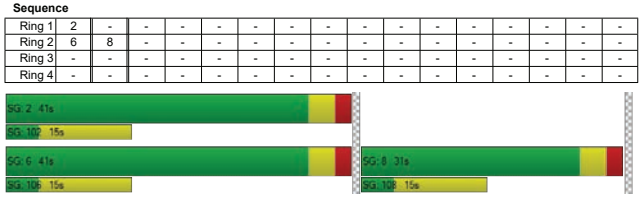


Intersection Setup

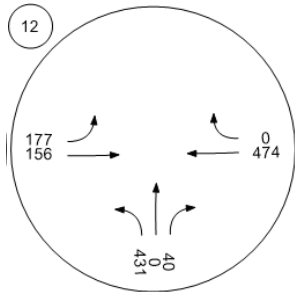
Name	IH45 NB Frontage Road			IH45 NB Frontage Road			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	114	0	219	0	0	0	0	709	0	0	76	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.00	1.00	1.00	1.12	1.12	1.00	1.00	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	-41	0	0	0	0
Total Hourly Volume [veh/h]	128	0	245	0	0	0	0	753	0	0	85	0
Peak Hour Factor	0.9130	0.9130	0.9130	1.0000	1.0000	1.0000	0.9130	0.9130	1.0000	1.0000	0.9130	0.9130

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.10	15.10	20.61	0.00	0.00	0.00	13.19	13.44	0.00	0.00	8.87	8.87
Movement LOS	B	B	C				B	B			A	A
d_A, Approach Delay [s/veh]	18.72			0.00			13.44			8.87		
Approach LOS	B			A			B			A		
d_I, Intersection Delay [s/veh]	14.74											
Intersection LOS	B											
Intersection V/C	0.444											

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM

Peak Hour Volume



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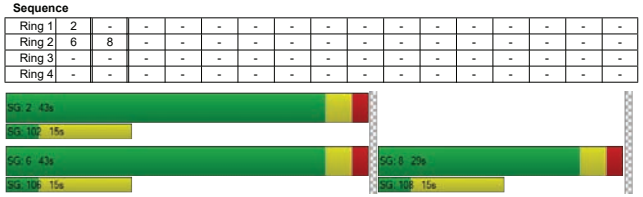


Intersection Setup

Name	IH45 NB Frontage Road			IH45 NB Frontage Road			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	385	0	119	0	0	0	0	229	0	0	423	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.12	1.12	1.12	1.00	1.00	1.00	1.12	1.12	1.00	1.00	1.12	1.12
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	-93	0	0	0	177	-100	0	0	0	0
Total Hourly Volume [veh/h]	431	0	40	0	0	0	177	156	0	0	474	0
Peak Hour Factor	0.9200	0.9200	0.9200	1.0000	1.0000	1.0000	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200

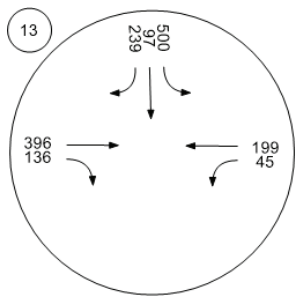
Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.29	20.29	16.16	0.00	0.00	0.00	18.41	9.07	0.00	0.00	9.70	9.70
Movement LOS	C	C	B				B	A			A	A
d_A, Approach Delay [s/veh]	19.94			0.00			14.02			9.70		
Approach LOS	B			A			B			A		
d_I, Intersection Delay [s/veh]	14.60											
Intersection LOS	B											
Intersection V/C	0.449											

West Dallas Street at IH45 Southbound Frontage Road

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	AM

Peak Hour Volume



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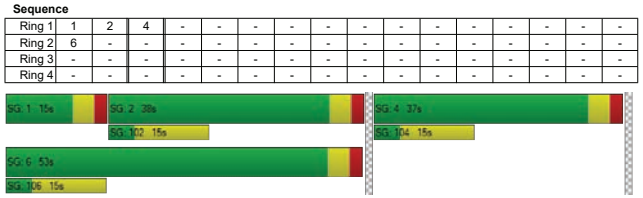


Intersection Setup

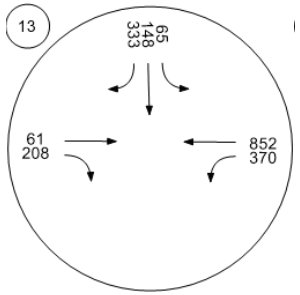
Name	He/IH			He/IH			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	446	87	213	0	390	121	40	178	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.12	1.12	1.12	1.00	1.12	1.12	1.12	1.12	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	-41	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	500	97	239	0	396	136	45	199	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9380	0.9380	0.9380	1.0000	0.9380	0.9380	0.9380	0.9380	1.0000

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	24.17	18.89	25.17	0.00	23.54	24.23	11.97	11.13	0.00
Movement LOS				C	B	C		C	C	B	B	
d_A, Approach Delay [s/veh]	0.00			23.84			23.72			11.29		
Approach LOS	A			C			C			B		
d_I, Intersection Delay [s/veh]	21.90											
Intersection LOS	C											
Intersection V/C	0.409											

Corridor	Preferred Alternative
Traffic Volume	2040 NHHIP Distribution
Period	PM

Peak Hour Volume



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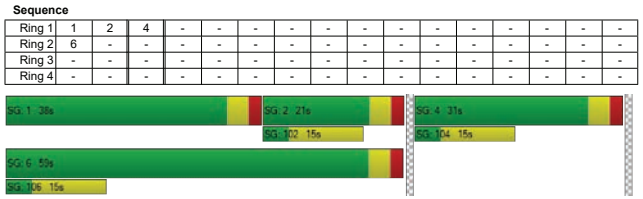

Intersection Setup

Name	He/IH			He/IH			West Dallas Street			West Dallas Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	58	132	297	0	144	186	330	761	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.12	1.12	1.12	1.00	1.12	1.12	1.12	1.12	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	-100	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	65	148	333	0	61	208	370	852	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9240	0.9240	0.9240	1.0000	0.9240	0.9240	0.9240	0.9240	1.0000

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	23.45	23.26	47.04	0.00	32.29	60.04	23.36	18.74	0.00
Movement LOS				C	C	D		C	E	C	B	
d_A, Approach Delay [s/veh]	0.00			37.79			53.75			20.13		
Approach LOS	A			D			D			C		
d_I, Intersection Delay [s/veh]	29.30											
Intersection LOS	C											
Intersection V/C	0.725											

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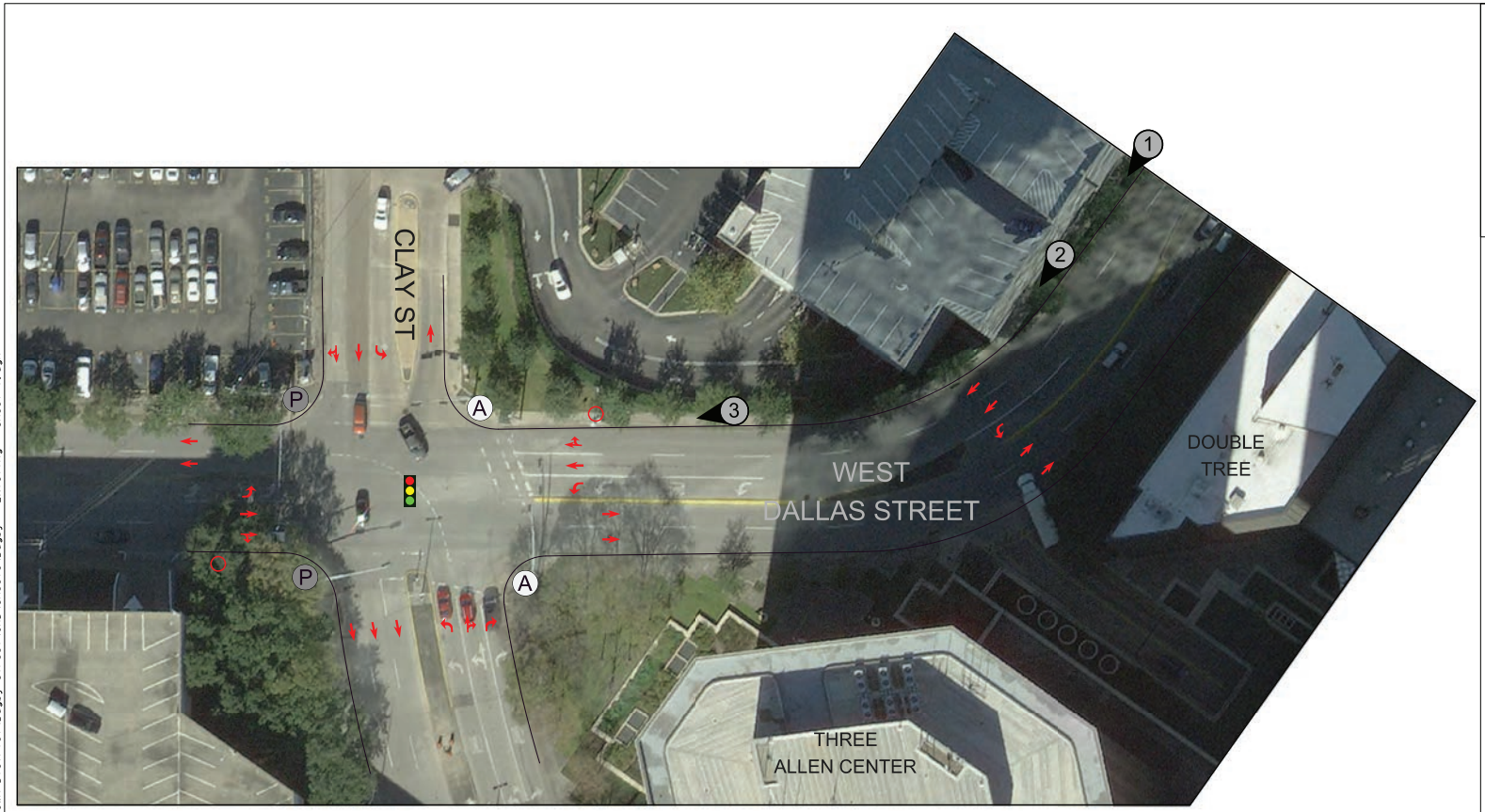
APPENDIX C

EXISTING CORRIDOR ASSESSMENT

This appendix includes a block by block assessment of the Bagby Street corridor. Sheets include:

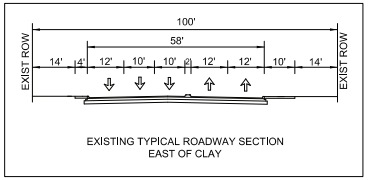
- Existing pavement
- Existing ROW
- Ramp conditions
- Parcel boundaries
- Lane assignments



1

2

3



EXISTING TYPICAL ROADWAY SECTION
EAST OF CLAY

BAGBY STREET PROJECT

DOWNTOWN
REDEVELOPMENT
AUTHORITY

EXISTING CONDITIONS
SHEET 1 OF 8

LEGEND

- EDGE OF PAVEMENT
- ROW
- LANE ASSIGNMENTS
- METRO BUS STOP

CURB RAMP CONDITION

- A — ACCEPTABLE
- P — POOR
- M — MISSING

Pavement Condition Index

N/A | 0-20 | 21-40 | 41-60 | 61-80 | 81-100

0 50 100
scale feet

Texas Board of Professional Engineers
Registration No. F-3158

801 Congress Street, Suite 325
Houston, Texas 77002
Phone: 713.270.8145
Fax: 281.809.0807

DATE:4/17/2018 5:59:15 PM USER:
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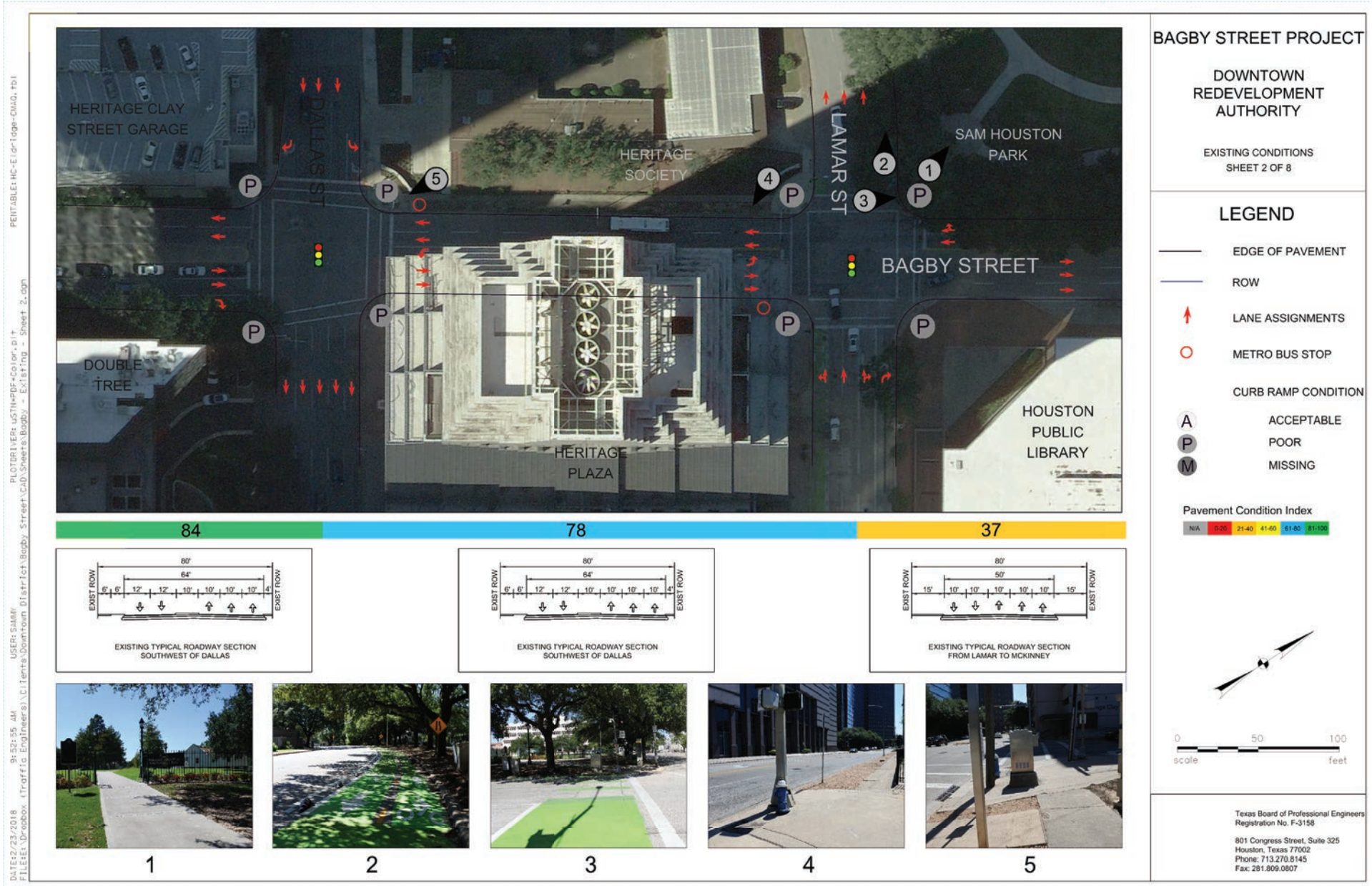

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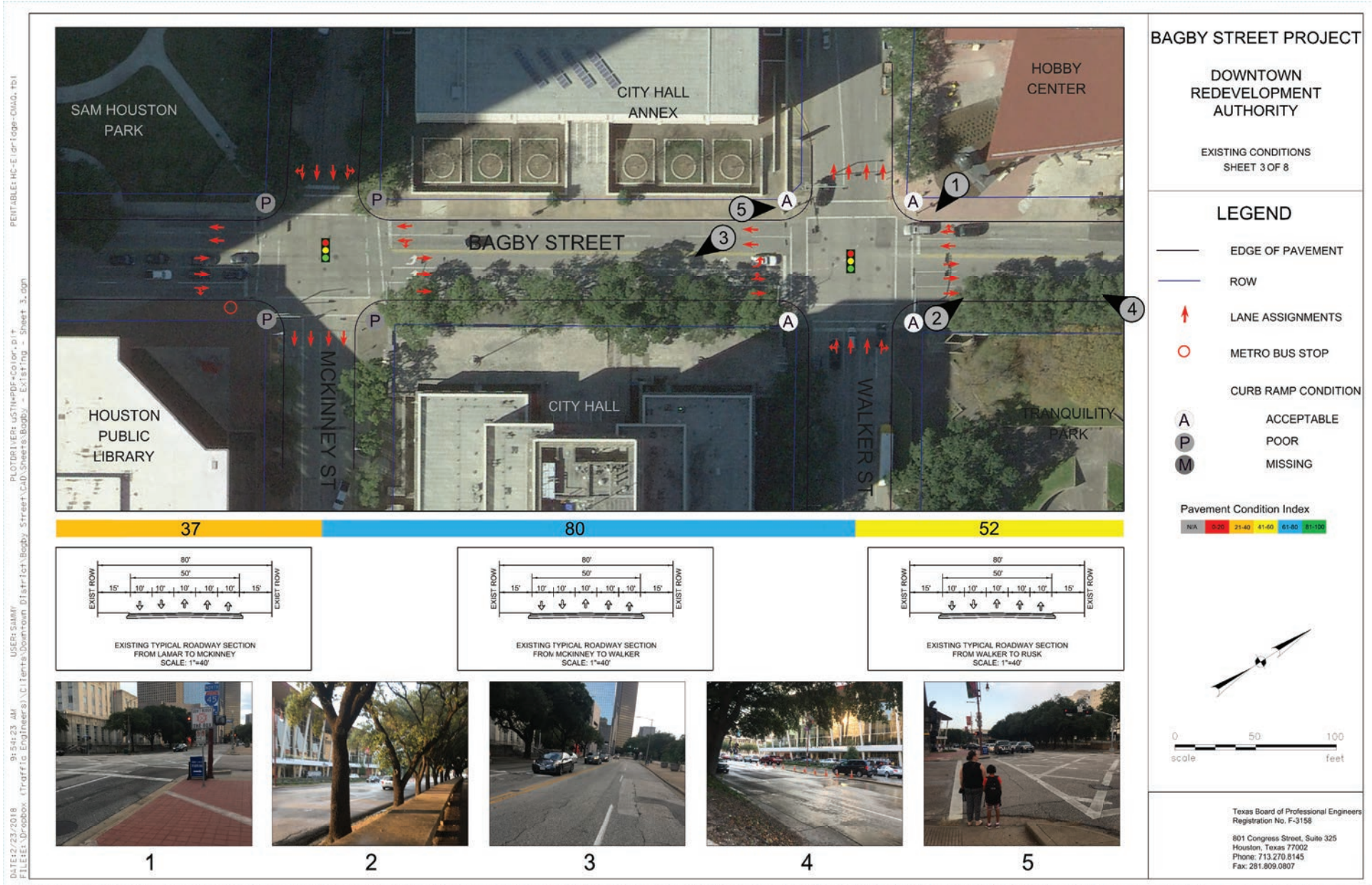

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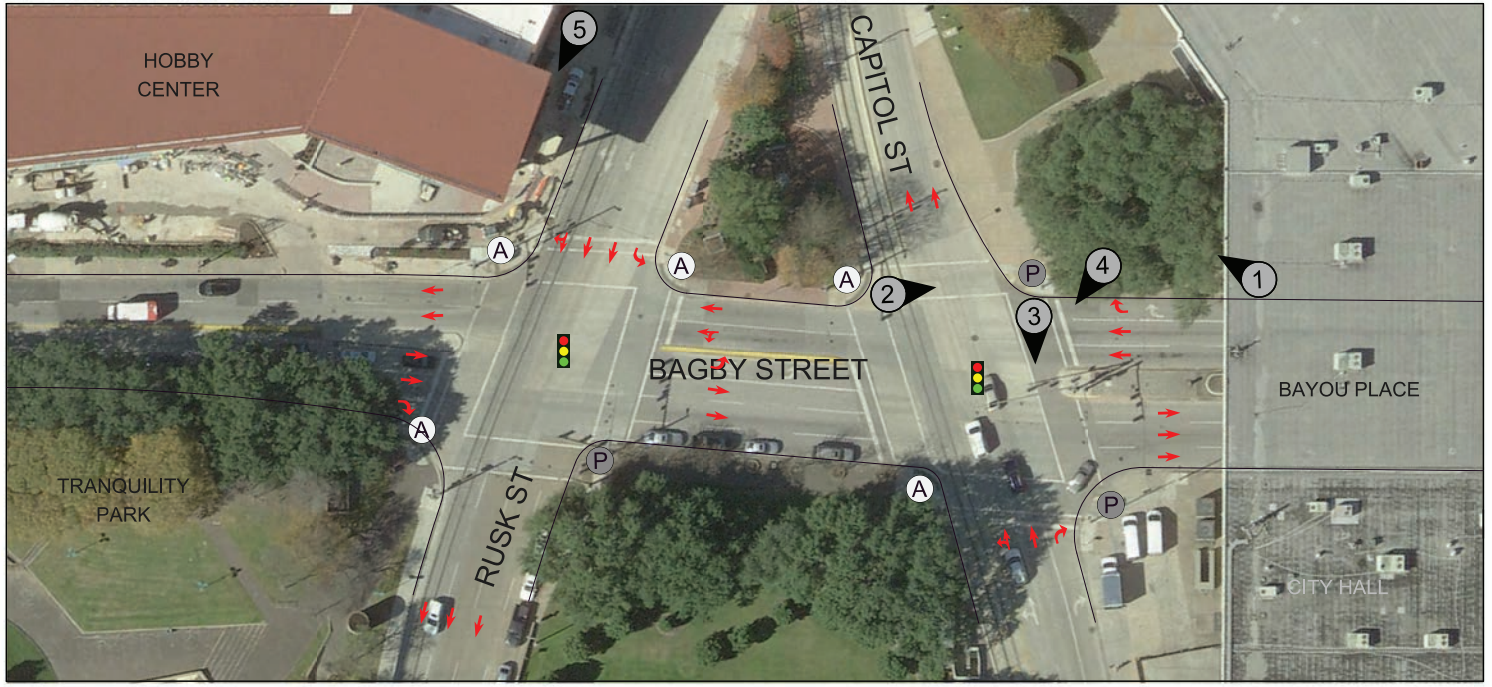
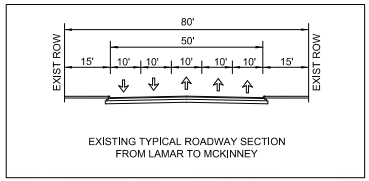
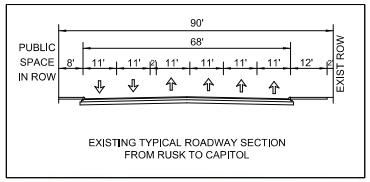


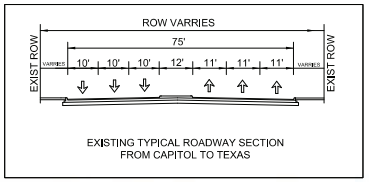
52 | 96 | 69



EXISTING TYPICAL ROADWAY SECTION
FROM LAMAR TO MCKINNEY



EXISTING TYPICAL ROADWAY SECTION
FROM RUSK TO CAPITOL



EXISTING TYPICAL ROADWAY SECTION
FROM CAPITOL TO TEXAS

1

2

3

4

5

BAGBY STREET PROJECT

DOWNTOWN REDEVELOPMENT AUTHORITY

EXISTING CONDITIONS
SHEET 4 OF 8

LEGEND

- EDGE OF PAVEMENT
- ROW
- LANE ASSIGNMENTS
- METRO BUS STOP

CURB RAMP CONDITION

- A — ACCEPTABLE
- P — POOR
- M — MISSING

Pavement Condition Index

N/A | 0-20 | 21-40 | 41-60 | 61-80 | 81-100

0 50 100
scale feet

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DATE:4/17/2018 6:01:36 PM USER:
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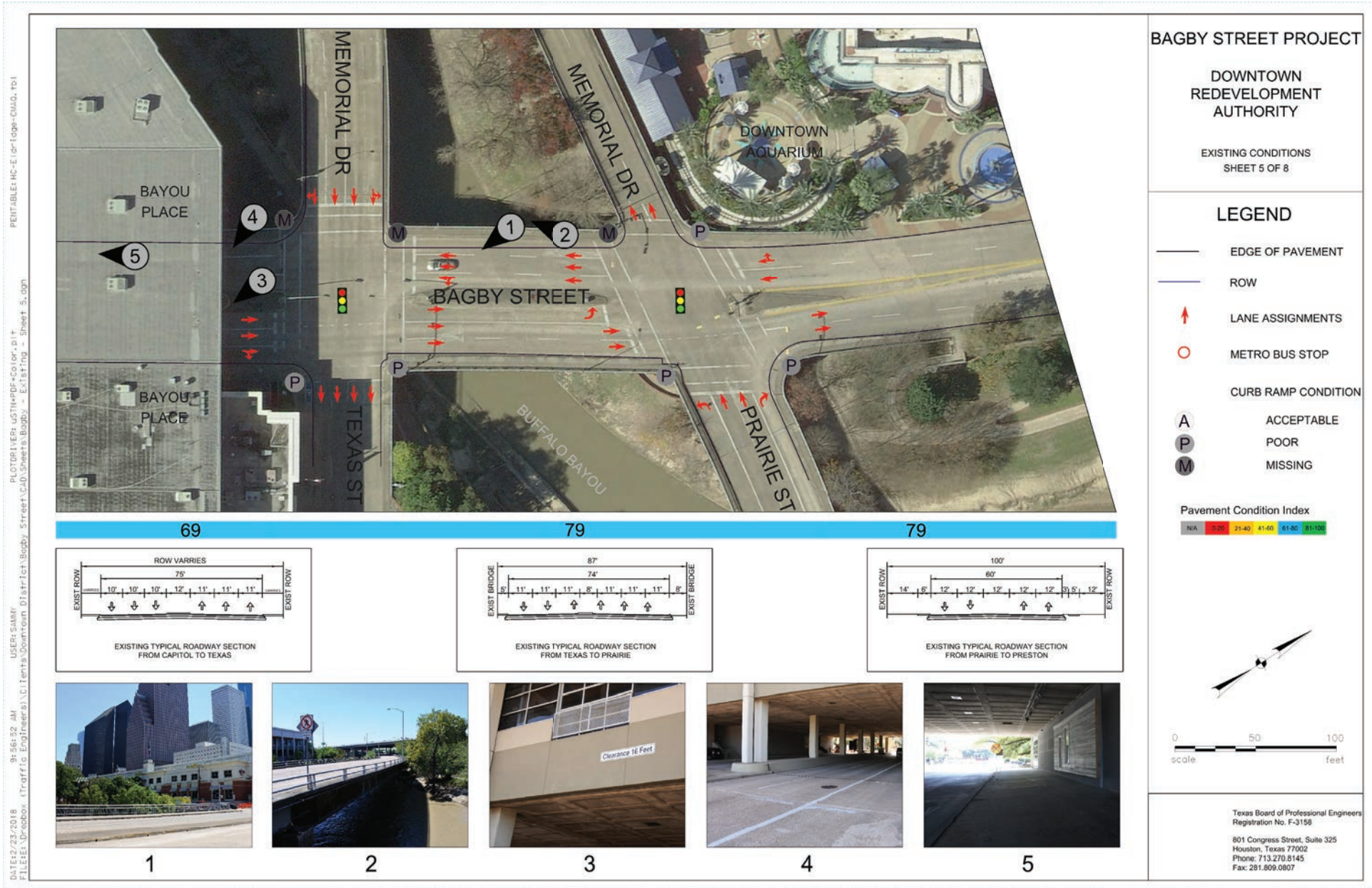

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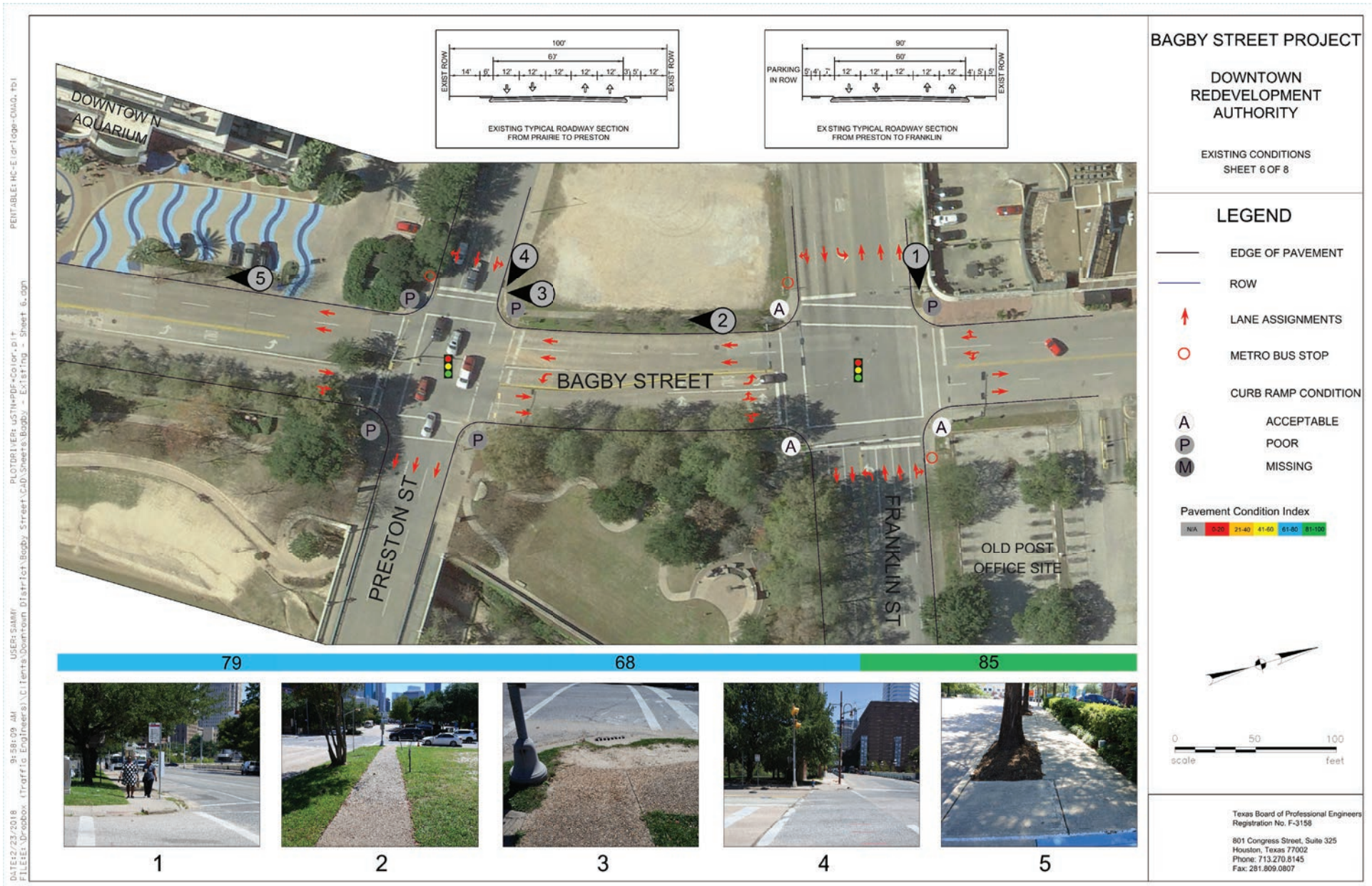

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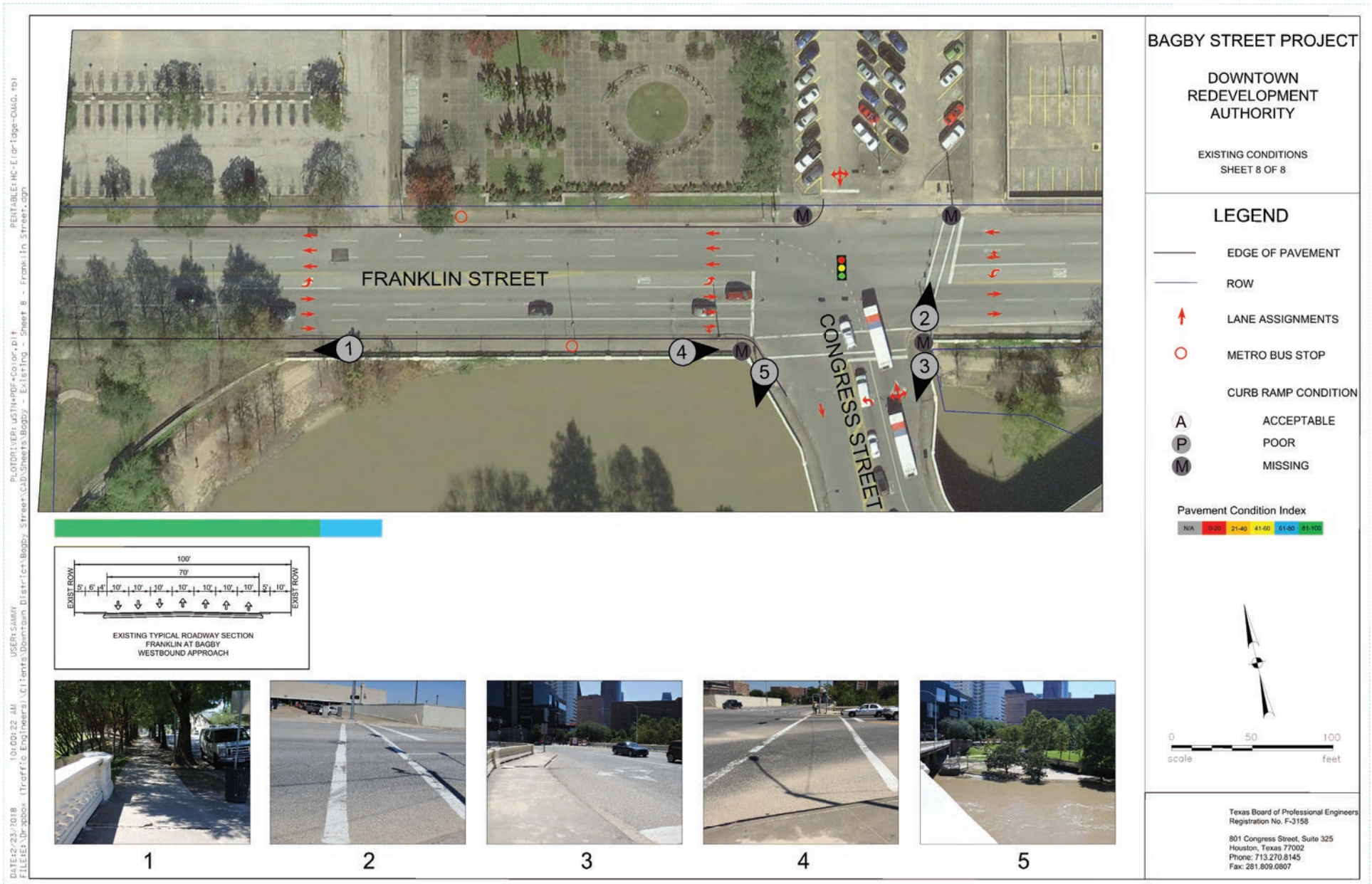
Schematic not to scale



Schematic not to scale

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APPENDIX D

Four Developed Alternatives

Four alternative designs for Bagby Street were developed based on the existing conditions analysis along with input and guidance from the project stakeholders. The four alternatives are presented in-depth in this Appendix. These alternatives were presented to the stakeholders for feedback and prioritization. The four alternatives were then evaluated based on the goals and desires for the Bagby Street corridor, and a final conceptual design was developed.

The final Recommended Conceptual Design is presented and discussed in depth in the **Corridor Recommendations Chapter** and is largely based on Alternative 2 with a few minor modifications primarily related to landscaping. The conceptual design also includes recommendations for segments of Franklin Street, Congress Street, Walker Street, and Lamar Street that are proposed to be improved as part of the project.

Alternative 1

Alternative 1 provides vehicular capacity that aligns with existing demand while integrating bikeway improvements and limited additional landscaping. The cross section for the 900 block of Bagby Street between City Hall and City Hall Annex is shown in **Figure D.01**.

The typical cross-section provides two vehicular lanes for northbound traffic and one or two lanes for southbound traffic, depending on the location. The proposed cross-section includes a two-way bikeway outside the curb, at sidewalk level, along the east side of the corridor.

Alternative 1 will require new curb alignments at locations where the existing street width is not sufficient, primarily in the vicinity of the Hobby Center and City Hall Annex. **Figures D.02** through **D.06** show the detailed corridor plan.

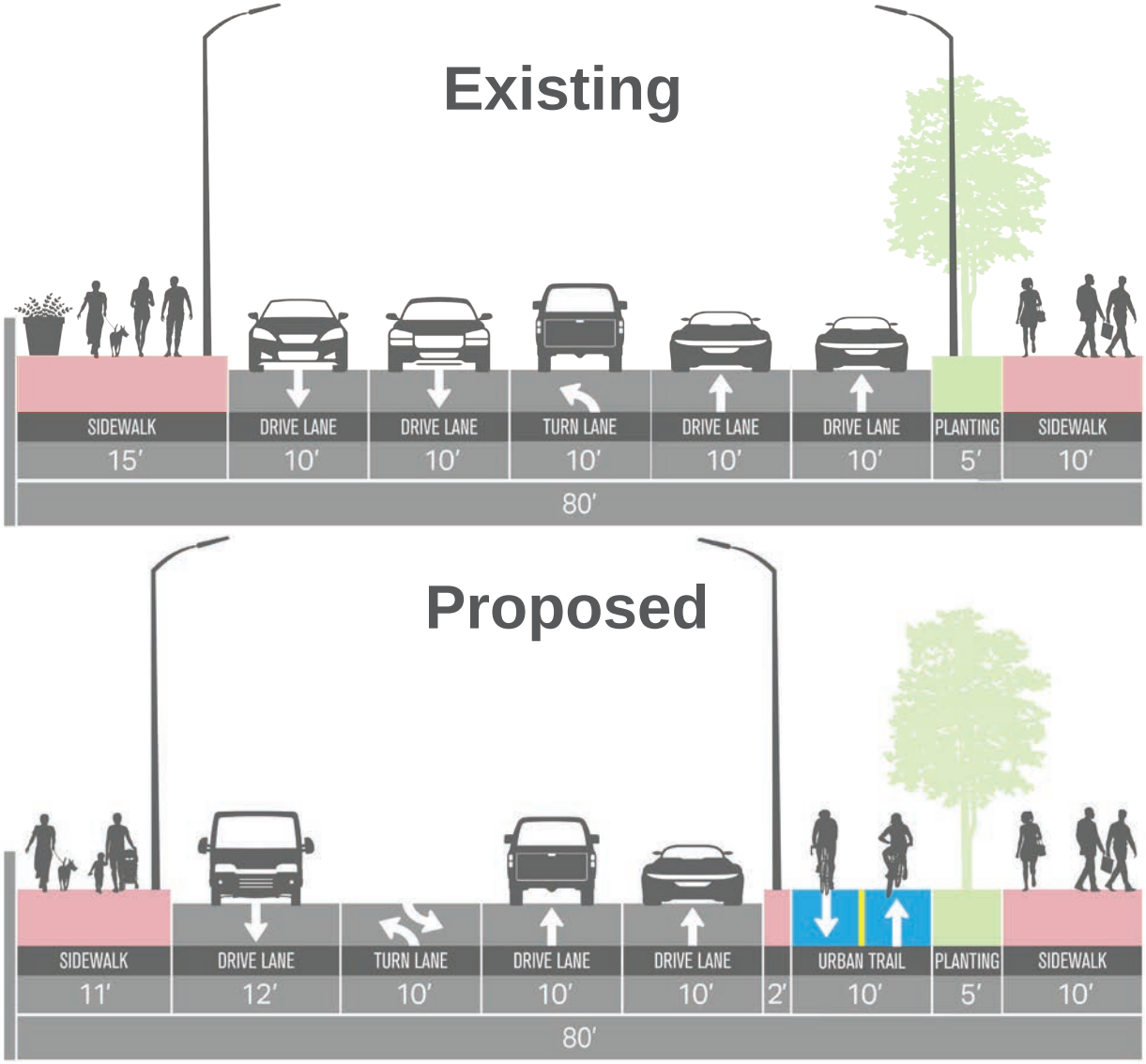
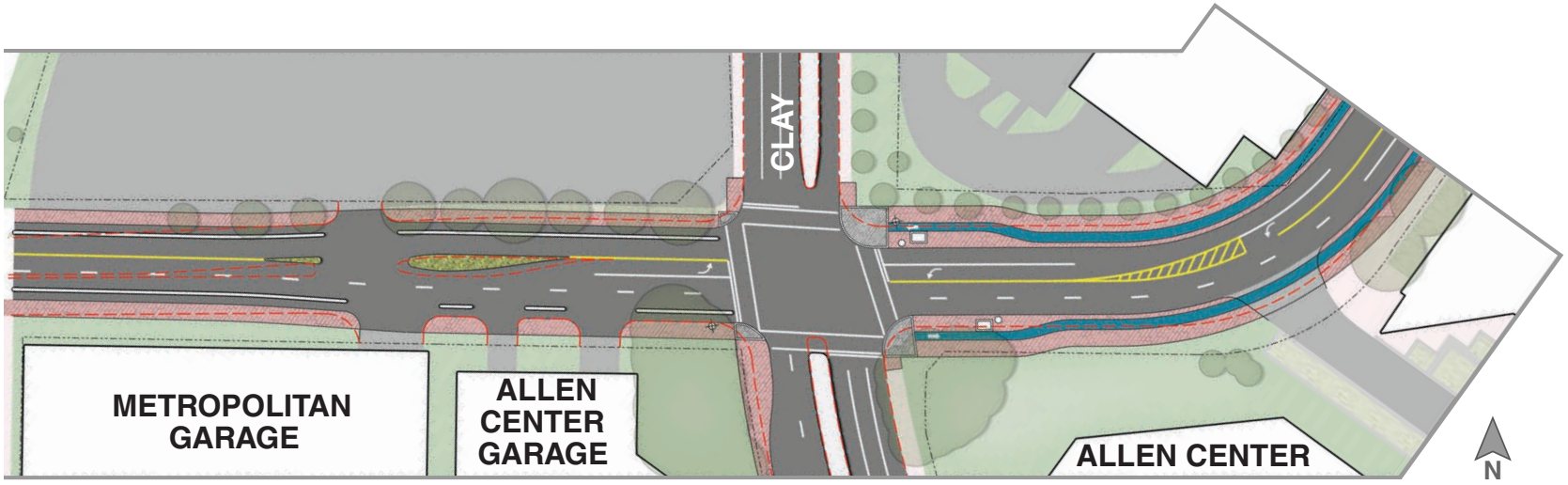


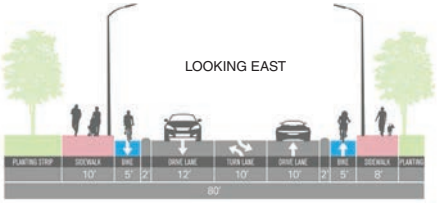
Figure D.01 Alternative 1 Proposed Cross-section

**Typical cross-section for the 900 block of Bagby Street between McKinney Street and Walker Street adjacent to City Hall and City Hall Annex where ROW is 80′.*

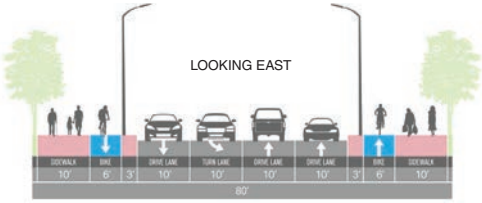
Alternative 1 Vision

ALTERNATIVE 1 | IH-45 TO DALLAS STREET



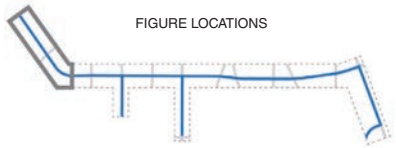


TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY



- Vehicular Paving: Proposed
- Parking: Existing
- Pedestrian Paving: Proposed
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

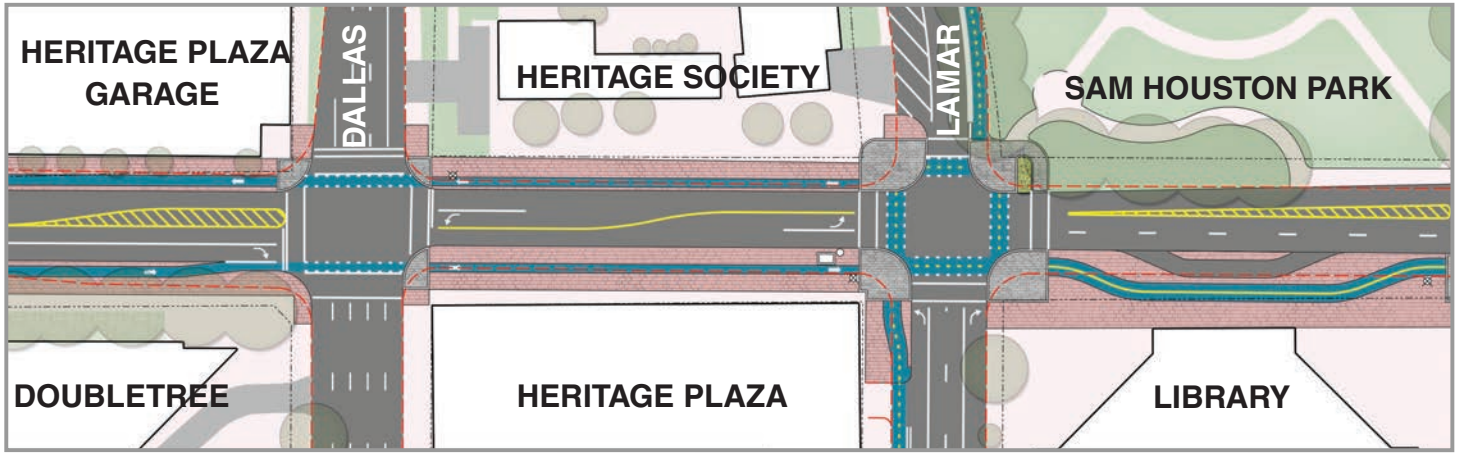
FIGURE LOCATIONS

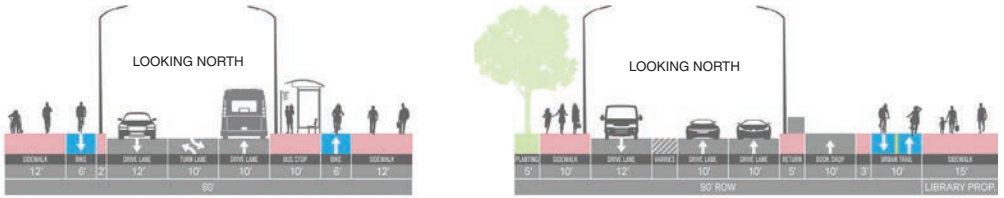


FIGURES ARE NOT TO SCALE

Figure D.02

ALTERNATIVE 1 | DALLAS STREET TO MCKINNEY STREET

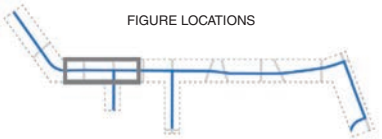




TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY

- Vehicular Paving: Proposed
- Parking: Existing
- Pedestrian Paving: Proposed
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

FIGURE LOCATIONS

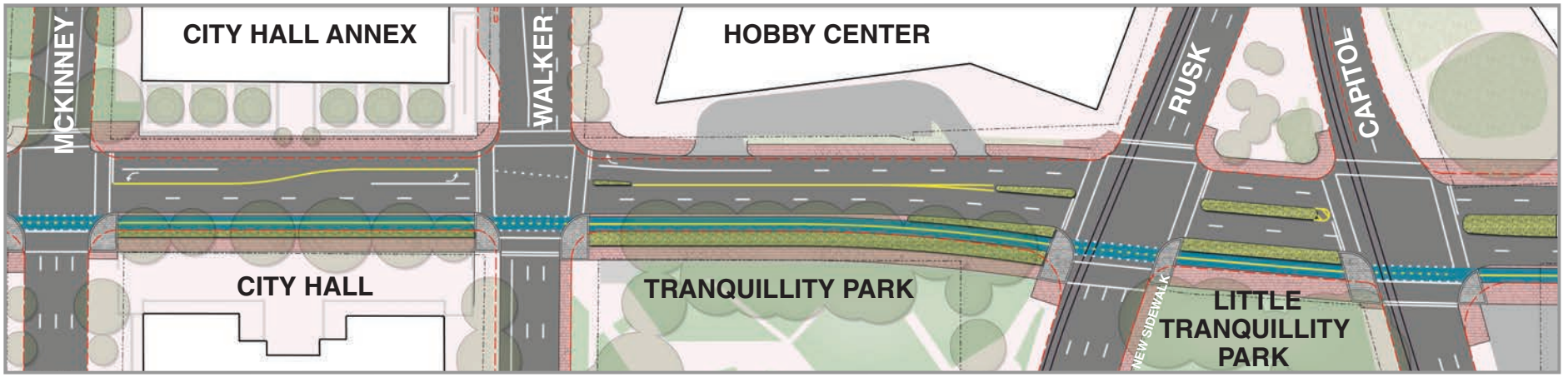


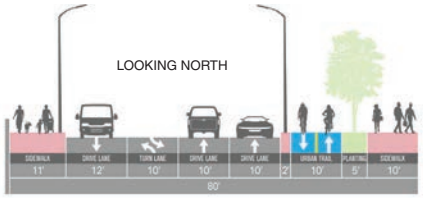
FIGURES ARE NOT TO SCALE

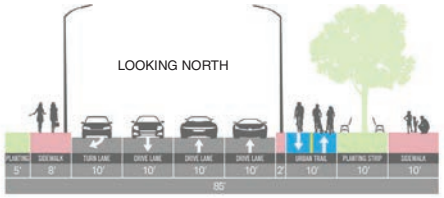
- See **Figure D.34** for Lamar Street alternatives

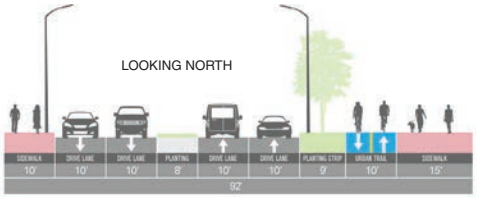
Figure D.03

ALTERNATIVE 1 | MCKINNEY STREET TO TEXAS AVENUE





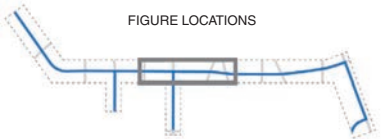




TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY

- Vehicular Paving: Proposed
- Parking: Existing
- Pedestrian Paving: Proposed
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

FIGURE LOCATIONS

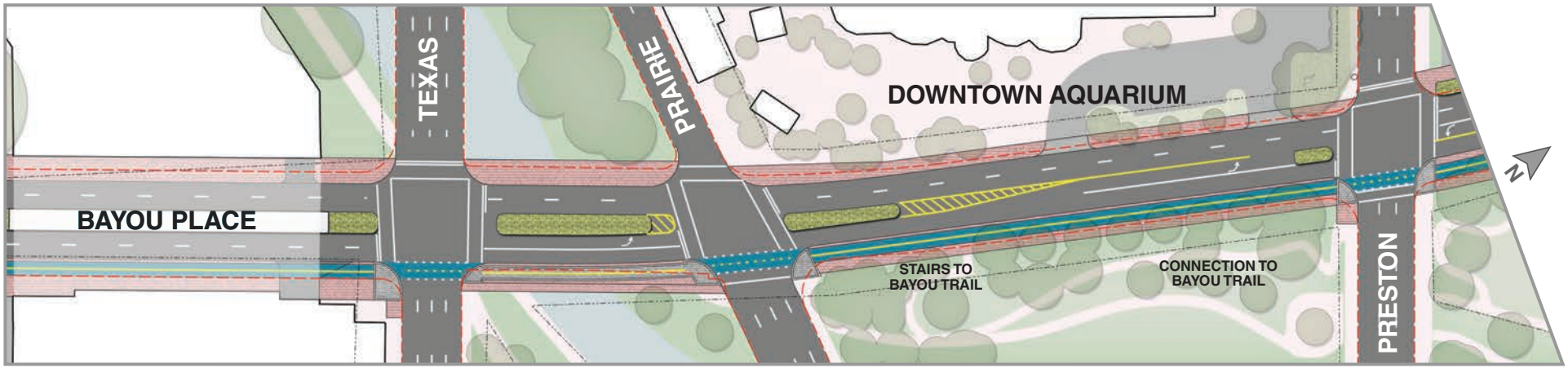


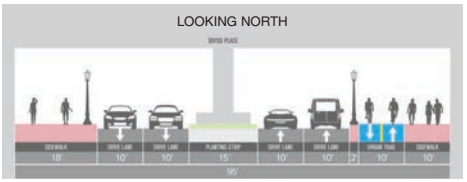
FIGURES ARE NOT TO SCALE

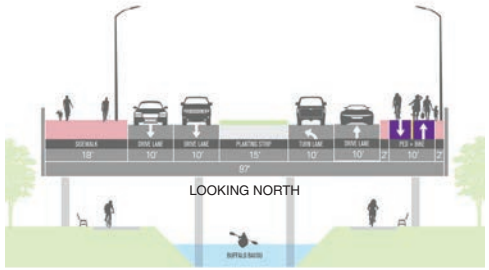
- See **Figure D.33** for Walker Street alternatives

Figure D.04

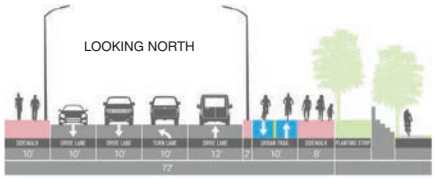
ALTERNATIVE 1 | TEXAS AVENUE TO FRANKLIN STREET







TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY



- Vehicular Paving: Proposed
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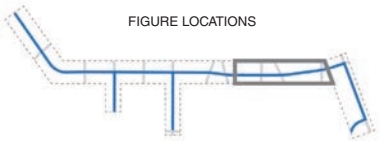
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

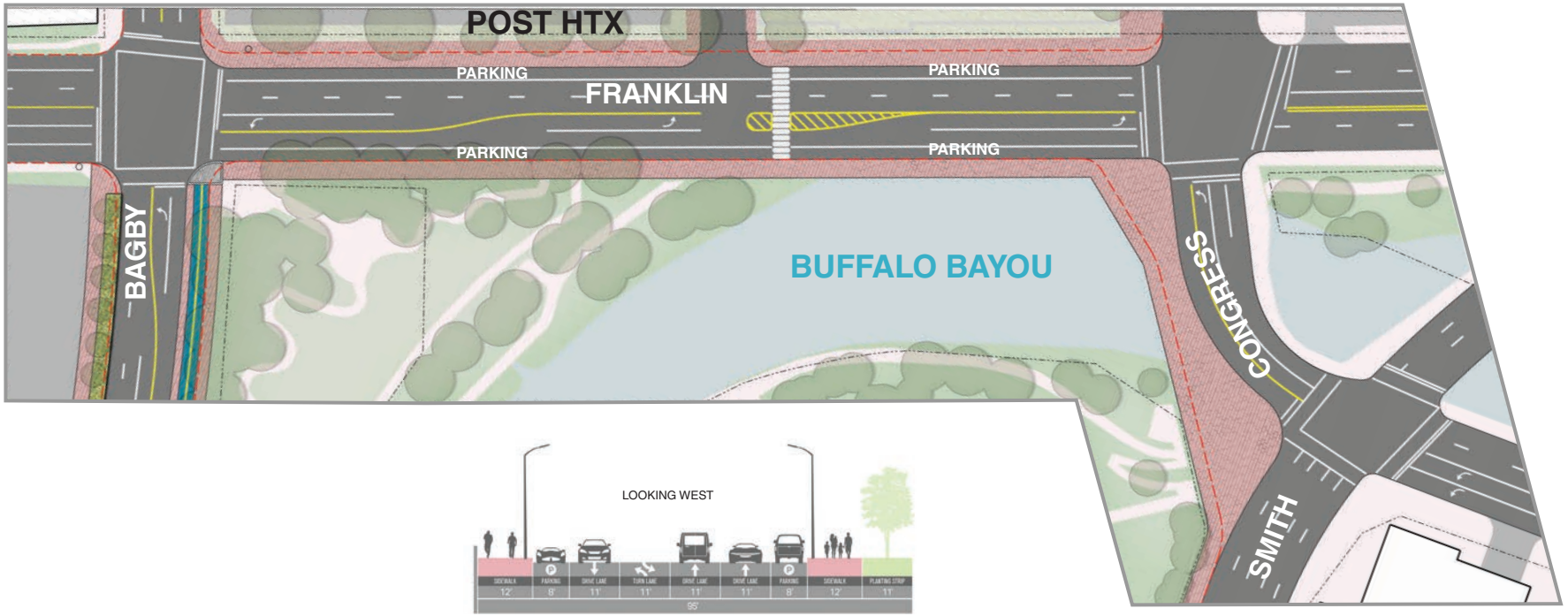
FIGURE LOCATIONS



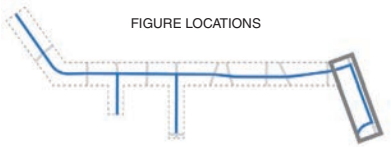
FIGURES ARE NOT TO SCALE

Figure D.05

ALTERNATIVE 1 | FRANKLIN STREET



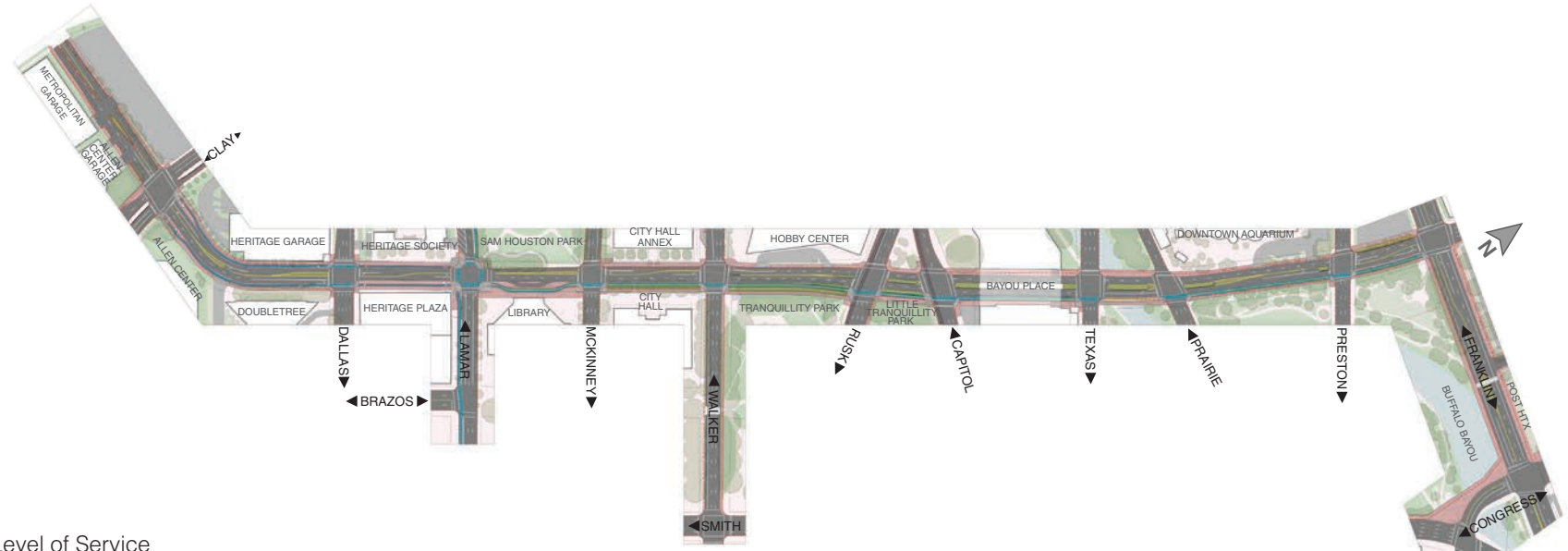
TYPICAL CROSS-SECTION
WIDTHS WILL VARY



FIGURES ARE NOT TO SCALE

- Vehicular Paving: Proposed
- Parking: Existing
- Pedestrian Paving: Proposed
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

Figure D.06



LOS V/C Level of Service Volume/Capacity Ratio

	West Dallas at Clay	Bagby at Dallas	Bagby at Lamar	Bagby at McKinney	Bagby at Walker	Bagby at Rusk	Bagby at Capitol	Bagby at Texas	Bagby at Prairie	Bagby at Preston	Bagby at Franklin
2020	C 0.571	B 0.455	B 0.426	B 0.454	C 0.493	B 0.493	B 0.307	B 0.472	B 0.229	B 0.305	B 0.176
2040 NHHIP	C 0.602	B 0.509	B 0.470	C 0.583	C 0.582	B 0.497	A 0.298	B 0.523	B 0.256	B 0.178	B 0.272

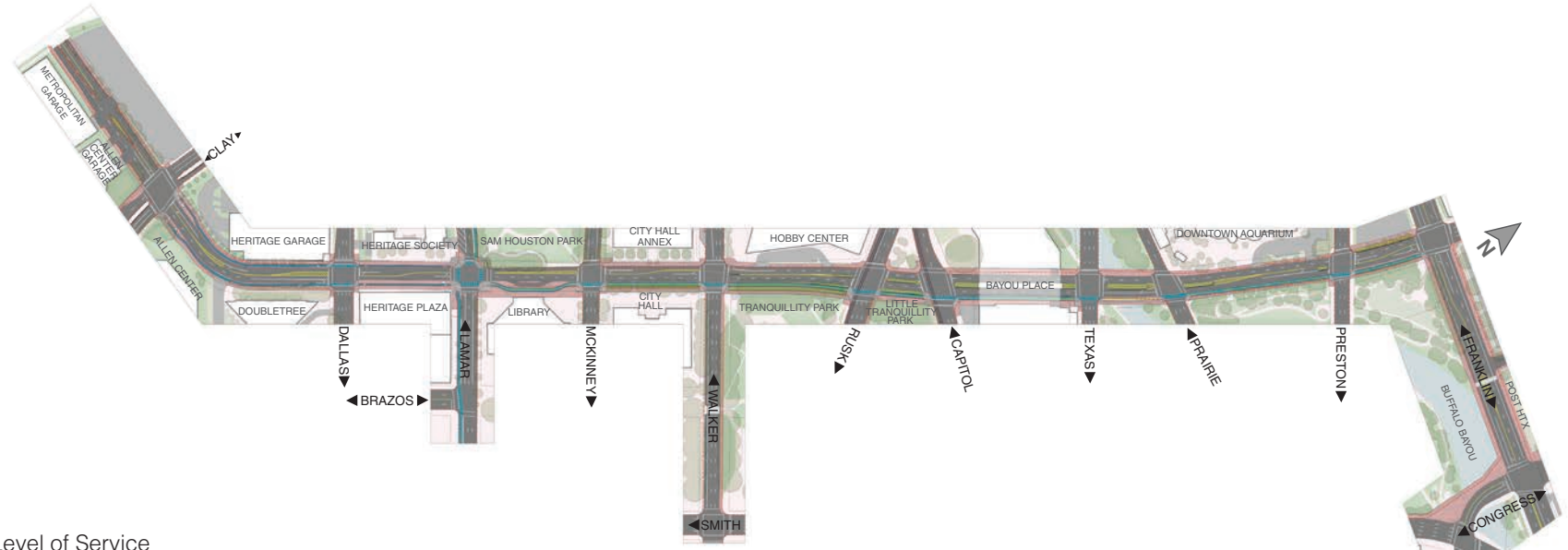
Figure D.07 Alternative 1 AM Peak Hour Analysis

Intersection capacity analyses were conducted for all proposed intersections along Alternative 1. The AM peak hour results are shown in **Figure D.07** and the PM peak hour results are shown in **Figure D.08.** Capacity analyses were conducted for three scenarios. The 2020 is a forecast of operations near the expected year of completion.

A 2040 growth only scenario was also conducted to understand 2040 operations if the NHHIP does not move forward. This scenario assumed the roadway network surrounding Bagby Street does not change between today and 2040.

For the 2040 NHHIP scenario, vehicular trips were redistributed along the roadway network to project the expected changes in driver behavior after the completion of the highway realignment. The redistributed trips were accounted for in the 2040 NHHIP model results, along with an estimated vehicular traffic growth of 0.5% compounded per year for the twenty years.

The detailed traffic report including all three scenarios is included in **Appendix B**.



LOS V/C Level of Service Volume/Capacity Ratio

	West Dallas at Clay	Bagby at Dallas	Bagby at Lamar	Bagby at McKinney	Bagby at Walker	Bagby at Rusk	Bagby at Capitol	Bagby at Texas	Bagby at Prairie	Bagby at Preston	Bagby at Franklin
2020	C 0.610	C 0.581	B 0.760	B 0.387	D 0.642	B 0.268	B 0.485	B 0.434	B 0.578	B 0.442	C 0.463
2040 NHHIP	C 0.620	B 0.473	B 0.600	B 0.331	C 0.769	B 0.213	B 0.489	B 0.436	B 0.590	B 0.308	C 0.413

Figure D.08 Alternative 1 PM Peak Hour Analysis

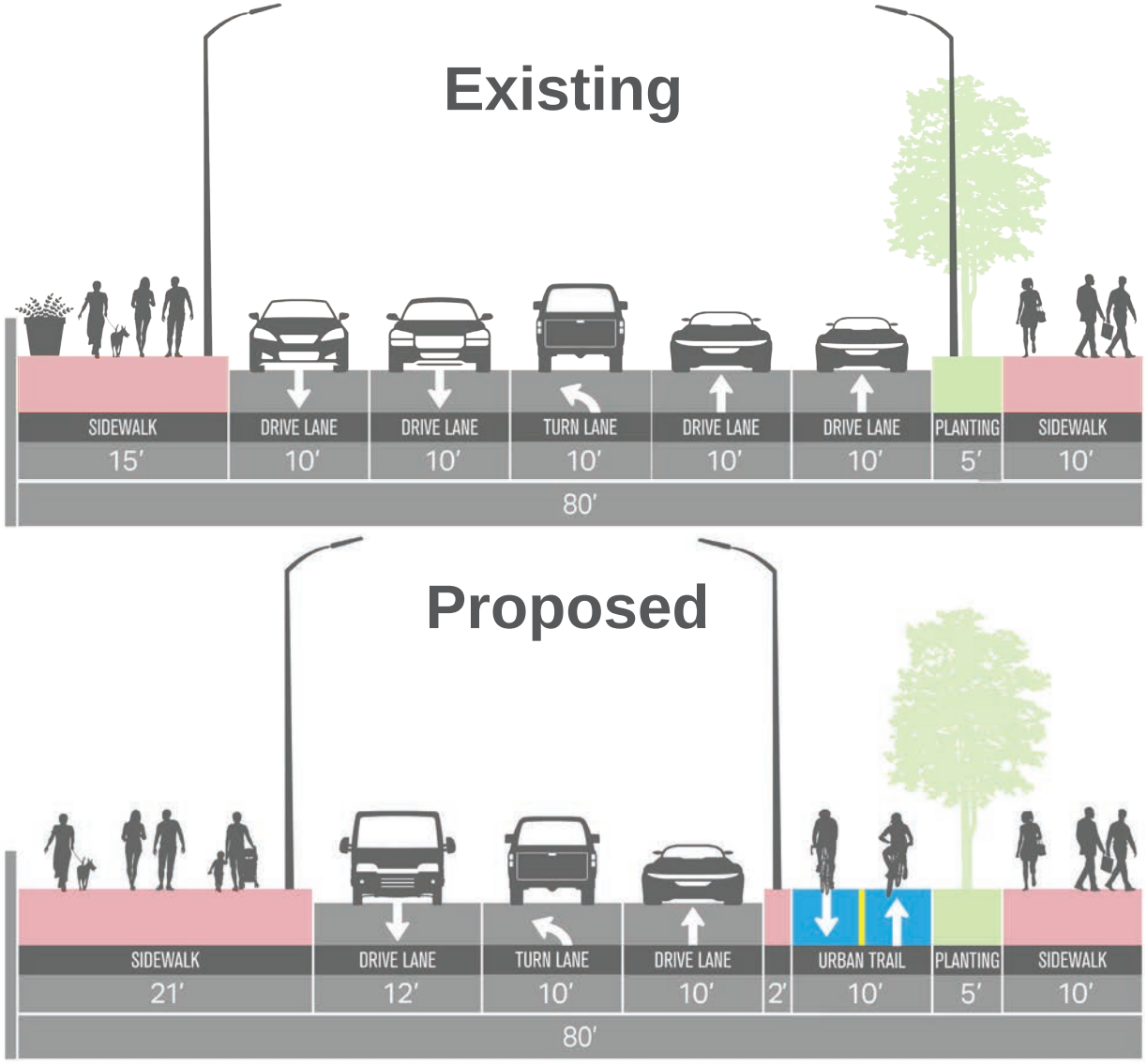


Figure D.09 Alternative 2 Proposed Cross-section

**Typical cross-section for the 900 block of Bagby Street between McKinney Street and Walker Street adjacent to City Hall and City Hall Annex where ROW is 80′.*

Alternative 2

Alternative 2 provides a roadway with three to four lanes of capacity on Bagby. This design provides added space for persons walking and bicycling including a trail on the east side of the street. It also provides added space for landscaping and other amenities. Alternative 2 aligns with stakeholder input to be bold and rethink how Bagby Street operates as an access street serving civic and arts destinations on the west side of Downtown.

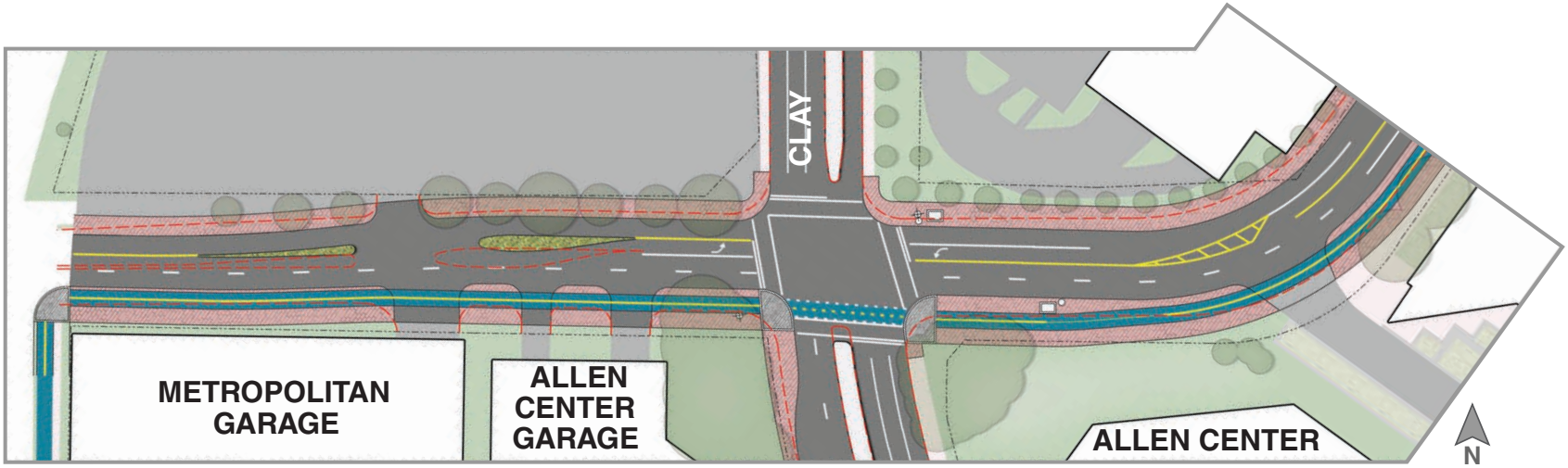
Alternative 2 provides a two-way bikeway outside the curb, similar to Alternative 1. Due to fewer vehicle lanes than Alternative 1, additional ROW space can be utilized as sidewalk enhancements.

The cross-section for the 900 block of Bagby Street between City Hall and City Hall Annex is shown in **Figure D.09. Figures D.10** through **D.14** show the detailed corridor plan.

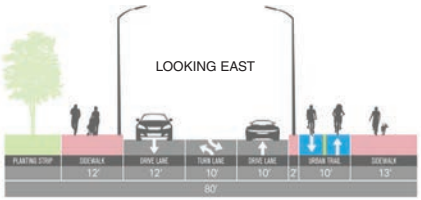
With minor adjustments, Alternative 2 is advanced as the Recommended Conceptual Design, to be developed during Final Design of the Bagby Street Improvement Project.

Alternative 2 Vision

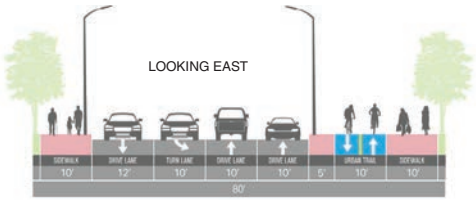
ALTERNATIVE 2 | IH-45 TO DALLAS STREET



FUTURE PROJECTS
MAY EXTEND TRAIL
TO BRAZOS IN MIDTOWN

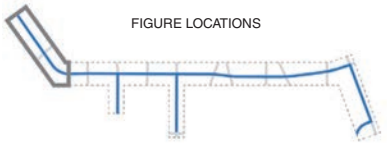


TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY



- Vehicular Paving: Proposed
- Parking: Existing
- Pedestrian Paving: Proposed
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

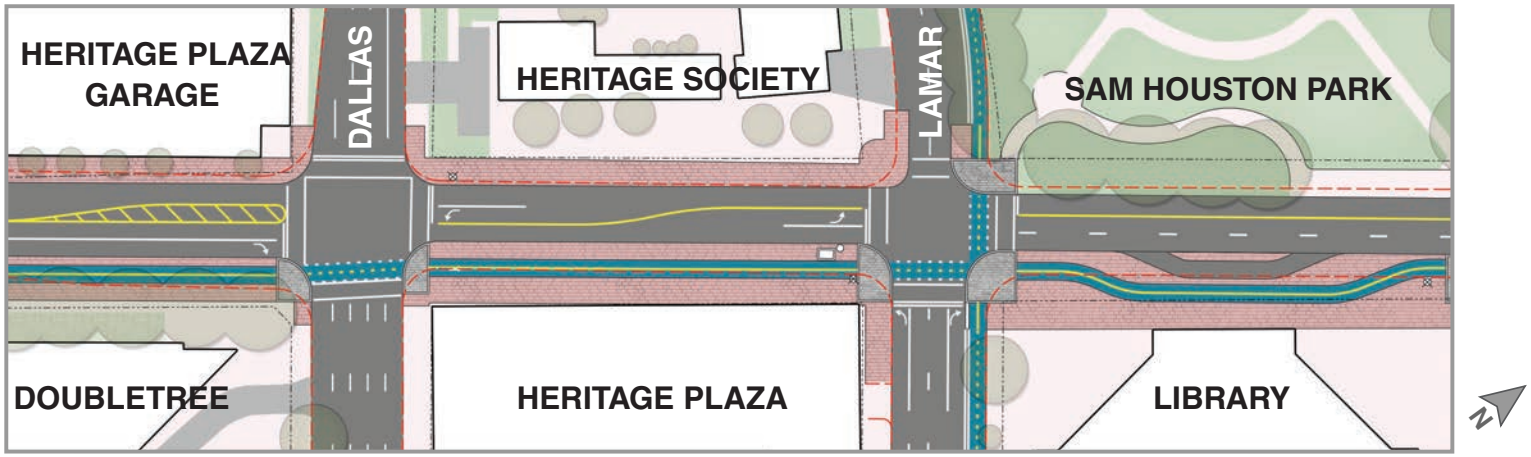
FIGURE LOCATIONS

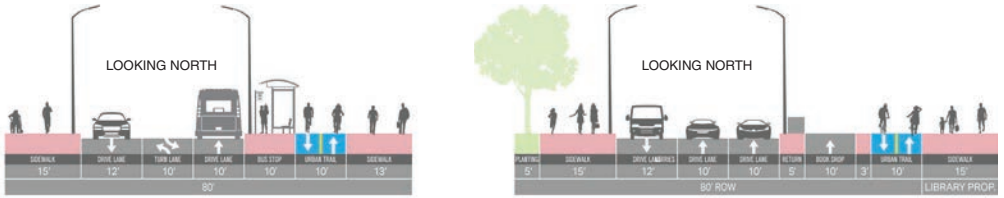


FIGURES ARE NOT TO SCALE

Figure D.10

ALTERNATIVE 2 | DALLAS STREET TO MCKINNEY STREET

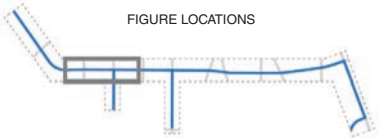




TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY

- Vehicular Paving: Proposed
- Parking: Existing
- Pedestrian Paving: Proposed
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

FIGURE LOCATIONS

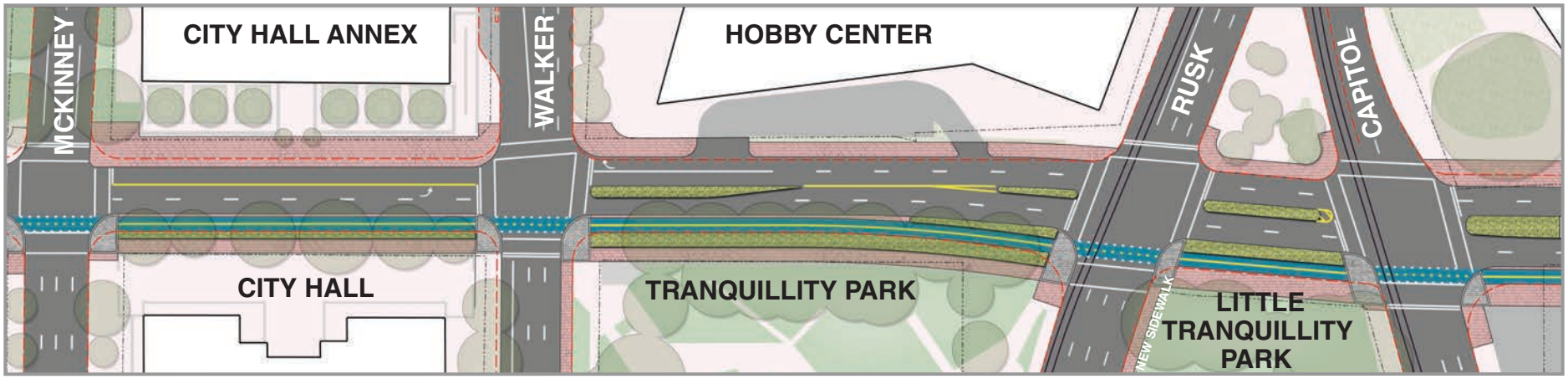


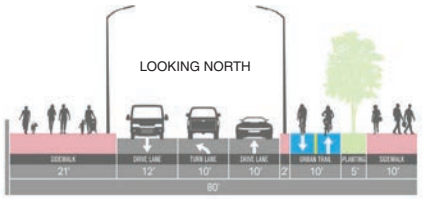
FIGURES ARE NOT TO SCALE

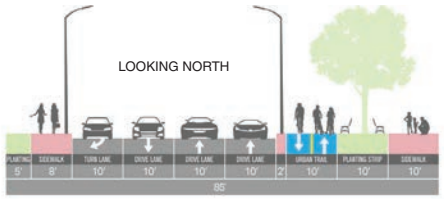
- See **Figure D.34** for Lamar Street alternatives

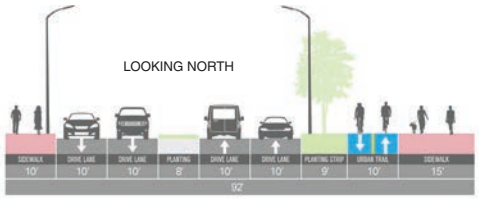
Figure D.11

ALTERNATIVE 2 | MCKINNEY STREET TO TEXAS AVENUE





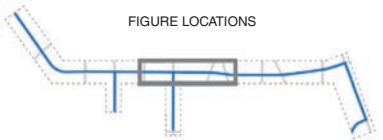




TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY

- Vehicular Paving: Proposed
- Parking: Existing
- Pedestrian Paving: Proposed
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

FIGURE LOCATIONS

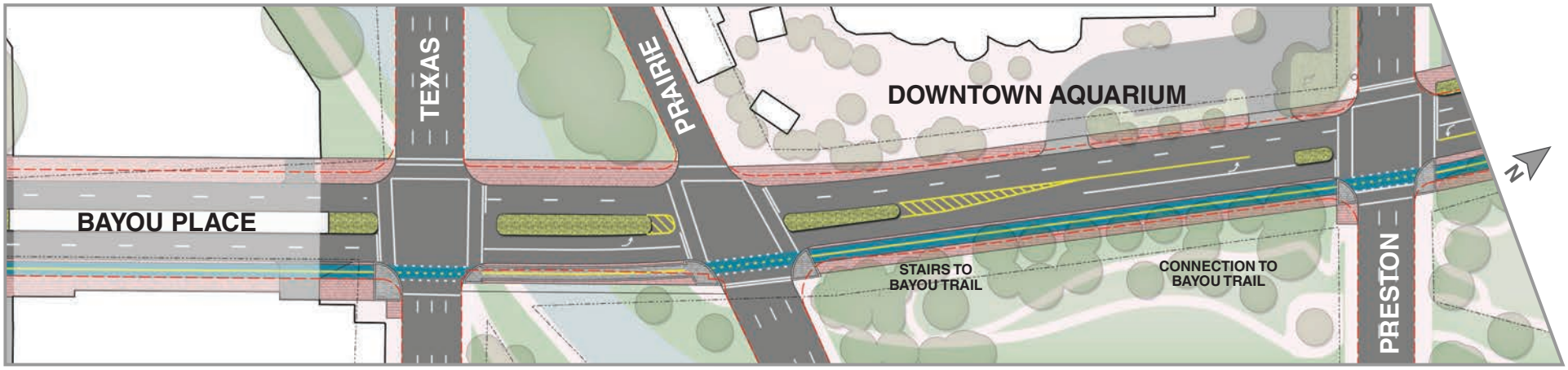


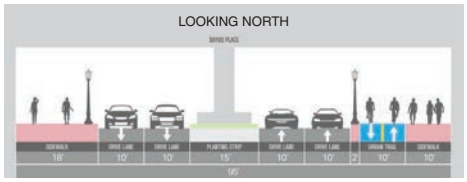
FIGURES ARE NOT TO SCALE

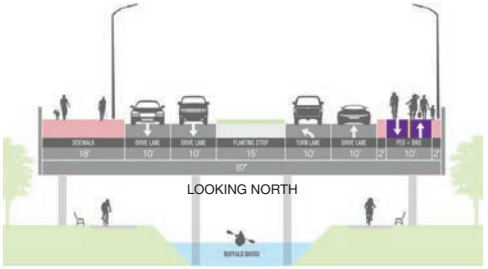
- See **Figure D.33** for Walker Street alternatives

Figure D.12

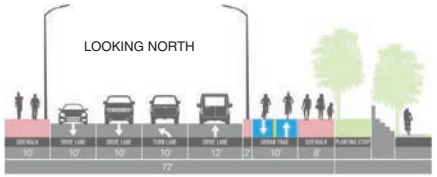
ALTERNATIVE 2 | TEXAS AVENUE TO FRANKLIN STREET





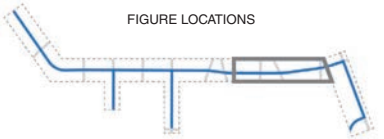


TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY



- Vehicular Paving: Proposed
- Parking: Existing
- Pedestrian Paving: Proposed
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

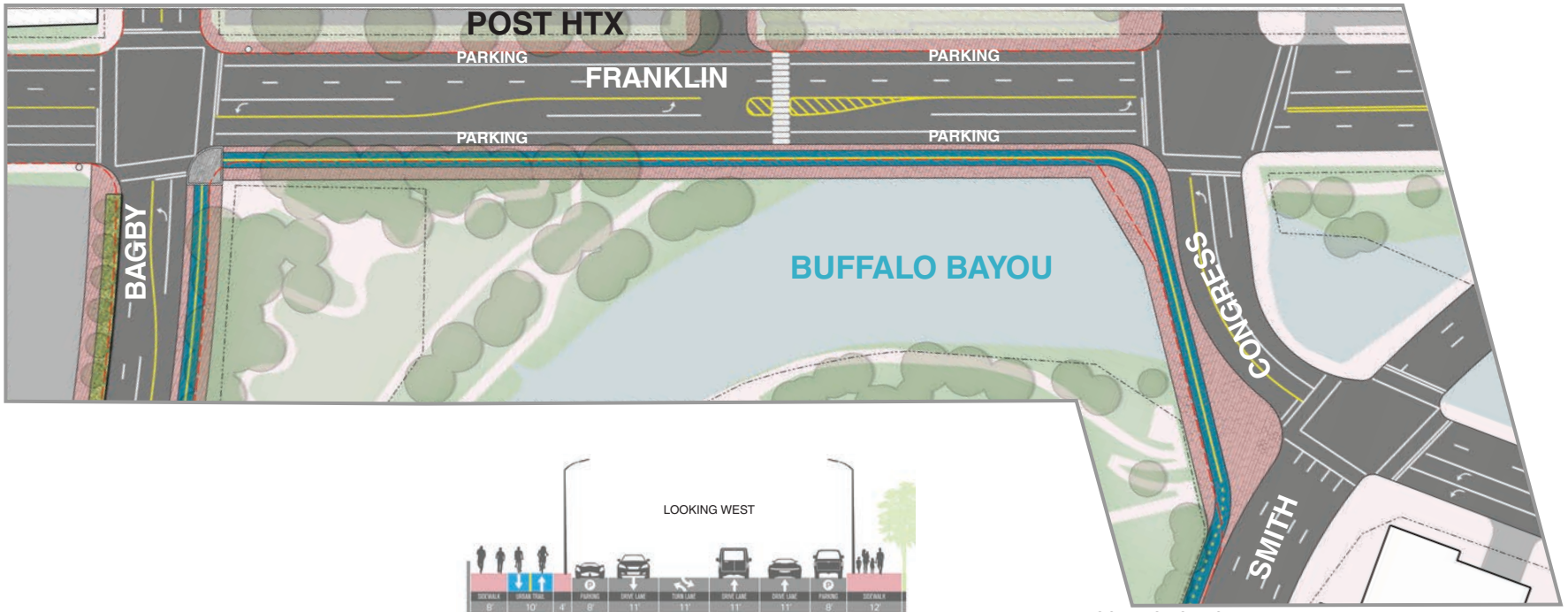
FIGURE LOCATIONS

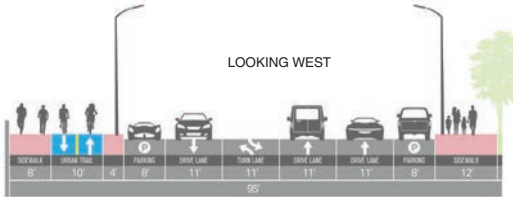


FIGURES ARE NOT TO SCALE

Figure D.13

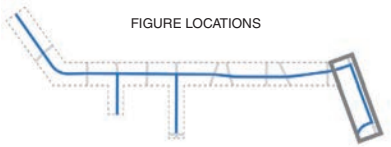
ALTERNATIVE 2 | FRANKLIN STREET





TYPICAL CROSS-SECTION
WIDTHS WILL VARY

CONNECTION TO SESQUICENTENNIAL PARK



FIGURES ARE NOT TO SCALE

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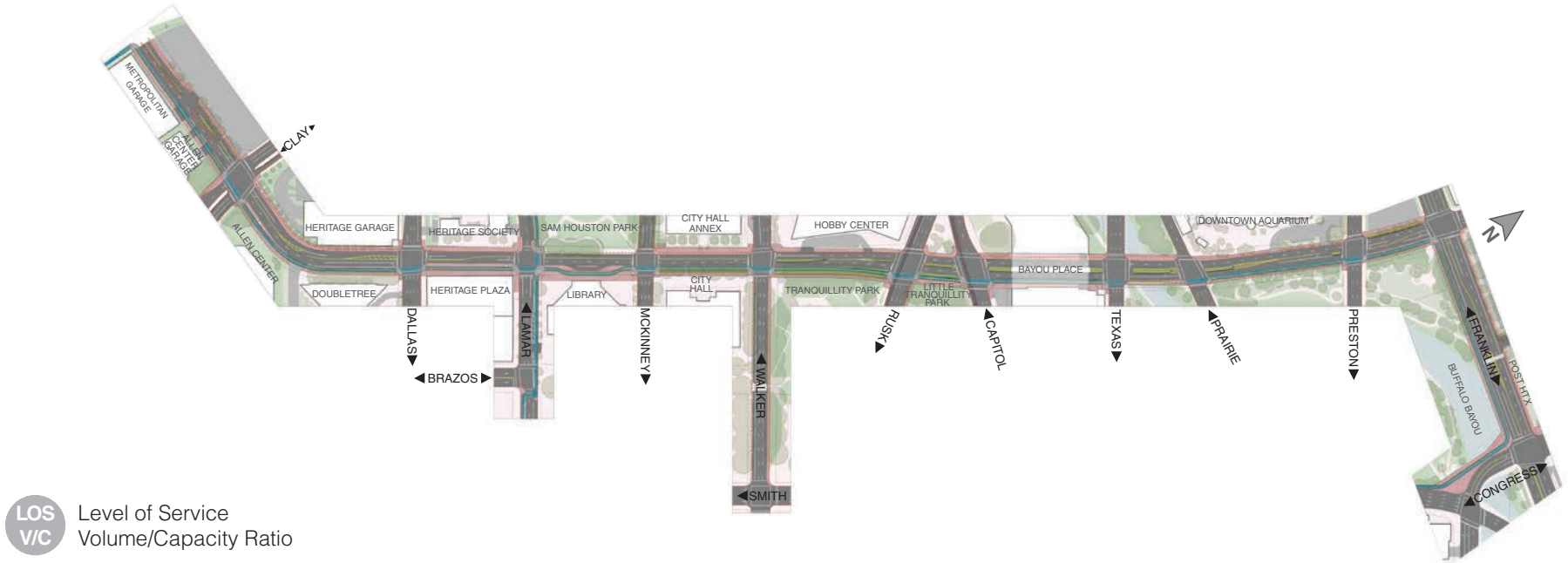
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

Figure D.14



LOS V/C Level of Service Volume/Capacity Ratio

	West Dallas at Clay	Bagby at Dallas	Bagby at Lamar	Bagby at McKinney	Bagby at Walker	Bagby at Rusk	Bagby at Capitol	Bagby at Texas	Bagby at Prairie	Bagby at Preston	Bagby at Franklin
2020	C 0.571	B 0.467	B 0.426	C 0.520	C 0.523	B 0.493	B 0.307	B 0.472	B 0.229	B 0.305	B 0.176
2040 NHHIP	C 0.603	B 0.523	B 0.470	D 0.649	C 0.605	B 0.497	A 0.298	B 0.523	B 0.256	B 0.178	B 0.272

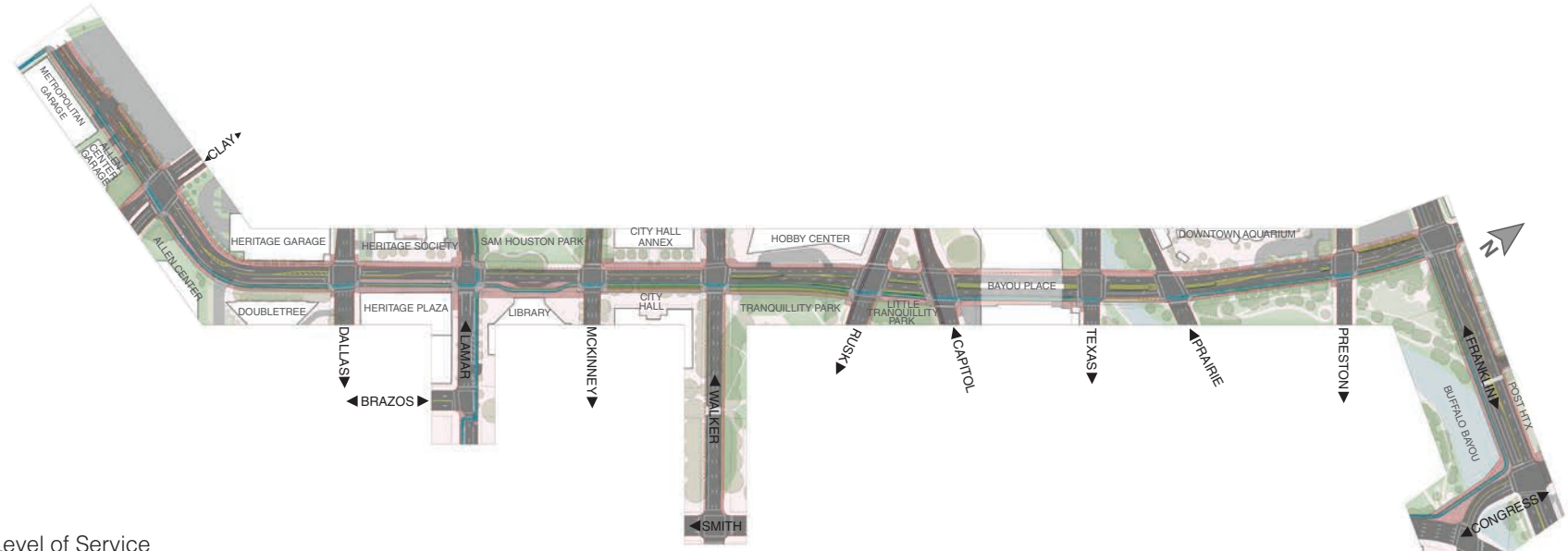
Figure D.15 Alternative 2 AM Peak Hour Analysis

Intersection capacity analyses were conducted for all proposed intersections along Alternative 2. The AM peak hour results are shown in **Figure D.15** and the PM peak hour results are shown in **Figure D.16.** Capacity analyses were conducted for three scenarios. The 2020 is a forecast of operations for the expected year of completion.

A 2040 growth only scenario was also conducted to understand 2040 operations if the NHHIP does not move forward. This scenario assumed the roadway network surrounding Bagby Street does not change between today and 2040.

For the 2040 NHHIP scenario vehicular trips were redistributed along the roadway network to project the expected changes in driver behavior after the completion of the highway realignment. The redistributed trips were accounted for in the 2040 NHHIP model results, along with an estimated vehicular traffic growth of 0.5% compounded per year for the twenty years.

The detailed traffic report including all three scenarios is included in **Appendix B**.



LOS V/C Level of Service Volume/Capacity Ratio

	West Dallas at Clay	Bagby at Dallas	Bagby at Lamar	Bagby at McKinney	Bagby at Walker	Bagby at Rusk	Bagby at Capitol	Bagby at Texas	Bagby at Prairie	Bagby at Preston	Bagby at Franklin
2020	C 0.610	C 0.581	B 0.760	B 0.408	F 0.792	B 0.268	B 0.485	B 0.434	B 0.578	B 0.442	C 0.463
2040 NHHIP	C 0.620	B 0.473	B 0.600	B 0.364	D 0.873	B 0.213	B 0.489	B 0.436	B 0.590	B 0.308	C 0.413

Figure D.16 Alternative 2 PM Peak Hour Analysis

Alternative 3

Alternative 3 provides similar vehicular capacity to Alternative 2. Alternative 3 provides a separated bikeway on each side of the street within the curb. The separated bicycle lanes require more space than the proposed bi-directional bikeway in the other alternatives. This provides less space for sidewalks and landscaping. It also introduced more access challenges, such as at locations near Walker Street, Hobby Center and the Downtown Aquarium.

The proposed cross-section for the 900 block of Bagby Street between City Hall and City Hall Annex is shown in **Figure D.17. Figures D.18** through **D.22** show the detailed corridor schematic.

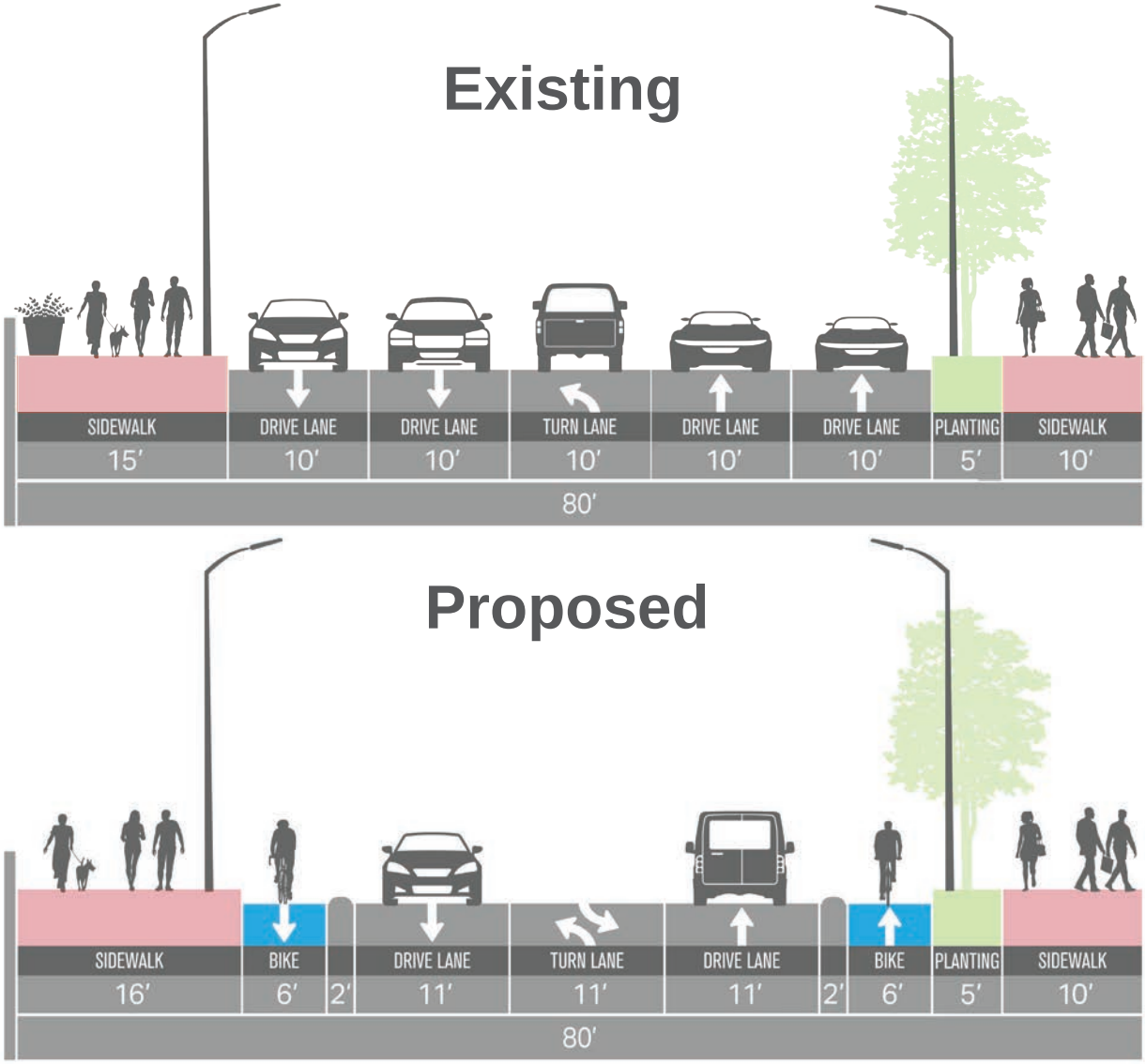
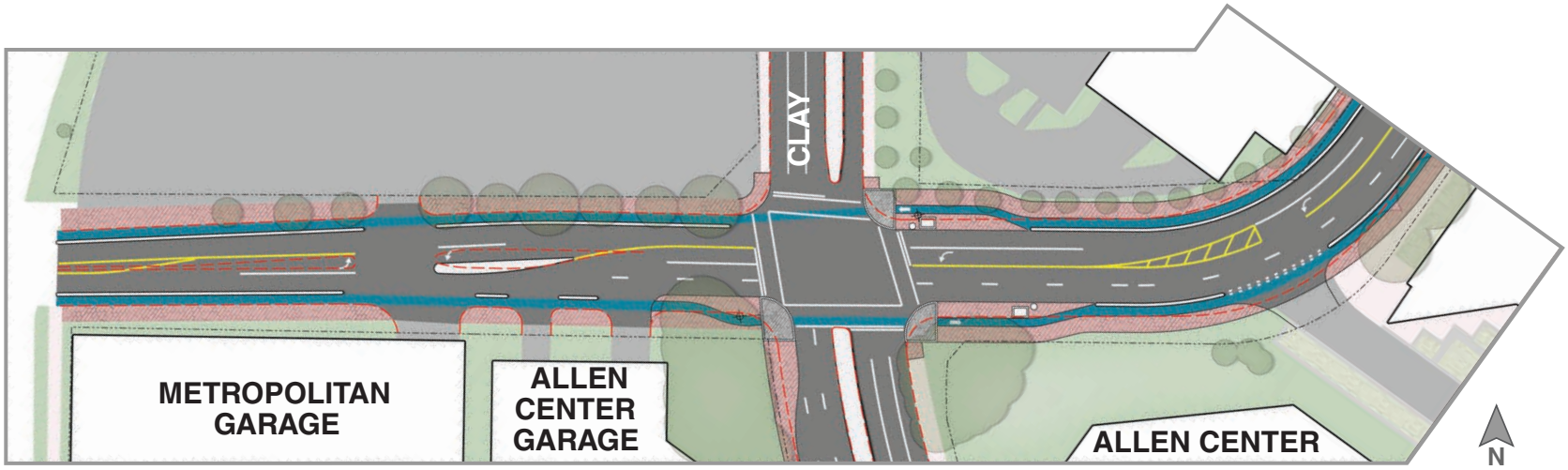


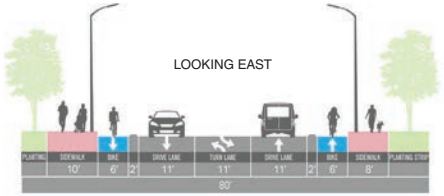
Figure D.17 Alternative 3 Proposed Cross-section

**Typical cross-section for the 900 block of Bagby Street between McKinney Street and Walker Street adjacent to City Hall and City Hall Annex where ROW is 80′.*

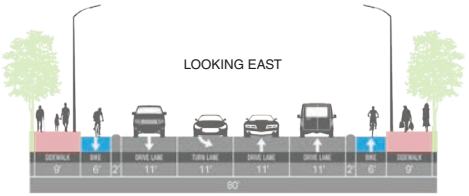
Alternative 3 Vision

ALTERNATIVE 3 | IH-45 TO DALLAS STREET





TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY



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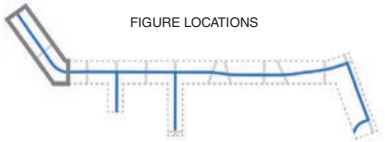
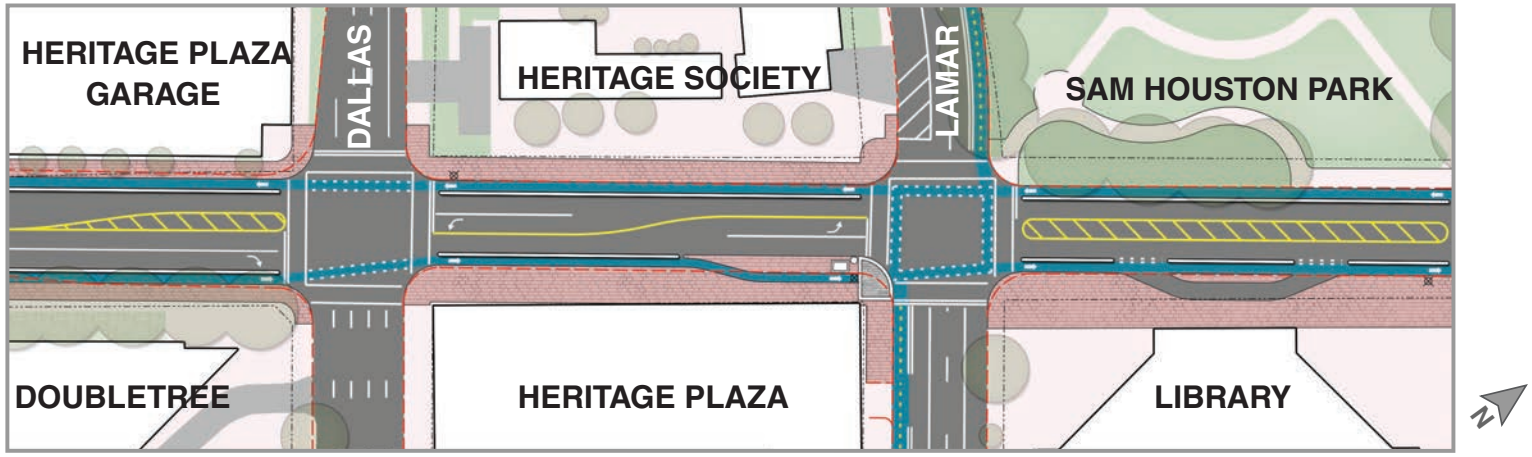
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

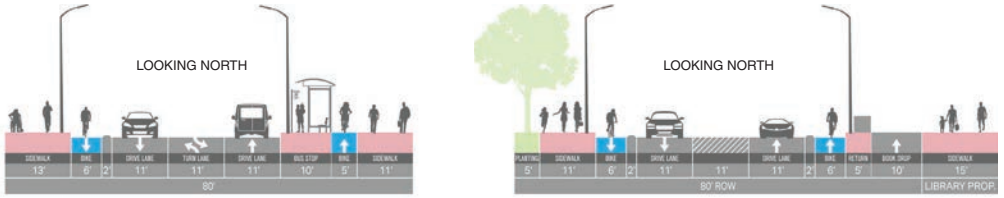
FIGURE LOCATIONS



FIGURES ARE NOT TO SCALE

Figure D.18





TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY

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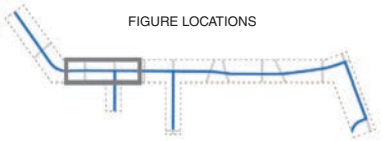
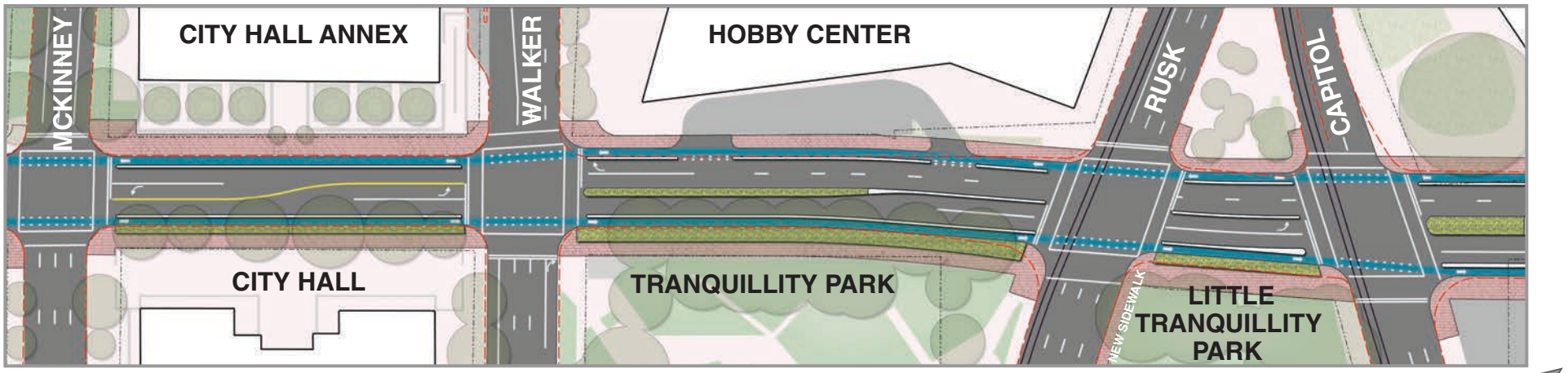
FIGURE LOCATIONS

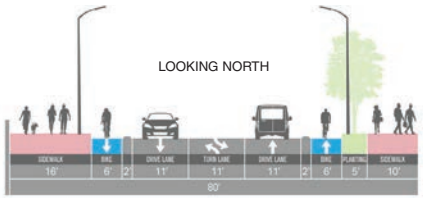


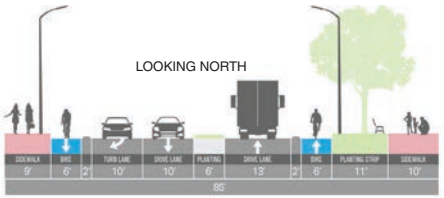
FIGURES ARE NOT TO SCALE

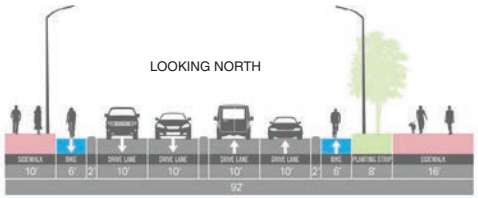
- See **Figure D.34** for Lamar Street alternatives

Figure D.19









TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY

- Vehicular Paving: Proposed
- Parking: Existing
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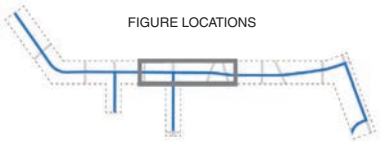
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

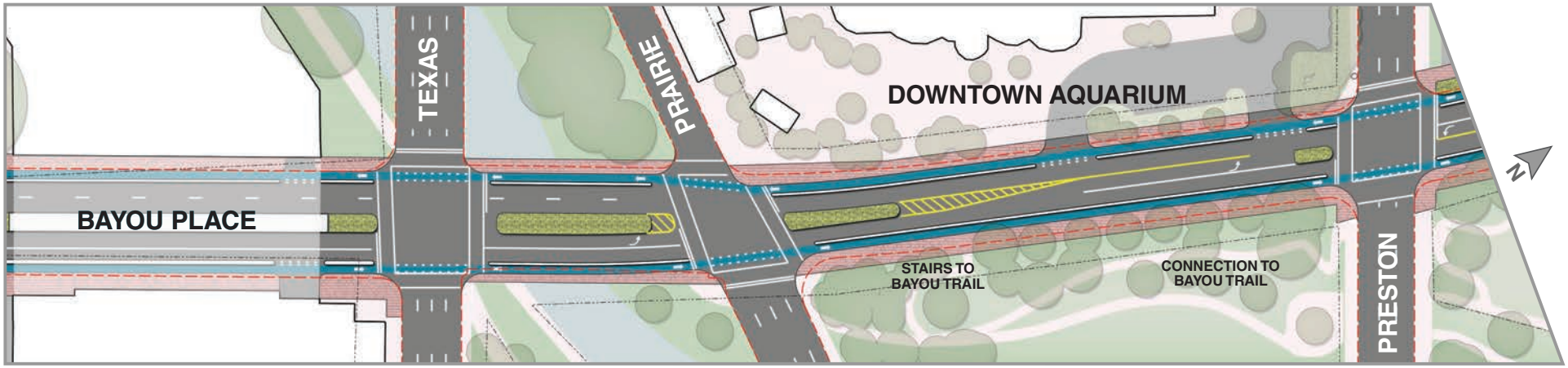
FIGURE LOCATIONS

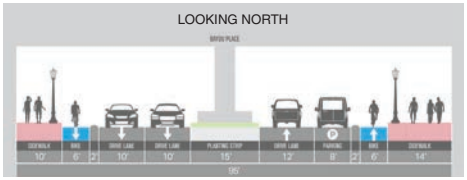


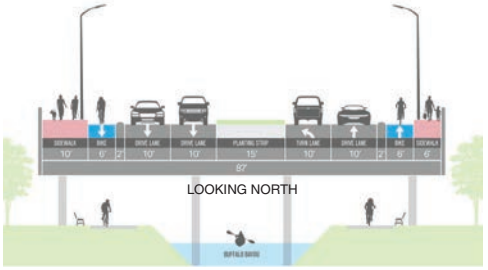
FIGURES ARE NOT TO SCALE

- See **Figure D.33** for Walker Street alternatives

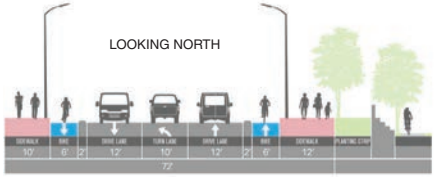
Figure D.20







TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY



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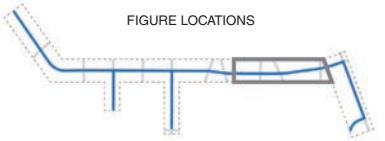
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

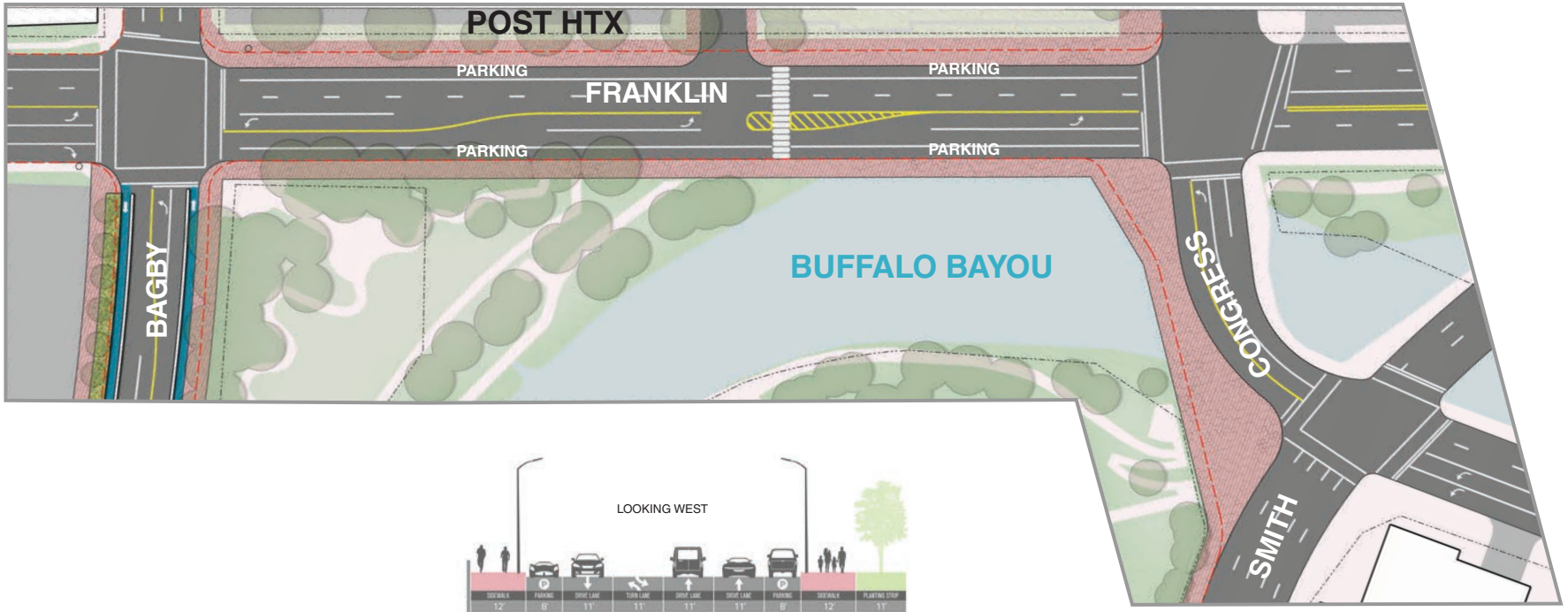
FIGURE LOCATIONS

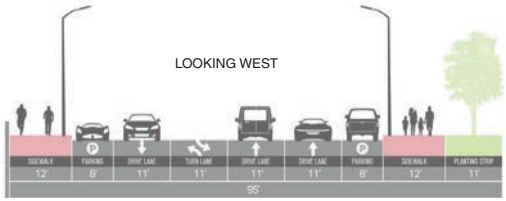


FIGURES ARE NOT TO SCALE

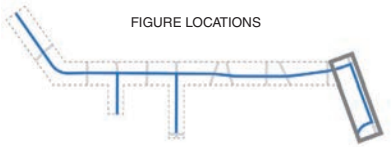
Figure D.21

ALTERNATIVE 3 | FRANKLIN STREET





TYPICAL CROSS-SECTION
WIDTHS WILL VARY



FIGURES ARE NOT TO SCALE

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- Pedestrian Paving: Existing
- Bike Facility: Proposed
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- Planting Bed: Proposed
- Planting Bed: Existing
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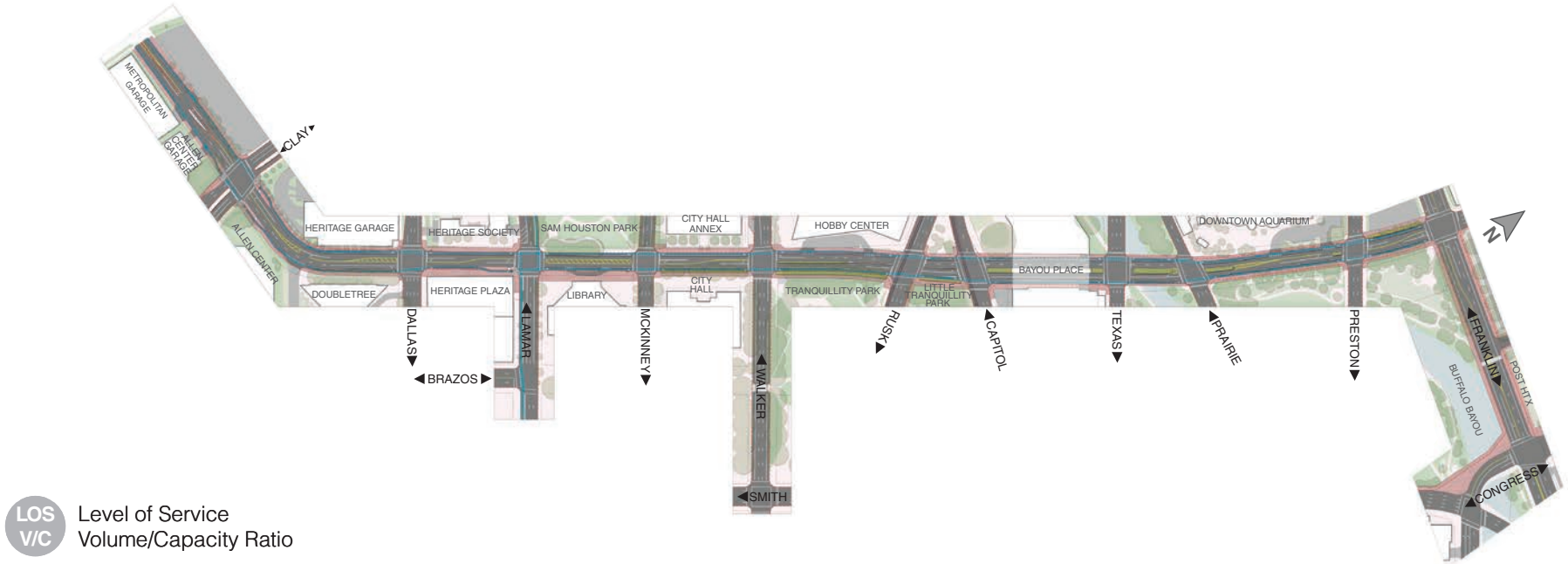
Figure D.22



LOS V/C Level of Service Volume/Capacity Ratio

	West Dallas at Clay	Bagby at Dallas	Bagby at Lamar	Bagby at McKinney	Bagby at Walker	Bagby at Rusk	Bagby at Capitol	Bagby at Texas	Bagby at Prairie	Bagby at Preston	Bagby at Franklin
2020	C 0.571	B 0.467	B 0.426	C 0.556	C 0.523	B 0.493	B 0.307	B 0.472	B 0.312	B 0.305	B 0.277
2040 NHHIP	C 0.603	B 0.470	B 0.470	C 0.615	B 0.497	A 0.298	B 0.523	B 0.348	B 0.178	C 0.483	B 0.311

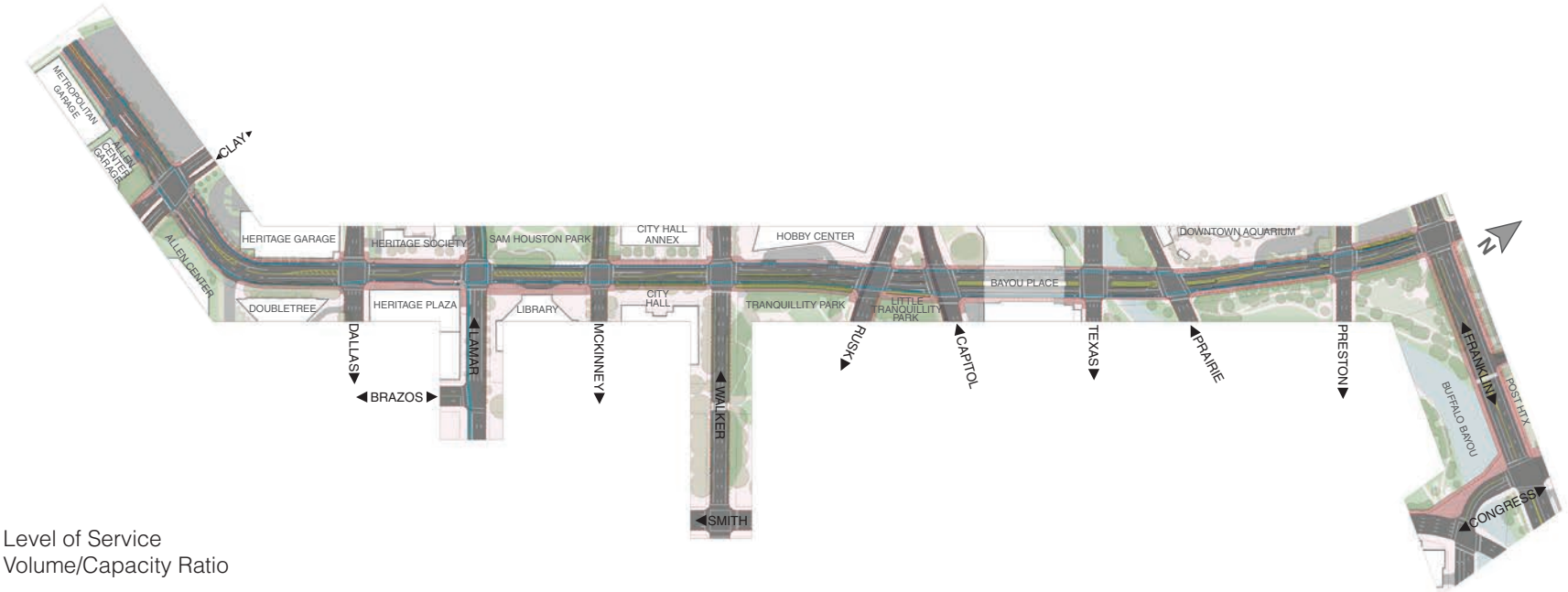
Figure D.23 Alternative 3 AM Peak Hour Analysis

Intersection capacity analyses were conducted for all proposed intersections along Alternative 3. The AM peak hour results are shown in **Figure D.23** and the PM peak hour results are shown in **Figure D.24.** Capacity analyses were conducted for three scenarios. The 2020 is a forecast of operations near the expected year of completion.

A 2040 growth only scenario was also conducted to understand 2040 operations if the NHHIP does not move forward. This scenario assumed the roadway network surrounding Bagby Street does not change between today and 2040.

For the 2040 NHHIP scenario, vehicular trips were redistributed along the roadway network to project the expected changes in driver behavior after the completion of the highway realignment. The redistributed trips were accounted for in the 2040 NHHIP model results, along with an estimated vehicular traffic growth of 0.5% compounded per year for the twenty years.

The detailed traffic report including all three scenarios is included in **Appendix B**.



LOS V/C Level of Service Volume/Capacity Ratio

	West Dallas at Clay	Bagby at Dallas	Bagby at Lamar	Bagby at McKinney	Bagby at Walker	Bagby at Rusk	Bagby at Capitol	Bagby at Texas	Bagby at Prairie	Bagby at Preston	Bagby at Franklin
2020	C 0.610	C 0.581	B 0.760	C 0.656	F 0.792	B 0.268	B 0.548	B 0.434	B 0.578	B 0.442	D 0.516
2040 NHHIP	C 0.620	B 0.473	B 0.600	C 0.488	D 0.873	B 0.213	B 0.448	B 0.436	B 0.628	B 0.308	C 0.579

Figure D.24 Alternative 3 PM Peak Hour Analysis

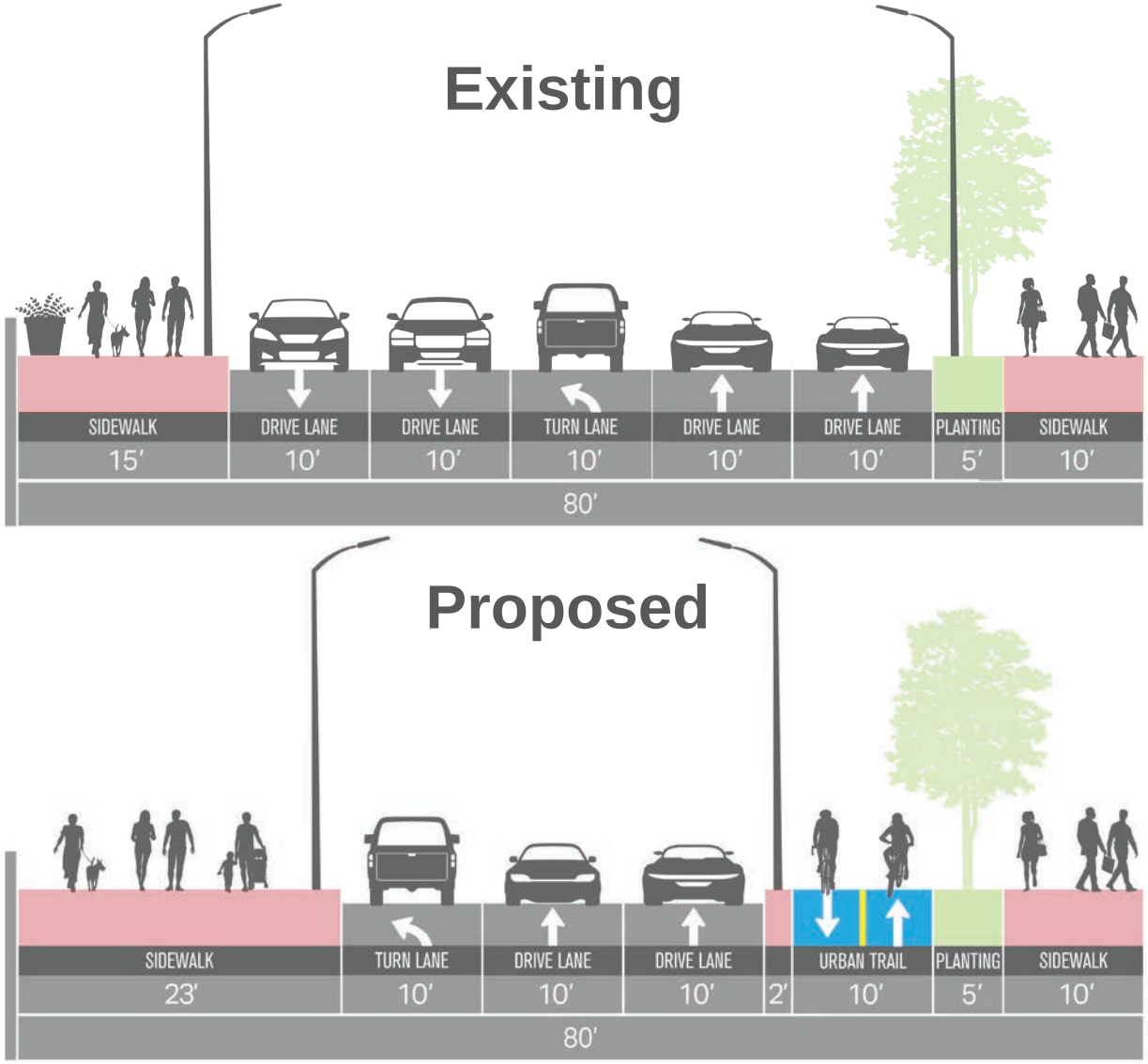


Figure D.25 Alternative 4 Proposed Cross-section

**Typical cross-section for the 900 block of Bagby Street between McKinney Street and Walker Street adjacent to City Hall and City Hall Annex where ROW is 80'.*

Alternative 4

Alternative 4 is a one-way alternative, which converts five blocks of the 11 block study corridor of Bagby Street to a one-way northbound corridor. Due to operations and driveways at some adjacent buildings, such as Hobby Center and Allen Center, it was determined that converting all blocks to one-way operations would not be feasible. Converting five blocks along Bagby Street to one-way was assessed by stakeholders as adversely impacting legibility and complicating circulation to some destinations such as the Theater District Garage entrance on Rusk for drivers coming from the north on Bagby.

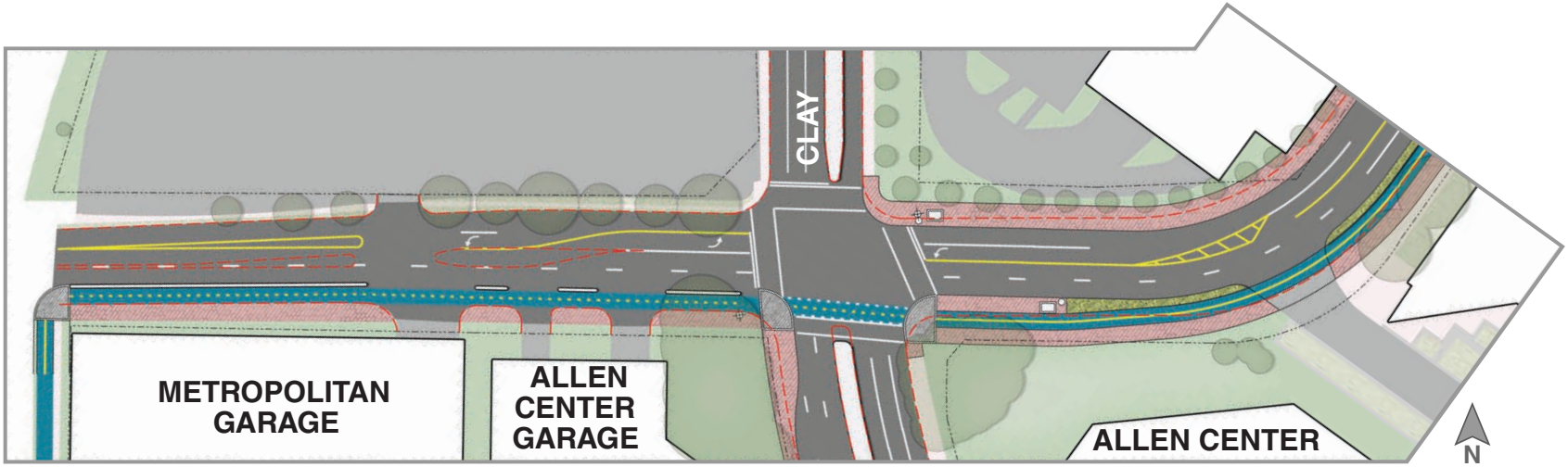
Alternative 4 provides a bicycle facility similar to Alternative 1 and Alternative 2. Blocks where southbound traffic has been removed provide for a substantially expanded pedestrian realm with opportunities for additional landscaping or on-street parking.

Level-of-services for this alternative are LOS A or LOS B indicate minimal vehicular delay, but the corridor legibility and limited access to some blocks make it less desirable than the preferred Alternative 2.

The proposed cross-section for the 900 block of Bagby Street between City Hall and City Hall Annex is shown in **Figure D.25. Figures D.26** through **D.30** show the detailed corridor schematic.

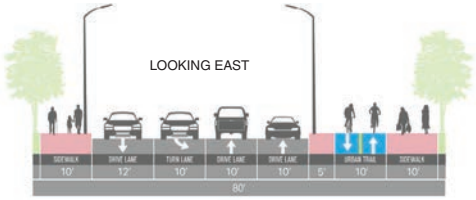
Alternative 4 Vision

ALTERNATIVE 4 | IH-45 TO DALLAS STREET



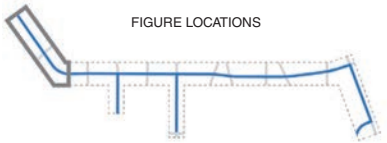
FUTURE PROJECTS MAY EXTEND TRAIL TO BRAZOS IN MIDTOWN

TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY



- Vehicular Paving: Proposed
- Parking: Existing
- Pedestrian Paving: Proposed
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

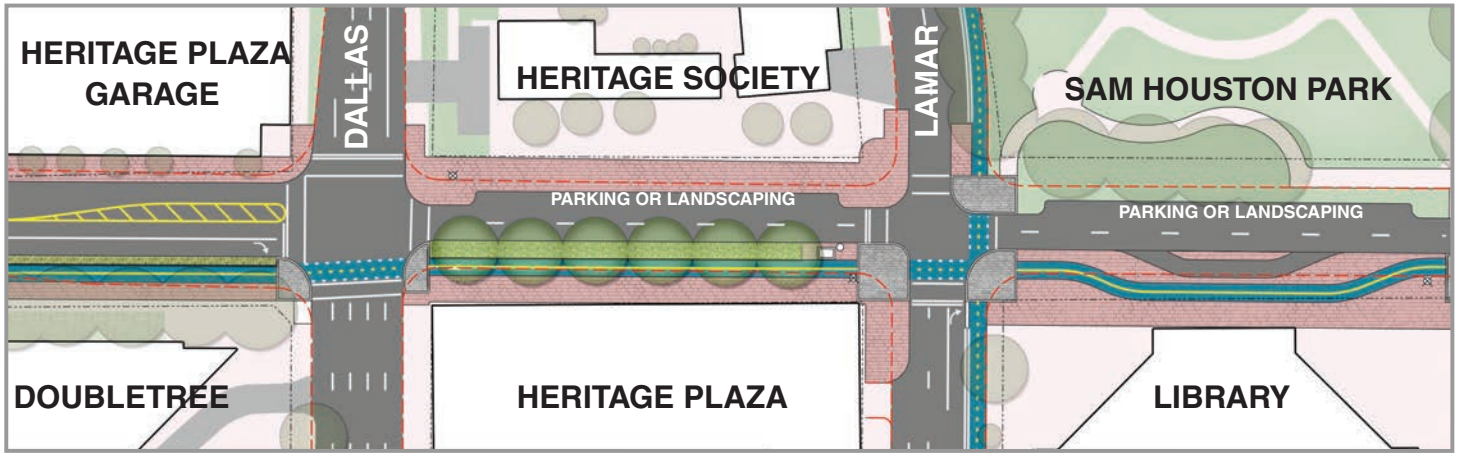
FIGURE LOCATIONS



FIGURES ARE NOT TO SCALE

Figure D.26

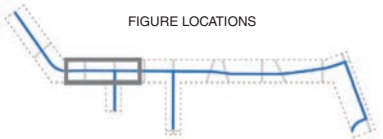
ALTERNATIVE 4 | DALLAS STREET TO MCKINNEY STREET



TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY

- Vehicular Paving: Proposed
- Parking: Existing
- Pedestrian Paving: Proposed
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

FIGURE LOCATIONS

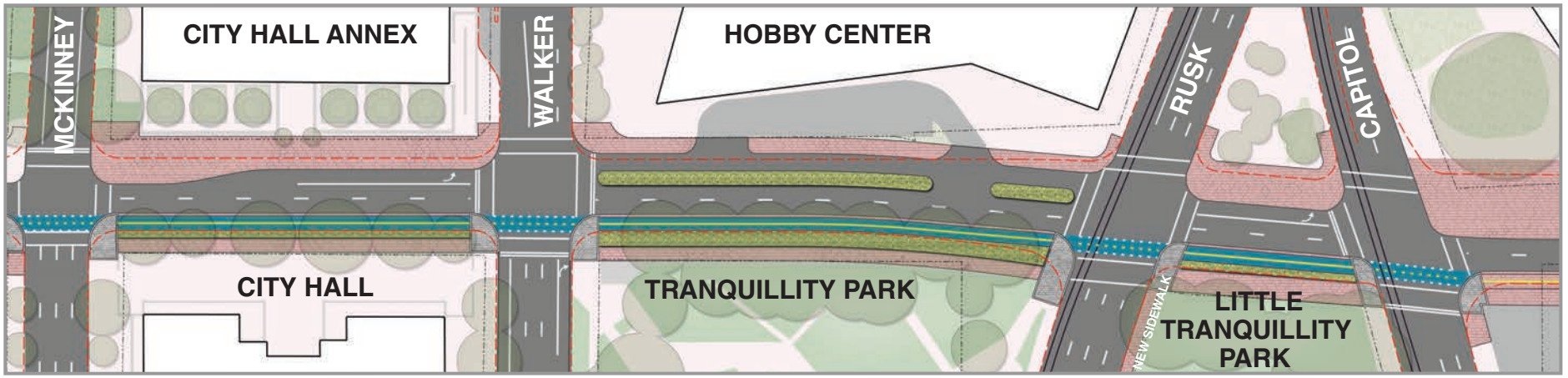


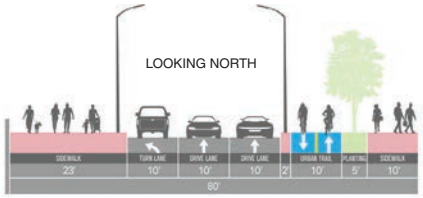
FIGURES ARE NOT TO SCALE

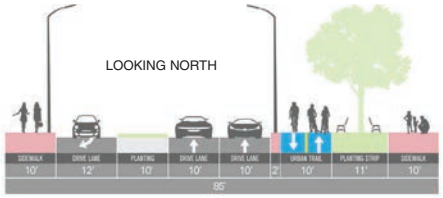
- See **Figure D.34** for Lamar Street alternatives

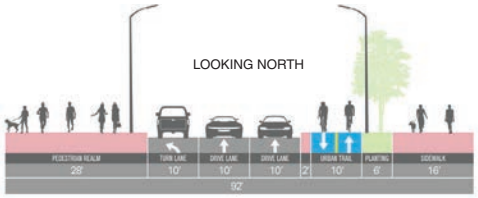
Figure D.27

ALTERNATIVE 4 | MCKINNEY STREET TO TEXAS AVENUE





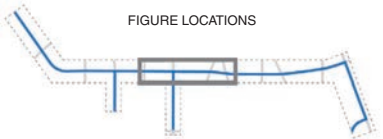




TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY

- Vehicular Paving: Proposed
- Parking: Existing
- Pedestrian Paving: Proposed
- Pedestrian Paving: Existing
- Bike Facility: Proposed
- Ped+Bike Area: Proposed
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

FIGURE LOCATIONS

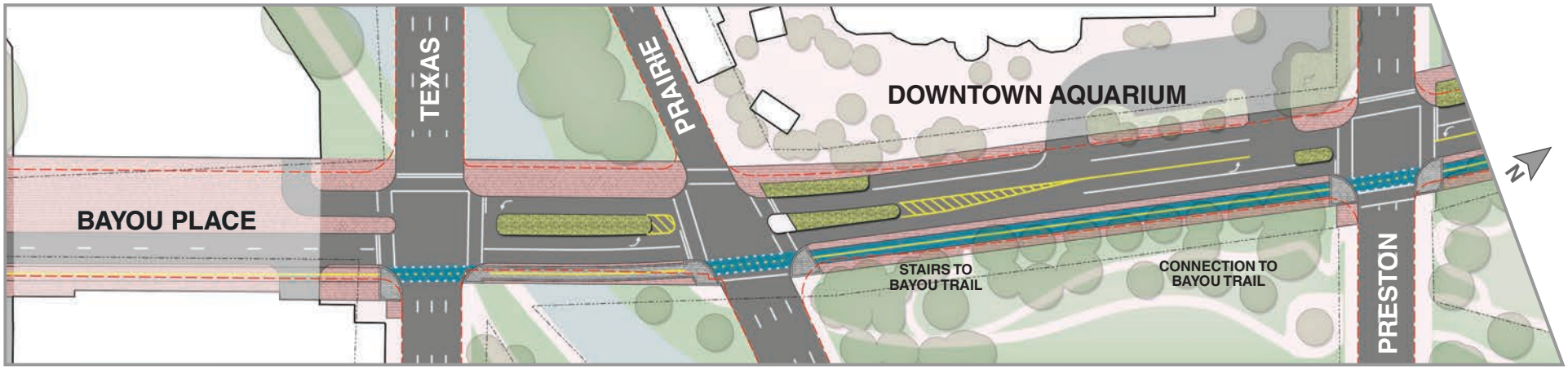


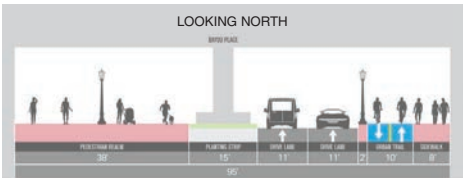
FIGURES ARE NOT TO SCALE

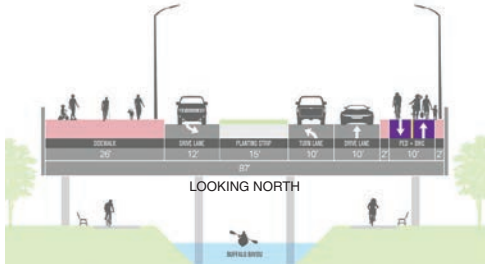
- See **Figure D.33** for Walker Street alternatives

Figure D.28

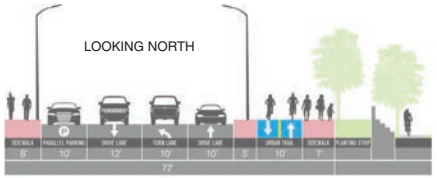
ALTERNATIVE 4 | TEXAS AVENUE TO FRANKLIN STREET







TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY



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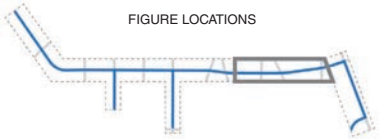
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

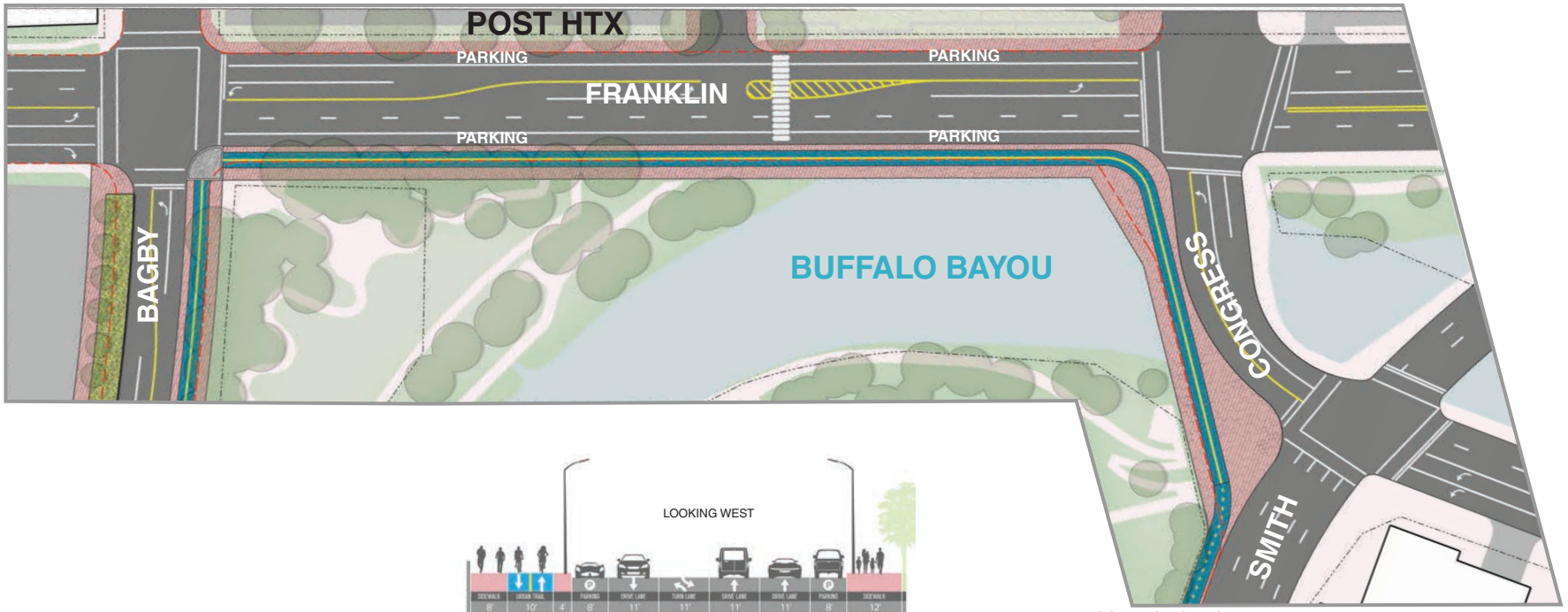
FIGURE LOCATIONS

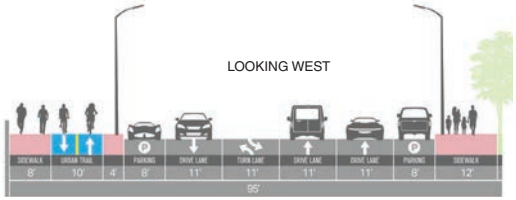


FIGURES ARE NOT TO SCALE

Figure D.29

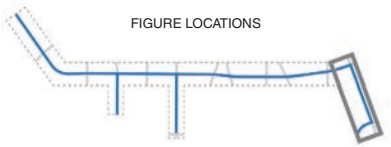
ALTERNATIVE 4 | FRANKLIN STREET





TYPICAL CROSS-SECTION
WIDTHS WILL VARY

CONNECTION TO SESQUICENTENNIAL PARK



FIGURES ARE NOT TO SCALE

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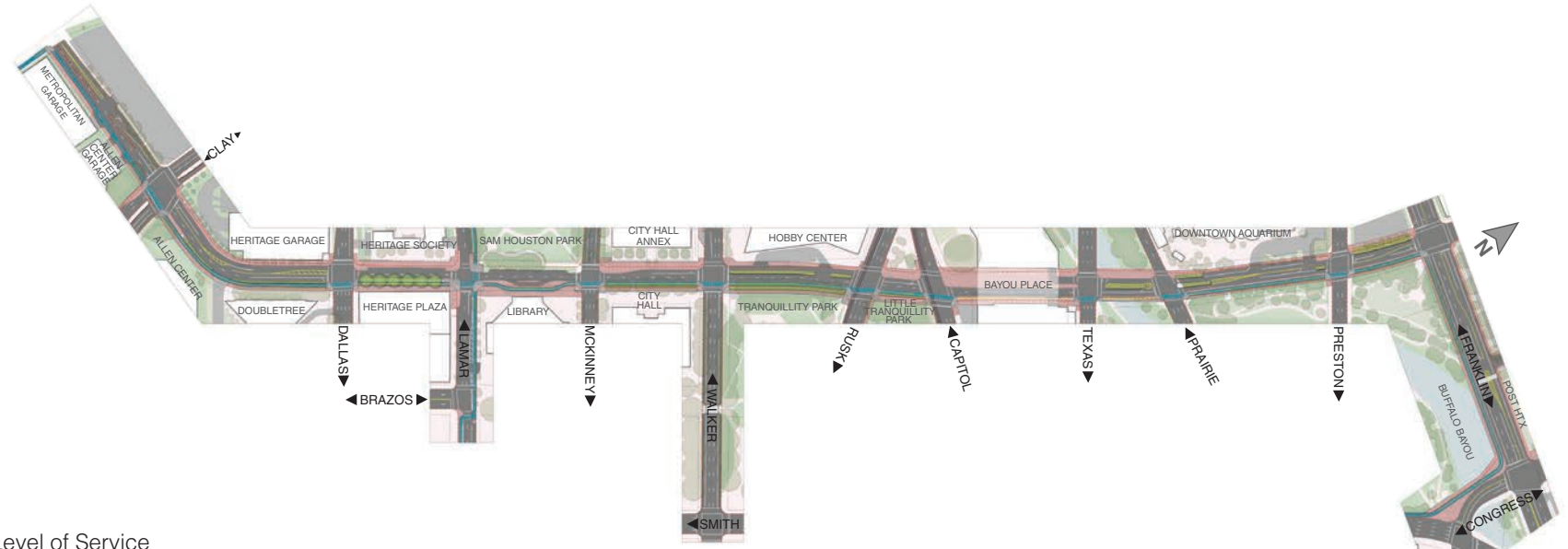
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

Figure D.30



LOS V/C Level of Service Volume/Capacity Ratio

	West Dallas at Clay	Bagby at Dallas	Bagby at Lamar	Bagby at McKinney	Bagby at Walker	Bagby at Rusk	Bagby at Capitol	Bagby at Texas	Bagby at Prairie	Bagby at Preston	Bagby at Franklin
2020	D 0.742	A 0.337	A 0.156	B 0.357	A 0.246	A 0.211	A 0.094	A 0.318	A 0.185	B 0.287	B 0.298
2040 NHHIP	D 0.808	A 0.367	A 0.142	B 0.464	A 0.328	A 0.205	A 0.052	B 0.404	A 0.220	B 0.220	C 0.503

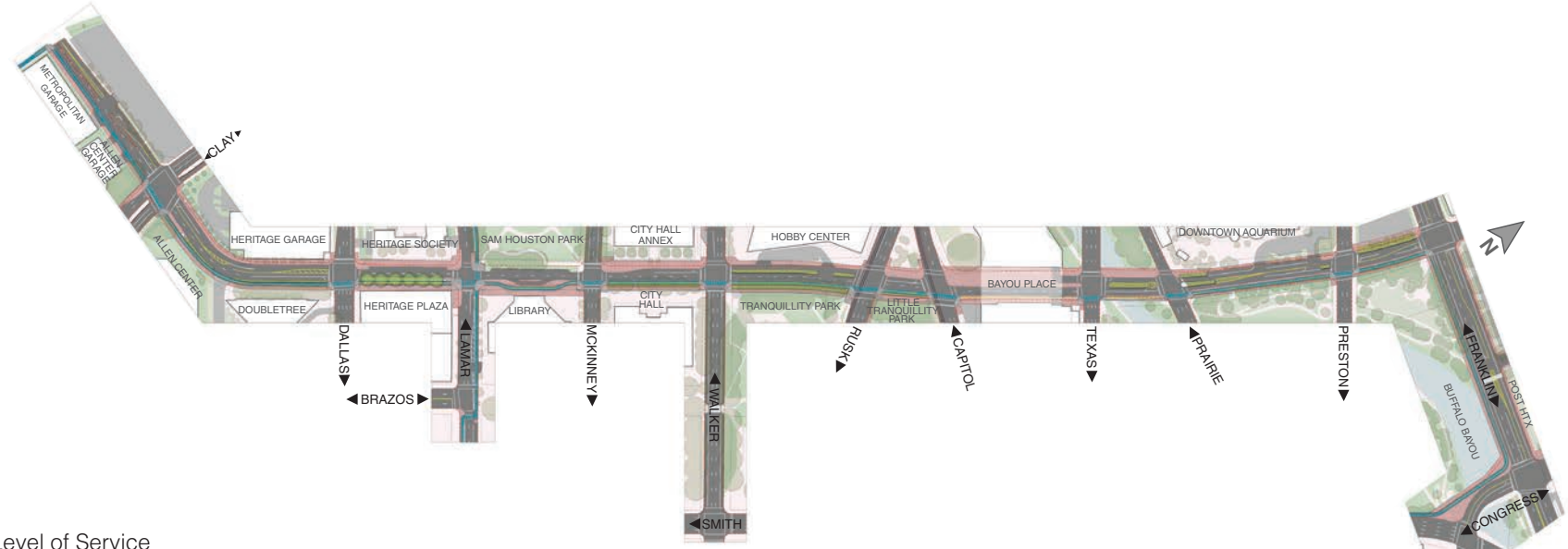
Figure D.31 Alternative 4 AM Peak Hour Analysis

Intersection capacity analyses were conducted for all proposed intersections along Alternative 4. The AM peak hour results are shown in **Figure D.31** and the PM peak hour results are shown in **Figure D.32.** Capacity analyses were conducted for three scenarios. The 2020 is a forecast of operations near the expected year of completion.

A 2040 growth only scenario was also conducted to understand 2040 operations if the NHHIP does not move forward. This scenario assumed the roadway network surrounding Bagby Street does not change between today and 2040.

For the 2040 NHHIP scenario, vehicular trips were redistributed along the roadway network to project the expected changes in driver behavior after the completion of the highway realignment. The redistributed trips were accounted for in the 2040 NHHIP model results, along with an estimated vehicular traffic growth of 0.5% compounded per year for the twenty years.

The detailed traffic report including all three scenarios is included in **Appendix B**.



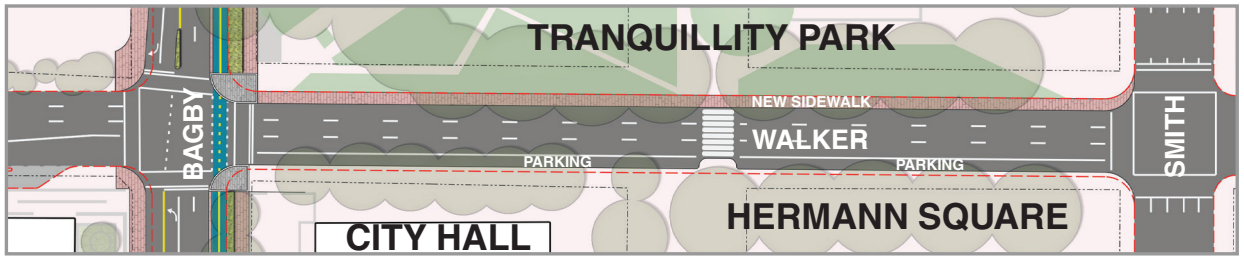
LOS V/C Level of Service Volume/Capacity Ratio

	West Dallas at Clay	Bagby at Dallas	Bagby at Lamar	Bagby at McKinney	Bagby at Walker	Bagby at Rusk	Bagby at Capitol	Bagby at Texas	Bagby at Prairie	Bagby at Preston	Bagby at Franklin
2020	D 0.697	B 0.561	B 0.614	C 0.376	C 0.730	B 0.261	A 0.398	B 0.418	B 0.578	B 0.423	D 0.616
2040 NHHIP	E 0.770	B 0.499	B 0.561	B 0.308	B 0.669	B 0.271	B 0.422	B 0.481	B 0.602	B 0.430	D 0.682

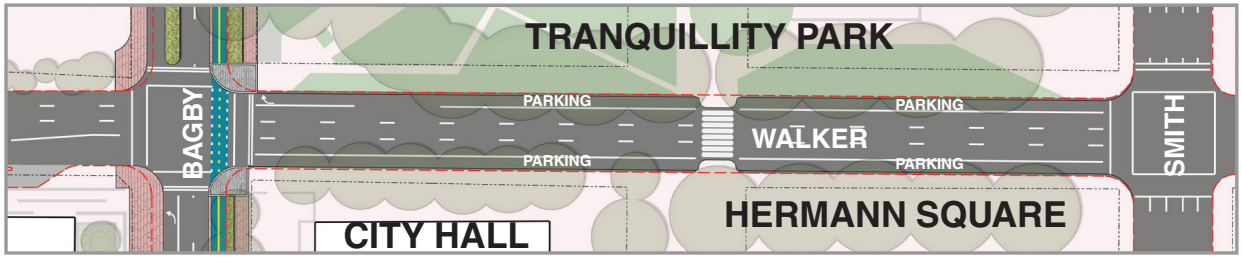
Figure D.32 Alternative 4 PM Peak Hour Analysis

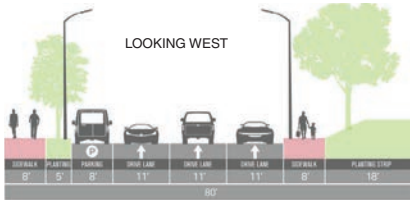
WALKER STREET

OPTION A | SHOWN IN ALT 1 + ALT 2

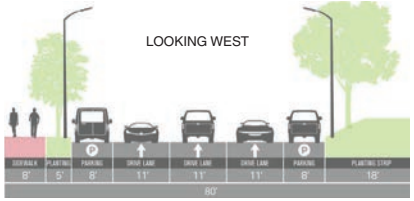


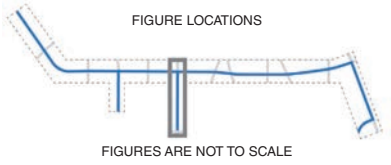
OPTION B | SHOWN IN ALT 3 + ALT 4





TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY





- Vehicular Paving: Proposed
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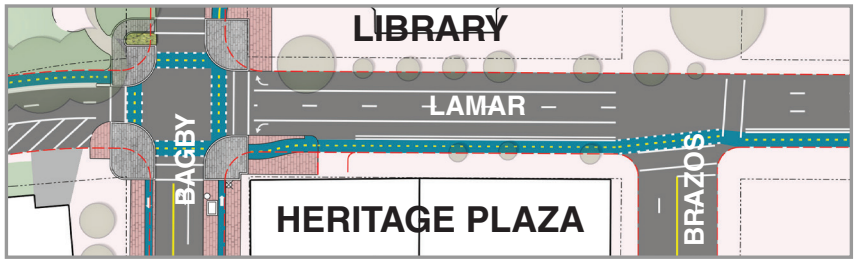
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

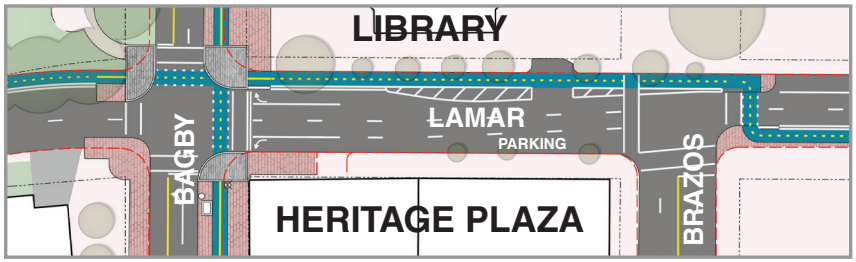
Figure D.33

LAMAR STREET

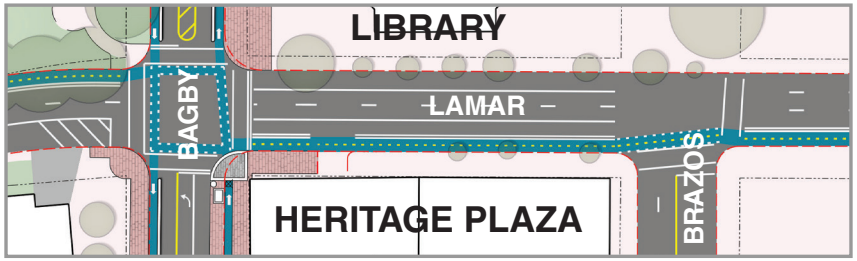
ALTERNATIVE 1



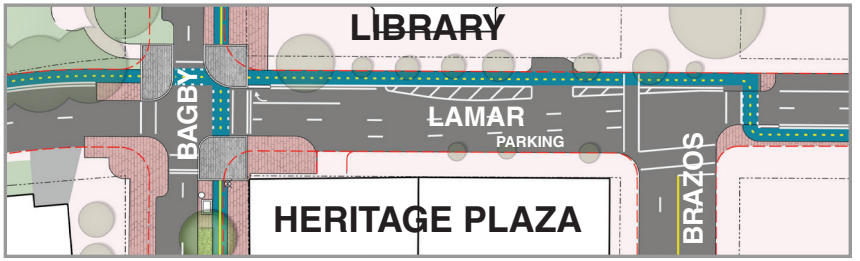
ALTERNATIVE 2

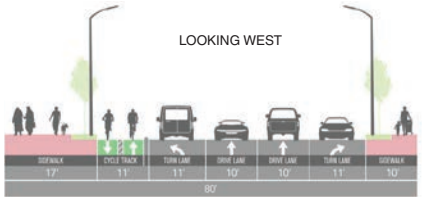


ALTERNATIVE 3

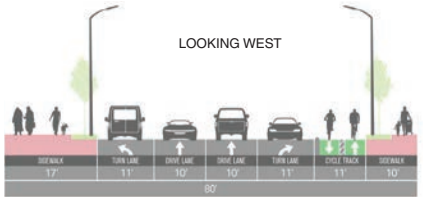


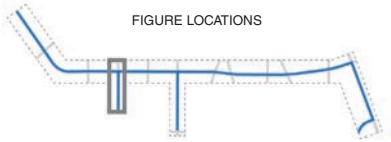
ALTERNATIVE 4





TYPICAL CROSS-SECTIONS
WIDTHS WILL VARY





FIGURES ARE NOT TO SCALE

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- Pedestrian Paving: Existing
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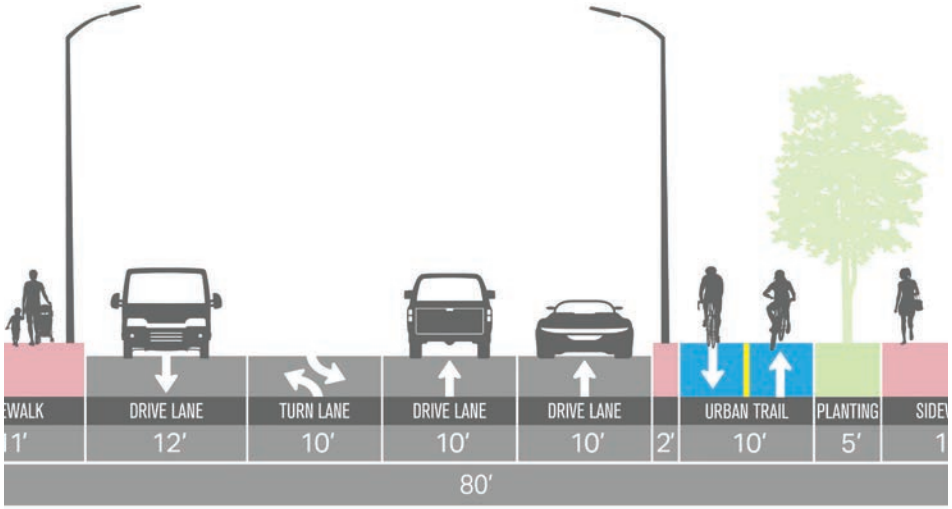
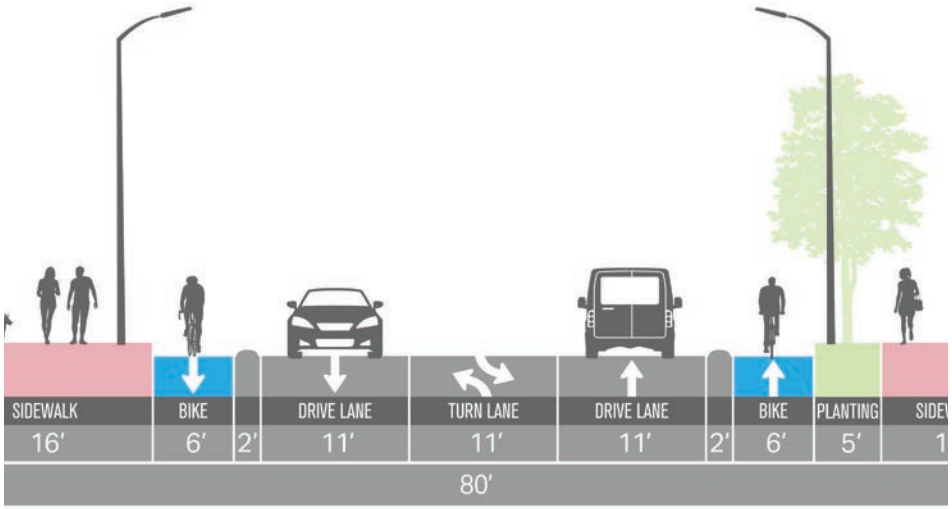
- Planting Bed: Proposed
- Planting Bed: Existing
- Turf: Existing
- Buffalo Bayou
- Curb Line: Existing

Figure D.34

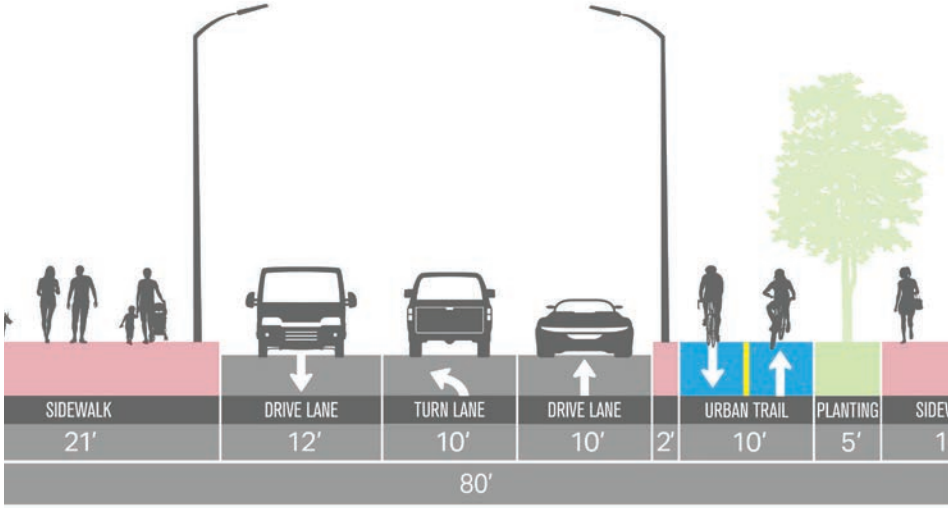
Alternative 1



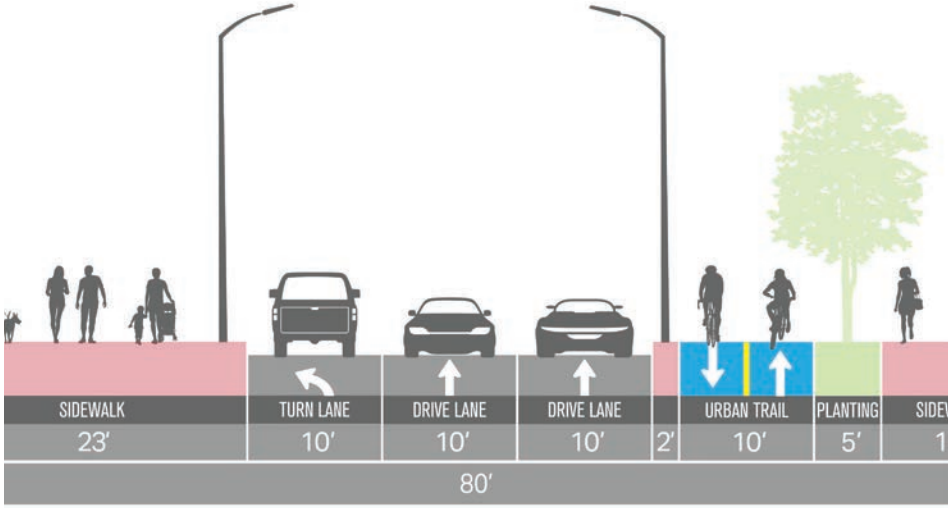
Alternative 3



Alternative 2



Alternative 4




Alternative 1


Alternative 3


Alternative 2


Alternative 4

BAGBY STREET IMPROVEMENT PLAN

BAGBY IS A STREET OF PARKS