

RICK HELTON
Mayor
BRENT MCCAULLEY
Mayor Pro Tem
Councilperson At Large B
BRANDON LUNSFORD
Councilperson At Large A
MANDI WILLIAMS
Councilperson District 1



CHUCK ENGELKEN
Councilperson District 2
BILL BENTLEY
Councilperson District 3
ROBERT GUERRA
Councilperson District 4
JAY MARTIN
Councilperson District 5
ROBBIE MCLARRIN
Councilperson District 6

CITY COUNCIL MEETING AGENDA

Monday, April 27, 2026, 6:00 p.m.

Notice is hereby given of a regular meeting of the La Porte City Council to be held on April 27, 2026, at 6:00 p.m. in the City Hall Council Chamber, 604 West Fairmont Parkway, La Porte, Texas, for the purpose of considering the following agenda items. All agenda items are subject to action.

1. **Call to Order**

The Mayor will determine that a quorum of Councilpersons is present and open the business meeting.

2. **Invocation and Pledges of Allegiance**

INVOCATION - The invocation will be given by Pastor Joey Whitener.

PLEDGES - Will be led by Erin Cervantes.

U.S. Flag

Texas Flag: Honor the Texas Flag. I pledge allegiance to thee, Texas, one state, under God, one and indivisible.

3. **Recognitions**

3.a **Recognition of Municipal Clerks Week, May 3-9**

3.b **Recognition of Employees for Years of Service**

Christopher Forsythe - Police (10 years)

Barry Groaning - Police (15 years)

3.c **Recognition of Kayla Baez, Johnny Morales, Jauslynn Sanchez, and Amber Castro-Beltran for their work on the inaugural Fleet Week Houston.**

4. **Citizen Comment**

State law provides that members of the public may speak before the Council considers an item of business. Complete a sign up sheet before speaking. (Generally limited to five minutes per person; the time may be reduced if there is a high number of speakers or for other considerations.) Members of the Council may ask questions or make statements of fact in response to comments but are not obligated to respond and will not participate in debate or take action during this portion of the agenda. Items may be requested for future agendas in accordance with the adopted Rules of Procedure.

5. Presentations

- 5.a Presentation by Bikers Against Child Abuse (BACA) in celebration of their HEROES Weekend, April 26 and 27, 2026.**
- 5.b Graduation cord presentation to LPISD senior Isaac Daigle, for participation in the City of La Porte Municipal Court's Teen Court [Judge Janikka Bratton]]**
- 5.c Port Houston Presentation**
Presentation by Callie Barnes, Director of Seaport Connectivity of Port Houston, on the Port of Houston Authority's roadway needs and priorities. [Haley Bowers, Economic Development Manager]

6. Consent Agenda

Approval of Consent Agenda items authorizes each to be implemented in accordance with staff recommendations provided. An item may be removed from the Consent Agenda and added to the Statutory Agenda for full discussion upon request by a member of the Council present at this meeting.

- 6.a Approve the minutes of the regular City Council meeting held on April 13, 2026. [Lee Woodward, City Secretary/PIO]**
- 6.b Laptop and Equipment purchase for Police Department**
Approve the purchase of laptops for \$129,149.10 through Dell under OMNIA Partners Region 14 ESC-TC Contract No. 01-143 and printers and related computer peripherals for \$44,957.10 through CDW-G under TIPS 230105 Tech Solutions, for a total authorization of \$174,106.20 to replace aging infrastructure on thirty (30) patrol vehicles. [Scott Pullig, Chief of Police]
- 6.c Approve Interlocal Agreement with Harris County**
Authorize the City Manager to a execute an interlocal agreement between the City of La Porte, Texas, and Harris County to receive partnership funds in the amount of \$300,000.00 for the Northside Neighborhood Drainage Improvements Phase III Project. [Ray Mayo, Director of Public Works]

7. Public Hearings and Associated Ordinances

State law provides for public hearings on particular items, such as the annual City budget, tax rate, and some land use decisions. Members of the public may speak when the presiding officer calls for comments, without signing up in advance. (Generally limited to five minutes per person; in accordance with state law, the time may be reduced if there is a high number of speakers or for other considerations.)

Members of the Council may ask questions or make statements of fact in response to comments but are not obligated to respond and will not participate in debate or take action until the public hearing is closed and the item is placed before them for consideration.

- 7.a Ordinance 2025-4036 Special Conditional Use Permit (SCUP) #SCUP-2026-0001**
The City Council will hold a public hearing to receive comments regarding a recommendation by the Planning and Zoning Commission to adopt Ordinance 2025-4036 for Special Conditional Use Permit #SCUP-2026-0001, a request by Mario Lanza, applicant, on behalf of 92 FAIRMONT LAKES INC, property owner, to allow for a residential subdivision including 205 lots, generally located at the northeast corner of Wharton Weems Blvd and State Highway 146, La Porte; Harris County,

Texas; followed by discussion and possible action to approve or deny Ordinance 2025-4036 for Special Conditional Use Permit #SCUP-2026-0001 to allow for a residential subdivision including 205 lots, generally located at the northeast corner of Wharton Weems Blvd and State Highway 146, La Porte; Harris County, Texas. [Ryan Hvitløk, Director of Planning & Development]

8. Statutory Agenda

Councilpersons will engage in debate in accordance with their adopted parliamentary authority. Members of the public may be permitted to answer questions from the Council or provide information if requested by the Council (either without objection or on a majority vote in favor).

8.a Public Works Facility Improvements - Change Order - Generator

Presentation, discussion, and possible action to approve a change order to incorporate both generators into the first phase of the project, with a cost of \$497,456.89, utilizing the construction contingency. [Jameson Appel, Assistant Director of Public Works]

9. Reports

Presentation on major projects and/or departures from current practices are often provided here. Reports from selected committees and periodic updates may also be provided.

9.a Presentation on the Avera Special Conditional Use Permit [Ryan Hvitlok, Director of Planning and Development]

9.b City of La Porte, Texas, Fund Balance Report [Michael Dolby, Finance Director]

9.c Report of the Fiscal Affairs Committee meeting held on April 27, 2026 [Councilperson Engelken]

9.d Report of the La Porte Development Corporation Board of Directors meeting held on April 27, 2026 [Mayor Pro Tem McCaulley]

9.e Administrative Reports [Corby Alexander, City Manager]

10. Items of Community Interest

Per Texas Gov't. Code Sec. 551.0415, the Council may receive from staff and/or may make a report about items of community interest during a meeting without having given notice of the subject of the report, if no action is taken and, except as provided by Section 551.042, possible action is not discussed regarding the information provided in the report. Hear announcements concerning matters appearing on the agenda; items of community interest; and/or inquiries of staff regarding specific factual information or existing policy from the Mayor, Councilpersons, and City staff, for which no formal action will be discussed.

11. Executive Session

The portion of the Texas Gov't. Code known as the Texas Open Gov't. Act (TOMA, TGC Ch. 551) provides a limited set of circumstances that allow the Council to meet in a session closed to the public. The Council will first meet in an open session, announce the exception that allows it to meet in a closed session, and announce the time it is convening in closed session. The Council will post executive sessions it is aware of in advance, but may go into an executive session if a situation arises during a meeting that calls for an appropriate exception.

The Council will convene in executive session without a vote unless an objection is raised by

a member of the Council.

If, during the course of the meeting and discussion of any items covered by this notice, City Council determines that a closed or executive session of the Council is required, then such closed meeting will be held as authorized by Texas Government Code, Chapter 551, Section 551.071 consultation with counsel on legal matters; Section 551.072 - deliberation regarding purchase, exchange, lease or value of real property; Section 551.073 - deliberation regarding a prospective gift; Section 551.074 - personnel matters regarding the appointment, employment, evaluation, reassignment, duties, discipline, or dismissal of a public officer or employee; Section 551.076 - implementation of security personnel or devices; Section 551.087 - deliberation regarding economic development negotiation; Section 551.089 - deliberation regarding security devices or security audits, and/or other matters as authorized under the Texas Government Code. If a closed or executive session is held in accordance with the Texas Government Code as set out above, the City Council will reconvene in open session in order to take action, if necessary, on the items addressed during executive session.

11.a Consultation with Attorney

Texas Government Code Sec. 551.071(2)-Consultation with Attorney: The City Council will meet in closed session with the City Attorney and City Manager to discuss legal issues in connection with existing airport lease agreement between the City of La Porte, Texas, and Tri-Star Aviation, Inc.

12. Reconvene

The Council will reconvene in open session and consider action, if any, on item(s) discussed in executive session. Only action of the Council decided on in an open session is legal. The Council will announce the time it reconvenes before resuming consideration or adjourning.

13. Adjourn

Persons with disabilities who plan to attend this meeting and who may need auxiliary aids or services are requested to contact the City Secretary's Office (281-470-5021), three working days prior to the meeting for appropriate arrangements.

Pursuant to Texas Government Code Sec. 551.127, on a regular, non-emergency basis, members may attend and participate in the meeting remotely by video conference. Should that occur, a quorum of the members will be physically present at the location noted above on this agenda.

CERTIFICATE

I, Lee Woodward, City Secretary, do hereby certify that a copy of the April 27, 2026, City Council agenda was posted on the City Hall bulletin board, a place convenient and readily accessible to the general public at all times, and to the City's website, www.LaPorteTX.gov, in compliance with Chapter 551, Texas Government Code.

DATE:

TIME:

TAKEN DOWN:

Lee Woodward, City Secretary

SIGN UP FOR CITY ALERTS AT *AlertLP.com!*

Employee Service Awards

April 2026

Christopher Forsythe – School Resource Officer (10 years)

Officer Forsythe joined the La Porte team in April of 2016. He served in the Patrol Division until September of 2025 when he transitioned to his current role of School Resource Officer. He is certified as an Advanced Peace Officer. His willingness to jump right into any task that benefits students was recently recognized with a GEM award for his work on the Fill the Bus Event. Thank you Chris for your ongoing service to La Porte students and the community,

Barry Groaning – School Resource Officer (15 years)

Since joining the team in 2011, Barry has worn several hats in the Police Department: Patrol Officer, Detective, and his current role as a School Resource Officer where he has been since 2021. He leads by example in his role and sets the tone on key days like the first day back to school. He is certified as a Master Peace Officer and continues to build his knowledge specifically in school-based law enforcement. He is known for developing solid relationships with students, school faculty, and fellow SROs. Thank you Barry for all you do for La Porte.



Proclamation

Office of the Mayor

WHEREAS, April is annually Child Abuse Awareness Month and Bikers Against Child Abuse, Inc. (BACA) observes it by celebrating the last weekend in April as *BACA Heroes Weekend in Texas*; and

WHEREAS, Bikers Against Child Abuse is an international nonprofit organization dedicated to providing support and healing to children who have been abused, referred to them as *heroes*, and recognizing the bravery and determination shown by victims of child abuse in facing and overcoming their trauma; and

WHEREAS, This exemplary organization has instituted a number of initiatives to champion the victims of child abuse, notably adoption ceremonies at which an abused child is brought into the Bikers Against Child Abuse family; and

WHEREAS, The City of La Porte joins BACA and other children's advocates across the country in taking action to prevent child abuse. While acknowledging each day of the year is an opportunity to create change for the future, we extend special wishes to BACA for a successful 2026 *BACA Heroes Weekend in Texas*.

NOW, THEREFORE, I, Rick Helton, Mayor, do hereby proclaim April 25 and 26, 2026, as

BACA Heroes Weekend in Texas

In Witness Whereof: I have hereto set my hand and caused the Seal of the City to be affixed hereto, this, the 27th day of April, 2026.

City of La Porte

Rick Helton, Mayor



Port Houston City of La Porte Presentation

Callie Barnes, Port Houston Director of Seaport Connectivity – 4/27/2026

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HOUSTON SHIP CHANNEL: A FEDERAL WATERWAY



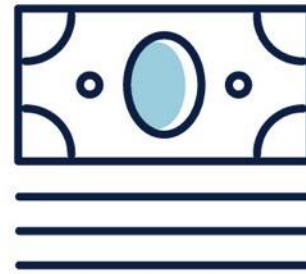
**1.54
MILLION**

JOBS IN TEXAS



**3.37
MILLION**

JOBS NATIONWIDE



**\$439
BILLION**

ECONOMIC IMPACT
IN TEXAS



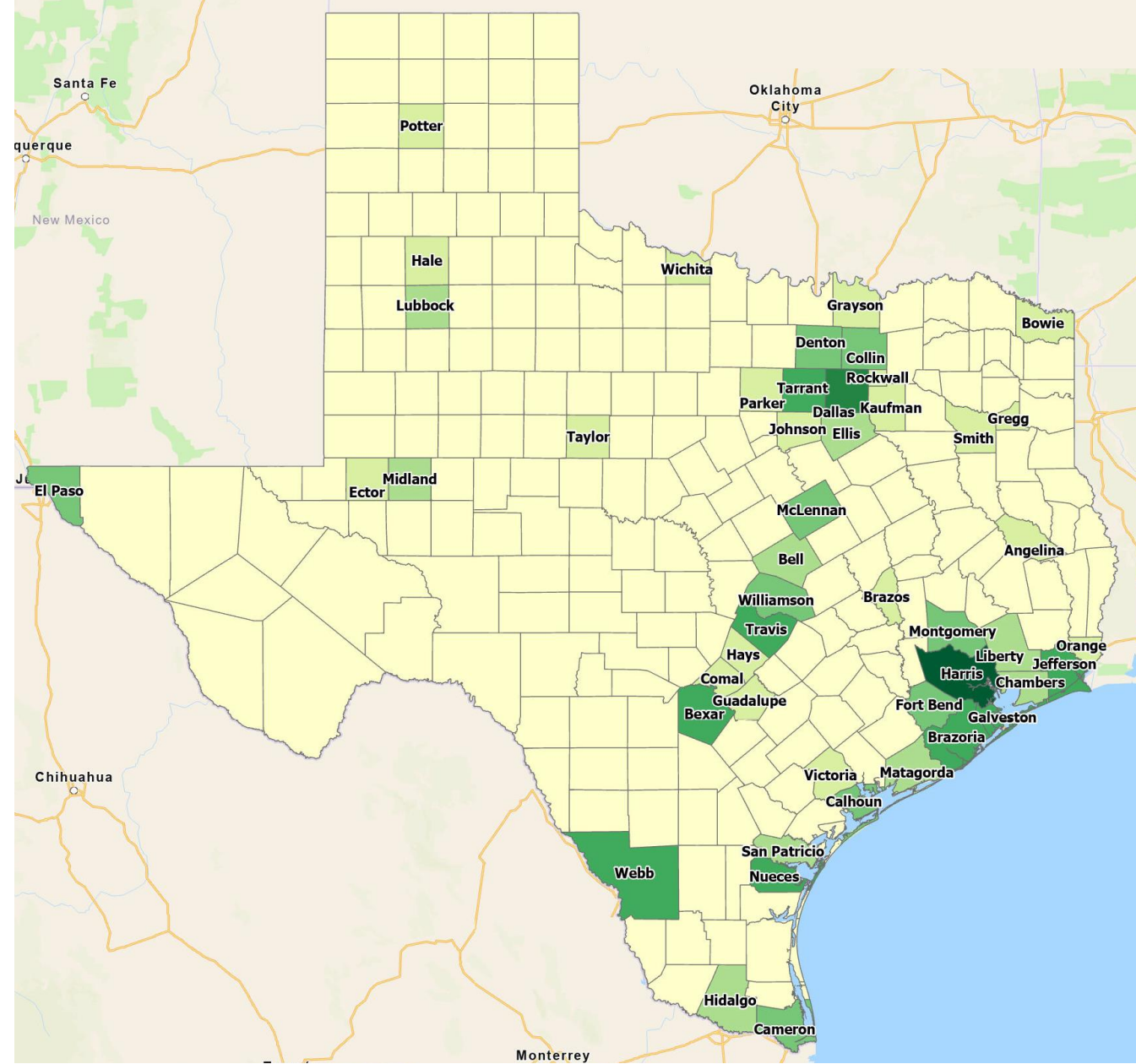
**\$906
BILLION**

ECONOMIC IMPACT
ACROSS THE U.S.

ECONOMIC IMPACT BY COUNTY


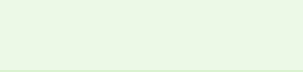
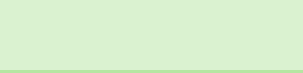




Legend - Texas Counties

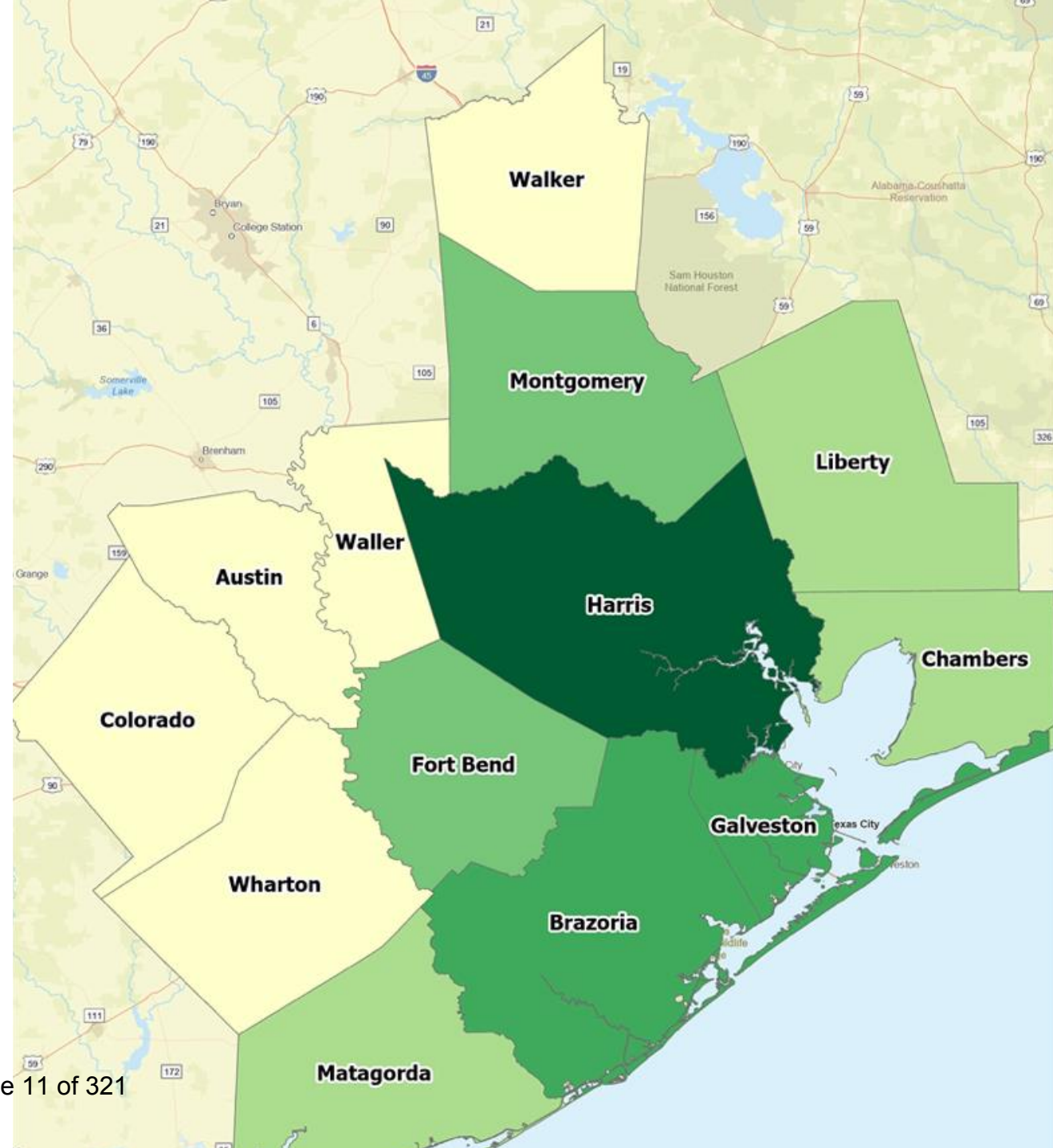
	Least Impact - \$0-\$ 610M
	\$610M- \$1.9B
	\$1.9B- \$3.1B
	\$3.1B- \$7.1B
	\$7.1B- 13.1B
	\$13.1B- \$26.8B
	Most Impact - \$204B



ECONOMIC IMPACT BY COUNTY

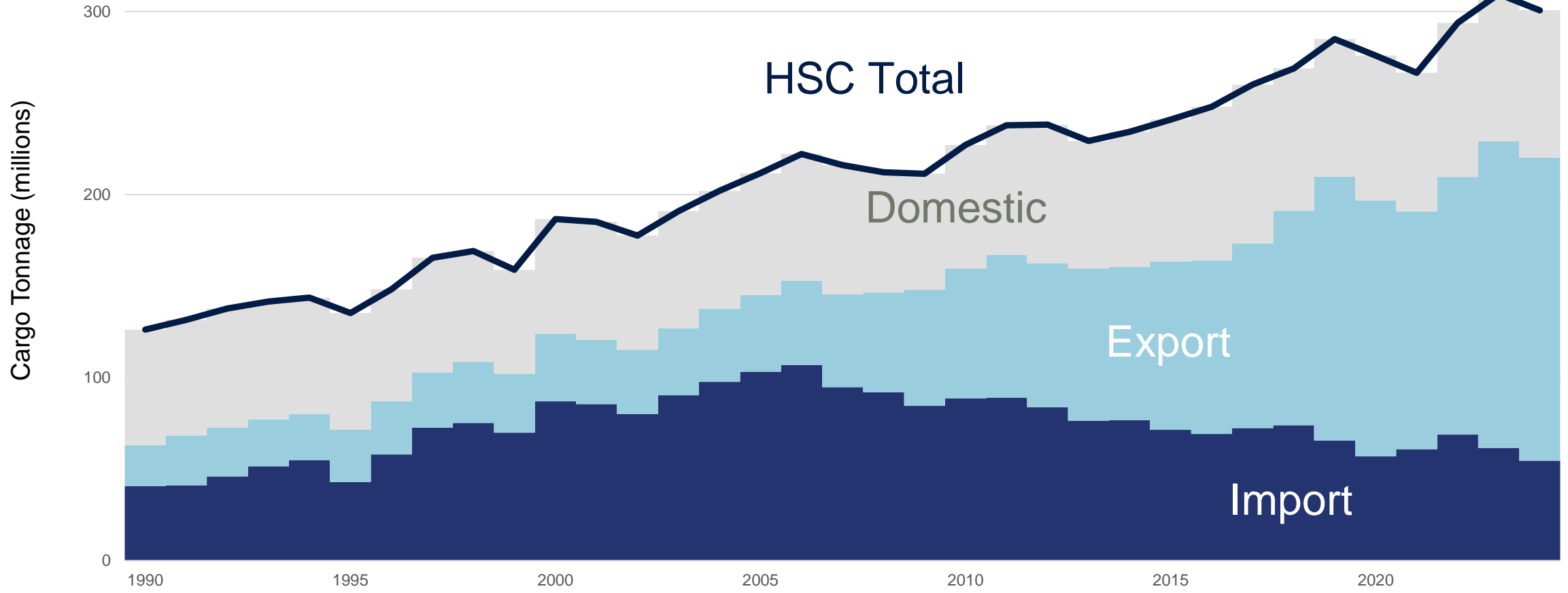
Legend - Texas Counties

	Least Impact - \$0-\$ 610M
	\$610M- \$1.9B
	\$1.9B- \$3.1B
	\$3.1B- \$7.1B
	\$7.1B- 13.1B
	\$13.1B- \$26.8B
	Most Impact - \$204B



HOUSTON SHIP CHANNEL TONNAGE

1990 - PRESENT



Note: 2024 tonnage is estimated
Source: PIERS

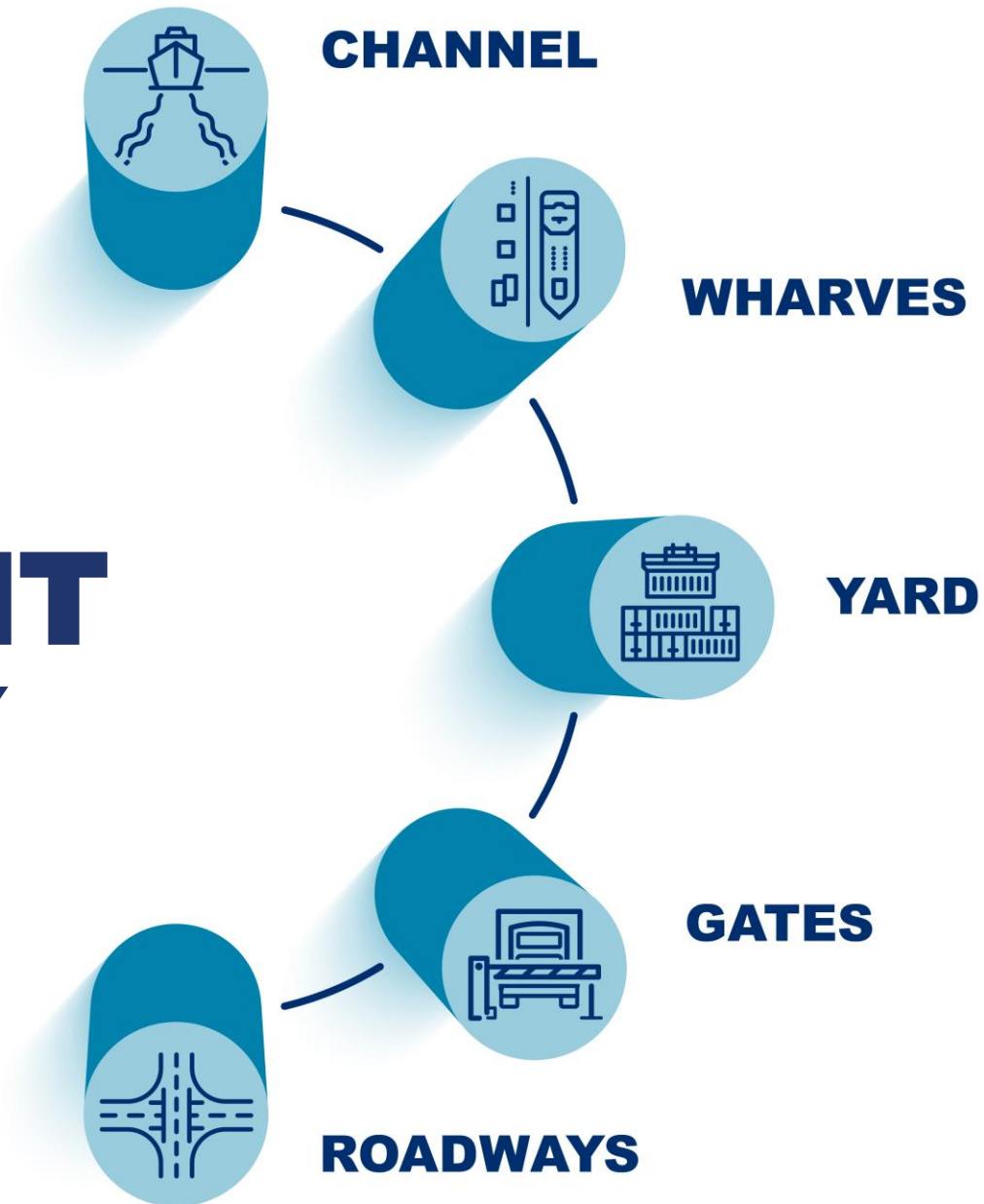
FASTEST GROWING PORT

2x
as fast as
#2!

Top 10 U.S. Container Port Rank by CAGR Total Loaded Container Volume in TEU

Rank – Growth Rate	Rank – Total TEUs	US Port Name	2015	2024	% Change	CAGR
		U.S. Container Total Loaded	32,907,196	40,367,971	23%	2.10%
1	5	Houston	1,766,378	3,313,879	88%	6.50%
2	4	Savannah	2,823,670	3,963,188	40%	3.40%
3	6	Norfolk	1,968,865	2,511,254	28%	2.50%
4	2	New York	4,536,845	5,592,007	23%	2.10%
5	1	Los Angeles	5,505,464	6,651,484	21%	1.90%
6	8	Charleston	1,558,974	1,838,163	18%	1.70%
7	3	Long Beach	4,921,408	5,475,589	11%	1.10%
8	10	Jacksonville	755,430	807,051	7%	0.70%
9	9	Oakland	1,526,419	1,579,929	4%	0.30%
10	7	Seatac	2,161,176	1,929,982	-11%	-1.10%

5 PILLARS FOR FREIGHT EFFICIENCY



PREPARING FOR THE FUTURE - ROADWAYS

Roadways are a critical link

- Nearly 99% of TEUs moved via truck
- Forecasting nearly double TEUs within next decade

Port Houston, TxDOT, H-GAC, and others must work together on key regional projects

- Accelerate Construction of SH 146 Widening
- Initiate All Segments of SH 225/I-610E Project
- Secure Funding for Bayport South Access Road Phases 2 and 3
- Prioritize and Begin Planning for Phase SH 146 Direct Connectors at Terminals



Port Houston – Roadway Priorities



SH 225 Planning and Environmental Linkages (PEL) - 2024

- **Safety Issues**

- Crash Rates Substantially Higher Than State-Wide Average

- **Inadequate Multimodal Movement of People**

- 52% Population Increase by 2045 in Study Area

- **Inefficient Movement of Freight and Maritime Cargo**

- All Major Roadways Designated part of the Primary Highway Freight System (PHFS)
- Listed as Part of the Top 100 Most Congested Truck Roadways in Texas

- **Inefficient Emergency Evacuation**

- 4 Emergency Evacuation Routes in Study Area

- **Aging Infrastructure**

- Majority of Roadways within Study Area Were Built Over 50 Years Ago
- Design and Drainage Do Not Meet Current Standard

SH 225 PEL

PUBLIC ENGAGEMENT



49
Attendees

Virtual Stakeholder & Agency Workshop #4
March 2023

Community Meetings

May to August 2023

Deer Park Community Advisory Council
Houston Community Advisory Panel
Economic Alliance, Houston Port Region
Super Neighborhood 65 & 82
Super Neighborhood 57 & 59
Citizen's Advisory Council to La Porte Industry
Galena Park-Jacinto City Community-Industry Partnership
Pasadena Citizens Advisory Council³

7 Meetings



258
Attendees

Live Poll



158
Participants



25
Attendees

Virtual Stakeholder & Agency Workshop #5
September 2023

Public Meeting #2

October 2023

2 in-person
Open Houses



70
Attendees

1 Virtual

382
Attendees



20
Comments



34
Attendees

Virtual Stakeholder & Agency Workshop #6
November 2023

PEL Recommendation

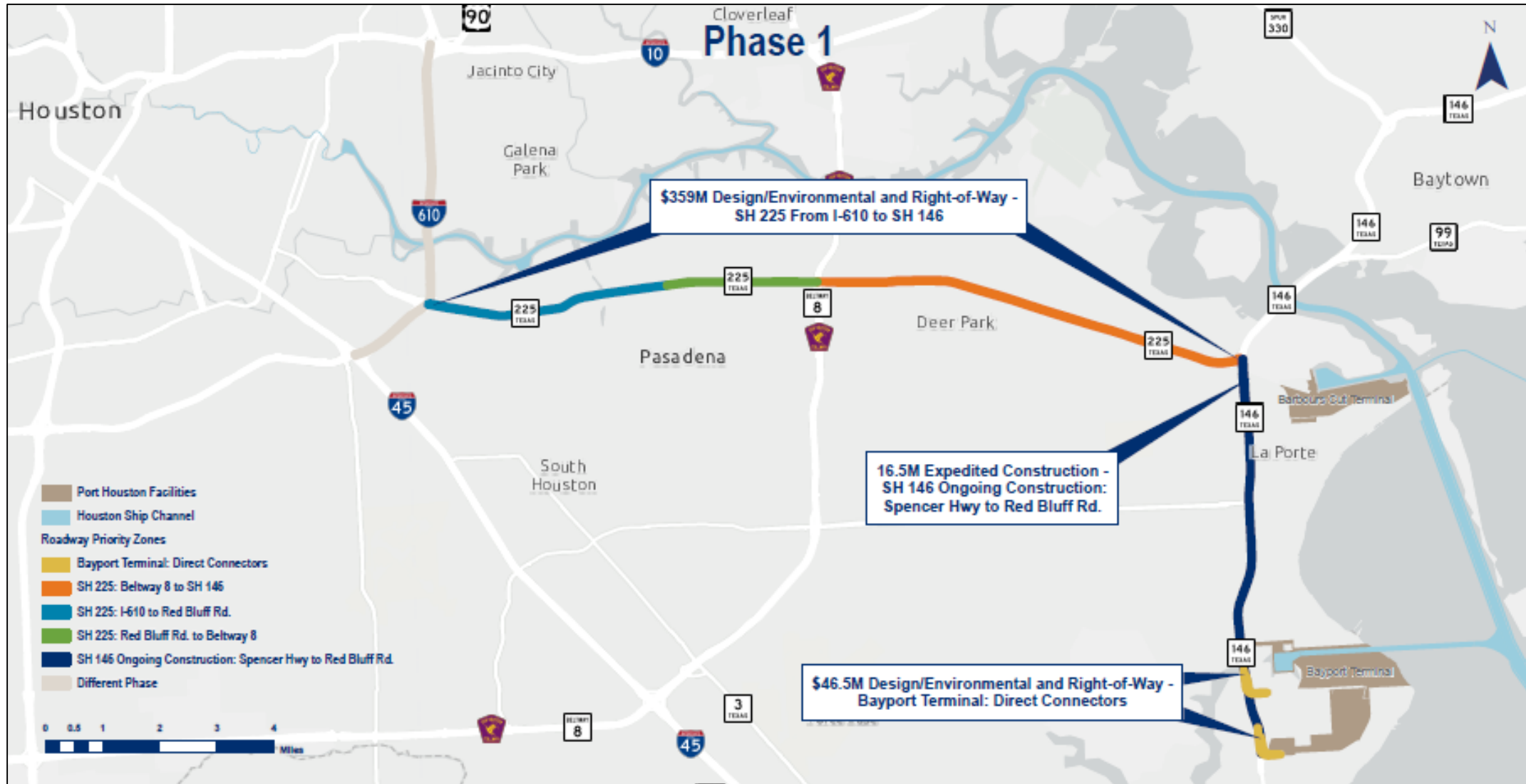
SH 225



I-610E



Phase 1 - Immediate need for ~\$450M



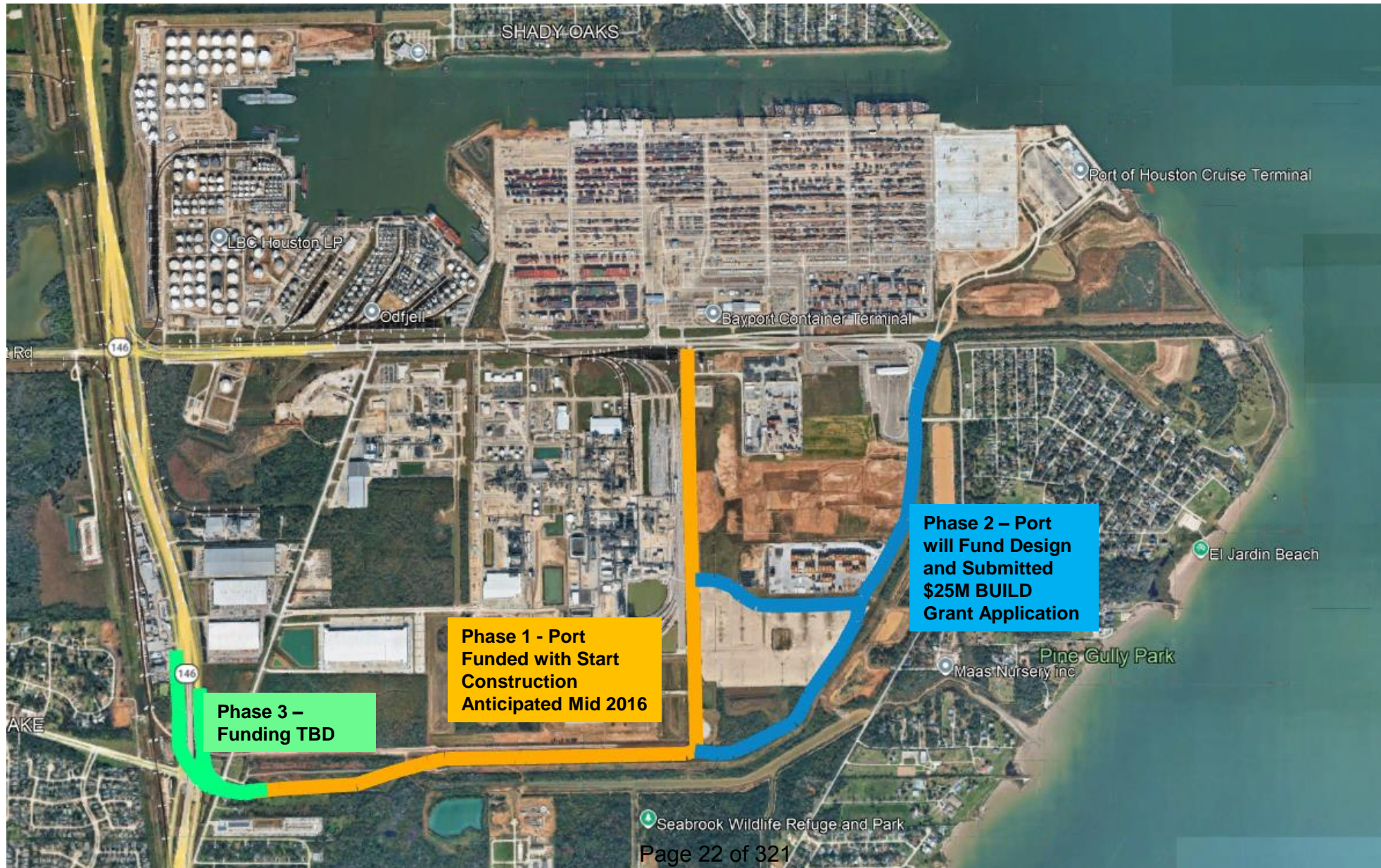
Phase 2 - Near-term need of ~\$2.5B



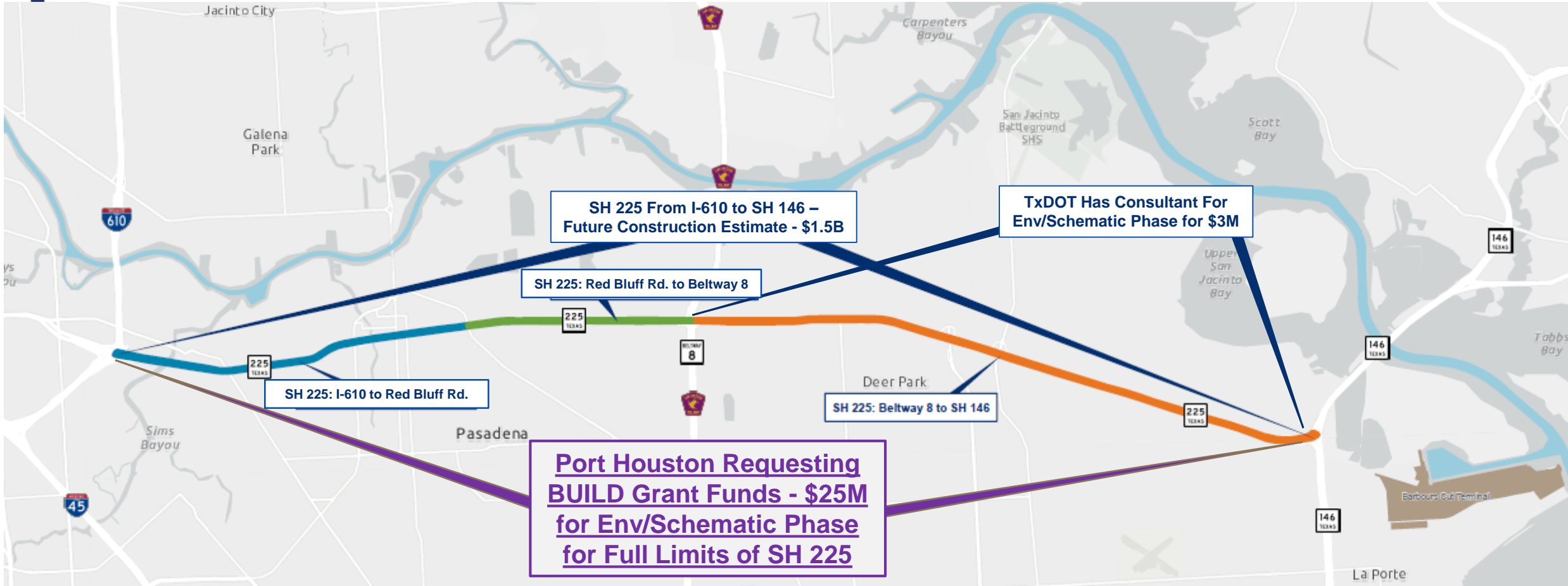
Phase 3 - ~\$4B



BSAR Phase 2 BUILD Grant Application – \$32.5M



SH 225 BUILD Grant Application – \$32.5M



Examples of Recent Roadway Advocacy Efforts

- Responded to the Request for Information (RFI) for Surface Transportation Reauthorization Bill
- Prepared Interim Charge for Speaker Burrows of Texas House
- Coordination with Texas Department of Transportation (TxDOT) and Governing Body, Texas Transportation Commission (Letter and Public Comments)
- Partnering with TxDOT Houston District
- Greater Houston Partnership (GHP) Policy Reform Workgroup (Standardizing Permitting and Expediting Economic Development [SPEED] Act) as well as Transportation and Infrastructure Committee
- Coordination with Houston-Galveston Area Council (H-GAC)
- Active with Economic Alliance Houston Port Region and Bay Area Houston Economic Partnership
- Partnering with Transportation Advocacy Group (TAG), Bay Area Houston Transportation Partnership (BayTran) and Transportation Advocates of Texas (TAOT)



www.porthouston.com

THANK YOU





MINUTES OF THE REGULAR MEETING OF THE CITY COUNCIL OF THE CITY OF LA PORTE

Councilpersons Present: Rick Helton, Brandon Lunsford, Brent McCaulley, Mandi Williams, Chuck Engelken, Robert Guerra, Jay Martin, Robbie McLarrin

Councilpersons Attending Remotely: None

Councilpersons Absent: Bill Bentley

Council-appointed Officers Present: Corby Alexander, City Manager; Clark T. Askins, City Attorney; Lee Woodward, City Secretary

**The City Council of the City of La Porte met in a regular meeting on
April 13, 2026, at the City Hall Council Chambers,
604 West Fairmont Parkway, La Porte, Texas, at 6:00 p.m.**

1. **Call to Order** - Mayor Helton called the meeting to order at 6:01 p.m.

2. Invocation and Pledges of Allegiance

Father Houston Okonma of St. Mary's Catholic Church provided an invocation and Ethan Scroggins led the pledges.

3. Recognitions

- a. Recognize Public Official of the Year, Corby Alexander [Rick Helton, Mayor]
- b. Recognize National Telecommunicator Week, April 12-18
- c. Recognize National Animal Care and Control Week, April 12-18
- d. Recognize National Volunteer Week, April 19-25

4. Citizen Comment

Aaron Daniel O'Neal spoke in support of the Ray of Light Food Pantry.

5. Presentations

- a. Fleet Week Presentation - Presentation on Fleet Week Houston, highlighting its significance, regional impact, and the City of La Porte's role in hosting historic maritime events and community engagement opportunities. April 15-22, 2026, the inaugural Fleet Week Houston will bring multiple U.S. Navy vessels and Sailors, Marines, and Coast Guardsmen to the city for a series of events and experiences. [Kayla O'Bryan, Marketing & Special Events Coordinator]

6. Consent Agenda

- a. Approve the minutes of the March 23, 2026, regular and March 28, 2026, special City Council meetings. [Lee Woodward, City Secretary/PIO]
- b. Updated Central Count Station appointments for May 2, 2026, election cycle [Lee Woodward, City Secretary/PIO]
- c. Northwest Park Bridge - Authorize the City Manager to execute a contract between the City of La Porte, Texas, and Kraftsman Commercial Playgrounds and Water Parks for purchase and installation of pedestrian bridge at Northwest Park, in the amount of \$549,813.05, through BuyBoard Contract #679-22. [Tim Miller, Director of Parks and Recreation]
- d. Authorize the City Manager to execute an agreement between the City of La Porte, Texas, and the La Porte Livestock and Rodeo Association for the use of Lomax Arena. [Tim Miller, Parks & Recreation Director]

Councilperson Engelken moved to approve the consent agenda items; Councilperson Williams seconded the motion; the motion was adopted, 8-0.

7. Statutory Agenda

- a. Linear Park Sound Wall - Design Services - Presentation, discussion, and possible action to authorize the City Manager to execute a professional services contract between the City of La Porte, Texas, and Cobb Fendley & Associates, Inc. for design of the Linear Park Soundwall project, in the amount of \$155,500.00. [Jameson Appel, Assistant Director of Public Works]

Mr. Appel offered a presentation. Councilperson Guerra moved to authorize the City Manager to execute a professional services contract between the City of La Porte, Texas, and Cobb Fendley & Associates, Inc. for design of the Linear Park Soundwall project, in the amount of \$155,500.00; the motion was seconded by Councilperson Engelken; the motion was adopted, 8-0.

- b. Ordinance 2026-5037 - Repeal Chapter 22 Regarding Mobile Food Vendors - Presentation, discussion, and possible action to adopt Ordinance 2026-5037 repealing regulations applicable to mobile food vendors as codified in Chapter 22 "Businesses", Section 22-58 of the Code of Ordinances of the City of La Porte, Texas. [Ryan Hvitløk, Director of Planning of Development]

Mr. Hvitløk provided an overview. Councilperson Guerra moved to adopt Ordinance 2026-5037 repealing regulations applicable to mobile food vendors as codified in Chapter 22 "Businesses," Section 22-58 of the Code of Ordinances of the City of La Porte, Texas; the motion was seconded by Councilperson Engelken; the motion was adopted, 8-0.

- c. Ordinance 2026-5039 - Bird Sanctuary - Presentation, discussion, and possible action to adopt Ordinance 2026-5039 amending Chapter 14 of the City of La Porte, Texas, Code of Ordinances to exempt Muscovy ducks and other non-protected birds from the City of La Porte's bird sanctuary

regulations and to allow for the removal of same by citizens and/or provide administrative staff with additional direction. [Councilpersons McLarrin, McCaulley, and Guerra]

Chief Pullig shared background on the issue. Councilperson McLarrin moved to adopt Ordinance 2026-5039 amending Chapter 14 of the City of La Porte, Texas, Code of Ordinances to exempt Muscovy ducks and other non-protected birds from the City of La Porte's bird sanctuary regulations and to allow for the removal of same by citizens; the motion was seconded by Councilperson Guerra; the motion was adopted, 8-0.

- d. Presentation, discussion, and possible action to provide administrative staff with direction on staffing at the police department. [Rick Helton, Mayor]**

Mayor Helton and Chief Pullig offered information on the proposal. Without objection, the addition of two LPPD officers was approved for inclusion in the proposed FY26-27 City budget,

8. Reports

- a. Report of the Drainage and Flooding Committee meeting held on April 13, 2026 [Councilperson Martin]**

Councilperson Martin said the committee met, received project updates, and set the next meeting for May 11.

- b. Explanation of property tax valuation processes [Rick Helton, Mayor]**

City Manager Corby Alexander introduced Hugh Landrum from Landrum & Associates and provided an explanation of ad valorem taxation.

- c. Administrative Reports [Corby Alexander, City Manager]**

Mr. Alexander said there were no reports.

9. Items of Community Interest

Councilpersons congratulated City Manager Corby Alexander on his award; thanked all those recognized at the beginning of the meeting; asked for attention to the traffic light timing at Fairmont and Canada Road; reminded all of the early voting dates for the May election; thanked Kayla Baez and Johnny Morales for their work on Fleet Week; congratulated Chief Pettis on being re-elected as Fire Chief, and thanked the Fire Department for the weekend's egg hunt and crawfish boil; and thanked the City Manager and City Secretary for attending the consolidation town halls.

10. Executive Session

- a. **Personnel Matter - Texas Government Code Section 551.074 - Personnel Matters. Deliberation regarding the appointment, employment, evaluation, reassignment, duties, discipline, or dismissal of a public officer or employee - City Council will meet in closed session with Municipal Court Judge Janikka Bratton.**
- b. **Personnel Matter - Texas Government Code Section 551.074 - Personnel Matters. Deliberation regarding the appointment, employment, evaluation, reassignment, duties, discipline, or dismissal of a public officer or employee - City Council will meet in closed session with City Manager Corby Alexander.**

Mayor Helton convened the Council in executive session at 7:31 p.m.

11. Reconvene

Mayor Helton reconvened the Council in open session at 8:57 p.m. Councilperson Engelken moved to approve a 4.16% salary increase for the municipal judge, with no change to the judge's car allowance; Mayor Pro Tem McCaulley seconded the motion; the motion was adopted, 8-0.

12. Adjourn - Without objection, Mayor Helton adjourned the meeting at 8:58 p.m.

Lee Woodward, City Secretary



REQUEST FOR CITY COUNCIL AGENDA ITEM

Agenda Date Requested: <u>April 27, 2026</u>
Requested By: <u>Scott Pullig, Chief of Police</u>
Department: <u>Police</u>
<input checked="" type="radio"/> Report <input type="radio"/> Resolution <input type="radio"/> Ordinance

Appropriation	
Source of Funds:	<u>Budget</u>
	<u>0155253-5214055</u>
Account Number:	<u>0015253-5214055</u>
	<u>\$128,715.00</u>
Amount Budgeted:	<u>\$228,253.00</u>
	<u>\$128,715.00</u>
Amount Requested:	<u>\$ 45,391.20</u>
Budgeted Item:	<input checked="" type="radio"/> Yes <input type="radio"/> No

Exhibits: Dell quote 3000199791951.2
CDW-G Quote

SUMMARY & RECOMMENDATION

In late 2024, the City of La Porte’s IT division identified several patrol vehicle computers (12) that were not compatible with the pending Windows 11 upgrade. Due to Criminal Justice Information System (CJIS) requirements, these devices must remain up to date with critical software and operating system patches, which they would not have received past October 2025. In mid-2025, those twelve (12) computers were replaced with Dell laptops.

In March 2025, the Police Department upgraded its Computer Aided Dispatch/Records Management System (CAD/RMS) from Central Square to Motorola. The Department was advised that the Motorola system would require a higher processing speed from its computers than Central Square. At that time, the patrol vehicles that were equipped with computer tablets met the minimum expected specifications. However, after the conversion to Motorola CAD/RMS, the department discovered that the computer tablets were having issues processing data in the new software. While the tablets can run the Motorola system, they do so much more slowly than those vehicles with the Dell laptops. The department has identified thirty (30) vehicles equipped with aging computer infrastructure.

Currently, the department has funds available in the Capital Improvement Project (CIP) account for the Motorola CAD/RMS project. In addition, there is a contingency amount allocated to Motorola for \$9,203. The total balance remaining in the CIP account is \$128,715.00.

Additional monies were identified in the departmental Motorola account because of Motorola’s billing delays. These monies were budgeted but not expended due to Motorola’s delayed “go live” date. There are additional savings in this account for module upgrades the Department originally agreed to receive in the initial contract but were excluded by Motorola. These module upgrades were not fully developed by Motorola and will not be implemented.

Staff is requesting to purchase thirty (30) Dell laptops and Havis Docking Stations for \$129,149.10, utilizing the remaining balance in CIP account and a portion of the monies in the departmental Motorola account. The purchase is through OMNIA Partners Region 14 ESC-TC Contract No. 01-143.

Staff is requesting to purchase required computer peripherals (printers, power supplies, cables) through CDW-G to complete the computer upfitting for the thirty (30) patrol vehicles. The cost of these peripherals will be \$44,957.10. The purchase is through TIPS 230105 Tech Solutions.

STRATEGIC PLAN KEY FOCUS AREAS AND GUIDING PRINCIPLES

The replacement of aging computer infrastructure in patrol vehicles at the Police Department directly supports the following goals of the City's 2023 Strategic Plan:

Governance: *The City of La Porte is governed in a transparent, efficient, accountable, and responsive manner on behalf of its citizens that actively promotes citizen involvement.*

Organizational Excellence: *The City of La Porte will operate in a transparent, efficient, accountable, and responsive manner by preparing the organization and the staff for the future, focusing on core services, attracting and retaining the best employees and wise stewardship of financial resources.*

ACTION REQUIRED BY CITY COUNCIL

Approve the purchase of laptops for \$129,149.10 through Dell under OMNIA Partners Region 14 ESC-TC Contract No. 01-143 and printers and related computer peripherals for \$44,957.10 through CDW-G under TIPS 230105 Tech Solutions, for a total authorization of \$174,106.20 to replace aging infrastructure on thirty (30) patrol vehicles.

Approved for the City Council meeting agenda

Corby D. Alexander, City Manager

Date

Your Dell Quote 3000199791951.2

From Jacob.Snow@dell.com <Jacob.Snow@dell.com>

Date Thu 4/16/2026 2:33 PM

To Withers, Darren <WithersD@laportetx.gov>



Your quote is ready for purchase.

Complete the purchase of your personalized quote through our secure online checkout before the quote expires on **Apr. 30, 2026**.

You can download a copy of this quote during checkout.

Place your order

Quote No.	3000199791951.2	Sales Rep	Jacob Snow
Total	\$129,149.10	Phone	512-513-0869
Customer #	15334235	Email	Jacob.Snow@dell.com
Quoted On	Apr. 16, 2026	Billing To	CHERELL DAUEMER
Expires by	Apr. 30, 2026		CITY OF LA PORTE
Contract Name	OMNIA-National Cooperative Purchasing Alliance (NCPA)		604 W FAIRMONT PKWY LA PORTE, TX 77571-6215
Contract Code	C000001019611		
Customer Agreement #	NCPA 01-143		

Message from your Sales Rep

Please reach out to your sales rep Jacob Snow for any changes or requests. Email: Jacob.snow@Dell.com Phone: 512-513-0869

Regards,
Jacob Snow

Product	Unit Price	Quantity	Subtotal
Havis Docking Station for Dell Pro Rugged 14" & 13", 5430, 7330 Notebooks; Standard Ports; DS-DELL-435	\$634.56	30	\$19,036.80
Havis Lind 120W Power Supply	\$263.83	30	\$7,914.90
Dell Pro Rugged 14 RB14250	\$3,406.58	30	\$102,197.40
Subtotal:			\$129,149.10
Shipping:			\$0.00
Non-Taxable Amount:			\$129,149.10
Taxable Amount:			\$0.00
Estimated Tax:			\$0.00
Total:			\$129,149.10

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Shipping Group Details

Shipping To

LYLE CAIN
 CITY OF LA PORTE
 3001 N 23RD ST
 LA PORTE, TX 77571-3185
 (281) 628-4249

Shipping Method

Standard Delivery Free Cost

	Unit Price	Quantity	Subtotal
Havis Docking Station for Dell Pro Rugged 14" & 13", 5430, 7330 Notebooks; Standard Ports; DS-DELL-435	\$634.56	30	\$19,036.80
Estimated delivery if purchased today: May. 28, 2026 Contract # C000001019611 Customer Agreement # NCPA 01-143			

Description	SKU	Unit Price	Quantity	Subtotal
Havis Docking Station for Dell Pro Rugged 14" & 13", 5430, 7330 Notebooks; Standard Ports; DS-DELL-435	AD163115	-	30	-

	Unit Price	Quantity	Subtotal
Havis Lind 120W Power Supply	\$263.83	30	\$7,914.90
Estimated delivery if purchased today: Jun. 10, 2026 Contract # C000001019611 Customer Agreement # NCPA 01-143			

Description	SKU	Unit Price	Quantity	Subtotal
Havis Lind 120W Power Supply	AD163121	-	30	-
		Unit Price	Quantity	Subtotal
		\$3,406.58	30	\$102,197.40

Dell Pro Rugged 14 RB14250
 Estimated delivery if purchased today:
 May. 22, 2026
 Contract # C000001019611
 Customer Agreement # NCPA 01-143

Description	SKU	Unit Price	Quantity	Subtotal
Dell Pro Rugged, RB14250 XCTO	210-BNNG	-	30	-
Intel(R) Core(TM) Ultra 7 165U (12 MB cache, 12 cores, up to 4.90 GHz, 15W)	379-BFTJ	-	30	-
Windows 11 Pro	619-BBQD	-	30	-
Intel R Core TM Ultra 7 165U (12 MB cache, 12 cores, up to 4.90 GHz, 15W), Intel Integrated Graphics	338-CQVH	-	30	-
32GB: 2 X 16 GB, DDR5,5600, Non-ECC, SoDIMM	370-BCGD	-	30	-
512GB PCIe NVMe 2230 SSD	400-BSFN	-	30	-
14" Touch, FHD 1920x1080, 60Hz, WVA, Anti-Glare, 1100nit, Low Blue Light, IR camera, Passive Pen	391-BJNQ	-	30	-
FHD HDR IR Camera + Microphone, Touch Display, WLAN/WWAN/GPS antenna	319-BBLD	-	30	-
No Mobile Broadband Card	556-BFST	-	30	-
Intel® Wi-Fi 6E AX211, 2x2, 802.11ax, MU-MIMO, Bluetooth® 5.3 wireless card	555-BLHY	-	30	-
Wireless Intel AX211 WLAN Driver	555-BLJD	-	30	-
Core Ultra 7 non-vPro CPU Label, Gen 14th	389-FJDZ	-	30	-
English US Rugged RGB Single Point backlit Copilot key keyboard	583-BMJG	-	30	-
No Fingerprint reader, no Smartcard reader	346-BLBK	-	30	-
65W USB-C AC adapter	492-BDTG	-	30	-
E4 C5 black Power Cord 1M, US	470-BCRH	-	30	-
Primary 3 Cell 53.5 Whr ExpressCharge Capable Battery	389-FJFG	-	30	-
Battery Airbay Cover	325-BFXD	-	30	-
Service and Support Guide MUI for DAO (English, French, Multi)	340-DSGW	-	30	-
Quick setup guide, WW	340-DRXV	-	30	-
No Resource USB Media	430-XYPF	-	30	-
ME Disable - Manageability	631-BBYT	-	30	-
ENERGY STAR Qualified	387-BBLW	-	30	-
EPEAT Gold with Climate+	379-BFWZ	-	30	-
Dedicated u-blox NEO-M9N GPS Card	540-BFLV	-	30	-
Mix Shipment, Dell Pro Rugged 14 RB14250	340-DSCG	-	30	-
Standard Shipment, VS	800-BBZV	-	30	-
English, French, Spanish, Brazilian Portuguese	619-BBPD	-	30	-

Additional TBT-4/Type-C port	325-BFXV	-	30	-
Additional rear USB 3.2 Type-A port	590-TFPW	-	30	-
Intel Responsiveness Technologies Driver	409-BCYL	-	30	-
Rigid Handle	750-BBMM	-	30	-
Custom Configuration	817-BBBB	-	30	-
Docking POGO connector with Antenna Passthru, WLAN+WWAN+GPS antenna	452-BDZH	-	30	-
ProSupport Plus: Next Business Day Onsite, 24 Months Extended	713-0295	-	30	-
ProSupport Plus: Next Business Day Onsite, 39 Months	713-0296	-	30	-
Dell Limited Hardware Warranty Initial Year	713-0305	-	30	-
ProSupport Plus: Accidental Damage Service, 63 Months	713-0328	-	30	-
ProSupport Plus: Keep Your Hard Drive, 63 Months	713-0329	-	30	-
ProSupport Plus: 7X24 Technical Support, 63 Months	713-0338	-	30	-
Dell Limited Hardware Warranty Extended Year(s)	975-3461	-	30	-
Thank you for choosing Dell ProSupport Plus. For tech support, visit www.dell.com/contactdell or call 1-866-516-3115	997-8367	-	30	-
Activate Your Microsoft 365 For A 30 Day Trial	658-BCSB	-	30	-
Dell Additional Software	634-CVYV	-	30	-
CyberLink Media Player with PowerDVD 24	634-BWZO	-	30	-
No Additional Software	658-BFOH	-	30	-

Subtotal:	\$129,149.10
Shipping:	\$0.00
Estimated Tax:	\$0.00
Total:	\$129,149.10

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Important Notes

Terms of Sale

This Quote will, if Customer issues a purchase order for the quoted items that is accepted by Supplier, constitute a contract between the entity issuing this Quote ("Supplier") and the entity to whom this Quote was issued ("Customer"). Unless otherwise stated herein, pricing is valid for Fourteen days from the date of this Quote. All products, pricing, and other information are based on the latest information available and are subject to change for any reason, including but not limited to tariffs imposed by government authorities, shortages in materials or resources, increase in the cost of manufacturing or other factors beyond Supplier's reasonable control. If such changes occur, pricing may be adjusted or purchase orders may be cancelled by Supplier, even after an order has been placed. Supplier also reserves the right to cancel this Quote and Customer purchase orders arising from pricing errors and/or customer changes to Supplier's planned delivery date. Taxes and/or freight charges listed on this Quote are only estimates. The final amounts shall be stated on the relevant invoice. Additional freight charges will be applied if Customer requests expedited shipping. Please indicate any tax exemption status on your purchase order and send your tax exemption certificate to Tax_Department@dell.com or ARSalesTax@emc.com, as applicable.

Governing Terms: This Quote is subject to: (a) a separate written agreement between Customer or Customer's affiliate and Supplier or a Supplier's affiliate to the extent that it expressly applies to the products and/or services in this Quote or, to the extent there is no such agreement, to the applicable set of Dell's Terms of Sale (available at www.dell.com/terms or www.dell.com/oemterms), or for cloud/as-a-Service offerings, the applicable cloud terms of service (identified on the Offer Specific Terms referenced below); and (b) the terms referenced herein (collectively, the "Governing Terms"). Different Governing Terms may apply to different products and services on this Quote. The Governing Terms apply to the exclusion of all terms and conditions incorporated in or referred to in any documentation submitted by Customer to Supplier.

Supplier Software Licenses and Services Descriptions: Customer's use of any Supplier software is subject to the license terms accompanying the software, or in the absence of accompanying terms, the applicable terms posted on www.Dell.com/eula. Descriptions and terms for Supplier-branded standard services are stated at www.dell.com/servicecontracts/global or for certain infrastructure products at www.dellemc.com/en-us/customer-services/product-warranty-and-service-descriptions.htm.

Offer-Specific, Third Party and Program Specific Terms: Customer's use of third-party software is subject to the license terms that accompany the software. Certain Supplier-branded and third-party products and services listed on this Quote are subject to additional, specific terms stated on www.dell.com/offeringsspecificterms ("Offer Specific Terms").

In case of Resale only: Should Customer procure any products or services for resale, whether on standalone basis or as part of a solution, Customer shall include the applicable software license terms, services terms, and/or offer-specific terms in a written agreement with the end-user and provide written evidence of doing so upon receipt of request from Supplier.

In case of Financing only: If Customer intends to enter into a financing arrangement ("Financing Agreement") for the products and/or services on this Quote with Dell Financial Services LLC or other funding source pre-approved by Supplier ("FS"), Customer may issue its purchase order to Supplier or to FS. If issued to FS, Supplier will fulfill and invoice FS upon confirmation that: (a) FS intends to enter into a Financing Agreement with Customer for this order; and (b) FS agrees to procure these items from Supplier. Notwithstanding the Financing Agreement, Customer's use (and Customer's resale of and the end-user's use) of these items in the order is subject to the applicable governing agreement between Customer and Supplier, except that title shall transfer from Supplier to FS instead of to Customer. If FS notifies Supplier after shipment that Customer is no longer pursuing a Financing Agreement for these items, or if Customer fails to enter into such Financing Agreement within 120 days after shipment by Supplier, Customer shall promptly pay the Supplier invoice amounts directly to Supplier.

Customer represents that this transaction does not involve: (a) use of U.S. Government funds; (b) use by or resale to the U.S. Government; or (c) maintenance and support of the product(s) listed in this document within classified spaces. Customer further represents that this transaction does not require Supplier's compliance with any statute, regulation or information technology standard applicable to a U.S. Government procurement.

For certain products shipped to end users in California, a State Environmental Fee will be applied to Customer's invoice. Supplier encourages customers to dispose of electronic equipment properly.

Electronically linked terms and descriptions are available in hard copy upon request.



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Purchasing reviewed and approved on 3/19/26.

ITEM	AVAILABILITY	PRICE	QUANTITY	ITEM TOTAL
 <p>Zebra ZQ521 Series ZQ521 - label printer - B/W - direct thermal MFG Part: ZQ52-BUW0020-00 CDW Part: 6544030 UNSPSC: 43212112</p>	In Stock Get it Thu, Mar 12 by a CDW partner	\$1,115.28 \$1,081.74 TIPS 230105 Tech Solutions, Products, and GOV ONLY	30	\$32,452.20
 <p>Zebra printer vehicle cradle MFG Part: P1063406-062 CDW Part: 4387733 UNSPSC: 44103100</p>	1-3+ Days Expected in-stock date for this item is between 1-3 days. Item will ship once it is in stock.	\$182.72 \$177.23 TIPS 230105 Tech Solutions, Products, and GOV ONLY	30	\$5,316.90
 <p>KIT, Acc DC-DC vehicle adapter, open ended, 12~24V, QLn/ZQ5/ZQ6 Series MFG Part: P1063406-030 CDW Part: 3711069 UNSPSC: 39121006</p>	In Stock Get it Thu, Mar 12 by a CDW partner	\$61.33 \$59.49 TIPS 230105 Tech Solutions, Products, and GOV ONLY	30	\$1,784.70
 <p>Zebra USB cable - 11.5 ft MFG Part: P1063406-146 CDW Part: 5168790 UNSPSC: 44103100</p>	In Stock Get it Thu, Mar 12 by a CDW partner	\$30.03 \$29.12 TIPS 230105 Tech Solutions, Products, and GOV ONLY	30	\$873.60

Order Summary

Subtotal: **\$44,957.10**

Tax and Shipping calculated at checkout.

Lease Option Pricing [?]
\$1,299.26 / Month

Checkout

Quote

Feedback



Zebra Spare Smart Battery - printer battery - 3250 mAh

MFG Part: BTRY-MPP-34MA1-01
CDW Part: 5270921
UNSPSC: 43211701

In Stock
Get it **Thu, Mar 12** by a CDW partner

~~\$155.67~~

\$150.99

TIPS 230105 Tech Solutions, Products, and GOV ONLY

30

\$4,529.70



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Feedback

The Interlocal Purchasing System

Purchasing Made Personal



Printed 9 March 2026

www.cdwg.com



Purchasing reviewed and approved on 3/9/26.

CDW Government LLC

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ADDRESS	230 N. Milwaukee Ave.	NAME Charlie Martin
CITY	Vernon Hills	PHONE (866) 839-8477
STATE	IL	FAX (866) 839-8472
ZIP	60061	EMAIL tips@tips-usa.com

DISADVANTAGED/MINORITY/WOMAN BUSINESS ENTERPRISE: N

HUB: N

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Overview

CDW Government, LLC (CDW•G) is the wholly owned subsidiary of CDW LLC, a leading multi-brand technology solutions provider to business, government, education, and healthcare organizations in the US, the UK and Canada. We established CDW•G in 1998 to focus on the specific needs of the government and education sectors. We have teams segmented to serve State and Local, K12, Higher Education, and Federal customers, and organized into 11 geographic regions for a higher level of specialization. We have 28 offices near major cities, and field coworkers across the US. Our offerings range from discrete hardware and software products to integrated IT solutions such as mobility, security, data center optimization, cloud computing, virtualization, and collaboration. As a vendor-neutral reseller, we prioritize solutions over brands and have a product portfolio that includes more than 100,000 products from more than 1,000 vendors. We provide our products and solutions through our sales and service delivery teams, consisting of nearly 6,000 customer-facing coworkers, including more than 2,000 field sellers, highly skilled technology specialists and advanced service delivery engineers. We provide expert consulting, design, configuration, installation, and lifecycle management services. Our technology services include e-Procurement integration, Leasing services, Managed services, Pre-shipment configuration, Professional services, Warranty and maintenance. We provide custom turn-key solutions in Cloud, Collaboration, Data center

 and Networking, Managed Print Services, Point of Sale, Security, Software Management, and Total Mobility Management. The full range of products and services we offer enables our customers to develop the best valued total solution for their needs. In 2022, CDW generated sales of \$24B, reaching 166 on the Fortune 500 and positioning us as a leader in our industry. As one of the largest IT solution providers in North America, CDW•G is No. 4 on CRN’s 2022 Solution Provider 500 list. Our stability helps assure TIPS members that we can support them

throughout the contract term. Our professional services team—over 1,000 professionals strong—deploys from our US offices to deliver the personal service that helps you understand and meet your business and technology needs. Our engineers and project managers are trained on the latest technologies and many hold advanced certifications from our top manufacturers. In addition to our CDW•G-badged professionals, we also have a large

Business Diversity program, which specializes in increasing procurement opportunities for HUB and other diverse suppliers. Since 2007 we have spent \$20 billion with certified small, diverse suppliers and currently feature over 1,300 diverse suppliers. CDW•G also recognizes the importance of responsible environmental management. Our
 efforts include participating in electronics recycling programs, consistently meeting and exceeding our waste diversion goal of 90% at our US distribution centers, and implementing smart packaging solutions. Our customerfocused philosophy drives us to provide outstanding customer service and the best value. We aim to have TIPS members view us as a valuable extension of their IT staff. Our customers’ environments are always evolving; our
 expertise across a wide range of technologies and sectors makes solution implementation economically viable for our customers. Our account teams serve as a liaison between our internal technical resources, external partners, and original equipment manufacturers (OEMs) to create a seamless experience for TIPS members. We leverage our distributor relationships as a world-class value-added reseller (VAR), as well as our capabilities as a specialized systems integrator and managed service partner to be a true one stop shop for full lifecycle support.</p>

AWARDED CONTRACTS "View EDGAR Doc" on Website

Contract	Comodity	Exp Date	EDGAR
230105	Technology Solutions Products and Services	05/31/2028	See EDGAR Certification Doc.

CONTACTS BY CONTRACTS

230105

Michael Swartz	Sales Manager	(866) 224-6471	michswa@cdwg.com
Laura Clark	Executive Account	(877) 325-6205	laurcla@cdwg.com



REQUEST FOR CITY COUNCIL AGENDA ITEM

Agenda Date Requested: <u>April 27, 2026</u>
Requested By: <u>Ray Mayo</u>
Department: <u>Public Works</u>
<input checked="" type="radio"/> Report <input type="radio"/> Resolution <input type="radio"/> Ordinance

Appropriation	
Source of Funds:	<u>N/A</u>
Account Number:	<u>N/A</u>
Amount Budgeted:	<u>N/A</u>
Amount Requested:	<u>N/A</u>
Budgeted Item:	<input type="radio"/> Yes <input checked="" type="radio"/> No

Exhibits: Harris County Partnership Inter-local Agreement; Area Map Exhibits

SUMMARY & RECOMMENDATION

On February 4th, 2026, City staff met with Harris County regarding drainage improvement projects within La Porte. The result of the meeting was an offer from Harris County to provide partnership funds for a portion of engineering and design services for Phase III of the Northside Neighborhood Improvements. Harris County has drafted an interlocal agreement for \$300,000.00. The City attorney has reviewed and approved the agreement.

The goal of the Northside Neighborhood Drainage Improvement Project is to improve the functionality of the storm sewer system and increase the level of service along west Polk Street, North 8th, North 7th and North 6th Street, between West Main Street and West Madison Street. To best utilize multiple grants awarded for this project, the overall project scope was broken into three (3) phases. Phase 1 constructed storm water channel improvements west of North 11th Street. Phase 1 construction was completed in March of 2022.

Phase 2 of the project included placement of approximately 1000 feet of box culverts by open-cut methods, and tunneled installation of another 420 feet of box culverts under the State Highway 146 corridor. The project limits are aligned with the Polk Street right-of-way from North 11th to North 8th Street. Additionally, there were four (4) detention areas constructed along the F-216 Channel corridor to mitigate the additional flow to the channel. Phase II of the project was completed in 2025. Both Phase I and 2 were constructed entirely with grant funding. Phase 3 improvements will extend the storm sewer east to North 6th Street provide underground storm sewer in the target area and concrete curb and gutter street and sidewalk improvements based on the engineer's recommendations.

Staff is currently reviewing a proposal for Phase 3 design services. The total design cost has not yet been established. Should the costs exceed \$600,000.00, La Porte would need to supply the funding or obtain funding from another source. The amount currently budgeted in the drainage fund for this project is \$531,770.00. Staff recommends the approval of the interlocal agreement with Harris County.

Benefits:

- Phase 3 of a multi-phase drainage project can be designed.
- Design costs will be shared with Harris County.

Liabilities:

- None

STRATEGIC PLAN STRATEGY AND GOAL

3.0 The City of La Porte will have and maintain a strong infrastructure and up to date facilities in order to continue to provide superior services for our citizens.

3.3 Improve intergovernmental relationships with other agencies for drainage improvements.

3.5 Consider alternative flood control methods and techniques.

ACTION REQUIRED BY CITY COUNCIL

Authorize the City Manager to enter into an inter-local agreement with Harris County to receive partnership funds in the amount of \$300,000.00 for the Northside Neighborhood Drainage Improvements Phase III Project.

Approved for the City Council meeting agenda

Corby D. Alexander, City Manager

Date

JOINT PARTICIPATION INTERLOCAL AGREEMENT

This Joint Participation Interlocal Agreement (“Agreement”) is entered into by and between **Harris County** (“County”) and the **City of La Porte, Texas** (“City”) pursuant to the Interlocal Cooperation Act, Tex. Gov’t Code Ch. 791.001, *et seq.* County and City may each be referred to herein individually as a “Party” or collectively as the “Parties”.

RECITALS

WHEREAS, it is of mutual benefit to both Parties to study, design, and estimate construction costs for drainage improvements along 6th Street from W. Madison Street to W. Main Street in La Porte, Texas (“Project”), as generally illustrated on Exhibit A attached hereto and incorporated herein by reference. The Project will evaluate existing storm sewer capacity, update designs to current standards, and prepare final construction plans addressing the undersized storm sewers and inlets identified in the City-Wide Drainage Study; and

WHEREAS, both Parties desire to cooperate in accordance with the terms of this Agreement to jointly accomplish the Project; and

WHEREAS, both Parties agree that all funds used under this Agreement shall be from current fiscal funds.

NOW THEREFORE, in consideration of the mutual promises, obligations, and benefits herein set forth, the Parties agree as follows:

TERMS

Section 1. Responsibilities of the Parties

- A. City’s Responsibilities
- (i) The City will solicit Request for Qualifications (RFQ) to contract with a third-party vendor for professional services to provide or cause to be provided, engineering services and related support services necessary to prepare plans, specifications, and estimates (“PS&E”) for the construction of the Project.
 - (ii) Upon execution of this Agreement, the City shall invoice the County for the County Funding Share for the Project in accordance with Section 2 of this Agreement.
 - (iii) Upon completion of the PS&E the City will submit the PS&E to the County for review and approval.
 - (iv) Upon completion of the Project, the City shall provide a statement of final accounting to the County detailing all costs incurred and identify amount(s) to be invoiced or refunded to the County.

B. County's Responsibilities

- (i) County will review the PS&E provided by the City and provide its approval within ten (10) business days. Should the County desire to make changes to such PS&E, the Parties agree to meet and resolve all issues within ten (10) business days of the County's receipt of the PS&E in order to finalize an agreed upon PS&E for the Project. If the County does not provide a response on the PS&E provided by the City within ten (10) business days from its receipt of the PS&E, then the PS&E submitted to the County by the City will be deemed approved.
- (ii) The County shall remit payment to the City for the County Funding Share for the Project in accordance with Section 2 of this Agreement.

Section 2. Funding of the Project

Notwithstanding any provision in this Agreement to the contrary, the following provisions will apply to all payments made under this Agreement:

- A. The County will provide a not-to-exceed amount of Three Hundred Thousand and No/100 Dollars (\$300,000.00) (County Funding Share), and the City will provide Three Hundred Thousand and No/100 Dollars (\$300,000.00) (City Funding Share) for a total of Six Hundred Thousand and No/100 Dollars (\$600,000.00), as generally illustrated on Exhibit B attached hereto and incorporated herein by reference.
- B. The County agrees to provide payment of the County Funding Share to the City within fourteen (14) business days of receipt of the invoice.
- C. Parties agree that any costs incurred through the duration of the project or other work to be performed under this Agreement in excess of \$600,000.00 shall be funded by the City, provided that any such excess costs are first communicated to the City and approved in writing before proceeding.

Section 3. Term and Termination

- A. This Agreement shall commence upon final execution by all the Parties (the "Effective Date") and shall remain in full force and effect until the completion of the Project or the County's receipt of all payments due from the City under this Agreement, whichever occurs later ("Term").
- B. This Agreement may be terminated by the County before award of the PS&E contract and at any time by mutual written consent of the Parties, or as otherwise provided under this Agreement.

Section 4. Limitation of Appropriation

- A. City understands and agrees, said understanding and agreement also being of the absolute essence of this Agreement, that the County is not currently appropriating any funds for the Project. County may appropriate funds to complete the Project, but such funds shall not under any conditions, circumstances, or interpretations thereof exceed the sum certified available by the Harris County Auditor.
- B. City understands and agrees, said understanding and agreement also being of the absolute essence of this Agreement, that failure of the Harris County Auditor to certify funds or to certify sufficient funding for any reason shall not be considered a breach of this Agreement.

Section 5. Miscellaneous

- A. Non-Assignability. The County and the City bind themselves and their successors, executors, administrators, and assigns to the other Party of this Agreement and to the successors, executors, administrators, and assigns of such other Party, in respect to all covenants of this Agreement. Neither the County nor the City shall assign, sublet, or transfer its interest in this Agreement without the prior written consent of the other Party.
- B. Notice. Any notice required to be given under this Agreement (“Notice”) shall be in writing and shall be duly served when it shall have been (a) personally delivered to the address below, (b) deposited, enclosed in an envelope with the proper postage prepaid thereon, and duly registered or certified, return receipt requested, in a United States Post Office, addressed to County or the City at the following addresses:

City Assistant Director of Public Works:	City of La Porte 2963 N 23 rd Street La Porte, Texas 77571 Attention: Jameson Appel Email: appelj@laportetx.gov
---	--

City Director of Public Works:	City of La Porte 2963 N 23 rd Street La Porte, Texas 77571 Attention: Ray Mayo Email: mayo@laportetx.gov
-----------------------------------	---

County:	Harris County Engineering Department 1111 Fannin Street, 11 th Floor Houston, Texas 77002 Attention: Interagency Agreement Coordinator
---------	--

Any Notice given by mail hereunder is deemed given upon deposit in the United States Mail and any Notice delivered in person shall be effective upon receipt.

Each Party shall have the right to change its respective address by giving at least fifteen (15) days’ written notice of such change to the other Party.

Other communications, except for Notices required under this Agreement, may be sent by electronic means or in the same manner as Notices described herein.

- C. Independent Parties. It is expressly understood and agreed by the Parties that nothing contained in this Agreement shall be construed to constitute or create a joint venture, partnership, association or other affiliation or like relationship between the Parties, it being specifically agreed that their relationship is and shall remain that of independent parties to a contractual relationship as set forth in this Agreement. The County is an independent contractor and neither it, nor its employees or agents shall be considered to be an employee, agent, partner, or representative of the City for any purpose. Neither the City, nor its employees, officers, or agents shall be considered to be employees, agents, partners or representatives of the County for any purposes. Neither Party has the authority to bind the other Party.
- D. No Third- Party Beneficiaries. This Agreement shall be for the sole and exclusive benefit of the Parties and their legal successors and assigns. The County is not obligated or liable to any party other than the City for the performance of this Agreement. Nothing in the Agreement is intended or shall be deemed or construed to create any additional rights or remedies upon any third party. Further, nothing contained in the Agreement shall be construed to or operate in any manner whatsoever to confer or create rights or remedies upon any third party, increase the rights or remedies of any third party, or the duties or responsibilities of the County with respect to any third party.
- E. Waiver of Breach. No waiver or waivers of any breach or default (or any breaches or defaults) by either Party hereto of any term, covenant, condition, or liability hereunder, or the performance by either Party of any obligation hereunder, shall be deemed or construed to be a waiver of subsequent breaches or defaults of any kind, under and circumstances.
- F. No Personal Liability; No Waiver of Immunity.
- (1) Nothing in the Agreement is construed as creating any personal liability on the part of any officer, director, employee, or agent of any public body that may be a Party to the Agreement, and the Parties expressly agree that the execution of the Agreement does not create any personal liability on the part of any officer, director, employee, or agent of the County.
 - (2) The Parties agree that no provision of this Agreement extends the County's or City's liability beyond the liability provided for in the Texas Constitution and the laws of the State of Texas.
 - (3) Neither the execution of this Agreement nor any other conduct of either Party relating to this Agreement shall be considered a waiver by the County of any right, defense, or immunity on behalf of itself, its employees or agents under the Texas Constitution or the laws of the State of Texas.
- G. Applicable Law and Venue. This Agreement shall be governed by the laws of the State of Texas and the forum for any action under or related to the Agreement is exclusively in a

state or federal court of competent jurisdiction in Texas. The exclusive venue for any action under or related to the Agreement is in a state or federal court of competent jurisdiction in Houston, Harris County, Texas.

- H. No Binding Arbitration; Right to Jury Trial. The County does not agree to binding arbitration, nor does the County waive its right to a jury trial.
- I. Contract Construction.
- (1) This Agreement shall not be construed against or in favor of any Party hereto based upon the fact that the Party did or did not authorize this Agreement.
 - (2) The headings in this Agreement are for convenience or reference only and shall not control or affect the meaning or construction of this Agreement.
 - (3) When terms are used in the singular or plural, the meaning shall apply to both.
 - (4) When either the male or female gender is used, the meaning shall apply to both.
- J. Recitals. The recitals set forth in this Agreement are, by this reference, incorporated into and deemed a part of this Agreement.
- K. Entire Agreement; Modifications. This Agreement contains the entire agreement between the Parties relating to the rights herein granted and the obligations herein assumed. This Agreement supersedes and replaces any prior agreement between the Parties pertaining to the rights granted and the obligations assumed herein. This Agreement shall be subject to change or modification only by a subsequent written modification approved and signed by the governing bodies of each Party.
- L. Severability. The provisions of this Agreement are severable, and if any provision or part of this Agreement or the application thereof to any person, entity, or circumstance shall ever be held by any court of competent jurisdiction to be invalid or unconstitutional for any reason, the remainder of this Agreement and the application of such provision or part of this Agreement to other persons, entities, or circumstances shall not be affected thereby.
- M. Survival of Terms. Any provision of this Agreement that, by its plain meaning, is intended to survive the expiration or earlier termination of this Agreement shall survive such expiration or earlier termination. If an ambiguity exists as to survival, the provision shall be deemed to survive.
- N. Multiple Counterparts/Execution. This Agreement may be executed in several counterparts. Each counterpart is deemed an original and all counterparts together constitute one and the same instrument. In addition, each Party warrants that the undersigned is a duly authorized representative with the power to execute the Agreement.
- O. Warranty. By execution of this Agreement, the City warrants that the duties accorded to the City in this Agreement are within the powers and authority of the City.

[EXECUTION PAGE FOLLOWS]

HARRIS COUNTY

CITY OF LA PORTE, TEXAS

By: _____
Lina Hidalgo
County Judge

By: _____
Corby Alexander
City Manager

APPROVED AS TO FORM:

ATTEST

JONATHAN FOMBONNE
County Attorney

By: _____
Secretary

By: _____
Alexa Moores
Assistant County Attorney
CAO File No.: 26GEN0645

ORDER OF COMMISSIONERS COURT

The Commissioners Court of Harris County, Texas, met in regular session at its regular term at the Harris County Administration Building in the County of Houston, Texas, on _____, with all members present except _____.

A quorum was present. Among other business, the following was transacted:

ORDER AUTHORIZING EXECUTION OF A JOINT PARTICIPATION INTERLOCAL AGREEMENT BETWEEN HARRIS COUNTY AND CITY OF LA PORTE TO STUDY AND DESIGN IMPROVEMENTS ALONG 6th STREET FROM W. MADISON STREET TO W. MAIN STREET AND ALL RELATED APPURTENANCES IN HARRIS COUNTY PRECINCT 2

Commissioner _____ introduced an order and moved that Commissioners Court adopt the order. Commissioner _____ seconded the motion for adoption of the order. The motion, carrying with it the adoption of the order, prevailed by the following vote:

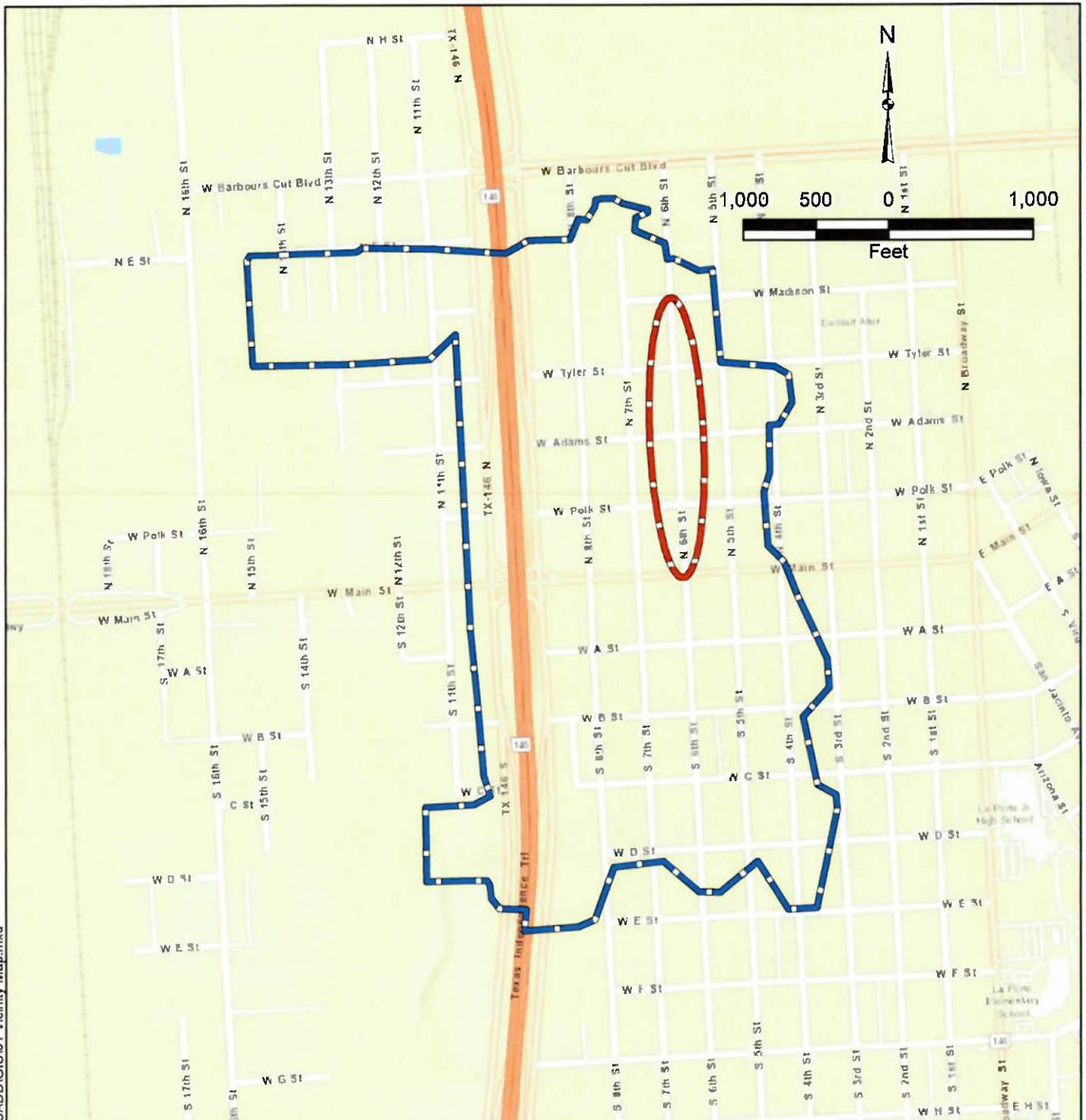
	Yes	No	Abstain
Judge Lina Hidalgo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comm. Rodney Ellis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comm. Adrian Garcia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comm. Tom S. Ramsey, P.E.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comm. Lesley Briones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The County Judge thereupon announced that the motion had duly and lawfully carried and that the order had been duly and lawfully adopted. The order thus adopted follows:

IT IS ORDERED THAT:

1. The Harris County Judge is authorized to execute on behalf of Harris County the attached Joint Participation Interlocal Agreement between Harris County and City of La Porte to study and design improvements along 6th Street from W. Madison Street to W. Main Street and all related appurtenances in Harris County Precinct 2.
2. All Harris County officials and employees are authorized to do any and all things necessary or convenient to accomplish the purposes of this order.

Exhibit A



J:\007586 La Porte 6th Street Drainage PER\07.00 CADD\GIS\01 Vicinity Map.mxd



Legend

- Drainage area
- Project Limits
- HCFC Channel

RPS Formerly Klutz Associates
 Texas PE Firm Reg. #F-929
 1160 Dairy Ashford, Suite 500, Houston, Texas 77079
 T 281 589 7257 E us@infrastructure@rpsgroup.com

Vicinity Map

La Porte 6th Street Improvements

RPS PROJ. NO.: 007586	EXHIBIT 1
SCALE: 1" = 1,000'	
DATE: December 2017	

Source: National Geographic

EXHIBIT B

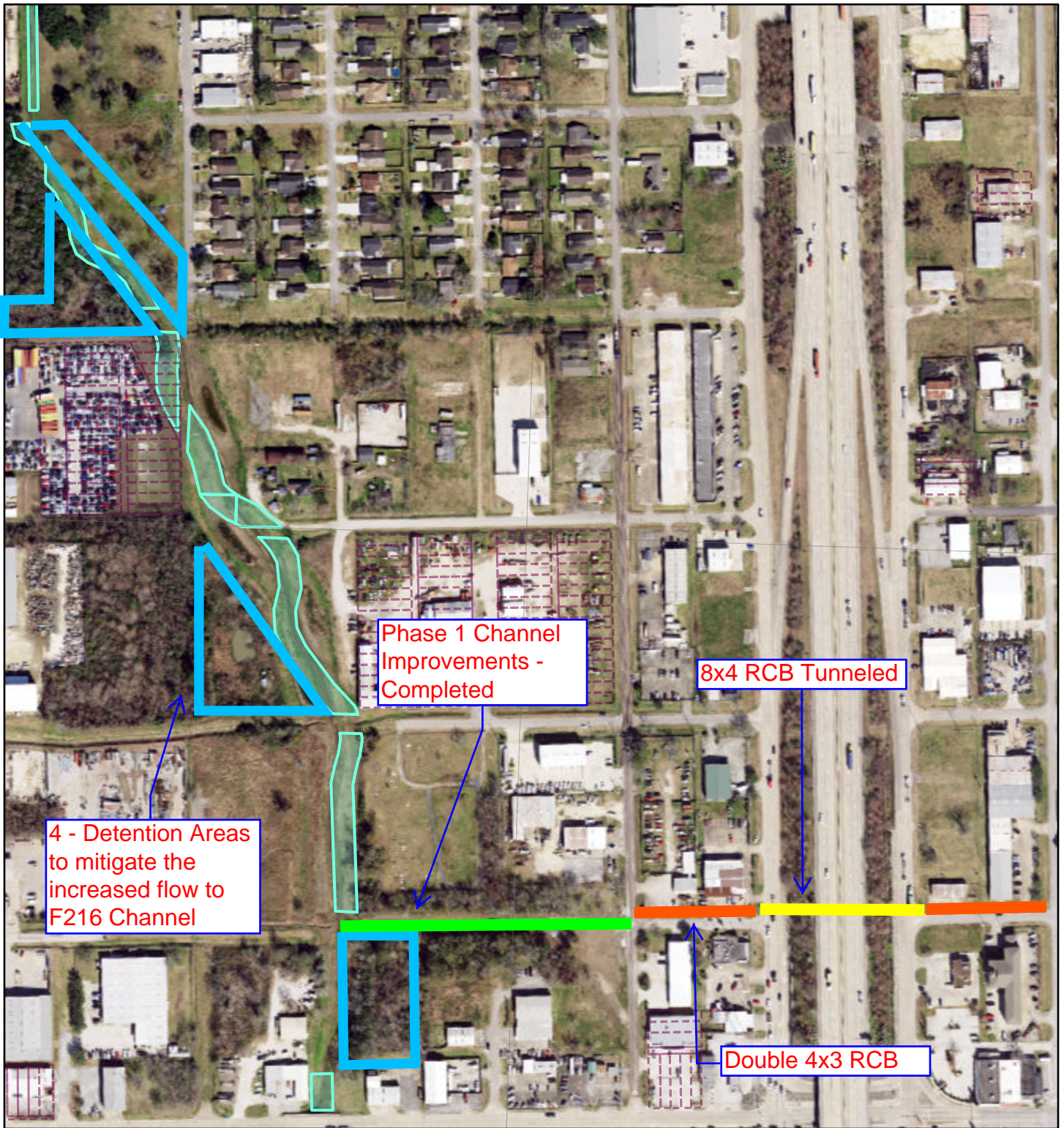
6th Street Drainage Improvements

Precinct 2






Date 2/5/2026

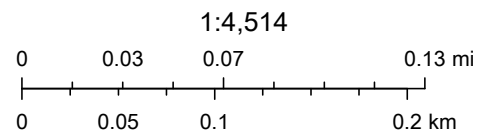
Description	Estimated Cost (Estimate Used In Agreement)
Harris County Portion [Not to exceed]	\$300,000.00
City of La Porte	\$300,000.00
Subtotal	\$600,000.00
Total Cost	\$600,000.00

Overview Northside Drainage Improvements Phase 2



10/2/2023, 10:50:49 AM

-  City Limits Boundary
-  HCAD Facet Finder Grid
-  HCAD Facet Finder ID
-  HCAD: Lot (updated since 2019)
-  HCFCD Easements (INTERNAL ONLY)



HGAC

Concept Northside Drainage Improvements Phase 3





REQUEST FOR CITY COUNCIL AGENDA ITEM

Agenda Date Requested: <u>April 27, 2026</u>
Requested By: <u>Ryan Hvitlök, Planning Director</u>
Department: <u>Planning and Development</u>
<input type="radio"/> Report <input type="radio"/> Resolution <input checked="" type="radio"/> Ordinance

Appropriation	
Source of Funds:	<u>N/A</u>
Account Number:	<u>N/A</u>
Amount Budgeted:	<u>N/A</u>
Amount Requested:	<u>N/A</u>
Budgeted Item:	<input type="radio"/> Yes <input checked="" type="radio"/> No

Exhibits: Traffic Impact Assessment; Stormwater Detention Analysis, Noise Analysis; Ordinance 2025-4036 (Proposed SCUP); PZ Recommendation Letter; P&Z Staff Report; Aerial Map; Zoning Map; FLUP Map; Notification Map; Site Photos; Application; Site Plan; Legal Ad

SUMMARY & RECOMMENDATION

**** Please note that SCUP-2024-0003 was replaced by SCUP-2026-0001, the projects are the same.**

The applicant, Mario Lanza/ M Lanza Engineering, PLLC, on behalf of 925 Fairmont Lakes, property owner, is seeking approval of a Special Conditional Use Permit (SCUP) to allow a residential subdivision including 204 lots within the Planned Unit Development (PUD) zoning district. The subject property, generally located at the northeast corner of Wharton Weems Blvd. and SH 146 includes approximately 56.75 acres of land.

The proposed subdivision will consist of a variety of lot sizes, with the typical lot size of 50 feet x 125'. Proposed lots will range from 6,005.95 square feet (Block 2, Lots 9 and 12) for the smallest lot size, to 16,291.05 square feet (Block 1, Lot 39) for the largest lot size. The one deviation the applicant is requesting is to reduce the front setback from the required 25 feet to 20 feet on 16 lots (Block 1, Lots 22-26; Block 2, Lots 8-13 and 30-34). The reason for the request is because the subject lots are located within a cul-de-sac. This development will offer two access points: one from SH 146 to the west and another from Wharton Weems Blvd. to the south.

The applicant proposes 1.9 acres of landscaping and open space, 9.6 acres of detention, including a jogging trail around the detention basin, and 2.7 acres of parkland. An 8-foot sound wall or a 6-foot sound wall atop a two-foot landscaped berm (for a total height of 8 feet) is proposed along SH 146 and Wharton Weems for sound mitigation. The proposed jogging trail surrounding the detention pond is to be constructed of concrete, a minimum of 5 feet in width. Additional amenities will include fifteen (15) benches and 3 pet waste stations along the proposed trail and entry feature signage along the Wharton Weems entry into the development with an irrigated landscape area.

As part of the SCUP application, the applicant has requested a deviation from the required 25-foot setback. The applicant is requesting a reduction to a 20-foot front setback for 16 lots out of the total 204 lots.

BACKGROUND

This application has been under consideration and revision since November 2024. A timeline for Planning & Zoning Commission and City Council actions is outlined below:

- **November 21, 2024**, the La Porte Planning and Zoning Commission held a public hearing regarding this application. The Planning and Zoning Commission voted on a motion to recommend approval of SCUP-2024-0003, with an amendment to remove the proposed deviation that would have allowed an increase in the cul-de-sac length on Block 1 from 600 feet to 696.59 feet. The motion passed 8-0.
- **January 27, 2025**, the La Porte City Council held a public hearing regarding this application. During the discussion, a Councilmember raised the concept of prohibiting corporate housing within the development. The City Attorney determined that corporate housing could be prohibited within the development, as that use is a separate NAICS code which is classified as a subset of NAICS 721310 – Rooming and Boarding Houses. The proposed SCUP was amended to address this concern.

Additional concerns were also raised regarding the proposed development's impacts on current and future residents as it relates to the proposed entrance location, drainage, and the feasibility of a 12-foot soundwall along the western and southern boundaries of the property as opposed to an 8-foot soundwall. A motion was made to table the item pending the completion of engineered studies that would more fully address these issues.

- **December 8, 2025**, the City Council held a public hearing regarding this application. The applicant provided a response to the City Council's concerns including 1) a previously TxDOT-approved Traffic Impact Assessment from 2024, which included the previous driveway configuration from Wharton Weems Blvd.; 2) a sound study which studied a 6-foot and an 8-foot sound wall along SH 146 and Wharton Weems Blvd.; 3) a drainage study which was not reviewed by Cobb Fendley. The applicant also provided a revised site plan. City Council remanded the application back to the Planning & Zoning Commission to review the revised site plan and proposal.
- **January 15, 2026**, the Planning and Zoning Commission held a public hearing regarding the revised site plan and proposal. Discussion was held regarding Council's request for a 12-foot sound wall study, revised TIA, and drainage. The Planning & Zoning Commission voted to recommend approval of the revised proposal to City Council with a vote of 9-0.
- **February 19, 2026**, the Planning and Zoning Commission held a discussion on a potential reconsideration of their January 15, 2026 recommendation for approval. The request was based on staff receiving concerns that there was confusion with a question whether a 12-foot sound wall study was requested from City Council at

their December 8, 2025 meeting. Staff reviewed the recording of the December 8, 2025 meeting and determined that no official direction from the City Council was provided regarding a study of a 12-foot sound wall. Staff reviewed previous records and determined that the official request was provided at the January 27, 2025 City Council meeting. The Planning and Zoning Commission voted to deny a motion to place the project back on a future agenda with a vote of 3-6.

Based on City Council's concerns from previous meetings the applicant has provided the following responses:

1. Traffic Analysis/Entrance Location

City Council requested a traffic impact analysis with specific direction to evaluate the feasibility of relocating the proposed entrance approximately 300 feet to the east. Councilmembers emphasized the need for the study to clearly explain the reasoning behind whether the entrance can or cannot be relocated and to evaluate any other viable placement options. The applicant agreed to pursue the study.

Applicant Response: The applicant provided a TxDOT-approved Traffic Impact Assessment (TIA), dated December 22, 2025. The revised analysis shows the relocated driveway further east on Wharton Weems as requested by the City Council. The TIA concluded that the proposed development will not cause any significant additional impact on the roadway network or intersections beyond a recommended left turn-lane on Wharton Weems for the eastern entrance into the development. An approved TxDOT driveway permit, dated February 20, 2026, was submitted for the Wharton Weems entrance to the development.

Staff Analysis: Staff has reviewed the proposed circulation and traffic improvements for the development and concurs with TxDOT's approval of the proposed plan. The Wharton Weems entrance has been moved further east away from the primary entrance to the Lakes of Fairmont Green (Fairmont Greens Pkwy.) to reduce potential conflicts. The proposed Wharton Weems entrance aligns with the secondary entrance of the Lakes at Fairmont Green at Fairway Drive. Traffic engineering standards and TxDOT both discourage the use of off-set intersections, especially along higher volume roads such as Wharton Weems Blvd.

2. Soundwall Height (8 feet vs. 12 feet)

Councilmembers requested that the height of the proposed soundwall along the western and southern boundary of the property increase from 8 feet to 12 feet in height.

Applicant Response: The applicant provided a Noise Analysis Technical Report dated March 2026 that studied a 6-foot, 8-foot, and 12-foot wall. Per the provided sound study which determined that a ***“6-foot sound wall would offer limited noise reduction, while an 8-foot sound wall would fully meet the applicable noise abatement criteria. Therefore, installation of a 12-foot sound wall is not justified.”***

Staff Analysis: The noise analysis provided was reviewed based on TxDOT's (Federal Highway Administration - FHWA approved) noise abatement standards for roadway noise. The FHWA noise abatement standard for residential uses is 67 dB(a). The noise analysis provided shows that both no sound wall and a six-foot wall would exceed the FHWA noise standard of 67 dB(A) at 12 to 13 receiver locations. An 8-foot wall would mitigate the roadway noise below the FHWA noise standards at all receiver locations. A 12-foot sound wall would provide minimum additional sound mitigation, 1 to 4 dB(A), when compared to an 8-foot wall. Due to wind load and building code requirements, the engineering differences between an 8-foot and a 12-foot wall would be substantial. A 12-foot wall would require double the foundation depth and width of an 8-foot wall. Furthermore, the developer would have to provide a geotechnical report for the 12-foot wall due to the depth of the foundation. In staff's opinion, the additional sound mitigation benefit of a 12-foot wall does not outweigh the additional construction requirements nor the visual impact for the residents with the higher wall in their backyard.

3. Stormwater Detention Analysis

City Council requested that a drainage study be completed and the results brought back to City Council for review. City Council expressed a preference for the study to be prepared by Cobb Fendley. The applicant indicated that the developer would have to make that decision.

Applicant Response: The applicant provided a drainage study prepared by M Lanza Engineering, PLLC dated 3/19/2026. The study was thoroughly reviewed by Cobb Fendley, which after several reviews and revisions determined the drainage study will meet the City's drainage criteria.

Staff Analysis: The city's engineer Cobb Fendley completed their review of the applicant's drainage study on April 6, 2026 with no additional comments or concerns. Staff determined that the proposed development along with the proposed drainage infrastructure will not have an adverse effect on the drainage in the area. The drainage study was found to have met the City of La Porte's stormwater requirements.

STRATEGIC PLAN STRATEGY AND GOAL

Governance: The City of La Porte is governed in a transparent, efficient, accountable, and responsive manner on behalf of citizens that actively promotes citizen involvement.

Economic Development: The City of La Porte will promote a strong and diverse economy that strengthens the local sales tax and property tax base while also contributing to a high quality of life.

ACTION REQUIRED BY CITY COUNCIL

Approve or deny Ordinance 2025-4036 for SCUP-2026-0001 to allow a 204-lot single-family subdivision on 56.75 acres of land located at the northeast corner of Wharton Weems Blvd. and SH-146, legally described as TR 5 ABST 30 W P HARRIS, TR 5L ABST 30 W P HARRIS, TR 1M ABST 35 J HUNTER, and LTS 1 THRU 32 BLK 1267 & TR 33 LA PORTE; Harris County, Texas.

Approved for the City Council meeting agenda

Corby D. Alexander, City Manager

Date

TRAFFIC IMPACT ASSESMENT

FOR

Yara Lakes Estates Subdivision

Located at State Highway 146 and Wharton Weems Blvd,
La Porte, Texas 77571

Submitted to:

M. Lanza Engineering, PLLC.

for

TXDOT Houston District
Traffic Engineering Section

Prepared by:



12/22/2025

Texas Traffic Studies
TRAFFIC ENGINEERS & PLANNERS
TBPE Firm No. F-21426
5447 Loch Lomond Drive
Houston, Texas 77096

Introduction

This traffic impact study summarizes the results of a traffic impact analysis conducted for M. Lanza Engineering, PLLC.; in connection with the design and development of the Yara Lakes Subdivision project at State Highway 146 (SH 146) and Wharton Weems Boulevard in La Porte, Texas.

This study includes a review and consideration of an eastbound left-turn lane on Wharton - Weems Boulevard, an evaluation of the level of service impact on the existing diamond intersection traffic signal, SH 146 at Wharton Weems Blvd, and the unsignalized intersections of Wharton Weems Blvd at S. Broadway and Fairmont Greens, as requested by the TxDOT Houston District's Traffic Engineering Section and the City of La Porte.

Proposed Use, Site Description and Study Area Roadways

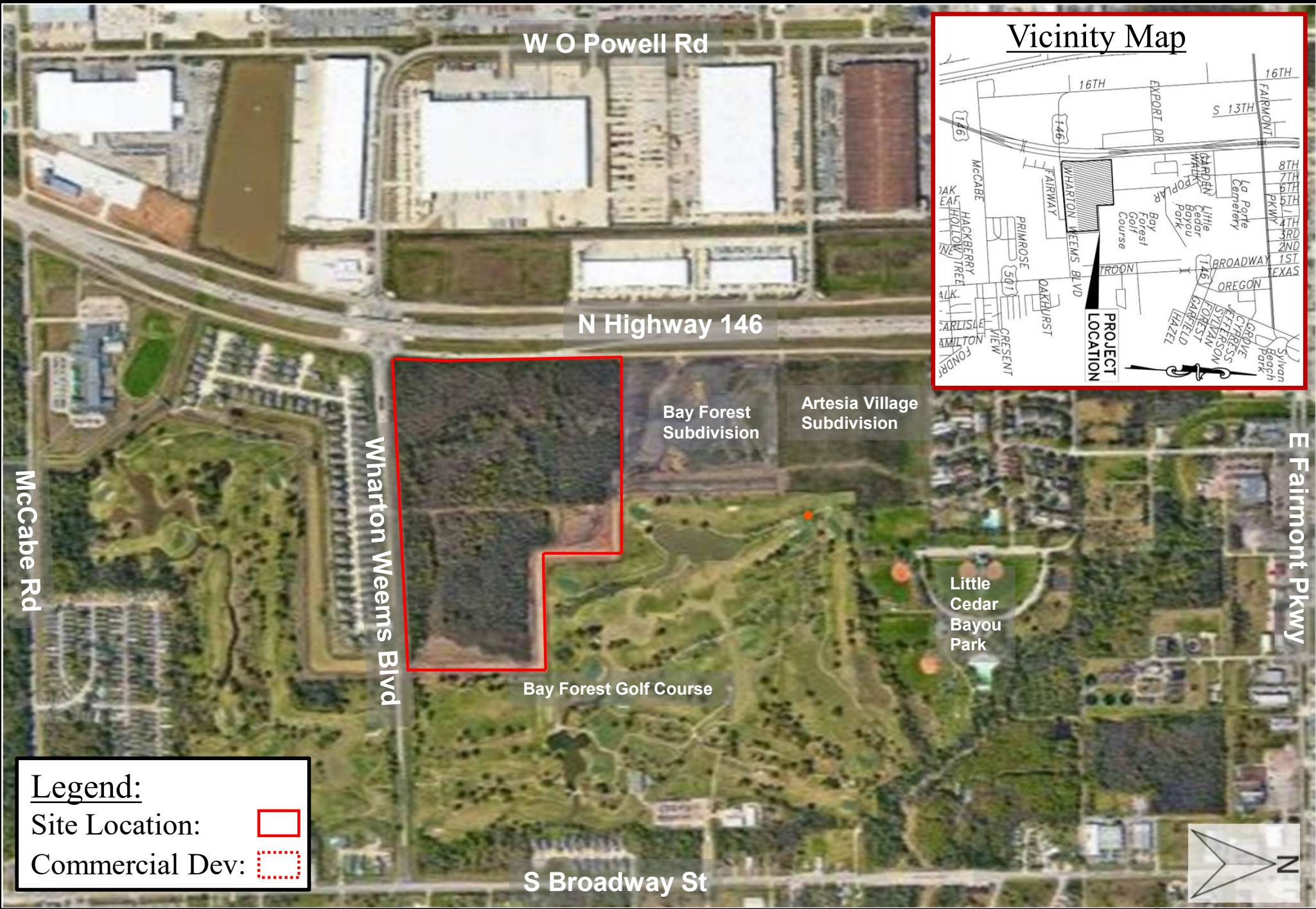
The development is on approximately 56.7-acres and will entail 204 single family detached homes, but the analysis is based on the original 274. The only difference between the original design and the current is the size of the park land and the lots. This report was for the original 274 lots and as such this report still encompasses the worse-case scenario of the 274 units. The residential subdivision will have two public road entrances, one off Wharton Weems Boulevard across from Fairmont Greens Parkway and one on SH 146 northbound frontage road. The Vicinity Map and Site Plan for the project are shown in Figures 1 and 2, respectively.

Traffic Count Data


Turning movement counts (TMCs) were collected in September 2023 for the intersections of Wharton Weems and SH 146, Wharton Weems at Fairmont Greens Parkway and Wharton Weems at S. Broadway Street to determine the roadway traffic volumes at the proposed site and to analyze the project impact on the signal. The AM peak hour was evaluated to be 6:45 to 7:45 AM, while the PM peak hour was found to be 4:45 to 5:45 PM based on the roadway traffic counts for all three sites. The peak hour count data is presented in Figure 3 and the raw data in Appendix A.


Existing Conditions

The study location on the south side of the City of La Porte, Texas. It is on the northeast corner of the intersection of State Highway 146 and Wharton Weems Boulevard, also known as Business State Highway 146. The intersection of SH 146 at Wharton Weems Blvd. is a signalized diamond intersection with Wharton Weems Blvd. passing under SH 146. All other intersections on Wharton Weems Blvd. are two-way stop controlled on the minor side streets. Wharton Weems Blvd. at SH 146 and to the west is a concrete curb and gutter roadway, with one lane each direction and a two-way left-turn lane. East of SH 146, Wharton Weems Blvd. is a two-lane asphalt roadway section with a raised center median running 630' from the intersection to the east. Wharton Weems Blvd. ends at S. Broadway Street. SH 146 northbound frontage road is a concrete curb and gutter roadway with 3 lanes north of the intersection for 1000' to the SH 146 entrance ramp where it drops a lane and continues as a two-lane curb and gutter roadway segment. The speed limit on SH 146 frontage roads is posted as 40-mph north and south of Wharton Weems Blvd. Wharton Weems Blvd. is posted as a 35-mph roadway west of the SH 146 southbound frontage road and 45-mph east of the northbound frontage road to S. Broadway Street. Wharton Weems Blvd. from SH 146 to S. Broadway Street is posted as a "No truck Route".






Legend:

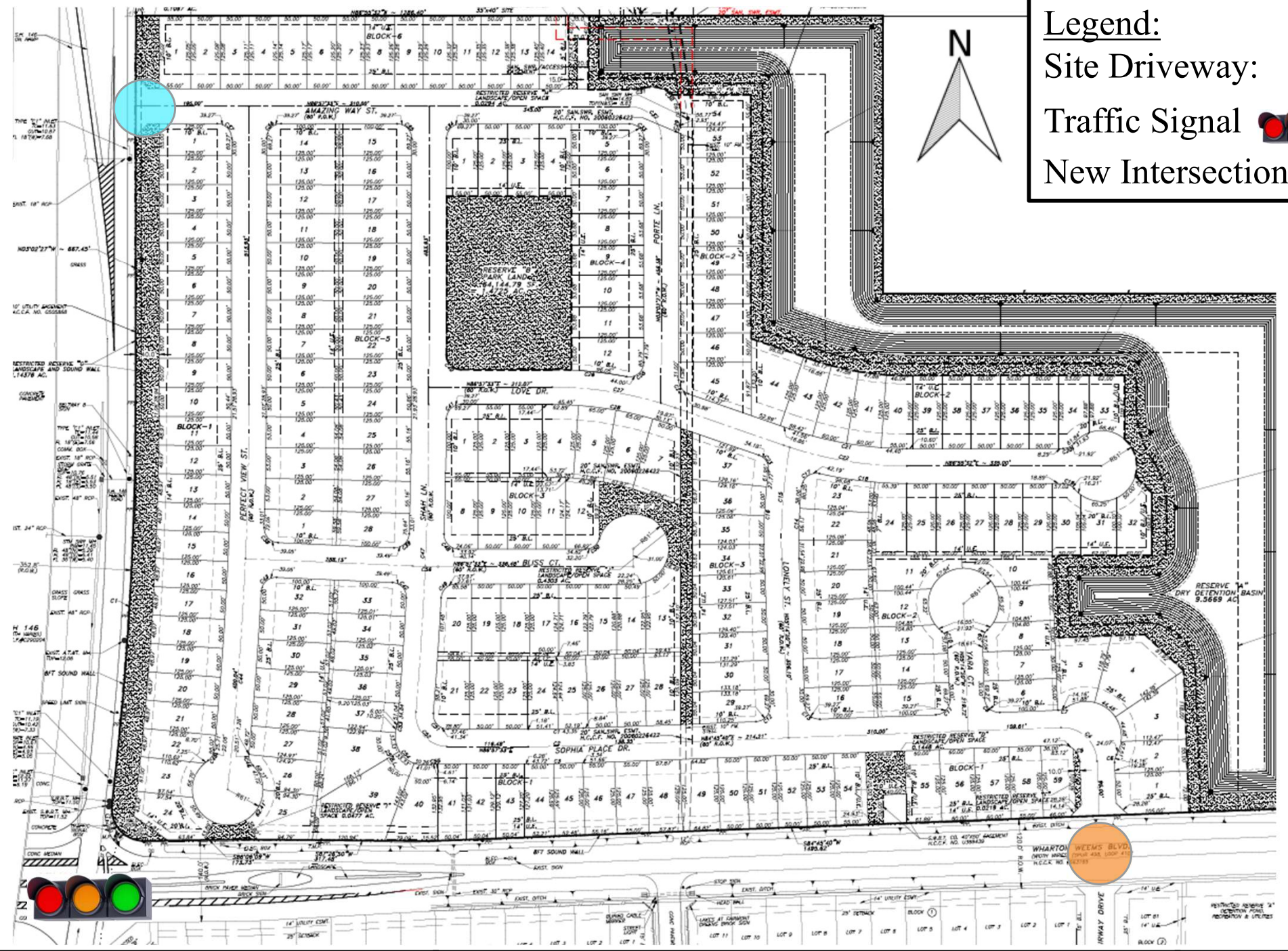
Site Location: 

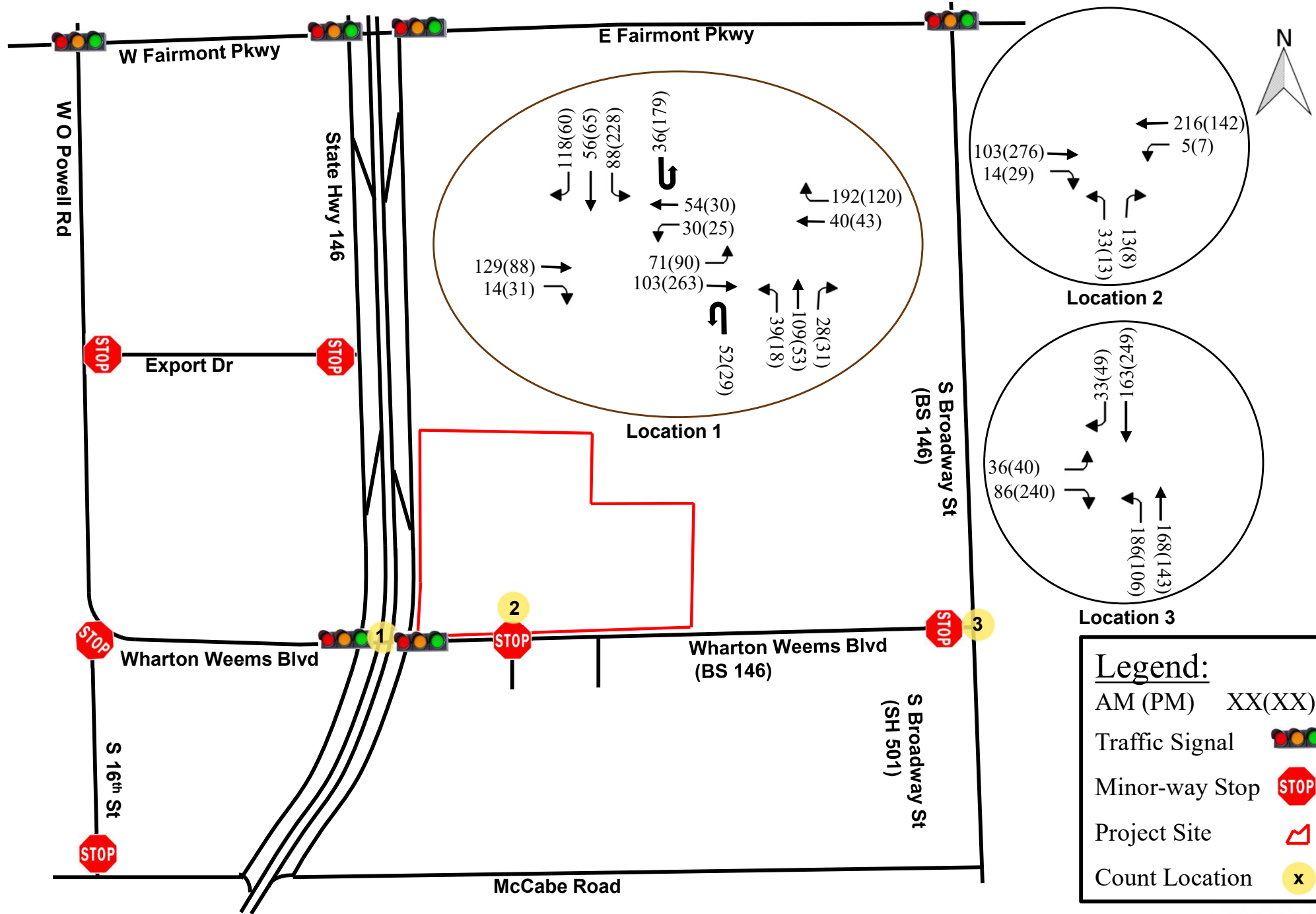
Commercial Dev: 



Legend:

- Site Driveway: 
- Traffic Signal: 
- New Intersection: 





The diamond interchange at SH 146 frontage roads and Wharton Weems Blvd has four approach lanes to the intersection and a dedicated U-turn lanes both northbound and southbound. The southbound approach is a dedicated left-turn lane, two through lanes and a dedicated right turn lane with three departure lanes. The northbound approach is three through lanes and a dedicated right turn lane with three departure lanes. Wharton Weems Blvd. eastbound approach to the intersection is two lanes with a through lane and dedicated right turn lane then changing to a dedicated left turn lane and through lane as it approaches the northbound frontage road. Wharton Weems Blvd. westbound approach to the intersection is two through lanes with an island channelized right-turn lane. The two through lanes continue through the intersection to the southbound frontage road.

Land use in the area is largely residential single-family east of SH 146 and industrial east of SH 146 and a gas station on the southwest corner of the diamond intersection.

TRIP GENERATION AND DISTRIBUTION

The ITE *Trip Generation Manual* (11th edition) was used to estimate the number of expected peak hour trips to and from the site. The analysis for the development was done for the worse case of the two proposed project scenarios. The development is a 274-unit single-family detached housing, Land Use Code (210). This land use was used to determine the trips generated by the development.

The analysis information used for the trip generation rates is shown below in Table 1. Results of the trip generation analysis are shown below in Table 2.

Table 1

Trip Generation Rates								
Land Use / ITE Code		AM Peak			PM Peak			Daily
Single-Family detached Housing / 210	Trip Rate	0.7			0.94			9.43
	Direction	Entering	Exiting	Total	Entering	Exiting	Total	
	In/Out Split	26%	74%		63%	37%		
	In/Out Split	60%	50%		50%	50%		

Table 2

Project Peak Hour Trips									
Yara Lakes Subdivision Development									
	AM Peak				PM Peak				Daily
Use/ITE Code	Entering	Exiting	Pass-by	Total	Entering	Exiting	Pass-by	Total	Trips
Single-Family detached Housing / 210	50	142	0	192	162	96	0	258	2584

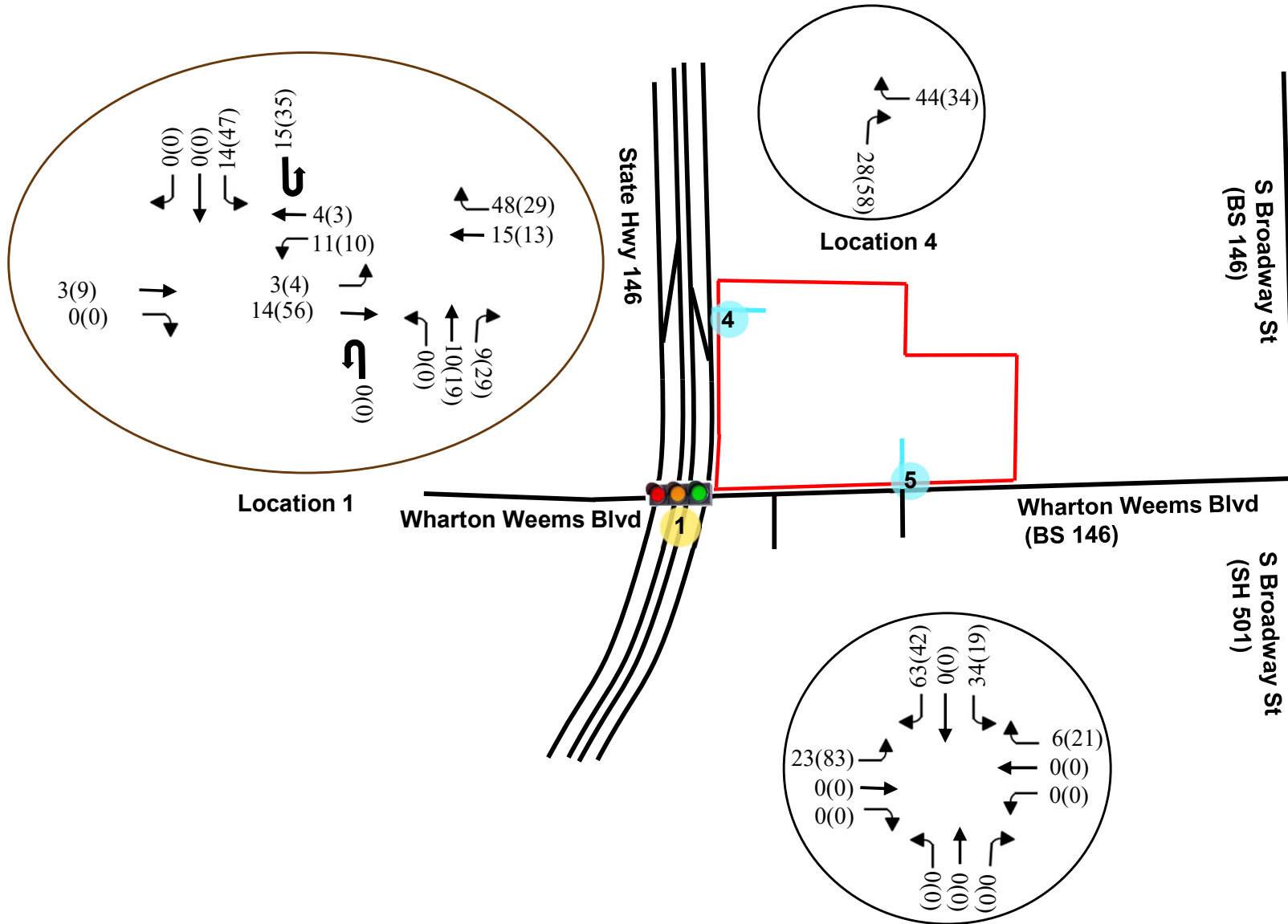
Project Traffic Distribution and Volumes

The projected trip distribution percentage for this development was determined based upon the existing traffic distribution, and the proposed site development access locations. Peak hour distributions were created for both the AM and PM peak hours and carried through the study intersection. Overall percentage distribution for vehicles approaching and leaving the development site during the site peak hours is shown in Figure 4. The site traffic for each driveway and proposed site intersection is shown in Figure 5. With the revised TIA the volumes from Fairmont Greens Parkway were moved to Fairway Drive to project worse case scenarios.



Legend:	
AM (PM)	X%
Project Site	
Site Entrances	





Legend:

AM (PM)	XX(XX)
Traffic Signal	
Project Site	
Intersection	
Driveway	



TRAFFIC SIGNAL ANALYSIS

2024 Build Conditions

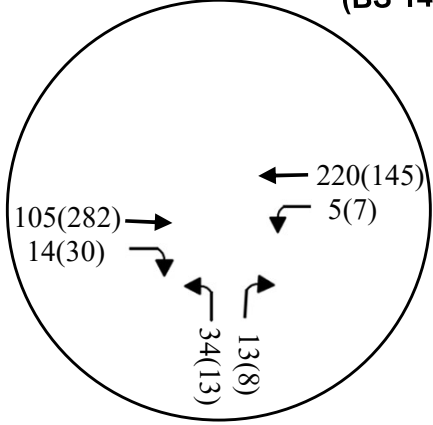
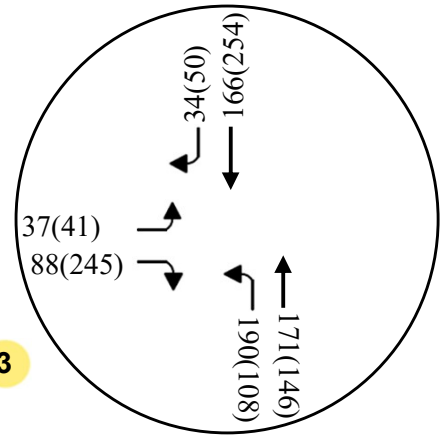
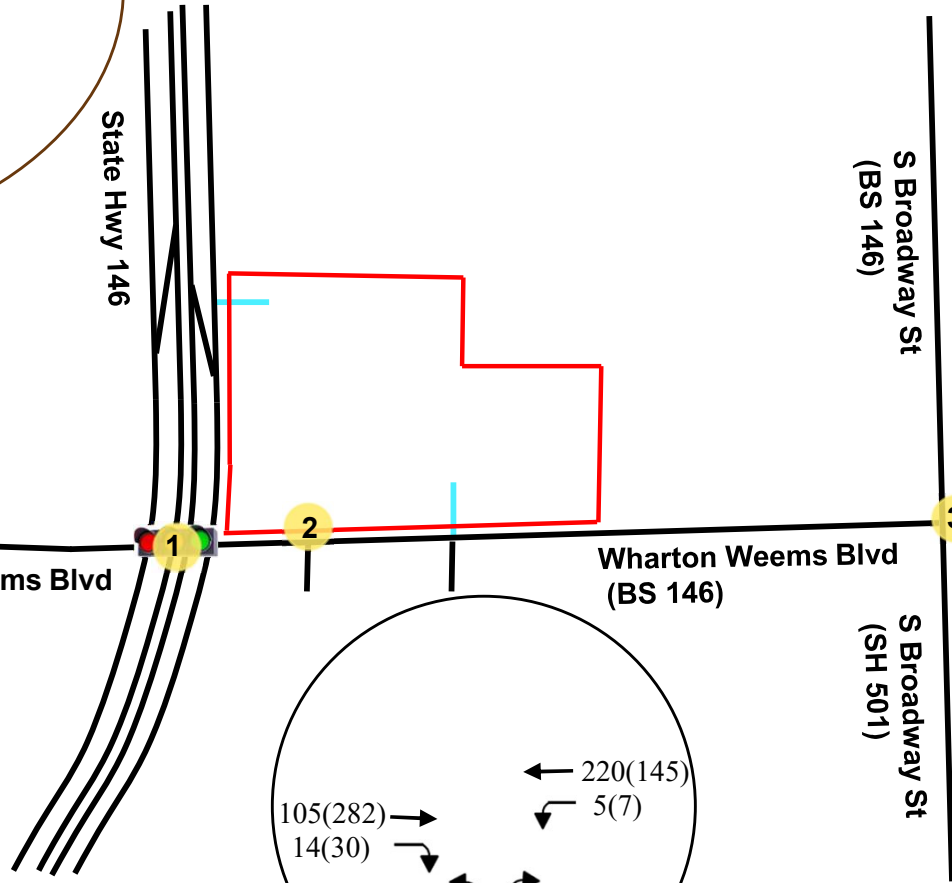
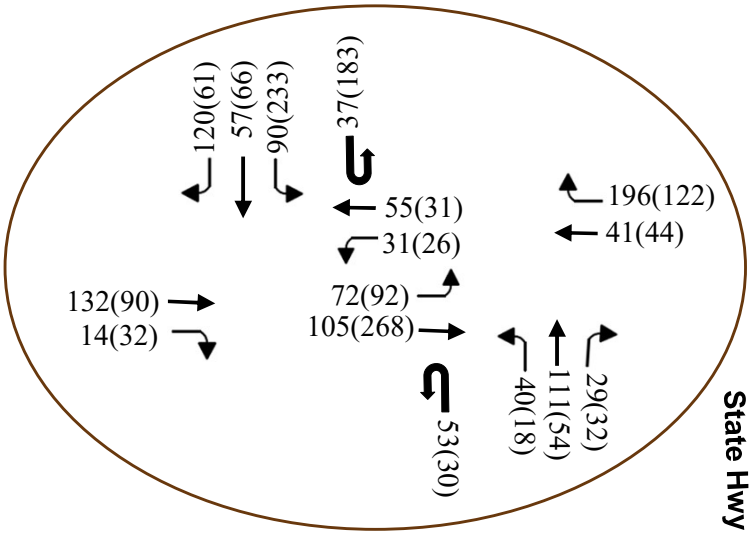
The development is planned to open in 2024. Future traffic projections were populated by applying a 2% growth rate to the existing traffic for 2024. The 2% background growth rate was determined for this area based on TxDOT traffic data counts, from TxDOT – Traffic County Database System, analyzed over a 5-year horizon from 2018 to 2022. Discussions with La Porte Staff were also used to verify the growth potential and growth rate used. The 2024 background traffic volumes use a 2% growth rate is shown in Figure 6. The traffic volumes for the site development traffic to the existing and background growth traffic is shown in Figure 7. These volumes were used to compare the level of service (LOS), using Synchro Version 12 traffic software. The impact for the existing, build, and no-build scenarios was analyzed. The analysis LOS results for the signalized intersections of SH 146 north and southbound frontage roads at Wharton Weems are shown below in Table 2. The LOS results for the stop-controlled intersections of Wharton Weems at Fairmont Greens Parkway and S. Broadway Street are shown in Table 3.

Table 2: Signalized Intersections

			2023 Existing				2024 No Build				2024 Build			
Intersection		Approach	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS
SH 146 NB FR @ Wharton Weems Blvd.	SH 146 NB FR	NB Approach	5.3	A	7.9	A	5.4	A	7.9	A	6.0	A	8.6	A
	Wharton Weems Blvd.	EB Approach	81.1	F	50.3	D	81.9	F	57.7	D	75.4	E	46.2	D
		WB Approach	45.9	D	56.1	F	46.1	D	56.1	E	46.4	D	56.5	E
			Intersection	44.6	D	44.8	D	44.5	D	46.2	D	42.9	D	41.5
SH 146 SB FR @ Wharton Weems Blvd.	SH 146 SB FR	SB Approach	67.7	E	83.1	F	67.7	E	82.1	F	69.9	E	87.5	F
	Wharton Weems Blvd.	EB Approach	8.4	A	11.0	B	8.5	A	11.0	B	9.6	A	13.4	B
		WB Approach	30.1	C	27.4	C	29.9	C	26.9	C	32.1	C	29.7	C
			Intersection	43.9	D	61.0	E	43.9	D	59.7	E	46.0	D	64.8

Table 3: Unsignalized Stop Control Intersections

			2023 Existing				2024 No Build				2024 Build			
Intersection		Approach	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS	Delay (Sec/Veh)	LOS
Wharton Weems Blvd. @ Fairway Drive	Fairway Drive / Yara Lakes	NB Left Turn	10.6	B	11.3	B	10.6	B	11.4	B	12.1	B	14.3	B
		SB Approach	0.0	A	0.0	A	0.0	A	0.0	A	11.3	B	11.9	B
	Wharton Weems Blvd.	EB Left Turn	7.5	A	8.0	A	7.5	A	8.0	A	7.8	A	7.8	A
		WB Left Turn	---	---	---	---	---	---	---	---	7.5	A	8.0	A
Wharton Weems Blvd. @ S. Broadway Street	S. Broadway Street	NB Left Turn	8.1	A	8.2	A	8.1	A	8.2	A	8.2	A	8.4	A
		SB Approach	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
	Wharton Weems Blvd.	EB Approach	13.4	B	15.3	C	13.7	B	15.7	C	15.0	C	17.5	C
NB Frontage Rd at Perfect View	Perfect View	WB Approach	---	---	---	---	---	---	---	---	9.3	A	9.5	A

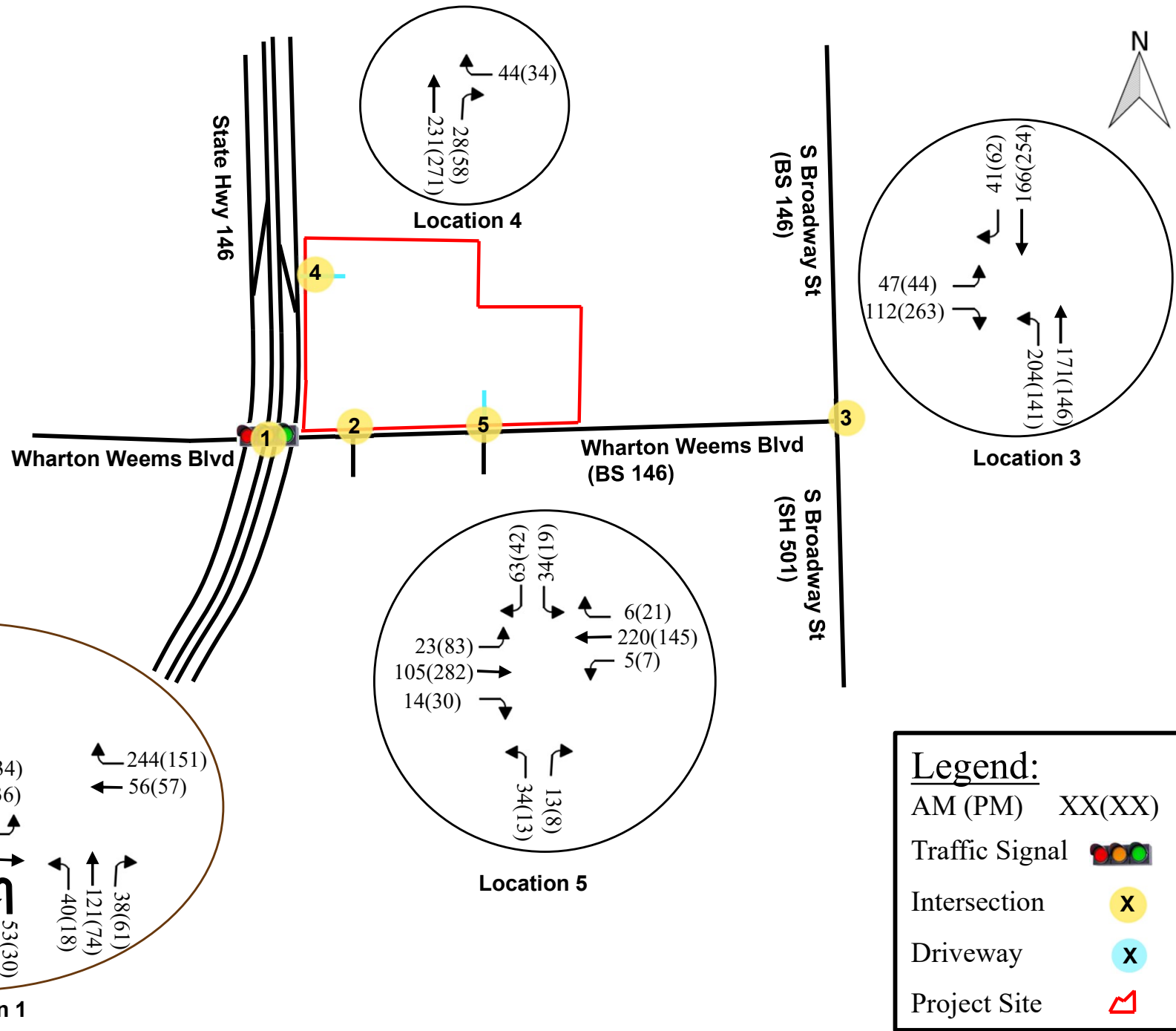


Legend:

AM (PM) XX(XX)

Project Site

Intersection



ANALYSIS AND FINDINGS REVIEW

Synchro analysis was performed for traffic signalized intersections of SH 146 northbound frontage road at Wharton Weems Boulevard, SH 146 southbound frontage road at Wharton Weems Boulevard, and the unsignalized intersections of Wharton Weems Boulevard at Fairmont Greens Parkway/Yara Lakes, and Wharton Weems Boulevard at S. Broadway Road. Based on the analysis there was no significant differences seen in the intersection or approach LOS and negligible differences in the intersection or approach delays. The LOS results in some instances improve with the additional traffic added and redistributing the traffic load on the intersection. The proposed intersection of Site roadway Perfect View and SH 146 northbound frontage road should not need a right-turn deceleration lane since SH 146 northbound frontage road is already a two-lane roadway and the volume of right-turns into the roadway is projected to be under the 60 vehicles per hour (vph) for right turns, in the highest peak hour, the PM peak. This does not exceed the warrant requirement for a right-turn auxiliary lane, and the area will be completely built out with this development. Using a worse-case scenario the roadway volumes do not fully justify the need of the auxiliary lane based on site visits.

CONCLUSION

After review of the existing roadways, proposed roadways, and site driveway connections; it is not anticipated that the proposed development traffic will not cause any significant additional impact on the roadway network or intersections beyond the recommended improvements of a left-turn lane on Wharton Weems Boulevard. The proposed intersection of Site roadway Perfect View and SH 146 northbound frontage road should not need a right-turn deceleration lane.

Installation of a standard left-turn lane is proposed on Wharton Weems Boulevard for the entrance to the new subdivision at the intersection of the existing Fairmont Greens Parkway roadway. As part of this left turn lane development, the turn lane will be extended to account for left turns into the existing residential development to the south. TxDOT should consider retiming the traffic signal at SH 146 and Wharton Weems Boulevard based on the existing traffic and signal operations, but it will need to be retimed once the development opens in late 2024, especially with the addition of the commercial center to improve the general balance of the delays and LOS on the approaches at the intersection.

APPENDIX LIST

- A. **Existing Traffic Count Data**
- B. **Synchro Output, 2023 Existing AM & PM**
- C. **Synchro Output, 2024 No Build Conditions AM & PM**
- D. **Synchro Output, 2024 Build Conditions AM & PM**

APPENDIX A:
Existing Traffic Count Data

1. SH 146 Southbound Frontage Road at Wharton Weems
2. SH 146 Northbound Frontage Road at Wharton Weems
3. Wharton Weems at Fairmont Greens Parkway
4. Wharton Weems at S. Broadway Street

Ally General Solutions, LLC
 dba AGS Engineering & Construction LLC
 DBE/SBE/MBE/HUB8(a)
 7070 W. 43rd St., Ste 203
 Houston, TX 77092
 Ph: (281) 888-7882

Site ID Code:
 Intersection Location:
 East / West Road :
 North / South Road :
 Count Date:

2
 SB SH 146 at Wharton Weems
 Wharton Weems
 SB SH 146
 9/14

AM Peak Hour
 MD Peak Hour
 PM Peak Hour

TIME	SOUTH BOUND												WEST BOUND																			
	CAR				TRUCKS				CYCLISTS				Peds	TOTAL	CAR				TRUCKS				CYCLISTS				Peds	TOTAL				
	L	T	R	UT	L	T	R	UT	L	T	R	UT			L	T	R	UT	L	T	R	UT	L	T	R	UT	L	T	R	UT		
0000 - 0015	2	2	2	2	0	0	1	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0015 - 0030	6	0	1	4	0	0	4	1	0	0	0	0	16	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
0030 - 0045	6	1	0	1	0	0	0	0	0	0	0	0	8	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3		
0045 - 0100	0	1	0	0	1	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0100 - 0115	5	0	0	1	0	0	0	0	0	0	0	0	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
0115 - 0130	0	0	0	2	0	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0130 - 0145	1	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0145 - 0200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0200 - 0215	2	2	4	1	0	0	1	0	0	0	0	0	10	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0		
0215 - 0230	1	1	2	1	0	0	0	0	0	0	0	0	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
0230 - 0245	3	0	2	3	0	0	2	0	0	0	0	0	10	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
0245 - 0300	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0300 - 0315	1	3	1	1	0	0	1	2	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0315 - 0330	1	0	1	0	0	1	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0330 - 0345	2	1	5	0	0	0	0	0	0	0	0	0	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
0345 - 0400	2	2	2	0	0	0	0	0	0	0	0	0	6	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
0400 - 0415	4	2	1	0	0	0	1	0	0	0	0	0	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
0415 - 0430	3	0	6	1	0	0	1	0	0	0	0	0	11	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2			
0430 - 0445	8	3	14	2	0	0	3	0	0	0	0	0	30	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	4			
0445 - 0500	1	1	14	0	0	1	3	0	0	0	0	0	20	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	9			
0500 - 0515	5	6	9	3	0	0	2	1	0	0	0	0	26	4	3	0	0	0	0	0	0	0	0	0	0	0	0	7				
0515 - 0530	3	4	18	3	0	0	3	0	0	0	0	0	31	2	4	0	0	0	0	0	0	0	0	0	0	0	0	6				
0530 - 0545	3	4	26	2	0	0	2	0	0	0	0	0	37	6	4	0	0	0	0	0	0	0	0	0	0	0	0	10				
0545 - 0600	5	10	29	3	1	3	6	1	0	0	0	0	58	4	6	0	0	0	0	0	0	0	0	0	0	0	0	10				
0600 - 0615	5	18	14	5	2	3	4	0	0	0	0	0	51	5	5	0	0	0	0	0	0	0	0	0	0	0	0	10				
0615 - 0630	5	16	15	2	1	2	3	1	0	0	0	0	45	7	6	0	0	0	0	0	0	0	0	0	0	0	0	13				
0630 - 0645	10	13	19	2	0	1	5	1	0	0	0	0	51	6	11	0	0	0	0	0	0	0	0	0	0	0	0	17				
0645 - 0700	15	17	16	8	0	2	4	0	0	0	0	0	62	5	12	0	0	1	0	0	0	0	0	0	0	0	0	18				
0700 - 0715	14	16	22	6	1	2	9	2	0	0	0	0	72	13	16	0	0	1	0	0	0	0	0	0	0	0	2	31				
0715 - 0730	18	7	14	10	2	2	6	3	0	0	0	0	62	9	16	0	0	3	0	0	0	0	0	0	0	0	0	28				
0730 - 0745	19	7	23	5	3	6	15	1	0	0	0	0	79	5	7	0	0	1	2	0	0	0	0	0	0	0	0	15				
0745 - 0800	25	10	18	8	1	6	11	1	0	0	0	0	80	2	4	0	0	6	0	0	0	0	0	0	0	0	0	12				
0800 - 0815	17	12	6	9	1	11	10	0	0	0	0	0	66	8	19	0	0	2	0	0	0	0	0	0	0	0	0	29				
0815 - 0830	13	4	6	10	0	3	14	1	0	0	0	0	51	9	12	0	1	3	0	0	0	0	0	0	0	0	0	26				
0830 - 0845	19	2	3	3	2	7	8	1	0	0	0	0	45	6	5	0	0	2	0	0	0	0	0	0	0	0	0	14				
0845 - 0900	21	5	5	0	2	5	8	1	0	0	0	1	48	3	6	0	0	8	0	0	0	0	0	0	0	0	4	21				
0900 - 0915	12	7	10	0	0	8	11	2	0	0	0	1	51	5	5	0	0	3	9	0	0	0	0	0	0	0	4	26				
0915 - 0930	19	5	4	2	1	7	12	4	0	0	0	0	54	5	2	0	0	1	1	0	0	0	0	0	0	0	4	13				
0930 - 0945	22	5	4	1	1	5	9	0	0	0	0	1	48	8	1	0	0	3	0	0	0	0	0	0	0	0	0	12				
0945 - 1000	19	6	8	5	3	3	14	2	0	0	0	1	61	3	8	0	0	4	0	0	0	0	0	0	0	0	0	15				
1000 - 1015	21	6	11	4	1	9	11	4	0	0	0	0	67	5	5	0	0	1	3	0	0	0	0	0	0	0	0	14				
1015 - 1030	28	4	11	1	2	5	13	2	0	0	0	0	66	4	1	0	0	1	5	0	0	0	0	0	0	0	0	11				
1030 - 1045	27	11	3	2	5	9	22	1	0	0	0	0	80	8	4	0	0	4	0	0	0	0	0	0	0	0	0	16				
1045 - 1100	20	9	4	9	1	5	14	5	0	0	0	0	67	6	4	0	0	1	6	0	0	0	0	0	0	0	0	17				
1100 - 1115	18	14	3	11	0	2	12	7	0	0	0	0	67	1	5	0	0	6	0	0	0	0	0	0	0	0	0	12				
1115 - 1130	20	13	1	11	1	2	12	2	0	0	0	0	62	6	4	0	0	4	0	0	0	0	0	0	0	0	0	14				
1130 - 1145	19	10	8	19	1	2	18	2	0	0	0	0	79	7	2	0	0	3	0	0	0	0	0	0	0	0	0	12				
1145 - 1200	21	2	7	13	0	6	16	2	0	0	0	0	67	5	9	0	0	1	3	0	0	0	0	0	0	0	0	18				
1200 - 1215	26	7	8	13	0	9	10	1	0	0	0	0	74	6	8	0	0	2	0	0	0	0	0	0	0	0	0	16				
1215 - 1230	24	4	6	15	0	4	11	0	0	0	0	0	64	7	7	0	0	2	0	0	0	0	0	0	0	0	0	16				
1230 - 1245	28	8	5	8	0	3	11	2	0	0	0	0	65	6	11	0	0	2	0	0	0	0	0	0	0	0	0	19				
1245 - 1300	23	4	11	8	0	6	14	1	0	0	0	0	67	3	11	0	0	1	7	0	0	0	0	0	0	0	0	22				
1300 - 1315	25	8	6	13	0	4	15	4	0	0	0	0	75	5	5	0	0	1	4	0	0	0	0	0	0	0	0	15				
1315 - 1330	24	5	8	15	0	2	13	1	0	0	0	0	68	2	3	0	0	2	0	0	0	0	0	0	0	0	2	9				
1330 - 1345	16	3	8	12	0	3	17	3	0	0	0	0	62	5	5	0	0	1	6	0	0	0	0	0	0	0	0	17				
1345 - 1400	17	4	4	8	4	3	17	4	0	0	0	0	61	1	5	0	0	1	2	0	0	0	0	0	0	0	0	9				
1400 - 1415	29	2	11	7	1	3	7	2	0	0	0	0	62	2	3	0	0	4	0	0	0	0	0	0	0	0	0	9				
1415 - 1430	23	4	4	18	1	4	10	3	0	0	0	0	67	0	2	0	0	1	5	0	0	0	0	0	0	0	0	8				
1430 - 1445	22	5	2	18	1	5	9	2	0	0	0	0	64	5	2	0	0	2	0	0	0	0	0	0	0	0	0	9				
1445 - 1500	32	7	5	16	0	2	10	2	0	0	0	0	74	12	5	0	0	1	3	0	0	0	0	0	0	0	0	21				

NORTH BOUND														EAST BOUND													
CAR				TRUCKS				CYCLISTS				Peds	Total	CAR				TRUCKS				CYCLISTS				Peds	Total
L	T	R	UT	L	T	R	UT	L	T	R	UT			L	T	R	UT	L	T	R	UT	L	T	R	UT		
0	2	2	2	0	0	0	0	0	0	0	0	0	6	2	4	0	0	2	0	0	0	0	0	0	0	8	
0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	8	0	0	1	0	0	0	0	0	0	0	10	
0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	7	0	0	3	0	0	0	0	0	0	0	10	
0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	1	0	0	0	0	0	0	4	
0	1	2	0	0	0	0	0	0	0	0	0	0	3	0	6	0	0	2	0	0	0	0	0	0	0	8	
0	1	1	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	0	0	0	0	0	0	2	
0	0	1	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	0	0	0	0	0	0	2	
0	1	0	1	0	6	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	1	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	2	0	0	0	0	0	0	0	6	
0	0	1	1	0	0	0	0	0	0	0	0	0	2	2	1	0	0	1	0	0	0	0	0	0	0	4	
1	1	0	3	0	0	0	1	0	0	0	0	0	6	1	2	0	0	2	0	0	0	0	0	0	0	5	
0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	4	0	0	1	0	0	0	0	0	0	0	5	
0	1	1	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	4	0	0	0	0	0	0	0	5	
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	0	0	5	
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0	3	0	2	0	0	0	1	0	0	0	0	0	6	2	3	0	0	4	0	0	0	0	0	0	0	9	
3	3	2	1	0	0	0	0	0	0	0	0	0	9	0	8	0	0	2	0	0	0	0	0	0	0	10	
5	5	3	2	0	0	0	1	0	0	0	0	0	16	2	3	0	0	5	0	0	0	0	0	0	0	10	
2	2	3	1	0	0	0	2	0	0	0	0	0	10	3	5	0	0	6	0	0	0	0	0	0	0	14	
2	4	3	2	0	0	0	0	0	0	0	0	0	11	4	4	0	0	2	0	0	0	0	0	0	0	10	
3	8	1	6	0	0	1	1	0	0	0	0	0	20	2	5	0	0	4	0	0	0	0	0	0	0	11	
5	10	1	6	0	0	0	0	0	0	0	0	0	22	11	5	0	0	5	1	0	0	0	0	0	0	22	
3	8	7	6	0	1	0	1	0	0	0	0	0	26	5	6	0	0	5	2	0	0	0	0	0	0	18	
5	9	6	5	0	1	0	2	0	0	0	0	0	28	3	9	0	0	7	1	0	0	0	0	0	0	20	
10	7	2	9	0	0	0	2	0	0	0	0	0	30	8	12	0	0	2	0	0	0	0	0	0	0	22	
8	4	8	15	1	2	0	3	0	0	0	0	0	41	8	17	0	0	5	0	0	0	0	0	0	0	30	
8	4	6	3	1	0	0	2	0	0	0	0	0	24	10	17	0	0	8	4	0	0	0	0	0	0	37	
12	22	5	18	2	3	0	4	0	0	0	0	0	64	11	21	0	0	3	2	0	0	0	0	0	0	37	
5	50	9	11	2	1	0	3	0	0	0	0	0	81	10	27	0	0	9	3	0	0	0	0	0	0	49	
3	27	7	11	6	2	1	2	0	0	0	0	0	50	13	29	0	0	9	1	0	0	0	0	0	0	51	
15	8	3	7	2	1	0	4	0	0	0	0	0	40	1	20	0	0	13	1	0	0	0	0	0	0	35	
8	8	1	6	4	2	0	2	0	0	0	0	0	31	6	17	0	0	14	0	0	0	0	0	0	0	37	
3	14	1	1	2	1	0	4	0	0	0	0	0	26	9	18	0	0	13	2	0	0	0	0	0	0	42	
3	17	8	3	9	0	0	2	0	1	0	0	1	44	12	16	0	0	15	2	0	0	0	0	0	0	45	
3	4	1	4	10	0	0	6	0	0	0	0	0	28	8	9	0	0	14	0	0	0	0	0	0	0	31	
2	9	4	4	1	0	0	5	0	0	0	0	0	25	11	17	0	0	18	0	0	0	0	0	0	0	46	
0	10	2	3	3	1	0	6	0	0	0	0	0	25	8	20	0	0	11	0	0	0	0	0	0	0	39	
1	8	3	5	4	1	0	4	0	0	0	0	0	26	5	19	0	0	13	1	0	0	0	0	0	0	38	
2	8	4	7	3	1	0	1	0	0	0	0	0	28	16	17	0	0	16	0	0	0	0	0	0	0	49	
1	6	12	2	6	0	0	1	0	0	0	0	0	28	15	24	0	0	9	2	0	0	0	0	0	0	50	
1	2	12	4	4	2	0	2	0	0	0	0	1	28	10	30	0	0	19	1	0	0	0	0	0	0	36	
2	8	9	1	6	0	0	2	0	0	0	0	0	28	4	23	0	0	9	0	0	0	0	0	0	0	36	
4	8	8	6	6	0	0	2	0	0	0	0	0	34	3	22	0	0	10	1	0	0	0	0	0	0	47	
5	9	6	5	3	1	0	1	0	0	0	0	0	30	7	31	0	0	8	1	0	0	0	0	0	0	41	
2	9	8	2	3	2	0	3	0	0	0	0	0	29	9	23	0	0	7	2	0	0	0	0	0	0	31	
6	12	4	7	3	0	0	1	0	0	0	0	0	33	8	18	0	0	5	0	0	0	0	0	0	0	52	
7	10	4	4	2	0	0	3	0	0	0	0	0	30	8	31	0	0	13	0	0	0	0	0	0	0	52	
3	13	0	2	2	1	0	1	0	0	0	0	0	22	11	29	0	0	11	1	0	0	0	0	0	0	45	
3	8	4	2	2	1	0	4	0	0	0	0	0	24	7	30	0	0	7	0	0	0	0	0	0	0	44	
5	13	3	3	8	0	0	1	0	0	0	0	0	33	10	27	0	0	5	0	0	0	0	0	0	0	53	
2	11	2	5	5	0	0	1	0	0	0	0	0	26	9	31	0	0	13	0	0	0	0	0	0	0	48	
1	11	3	2	2	0	0	2	0	0	0	0	0	21	6	30	0	0	12	0	0	0	0	0	0	0	36	
2	6	7	4	7	1	0	4	0	0	0	0	0	31	6	20	0	0	10	0	0	0	0	0	0	0	39	
2	5	5	2	3	0	0	2	0	0	0	0	0	19	4	20	0	0	12	3	0	0	0	0	0	0	52	
2	6	4	3	5	0	0	1	0	0	0	0	0	21	8	32	0	0	12	0	0	0	0	0	0	0	54	
0	12	2	2	4	0	0	0	0	0	0	0	0	20	9	30	0	0	14	1	0	0	0	0	0	0	55	
1	9	5	0	2	1	0	1	0	0	0	0	0	19	17	25	0	0	13	0	0	0	0	0	0	0	52	
2	8	6	3	3	0	0	3	0	0	0	0	0	25	4	39	0	0	9	0	0	0	0	0	0	0	58	
3	13	4	4	3	1	0	1	0	0	0	0	0	28	12	30	0	0	13	3	0	0	0	0	0	0	64	
2	32	5	8	9	0	0	3	0	0	0	0	0	59	12	37	0	0	12	3	0	0	0	0	0	0	83	
2	18	5	6	3	0	0	2	0	0	0	0	0	36	13	47	0	0	2	1	0	0	0	0	0	0	66	
7	18	8	9	6	3	1	2	0	0	0	0	0	54	11	43	0	0	10	2	0	0	0	0	0	0	63	
1	7	5	4	4	1	0	0	0	0	0	0	0	22	12	45	0	0	5	1	0	0	0	0	0	0	80	
4	13	5	3	3	1	1	1	0	0	0	0	0	31	15	54	0	0	9	2	0	0	0	0	0	0	68	
2	17	4	5	5	1	1	3	0	0	0	0	0	38	8	51	0	0	8	1	0	0	0	0	0	0	71	
2	17	0	6	1	1	0	2	0	0	0	0	0	38	15	50	0	0	6	0	0	0	0	0	0	0	116	
3	10	5	7	4	0	0	2	0	0	0	0	0	31	25	84	0	0	7	0	0	0	0	0	0	0	98	
3	12	5	4	0	0	0	4	0	0	0	0	0	28	13	78	0	0	7	0	0	0	0	0	0	0	68	
1	13	12	4	4	0	0	0	0	0	0	0	0	34	0	51	0	0	8	0								



TIME	SOUTH BOUND										WEST BOUND																				
	CAR				TRUCKS				CYCLISTS				Peds	Total	CAR				TRUCKS				CYCLISTS				Peds	Total			
	L	T	R	UT	L	T	R	UT	L	T	R	UT			L	T	R	UT	L	T	R	UT	L	T	R	UT					
0000 - 0015	0	4	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0015 - 0030	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0030 - 0045	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0045 - 0100	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0100 - 0115	0	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0115 - 0130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0130 - 0145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0145 - 0200	0	4	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0200 - 0215	0	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0215 - 0230	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0230 - 0245	0	4	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0245 - 0300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0300 - 0315	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0315 - 0330	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0330 - 0345	0	4	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0345 - 0400	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0400 - 0415	0	4	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0415 - 0430	0	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0430 - 0445	0	2	2	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0445 - 0500	0	4	1	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0500 - 0515	0	2	3	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0515 - 0530	0	4	2	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0530 - 0545	0	4	6	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0545 - 0600	0	5	2	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0600 - 0615	0	15	3	0	0	0	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0615 - 0630	0	14	6	0	0	1	0	0	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
0630 - 0645	0	9	6	0	0	6	0	0	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	
0645 - 0700	0	30	8	0	0	3	0	0	0	0	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0700 - 0715	0	43	14	0	0	3	0	0	0	0	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
0715 - 0730	0	51	6	0	0	4	1	0	0	0	0	0	0	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
0730 - 0745	0	26	4	0	0	3	0	0	0	0	0	0	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	
0745 - 0800	0	31	9	0	0	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	
0800 - 0815	0	27	10	0	0	1	1	0	0	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0815 - 0830	0	30	8	0	0	2	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0830 - 0845	0	26	4	0	0	0	0	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0845 - 0900	0	22	4	0	0	1	0	0	0	0	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	
0900 - 0915	0	22	9	0	0	0	1	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0915 - 0930	0	23	6	0	0	1	0	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
0930 - 0945	0	23	4	0	0	0	0	0	0	0	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
0945 - 1000	0	20	4	0	0	1	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1000 - 1015	0	31	5	0	0	0	0	0	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
1015 - 1030	0	29	7	0	0	1	0	0	0	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1030 - 1045	0	34	9	0	0	1	0	0	0	0	0	0	0	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
1045 - 1100	0	29	9	0	0	0	0	0	0	0	0	0	0	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1100 - 1115	0	26	3	0	0	0	0	0	0	0	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1115 - 1130	0	26	5	0	0	0	0	0	0	0	0	0	0	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1130 - 1145	0	21	9	0	0	0	1	0	0	0	0	0	0	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1145 - 1200	0	31	7	0	0	1	1	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1200 - 1215	0	36	6	0	0	0	0	0	0	0	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
1215 - 1230	0	37	6	0	0	0	0	0	0	0	0	0	0	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
1230 - 1245	0	26	9	0	0	2	0	0	0	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1245 - 1300	0	28	6	0	0	1	0	0	0	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1300 - 1315	0	31	5	0	0	0	0	0	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	
1315 - 1330	0	33	8	0	0	1	0	0	0	0	0	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1330 - 1345	0	30	3	0	0	1	0	0	0	0	0	0	0	34	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	
1345 - 1400	0	37	4	0	0	0	0	0	0	0	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
1400 - 1415	0	33	3	0	0	0	0	0	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	
1415 - 1430	0	32	4	0	0	0	1	0	0	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1430 - 1445	0	50	5	0	0	3	0	0	0	0																					

APPENDIX B:

Synchro Output, 2023 Existing AM & PM

Lanes, Volumes, Timings
1: S Broadway & WHARTON WEEMS

11/22/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	36	86	186	168	163	33
Future Volume (vph)	36	86	186	168	163	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	200			0
Storage Lanes	0	0	1			0
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.905				0.977	
Flt Protected	0.985		0.950			
Satd. Flow (prot)	1660	0	1770	1863	1820	0
Flt Permitted	0.985		0.950			
Satd. Flow (perm)	1660	0	1770	1863	1820	0
Link Speed (mph)	45			30	30	
Link Distance (ft)	1642			796	680	
Travel Time (s)	24.9			18.1	15.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	93	202	183	177	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	202	183	213	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.2%
ICU Level of Service	A
Analysis Period (min)	15

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑	↑	
Traffic Vol, veh/h	36	86	186	168	163	33
Future Vol, veh/h	36	86	186	168	163	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	93	202	183	177	36

Major/Minor

	Minor2	Major1	Major2		
Conflicting Flow All	782	195	213	0	-
Stage 1	195	-	-	-	-
Stage 2	587	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	363	846	1357	-	-
Stage 1	838	-	-	-	-
Stage 2	556	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	309	846	1357	-	-
Mov Cap-2 Maneuver	309	-	-	-	-
Stage 1	713	-	-	-	-
Stage 2	556	-	-	-	-

Approach

	EB	NB	SB
HCM Control Delay, s/v	13.43	4.26	0
HCM LOS	B		

Minor Lane/Major Mvmt

	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1357	-	559	-	-
HCM Lane V/C Ratio	0.149	-	0.237	-	-
HCM Control Delay (s/veh)	8.1	-	13.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %ile Q(veh)	0.5	-	0.9	-	-

Lanes, Volumes, Timings
 3: WHARTON WEEMS & NB FRONTAGE

11/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑			↑↑	↗		↕↑↑	↗			
Traffic Volume (vph)	71	103	0	0	40	192	39	106	28	0	0	0
Future Volume (vph)	71	103	0	0	40	192	39	106	28	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	1.00	1.00
Fr						0.850			0.850			
Flt Protected	0.950							0.987				
Satd. Flow (prot)	1770	1863	0	0	3539	1583	0	5019	1583	0	0	0
Flt Permitted	0.950							0.987				
Satd. Flow (perm)	1770	1863	0	0	3539	1583	0	5019	1583	0	0	0
Right Turn on Red			Yes			Yes		Yes				Yes
Satd. Flow (RTOR)						209			102			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		258			274			200			186	
Travel Time (s)		3.9			4.2			3.4			3.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	112	0	0	43	209	42	115	30	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	112	0	0	43	209	0	157	30	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		28			20			36			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2			2	2	1	3	3			
Detector Template					TXLT	TXLT	Left	TX40	TX40			
Leading Detector (ft)	156	156			0	0	20	240	240			
Trailing Detector (ft)	5	5			0	0	0	-5	-5			
Detector 1 Position(ft)	5	5			-5	-5	0	-5	-5			
Detector 1 Size(ft)	6	6			20	20	20	20	20			
Detector 1 Type	CI+Ex	CI+Ex			Call	Call	CI+Ex	CI+Ex	CI+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)	150	150			21	21		104	104			
Detector 2 Size(ft)	6	6			20	20		6	6			
Detector 2 Type	CI+Ex	CI+Ex			Call	Call		CI+Ex	CI+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 3 Position(ft)								234	234			
Detector 3 Size(ft)								6	6			
Detector 3 Type								CI+Ex	CI+Ex			
Detector 3 Channel												
Detector 3 Extend (s)								0.0	0.0			
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			

Lane Group	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Lane Configurations						
Traffic Volume (vph)						
Future Volume (vph)						
Ideal Flow (vphpl)						
Lane Util. Factor						
Fr1						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Right Turn on Red						
Satd. Flow (RTOR)						
Link Speed (mph)						
Link Distance (ft)						
Travel Time (s)						
Peak Hour Factor						
Adj. Flow (vph)						
Shared Lane Traffic (%)						
Lane Group Flow (vph)						
Enter Blocked Intersection						
Lane Alignment						
Median Width(ft)						
Link Offset(ft)						
Crosswalk Width(ft)						
Two way Left Turn Lane						
Headway Factor						
Turning Speed (mph)						
Number of Detectors						
Detector Template						
Leading Detector (ft)						
Trailing Detector (ft)						
Detector 1 Position(ft)						
Detector 1 Size(ft)						
Detector 1 Type						
Detector 1 Channel						
Detector 1 Extend (s)						
Detector 1 Queue (s)						
Detector 1 Delay (s)						
Detector 2 Position(ft)						
Detector 2 Size(ft)						
Detector 2 Type						
Detector 2 Channel						
Detector 2 Extend (s)						
Detector 3 Position(ft)						
Detector 3 Size(ft)						
Detector 3 Type						
Detector 3 Channel						
Detector 3 Extend (s)						
Turn Type						

Lanes, Volumes, Timings
 3: WHARTON WEEMS & NB FRONTAGE

11/22/2023

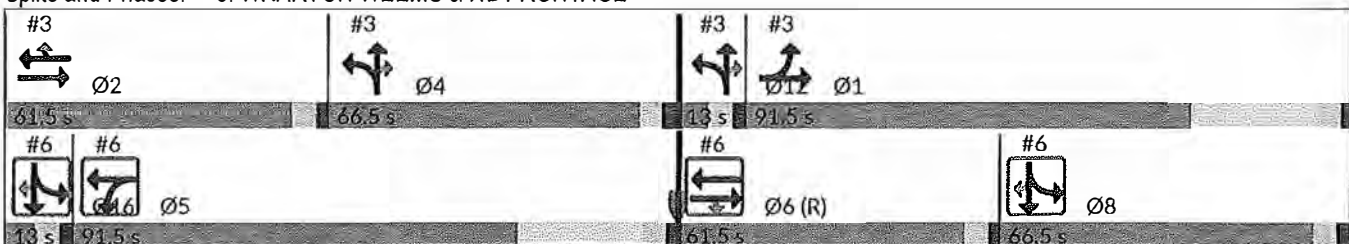


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	2 1			2		4 12	4 12				
Permitted Phases						2			4 12			
Detector Phase	1	2 1			2	2	4 12	4 12	4 12			
Switch Phase												
Minimum Initial (s)	5.0				10.0	10.0						
Minimum Split (s)	22.5				33.5	33.5						
Total Split (s)	91.5				61.5	61.5						
Total Split (%)	35.7%				24.0%	24.0%						
Maximum Green (s)	85.0				55.0	55.0						
Yellow Time (s)	4.5				4.5	4.5						
All-Red Time (s)	2.0				2.0	2.0						
Lost Time Adjust (s)	0.0				0.0	0.0						
Total Lost Time (s)	6.5				6.5	6.5						
Lead/Lag	Lag				Lead	Lead						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0				2.0	2.0						
Recall Mode	None				Min	Min						
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					13.0	13.0						
Pedestrian Calls (#/hr)					0	0						
Act Effct Green (s)	21.7	39.7			11.5	11.5		202.8	202.8			
Actuated g/C Ratio	0.08	0.16			0.04	0.04		0.79	0.79			
v/c Ratio	0.51	0.39			0.27	0.77		0.04	0.02			
Control Delay (s/veh)	90.0	76.1			121.7	30.3		6.3	0.0			
Queue Delay	0.0	0.1			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	90.0	76.1			121.7	30.3		6.3	0.0			
LOS	F	E			F	C		A	A			
Approach Delay (s/veh)		81.8			45.9			5.3				
Approach LOS		F			D			A				

Intersection Summary

Area Type: Other
 Cycle Length: 256
 Actuated Cycle Length: 256
 Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay (s/veh): 44.6
 Intersection LOS: D
 Intersection Capacity Utilization 39.4%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 3: WHARTON WEEMS & NB FRONTAGE



Exist AM 8:09 am 11/20/2023 Baseline

Lane Group	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Protected Phases	4	5	6	8	12	16
Permitted Phases						
Detector Phase						
Switch Phase						
Minimum Initial (s)	8.0	5.0	10.0	8.0	2.0	2.0
Minimum Split (s)	55.0	11.5	32.5	46.0	9.0	9.0
Total Split (s)	66.5	91.5	61.5	66.5	13.0	13.0
Total Split (%)	26%	36%	24%	26%	5%	5%
Maximum Green (s)	59.5	85.0	55.0	59.5	6.0	6.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.5	2.0	2.0	2.5	2.5	2.5
Lost Time Adjust (s)						
Total Lost Time (s)						
Lead/Lag	Lag	Lag	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Min	None	C-Min	Min	None	None
Walk Time (s)	7.0		7.0	7.0		
Flash Dont Walk (s)	34.0		12.0	25.0		
Pedestrian Calls (#/hr)	0		0	0		
Act Effct Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay (s/veh)						
Queue Delay						
Total Delay (s/veh)						
LOS						
Approach Delay (s/veh)						
Approach LOS						
Intersection Summary						

Phasings

3: WHARTON WEEMS & NB FRONTAGE

11/22/2023



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Protected Phases	1	2 1	2		4 12		4	5	6	8	12	16
Permitted Phases				2		4 12						
Minimum Initial (s)	5.0		10.0	10.0			8.0	5.0	10.0	8.0	2.0	2.0
Minimum Split (s)	22.5		33.5	33.5			55.0	11.5	32.5	46.0	9.0	9.0
Total Split (s)	91.5		61.5	61.5			66.5	91.5	61.5	66.5	13.0	13.0
Total Split (%)	35.7%		24.0%	24.0%			26%	36%	24%	26%	5%	5%
Maximum Green (s)	85.0		55.0	55.0			59.5	85.0	55.0	59.5	6.0	6.0
Yellow Time (s)	4.5		4.5	4.5			4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0		2.0	2.0			2.5	2.0	2.0	2.5	2.5	2.5
Lead/Lag	Lag		Lead	Lead			Lag	Lag	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0		2.0	2.0			2.0	2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	3.0		3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None		Min	Min			Min	None	C-Min	Min	None	None
Walk Time (s)			7.0	7.0			7.0		7.0	7.0		
Flash Dont Walk (s)			13.0	13.0			34.0		12.0	25.0		
Pedestrian Calls (#/hr)			0	0			0		0	0		
90th %ile Green (s)	30.6		17.4	17.4			9.1	20.3	180.0	22.5	171.9	6.2
90th %ile Term Code	Hold		Gap	Gap			Gap	Hold	Coord	Gap	Coord	Gap
70th %ile Green (s)	23.9		10.0	10.0			8.0	13.0	192.3	18.7	187.1	5.0
70th %ile Term Code	Hold		Min	Min			Min	Hold	Coord	Gap	Coord	Gap
50th %ile Green (s)	20.6		10.0	10.0			8.0	13.0	194.4	16.6	190.4	5.0
50th %ile Term Code	Hold		Min	Min			Min	Hold	Coord	Gap	Coord	Gap
30th %ile Green (s)	18.4		10.0	10.0			8.0	13.1	196.6	14.4	192.6	4.9
30th %ile Term Code	Hold		Min	Min			Min	Hold	Coord	Gap	Coord	Gap
10th %ile Green (s)	15.2		10.0	10.0			8.0	13.3	200.0	11.0	195.8	4.7
10th %ile Term Code	Hold		Min	Min			Min	Hold	Coord	Gap	Coord	Gap

Intersection Summary

Cycle Length: 256

Actuated Cycle Length: 256

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

Control Type: Actuated-Coordinated

Queues

3: WHARTON WEEMS & NB FRONTAGE

11/22/2023



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	77	112	43	209	157	30
v/c Ratio	0.51	0.39	0.27	0.77	0.04	0.02
Control Delay (s/veh)	90.0	76.1	121.7	30.3	6.3	0.0
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay (s/veh)	90.0	76.1	121.7	30.3	6.3	0.0
Queue Length 50th (ft)	85	119	38	0	18	0
Queue Length 95th (ft)	130	168	65	104	34	0
Internal Link Dist (ft)		178	194		120	
Turn Bay Length (ft)						
Base Capacity (vph)	750	789	760	504	3975	1275
Starvation Cap Reductn	48	138	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.17	0.06	0.41	0.04	0.02

Intersection Summary

Lanes, Volumes, Timings
6: SB FRONTAGE & WHARTON WEEMS

11/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↑					↖	↑↑	↗
Traffic Volume (vph)	0	129	14	30	54	0	0	0	0	88	56	118
Future Volume (vph)	0	129	14	30	54	0	0	0	0	88	56	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1863	1583	1770	1863	0	0	0	0	1770	3539	1583
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1863	1583	1770	1863	0	0	0	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			104									128
Link Speed (mph)		35			45			40			40	
Link Distance (ft)		400			258			161			232	
Travel Time (s)		7.8			3.9			2.7			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	140	15	33	59	0	0	0	0	96	61	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	140	15	33	59	0	0	0	0	96	61	128
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	R NA	Left	R NA
Median Width(ft)		14			24			12			12	
Link Offset(ft)		0			0			5			0	
Crosswalk Width(ft)		12			36			16			36	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	2	2					3	3	3
Detector Template		TXLT	Right							TX40	TX40	TX40
Leading Detector (ft)		0	20	156	156					240	240	240
Trailing Detector (ft)		0	0	5	5					-5	-5	-5
Detector 1 Position(ft)		-5	0	5	5					-5	-5	-5
Detector 1 Size(ft)		20	20	6	6					20	20	20
Detector 1 Type		Call	CI+Ex	CI+Ex	CI+Ex					CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 2 Position(ft)		21		150	150					104	104	104
Detector 2 Size(ft)		20		6	6					6	6	6
Detector 2 Type		Call		CI+Ex	CI+Ex					CI+Ex	CI+Ex	CI+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 3 Position(ft)										234	234	234
Detector 3 Size(ft)										6	6	6
Detector 3 Type										CI+Ex	CI+Ex	CI+Ex
Detector 3 Channel												
Detector 3 Extend (s)										0.0	0.0	0.0
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm

Lane Group	Ø1	Ø2	Ø4	Ø8	Ø12	Ø16
Lane Configurations						
Traffic Volume (vph)						
Future Volume (vph)						
Ideal Flow (vphpl)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Right Turn on Red						
Satd. Flow (RTOR)						
Link Speed (mph)						
Link Distance (ft)						
Travel Time (s)						
Peak Hour Factor						
Adj. Flow (vph)						
Shared Lane Traffic (%)						
Lane Group Flow (vph)						
Enter Blocked Intersection						
Lane Alignment						
Median Width(ft)						
Link Offset(ft)						
Crosswalk Width(ft)						
Two way Left Turn Lane						
Headway Factor						
Turning Speed (mph)						
Number of Detectors						
Detector Template						
Leading Detector (ft)						
Trailing Detector (ft)						
Detector 1 Position(ft)						
Detector 1 Size(ft)						
Detector 1 Type						
Detector 1 Channel						
Detector 1 Extend (s)						
Detector 1 Queue (s)						
Detector 1 Delay (s)						
Detector 2 Position(ft)						
Detector 2 Size(ft)						
Detector 2 Type						
Detector 2 Channel						
Detector 2 Extend (s)						
Detector 3 Position(ft)						
Detector 3 Size(ft)						
Detector 3 Type						
Detector 3 Channel						
Detector 3 Extend (s)						
Turn Type						

Lanes, Volumes, Timings
6: SB FRONTAGE & WHARTON WEEMS

11/22/2023

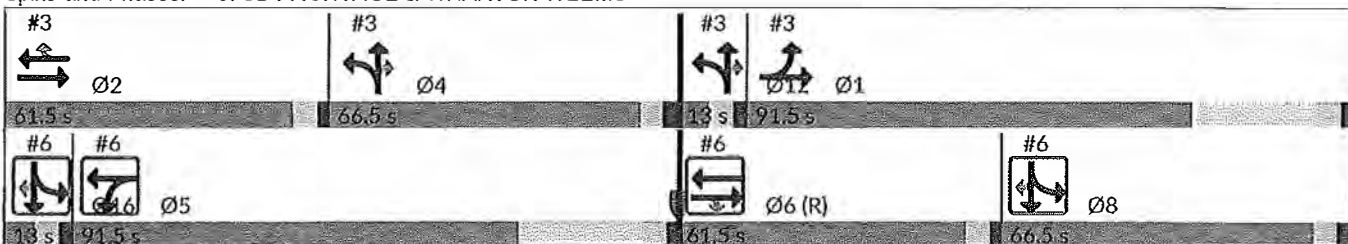


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		6		5	6 5					16 8	16 8	
Permitted Phases			6									16 8
Detector Phase		6	6	5	6 5					16 8	16 8	16 8
Switch Phase												
Minimum Initial (s)		10.0	10.0	5.0								
Minimum Split (s)		32.5	32.5	11.5								
Total Split (s)		61.5	61.5	91.5								
Total Split (%)		24.0%	24.0%	35.7%								
Maximum Green (s)		55.0	55.0	85.0								
Yellow Time (s)		4.5	4.5	4.5								
All-Red Time (s)		2.0	2.0	2.0								
Lost Time Adjust (s)		0.0	0.0	0.0								
Total Lost Time (s)		6.5	6.5	6.5								
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		2.0	2.0	2.0								
Recall Mode		C-Min	C-Min	None								
Walk Time (s)		7.0	7.0									
Flash Dont Walk (s)		12.0	12.0									
Pedestrian Calls (#/hr)		0	0									
Act Effct Green (s)		192.7	192.7	14.5	213.7					28.8	28.8	28.8
Actuated g/C Ratio		0.75	0.75	0.06	0.83					0.11	0.11	0.11
v/c Ratio		0.10	0.01	0.33	0.04					0.48	0.15	0.44
Control Delay (s/veh)		9.3	0.0	73.1	4.5					114.1	102.1	16.5
Queue Delay		0.0	0.0	0.0	1.6					0.0	0.0	0.0
Total Delay (s/veh)		9.3	0.0	73.1	6.1					114.1	102.1	16.5
LOS		A	A	E	A					F	F	B
Approach Delay (s/veh)		8.4			30.1						67.7	
Approach LOS		A			C						E	

Intersection Summary

Area Type: Other
 Cycle Length: 256
 Actuated Cycle Length: 256
 Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay (s/veh): 43.9
 Intersection Capacity Utilization 39.4%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service A

Splits and Phases: 6: SB FRONTAGE & WHARTON WEEMS



Exist AM 8:09 am 11/20/2023 Baseline

Lane Group	Ø1	Ø2	Ø4	Ø8	Ø12	Ø16
Protected Phases	1	2	4	8	12	16
Permitted Phases						
Detector Phase						
Switch Phase						
Minimum Initial (s)	5.0	10.0	8.0	8.0	2.0	2.0
Minimum Split (s)	22.5	33.5	55.0	46.0	9.0	9.0
Total Split (s)	91.5	61.5	66.5	66.5	13.0	13.0
Total Split (%)	36%	24%	26%	26%	5%	5%
Maximum Green (s)	85.0	55.0	59.5	59.5	6.0	6.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.5	2.5	2.5	2.5
Lost Time Adjust (s)						
Total Lost Time (s)						
Lead/Lag	Lag	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min	Min	Min	None	None
Walk Time (s)		7.0	7.0	7.0		
Flash Dont Walk (s)		13.0	34.0	25.0		
Pedestrian Calls (#/hr)		0	0	0		
Act Effct Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay (s/veh)						
Queue Delay						
Total Delay (s/veh)						
LOS						
Approach Delay (s/veh)						
Approach LOS						
Intersection Summary						

Phasings

6: SB FRONTAGE & WHARTON WEEMS

11/22/2023



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø2	Ø4	Ø8	Ø12
Protected Phases	6		5	6 5	16 8	16 8		1	2	4	8	12
Permitted Phases		6					16 8					
Minimum Initial (s)	10.0	10.0	5.0					5.0	10.0	8.0	8.0	2.0
Minimum Split (s)	32.5	32.5	11.5					22.5	33.5	55.0	46.0	9.0
Total Split (s)	61.5	61.5	91.5					91.5	61.5	66.5	66.5	13.0
Total Split (%)	24.0%	24.0%	35.7%					36%	24%	26%	26%	5%
Maximum Green (s)	55.0	55.0	85.0					85.0	55.0	59.5	59.5	6.0
Yellow Time (s)	4.5	4.5	4.5					4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.5	2.5	2.5
Lead/Lag	Lead	Lead	Lag					Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes					Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Min	C-Min	None					None	Min	Min	Min	None
Walk Time (s)	7.0	7.0							7.0	7.0	7.0	
Flash Dont Walk (s)	12.0	12.0							13.0	34.0	25.0	
Pedestrian Calls (#/hr)	0	0							0	0	0	
90th %ile Green (s)	180.0	180.0	20.3					30.6	17.4	9.1	22.5	171.9
90th %ile Term Code	Coord	Coord	Hold					Hold	Gap	Gap	Gap	Coord
70th %ile Green (s)	192.3	192.3	13.0					23.9	10.0	8.0	18.7	187.1
70th %ile Term Code	Coord	Coord	Hold					Hold	Min	Min	Gap	Coord
50th %ile Green (s)	194.4	194.4	13.0					20.6	10.0	8.0	16.6	190.4
50th %ile Term Code	Coord	Coord	Hold					Hold	Min	Min	Gap	Coord
30th %ile Green (s)	196.6	196.6	13.1					18.4	10.0	8.0	14.4	192.6
30th %ile Term Code	Coord	Coord	Hold					Hold	Min	Min	Gap	Coord
10th %ile Green (s)	200.0	200.0	13.3					15.2	10.0	8.0	11.0	195.8
10th %ile Term Code	Coord	Coord	Hold					Hold	Min	Min	Gap	Coord

Intersection Summary

Cycle Length: 256

Actuated Cycle Length: 256

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

Control Type: Actuated-Coordinated

Lane Group	Ø16
Protected Phases	16
Permitted Phases	
Minimum Initial (s)	2.0
Minimum Split (s)	9.0
Total Split (s)	13.0
Total Split (%)	5%
Maximum Green (s)	6.0
Yellow Time (s)	4.5
All-Red Time (s)	2.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.0
Minimum Gap (s)	3.0
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
90th %ile Green (s)	6.2
90th %ile Term Code	Gap
70th %ile Green (s)	5.0
70th %ile Term Code	Gap
50th %ile Green (s)	5.0
50th %ile Term Code	Gap
30th %ile Green (s)	4.9
30th %ile Term Code	Gap
10th %ile Green (s)	4.7
10th %ile Term Code	Gap
Intersection Summary	

Queues

6: SB FRONTAGE & WHARTON WEEMS

11/22/2023



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	140	15	33	59	96	61	128
v/c Ratio	0.10	0.01	0.33	0.04	0.48	0.15	0.44
Control Delay (s/veh)	9.3	0.0	73.1	4.5	114.1	102.1	16.5
Queue Delay	0.0	0.0	0.0	1.6	0.0	0.0	0.0
Total Delay (s/veh)	9.3	0.0	73.1	6.1	114.1	102.1	16.5
Queue Length 50th (ft)	58	0	53	50	156	50	0
Queue Length 95th (ft)	104	0	95	78	226	78	78
Internal Link Dist (ft)	320			178		152	
Turn Bay Length (ft)							
Base Capacity (vph)	1401	1216	750	1555	411	822	466
Starvation Cap Reductn	0	0	0	1381	0	0	0
Spillback Cap Reductn	0	0	0	0	1	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.01	0.04	0.34	0.23	0.07	0.27

Intersection Summary

Lanes, Volumes, Timings
 9: Fairmond Greens & WHARTON WEEMS

11/22/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Volume (vph)	103	14	5	216	33	13
Future Volume (vph)	103	14	5	216	33	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984				0.962	
Flt Protected				0.999	0.965	
Satd. Flow (prot)	1833	0	0	1861	1729	0
Flt Permitted				0.999	0.965	
Satd. Flow (perm)	1833	0	0	1861	1729	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	351			741	214	
Travel Time (s)	13.8			16.8	8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	112	15	5	235	36	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	127	0	0	240	50	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 25.4% ICU Level of Service A
 Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.4

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	103	14	5	216	33	13
Future Vol, veh/h	103	14	5	216	33	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	112	15	5	235	36	14

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	127	0	365	120
Stage 1	-	-	-	-	120	-
Stage 2	-	-	-	-	246	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1459	-	634	932
Stage 1	-	-	-	-	906	-
Stage 2	-	-	-	-	795	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1459	-	632	932
Mov Cap-2 Maneuver	-	-	-	-	632	-
Stage 1	-	-	-	-	906	-
Stage 2	-	-	-	-	792	-

Approach EB WB NB

HCM Control Delay, s/v 0 0.17 10.58
 HCM LOS B

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	695	-	-	41	-
HCM Lane V/C Ratio	0.072	-	-	0.004	-
HCM Control Delay (s/veh)	10.6	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Lanes, Volumes, Timings
 10: NB FRONTAGE/WHARTON WEEMS & NB UTURN

11/22/2023



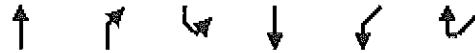
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	↰	↑↑↑↑				
Traffic Volume (vph)	52	176	0	0	0	0
Future Volume (vph)	52	176	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	0			0	0	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	0.86	1.00	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	6408	0	0	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	6408	0	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		216	200		107	
Travel Time (s)		5.9	4.8		2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	191	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	191	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.0%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
 17: SB FRONTAGE & NB UTURN

11/22/2023



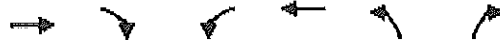
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations				↑↑↑	↘	
Traffic Volume (vph)	0	0	0	100	52	0
Future Volume (vph)	0	0	0	100	52	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00
Fr						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	5085	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	5085	1770	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	359			161	88	
Travel Time (s)	11.1			3.5	2.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	109	57	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	109	57	0
Enter Blocked Intersection	No	No	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Yield	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.0%
	ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
19: WHARTON WEEMS

11/22/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	741			1642	162	
Travel Time (s)	16.8			13.1	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
ICU Level of Service	A
Analysis Period (min)	15

Intersection

Int Delay, s/veh 0

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↔			↕	↕	
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1622	-	1020	1083
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1020	1083
Mov Cap-2 Maneuver	-	-	-	-	1020	-
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1022	-

Approach EB WB NB

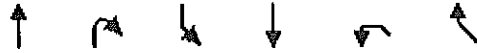
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	-	-	-	1622	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Lanes, Volumes, Timings
 20: SB FRONTAGE & SB UTURN

11/22/2023



Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations			↵	↑↑↑		
Traffic Volume (vph)	0	0	36	262	0	0
Future Volume (vph)	0	0	36	262	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	0	0	1770	5085	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1770	5085	0	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	232			276	158	
Travel Time (s)	8.3			11.2	6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	39	285	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	39	285	0	0
Enter Blocked Intersection	No	No	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			12	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	8.4%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
23: SB UTURN & NB FRONTAGE

11/22/2023



Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↑↑↑			↵	
Traffic Volume (vph)	0	372	0	0	36	0
Future Volume (vph)	0	372	0	0	36	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	1.00	1.00	1.00	1.00
Flt						
Flt Protected					0.950	
Satd. Flow (prot)	0	5085	0	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	5085	0	0	1770	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		186	297		119	
Travel Time (s)		4.0	6.8		3.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	404	0	0	39	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	404	0	0	39	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Yield	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.2%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
24: WHARTON WEEMS

11/22/2023



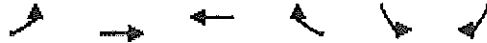
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	0
Link Speed (mph)		45	45		30	
Link Distance (ft)		265	351		135	
Travel Time (s)		6.0	7.8		3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	6.7%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
26: WHARTON WEEMS

11/22/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	0
Link Speed (mph)		45	45		30	
Link Distance (ft)		274	136		169	
Travel Time (s)		5.8	2.9		3.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	36		0	
Link Offset(ft)		0	6		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	6.7%
	ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
28: NB FRONTAGE

11/22/2023



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	0	0	5085	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	0	5085	0	0	0
Link Speed (mph)	30		40			40
Link Distance (ft)	152		257			216
Travel Time (s)	3.5		6.3			5.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	Yes	Yes	No	No
Lane Alignment	Left	Right	Right	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		12			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Free		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization:	15.8%
Analysis Period (min):	15
	ICU Level of Service A

Lanes, Volumes, Timings
30: NB FRONTAGE

11/22/2023



Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	↵	↑↑				
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Fr						
Fit Protected						
Satd. Flow (prot)	1863	3539	0	0	0	0
Fit Permitted						
Satd. Flow (perm)	1863	3539	0	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		489	481		247	
Travel Time (s)		11.1	10.9		3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	65			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.2%
	ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
32: WHARTON WEEMS

11/22/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	3539	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	3539	0	0	0
Link Speed (mph)		35	35		30	
Link Distance (ft)		871	400		132	
Travel Time (s)		24.6	4.7		3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings

34: SB FRONTAGE

11/22/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑↑	
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00
Fr						
Flt Protected						
Satd. Flow (prot)	0	0	0	0	5085	0
Flt Permitted						
Satd. Flow (perm)	0	0	0	0	5085	0
Link Speed (mph)	30			40	40	
Link Distance (ft)	118			276	232	
Travel Time (s)	2.7			6.3	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	Yes	Yes
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Free			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	8.4%
	ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
 1: S Broadway & WHARTON WEEMS

11/22/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	240	106	143	249	49
Future Volume (vph)	40	240	106	143	249	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	200			0
Storage Lanes	0	0	1			0
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.884				0.978	
Flt Protected	0.993		0.950			
Satd. Flow (prot)	1635	0	1770	1863	1822	0
Flt Permitted	0.993		0.950			
Satd. Flow (perm)	1635	0	1770	1863	1822	0
Link Speed (mph)	45			30	30	
Link Distance (ft)	1642			796	680	
Travel Time (s)	24.9			18.1	15.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	261	115	155	271	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	304	0	115	155	324	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.0%
	ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	6.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		W	↑	↑	
Traffic Vol, veh/h	40	240	106	143	249	49
Future Vol, veh/h	40	240	106	143	249	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	261	115	155	271	53

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	683	297	324	0	-	0
Stage 1	297	-	-	-	-	-
Stage 2	386	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	415	742	1236	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	687	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	376	742	1236	-	-	-
Mov Cap-2 Maneuver	376	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	687	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v15.27		3.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1236	-	652	-	-
HCM Lane V/C Ratio	0.093	-	0.467	-	-
HCM Control Delay (s/veh)	8.2	-	15.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %ile Q(veh)	0.3	-	2.5	-	-

Lanes, Volumes, Timings
 3: WHARTON WEEMS & NB FRONTAGE

11/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑			↑↑	↗		↑↑↑	↗			
Traffic Volume (vph)	90	263	0	0	43	120	18	53	31	0	0	0
Future Volume (vph)	90	263	0	0	43	120	18	53	31	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.987				
Satd. Flow (prot)	1770	1863	0	0	3539	1583	0	5019	1583	0	0	0
Flt Permitted	0.950							0.987				
Satd. Flow (perm)	1770	1863	0	0	3539	1583	0	5019	1583	0	0	0
Right Turn on Red			Yes			Yes		Yes				Yes
Satd. Flow (RTOR)						130			102			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		258			274			200			186	
Travel Time (s)		3.9			4.2			3.4			3.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	286	0	0	47	130	20	58	34	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	286	0	0	47	130	0	78	34	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		28			20			36			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15			9	15		9	15	9
Number of Detectors	2	2			2	2	1	3	3			
Detector Template					TXLT	TXLT	Left	TX40	TX40			
Leading Detector (ft)	156	156			0	0	20	240	240			
Trailing Detector (ft)	5	5			0	0	0	-5	-5			
Detector 1 Position(ft)	5	5			-5	-5	0	-5	-5			
Detector 1 Size(ft)	6	6			20	20	20	20	20			
Detector 1 Type	CI+Ex	CI+Ex			Call	Call	CI+Ex	CI+Ex	CI+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)	150	150			21	21		104	104			
Detector 2 Size(ft)	6	6			20	20		6	6			
Detector 2 Type	CI+Ex	CI+Ex			Call	Call		CI+Ex	CI+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 3 Position(ft)								234	234			
Detector 3 Size(ft)								6	6			
Detector 3 Type								CI+Ex	CI+Ex			
Detector 3 Channel												
Detector 3 Extend (s)								0.0	0.0			
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			

Lane Group	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Lane Configurations						
Traffic Volume (vph)						
Future Volume (vph)						
Ideal Flow (vphpl)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Right Turn on Red						
Satd. Flow (RTOR)						
Link Speed (mph)						
Link Distance (ft)						
Travel Time (s)						
Peak Hour Factor						
Adj. Flow (vph)						
Shared Lane Traffic (%)						
Lane Group Flow (vph)						
Enter Blocked Intersection						
Lane Alignment						
Median Width(ft)						
Link Offset(ft)						
Crosswalk Width(ft)						
Two way Left Turn Lane						
Headway Factor						
Turning Speed (mph)						
Number of Detectors						
Detector Template						
Leading Detector (ft)						
Trailing Detector (ft)						
Detector 1 Position(ft)						
Detector 1 Size(ft)						
Detector 1 Type						
Detector 1 Channel						
Detector 1 Extend (s)						
Detector 1 Queue (s)						
Detector 1 Delay (s)						
Detector 2 Position(ft)						
Detector 2 Size(ft)						
Detector 2 Type						
Detector 2 Channel						
Detector 2 Extend (s)						
Detector 3 Position(ft)						
Detector 3 Size(ft)						
Detector 3 Type						
Detector 3 Channel						
Detector 3 Extend (s)						
Turn Type						

Lanes, Volumes, Timings
 3: WHARTON WEEMS & NB FRONTAGE

11/22/2023

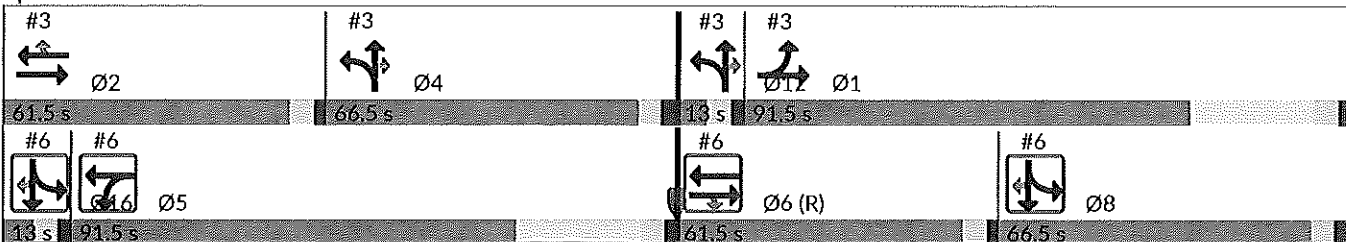


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	2 1			2		4 12	4 12				
Permitted Phases						2			4 12			
Detector Phase	1	2 1			2	2	4 12	4 12	4 12			
Switch Phase												
Minimum Initial (s)	5.0				10.0	10.0						
Minimum Split (s)	22.5				33.5	33.5						
Total Split (s)	91.5				61.5	61.5						
Total Split (%)	35.7%				24.0%	24.0%						
Maximum Green (s)	85.0				55.0	55.0						
Yellow Time (s)	4.5				4.5	4.5						
All-Red Time (s)	2.0				2.0	2.0						
Lost Time Adjust (s)	0.0				0.0	0.0						
Total Lost Time (s)	6.5				6.5	6.5						
Lead/Lag	Lag				Lead	Lead						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0				2.0	2.0						
Recall Mode	None				Min	Min						
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					13.0	13.0						
Pedestrian Calls (#/hr)					0	0						
Act Effct Green (s)	40.9	58.4			11.0	11.0	184.1	184.1				
Actuated g/C Ratio	0.16	0.23			0.04	0.04	0.72	0.72				
v/c Ratio	0.35	0.67			0.31	0.68	0.02	0.03				
Control Delay (s/veh)	56.6	47.9			123.7	31.6	11.3	0.0				
Queue Delay	0.1	0.2			0.0	0.0	0.0	0.0				
Total Delay (s/veh)	56.7	48.1			123.7	31.6	11.3	0.0				
LOS	E	D			F	C	B	A				
Approach Delay (s/veh)		50.3			56.1		7.9					
Approach LOS		D			E		A					

Intersection Summary

Area Type: Other
 Cycle Length: 256
 Actuated Cycle Length: 256
 Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay (s/veh): 44.8
 Intersection Capacity Utilization 52.0%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service A

Splits and Phases: 3: WHARTON WEEMS & NB FRONTAGE



Exist PM 11:59 am 11/22/2023 Baseline

Synchro 12 Report

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Lanes, Volumes, Timings
 3: WHARTON WEEMS & NB FRONTAGE

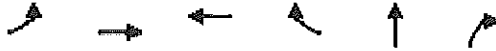
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Lane Group	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Protected Phases	4	5	6	8	12	16
Permitted Phases						
Detector Phase						
Switch Phase						
Minimum Initial (s)	8.0	5.0	10.0	8.0	2.0	2.0
Minimum Split (s)	55.0	11.5	32.5	46.0	9.0	9.0
Total Split (s)	66.5	91.5	61.5	66.5	13.0	13.0
Total Split (%)	26%	36%	24%	26%	5%	5%
Maximum Green (s)	59.5	85.0	55.0	59.5	6.0	6.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.5	2.0	2.0	2.5	2.5	2.5
Lost Time Adjust (s)						
Total Lost Time (s)						
Lead/Lag	Lag	Lag	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Min	None	C-Min	Min	None	None
Walk Time (s)	7.0		7.0	7.0		
Flash Dont Walk (s)	34.0		12.0	25.0		
Pedestrian Calls (#/hr)	0		0	0		
Act Effct Green (s)						
Actuated g/C Ratio						
w/c Ratio						
Control Delay (s/veh)						
Queue Delay						
Total Delay (s/veh)						
LOS						
Approach Delay (s/veh)						
Approach LOS						
Intersection Summary						

Phasings

3: WHARTON WEEMS & NB FRONTAGE

11/22/2023



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Protected Phases	1	2 1	2		4 12		4	5	6	8	12	16
Permitted Phases				2		4 12						
Minimum Initial (s)	5.0		10.0	10.0			8.0	5.0	10.0	8.0	2.0	2.0
Minimum Split (s)	22.5		33.5	33.5			55.0	11.5	32.5	46.0	9.0	9.0
Total Split (s)	91.5		61.5	61.5			66.5	91.5	61.5	66.5	13.0	13.0
Total Split (%)	35.7%		24.0%	24.0%			26%	36%	24%	26%	5%	5%
Maximum Green (s)	85.0		55.0	55.0			59.5	85.0	55.0	59.5	6.0	6.0
Yellow Time (s)	4.5		4.5	4.5			4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0		2.0	2.0			2.5	2.0	2.0	2.5	2.5	2.5
Lead/Lag	Lag		Lead	Lead			Lag	Lag	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0		2.0	2.0			2.0	2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	3.0		3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None		Min	Min			Min	None	C-Min	Min	None	None
Walk Time (s)			7.0	7.0			7.0		7.0	7.0		
Flash Dont Walk (s)			13.0	13.0			34.0		12.0	25.0		
Pedestrian Calls (#/hr)			0	0			0		0	0		
90th %ile Green (s)	51.4		15.0	15.0			8.0	14.9	162.6	43.4	154.6	8.1
90th %ile Term Code	Hold		Gap	Gap			Min	Hold	Coord	Gap	Coord	Gap
70th %ile Green (s)	44.0		10.0	10.0			8.0	11.1	172.6	38.4	167.0	6.9
70th %ile Term Code	Gap		Min	Min			Min	Hold	Coord	Hold	Coord	Gap
50th %ile Green (s)	40.6		10.0	10.0			8.0	12.3	174.4	36.6	170.4	5.7
50th %ile Term Code	Gap		Min	Min			Min	Hold	Coord	Hold	Coord	Gap
30th %ile Green (s)	36.8		10.0	10.0			8.0	12.5	178.4	32.6	174.2	5.5
30th %ile Term Code	Gap		Min	Min			Min	Hold	Coord	Hold	Coord	Gap
10th %ile Green (s)	31.5		10.0	10.0			8.0	0.0	184.4	26.6	179.5	24.5
10th %ile Term Code	Hold		Min	Min			Min	Skip	Coord	Gap	Coord	Hold

Intersection Summary

Cycle Length: 256

Actuated Cycle Length: 256

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

Control Type: Actuated-Coordinated

Queues

3: WHARTON WEEMS & NB FRONTAGE

11/22/2023



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	98	286	47	130	78	34
v/c Ratio	0.35	0.67	0.31	0.68	0.02	0.03
Control Delay (s/veh)	56.6	47.9	123.7	31.6	11.3	0.0
Queue Delay	0.1	0.2	0.0	0.0	0.0	0.0
Total Delay (s/veh)	56.7	48.1	123.7	31.6	11.3	0.0
Queue Length 50th (ft)	67	171	41	0	13	0
Queue Length 95th (ft)	109	207	70	86	24	0
Internal Link Dist (ft)		178	194		120	
Turn Bay Length (ft)						
Base Capacity (vph)	750	795	760	442	3610	1167
Starvation Cap Reductn	150	106	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.42	0.06	0.29	0.02	0.03

Intersection Summary

Lanes, Volumes, Timings
6: SB FRONTAGE & WHARTON WEEMS

11/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↑					↖	↑↑	↗
Traffic Volume (vph)	0	88	31	25	30	0	0	0	0	228	65	60
Future Volume (vph)	0	88	31	25	30	0	0	0	0	228	65	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Flt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1863	1583	1770	1863	0	0	0	0	1770	3539	1583
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1863	1583	1770	1863	0	0	0	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			104									102
Link Speed (mph)		35			45			40			40	
Link Distance (ft)		400			258			161			232	
Travel Time (s)		7.8			3.9			2.7			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	96	34	27	33	0	0	0	0	248	71	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	96	34	27	33	0	0	0	0	248	71	65
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	R NA	Left	R NA
Median Width(ft)		14			24			12			12	
Link Offset(ft)		0			0			5			0	
Crosswalk Width(ft)		12			36			16			36	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors			2	1	2					3	3	3
Detector Template		TXLT	Right							TX40	TX40	TX40
Leading Detector (ft)		0	20	156	156					240	240	240
Trailing Detector (ft)		0	0	5	5					-5	-5	-5
Detector 1 Position(ft)		-5	0	5	5					-5	-5	-5
Detector 1 Size(ft)		20	20	6	6					20	20	20
Detector 1 Type		Call	CI+Ex	CI+Ex	CI+Ex					CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 2 Position(ft)		21		150	150					104	104	104
Detector 2 Size(ft)		20		6	6					6	6	6
Detector 2 Type		Call		CI+Ex	CI+Ex					CI+Ex	CI+Ex	CI+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 3 Position(ft)										234	234	234
Detector 3 Size(ft)										6	6	6
Detector 3 Type										CI+Ex	CI+Ex	CI+Ex
Detector 3 Channel												
Detector 3 Extend (s)										0.0	0.0	0.0
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm

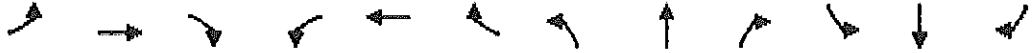
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Synchro 12 Report
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Lane Group	Ø1	Ø2	Ø4	Ø8	Ø12	Ø16
Lane Configurations						
Traffic Volume (vph)						
Future Volume (vph)						
Ideal Flow (vphpl)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Right Turn on Red						
Satd. Flow (RTOR)						
Link Speed (mph)						
Link Distance (ft)						
Travel Time (s)						
Peak Hour Factor						
Adj. Flow (vph)						
Shared Lane Traffic (%)						
Lane Group Flow (vph)						
Enter Blocked Intersection						
Lane Alignment						
Median Width(ft)						
Link Offset(ft)						
Crosswalk Width(ft)						
Two way Left Turn Lane						
Headway Factor						
Turning Speed (mph)						
Number of Detectors						
Detector Template						
Leading Detector (ft)						
Trailing Detector (ft)						
Detector 1 Position(ft)						
Detector 1 Size(ft)						
Detector 1 Type						
Detector 1 Channel						
Detector 1 Extend (s)						
Detector 1 Queue (s)						
Detector 1 Delay (s)						
Detector 2 Position(ft)						
Detector 2 Size(ft)						
Detector 2 Type						
Detector 2 Channel						
Detector 2 Extend (s)						
Detector 3 Position(ft)						
Detector 3 Size(ft)						
Detector 3 Type						
Detector 3 Channel						
Detector 3 Extend (s)						
Turn Type						

Lanes, Volumes, Timings
6: SB FRONTAGE & WHARTON WEEMS

11/22/2023

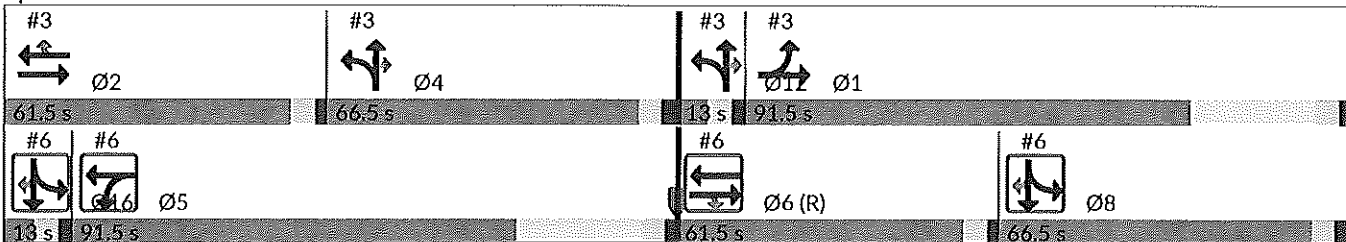


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		6		5	6 5					16 8	16 8	
Permitted Phases			6									16 8
Detector Phase		6	6	5	6 5					16 8	16 8	16 8
Switch Phase												
Minimum Initial (s)		10.0	10.0	5.0								
Minimum Split (s)		32.5	32.5	11.5								
Total Split (s)		61.5	61.5	91.5								
Total Split (%)		24.0%	24.0%	35.7%								
Maximum Green (s)		55.0	55.0	85.0								
Yellow Time (s)		4.5	4.5	4.5								
All-Red Time (s)		2.0	2.0	2.0								
Lost Time Adjust (s)		0.0	0.0	0.0								
Total Lost Time (s)		6.5	6.5	6.5								
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		2.0	2.0	2.0								
Recall Mode		C-Min	C-Min	None								
Walk Time (s)		7.0	7.0									
Flash Dont Walk (s)		12.0	12.0									
Pedestrian Calls (#/hr)		0	0									
Act Effct Green (s)		174.5	174.5	11.2	190.8					52.7	52.7	52.7
Actuated g/c Ratio		0.68	0.68	0.04	0.75					0.21	0.21	0.21
v/c Ratio		0.08	0.03	0.35	0.02					0.68	0.10	0.16
Control Delay (s/veh)		14.8	0.1	52.4	7.0					104.4	82.6	1.3
Queue Delay		0.0	0.0	0.0	0.0					0.3	0.0	0.0
Total Delay (s/veh)		14.8	0.1	52.4	7.0					104.7	82.6	1.3
LOS		B	A	D	A					F	F	A
Approach Delay (s/veh)		11.0			27.4						83.1	
Approach LOS		B			C						F	

Intersection Summary

Area Type: Other
 Cycle Length: 256
 Actuated Cycle Length: 256
 Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay (s/veh): 61.0
 Intersection Capacity Utilization 52.0%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service A

Splits and Phases: 6: SB FRONTAGE & WHARTON WEEMS



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Synchro 12 Report

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Lane Group	Ø1	Ø2	Ø4	Ø8	Ø12	Ø16
Protected Phases	1	2	4	8	12	16
Permitted Phases						
Detector Phase						
Switch Phase						
Minimum Initial (s)	5.0	10.0	8.0	8.0	2.0	2.0
Minimum Split (s)	22.5	33.5	55.0	46.0	9.0	9.0
Total Split (s)	91.5	61.5	66.5	66.5	13.0	13.0
Total Split (%)	36%	24%	26%	26%	5%	5%
Maximum Green (s)	85.0	55.0	59.5	59.5	6.0	6.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.5	2.5	2.5	2.5
Lost Time Adjust (s)						
Total Lost Time (s)						
Lead/Lag	Lag	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min	Min	Min	None	None
Walk Time (s)		7.0	7.0	7.0		
Flash Dont Walk (s)		13.0	34.0	25.0		
Pedestrian Calls (#/hr)		0	0	0		
Act Effct Green (s)						
Actuated g/C Ratio						
w/c Ratio						
Control Delay (s/veh)						
Queue Delay						
Total Delay (s/veh)						
LOS						
Approach Delay (s/veh)						
Approach LOS						
Intersection Summary						

Phasings

6: SB FRONTAGE & WHARTON WEEMS

11/22/2023



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø2	Ø4	Ø8	Ø12
Protected Phases	6		5	6 5	16 8	16 8		1	2	4	8	12
Permitted Phases		6					16 8					
Minimum Initial (s)	10.0	10.0	5.0					5.0	10.0	8.0	8.0	2.0
Minimum Split (s)	32.5	32.5	11.5					22.5	33.5	55.0	46.0	9.0
Total Split (s)	61.5	61.5	91.5					91.5	61.5	66.5	66.5	13.0
Total Split (%)	24.0%	24.0%	35.7%					36%	24%	26%	26%	5%
Maximum Green (s)	55.0	55.0	85.0					85.0	55.0	59.5	59.5	6.0
Yellow Time (s)	4.5	4.5	4.5					4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.5	2.5	2.5
Lead/Lag	Lead	Lead	Lag					Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes					Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Min	C-Min	None					None	Min	Min	Min	None
Walk Time (s)	7.0	7.0							7.0	7.0	7.0	
Flash Dont Walk (s)	12.0	12.0							13.0	34.0	25.0	
Pedestrian Calls (#/hr)	0	0							0	0	0	
90th %ile Green (s)	162.6	162.6	14.9					51.4	15.0	8.0	43.4	154.6
90th %ile Term Code	Coord	Coord	Hold					Hold	Gap	Min	Gap	Coord
70th %ile Green (s)	172.6	172.6	11.1					44.0	10.0	8.0	38.4	167.0
70th %ile Term Code	Coord	Coord	Hold					Gap	Min	Min	Hold	Coord
50th %ile Green (s)	174.4	174.4	12.3					40.6	10.0	8.0	36.6	170.4
50th %ile Term Code	Coord	Coord	Hold					Gap	Min	Min	Hold	Coord
30th %ile Green (s)	178.4	178.4	12.5					36.8	10.0	8.0	32.6	174.2
30th %ile Term Code	Coord	Coord	Hold					Gap	Min	Min	Hold	Coord
10th %ile Green (s)	184.4	184.4	0.0					31.5	10.0	8.0	26.6	179.5
10th %ile Term Code	Coord	Coord	Skip					Hold	Min	Min	Gap	Coord

Intersection Summary

Cycle Length: 256
 Actuated Cycle Length: 256
 Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green
 Control Type: Actuated-Coordinated

Lane Group	Ø16
Protected Phases	16
Permitted Phases	
Minimum Initial (s)	2.0
Minimum Split (s)	9.0
Total Split (s)	13.0
Total Split (%)	5%
Maximum Green (s)	6.0
Yellow Time (s)	4.5
All-Red Time (s)	2.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.0
Minimum Gap (s)	3.0
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
90th %ile Green (s)	8.1
90th %ile Term Code	Gap
70th %ile Green (s)	6.9
70th %ile Term Code	Gap
50th %ile Green (s)	5.7
50th %ile Term Code	Gap
30th %ile Green (s)	5.5
30th %ile Term Code	Gap
10th %ile Green (s)	24.5
10th %ile Term Code	Hold
Intersection Summary	

Queues

6: SB FRONTAGE & WHARTON WEEMS

11/22/2023



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	96	34	27	33	248	71	65
v/c Ratio	0.08	0.03	0.35	0.02	0.68	0.10	0.16
Control Delay (s/veh)	14.8	0.1	52.4	7.0	104.4	82.6	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay (s/veh)	14.8	0.1	52.4	7.0	104.7	82.6	1.3
Queue Length 50th (ft)	53	0	44	41	402	53	0
Queue Length 95th (ft)	92	0	84	75	502	80	3
Internal Link Dist (ft)	320			178		152	
Turn Bay Length (ft)							
Base Capacity (vph)	1269	1112	750	1409	411	822	446
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	50	0	0	0	15	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.03	0.04	0.02	0.63	0.09	0.15

Intersection Summary

Lanes, Volumes, Timings
 9: Fairmont Greens & WHARTON WEEMS

11/22/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕		↕
Traffic Volume (vph)	276	29	7	142	13	8
Future Volume (vph)	276	29	7	142	13	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987				0.947	
Flt Protected				0.998	0.970	
Satd. Flow (prot)	1839	0	0	1859	1711	0
Flt Permitted				0.998	0.970	
Satd. Flow (perm)	1839	0	0	1859	1711	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	351			741	214	
Travel Time (s)	13.8			16.8	8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	300	32	8	154	14	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	332	0	0	162	23	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 26.3% ICU Level of Service A
 Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.6

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	276	29	7	142	13	8
Future Vol, veh/h	276	29	7	142	13	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	300	32	8	154	14	9

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	332	0	485	316
Stage 1	-	-	-	-	316	-
Stage 2	-	-	-	-	170	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1228	-	541	725
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	860	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1228	-	537	725
Mov Cap-2 Maneuver	-	-	-	-	537	-
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	854	-

Approach EB WB NB

HCM Control Delay, s/v	0	0.37	11.28
HCM LOS			B

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	596	-	-	85	-
HCM Lane V/C Ratio	0.038	-	-	0.006	-
HCM Control Delay (s/veh)	11.3	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings
 10: NB FRONTAGE/WHARTON WEEMS & NB UTURN

11/22/2023



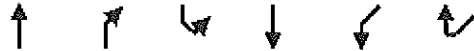
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	↰	↑↑↑↑				
Traffic Volume (vph)	29	102	0	0	0	0
Future Volume (vph)	29	102	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	0			0	0	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	0.86	1.00	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	6408	0	0	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	6408	0	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		216	200		107	
Travel Time (s)		5.9	4.8		2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	111	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	111	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.0%
ICU Level of Service	A
Analysis Period (min)	15

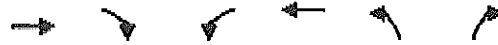
Lanes, Volumes, Timings
17: SB FRONTAGE & NB UTURN

11/22/2023



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations				↑↑↑↑	↘	
Traffic Volume (vph)	0	0	0	121	29	0
Future Volume (vph)	0	0	0	121	29	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00
Fr						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	5085	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	5085	1770	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	359			161	88	
Travel Time (s)	11.1			3.5	2.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	132	32	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	132	32	0
Enter Blocked Intersection	No	No	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Yield	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.0%
Analysis Period (min)	15
	ICU Level of Service A



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↗	↖	↗
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	741			1642	162	
Travel Time (s)	16.8			13.1	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1020
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1020
Mov Cap-2 Maneuver	-	-	-	-	1020
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1622	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Lanes, Volumes, Timings
 20: SB FRONTAGE & SB UTURN

11/22/2023

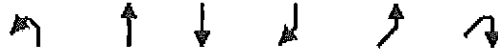
	↑	↗	↘	↓	↙	↖
Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations			↘	↑↑↑		
Traffic Volume (vph)	0	0	179	353	0	0
Future Volume (vph)	0	0	179	353	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	0	0	1770	5085	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1770	5085	0	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	232			276	158	
Travel Time (s)	8.3			11.2	6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	195	384	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	195	384	0	0
Enter Blocked Intersection	No	No	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			12	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
 23: SB UTURN & NB FRONTAGE

11/22/2023



Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↑↑↑			↘	
Traffic Volume (vph)	0	263	0	0	179	0
Future Volume (vph)	0	263	0	0	179	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	1.00	1.00	1.00	1.00
Flt						
Flt Protected					0.950	
Satd. Flow (prot)	0	5085	0	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	5085	0	0	1770	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		186	297		119	
Travel Time (s)		4.0	6.8		3.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	286	0	0	195	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	286	0	0	195	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Yield	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 21.7% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
24: WHARTON WEEMS

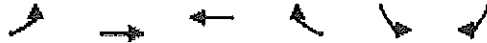
11/22/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	0
Link Speed (mph)		45	45		30	
Link Distance (ft)		265	351		135	
Travel Time (s)		6.0	7.8		3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	6.7%
ICU Level of Service	A
Analysis Period (min)	15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	0
Link Speed (mph)		45	45		30	
Link Distance (ft)		274	136		169	
Travel Time (s)		5.8	2.9		3.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	36		0	
Link Offset(ft)		0	6		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	6.7%
	ICU Level of Service A
Analysis Period (min)	15



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	0	5085	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	0	5085	0	0	0
Link Speed (mph)	30		40			40
Link Distance (ft)	152		257			216
Travel Time (s)	3.5		6.3			5.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	Yes	Yes	No	No
Lane Alignment	Left	Right	Right	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		12			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Free		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	15.8%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
30: NB FRONTAGE

11/22/2023



Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	↵	↑↑				
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	3539	0	0	0	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	0	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		489	481		247	
Travel Time (s)		11.1	10.9		3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	65			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 21.7% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
32: WHARTON WEEMS

11/22/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	3539	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	3539	0	0	0
Link Speed (mph)		35	35		30	
Link Distance (ft)		871	400		132	
Travel Time (s)		24.6	4.7		3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
34: SB FRONTAGE

11/22/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑↑	
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	0	0	0	5085	0
Flt Permitted						
Satd. Flow (perm)	0	0	0	0	5085	0
Link Speed (mph)	30			40	40	
Link Distance (ft)	118			276	232	
Travel Time (s)	2.7			6.3	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	Yes	Yes
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Free			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
	ICU Level of Service A
Analysis Period (min)	15

APPENDIX C:

Synchro Output, 2024 No Build Conditions AM & PM

Lanes, Volumes, Timings
1: S Broadway & WHARTON WEEMS

11/22/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	37	88	190	171	166	34
Future Volume (vph)	37	88	190	171	166	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	200			0
Storage Lanes	0	0	1			0
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.905				0.977	
Flt Protected	0.986		0.950			
Satd. Flow (prot)	1662	0	1770	1863	1820	0
Flt Permitted	0.986		0.950			
Satd. Flow (perm)	1662	0	1770	1863	1820	0
Link Speed (mph)	45			30	30	
Link Distance (ft)	1642			796	680	
Travel Time (s)	24.9			18.1	15.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	96	207	186	180	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	136	0	207	186	217	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.8%
ICU Level of Service	A
Analysis Period (min)	15

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘		↘	↑	↑	
Traffic Vol, veh/h	37	88	190	171	166	34
Future Vol, veh/h	37	88	190	171	166	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	96	207	186	180	37

Major/Minor

	Minor2	Major1	Major2			
Conflicting Flow All	798	199	217	0	-	0
Stage 1	199	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	355	842	1352	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	301	842	1352	-	-	-
Mov Cap-2 Maneuver	301	-	-	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach

	EB	NB	SB
HCM Control Delay, s/v	13.69	4.29	0
HCM LOS	B		

Minor Lane/Major Mvmt

	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1352	-	550	-	-
HCM Lane V/C Ratio	0.153	-	0.247	-	-
HCM Control Delay (s/veh)	8.1	-	13.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %ile Q(veh)	0.5	-	1	-	-

Lanes, Volumes, Timings
 3: WHARTON WEEMS & NB FRONTAGE

11/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑			↑↑	↗		↑↑↑	↗			
Traffic Volume (vph)	72	105	0	0	41	196	40	111	29	0	0	0
Future Volume (vph)	72	105	0	0	41	196	40	111	29	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.987				
Satd. Flow (prot)	1770	1863	0	0	3539	1583	0	5019	1583	0	0	0
Flt Permitted	0.950							0.987				
Satd. Flow (perm)	1770	1863	0	0	3539	1583	0	5019	1583	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						213			102			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		258			274			200			186	
Travel Time (s)		3.9			4.2			3.4			3.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	78	114	0	0	45	213	43	121	32	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	114	0	0	45	213	0	164	32	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		28			20			36			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2			2	2	1	3	3			
Detector Template					TXLT	TXLT	Left	TX40	TX40			
Leading Detector (ft)	156	156			0	0	20	240	240			
Trailing Detector (ft)	5	5			0	0	0	-5	-5			
Detector 1 Position(ft)	5	5			-5	-5	0	-5	-5			
Detector 1 Size(ft)	6	6			20	20	20	20	20			
Detector 1 Type	CI+Ex	CI+Ex			Call	Call	CI+Ex	CI+Ex	CI+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)	150	150			21	21		104	104			
Detector 2 Size(ft)	6	6			20	20		6	6			
Detector 2 Type	CI+Ex	CI+Ex			Call	Call		CI+Ex	CI+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 3 Position(ft)								234	234			
Detector 3 Size(ft)								6	6			
Detector 3 Type								CI+Ex	CI+Ex			
Detector 3 Channel												
Detector 3 Extend (s)								0.0	0.0			
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			

Lane Group	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Lane Configurations						
Traffic Volume (vph)						
Future Volume (vph)						
Ideal Flow (vphpl)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Right Turn on Red						
Satd. Flow (RTOR)						
Link Speed (mph)						
Link Distance (ft)						
Travel Time (s)						
Peak Hour Factor						
Adj. Flow (vph)						
Shared Lane Traffic (%)						
Lane Group Flow (vph)						
Enter Blocked Intersection						
Lane Alignment						
Median Width(ft)						
Link Offset(ft)						
Crosswalk Width(ft)						
Two way Left Turn Lane						
Headway Factor						
Turning Speed (mph)						
Number of Detectors						
Detector Template						
Leading Detector (ft)						
Trailing Detector (ft)						
Detector 1 Position(ft)						
Detector 1 Size(ft)						
Detector 1 Type						
Detector 1 Channel						
Detector 1 Extend (s)						
Detector 1 Queue (s)						
Detector 1 Delay (s)						
Detector 2 Position(ft)						
Detector 2 Size(ft)						
Detector 2 Type						
Detector 2 Channel						
Detector 2 Extend (s)						
Detector 3 Position(ft)						
Detector 3 Size(ft)						
Detector 3 Type						
Detector 3 Channel						
Detector 3 Extend (s)						
Turn Type						

Lanes, Volumes, Timings
 3: WHARTON WEEMS & NB FRONTAGE

11/22/2023

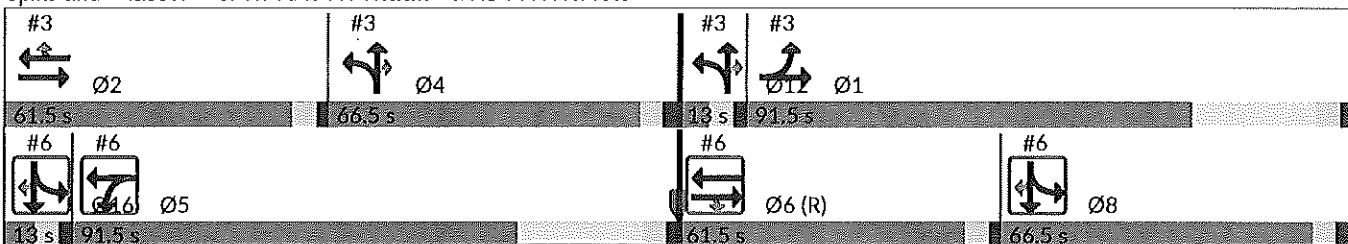


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	2 1			2		4 12	4 12				
Permitted Phases						2			4 12			
Detector Phase	1	2 1			2	2	4 12	4 12	4 12			
Switch Phase												
Minimum Initial (s)	5.0				10.0	10.0						
Minimum Split (s)	22.5				33.5	33.5						
Total Split (s)	91.5				61.5	61.5						
Total Split (%)	35.7%				24.0%	24.0%						
Maximum Green (s)	85.0				55.0	55.0						
Yellow Time (s)	4.5				4.5	4.5						
All-Red Time (s)	2.0				2.0	2.0						
Lost Time Adjust (s)	0.0				0.0	0.0						
Total Lost Time (s)	6.5				6.5	6.5						
Lead/Lag	Lag				Lead	Lead						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0				2.0	2.0						
Recall Mode	None				Min	Min						
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					13.0	13.0						
Pedestrian Calls (#/hr)					0	0						
Act Effect Green (s)	22.0	40.0			11.5	11.5	202.5	202.5				
Actuated g/C Ratio	0.09	0.16			0.04	0.04	0.79	0.79				
v/c Ratio	0.51	0.39			0.28	0.78	0.04	0.03				
Control Delay (s/veh)	90.2	76.2			122.1	30.2	6.4	0.0				
Queue Delay	0.0	0.1			0.0	0.0	0.0	0.0				
Total Delay (s/veh)	90.2	76.3			122.1	30.2	6.4	0.0				
LOS	F	E			F	C	A	A				
Approach Delay (s/veh)		81.9			46.2		5.4					
Approach LOS		F			D		A					

Intersection Summary

Area Type: Other
 Cycle Length: 256
 Actuated Cycle Length: 256
 Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay (s/veh): 44.5
 Intersection LOS: D
 Intersection Capacity Utilization 39.6%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 3: WHARTON WEEMS & NB FRONTAGE



Background AM 11:49 am 11/22/2023 Baseline

Synchro 12 Report

Lanes, Volumes, Timings
 3: WHARTON WEEMS & NB FRONTAGE

11/22/2023

Lane Group	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Protected Phases	4	5	6	8	12	16
Permitted Phases						
Detector Phase						
Switch Phase						
Minimum Initial (s)	8.0	5.0	10.0	8.0	2.0	2.0
Minimum Split (s)	55.0	11.5	32.5	46.0	9.0	9.0
Total Split (s)	66.5	91.5	61.5	66.5	13.0	13.0
Total Split (%)	26%	36%	24%	26%	5%	5%
Maximum Green (s)	59.5	85.0	55.0	59.5	6.0	6.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.5	2.0	2.0	2.5	2.5	2.5
Lost Time Adjust (s)						
Total Lost Time (s)						
Lead/Lag	Lag	Lag	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Min	None	C-Min	Min	None	None
Walk Time (s)	7.0		7.0	7.0		
Flash Dont Walk (s)	34.0		12.0	25.0		
Pedestrian Calls (#/hr)	0		0	0		
Act Effct Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay (s/veh)						
Queue Delay						
Total Delay (s/veh)						
LOS						
Approach Delay (s/veh)						
Approach LOS						
Intersection Summary						

Phasings

3: WHARTON WEEMS & NB FRONTAGE

11/22/2023



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Protected Phases	1	2 1	2		4 12		4	5	6	8	12	16
Permitted Phases				2		4 12						
Minimum Initial (s)	5.0		10.0	10.0			8.0	5.0	10.0	8.0	2.0	2.0
Minimum Split (s)	22.5		33.5	33.5			55.0	11.5	32.5	46.0	9.0	9.0
Total Split (s)	91.5		61.5	61.5			66.5	91.5	61.5	66.5	13.0	13.0
Total Split (%)	35.7%		24.0%	24.0%			26%	36%	24%	26%	5%	5%
Maximum Green (s)	85.0		55.0	55.0			59.5	85.0	55.0	59.5	6.0	6.0
Yellow Time (s)	4.5		4.5	4.5			4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0		2.0	2.0			2.5	2.0	2.0	2.5	2.5	2.5
Lead/Lag	Lag		Lead	Lead			Lag	Lag	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0		2.0	2.0			2.0	2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	3.0		3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None		Min	Min			Min	None	C-Min	Min	None	None
Walk Time (s)			7.0	7.0			7.0		7.0	7.0		
Flash Dont Walk (s)			13.0	13.0			34.0		12.0	25.0		
Pedestrian Calls (#/hr)			0	0			0		0	0		
90th %ile Green (s)	31.1		17.4	17.4			9.6	20.8	179.2	22.8	170.9	6.2
90th %ile Term Code	Hold		Gap	Gap			Gap	Hold	Coord	Gap	Coord	Gap
70th %ile Green (s)	24.3		10.0	10.0			8.0	13.0	192.1	18.9	186.7	5.0
70th %ile Term Code	Hold		Min	Min			Min	Hold	Coord	Gap	Coord	Gap
50th %ile Green (s)	20.8		10.0	10.0			8.0	13.0	194.2	16.8	190.2	5.0
50th %ile Term Code	Hold		Min	Min			Min	Hold	Coord	Gap	Coord	Gap
30th %ile Green (s)	18.7		10.0	10.0			8.0	13.1	196.3	14.7	192.3	4.9
30th %ile Term Code	Hold		Min	Min			Min	Hold	Coord	Gap	Coord	Gap
10th %ile Green (s)	15.2		10.0	10.0			8.0	13.2	199.9	11.1	195.8	4.8
10th %ile Term Code	Hold		Min	Min			Min	Hold	Coord	Gap	Coord	Gap

Intersection Summary

Cycle Length: 256

Actuated Cycle Length: 256

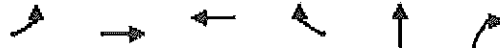
Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green

Control Type: Actuated-Coordinated

Queues

3: WHARTON WEEMS & NB FRONTAGE

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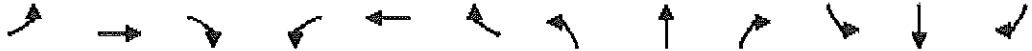


Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	78	114	45	213	164	32
v/c Ratio	0.51	0.39	0.28	0.78	0.04	0.03
Control Delay (s/veh)	90.2	76.2	122.1	30.2	6.4	0.0
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay (s/veh)	90.2	76.3	122.1	30.2	6.4	0.0
Queue Length 50th (ft)	87	121	40	0	19	0
Queue Length 95th (ft)	133	172	66	107	36	0
Internal Link Dist (ft)		178	194		120	
Turn Bay Length (ft)						
Base Capacity (vph)	750	789	760	507	3970	1273
Starvation Cap Reductn	49	139	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.18	0.06	0.42	0.04	0.03

Intersection Summary

Lanes, Volumes, Timings
 6: SB FRONTAGE & WHARTON WEEMS

11/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↑					↘	↑↑	↗
Traffic Volume (vph)	0	132	14	31	55	0	0	0	0	90	57	120
Future Volume (vph)	0	132	14	31	55	0	0	0	0	90	57	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1863	1583	1770	1863	0	0	0	0	1770	3539	1583
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1863	1583	1770	1863	0	0	0	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			104									130
Link Speed (mph)		35			45			40			40	
Link Distance (ft)		400			258			161			232	
Travel Time (s)		7.8			3.9			2.7			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	143	15	34	60	0	0	0	0	98	62	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	143	15	34	60	0	0	0	0	98	62	130
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	R NA	Left	R NA
Median Width(ft)		14			24			12			12	
Link Offset(ft)		0			0			5			0	
Crosswalk Width(ft)		12			36			16			36	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	2	2					3	3	3
Detector Template		TXLT	Right							TX40	TX40	TX40
Leading Detector (ft)		0	20	156	156					240	240	240
Trailing Detector (ft)		0	0	5	5					-5	-5	-5
Detector 1 Position(ft)		-5	0	5	5					-5	-5	-5
Detector 1 Size(ft)		20	20	6	6					20	20	20
Detector 1 Type		Call	CI+Ex	CI+Ex	CI+Ex					CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 2 Position(ft)		21		150	150					104	104	104
Detector 2 Size(ft)		20		6	6					6	6	6
Detector 2 Type		Call		CI+Ex	CI+Ex					CI+Ex	CI+Ex	CI+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 3 Position(ft)										234	234	234
Detector 3 Size(ft)										6	6	6
Detector 3 Type										CI+Ex	CI+Ex	CI+Ex
Detector 3 Channel												
Detector 3 Extend (s)										0.0	0.0	0.0
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm

Lane Group	Ø1	Ø2	Ø4	Ø8	Ø12	Ø16
Lane Configurations						
Traffic Volume (vph)						
Future Volume (vph)						
Ideal Flow (vphpl)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Right Turn on Red						
Satd. Flow (RTOR)						
Link Speed (mph)						
Link Distance (ft)						
Travel Time (s)						
Peak Hour Factor						
Adj. Flow (vph)						
Shared Lane Traffic (%)						
Lane Group Flow (vph)						
Enter Blocked Intersection						
Lane Alignment						
Median Width(ft)						
Link Offset(ft)						
Crosswalk Width(ft)						
Two way Left Turn Lane						
Headway Factor						
Turning Speed (mph)						
Number of Detectors						
Detector Template						
Leading Detector (ft)						
Trailing Detector (ft)						
Detector 1 Position(ft)						
Detector 1 Size(ft)						
Detector 1 Type						
Detector 1 Channel						
Detector 1 Extend (s)						
Detector 1 Queue (s)						
Detector 1 Delay (s)						
Detector 2 Position(ft)						
Detector 2 Size(ft)						
Detector 2 Type						
Detector 2 Channel						
Detector 2 Extend (s)						
Detector 3 Position(ft)						
Detector 3 Size(ft)						
Detector 3 Type						
Detector 3 Channel						
Detector 3 Extend (s)						
Turn Type						

Lanes, Volumes, Timings
6: SB FRONTAGE & WHARTON WEEMS

11/22/2023

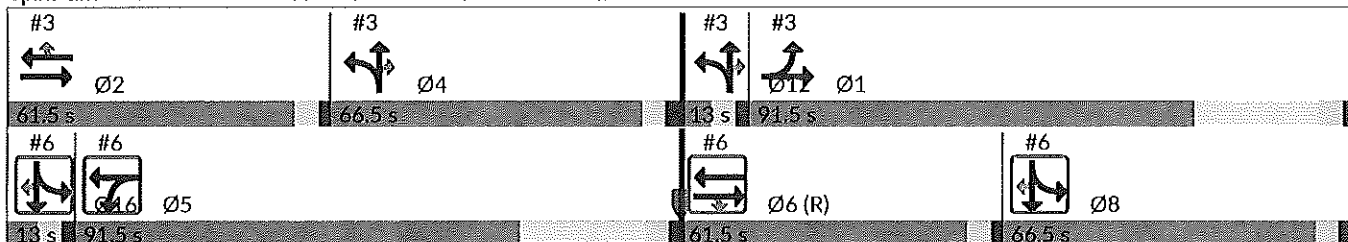


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		6		5	6 5					16 8	16 8	
Permitted Phases			6									16 8
Detector Phase		6	6	5	6 5					16 8	16 8	16 8
Switch Phase												
Minimum Initial (s)		10.0	10.0	5.0								
Minimum Split (s)		32.5	32.5	11.5								
Total Split (s)		61.5	61.5	91.5								
Total Split (%)		24.0%	24.0%	35.7%								
Maximum Green (s)		55.0	55.0	85.0								
Yellow Time (s)		4.5	4.5	4.5								
All-Red Time (s)		2.0	2.0	2.0								
Lost Time Adjust (s)		0.0	0.0	0.0								
Total Lost Time (s)		6.5	6.5	6.5								
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		2.0	2.0	2.0								
Recall Mode		C-Min	C-Min	None								
Walk Time (s)		7.0	7.0									
Flash Dont Walk (s)		12.0	12.0									
Pedestrian Calls (#/hr)		0	0									
Act Effct Green (s)		192.3	192.3	14.6	213.5					29.0	29.0	29.0
Actuated g/c Ratio		0.75	0.75	0.06	0.83					0.11	0.11	0.11
v/c Ratio		0.10	0.01	0.34	0.04					0.49	0.15	0.44
Control Delay (s/veh)		9.4	0.0	71.8	4.6					114.1	101.9	16.5
Queue Delay		0.0	0.0	0.0	1.6					0.0	0.0	0.0
Total Delay (s/veh)		9.4	0.0	71.8	6.1					114.1	101.9	16.5
LOS		A	A	E	A					F	F	B
Approach Delay (s/veh)		8.5			29.9						67.7	
Approach LOS		A			C						E	

Intersection Summary

Area Type: Other
 Cycle Length: 256
 Actuated Cycle Length: 256
 Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay (s/veh): 43.9
 Intersection Capacity Utilization 39.6%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service A

Splits and Phases: 6: SB FRONTAGE & WHARTON WEEMS



Background AM 11:49 am 11/22/2023 Baseline

Synchro 12 Report

Page 11

Lane Group	Ø1	Ø2	Ø4	Ø8	Ø12	Ø16
Protected Phases	1	2	4	8	12	16
Permitted Phases						
Detector Phase						
Switch Phase						
Minimum Initial (s)	5.0	10.0	8.0	8.0	2.0	2.0
Minimum Split (s)	22.5	33.5	55.0	46.0	9.0	9.0
Total Split (s)	91.5	61.5	66.5	66.5	13.0	13.0
Total Split (%)	36%	24%	26%	26%	5%	5%
Maximum Green (s)	85.0	55.0	59.5	59.5	6.0	6.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.5	2.5	2.5	2.5
Lost Time Adjust (s)						
Total Lost Time (s)						
Lead/Lag	Lag	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min	Min	Min	None	None
Walk Time (s)		7.0	7.0	7.0		
Flash Dont Walk (s)		13.0	34.0	25.0		
Pedestrian Calls (#/hr)		0	0	0		
Act Effct Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay (s/veh)						
Queue Delay						
Total Delay (s/veh)						
LOS						
Approach Delay (s/veh)						
Approach LOS						
Intersection Summary						

Phasings

6: SB FRONTAGE & WHARTON WEEMS

11/22/2023



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø2	Ø4	Ø8	Ø12
Protected Phases	6		5	6 5	16 8	16 8		1	2	4	8	12
Permitted Phases		6					16 8					
Minimum Initial (s)	10.0	10.0	5.0					5.0	10.0	8.0	8.0	2.0
Minimum Split (s)	32.5	32.5	11.5					22.5	33.5	55.0	46.0	9.0
Total Split (s)	61.5	61.5	91.5					91.5	61.5	66.5	66.5	13.0
Total Split (%)	24.0%	24.0%	35.7%					36%	24%	26%	26%	5%
Maximum Green (s)	55.0	55.0	85.0					85.0	55.0	59.5	59.5	6.0
Yellow Time (s)	4.5	4.5	4.5					4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.5	2.5	2.5
Lead/Lag	Lead	Lead	Lag					Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes					Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Min	C-Min	None					None	Min	Min	Min	None
Walk Time (s)	7.0	7.0							7.0	7.0	7.0	
Flash Dont Walk (s)	12.0	12.0							13.0	34.0	25.0	
Pedestrian Calls (#/hr)	0	0							0	0	0	
90th %ile Green (s)	179.2	179.2	20.8					31.1	17.4	9.6	22.8	170.9
90th %ile Term Code	Coord	Coord	Hold					Hold	Gap	Gap	Gap	Coord
70th %ile Green (s)	192.1	192.1	13.0					24.3	10.0	8.0	18.9	186.7
70th %ile Term Code	Coord	Coord	Hold					Hold	Min	Min	Gap	Coord
50th %ile Green (s)	194.2	194.2	13.0					20.8	10.0	8.0	16.8	190.2
50th %ile Term Code	Coord	Coord	Hold					Hold	Min	Min	Gap	Coord
30th %ile Green (s)	196.3	196.3	13.1					18.7	10.0	8.0	14.7	192.3
30th %ile Term Code	Coord	Coord	Hold					Hold	Min	Min	Gap	Coord
10th %ile Green (s)	199.9	199.9	13.2					15.2	10.0	8.0	11.1	195.8
10th %ile Term Code	Coord	Coord	Hold					Hold	Min	Min	Gap	Coord

Intersection Summary

Cycle Length: 256

Actuated Cycle Length: 256

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

Control Type: Actuated-Coordinated

Lane Group	Ø16
Protected Phases	16
Permitted Phases	
Minimum Initial (s)	2.0
Minimum Split (s)	9.0
Total Split (s)	13.0
Total Split (%)	5%
Maximum Green (s)	6.0
Yellow Time (s)	4.5
All-Red Time (s)	2.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.0
Minimum Gap (s)	3.0
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
90th %ile Green (s)	6.2
90th %ile Term Code	Gap
70th %ile Green (s)	5.0
70th %ile Term Code	Gap
50th %ile Green (s)	5.0
50th %ile Term Code	Gap
30th %ile Green (s)	4.9
30th %ile Term Code	Gap
10th %ile Green (s)	4.8
10th %ile Term Code	Gap
Intersection Summary	

Queues

6: SB FRONTAGE & WHARTON WEEMS

11/22/2023



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	143	15	34	60	98	62	130
v/c Ratio	0.10	0.01	0.34	0.04	0.49	0.15	0.44
Control Delay (s/veh)	9.4	0.0	71.8	4.6	114.1	101.9	16.5
Queue Delay	0.0	0.0	0.0	1.6	0.0	0.0	0.0
Total Delay (s/veh)	9.4	0.0	71.8	6.1	114.1	101.9	16.5
Queue Length 50th (ft)	60	0	54	51	159	51	0
Queue Length 95th (ft)	107	0	96	82	231	80	78
Internal Link Dist (ft)	320			178		152	
Turn Bay Length (ft)							
Base Capacity (vph)	1399	1215	750	1553	411	822	467
Starvation Cap Reductn	0	0	0	1378	0	0	0
Spillback Cap Reductn	0	0	0	0	1	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.01	0.05	0.34	0.24	0.08	0.28

Intersection Summary

Lanes, Volumes, Timings
 9: Fairmont Greens & WHARTON WEEMS

11/22/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	105	14	5	220	34	13
Future Volume (vph)	105	14	5	220	34	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984			0.963		
Frt Protected				0.999	0.965	
Satd. Flow (prot)	1833	0	0	1861	1731	0
Frt Permitted				0.999	0.965	
Satd. Flow (perm)	1833	0	0	1861	1731	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	351			741	214	
Travel Time (s)	13.8			16.8	8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	15	5	239	37	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	0	0	244	51	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.6%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	↕
Traffic Vol, veh/h	105	14	5	220	34	13
Future Vol, veh/h	105	14	5	220	34	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	15	5	239	37	14

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	129	0	372
Stage 1	-	-	-	-	122
Stage 2	-	-	-	-	250
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1456	-	629
Stage 1	-	-	-	-	904
Stage 2	-	-	-	-	792
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1456	-	626
Mov Cap-2 Maneuver	-	-	-	-	626
Stage 1	-	-	-	-	904
Stage 2	-	-	-	-	788

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.17	10.65
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	688	-	-	40	-
HCM Lane V/C Ratio	0.074	-	-	0.004	-
HCM Control Delay (s/veh)	10.6	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Lanes, Volumes, Timings
 10: NB FRONTAGE/WHARTON WEEMS & NB UTURN

11/22/2023



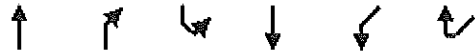
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	↙	↑↑↑↑				
Traffic Volume (vph)	53	180	0	0	0	0
Future Volume (vph)	53	180	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	0			0	0	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	0.86	1.00	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	6408	0	0	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	6408	0	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		216	200		107	
Travel Time (s)		5.9	4.8		2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	196	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	58	196	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 41.3% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
17: SB FRONTAGE & NB UTURN

11/22/2023



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations				↑↑↑↑	↘	
Traffic Volume (vph)	0	0	0	1240	53	0
Future Volume (vph)	0	0	0	1240	53	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	5085	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	5085	1770	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	359			161	88	
Travel Time (s)	11.1			3.5	2.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	1348	58	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1348	58	0
Enter Blocked Intersection	No	No	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Yield	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	41.3%
	ICU Level of Service A
Analysis Period (min)	15



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	741			1642	162	
Travel Time (s)	16.8			13.1	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

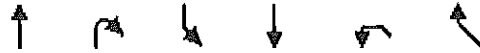
Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	1	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1622	-	1020
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1020
Mov Cap-2 Maneuver	-	-	-	-	1020
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1622	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Lanes, Volumes, Timings
 20: SB FRONTAGE & SB UTURN

11/22/2023



Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations			↵	↑↑↑		
Traffic Volume (vph)	0	0	37	267	0	0
Future Volume (vph)	0	0	37	267	0	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	0	0	1770	5085	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1770	5085	0	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	232			276	158	
Travel Time (s)	8.3			11.2	6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	40	290	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	40	290	0	0
Enter Blocked Intersection	No	No	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			12	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	8.5%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
 23: SB UTURN & NB FRONTAGE

11/22/2023



Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↑↑↑			↵	
Traffic Volume (vph)	0	379	0	0	37	0
Future Volume (vph)	0	379	0	0	37	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	1.00	1.00	1.00	1.00
Fr						
Flt Protected					0.950	
Satd. Flow (prot)	0	5085	0	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	5085	0	0	1770	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		186	297		119	
Travel Time (s)		4.0	6.8		3.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	412	0	0	40	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	412	0	0	40	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Yield	

Intersection Summary

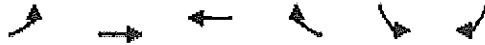
Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 17.3% ICU Level of Service A
 Analysis Period (min) 15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	0
Link Speed (mph)		45	45		30	
Link Distance (ft)		265	351		135	
Travel Time (s)		6.0	7.8		3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 6.7% ICU Level of Service A
 Analysis Period (min) 15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	0
Link Speed (mph)		45	45		30	
Link Distance (ft)		274	136		169	
Travel Time (s)		5.8	2.9		3.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	36		0	
Link Offset(ft)		0	6		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	6.7%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
28: NB FRONTAGE

11/22/2023



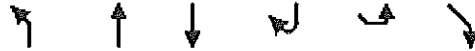
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	0	5085	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	0	5085	0	0	0
Link Speed (mph)	30		40			40
Link Distance (ft)	152		257			216
Travel Time (s)	3.5		6.3			5.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	Yes	Yes	No	No
Lane Alignment	Left	Right	Right	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		12			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Free		Free			Free

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 15.8% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
30: NB FRONTAGE

11/22/2023



Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	3539	0	0	0	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	0	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		489	481		247	
Travel Time (s)		11.1	10.9		3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	65			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.3%
ICU Level of Service	A
Analysis Period (min)	15



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	3539	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	3539	0	0	0
Link Speed (mph)		35	35		30	
Link Distance (ft)		871	400		132	
Travel Time (s)		24.6	4.7		3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
34: SB FRONTAGE

11/22/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑↑	
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00
FrI						
Flt Protected						
Satd. Flow (prot)	0	0	0	0	5085	0
Flt Permitted						
Satd. Flow (perm)	0	0	0	0	5085	0
Link Speed (mph)	30			40	40	
Link Distance (ft)	118			276	232	
Travel Time (s)	2.7			6.3	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	Yes	Yes
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Free			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	8.5%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
1: S Broadway & WHARTON WEEMS

11/22/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖		↖	↑	↓	
Traffic Volume (vph)	41	245	108	146	254	50
Future Volume (vph)	41	245	108	146	254	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	200			0
Storage Lanes	0	0	1			0
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr't	0.885				0.978	
Flt Protected	0.993		0.950			
Satd. Flow (prot)	1637	0	1770	1863	1822	0
Flt Permitted	0.993		0.950			
Satd. Flow (perm)	1637	0	1770	1863	1822	0
Link Speed (mph)	45			30	30	
Link Distance (ft)	1642			796	680	
Travel Time (s)	24.9			18.1	15.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	266	117	159	276	54
Shared Lane Traffic (%)						
Lane Group Flow (vph)	311	0	117	159	330	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	49.8%
ICU Level of Service	A
Analysis Period (min)	15

Intersection

Int Delay, s/veh 6.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑	↑	
Traffic Vol, veh/h	41	245	108	146	254	50
Future Vol, veh/h	41	245	108	146	254	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	266	117	159	276	54

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	697	303	330	0	-	0
Stage 1	303	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	407	736	1229	-	-	-
Stage 1	749	-	-	-	-	-
Stage 2	682	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	368	736	1229	-	-	-
Mov Cap-2 Maneuver	368	-	-	-	-	-
Stage 1	677	-	-	-	-	-
Stage 2	682	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	15.69	3.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1229	-	644	-	-
HCM Lane V/C Ratio	0.096	-	0.483	-	-
HCM Control Delay (s/veh)	8.2	-	15.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.6	-	-

Lanes, Volumes, Timings
3: WHARTON WEEMS & NB FRONTAGE

11/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑			↑↑	↗		↕↕↕	↗			
Traffic Volume (vph)	92	268	0	0	44	122	18	54	32	0	0	0
Future Volume (vph)	92	268	0	0	44	122	18	54	32	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.988				
Satd. Flow (prot)	1770	1863	0	0	3539	1583	0	5024	1583	0	0	0
Flt Permitted	0.950							0.988				
Satd. Flow (perm)	1770	1863	0	0	3539	1583	0	5024	1583	0	0	0
Right Turn on Red			Yes			Yes		Yes				Yes
Satd. Flow (RTOR)						133			102			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		258			274			200			186	
Travel Time (s)		3.9			4.2			3.4			3.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	100	291	0	0	48	133	20	59	35	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	291	0	0	48	133	0	79	35	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		28			20			36			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2			2	2	1	3	3			
Detector Template					TXLT	TXLT	Left	TX40	TX40			
Leading Detector (ft)	156	156			0	0	20	240	240			
Trailing Detector (ft)	5	5			0	0	0	-5	-5			
Detector 1 Position(ft)	5	5			-5	-5	0	-5	-5			
Detector 1 Size(ft)	6	6			20	20	20	20	20			
Detector 1 Type	CI+Ex	CI+Ex			Call	Call	CI+Ex	CI+Ex	CI+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)	150	150			21	21		104	104			
Detector 2 Size(ft)	6	6			20	20		6	6			
Detector 2 Type	CI+Ex	CI+Ex			Call	Call		CI+Ex	CI+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 3 Position(ft)								234	234			
Detector 3 Size(ft)								6	6			
Detector 3 Type								CI+Ex	CI+Ex			
Detector 3 Channel												
Detector 3 Extend (s)								0.0	0.0			
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			

Lane Group	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Lane Configurations						
Traffic Volume (vph)						
Future Volume (vph)						
Ideal Flow (vphpl)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Right Turn on Red						
Satd. Flow (RTOR)						
Link Speed (mph)						
Link Distance (ft)						
Travel Time (s)						
Peak Hour Factor						
Adj. Flow (vph)						
Shared Lane Traffic (%)						
Lane Group Flow (vph)						
Enter Blocked Intersection						
Lane Alignment						
Median Width(ft)						
Link Offset(ft)						
Crosswalk Width(ft)						
Two way Left Turn Lane						
Headway Factor						
Turning Speed (mph)						
Number of Detectors						
Detector Template						
Leading Detector (ft)						
Trailing Detector (ft)						
Detector 1 Position(ft)						
Detector 1 Size(ft)						
Detector 1 Type						
Detector 1 Channel						
Detector 1 Extend (s)						
Detector 1 Queue (s)						
Detector 1 Delay (s)						
Detector 2 Position(ft)						
Detector 2 Size(ft)						
Detector 2 Type						
Detector 2 Channel						
Detector 2 Extend (s)						
Detector 3 Position(ft)						
Detector 3 Size(ft)						
Detector 3 Type						
Detector 3 Channel						
Detector 3 Extend (s)						
Turn Type						

Lanes, Volumes, Timings
3: WHARTON WEEMS & NB FRONTAGE

11/22/2023

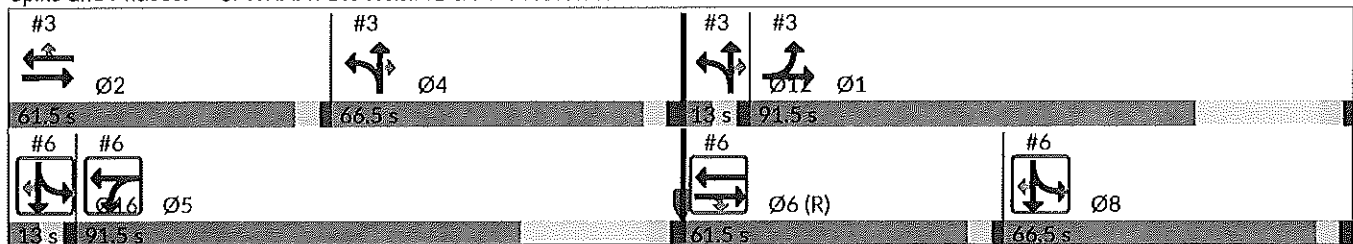


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	2 1			2		4 12	4 12				
Permitted Phases						2			4 12			
Detector Phase	1	2 1			2	2	4 12	4 12	4 12			
Switch Phase												
Minimum Initial (s)	5.0				10.0	10.0						
Minimum Split (s)	22.5				33.5	33.5						
Total Split (s)	91.5				61.5	61.5						
Total Split (%)	35.7%				24.0%	24.0%						
Maximum Green (s)	85.0				55.0	55.0						
Yellow Time (s)	4.5				4.5	4.5						
All-Red Time (s)	2.0				2.0	2.0						
Lost Time Adjust (s)	0.0				0.0	0.0						
Total Lost Time (s)	6.5				6.5	6.5						
Lead/Lag	Lag				Lead	Lead						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0				2.0	2.0						
Recall Mode	None				Min	Min						
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					13.0	13.0						
Pedestrian Calls (#/hr)					0	0						
Act Effct Green (s)	41.1	58.6			11.0	11.0		183.9	183.9			
Actuated g/C Ratio	0.16	0.23			0.04	0.04		0.72	0.72			
v/c Ratio	0.35	0.68			0.32	0.68		0.02	0.03			
Control Delay (s/veh)	57.3	51.0			123.9	31.7		11.3	0.1			
Queue Delay	0.1	0.2			0.0	0.0		0.0	0.0			
Total Delay (s/veh)	57.4	51.2			123.9	31.7		11.3	0.1			
LOS	E	D			F	C		B	A			
Approach Delay (s/veh)		52.7			56.1			7.9				
Approach LOS		D			E			A				

Intersection Summary

Area Type: Other
 Cycle Length: 256
 Actuated Cycle Length: 256
 Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay (s/veh): 46.2
 Intersection Capacity Utilization 51.7%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service A

Splits and Phases: 3: WHARTON WEEMS & NB FRONTAGE



Background PM 12:07 pm 11/22/2023 Baseline

Synchro 12 Report

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Lanes, Volumes, Timings
 3: WHARTON WEEMS & NB FRONTAGE

11/22/2023

Lane Group	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Protected Phases	4	5	6	8	12	16
Permitted Phases						
Detector Phase						
Switch Phase						
Minimum Initial (s)	8.0	5.0	10.0	8.0	2.0	2.0
Minimum Split (s)	55.0	11.5	32.5	46.0	9.0	9.0
Total Split (s)	66.5	91.5	61.5	66.5	13.0	13.0
Total Split (%)	26%	36%	24%	26%	5%	5%
Maximum Green (s)	59.5	85.0	55.0	59.5	6.0	6.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.5	2.0	2.0	2.5	2.5	2.5
Lost Time Adjust (s)						
Total Lost Time (s)						
Lead/Lag	Lag	Lag	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Min	None	C-Min	Min	None	None
Walk Time (s)	7.0		7.0	7.0		
Flash Dont Walk (s)	34.0		12.0	25.0		
Pedestrian Calls (#/hr)	0		0	0		
Act Effct Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay (s/veh)						
Queue Delay						
Total Delay (s/veh)						
LOS						
Approach Delay (s/veh)						
Approach LOS						
Intersection Summary						

Phasings

3: WHARTON WEEMS & NB FRONTAGE

11/22/2023



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Protected Phases	1	2 1	2		4 12		4	5	6	8	12	16
Permitted Phases				2		4 12						
Minimum Initial (s)	5.0		10.0	10.0			8.0	5.0	10.0	8.0	2.0	2.0
Minimum Split (s)	22.5		33.5	33.5			55.0	11.5	32.5	46.0	9.0	9.0
Total Split (s)	91.5		61.5	61.5			66.5	91.5	61.5	66.5	13.0	13.0
Total Split (%)	35.7%		24.0%	24.0%			26%	36%	24%	26%	5%	5%
Maximum Green (s)	85.0		55.0	55.0			59.5	85.0	55.0	59.5	6.0	6.0
Yellow Time (s)	4.5		4.5	4.5			4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0		2.0	2.0			2.5	2.0	2.0	2.5	2.5	2.5
Lead/Lag	Lag		Lead	Lead			Lag	Lag	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0		2.0	2.0			2.0	2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	3.0		3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None		Min	Min			Min	None	C-Min	Min	None	None
Walk Time (s)			7.0	7.0			7.0		7.0	7.0		
Flash Dont Walk (s)			13.0	13.0			34.0		12.0	25.0		
Pedestrian Calls (#/hr)			0	0			0		0	0		
90th %ile Green (s)	49.9		15.0	15.0			8.0	15.9	164.1	41.9	156.1	7.1
90th %ile Term Code	Hold		Gap	Gap			Min	Hold	Coord	Gap	Coord	Gap
70th %ile Green (s)	45.1		10.0	10.0			8.0	11.2	171.6	39.4	165.9	6.8
70th %ile Term Code	Gap		Min	Min			Min	Hold	Coord	Hold	Coord	Gap
50th %ile Green (s)	41.5		10.0	10.0			8.0	12.3	173.5	37.5	169.5	5.7
50th %ile Term Code	Gap		Min	Min			Min	Hold	Coord	Hold	Coord	Gap
30th %ile Green (s)	37.5		10.0	10.0			8.0	12.5	177.7	33.3	173.5	5.5
30th %ile Term Code	Gap		Min	Min			Min	Hold	Coord	Hold	Coord	Gap
10th %ile Green (s)	31.6		10.0	10.0			8.0	0.0	184.3	26.7	179.4	24.5
10th %ile Term Code	Gap		Min	Min			Min	Skip	Coord	Hold	Coord	Hold

Intersection Summary

Cycle Length: 256

Actuated Cycle Length: 256

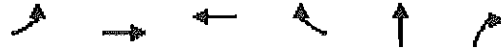
Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green

Control Type: Actuated-Coordinated

Queues

3: WHARTON WEEMS & NB FRONTAGE

11/22/2023



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	100	291	48	133	79	35
w/c Ratio	0.35	0.68	0.32	0.68	0.02	0.03
Control Delay (s/veh)	57.3	51.0	123.9	31.7	11.3	0.1
Queue Delay	0.1	0.2	0.0	0.0	0.0	0.0
Total Delay (s/veh)	57.4	51.2	123.9	31.7	11.3	0.1
Queue Length 50th (ft)	70	217	42	0	13	0
Queue Length 95th (ft)	119	222	72	88	24	0
Internal Link Dist (ft)		178	194		120	
Turn Bay Length (ft)						
Base Capacity (vph)	750	793	760	444	3608	1165
Starvation Cap Reductn	150	106	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced w/c Ratio	0.17	0.42	0.06	0.30	0.02	0.03

Intersection Summary

Lanes, Volumes, Timings
6: SB FRONTAGE & WHARTON WEEMS

11/22/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↘	↑					↘	↑↑	↗
Traffic Volume (vph)	0	90	32	26	31	0	0	0	0	223	66	61
Future Volume (vph)	0	90	32	26	31	0	0	0	0	223	66	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Flt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1863	1583	1770	1863	0	0	0	0	1770	3539	1583
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1863	1583	1770	1863	0	0	0	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			104									102
Link Speed (mph)		35			45			40			40	
Link Distance (ft)		400			258			161			232	
Travel Time (s)		7.8			3.9			2.7			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	98	35	28	34	0	0	0	0	242	72	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	98	35	28	34	0	0	0	0	242	72	66
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	R NA	Left	R NA
Median Width(ft)		14			24			12			12	
Link Offset(ft)		0			0			5			0	
Crosswalk Width(ft)		12			36			16			36	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors			1	2	2					3	3	3
Detector Template		TXLT	Right							TX40	TX40	TX40
Leading Detector (ft)		0	20	156	156					240	240	240
Trailing Detector (ft)		0	0	5	5					-5	-5	-5
Detector 1 Position(ft)		-5	0	5	5					-5	-5	-5
Detector 1 Size(ft)		20	20	6	6					20	20	20
Detector 1 Type		Call	CI+Ex	CI+Ex	CI+Ex					CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 2 Position(ft)		21		150	150					104	104	104
Detector 2 Size(ft)		20		6	6					6	6	6
Detector 2 Type		Call		CI+Ex	CI+Ex					CI+Ex	CI+Ex	CI+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 3 Position(ft)										234	234	234
Detector 3 Size(ft)										6	6	6
Detector 3 Type										CI+Ex	CI+Ex	CI+Ex
Detector 3 Channel												
Detector 3 Extend (s)										0.0	0.0	0.0
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm

Lane Group	Ø1	Ø2	Ø4	Ø8	Ø12	Ø16
Lane Configurations						
Traffic Volume (vph)						
Future Volume (vph)						
Ideal Flow (vphpl)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Right Turn on Red						
Satd. Flow (RTOR)						
Link Speed (mph)						
Link Distance (ft)						
Travel Time (s)						
Peak Hour Factor						
Adj. Flow (vph)						
Shared Lane Traffic (%)						
Lane Group Flow (vph)						
Enter Blocked Intersection						
Lane Alignment						
Median Width(ft)						
Link Offset(ft)						
Crosswalk Width(ft)						
Two way Left Turn Lane						
Headway Factor						
Turning Speed (mph)						
Number of Detectors						
Detector Template						
Leading Detector (ft)						
Trailing Detector (ft)						
Detector 1 Position(ft)						
Detector 1 Size(ft)						
Detector 1 Type						
Detector 1 Channel						
Detector 1 Extend (s)						
Detector 1 Queue (s)						
Detector 1 Delay (s)						
Detector 2 Position(ft)						
Detector 2 Size(ft)						
Detector 2 Type						
Detector 2 Channel						
Detector 2 Extend (s)						
Detector 3 Position(ft)						
Detector 3 Size(ft)						
Detector 3 Type						
Detector 3 Channel						
Detector 3 Extend (s)						
Turn Type						

Lanes, Volumes, Timings
6: SB FRONTAGE & WHARTON WEEMS

11/22/2023

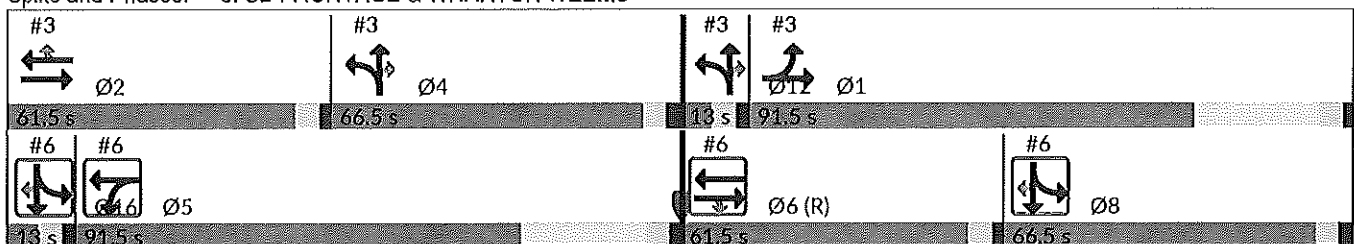


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		6		5	6.5					16.8	16.8	
Permitted Phases			6									16.8
Detector Phase		6	6	5	6.5					16.8	16.8	16.8
Switch Phase												
Minimum Initial (s)		10.0	10.0	5.0								
Minimum Split (s)		32.5	32.5	11.5								
Total Split (s)		61.5	61.5	91.5								
Total Split (%)		24.0%	24.0%	35.7%								
Maximum Green (s)		55.0	55.0	85.0								
Yellow Time (s)		4.5	4.5	4.5								
All-Red Time (s)		2.0	2.0	2.0								
Lost Time Adjust (s)		0.0	0.0	0.0								
Total Lost Time (s)		6.5	6.5	6.5								
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		2.0	2.0	2.0								
Recall Mode		C-Min	C-Min	None								
Walk Time (s)		7.0	7.0									
Flash Dont Walk (s)		12.0	12.0									
Pedestrian Calls (#/hr)		0	0									
Act Effct Green (s)		174.2	174.2	11.4	190.8					52.7	52.7	52.7
Actuated g/C Ratio		0.68	0.68	0.04	0.75					0.21	0.21	0.21
v/c Ratio		0.08	0.03	0.36	0.02					0.66	0.10	0.16
Control Delay (s/veh)		14.9	0.1	51.2	6.8					103.5	82.9	1.6
Queue Delay		0.0	0.0	0.0	0.0					0.3	0.0	0.0
Total Delay (s/veh)		14.9	0.1	51.2	6.8					103.8	82.9	1.6
LOS		B	A	D	A					F	F	A
Approach Delay (s/veh)		11.0			26.9						82.1	
Approach LOS		B			C						F	

Intersection Summary

Area Type: Other
 Cycle Length: 256
 Actuated Cycle Length: 256
 Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.68
 Intersection Signal Delay (s/veh): 59.7
 Intersection LOS: E
 Intersection Capacity Utilization 51.7%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 6: SB FRONTAGE & WHARTON WEEMS



Background PM 12:07 pm 11/22/2023 Baseline

Synchro 12 Report

Page 11

Lane Group	Ø1	Ø2	Ø4	Ø8	Ø12	Ø16
Protected Phases	1	2	4	8	12	16
Permitted Phases						
Detector Phase						
Switch Phase						
Minimum Initial (s)	5.0	10.0	8.0	8.0	2.0	2.0
Minimum Split (s)	22.5	33.5	55.0	46.0	9.0	9.0
Total Split (s)	91.5	61.5	66.5	66.5	13.0	13.0
Total Split (%)	36%	24%	26%	26%	5%	5%
Maximum Green (s)	85.0	55.0	59.5	59.5	6.0	6.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.5	2.5	2.5	2.5
Lost Time Adjust (s)						
Total Lost Time (s)						
Lead/Lag	Lag	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min	Min	Min	None	None
Walk Time (s)		7.0	7.0	7.0		
Flash Dont Walk (s)		13.0	34.0	25.0		
Pedestrian Calls (#/hr)		0	0	0		
Act Effect Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay (s/veh)						
Queue Delay						
Total Delay (s/veh)						
LOS						
Approach Delay (s/veh)						
Approach LOS						
Intersection Summary						

Phasings

6: SB FRONTAGE & WHARTON WEEMS

11/22/2023



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø2	Ø4	Ø8	Ø12
Protected Phases	6		5	6 5	16 8	16 8		1	2	4	8	12
Permitted Phases		6					16 8					
Minimum Initial (s)	10.0	10.0	5.0					5.0	10.0	8.0	8.0	2.0
Minimum Split (s)	32.5	32.5	11.5					22.5	33.5	55.0	46.0	9.0
Total Split (s)	61.5	61.5	91.5					91.5	61.5	66.5	66.5	13.0
Total Split (%)	24.0%	24.0%	35.7%					36%	24%	26%	26%	5%
Maximum Green (s)	55.0	55.0	85.0					85.0	55.0	59.5	59.5	6.0
Yellow Time (s)	4.5	4.5	4.5					4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.5	2.5	2.5
Lead/Lag	Lead	Lead	Lag					Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes					Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Min	C-Min	None					None	Min	Min	Min	None
Walk Time (s)	7.0	7.0							7.0	7.0	7.0	
Flash Dont Walk (s)	12.0	12.0							13.0	34.0	25.0	
Pedestrian Calls (#/hr)	0	0							0	0	0	
90th %ile Green (s)	164.1	164.1	15.9					49.9	15.0	8.0	41.9	156.1
90th %ile Term Code	Coord	Coord	Hold					Hold	Gap	Min	Gap	Coord
70th %ile Green (s)	171.6	171.6	11.2					45.1	10.0	8.0	39.4	165.9
70th %ile Term Code	Coord	Coord	Hold					Gap	Min	Min	Hold	Coord
50th %ile Green (s)	173.5	173.5	12.3					41.5	10.0	8.0	37.5	169.5
50th %ile Term Code	Coord	Coord	Hold					Gap	Min	Min	Hold	Coord
30th %ile Green (s)	177.7	177.7	12.5					37.5	10.0	8.0	33.3	173.5
30th %ile Term Code	Coord	Coord	Hold					Gap	Min	Min	Hold	Coord
10th %ile Green (s)	184.3	184.3	0.0					31.6	10.0	8.0	26.7	179.4
10th %ile Term Code	Coord	Coord	Skip					Gap	Min	Min	Hold	Coord

Intersection Summary

Cycle Length: 256

Actuated Cycle Length: 256

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

Control Type: Actuated-Coordinated

Lane Group	Ø16
Protected Phases	16
Permitted Phases	
Minimum Initial (s)	2.0
Minimum Split (s)	9.0
Total Split (s)	13.0
Total Split (%)	5%
Maximum Green (s)	6.0
Yellow Time (s)	4.5
All-Red Time (s)	2.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.0
Minimum Gap (s)	3.0
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
90th %ile Green (s)	7.1
90th %ile Term Code	Gap
70th %ile Green (s)	6.8
70th %ile Term Code	Gap
50th %ile Green (s)	5.7
50th %ile Term Code	Gap
30th %ile Green (s)	5.5
30th %ile Term Code	Gap
10th %ile Green (s)	24.5
10th %ile Term Code	Hold
Intersection Summary	

Queues

6: SB FRONTAGE & WHARTON WEEMS

11/22/2023

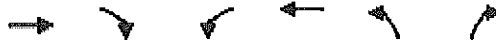


Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	98	35	28	34	242	72	66
v/c Ratio	0.08	0.03	0.36	0.02	0.66	0.10	0.16
Control Delay (s/veh)	14.9	0.1	51.2	6.8	103.5	82.9	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay (s/veh)	14.9	0.1	51.2	6.8	103.8	82.9	1.6
Queue Length 50th (ft)	55	0	45	43	389	53	0
Queue Length 95th (ft)	92	0	87	78	495	82	3
Internal Link Dist (ft)	320			178		152	
Turn Bay Length (ft)							
Base Capacity (vph)	1268	1110	750	1409	411	822	446
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	93	0	0	0	16	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.03	0.04	0.02	0.61	0.09	0.15

Intersection Summary

Lanes, Volumes, Timings
 9: Fairmont Greens & WHARTON WEEMS

11/22/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Traffic Volume (vph)	282	30	7	145	13	8
Future Volume (vph)	282	30	7	145	13	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987			0.947		
Flt Protected				0.998	0.970	
Satd. Flow (prot)	1839	0	0	1859	1711	0
Flt Permitted				0.998	0.970	
Satd. Flow (perm)	1839	0	0	1859	1711	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	351			741	214	
Travel Time (s)	13.8			16.8	8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	307	33	8	158	14	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	340	0	0	166	23	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.7% ICU Level of Service A
Analysis Period (min)	15

Intersection

Int Delay, s/veh 0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶			↷	↶	↷
Traffic Vol, veh/h	282	30	7	145	13	8
Future Vol, veh/h	282	30	7	145	13	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	307	33	8	158	14	9

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	339	0	496 323
Stage 1	-	-	-	-	323 -
Stage 2	-	-	-	-	173 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1220	-	533 718
Stage 1	-	-	-	-	734 -
Stage 2	-	-	-	-	857 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1220	-	530 718
Mov Cap-2 Maneuver	-	-	-	-	530 -
Stage 1	-	-	-	-	734 -
Stage 2	-	-	-	-	851 -

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.37	11.36
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	589	-	-	83	-
HCM Lane V/C Ratio	0.039	-	-	0.006	-
HCM Control Delay (s/veh)	11.4	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %ile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings
 10: NB FRONTAGE/WHARTON WEEMS & NB UTURN

11/22/2023



Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	↰	↑↑↑↑				
Traffic Volume (vph)	30	104	0	0	0	0
Future Volume (vph)	30	104	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	0			0	0	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	0.86	1.00	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	6408	0	0	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	6408	0	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		216	200		107	
Travel Time (s)		5.9	4.8		2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	113	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	113	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 28.0% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
17: SB FRONTAGE & NB UTURN

11/22/2023

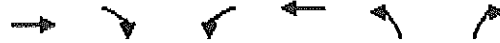


Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations				↑↑↑	↘	
Traffic Volume (vph)	0	0	0	124	30	0
Future Volume (vph)	0	0	0	124	30	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	5085	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	5085	1770	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	359			161	88	
Travel Time (s)	11.1			3.5	2.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	135	33	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	135	33	0
Enter Blocked Intersection	No	No	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Yield	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.0%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
19: WHARTON WEEMS

11/22/2023



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	1863	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	1863	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	741			1642	162	
Travel Time (s)	16.8			13.1	3.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 0

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1622	-	1020	1083
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1622	-	1020	1083
Mov Cap-2 Maneuver	-	-	-	-	1020	-
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1022	-

Approach EB WB NB

HCM Control Delay, s/v 0 0 0
HCM LOS A

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	-	-	-	1622	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Lanes, Volumes, Timings
 20: SB FRONTAGE & SB UTURN

11/22/2023



Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations			↵	↑↑↑		
Traffic Volume (vph)	0	0	183	360	0	0
Future Volume (vph)	0	0	183	360	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	0	0	1770	5085	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1770	5085	0	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	232			276	158	
Travel Time (s)	8.3			11.2	6.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	199	391	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	199	391	0	0
Enter Blocked Intersection	No	No	Yes	Yes	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			12	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.5%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
23: SB UTURN & NB FRONTAGE

11/22/2023



Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↑↑↑			↵	
Traffic Volume (vph)	0	268	0	0	183	0
Future Volume (vph)	0	268	0	0	183	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	1.00	1.00	1.00	1.00
Frt						
Frt Protected					0.950	
Satd. Flow (prot)	0	5085	0	0	1770	0
Frt Permitted					0.950	
Satd. Flow (perm)	0	5085	0	0	1770	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		186	297		119	
Travel Time (s)		4.0	6.8		3.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	291	0	0	199	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	291	0	0	199	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Yield	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 22.0% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
24: WHARTON WEEMS

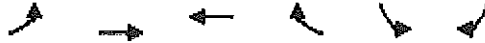
11/22/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	0
Link Speed (mph)		45	45		30	
Link Distance (ft)		265	351		135	
Travel Time (s)		6.0	7.8		3.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	6.7%
Analysis Period (min)	15
	ICU Level of Service A



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	0	0
Link Speed (mph)		45	45		30	
Link Distance (ft)		274	136		169	
Travel Time (s)		5.8	2.9		3.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	36		0	
Link Offset(ft)		0	6		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	6.7%
	ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
28: NB FRONTAGE

11/22/2023



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↑↑↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	1.00
Fr						
Fit Protected						
Satd. Flow (prot)	0	0	5085	0	0	0
Fit Permitted						
Satd. Flow (perm)	0	0	5085	0	0	0
Link Speed (mph)	30		40			40
Link Distance (ft)	152		257			216
Travel Time (s)	3.5		6.3			5.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	Yes	Yes	No	No
Lane Alignment	Left	Right	Right	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		12			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Free		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	15.8%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
30: NB FRONTAGE

11/22/2023



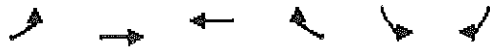
Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	↵	↑↑				
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	1863	3539	0	0	0	0
Flt Permitted						
Satd. Flow (perm)	1863	3539	0	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		489	481		247	
Travel Time (s)		11.1	10.9		3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	65			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	22.0%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
32: WHARTON WEEMS

11/22/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑↑			
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	3539	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1863	3539	0	0	0
Link Speed (mph)		35	35		30	
Link Distance (ft)		871	400		132	
Travel Time (s)		24.6	4.7		3.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	Yes	Yes	Yes	Yes	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
34: SB FRONTAGE

11/22/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations					↑↑↑	
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	0	0	0	0	5085	0
Fit Permitted						
Satd. Flow (perm)	0	0	0	0	5085	0
Link Speed (mph)	30			40	40	
Link Distance (ft)	118			276	232	
Travel Time (s)	2.7			6.3	5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	Yes	Yes
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Free			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization:	13.5%
	ICU Level of Service A
Analysis Period (min)	15

APPENDIX D:

Synchro Output, 2024 Build Conditions AM & PM

Lanes, Volumes, Timings
 1: S Broadway & WHARTON WEEMS

11/28/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	47	112	204	171	166	41
Future Volume (vph)	47	112	204	171	166	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	200			0
Storage Lanes	1	1	1			0
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.905				0.973	
Flt Protected	0.985		0.950			
Satd. Flow (prot)	1660	0	1770	1863	1812	0
Flt Permitted	0.985		0.950			
Satd. Flow (perm)	1660	0	1770	1863	1812	0
Link Speed (mph)	45			30	30	
Link Distance (ft)	1634			685	675	
Travel Time (s)	24.8			15.6	15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	51	122	222	186	180	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	173	0	222	186	225	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	42.0%
ICU Level of Service	A
Analysis Period (min)	15

Intersection

Int Delay, s/veh 5.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘		↘	↑	↗	
Traffic Vol, veh/h	47	112	204	171	166	41
Future Vol, veh/h	47	112	204	171	166	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	122	222	186	180	45

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	832	203	225	0	- 0
Stage 1	203	-	-	-	-
Stage 2	629	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	339	838	1344	-	-
Stage 1	831	-	-	-	-
Stage 2	531	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	283	838	1344	-	-
Mov Cap-2 Maneuver	283	-	-	-	-
Stage 1	694	-	-	-	-
Stage 2	531	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v15.03		4.47	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1344	-	531	-	-
HCM Lane V/C Ratio	0.165	-	0.326	-	-
HCM Control Delay (s/veh)	8.2	-	15	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.6	-	1.4	-	-

Lanes, Volumes, Timings
 3: NB FRONTAGE & WHARTON WEEMS

11/28/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	118	0	0	56	244	40	121	38	0	0	0
Future Volume (vph)	75	118	0	0	56	244	40	121	38	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	1.00	1.00
Fr't						0.850			0.850			
Flt Protected	0.950							0.988				
Satd. Flow (prot)	1770	1863	0	0	3539	1583	0	5024	1583	0	0	0
Flt Permitted	0.950							0.988				
Satd. Flow (perm)	1770	1863	0	0	3539	1583	0	5024	1583	0	0	0
Right Turn on Red			Yes			Yes		Yes				Yes
Satd. Flow (RTOR)						265			102			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		258			274			200			186	
Travel Time (s)		3.9			4.2			3.4			3.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	128	0	0	61	265	43	132	41	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	128	0	0	61	265	0	175	41	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		28			20			36			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2			2	2	1	3	3			
Detector Template					TXLT	TXLT	Left	TX40	TX40			
Leading Detector (ft)	156	156			0	0	20	240	240			
Trailing Detector (ft)	5	5			0	0	0	-5	-5			
Detector 1 Position(ft)	5	5			-5	-5	0	-5	-5			
Detector 1 Size(ft)	6	6			20	20	20	20	20			
Detector 1 Type	CI+Ex	CI+Ex			Call	Call	CI+Ex	CI+Ex	CI+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)	150	150			21	21		104	104			
Detector 2 Size(ft)	6	6			20	20		6	6			
Detector 2 Type	CI+Ex	CI+Ex			Call	Call		CI+Ex	CI+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 3 Position(ft)								234	234			
Detector 3 Size(ft)								6	6			
Detector 3 Type								CI+Ex	CI+Ex			
Detector 3 Channel												
Detector 3 Extend (s)								0.0	0.0			
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			

Lane Group	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Lane Configurations						
Traffic Volume (vph)						
Future Volume (vph)						
Ideal Flow (vphpl)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Right Turn on Red						
Satd. Flow (RTOR)						
Link Speed (mph)						
Link Distance (ft)						
Travel Time (s)						
Peak Hour Factor						
Adj. Flow (vph)						
Shared Lane Traffic (%)						
Lane Group Flow (vph)						
Enter Blocked Intersection						
Lane Alignment						
Median Width(ft)						
Link Offset(ft)						
Crosswalk Width(ft)						
Two way Left Turn Lane						
Headway Factor						
Turning Speed (mph)						
Number of Detectors						
Detector Template						
Leading Detector (ft)						
Trailing Detector (ft)						
Detector 1 Position(ft)						
Detector 1 Size(ft)						
Detector 1 Type						
Detector 1 Channel						
Detector 1 Extend (s)						
Detector 1 Queue (s)						
Detector 1 Delay (s)						
Detector 2 Position(ft)						
Detector 2 Size(ft)						
Detector 2 Type						
Detector 2 Channel						
Detector 2 Extend (s)						
Detector 3 Position(ft)						
Detector 3 Size(ft)						
Detector 3 Type						
Detector 3 Channel						
Detector 3 Extend (s)						
Turn Type						

Lanes, Volumes, Timings

3: NB FRONTAGE & WHARTON WEEMS

11/28/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	2 1			2		4 12	4 12				
Permitted Phases						2			4 12			
Detector Phase	1	2 1			2	2	4 12	4 12	4 12			
Switch Phase												
Minimum Initial (s)	5.0				10.0	10.0						
Minimum Split (s)	22.5				33.5	33.5						
Total Split (s)	91.5				61.5	61.5						
Total Split (%)	35.7%				24.0%	24.0%						
Maximum Green (s)	85.0				55.0	55.0						
Yellow Time (s)	4.5				4.5	4.5						
All-Red Time (s)	2.0				2.0	2.0						
Lost Time Adjust (s)	0.0				0.0	0.0						
Total Lost Time (s)	6.5				6.5	6.5						
Lead/Lag	Lag				Lead	Lead						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0				2.0	2.0						
Recall Mode	None				Min	Min						
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					13.0	13.0						
Pedestrian Calls (#/hr)					0	0						
Act Effct Green (s)	24.8	43.5			12.2	12.2	199.0	199.0				
Actuated g/C Ratio	0.10	0.17			0.05	0.05	0.78	0.78				
v/c Ratio	0.48	0.41			0.36	0.81	0.04	0.03				
Control Delay (s/veh)	83.3	70.2			123.2	28.8	7.4	0.1				
Queue Delay	0.0	0.1			0.0	0.0	0.0	0.0				
Total Delay (s/veh)	83.3	70.2			123.2	28.8	7.4	0.1				
LOS	F	E			F	C	A	A				
Approach Delay (s/veh)		75.4			46.4		6.0					
Approach LOS		E			D		A					

Intersection Summary

Area Type: Other

Cycle Length: 256

Actuated Cycle Length: 256

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

Natural Cycle: 170

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay (s/veh): 42.9

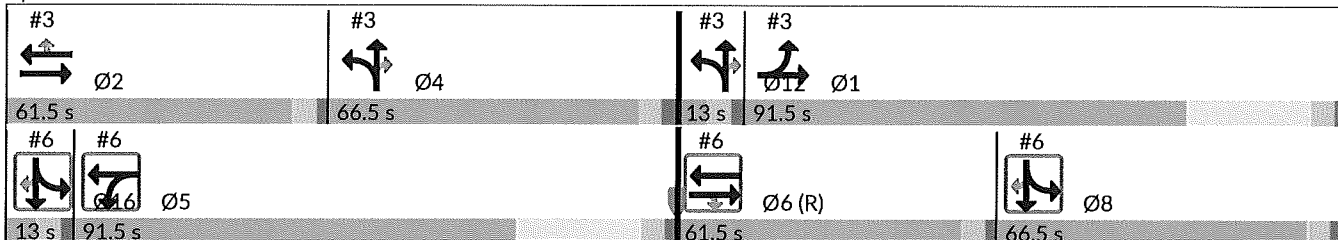
Intersection LOS: D

Intersection Capacity Utilization 42.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: NB FRONTAGE & WHARTON WEEMS



Site AM 8:09 am 11/20/2023 Baseline

Synchro 12 Report

Lanes, Volumes, Timings
 3: NB FRONTAGE & WHARTON WEEMS

11/28/2023

Lane Group	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Protected Phases	4	5	6	8	12	16
Permitted Phases						
Detector Phase						
Switch Phase						
Minimum Initial (s)	8.0	5.0	10.0	8.0	2.0	2.0
Minimum Split (s)	55.0	11.5	32.5	46.0	9.0	9.0
Total Split (s)	66.5	91.5	61.5	66.5	13.0	13.0
Total Split (%)	26%	36%	24%	26%	5%	5%
Maximum Green (s)	59.5	85.0	55.0	59.5	6.0	6.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.5	2.0	2.0	2.5	2.5	2.5
Lost Time Adjust (s)						
Total Lost Time (s)						
Lead/Lag	Lag	Lag	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Min	None	C-Min	Min	None	None
Walk Time (s)	7.0		7.0	7.0		
Flash Dont Walk (s)	34.0		12.0	25.0		
Pedestrian Calls (#/hr)	0		0	0		
Act Effct Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay (s/veh)						
Queue Delay						
Total Delay (s/veh)						
LOS						
Approach Delay (s/veh)						
Approach LOS						
Intersection Summary						

Phasings

3: NB FRONTAGE & WHARTON WEEMS

11/28/2023



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Protected Phases	1	2 1	2		4 12		4	5	6	8	12	16
Permitted Phases				2		4 12						
Minimum Initial (s)	5.0		10.0	10.0			8.0	5.0	10.0	8.0	2.0	2.0
Minimum Split (s)	22.5		33.5	33.5			55.0	11.5	32.5	46.0	9.0	9.0
Total Split (s)	91.5		61.5	61.5			66.5	91.5	61.5	66.5	13.0	13.0
Total Split (%)	35.7%		24.0%	24.0%			26%	36%	24%	26%	5%	5%
Maximum Green (s)	85.0		55.0	55.0			59.5	85.0	55.0	59.5	6.0	6.0
Yellow Time (s)	4.5		4.5	4.5			4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0		2.0	2.0			2.5	2.0	2.0	2.5	2.5	2.5
Lead/Lag	Lag		Lead	Lead			Lag	Lag	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0		2.0	2.0			2.0	2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	3.0		3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None		Min	Min			Min	None	C-Min	Min	None	None
Walk Time (s)			7.0	7.0			7.0		7.0	7.0		
Flash Dont Walk (s)			13.0	13.0			34.0		12.0	25.0		
Pedestrian Calls (#/hr)			0	0			0		0	0		
90th %ile Green (s)	34.7		20.5	20.5			10.3	24.5	172.5	25.7	163.5	6.3
90th %ile Term Code	Hold		Gap	Gap			Gap	Hold	Coord	Gap	Coord	Gap
70th %ile Green (s)	27.6		10.5	10.5			8.2	13.6	188.9	21.4	182.7	5.1
70th %ile Term Code	Hold		Gap	Gap			Gap	Hold	Coord	Gap	Coord	Gap
50th %ile Green (s)	23.6		10.0	10.0			8.0	12.9	191.8	19.2	187.4	5.1
50th %ile Term Code	Hold		Min	Min			Min	Hold	Coord	Gap	Coord	Gap
30th %ile Green (s)	20.9		10.0	10.0			8.0	13.0	194.1	16.9	190.1	5.0
30th %ile Term Code	Hold		Min	Min			Min	Hold	Coord	Gap	Coord	Gap
10th %ile Green (s)	17.2		10.0	10.0			8.0	13.2	197.8	13.2	193.8	4.8
10th %ile Term Code	Hold		Min	Min			Min	Hold	Coord	Gap	Coord	Gap

Intersection Summary

Cycle Length: 256

Actuated Cycle Length: 256

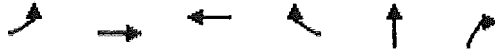
Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green

Control Type: Actuated-Coordinated

Queues

3: NB FRONTAGE & WHARTON WEEMS

11/28/2023















Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	82	128	61	265	175	41
v/c Ratio	0.48	0.41	0.36	0.81	0.04	0.03
Control Delay (s/veh)	83.3	70.2	123.2	28.8	7.4	0.1
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay (s/veh)	83.3	70.2	123.2	28.8	7.4	0.1
Queue Length 50th (ft)	86	126	54	0	21	0
Queue Length 95th (ft)	131	176	84	115	42	0
Internal Link Dist (ft)		178	194		120	
Turn Bay Length (ft)						
Base Capacity (vph)	750	789	760	548	3905	1252
Starvation Cap Reductn	62	152	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.20	0.08	0.48	0.04	0.03

Intersection Summary

HCM 7th Edition methodology does not support clustered intersections.

Lanes, Volumes, Timings
 6: SB FRONTAGE & WHARTON WEEMS

11/28/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↑					↖	↑↑	↗
Traffic Volume (vph)	0	134	14	42	59	0	0	0	0	109	57	120
Future Volume (vph)	0	134	14	42	59	0	0	0	0	109	57	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frnt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1863	1583	1770	1863	0	0	0	0	1770	3539	1583
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1863	1583	1770	1863	0	0	0	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			104									130
Link Speed (mph)		35			45			40			40	
Link Distance (ft)		400			258			161			232	
Travel Time (s)		7.8			3.9			2.7			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	146	15	46	64	0	0	0	0	118	62	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	146	15	46	64	0	0	0	0	118	62	130
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	R NA	Left	R NA
Median Width(ft)		14			24			12			12	
Link Offset(ft)		0			0			5			0	
Crosswalk Width(ft)		12			36			16			36	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	2	2					3	3	3
Detector Template		TXLT	Right							TX40	TX40	TX40
Leading Detector (ft)		0	20	156	156					240	240	240
Trailing Detector (ft)		0	0	5	5					-5	-5	-5
Detector 1 Position(ft)		-5	0	5	5					-5	-5	-5
Detector 1 Size(ft)		20	20	6	6					20	20	20
Detector 1 Type		Call	CI+Ex	CI+Ex	CI+Ex					CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 2 Position(ft)		21		150	150					104	104	104
Detector 2 Size(ft)		20		6	6					6	6	6
Detector 2 Type		Call		CI+Ex	CI+Ex					CI+Ex	CI+Ex	CI+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 3 Position(ft)										234	234	234
Detector 3 Size(ft)										6	6	6
Detector 3 Type										CI+Ex	CI+Ex	CI+Ex
Detector 3 Channel												
Detector 3 Extend (s)										0.0	0.0	0.0
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm

Lane Group	Ø1	Ø2	Ø4	Ø8	Ø12	Ø16
Lane Configurations						
Traffic Volume (vph)						
Future Volume (vph)						
Ideal Flow (vphpl)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Right Turn on Red						
Satd. Flow (RTOR)						
Link Speed (mph)						
Link Distance (ft)						
Travel Time (s)						
Peak Hour Factor						
Adj. Flow (vph)						
Shared Lane Traffic (%)						
Lane Group Flow (vph)						
Enter Blocked Intersection						
Lane Alignment						
Median Width(ft)						
Link Offset(ft)						
Crosswalk Width(ft)						
Two way Left Turn Lane						
Headway Factor						
Turning Speed (mph)						
Number of Detectors						
Detector Template						
Leading Detector (ft)						
Trailing Detector (ft)						
Detector 1 Position(ft)						
Detector 1 Size(ft)						
Detector 1 Type						
Detector 1 Channel						
Detector 1 Extend (s)						
Detector 1 Queue (s)						
Detector 1 Delay (s)						
Detector 2 Position(ft)						
Detector 2 Size(ft)						
Detector 2 Type						
Detector 2 Channel						
Detector 2 Extend (s)						
Detector 3 Position(ft)						
Detector 3 Size(ft)						
Detector 3 Type						
Detector 3 Channel						
Detector 3 Extend (s)						
Turn Type						

Lanes, Volumes, Timings

6: SB FRONTAGE & WHARTON WEEMS

11/28/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		6		5	6.5					16.8	16.8	
Permitted Phases			6									16.8
Detector Phase		6	6	5	6.5					16.8	16.8	16.8
Switch Phase												
Minimum Initial (s)		10.0	10.0	5.0								
Minimum Split (s)		32.5	32.5	11.5								
Total Split (s)		61.5	61.5	91.5								
Total Split (%)		24.0%	24.0%	35.7%								
Maximum Green (s)		55.0	55.0	85.0								
Yellow Time (s)		4.5	4.5	4.5								
All-Red Time (s)		2.0	2.0	2.0								
Lost Time Adjust (s)		0.0	0.0	0.0								
Total Lost Time (s)		6.5	6.5	6.5								
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		2.0	2.0	2.0								
Recall Mode		C-Min	C-Min	None								
Walk Time (s)		7.0	7.0									
Flash Dont Walk (s)		12.0	12.0									
Pedestrian Calls (#/hr)		0	0									
Act Effct Green (s)		189.0	189.0	15.4	211.0					31.5	31.5	31.5
Actuated g/C Ratio		0.74	0.74	0.06	0.82					0.12	0.12	0.12
v/c Ratio		0.11	0.01	0.43	0.04					0.54	0.14	0.42
Control Delay (s/veh)		10.6	0.0	66.9	5.3					114.2	99.4	15.6
Queue Delay		0.0	0.0	0.0	1.9					0.0	0.0	0.0
Total Delay (s/veh)		10.6	0.0	66.9	7.2					114.2	99.4	15.6
LOS		B	A	E	A					F	F	B
Approach Delay (s/veh)		9.6			32.1						69.9	
Approach LOS		A			C						E	

Intersection Summary

Area Type: Other

Cycle Length: 256

Actuated Cycle Length: 256

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

Natural Cycle: 170

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay (s/veh): 46.0

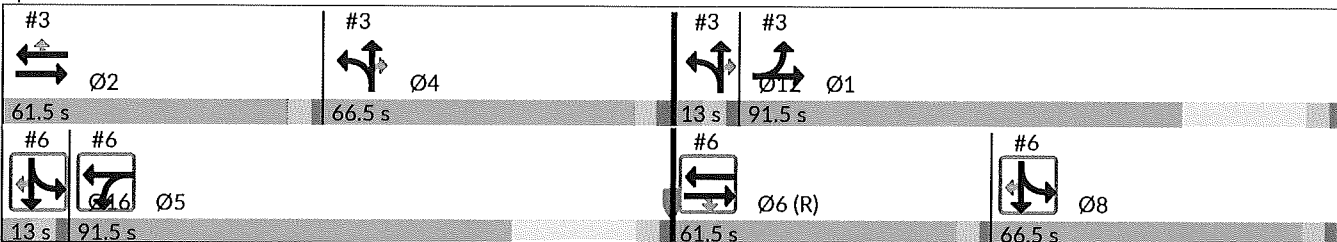
Intersection LOS: D

Intersection Capacity Utilization 42.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: SB FRONTAGE & WHARTON WEEMS



Site AM 8:09 am 11/20/2023 Baseline

Synchro 12 Report

Page 12

Lane Group	Ø1	Ø2	Ø4	Ø8	Ø12	Ø16
Protected Phases	1	2	4	8	12	16
Permitted Phases						
Detector Phase						
Switch Phase						
Minimum Initial (s)	5.0	10.0	8.0	8.0	2.0	2.0
Minimum Split (s)	22.5	33.5	55.0	46.0	9.0	9.0
Total Split (s)	91.5	61.5	66.5	66.5	13.0	13.0
Total Split (%)	36%	24%	26%	26%	5%	5%
Maximum Green (s)	85.0	55.0	59.5	59.5	6.0	6.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.5	2.5	2.5	2.5
Lost Time Adjust (s)						
Total Lost Time (s)						
Lead/Lag	Lag	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min	Min	Min	None	None
Walk Time (s)		7.0	7.0	7.0		
Flash Dont Walk (s)		13.0	34.0	25.0		
Pedestrian Calls (#/hr)		0	0	0		
Act Effct Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay (s/veh)						
Queue Delay						
Total Delay (s/veh)						
LOS						
Approach Delay (s/veh)						
Approach LOS						
Intersection Summary						

Phasings

6: SB FRONTAGE & WHARTON WEEMS

11/28/2023



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø2	Ø4	Ø8	Ø12
Protected Phases	6		5	6 5	16 8	16 8		1	2	4	8	12
Permitted Phases		6					16 8					
Minimum Initial (s)	10.0	10.0	5.0					5.0	10.0	8.0	8.0	2.0
Minimum Split (s)	32.5	32.5	11.5					22.5	33.5	55.0	46.0	9.0
Total Split (s)	61.5	61.5	91.5					91.5	61.5	66.5	66.5	13.0
Total Split (%)	24.0%	24.0%	35.7%					36%	24%	26%	26%	5%
Maximum Green (s)	55.0	55.0	85.0					85.0	55.0	59.5	59.5	6.0
Yellow Time (s)	4.5	4.5	4.5					4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.5	2.5	2.5
Lead/Lag	Lead	Lead	Lag					Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes					Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Min	C-Min	None					None	Min	Min	Min	None
Walk Time (s)	7.0	7.0						7.0	7.0	7.0		
Flash Dont Walk (s)	12.0	12.0						13.0	34.0	25.0		
Pedestrian Calls (#/hr)	0	0						0	0	0		
90th %ile Green (s)	172.5	172.5	24.5					34.7	20.5	10.3	25.7	163.5
90th %ile Term Code	Coord	Coord	Hold					Hold	Gap	Gap	Gap	Coord
70th %ile Green (s)	188.9	188.9	13.6					27.6	10.5	8.2	21.4	182.7
70th %ile Term Code	Coord	Coord	Hold					Hold	Gap	Gap	Gap	Coord
50th %ile Green (s)	191.8	191.8	12.9					23.6	10.0	8.0	19.2	187.4
50th %ile Term Code	Coord	Coord	Hold					Hold	Min	Min	Gap	Coord
30th %ile Green (s)	194.1	194.1	13.0					20.9	10.0	8.0	16.9	190.1
30th %ile Term Code	Coord	Coord	Hold					Hold	Min	Min	Gap	Coord
10th %ile Green (s)	197.8	197.8	13.2					17.2	10.0	8.0	13.2	193.8
10th %ile Term Code	Coord	Coord	Hold					Hold	Min	Min	Gap	Coord

Intersection Summary

Cycle Length: 256

Actuated Cycle Length: 256

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

Control Type: Actuated-Coordinated

Phasings

6: SB FRONTAGE & WHARTON WEEMS

11/28/2023

Lane Group	Ø16
Protected Phases	16
Permitted Phases	
Minimum Initial (s)	2.0
Minimum Split (s)	9.0
Total Split (s)	13.0
Total Split (%)	5%
Maximum Green (s)	6.0
Yellow Time (s)	4.5
All-Red Time (s)	2.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.0
Minimum Gap (s)	3.0
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
90th %ile Green (s)	6.3
90th %ile Term Code	Gap
70th %ile Green (s)	5.1
70th %ile Term Code	Gap
50th %ile Green (s)	5.1
50th %ile Term Code	Gap
30th %ile Green (s)	5.0
30th %ile Term Code	Gap
10th %ile Green (s)	4.8
10th %ile Term Code	Gap
Intersection Summary	

Queues

6: SB FRONTAGE & WHARTON WEEMS

11/28/2023



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	146	15	46	64	118	62	130
v/c Ratio	0.11	0.01	0.43	0.04	0.54	0.14	0.42
Control Delay (s/veh)	10.6	0.0	66.9	5.3	114.2	99.4	15.6
Queue Delay	0.0	0.0	0.0	1.9	0.0	0.0	0.0
Total Delay (s/veh)	10.6	0.0	66.9	7.2	114.2	99.4	15.6
Queue Length 50th (ft)	64	0	76	64	192	50	0
Queue Length 95th (ft)	120	0	120	101	270	79	77
Internal Link Dist (ft)	320			178		152	
Turn Bay Length (ft)							
Base Capacity (vph)	1375	1196	750	1534	411	822	467
Starvation Cap Reductn	0	0	0	1365	0	0	0
Spillback Cap Reductn	7	0	0	0	1	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.01	0.06	0.38	0.29	0.08	0.28
Intersection Summary							

HCM 7th Edition methodology does not support clustered intersections.

Lanes, Volumes, Timings

9: FAIRMONT GREENS/YARA LAKES & WHARTON WEEMS

11/28/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	105	14	5	220	6	34	0	13	34	0	63
Future Volume (vph)	23	105	14	5	220	6	34	0	13	34	0	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt		0.983			0.996			0.963				0.913
Flt Protected	0.950			0.950				0.965				0.983
Satd. Flow (prot)	1770	1831	0	1770	1855	0	0	1731	0	0	1672	0
Flt Permitted	0.950			0.950				0.965				0.983
Satd. Flow (perm)	1770	1831	0	1770	1855	0	0	1731	0	0	1672	0
Link Speed (mph)		45			45			30				30
Link Distance (ft)		351			431			214				164
Travel Time (s)		13.8			16.8			8.2				0.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	114	15	5	239	7	37	0	14	37	0	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	129	0	5	246	0	0	51	0	0	105	0
Enter Blocked Intersection	No	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		6			-6			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.0%
ICU Level of Service	A
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔			↔	
Traffic Vol, veh/h	23	105	14	5	220	6	34	0	13	34	0	63
Future Vol, veh/h	23	105	14	5	220	6	34	0	13	34	0	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	114	15	5	239	7	37	0	14	37	0	68

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	246	0	0	129	0	0	422	428	122	417	433	242
Stage 1	-	-	-	-	-	-	172	172	-	253	253	-
Stage 2	-	-	-	-	-	-	250	257	-	164	179	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1320	-	-	1456	-	-	542	519	929	546	516	796
Stage 1	-	-	-	-	-	-	830	757	-	751	698	-
Stage 2	-	-	-	-	-	-	754	695	-	838	751	-
Platoon blocked, %												
Mov Cap-1 Maneuver	1320	-	-	1456	-	-	484	507	929	525	504	796
Mov Cap-2 Maneuver	-	-	-	-	-	-	484	507	-	525	504	-
Stage 1	-	-	-	-	-	-	814	742	-	748	695	-
Stage 2	-	-	-	-	-	-	687	693	-	810	737	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	1.26	0.16	12.1	11.32
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	558	1320	-	-	1456	-	-	674
HCM Lane V/C Ratio	0.091	0.019	-	-	0.004	-	-	0.156
HCM Control Delay (s/veh)	12.1	7.8	-	-	7.5	-	-	11.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.6

Lanes, Volumes, Timings
 10: NB FRONTAGE & NB UTURN

11/28/2023



Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	↰	↑↑↑				
Traffic Volume (vph)	53	199	0	0	0	0
Future Volume (vph)	53	199	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	0			0	0	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	0.86	1.00	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	6408	0	0	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	6408	0	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		216	200		107	
Travel Time (s)		5.9	4.8		2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	216	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	58	216	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 28.0% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
 16: NB FRONTAGE & PERFECT VIEW

11/28/2023



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↖	↕	↗		
Traffic Volume (vph)	0	44	231	28	0	0
Future Volume (vph)	0	44	231	28	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.865	0.984			
Flt Protected						
Satd. Flow (prot)	0	1611	3483	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1611	3483	0	0	0
Link Speed (mph)	30		40			40
Link Distance (ft)	198		481			443
Travel Time (s)	4.5		8.2			7.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	48	251	30	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	48	281	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.3%
	ICU Level of Service A
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑			
Traffic Vol, veh/h	0	44	231	28	0	0
Future Vol, veh/h	0	44	231	28	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	48	251	30	0	0

Major/Minor	Minor1	Major1		
Conflicting Flow All	-	141	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.94	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.32	-	-
Pot Cap-1 Maneuver	0	881	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	-	881	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s/v	9.32	0
HCM LOS	A	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	881
HCM Lane V/C Ratio	-	0.054
HCM Control Delay (s/veh)	-	9.3
HCM Lane LOS	-	A
HCM 95th %tile Q(veh)	-	0.2

Lanes, Volumes, Timings
 1: S Broadway & WHARTON WEEMS

11/28/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	44	263	141	146	254	62
Future Volume (vph)	44	263	141	146	254	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	200			0
Storage Lanes	1	1	1			0
Taper Length (ft)	100		100			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.884				0.974	
Flt Protected	0.993		0.950			
Satd. Flow (prot)	1635	0	1770	1863	1814	0
Flt Permitted	0.993		0.950			
Satd. Flow (perm)	1635	0	1770	1863	1814	0
Link Speed (mph)	45			30	30	
Link Distance (ft)	1944			685	675	
Travel Time (s)	24.8			15.6	15.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	286	153	159	276	67
Shared Lane Traffic (%)						
Lane Group Flow (vph)	334	0	153	159	343	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	53.6%
ICU Level of Service	A
Analysis Period (min)	15

HCM 7th TWSC
1: S Broadway & WHARTON WEEMS

11/28/2023

Intersection						
Int Delay, s/veh	7.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		W	U	U	
Traffic Vol, veh/h	44	263	141	146	254	62
Future Vol, veh/h	44	263	141	146	254	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	200	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	286	153	159	276	67

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	775	310	343	0	0
Stage 1	310	-	-	-	-
Stage 2	465	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	366	730	1216	-	-
Stage 1	744	-	-	-	-
Stage 2	632	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	320	730	1216	-	-
Mov Cap-2 Maneuver	320	-	-	-	-
Stage 1	650	-	-	-	-
Stage 2	632	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	17.49	4.12	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1216	-	617	-	-
HCM Lane V/C Ratio	0.126	-	0.541	-	-
HCM Control Delay (s/veh)	8.4	-	17.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	3.2	-	-

Lanes, Volumes, Timings

3: NB FRONTAGE & WHARTON WEEMS

11/28/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	324	0	0	57	151	18	74	61	0	0	0
Future Volume (vph)	96	324	0	0	57	151	18	74	61	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected	0.950							0.990				
Satd. Flow (prot)	1770	1863	0	0	3539	1583	0	5034	1583	0	0	0
Flt Permitted	0.950							0.990				
Satd. Flow (perm)	1770	1863	0	0	3539	1583	0	5034	1583	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						164			102			
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		258			274			200			186	
Travel Time (s)		3.9			4.2			3.4			3.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	104	352	0	0	62	164	20	80	66	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	352	0	0	62	164	0	100	66	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	R NA	Left	Right	Left	Left	Right
Median Width(ft)		24			24			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		28			20			36			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	2	2			2	2	1	3	3			
Detector Template					TXLT	TXLT	Left	TX40	TX40			
Leading Detector (ft)	156	156			0	0	20	240	240			
Trailing Detector (ft)	5	5			0	0	0	-5	-5			
Detector 1 Position(ft)	5	5			-5	-5	0	-5	-5			
Detector 1 Size(ft)	6	6			20	20	20	20	20			
Detector 1 Type	CI+Ex	CI+Ex			Call	Call	CI+Ex	CI+Ex	CI+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)	150	150			21	21		104	104			
Detector 2 Size(ft)	6	6			20	20		6	6			
Detector 2 Type	CI+Ex	CI+Ex			Call	Call		CI+Ex	CI+Ex			
Detector 2 Channel												
Detector 2 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0			
Detector 3 Position(ft)								234	234			
Detector 3 Size(ft)								6	6			
Detector 3 Type								CI+Ex	CI+Ex			
Detector 3 Channel												
Detector 3 Extend (s)								0.0	0.0			
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			

Lanes, Volumes, Timings
 3: NB FRONTAGE & WHARTON WEEMS

11/28/2023

Lane Group	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Lane Configurations						
Traffic Volume (vph)						
Future Volume (vph)						
Ideal Flow (vphpl)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Right Turn on Red						
Satd. Flow (RTOR)						
Link Speed (mph)						
Link Distance (ft)						
Travel Time (s)						
Peak Hour Factor						
Adj. Flow (vph)						
Shared Lane Traffic (%)						
Lane Group Flow (vph)						
Enter Blocked Intersection						
Lane Alignment						
Median Width(ft)						
Link Offset(ft)						
Crosswalk Width(ft)						
Two way Left Turn Lane						
Headway Factor						
Turning Speed (mph)						
Number of Detectors						
Detector Template						
Leading Detector (ft)						
Trailing Detector (ft)						
Detector 1 Position(ft)						
Detector 1 Size(ft)						
Detector 1 Type						
Detector 1 Channel						
Detector 1 Extend (s)						
Detector 1 Queue (s)						
Detector 1 Delay (s)						
Detector 2 Position(ft)						
Detector 2 Size(ft)						
Detector 2 Type						
Detector 2 Channel						
Detector 2 Extend (s)						
Detector 3 Position(ft)						
Detector 3 Size(ft)						
Detector 3 Type						
Detector 3 Channel						
Detector 3 Extend (s)						
Turn Type						

Lanes, Volumes, Timings
 3: NB FRONTAGE & WHARTON WEEMS

11/28/2023

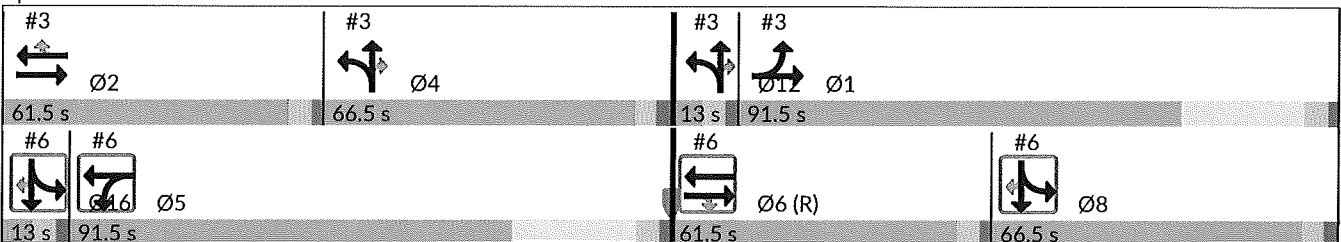


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	1	2 1			2		4 12	4 12				
Permitted Phases						2			4 12			
Detector Phase	1	2 1			2	2	4 12	4 12	4 12			
Switch Phase												
Minimum Initial (s)	5.0				10.0	10.0						
Minimum Split (s)	22.5				33.5	33.5						
Total Split (s)	91.5				61.5	61.5						
Total Split (%)	35.7%				24.0%	24.0%						
Maximum Green (s)	85.0				55.0	55.0						
Yellow Time (s)	4.5				4.5	4.5						
All-Red Time (s)	2.0				2.0	2.0						
Lost Time Adjust (s)	0.0				0.0	0.0						
Total Lost Time (s)	6.5				6.5	6.5						
Lead/Lag	Lag				Lead	Lead						
Lead-Lag Optimize?	Yes				Yes	Yes						
Vehicle Extension (s)	2.0				2.0	2.0						
Recall Mode	None				Min	Min						
Walk Time (s)					7.0	7.0						
Flash Dont Walk (s)					13.0	13.0						
Pedestrian Calls (#/hr)					0	0						
Act Effct Green (s)	48.8	66.8			11.5	11.5	175.7	175.7				
Actuated g/C Ratio	0.19	0.26			0.04	0.04	0.69	0.69				
v/c Ratio	0.31	0.73			0.39	0.72	0.03	0.06				
Control Delay (s/veh)	52.8	43.8			125.5	30.5	14.1	0.3				
Queue Delay	0.1	0.3			0.0	0.0	0.0	0.0				
Total Delay (s/veh)	52.9	44.1			125.5	30.5	14.1	0.3				
LOS	D	D			F	C	B	A				
Approach Delay (s/veh)		46.1			56.5		8.6					
Approach LOS		D			E		A					

Intersection Summary

Area Type: Other
 Cycle Length: 256
 Actuated Cycle Length: 256
 Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay (s/veh): 41.5
 Intersection Capacity Utilization 55.9%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service B

Splits and Phases: 3: NB FRONTAGE & WHARTON WEEMS



Site PM 3:48 pm 11/22/2023 Baseline

Synchro 12 Report

Lanes, Volumes, Timings
 3: NB FRONTAGE & WHARTON WEEMS

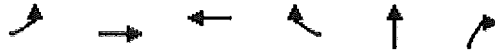
11/28/2023

Lane Group	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Protected Phases	4	5	6	8	12	16
Permitted Phases						
Detector Phase						
Switch Phase						
Minimum Initial (s)	8.0	5.0	10.0	8.0	2.0	2.0
Minimum Split (s)	55.0	11.5	32.5	46.0	9.0	9.0
Total Split (s)	66.5	91.5	61.5	66.5	13.0	13.0
Total Split (%)	26%	36%	24%	26%	5%	5%
Maximum Green (s)	59.5	85.0	55.0	59.5	6.0	6.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.5	2.0	2.0	2.5	2.5	2.5
Lost Time Adjust (s)						
Total Lost Time (s)						
Lead/Lag	Lag	Lag	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Min	None	C-Min	Min	None	None
Walk Time (s)	7.0		7.0	7.0		
Flash Dont Walk (s)	34.0		12.0	25.0		
Pedestrian Calls (#/hr)	0		0	0		
Act Effct Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay (s/veh)						
Queue Delay						
Total Delay (s/veh)						
LOS						
Approach Delay (s/veh)						
Approach LOS						
Intersection Summary						

Phasings

3: NB FRONTAGE & WHARTON WEEMS

11/28/2023



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR	Ø4	Ø5	Ø6	Ø8	Ø12	Ø16
Protected Phases	1	2 1	2		4 12		4	5	6	8	12	16
Permitted Phases				2		4 12						
Minimum Initial (s)	5.0		10.0	10.0			8.0	5.0	10.0	8.0	2.0	2.0
Minimum Split (s)	22.5		33.5	33.5			55.0	11.5	32.5	46.0	9.0	9.0
Total Split (s)	91.5		61.5	61.5			66.5	91.5	61.5	66.5	13.0	13.0
Total Split (%)	35.7%		24.0%	24.0%			26%	36%	24%	26%	5%	5%
Maximum Green (s)	85.0		55.0	55.0			59.5	85.0	55.0	59.5	6.0	6.0
Yellow Time (s)	4.5		4.5	4.5			4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0		2.0	2.0			2.5	2.0	2.0	2.5	2.5	2.5
Lead/Lag	Lag		Lead	Lead			Lag	Lag	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0		2.0	2.0			2.0	2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	3.0		3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None		Min	Min			Min	None	C-Min	Min	None	None
Walk Time (s)			7.0	7.0			7.0		7.0	7.0		
Flash Dont Walk (s)			13.0	13.0			34.0		12.0	25.0		
Pedestrian Calls (#/hr)			0	0			0		0	0		
90th %ile Green (s)	60.4		16.5	16.5			8.0	16.0	154.3	50.2	144.1	8.5
90th %ile Term Code	Hold		Gap	Gap			Min	Hold	Coord	Gap	Coord	Gap
70th %ile Green (s)	52.1		11.0	11.0			8.0	11.8	165.2	44.8	157.9	7.2
70th %ile Term Code	Gap		Gap	Gap			Min	Hold	Coord	Hold	Coord	Gap
50th %ile Green (s)	48.4		10.0	10.0			8.0	11.0	168.1	42.9	162.6	7.0
50th %ile Term Code	Gap		Min	Min			Min	Hold	Coord	Hold	Coord	Gap
30th %ile Green (s)	44.6		10.0	10.0			8.0	12.2	170.4	40.6	166.4	5.8
30th %ile Term Code	Gap		Min	Min			Min	Hold	Coord	Hold	Coord	Gap
10th %ile Green (s)	38.4		10.0	10.0			8.0	12.5	177.0	34.0	172.6	5.5
10th %ile Term Code	Gap		Min	Min			Min	Hold	Coord	Hold	Coord	Gap

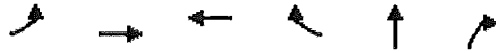
Intersection Summary

Cycle Length: 256
 Actuated Cycle Length: 256
 Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green
 Control Type: Actuated-Coordinated

Queues

3: NB FRONTAGE & WHARTON WEEMS

11/28/2023



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	104	352	62	164	100	66
v/c Ratio	0.31	0.73	0.39	0.72	0.03	0.06
Control Delay (s/veh)	52.8	43.8	125.5	30.5	14.1	0.3
Queue Delay	0.1	0.3	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.9	44.1	125.5	30.5	14.1	0.3
Queue Length 50th (ft)	71	216	55	0	18	0
Queue Length 95th (ft)	m109	231	87	96	34	1
Internal Link Dist (ft)		178	194		120	
Turn Bay Length (ft)						
Base Capacity (vph)	750	818	760	468	3455	1118
Starvation Cap Reductn	198	113	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.50	0.08	0.35	0.03	0.06

Intersection Summary

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

Lanes, Volumes, Timings
6: SB FRONTAGE & WHARTON WEEMS

11/28/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↗	↖	↑					↖	↑↑	↗
Traffic Volume (vph)	0	100	32	36	34	0	0	0	0	280	66	61
Future Volume (vph)	0	100	32	36	34	0	0	0	0	280	66	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	1863	1583	1770	1863	0	0	0	0	1770	3539	1583
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1863	1583	1770	1863	0	0	0	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			104									102
Link Speed (mph)		35			45			40			40	
Link Distance (ft)		400			258			161			232	
Travel Time (s)		7.8			3.9			2.7			4.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	109	35	39	37	0	0	0	0	304	72	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	35	39	37	0	0	0	0	304	72	66
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	R NA	Left	R NA
Median Width(ft)		14			24			12			12	
Link Offset(ft)		0			0			5			0	
Crosswalk Width(ft)		12			36			16			36	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	2	2					3	3	3
Detector Template		TXLT	Right							TX40	TX40	TX40
Leading Detector (ft)		0	20	156	156					240	240	240
Trailing Detector (ft)		0	0	5	5					-5	-5	-5
Detector 1 Position(ft)		-5	0	5	5					-5	-5	-5
Detector 1 Size(ft)		20	20	6	6					20	20	20
Detector 1 Type		Call	CI+Ex	CI+Ex	CI+Ex					CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0	0.0	0.0
Detector 2 Position(ft)		21		150	150					104	104	104
Detector 2 Size(ft)		20		6	6					6	6	6
Detector 2 Type		Call		CI+Ex	CI+Ex					CI+Ex	CI+Ex	CI+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 3 Position(ft)										234	234	234
Detector 3 Size(ft)										6	6	6
Detector 3 Type										CI+Ex	CI+Ex	CI+Ex
Detector 3 Channel												
Detector 3 Extend (s)										0.0	0.0	0.0
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm

Lane Group	Ø1	Ø2	Ø4	Ø8	Ø12	Ø16
Lane Configurations						
Traffic Volume (vph)						
Future Volume (vph)						
Ideal Flow (vphpl)						
Lane Util. Factor						
Frt						
Flt Protected						
Satd. Flow (prot)						
Flt Permitted						
Satd. Flow (perm)						
Right Turn on Red						
Satd. Flow (RTOR)						
Link Speed (mph)						
Link Distance (ft)						
Travel Time (s)						
Peak Hour Factor						
Adj. Flow (vph)						
Shared Lane Traffic (%)						
Lane Group Flow (vph)						
Enter Blocked Intersection						
Lane Alignment						
Median Width(ft)						
Link Offset(ft)						
Crosswalk Width(ft)						
Two way Left Turn Lane						
Headway Factor						
Turning Speed (mph)						
Number of Detectors						
Detector Template						
Leading Detector (ft)						
Trailing Detector (ft)						
Detector 1 Position(ft)						
Detector 1 Size(ft)						
Detector 1 Type						
Detector 1 Channel						
Detector 1 Extend (s)						
Detector 1 Queue (s)						
Detector 1 Delay (s)						
Detector 2 Position(ft)						
Detector 2 Size(ft)						
Detector 2 Type						
Detector 2 Channel						
Detector 2 Extend (s)						
Detector 3 Position(ft)						
Detector 3 Size(ft)						
Detector 3 Type						
Detector 3 Channel						
Detector 3 Extend (s)						
Turn Type						

Lanes, Volumes, Timings
 6: SB FRONTAGE & WHARTON WEEMS

11/28/2023

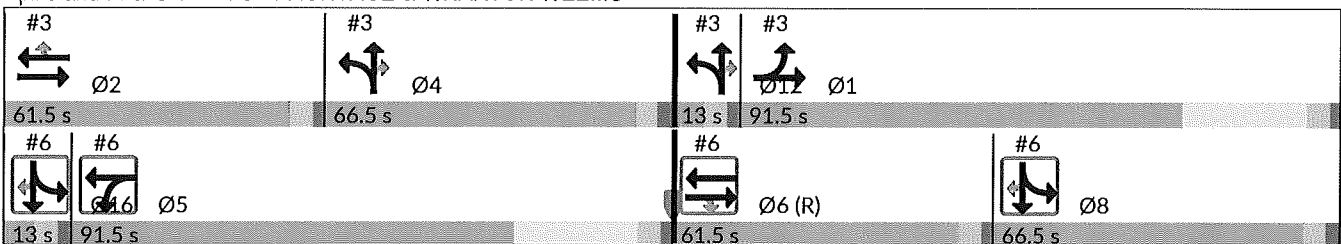


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		6		5	6 5					16 8	16 8	
Permitted Phases			6									16 8
Detector Phase		6	6	5	6 5					16 8	16 8	16 8
Switch Phase												
Minimum Initial (s)		10.0	10.0	5.0								
Minimum Split (s)		32.5	32.5	11.5								
Total Split (s)		61.5	61.5	91.5								
Total Split (%)		24.0%	24.0%	35.7%								
Maximum Green (s)		55.0	55.0	85.0								
Yellow Time (s)		4.5	4.5	4.5								
All-Red Time (s)		2.0	2.0	2.0								
Lost Time Adjust (s)		0.0	0.0	0.0								
Total Lost Time (s)		6.5	6.5	6.5								
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		2.0	2.0	2.0								
Recall Mode		C-Min	C-Min	None								
Walk Time (s)		7.0	7.0									
Flash Dont Walk (s)		12.0	12.0									
Pedestrian Calls (#/hr)		0	0									
Act Effct Green (s)		167.0	167.0	12.7	186.2					56.3	56.3	56.3
Actuated g/C Ratio		0.65	0.65	0.05	0.73					0.22	0.22	0.22
v/c Ratio		0.09	0.03	0.45	0.03					0.78	0.09	0.15
Control Delay (s/veh)		17.7	0.1	50.5	7.8					108.1	78.1	1.4
Queue Delay		0.0	0.0	0.0	0.0					0.4	0.0	0.0
Total Delay (s/veh)		17.7	0.1	50.5	7.8					108.4	78.1	1.4
LOS		B	A	D	A					F	E	A
Approach Delay (s/veh)		13.4			29.7						87.5	
Approach LOS		B			C						F	

Intersection Summary

Area Type: Other
 Cycle Length: 256
 Actuated Cycle Length: 256
 Offset: 0 (0%), Referenced to phase 6:EBWB, Start of Green
 Natural Cycle: 170
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay (s/veh): 64.8
 Intersection Capacity Utilization 55.9%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service B

Splits and Phases: 6: SB FRONTAGE & WHARTON WEEMS



Site PM 3:48 pm 11/22/2023 Baseline

Synchro 12 Report

Page 11

Lane Group	Ø1	Ø2	Ø4	Ø8	Ø12	Ø16
Protected Phases	1	2	4	8	12	16
Permitted Phases						
Detector Phase						
Switch Phase						
Minimum Initial (s)	5.0	10.0	8.0	8.0	2.0	2.0
Minimum Split (s)	22.5	33.5	55.0	46.0	9.0	9.0
Total Split (s)	91.5	61.5	66.5	66.5	13.0	13.0
Total Split (%)	36%	24%	26%	26%	5%	5%
Maximum Green (s)	85.0	55.0	59.5	59.5	6.0	6.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.5	2.5	2.5	2.5
Lost Time Adjust (s)						
Total Lost Time (s)						
Lead/Lag	Lag	Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	Min	Min	Min	None	None
Walk Time (s)		7.0	7.0	7.0		
Flash Dont Walk (s)		13.0	34.0	25.0		
Pedestrian Calls (#/hr)		0	0	0		
Act Effct Green (s)						
Actuated g/C Ratio						
v/c Ratio						
Control Delay (s/veh)						
Queue Delay						
Total Delay (s/veh)						
LOS						
Approach Delay (s/veh)						
Approach LOS						
Intersection Summary						

Phasings

6: SB FRONTAGE & WHARTON WEEMS

11/28/2023



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR	Ø1	Ø2	Ø4	Ø8	Ø12
Protected Phases	6		5	6 5	16 8	16 8		1	2	4	8	12
Permitted Phases		6					16 8					
Minimum Initial (s)	10.0	10.0	5.0					5.0	10.0	8.0	8.0	2.0
Minimum Split (s)	32.5	32.5	11.5					22.5	33.5	55.0	46.0	9.0
Total Split (s)	61.5	61.5	91.5					91.5	61.5	66.5	66.5	13.0
Total Split (%)	24.0%	24.0%	35.7%					36%	24%	26%	26%	5%
Maximum Green (s)	55.0	55.0	85.0					85.0	55.0	59.5	59.5	6.0
Yellow Time (s)	4.5	4.5	4.5					4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.5	2.5	2.5
Lead/Lag	Lead	Lead	Lag					Lag	Lead	Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes					Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	2.0
Minimum Gap (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Min	C-Min	None					None	Min	Min	Min	None
Walk Time (s)	7.0	7.0							7.0	7.0	7.0	
Flash Dont Walk (s)	12.0	12.0							13.0	34.0	25.0	
Pedestrian Calls (#/hr)	0	0							0	0	0	
90th %ile Green (s)	154.3	154.3	16.0					60.4	16.5	8.0	50.2	144.1
90th %ile Term Code	Coord	Coord	Hold					Hold	Gap	Min	Gap	Coord
70th %ile Green (s)	165.2	165.2	11.8					52.1	11.0	8.0	44.8	157.9
70th %ile Term Code	Coord	Coord	Hold					Gap	Gap	Min	Hold	Coord
50th %ile Green (s)	168.1	168.1	11.0					48.4	10.0	8.0	42.9	162.6
50th %ile Term Code	Coord	Coord	Hold					Gap	Min	Min	Hold	Coord
30th %ile Green (s)	170.4	170.4	12.2					44.6	10.0	8.0	40.6	166.4
30th %ile Term Code	Coord	Coord	Hold					Gap	Min	Min	Hold	Coord
10th %ile Green (s)	177.0	177.0	12.5					38.4	10.0	8.0	34.0	172.6
10th %ile Term Code	Coord	Coord	Hold					Gap	Min	Min	Hold	Coord

Intersection Summary

Cycle Length: 256

Actuated Cycle Length: 256

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

Control Type: Actuated-Coordinated

Phasings

6: SB FRONTAGE & WHARTON WEEMS

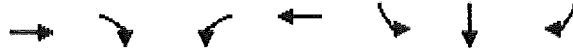
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Lane Group	Ø16
Protected Phases	16
Permitted Phases	
Minimum Initial (s)	2.0
Minimum Split (s)	9.0
Total Split (s)	13.0
Total Split (%)	5%
Maximum Green (s)	6.0
Yellow Time (s)	4.5
All-Red Time (s)	2.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	2.0
Minimum Gap (s)	3.0
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
90th %ile Green (s)	8.5
90th %ile Term Code	Gap
70th %ile Green (s)	7.2
70th %ile Term Code	Gap
50th %ile Green (s)	7.0
50th %ile Term Code	Gap
30th %ile Green (s)	5.8
30th %ile Term Code	Gap
10th %ile Green (s)	5.5
10th %ile Term Code	Gap
Intersection Summary	

Queues

6: SB FRONTAGE & WHARTON WEEMS

11/28/2023



Lane Group	EBT	EBR	WBL	WBT	SBL	SBT	SBR
Lane Group Flow (vph)	109	35	39	37	304	72	66
v/c Ratio	0.09	0.03	0.45	0.03	0.78	0.09	0.15
Control Delay (s/veh)	17.7	0.1	50.5	7.8	108.1	78.1	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Total Delay (s/veh)	17.7	0.1	50.5	7.8	108.4	78.1	1.4
Queue Length 50th (ft)	66	0	65	50	492	52	0
Queue Length 95th (ft)	113	0	112	90	601	77	3
Internal Link Dist (ft)	320			178		152	
Turn Bay Length (ft)							
Base Capacity (vph)	1215	1068	750	1355	420	839	453
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	139	0	0	0	10	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.03	0.05	0.03	0.74	0.09	0.15

Intersection Summary

Lanes, Volumes, Timings

9: FAIRMONT GREENS/YARA LAKES & WHARTON WEEMS

11/28/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	282	30	7	145	21	13	0	8	19	0	42
Future Volume (vph)	83	282	30	7	145	21	13	0	8	19	0	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.981			0.947			0.907	
Flt Protected	0.950			0.950				0.970			0.985	
Satd. Flow (prot)	1770	1835	0	1770	1827	0	0	1711	0	0	1664	0
Flt Permitted	0.950			0.950				0.970			0.985	
Satd. Flow (perm)	1770	1835	0	1770	1827	0	0	1711	0	0	1664	0
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		351			431			214			164	
Travel Time (s)		13.8			16.8			8.2			0.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	90	307	33	8	158	23	14	0	9	21	0	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	340	0	8	181	0	0	23	0	0	67	0
Enter Blocked Intersection	No	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		6			-6			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.7%
ICU Level of Service	A
Analysis Period (min)	15

Intersection

Int Delay, s/veh 2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔			↔	
Traffic Vol, veh/h	83	282	30	7	145	21	13	0	8	19	0	42
Future Vol, veh/h	83	282	30	7	145	21	13	0	8	19	0	42
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	90	307	33	8	158	23	14	0	9	21	0	46

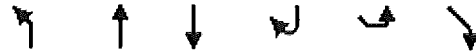
Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	180	0	0	339	0	0	676	699	323	671	704	169
Stage 1	-	-	-	-	-	-	503	503	-	184	184	-
Stage 2	-	-	-	-	-	-	173	196	-	487	520	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1395	-	-	1220	-	-	367	364	718	370	362	875
Stage 1	-	-	-	-	-	-	551	541	-	818	747	-
Stage 2	-	-	-	-	-	-	829	739	-	562	532	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1395	-	-	1220	-	-	323	338	718	340	336	875
Mov Cap-2 Maneuver	-	-	-	-	-	-	323	338	-	340	336	-
Stage 1	-	-	-	-	-	-	515	506	-	812	743	-
Stage 2	-	-	-	-	-	-	781	734	-	519	498	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	1.63	0.32	14.32	11.91
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	409	1395	-	-	1220	-	-	587
HCM Lane V/C Ratio	0.056	0.065	-	-	0.006	-	-	0.113
HCM Control Delay (s/veh)	14.3	7.8	-	-	8	-	-	11.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-	-	0.4

Lanes, Volumes, Timings
 10: NB FRONTAGE & NB UTURN

11/28/2023



Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Volume (vph)	30	153	0	0	0	0
Future Volume (vph)	30	153	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	0	0
Storage Lanes	0			0	0	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	0.86	1.00	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	6408	0	0	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	6408	0	0	0	0
Link Speed (mph)		40	40		30	
Link Distance (ft)		216	200		107	
Travel Time (s)		5.9	4.8		2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	166	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	166	0	0	0	0
Enter Blocked Intersection	Yes	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.0%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
 16: NB FRONTAGE & PERFECT VIEW

11/28/2023



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕	↖		
Traffic Volume (vph)	0	34	271	58	0	0
Future Volume (vph)	0	34	271	58	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.865	0.974			
Flt Protected						
Satd. Flow (prot)	0	1611	3447	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	1611	3447	0	0	0
Link Speed (mph)	30		40			40
Link Distance (ft)	198		481			443
Travel Time (s)	4.5		8.2			7.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	37	295	63	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	37	358	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Stop

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	19.3% ICU Level of Service A
Analysis Period (min)	15

HCM 7th TWSC
 16: NB FRONTAGE & PERFECT VIEW

11/28/2023

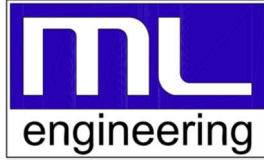
Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑			
Traffic Vol, veh/h	0	34	271	58	0	0
Future Vol, veh/h	0	34	271	58	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	37	295	63	0	0

Major/Minor	Minor1	Major1		
Conflicting Flow All	-	179	0	0
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	6.94	-	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	3.32	-	-
Pot Cap-1 Maneuver	0	833	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	833	-	-
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	WB	NB
HCM Control Delay, s/v	9.52	0
HCM LOS	A	

Minor Lane/Major Mvmt	NBT	NBRWBLn1
Capacity (veh/h)	-	833
HCM Lane V/C Ratio	-	0.044
HCM Control Delay (s/veh)	-	9.5
HCM Lane LOS	-	A
HCM 95th %tile Q(veh)	-	0.1



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**STORMWATER DETENTION ANALYSIS
FOR YARA LAKES ESTATES**

NEW RESIDENTIAL SUBDIVISION DEVELOPMENT WITH 204 SINGLE-FAMILY RESIDENTIAL LOTS

**56.712 ACRES OF LAND BEING ALL OF THAT CERTAIN CALLED 41.992 ACRES
(TRACT 9) AND ALL OF THAT CERTAIN CALLED 14.707 AC. (TRACT 2), RECORDED
UNDER H.C.C.F. #20120305157 AND LOCATED IN THE JOHNSON HUNTER SURVEY, A-
35 AND IN THE W.P. HARRIS SURVEY, A-30, HARRIS COUNTY, TEXAS**

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DATE: 03/19/2026

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EXHIBIT 7c	XPSWMM – Proposed Conditions Node: P1.1 result	
EXHIBIT 7d	XPSWMM – Proposed Conditions Node: MH3 result	
EXHIBIT 7e	XPSWMM – Proposed Conditions Node: Yara Lakes Pond result	
EXHIBIT 7f	XPSWMM – Proposed Conditions Link: Weir	

SECTION 1 – EXECUTIVE SUMMARY

M Lanza Engineering, PLLC undertook the required engineered designs of the infrastructure, Hydrologic and Hydraulic studies, and the preparation of the drainage impact analysis report for the Yara Lakes Estates Subdivision; this proposed development will incorporate new 204 typical Residential lots, 9.761 ac. Detention Basin reserve, 2.7170 ac. park land reserves and 1.9276 ac. landscape/open space reserves.

Under Existing conditions, the site is mostly covered in wooded area (51.04 ac.) and has a storm water channel (5.67 ac.) to convey storm water from adjacent Fairmont Greens North subdivision running along the eastern edge of the property.

The proposed work is the development of Yara Lakes subdivision with single family residential lots with the applicable public infrastructure. These improvements will require the redesign of the existing on-site storm water detention channel; therefore, we are making an amendment to the approved drainage impact analysis for ***Fairmont Greens North*** (refer as FGN in this report) approved by Harris County Flood Control District with Project# 1806270142.

Based on the availability of water and wastewater, and the allowable area to accommodate the required stormwater detention system for the entire land development, the Yara Lakes Estates subdivision development is feasible.

SECTION 2 – INTRODUCTION

2.1 PROJECT LOCATION

The project is located at the northeast intersection of SH 146. and Wharton Weems Blvd., La Porte, Texas 77571 in Harris County. A vicinity map indicating the location of the tract relative to the landmarks is provided as Exhibit-1 in the document.

2.2 SCOPE OF WORK

Yara Lakes Estates subdivision (56.712 ac.) development infrastructure designs, hydrologic and hydraulic study, and drainage impact report to include 204 typical Residential lots.

The scope of work includes:

1. Development of new residential lots to Yara Lakes Estates subdivision.
2. Retrofitting existing storm detention channel to a storm detention pond as per the new proposed development.
3. Preparation of XPSWMM model to analyze the stormwater impact of the proposed development.
4. Hydrologic analysis of the site and its contributing areas, development of drainage areas and calculation of peak discharges for existing and proposed conditions.
5. Determination of the new site ultimate stormwater outfall strategies.

2.3 DATA SOURCE

Following are the documentation used in this analysis:

- Policy Criteria & Procedure Manual, Harris County Flood Control District, July 2019.
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Harris County, Texas, and Incorporated areas.
- City of La Porte PICM.
- Rainfall Depths and Intensities in NOAA's Atlas 14 rainfall data adopted by HCFCD.
- Storm Water Management Model User's Manual Version 5.1

2.4 SURVEY AND PROJECT DATUM

For these calculations we use the current topographic survey by Century Engineering, Inc. dated April 2023. The stormwater design plan sets were referenced to the NAVD 1988 (2001, adjustment) vertical datum as stated on the survey provided by Century Engineering, Inc.

2.5 FEMA Special Flood Hazard Area

The property area is covered by effective Flood Insurance Rate Map (FIRM) Panel No. 48201C0945M, revised January 06, 2017. For this study, the property lies partially within shaded Zone-X and Zone "AE", an area considered within the 0.2% and 1% Flood Plain, as shown on Exhibit 2. The flood plain administrator for the development will be the City of La Porte and per the City of La Porte GIS map, the property is not within the Riverine Floodplain therefore floodplain fill mitigation won't be required. All Single Family Residential finished floors will be designed to prevent flood damage and will abide by minimum finished floor requirements for properties in the flood zone.

SECTION 3 – ANALYSIS

3.1 EXISTING CONDITIONS

Under existing conditions, the 56.712 acres is a combination of a storm water detention channel area of 5.67 ac and 51.04 ac. wooded area that was subdivided into tract 3a (30.93 ac.) and 3b (24.35 ac.) where the tract 3a sheet flows into the roadside ditch on Wharton Weems Blvd and Tract 3b drains into the drainage system. The Topography of the area is very flat with low slope (<1%), an average elevation of approximately 12 ft, with highs of 13 ft and lows of 11 ft. According to the FEMA, under panel no. 48201C0945M, the property is located within a 100-Yr and 500-Yr effective floodplain. The storm outfall from adjacent development in the North (Fairmont Greens North) discharges 1% $Q_{out} = 40.289$ cfs into the private storm water channel located on Yara Lakes project site which is connected via a 24" RCP into the existing detention pond for the Lakes at Fairmont Greens to the south with an ultimate outfall 1% $Q_{out} = 35.1$ cfs into the A104-00-00 tributary downstream, located in the Clear Creek Watershed.

3.2 PROPOSED DEVELOPMENT

As referenced above, the proposed Yara Lakes Estates development consists of developing the 56.712 acres to accommodate 204 <¼ acre single family residential lots. Please refer to Exhibit 5.

SECTION 4 – HYDROLOGY

4.1 HYDROLOGY METHOD

For this analysis, we use the most current available methodology provided by Harris County Flood Control District in their current Policy Criteria and Procedures Manual, criteria for Atlas 14, implementation-July 2019.

The selected method for this analysis is the HCFCD method-2, Small Watershed Hydrograph Method consisting of developing a hydrograph using the site runoff curves, this simplified method is to determine peak discharges for areas from 50 acres up to 640 acres.

The peak flow was determined by using the equation for the site run-off curves:

$$Q_p = b * A^m$$

The total time to peak was calculated using the following equation from the PCPM:

$$T_p = \frac{V}{1.39 * Q_p}$$

4.2 HYDRAULIC METHOD

Autodesk XP-SWMM program was used for the impact analysis of the proposed development on the existing conditions of the site and downstream areas. This study builds up on the detention analysis performed for the Fairmont Greens North subdivision and amends the total development and detention area of the overall drainage area of the ponds. This study intends to confirm that there is no adverse negative impact on the surrounding area.

4.3 BACKGROUND

This drainage analysis is an amendment to the approved drainage impact analysis for **Fairmont Greens North (FGN) (Project#1806270142)**. The previously approved DIA analyzed the impact of development within 38.32 ac. land out of approx. 95.03 ac. land which includes 3 interconnected detention ponds with storm discharge crossing Wharton Weems Blvd. and into P1.1 (Ex. 3b) which ultimately discharges into tributary A104-00-00. The new amendment analysis is for the remainder 56.7123 acres out of 95.03 ac. tract. **Yara Lakes Estates** will use and improve infrastructure provided for the Fairmont Greens North storm detention while the outfall structure will remain the same as under existing conditions. The new amendment proposes enhancing P3 (exist. Channel, exhibit 5) passing through the subject site to include the additional storm detention volume generated by the proposed Yara Lakes Estates development.

Fairmont Greens North drainage analysis employed 3 interconnected pond systems (i.e., P1, P2, P3) to route the storm runoff safely to the ultimate outfall (tributary A104-00-00). P1 & P2 are located within the existing FGN development while P3 passes through the Yara Lakes Estates property. The originally approved DIA for FGN is based on TP-40 rainfall data. Below is the summary table for FGN development as it was approved in 2019:

Detention Summary Table

Fairmont Greens North		
Detention Basin Drainage Area	38.3 acres	
Detention Storage Rate	0.79 acre-feet/acre	
Floodplain Storage Rate	1.0 acre-feet/acre	
Combined Storate Rate	1.02 acre-feet/acre	
Detention Storage Required	21.1 acre-feet	
Floodplain Storage Required	8.9 acre-feet	
Total Storage Required	30.0 acre-feet	
Total Storage Provided	39.2 acre-feet	
	10% (10-yr)	100% (100-yr)
Maximum Allowable Outflow (cfs)	27.0	40.6
Maximum Outflow Provided (cfs)	26.8	35.1

Table 5: Individual Pond Quantities

Pond	Berm Area <i>ac</i>	Top of Bank Elev. <i>ft</i>	Pond Depth <i>ft</i>	Wet Pond Elev. <i>ft</i>	Total Pond Volume <i>ac-ft</i>	WSE [10-yr] <i>ft</i>	WSE [100-yr] <i>ft</i>	Freeboard [100-yr] <i>ft</i>
1	3.12	13.5	6	-	10.7	10.44	12.33	1.18
2	4.78	13.5	9.5	7	12.2	9.97	12.21	1.29
3	5.57	13	10.5	-	16.5	8.85	11.49	1.51
Existing	9.25	8.5	9	1.5	35.5	5.21	7.11	1.39

Based on the provided data, it has been determined that FGN possesses 9.2 acre-feet of surplus detention storage within Pond P3. The proposed development must incorporate this existing capacity into its design to accurately calculate the additional on-site detention volume requirements, while maintaining consistent outfall discharge rates

4.4 LAND USE

The land uses impervious cover for both existing and proposed conditions using the most restrictive values in the HCFCF PCMP table 3.5.1 referenced in this report as Table 1. (See Exhibit 3 & 4)

Table 1 – Land Use Categories and Percent Impervious Cover

Land Use Categories	Land Use Descriptions	% Impervious	% Development
Undeveloped	Unimproved, natural, or agricultural	0	0
Residential – Rural Lot	≥ 5 acre ranch or farm	5	0
Residential – Large Lot (Newer)	> ½ acre new residential neighborhoods , storm sewers or roadside ditches with adequate capacity	25	100
Residential – Large Lot (Older)	> ¼ acre, older neighborhoods with limited capacity roadside ditches	25	50
Residential – Small Lot	≤ ¼ acre	40	100
Schools	Schools with non-paved areas	40	50
Developed Green Areas	Parks or golf courses	15	50
Light Industrial/ Commercial	Office parks, nurseries, airports, warehouses, or manufacturing with non-paved areas	65	100
High Density	Commercial, business, industrial, or apartments	85	100
Isolated Transportation*	Highway or major thoroughfare corridors	80	100
Water	Detention basins, lakes, and channels	100	100

WEIGHTED RUNOFF COEFFICIENT				
EXISTING CONDITIONS				
TOTAL AREA	56.7123			
WOODS	51.042	C (WOODS)	0.2	
CHANNEL	5.670	56.712	C (CHANNEL)	1.0
Cw = [(51.042 AC.*0.2)+(5.67 AC.*1.0)] / 56.7123 AC.				
EXISTING Cw	0.280	% IMPERVIOUS	27.998	
USE 0% IMPERVIOUS				
PROPOSED CONDITIONS				
TOTAL AREA	56.7123			
POND	7.7610	C (POND)	1	
LOTS	48.9513	56.712	C (LOTS)	0.4
Cw = [(7.761 AC.*1.0)+(48.9513 AC.*0.4)] / 56.7123 AC.				
PROPOSED Cw	0.482	% IMPERVIOUS	48.21	

4.5 HYDROGRAPH ROUTING DATA SUMMARY

Redevelopment Peak Discharge:

Peak discharges using the equation on HCFCD PCMP 3.3.5. $Q=bA^m$ for site runoff curves, where A= drainage area (ac.), $m= 0.786 > 20ac.$ and b= impervious cover variable from Table 2.

Table 2 – Site Runoff Variable b

Impervious Cover	50% Prob.		10% Prob.		1% Prob.		0.2% Prob.	
	≤ 20 acres	> 20 acres	≤ 20 acres	> 20 acres	≤ 20 acres	> 20 acres	≤ 20 acres	> 20 acres
0%	0.7	1.4	1.3	2.4	2.4	4.6	3.6	6.8
10%	0.9	1.8	1.6	3.0	2.9	5.5	4.3	8.1
20%	1.2	2.2	1.9	3.6	3.4	6.5	5.0	9.5
30%	1.4	2.7	2.3	4.4	4.1	7.7	5.8	11.0
40%	1.7	3.3	2.8	5.2	4.7	8.9	6.6	12.6
85%	2.3	4.3	3.5	6.6	5.7	10.9	8.0	15.1

Following is the summary for the linear interpolation used to determine the variable dependent on impervious cover using values in Table 2.:

SITE RUNOFF CURVES						
IMP. COVER	50% PROBABILITY		10% PROBABILITY		1% PROBABILITY	
	≤20 ACRES	≥20 ACRES	≤20 ACRES	≥20 ACRES	≤20 ACRES	≥20 ACRES
%						
0	0.7	1.4	1.3	2.4	2.4	4.6
10	0.9	1.8	1.6	3	2.9	5.5
20	1.2	2.2	1.9	3.6	3.4	6.5
30	1.4	2.7	2.3	4.4	4.1	7.7
40	1.7	3.3	2.8	5.2	4.7	8.9
85	2.3	4.3	3.5	6.6	5.7	10.9
			% IMP.	2-YR	10-YR	100-YR
	EXIST. IMPERVIOUS		0.000	1.40	2.40	4.60
	PROP. IMPERVIOUS		48.21	3.48	5.46	9.26

RUNOFF CALCULATION			
EXISTING CONDITIONS			
	2-YR	10-YR	100-YR
Q = bA ^m	33.459	57.359	109.938
PROPOSED CONDITIONS			
	2-YR	10-YR	100-YR
Q = bA ^m	83.229	130.383	221.428

EXCESS OF RUNOFF

EXCESS OF RUNOFF - SMALL WATERSHED HYDROGRAPH METHOD						
WATERSHED		DIRECT RUNOFF (IN.)				
REGION-3		0	40	85	100	%
	100-YR	16	16.7	17.5	18	
	10-YR	6.8	7.7	8.8	9.3	
	2-YR	3.2	4	4.9	5.3	
EXISTING CONDITIONS		PERCENT	100-YR	10-YR	2-YR	
	IMPERVIOUS COVER	0.000	16.0	6.8	3.2	
PROPOSED CONDITIONS			100-YR	10-YR	2-YR	
	IMPERVIOUS COVER	48.21	16.846	7.901	4.16	

VOLUME OF RUN-OFF CALCULATION

EXISTING CONDITIONS			
	2-YR	10-YR	100-YR
$V = A * I / 12$	15.123	32.137	75.616
PROPOSED CONDITIONS			
	2-YR	10-YR	100-YR
$V = A * I / 12$	19.680	37.339	79.614

TIME TO PEAK CALCULATION

$T_{pe} = V * 43560 / (1.39 * Q * 3600)$

EXISTING CONDITIONS			
	2-YR	10-YR	100-YR
	3.935	4.877	5.987
PROPOSED CONDITIONS			
	2-YR	10-YR	100-YR
	2.058	2.493	3.130

4.6 REQUIRED DETENTION STORAGE

EXISTING VS. PROPOSED CONDITIONS DETENTION RATE

	2-YR	10-YR	100-YR
AC-FT./AC	0.190	0.337	0.665
AC-FT.	10.793	19.114	37.713
CUF.	470123.24	832586.88	1642786.55

MALCOMS METHOD HYDROGRAPH

**YARA LAKES
FM 146 AT WHARTON WEEMS BLVD., LA PORTE, TX 77571**

100 YEAR EVENT (24 HOUR)

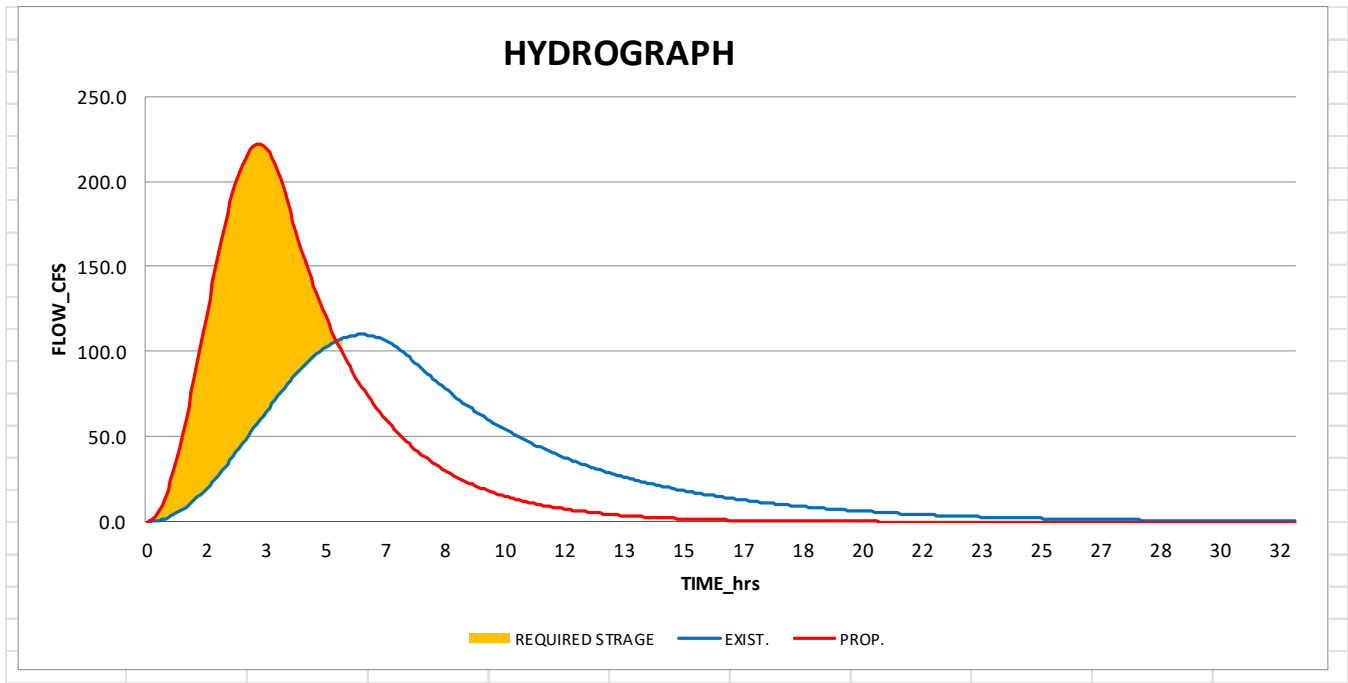
	1% EXIST.	1% PROP.
Drainage Area (Acres)	56.712	56.712
Percent Impervious	0.00	48.21
Excess rainfall volume (in)	16.00	16.85
Peak Flow Rate (cfs)	109.938	221.428
Computed Tp (hrs)	5.99	3.13
Time Increment (hrs)	0.08	

Detention Analysis							
Existing Conditions		Proposed Conditions		Volume (cubic feet)	Volume (acre-feet)	Cum. Vol. (acre-feet)	
TIME (hrs)	Q (cfs)	TIME (hrs)	Q (cfs)				
0	0.0	0.00	0.0				
0.08	0.0	0.08	0.4	44.40	0.00	0.00	
0.16	0.2	0.16	1.4	221.68	0.01	0.01	
0.24	0.4	0.24	3.2	574.96	0.01	0.02	
0.32	0.8	0.32	5.7	1101.70	0.03	0.04	
0.40	1.2	0.40	8.8	1798.13	0.04	0.09	
0.48	1.7	0.48	12.6	2659.23	0.06	0.15	
0.56	2.4	0.56	17.0	3678.80	0.08	0.23	
0.64	3.1	0.64	22.1	4849.51	0.11	0.34	
0.72	3.9	0.72	27.7	6162.89	0.14	0.48	
0.80	4.8	0.80	33.8	7609.48	0.17	0.66	
0.88	5.8	0.88	40.5	9178.78	0.21	0.87	
0.96	6.8	0.96	47.5	10859.43	0.25	1.12	
1.04	8.0	1.04	55.0	12639.21	0.29	1.41	
1.12	9.2	1.12	62.9	14505.15	0.33	1.74	
1.20	10.5	1.20	71.1	16443.60	0.38	2.12	
1.28	11.9	1.28	79.5	18440.34	0.42	2.54	
1.36	13.4	1.36	88.1	20480.69	0.47	3.01	
1.44	15.0	1.44	96.9	22549.55	0.52	3.53	
1.52	16.6	1.52	105.7	24631.56	0.57	4.10	
1.60	18.3	1.60	114.6	26711.17	0.61	4.71	
1.68	20.0	1.68	123.5	28772.74	0.66	5.37	
1.76	21.8	1.76	132.3	30800.67	0.71	6.08	
1.84	23.7	1.84	140.9	32779.51	0.75	6.83	
1.92	25.6	1.92	149.3	34694.00	0.80	7.63	
2.00	27.6	2.00	157.5	36529.26	0.84	8.46	
2.08	29.6	2.08	165.4	38270.83	0.88	9.34	
2.16	31.7	2.16	173.0	39904.79	0.92	10.26	
2.24	33.8	2.24	180.1	41417.85	0.95	11.21	
2.32	35.9	2.32	186.8	42797.43	0.98	12.19	
2.40	38.1	2.40	193.0	44031.78	1.01	13.20	
2.48	40.3	2.48	198.7	45110.03	1.04	14.24	
2.56	42.6	2.56	203.8	46022.26	1.06	15.30	

2.64	44.8	2.64	208.3	46759.60	1.07	16.37
2.72	47.1	2.72	212.2	47314.26	1.09	17.46
2.80	49.4	2.80	215.4	47679.62	1.09	18.55
2.88	51.7	2.88	218.0	47850.23	1.10	19.65
2.96	54.0	2.96	219.8	47821.91	1.10	20.75
3.04	56.3	3.04	221.0	47591.74	1.09	21.84
3.12	58.6	3.12	221.4	47158.07	1.08	22.92
3.20	60.9	3.20	221.2	46520.61	1.07	23.99
3.28	63.2	3.28	220.2	45680.35	1.05	25.04
3.36	65.5	3.36	218.5	44639.62	1.02	26.06
3.44	67.7	3.44	216.1	43402.04	1.00	27.06
3.52	70.0	3.52	213.0	41972.55	0.96	28.02
3.60	72.2	3.60	209.3	40357.32	0.93	28.95
3.68	74.3	3.68	205.0	38563.77	0.89	29.83
3.76	76.5	3.76	200.0	36600.51	0.84	30.67
3.84	78.6	3.84	194.5	34477.27	0.79	31.47
3.92	80.6	3.92	188.6	32238.59	0.74	32.21
4.00	82.7	4.00	182.5	29922.05	0.69	32.89
4.08	84.6	4.08	176.5	27601.72	0.63	33.53
4.16	86.5	4.16	170.7	25353.01	0.58	34.11
4.24	88.4	4.24	165.2	23175.05	0.53	34.64
4.32	90.2	4.32	159.8	21067.00	0.48	35.12
4.40	91.9	4.40	154.5	19028.03	0.44	35.56
4.48	93.6	4.48	149.5	17057.36	0.39	35.95
4.56	95.2	4.56	144.6	15154.21	0.35	36.30
4.64	96.8	4.64	139.9	13317.85	0.31	36.61
4.72	98.2	4.72	135.3	11547.53	0.27	36.87
4.80	99.6	4.80	130.9	9842.55	0.23	37.10
4.88	100.9	4.88	126.6	8202.19	0.19	37.29
4.96	102.1	4.96	122.5	6625.75	0.15	37.44
5.04	103.3	5.04	118.5	5112.54	0.12	37.56
5.12	104.3	5.12	114.6	3661.86	0.08	37.64
5.20	105.3	5.20	110.8	2273.03	0.05	37.69
5.28	106.2	5.28	107.2	945.33	0.02	37.71
5.36	107.0	5.36	103.7	0.00	0.00	37.71
5.44	107.7	5.44	100.3	0.00	0.00	37.71
5.52	108.3	5.52	97.1	0.00	0.00	37.71
5.60	108.8	5.60	93.9	0.00	0.00	37.71
5.68	109.2	5.68	90.8	0.00	0.00	37.71
5.76	109.5	5.76	87.8	0.00	0.00	37.71
5.84	109.8	5.84	85.0	0.00	0.00	37.71
5.92	109.9	5.92	82.2	0.00	0.00	37.71
6.00	109.9	6.00	79.5	0.00	0.00	37.71
6.08	109.9	6.08	76.9	0.00	0.00	37.71
6.16	109.7	6.16	74.4	0.00	0.00	37.71
6.24	109.5	6.24	72.0	0.00	0.00	37.71
6.32	109.1	6.32	69.6	0.00	0.00	37.71
6.40	108.7	6.40	67.3	0.00	0.00	37.71
6.48	108.1	6.48	65.1	0.00	0.00	37.71
6.56	107.5	6.56	63.0	0.00	0.00	37.71

27.04	1.3	27.04	0.0	0.00	0.00	37.71
27.12	1.3	27.12	0.0	0.00	0.00	37.71
27.20	1.3	27.20	0.0	0.00	0.00	37.71
27.28	1.3	27.28	0.0	0.00	0.00	37.71
27.36	1.3	27.36	0.0	0.00	0.00	37.71
27.44	1.2	27.44	0.0	0.00	0.00	37.71
27.52	1.2	27.52	0.0	0.00	0.00	37.71
27.60	1.2	27.60	0.0	0.00	0.00	37.71
27.68	1.2	27.68	0.0	0.00	0.00	37.71
27.76	1.2	27.76	0.0	0.00	0.00	37.71
27.84	1.1	27.84	0.0	0.00	0.00	37.71
27.92	1.1	27.92	0.0	0.00	0.00	37.71
28.00	1.1	28.00	0.0	0.00	0.00	37.71
28.08	1.1	28.08	0.0	0.00	0.00	37.71
28.16	1.1	28.16	0.0	0.00	0.00	37.71
28.24	1.0	28.24	0.0	0.00	0.00	37.71
28.32	1.0	28.32	0.0	0.00	0.00	37.71
28.40	1.0	28.40	0.0	0.00	0.00	37.71
28.48	1.0	28.48	0.0	0.00	0.00	37.71
28.56	1.0	28.56	0.0	0.00	0.00	37.71
28.64	1.0	28.64	0.0	0.00	0.00	37.71
28.72	0.9	28.72	0.0	0.00	0.00	37.71
28.80	0.9	28.80	0.0	0.00	0.00	37.71
28.88	0.9	28.88	0.0	0.00	0.00	37.71
28.96	0.9	28.96	0.0	0.00	0.00	37.71
29.04	0.9	29.04	0.0	0.00	0.00	37.71
29.12	0.9	29.12	0.0	0.00	0.00	37.71
29.20	0.8	29.20	0.0	0.00	0.00	37.71
29.28	0.8	29.28	0.0	0.00	0.00	37.71
29.36	0.8	29.36	0.0	0.00	0.00	37.71
29.44	0.8	29.44	0.0	0.00	0.00	37.71
29.52	0.8	29.52	0.0	0.00	0.00	37.71
29.60	0.8	29.60	0.0	0.00	0.00	37.71
29.68	0.8	29.68	0.0	0.00	0.00	37.71
29.76	0.7	29.76	0.0	0.00	0.00	37.71
29.84	0.7	29.84	0.0	0.00	0.00	37.71
29.92	0.7	29.92	0.0	0.00	0.00	37.71
30.00	0.7	30.00	0.0	0.00	0.00	37.71
30.08	0.7	30.08	0.0	0.00	0.00	37.71
30.16	0.7	30.16	0.0	0.00	0.00	37.71
30.24	0.7	30.24	0.0	0.00	0.00	37.71
30.32	0.7	30.32	0.0	0.00	0.00	37.71
30.40	0.6	30.40	0.0	0.00	0.00	37.71
30.48	0.6	30.48	0.0	0.00	0.00	37.71
30.56	0.6	30.56	0.0	0.00	0.00	37.71
30.64	0.6	30.64	0.0	0.00	0.00	37.71
30.72	0.6	30.72	0.0	0.00	0.00	37.71
30.80	0.6	30.80	0.0	0.00	0.00	37.71

APPLICABLE DETENTION RATE	0.665	AC-FT/AC.
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4.7 ON-SITE DETENTION VOLUME PROVIDED

Existing private storm detention channel (Pr3b) is proposed to be enhanced into a storm detention pond (Yara Pond) sized to detain storm runoff from FGN and Yara Lakes Estates with the same controlled outfall as approved for the FGN development.

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*-----*
| Variable storage data for node | YARA POND
*-----*

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Data Point	Elevation ft	Depth ft	Area ft^2	Volume ft^3	Area acres	Volume ac-ft
1	2.5000	0.0000	124321.2419	0.0000	2.8540	0.0000
2	3.5000	1.0000	141015.0892	132579.2274	3.2373	3.0436
3	4.5000	2.0000	159282.2365	282633.7043	3.6566	6.4884
4	5.5000	3.0000	177780.9924	451078.9662	4.0813	10.3553
5	6.5000	4.0000	197536.9770	638649.3554	4.5348	14.6614
6	7.5000	5.0000	217146.5129	845911.7099	4.9850	19.4195
7	8.5000	6.0000	236914.4765	1.07287E+06	5.4388	24.6297
8	9.5000	7.0000	256840.9985	1.31968E+06	5.8963	30.2956
9	10.5000	8.0000	276925.9918	1.58649E+06	6.3573	36.4209
10	11.5000	9.0000	297169.4999	1.87348E+06	6.8221	43.0092
11	12.5000	10.0000	317571.5228	2.18079E+06	7.2904	50.0641
12	13.0000	10.5000	327831.9502	2.34213E+06	7.5260	53.7680
13	13.5000	11.0000	338132.0606	2.50862E+06	7.7624	57.5899

Total on-site required detention volume for FGN: **30.0 ac-ft.**
 Total on-site provided detention volume for FGN: **39.2 ac-ft.**
 Total on-site provided detention volume for FGN in P3: **16.5 ac-ft.**
 Excess detention volume provided by FGN: **9.2 ac-ft.**
 Total on-site required detention volume for Yara Lakes Estates: **37.713 ac-ft.**

Effective detention volume provided in Yara Lakes pond: 57.5899 ac-ft. – 16.5 ac-ft. + 9.2 ac-ft. = 50.29 ac-ft.

4.8 XPSWMM SUMMARY RESULTS

The XP-SWMM (V.2026) software is used for this analysis, the analysis is an amendment to the approved drainage impact analysis (DIA) conducted for Fairmont Greens North subdivision (P#1806270142). The approved copy of the XP-SWMM model that was provided has been modified to keep all the existing elements the same while modifying the rainfall hydrograph for the whole site to Atlas-14 & the Yara Lakes portion where the proposed 10% and 1% hydrograph inflows from Yara Lakes Site into the new reconfigured Yara Lakes Pond (previously Pr3b). The 24" RCP outfall from P3 at elev. 2.5' remains the same.

Under existing conditions, the complete model has been updated to reflect **Atlas-14 flows**. Yara Lakes site drainage area was subdivided into tract 3a (30.93 ac.) and 3b (24.35 ac.) where the tract 3a sheet flows into the roadside ditch on Wharton Weems Blvd. The tract 3b drains into the pond Pr3b ultimately to P1.1 and Out. The ultimate storm discharge occurs at P1.1 and into HCFCD tributary A104-00-00.

Under proposed conditions, the complete model has been updated to reflect **Atlas-14 flows** within the system. The full 56.7123 ac. (Pr3a + Pr3b + partially O1) Yara Lakes Estates site area now drains to Yara Lakes Estates Pond (previously Pr3b) and outfalls through existing 24" RCP between MH3 and P1.1.A weir is set on the Yara Lakes pond at elev. 12.5' to route the excess of storm runoff safely into the roadside ditch. The outfall pipe from FGN development is being increased from 24" to 36" to accommodate the development.

The following data is the summary of the proposed change to the existing design. (Atlas-14)

	Drainage area	Area (ac.)	Impervious Cover	Peak Flow (cfs)		Peak Time (hr.)		Run-off Volume (ac-ft)	
				10-Yr	100-Yr	10-Yr	100-Yr	10-Yr	100-Yr
Existing	FGN – Tract 1	18.9	35.9%	49.04	84.18	2.127	2.708	11.982	26.189
	FGN – Tract 2	19.5	87.6%	68.25	111.15	1.842	2.238	14.441	28.577
	Yara – Tract 3a	30.9	0.00%	35.59	68.213	4.283	5.258	17.510	41.200
	Yara – Tract 3b	24.4	0.00%	29.56	56.656	4.072	4.999	13.827	32.533
	Offsite – 1 (O1)	3.1	6.5%	4.634	8.448	3.371	4.290	1.794	4.163
	Offsite – 2 (O2)	15.7	57.4%	48.21	79.86	1.919	2.426	10.630	22.255
Proposed	FGN – Tract 1	18.9	35.9%	49.04	84.18	2.127	2.708	11.982	26.189
	FGN – Tract 2	19.5	87.6%	68.25	111.15	1.842	2.238	14.441	28.577
	Yara – Tract 3	56.71	48.21%	130.383	221.428	2.493	3.13	37.339	79.614
	Offsite – 1 (O1)	1.4	14.21%	2.448	4.411	2.99	3.79	0.841	1.920
	Offsite – 2 (O2)	15.7	57.4%	48.21	79.86	1.919	2.426	10.630	22.255

System Inflow / Outflow:

Existing Conditions (Atlas-14)

Proposed Conditions (Atlas-14)

-----		*-----*	
Initial system volume	= 0.0000 Cu Ft	Initial system volume	= 0.0000 Cu Ft
Total system inflow volume	= 9.76645E+06 Cu Ft	Total system inflow volume	= 9.82432E+06 Cu Ft
Inflow + Initial volume	= 9.76645E+06 Cu Ft	Inflow + Initial volume	= 9.82432E+06 Cu Ft
-----		*-----*	
Total system outflow	= 9.75801E+06 Cu Ft	Total system outflow	= 9.70202E+06 Cu Ft
Volume left (Final volume)	= 79940.9798 Cu Ft	Volume left (Final volume)	= 144134.7619 Cu Ft
Evaporation	= 0.0000 Cu Ft	Evaporation	= 0.0000 Cu Ft
Basin Infiltration	= 0.0000 Cu Ft	Basin Infiltration	= 0.0000 Cu Ft
Outflow + Final Volume	= 9.83795E+06 Cu Ft	Outflow + Final Volume	= 9.84616E+06 Cu Ft
-----		*-----*	

XPSWMM Junction Depth existing vs proposed conditions:

Existing Conditions (Atlas-14)

Junction Name	Invert Elevation (ft)	Maximum Elevation (ft)
A2.3	8.6400	9.3550
A2.2	7.2800	9.3544
A2.1	7.0300	9.3535
A1.2	6.3700	9.3390
A1.1	5.3700	9.3378
P1.1	2.1900	9.3246
C3.2	8.4000	9.3621
MHC1	8.1500	9.3621
C3.1	6.2900	9.3583
C1.2	5.5100	9.3411
C1.1	4.7600	9.3364
C2.1	7.0200	9.3460
B2.2	7.7200	9.9559
B2.1	7.1800	9.8247
B1.2	6.2400	9.3483
B1.1	5.5700	9.3464
MHB1	5.4000	9.3458
JCT B1	6.9100	9.7357
P1.2	1.2800	8.9289
P1.3	-0.2300	7.3029
OUT1	-0.5500	1.4500
01	11.1000	19.2512
02	10.8800	19.2004
WWS.1	10.7200	19.2002
WWS.2	10.3800	15.4603
WWS.3	9.8200	15.4583
WWS.4	9.5700	12.2164
Pr1	7.5000	14.2175
2.2	7.0000	13.6906
MH3	2.0000	13.2424
MH2	3.3600	13.5173
WWN.3	9.1500	12.3085
WWN.1	9.1200	12.3049
WWN.2	9.3000	10.4557
OUT3	7.9000	8.7396
3.1	3.0000	13.2429
2.1	7.5000	13.6907
Pr2	7.0000	13.6907
03	9.3000	12.3052
WWN.4	9.1000	12.3095
WWS.5	9.2800	12.2076
04	8.9900	12.2077
WWS.6	8.6600	10.5208
OUT2	7.4650	8.5731
Pr3b	2.7500	13.2427
Pr3a	9.8700	12.3309

Proposed Conditions (Atlas-14)

Junction Name	Invert Elevation (ft)	Maximum Elevation (ft)
A2.3	8.6400	9.1758
A2.2	7.2800	9.1750
A2.1	7.0300	9.1744
A1.2	6.3700	9.1633
A1.1	5.3700	9.1623
P1.1	2.1900	9.1521
C3.2	8.4000	9.1809
MHC1	8.1500	9.1811
C3.1	6.2900	9.1781
C1.2	5.5100	9.1649
C1.1	4.7600	9.1612
C2.1	7.0200	9.1686
B2.2	7.7200	9.9635
B2.1	7.1800	9.8323
B1.2	6.2400	9.1730
B1.1	5.5700	9.1711
MHB1	5.4000	9.1705
JCT B1	6.9100	9.7433
P1.2	1.2800	8.7650
P1.3	-0.2300	7.1744
OUT1	-0.5500	1.4500
01	11.1000	19.1477
02	10.8800	19.0999
WWS.1	10.7200	19.0995
WWS.2	10.3800	15.2522
WWS.3	9.8200	15.2495
WWS.4	9.5700	12.1634
Pr1	7.5000	14.1941
2.2	7.0000	13.6950
MH3	2.0000	12.6329
MH2	3.3600	13.5032
WWN.3	9.1500	12.3171
WWN.1	9.0000	12.3136
WWN.2	8.9000	10.1208
OUT3	7.8500	8.7040
2.1	7.5000	13.6957
Pr2	7.0000	13.6954
03	9.3000	12.3139
WWN.4	9.1000	12.3181
WWS.5	9.2800	12.1582
04	8.9900	12.1586
WWS.6	8.6600	10.5122
OUT2	7.4650	8.5664
YARA POND	2.5000	13.4645

XPSWMM node comparison table

NODES	EXIST. CONDITIONS	PROP. CONDITIONS	DETLA (FT.)
	MAX. ELEV. (FT.)	MAX. ELEV. (FT.)	(EXIST. - PROP.)
A1.1	9.3378	9.1623	0.1755
A1.2	9.339	9.1633	0.1757
A2.1	9.3535	9.1744	0.1791
A2.2	9.3544	9.175	0.1794
A2.3	9.355	9.1758	0.1792
B1.1	9.3464	9.1711	0.1753
B1.2	9.3483	9.173	0.1753
B2.1	9.8247	9.8323	-0.0076
B2.2	9.9559	9.9635	-0.0076
MHB1	9.3458	9.1705	0.1753
JCT B1	9.7357	9.7433	-0.0076
C1.1	9.3364	9.1612	0.1752
C1.2	9.3411	9.1649	0.1762
C2.1	9.346	9.1686	0.1774
C3.1	9.3583	9.1781	0.1802
C3.2	9.3621	9.1809	0.1812
MHC1	9.3621	9.1811	0.181
WWS.1	19.2002	19.0995	0.1007
WWS.2	15.4603	15.2522	0.2081
WWS.3	15.4583	15.2495	0.2088
WWS.4	12.2164	12.1634	0.053
WWS.5	12.2076	12.1582	0.0494
WWS.6	10.5208	10.5122	0.0086
WWN.1	12.3049	12.3136	-0.0087
WWN.2	10.4557	10.1208	0.3349
WWN.3	12.3085	12.3171	-0.0086
WWN.4	12.3095	12.3181	-0.0086
Pr1	14.2175	14.1941	0.0234
Pr2	13.6907	13.6954	-0.0047
Pr3a	12.3309	-	-
Pr3b	13.2427	-	-
YARA POND	-	13.4645	-
P1.1	9.3246	9.1521	0.1725
P1.2	8.9289	8.765	0.1639
P1.3	7.3029	7.1744	0.1285
O1	19.2512	19.1477	0.1035
O2	19.2004	19.0999	0.1005
O3	12.3052	12.3139	-0.0087
O4	12.2077	12.1586	0.0491
2.1	13.6907	13.6957	-0.005
2.2	13.6906	13.695	-0.0044
3.1	13.2429	-	-
MH2	13.5173	13.5032	0.0141
MH3	13.2424	12.6329	0.6095
OUT-1	1.45	1.45	0
OUT-2	8.5731	8.5664	0.0067
OUT-3	8.7396	8.704	0.0356

** NEGATIVE DELTA VALUE INDICATES INCREASE IN WSE. AT NODE

** POSITIVE DELTA VALUE INDICATES DECREASE IN WSE. AT NODE

4.9 DETENTION LAYOUT

The existing Pr3b is proposed to be enhanced to detain the excess of runoff generated from the Yara Lakes Estates development. Pr3b outfall configuration remains the same while also keeping the 4:1 side slopes, below is a comparison of the modifications being proposed.

	Pond	HB (ft.)	FL (ft.)	H (ft.)	1% WSE (ft.)	Area (ac.)	Vol. (ac-ft.)
Existing	Pr3b	13.0'	2.5'	10.5'	12.622'	5.57	16.5
Proposed	Yara Lakes Pond	13.5'	2.5'	11.0'	13.4645'	7.762	57.589

Detention Pond Design Summary

New Development Area	56.7123 acres		
Total area of Pond	7.762 acres		
Average Natural Ground Elevation	12 – 13 ft.		
Pond Max. Water Surface Elevation	13.50'		
Pond Side Slope	4:1		
Berm Width	15'		
	Total Detention Required (ac-ft.)	Total Provided (ac-ft.)	Rate Provided (ac-ft/ac.)
Detention Vol. (100-Yr)	37.713	57.589	0.997
	10-Yr	100-Yr	
Ultimate Allowable Outfall Rate (cfs)	27.354 cfs	57.573 cfs	
Ultimate Outfall Rate Provided (cfs)	27.347 cfs	53.551 cfs	

4.10 STORM OUTFALL SUMMARY

Based on the XP-SWMM amendment analysis conducted for the proposed Yara Lakes Estates development, following is the ultimate storm outfall result at P1.1 output extracted from the analysis.

Name	Location	Outfall	Outfall Type	Existing Flow (cfs) Atlas-14		Proposed Flow (cfs) Atlas-14	
				10%	1%	10%	1%
Outfall - 1	P1.1	A104-00-00	36" RCP w/ 24" restrictor	27.354	57.573	27.347	53.551

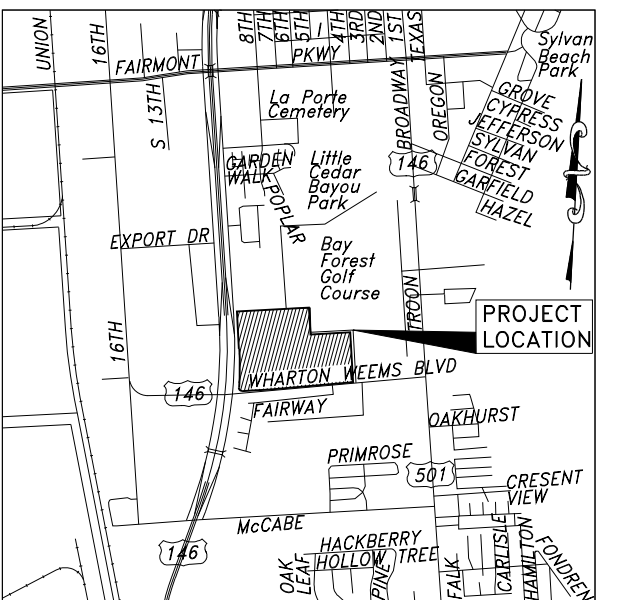
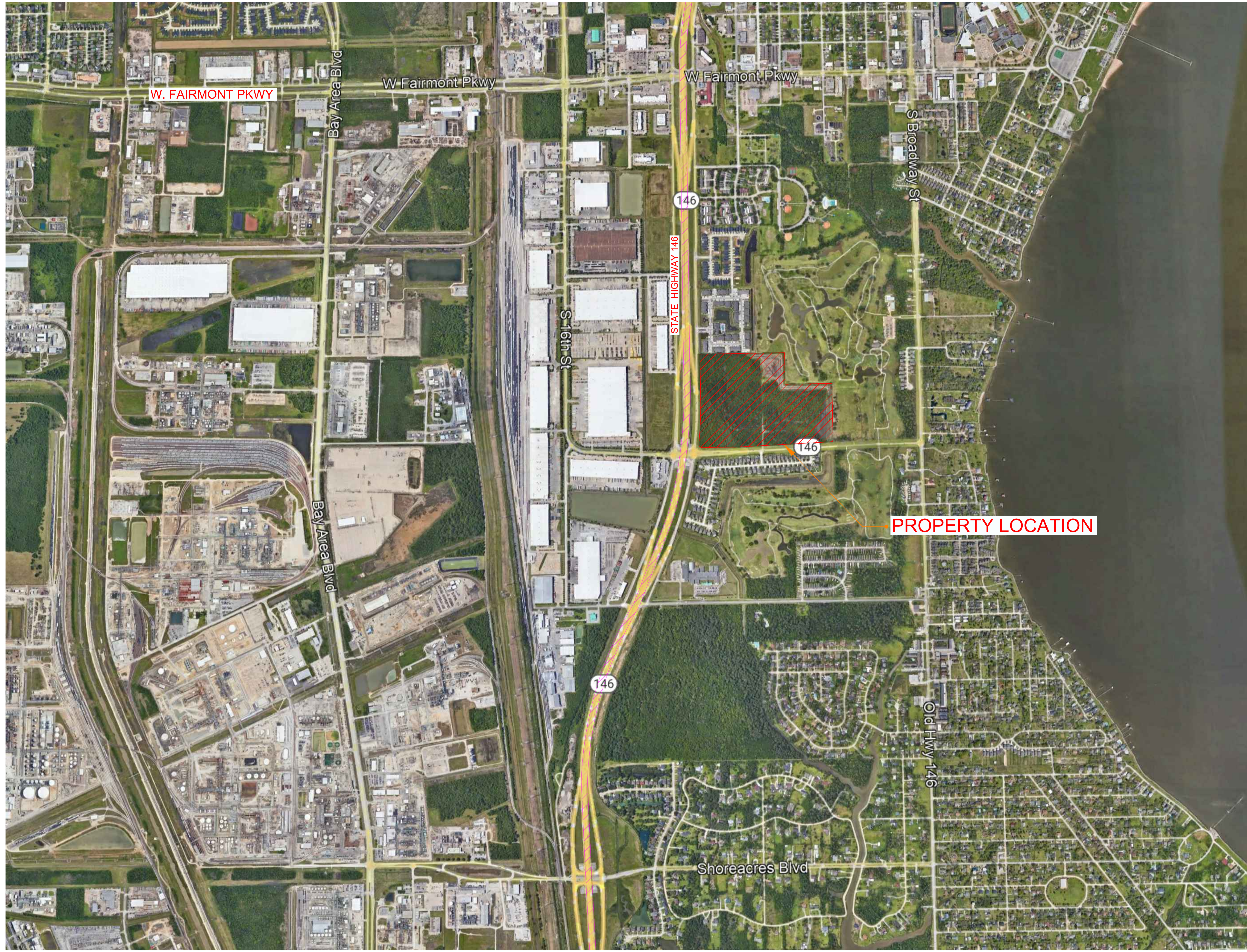
The proposed Yara Lakes Estates development will not have any negative impact on the existing channel while detaining the excess flow generated by Yara Lakes Estates and FGN development.

5.0 ENGINEER'S CONCLUSION

Upon completion of the storm detention & hydraulic amendment analysis via XP-SWMM conducted for the Yara Lakes Estates development result in no negative impact on the working of the existing storm detention & outfall system conveying excess of runoff from Fairmont Greens North, Yara Lakes Estates and Lakes at Fairmont Greens into the tributary A104-00-00 under existing and proposed conditions. With this analysis, M Lanza Engineering, PLLC deems this development will have **no adverse negative impact** on the upstream & downstream drainage conditions.



Mario E. Lanza, P.E.

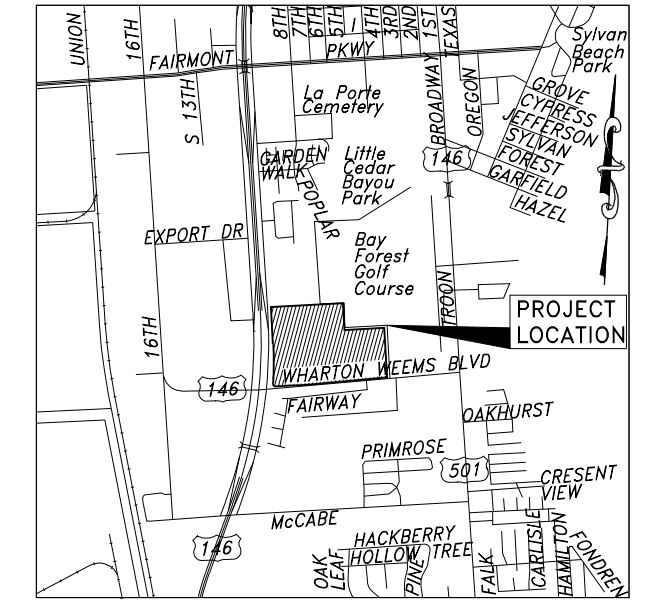


VICINITY MAP
 N15
 CITY OF LA PORTE/HARRIS COUNTY
 KEY MAP # 585-K



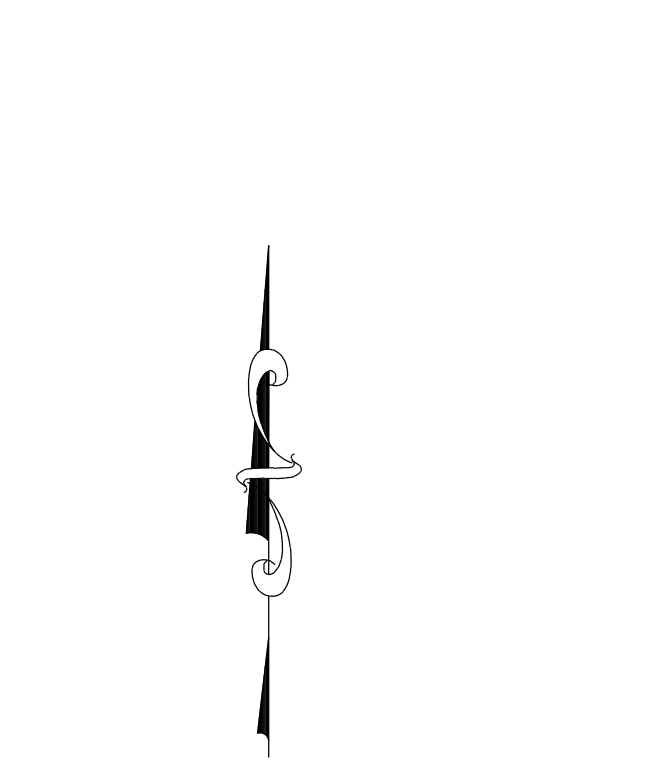
<p>IN THE CITY OF LA PORTE, TEXAS HARRIS COUNTY</p> <p>YARA LAKES ESTATES SUBDIVISION 56.7 AC. RESIDENTIAL / COMMERCIAL DEVELOPMENT LA PORTE, TEXAS 77071</p> <p>LEGAL: 56.7 ACRES (TRACT 90) AND ALL OF THAT CERTAIN CALLED 14.707 AC. (TRACT 91) OF THE YARA LAKES ESTATES SUBDIVISION, HARRIS COUNTY, TEXAS.</p>		<p>NO. _____</p> <p>DATE _____</p>
<p>M LANZA ENGINEERING P.L.L.C. CIVIL, STRUCTURAL ENGINEERS & PLANNERS 11803 SPRING CYPRESS RD., SUITE B TOMBALL, TEXAS 77377 T 832.559.3816 F 832.686.4983 Email: Mlanza@mianzanzengeering.com</p>		<p>FIRM NO.: F-13716</p>
<p>engineering</p> <p>M LANZA ENGINEERING, P.L.L.C. ALL RIGHTS RESERVED. THE WHOLE OR PARTIAL REPRODUCTION, COPYING, SALE OR DISTRIBUTION OF THIS DOCUMENT IS STRICTLY PROHIBITED UNLESS IT IS FORMALLY AUTHORIZED BY M LANZA ENGINEERING, P.L.L.C.</p> <p>UNAUTHORIZED CHANGES & USES: M LANZA ENGINEERING, P.L.L.C. ACCEPTS NO RESPONSIBILITY FOR ANY UNAUTHORIZED CHANGES OR USES OF THIS DOCUMENT. ANY CHANGES TO THE ORIGINAL MUST BE IN WRITING AND MUST BE APPROVED BY M LANZA ENGINEERING, P.L.L.C.</p>		<p>P.E. STAMP:</p>
<p>DESIGN BY: Mario E. Lanza, P.E.</p> <p>DRAWING BY: Mario E. Lanza, P.E.</p> <p>DATE: October 24, 2025</p> <p>SCALE: NTS.</p> <p>FILE: M\2023\SOPHA FILE\GRAND MISSION\EXHIBITS</p> <p>DRAWING:</p>		<p>SHEET: 1 / 5</p>

EXHIBIT 1 - VICINITY MAP
 NTS.



VICINITY MAP
 CITY OF LA PORTE, HARRIS COUNTY
 KEY MAP # 580-K

LEGEND	
	PROPOSED DRAINAGE AREAS
	HCFCD STREAMS



NO.	DATE	REVISIONS

IN THE CITY OF LA PORTE, TEXAS
 HARRIS COUNTY

**YARA LAKES ESTATES SUBDIVISION
 56.7 AC RESIDENTIAL / COMMERCIAL
 DEVELOPMENT
 LA PORTE, TEXAS 071**

LEGAL: 1.562 ACRES (TRACT 9) AND ALL OF THAT CERTAIN CALLED 14.707 AC (TRACT 2) OF THE YARA LAKES ESTATES SUBDIVISION, HARRIS COUNTY, TEXAS, AND IN THE W.P. HARRIS COUNTY CENTER SURVEY, 1935.

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DRAWING BY:
 Mario E. Lanza, P.E.

DATE:
 October 24, 2025

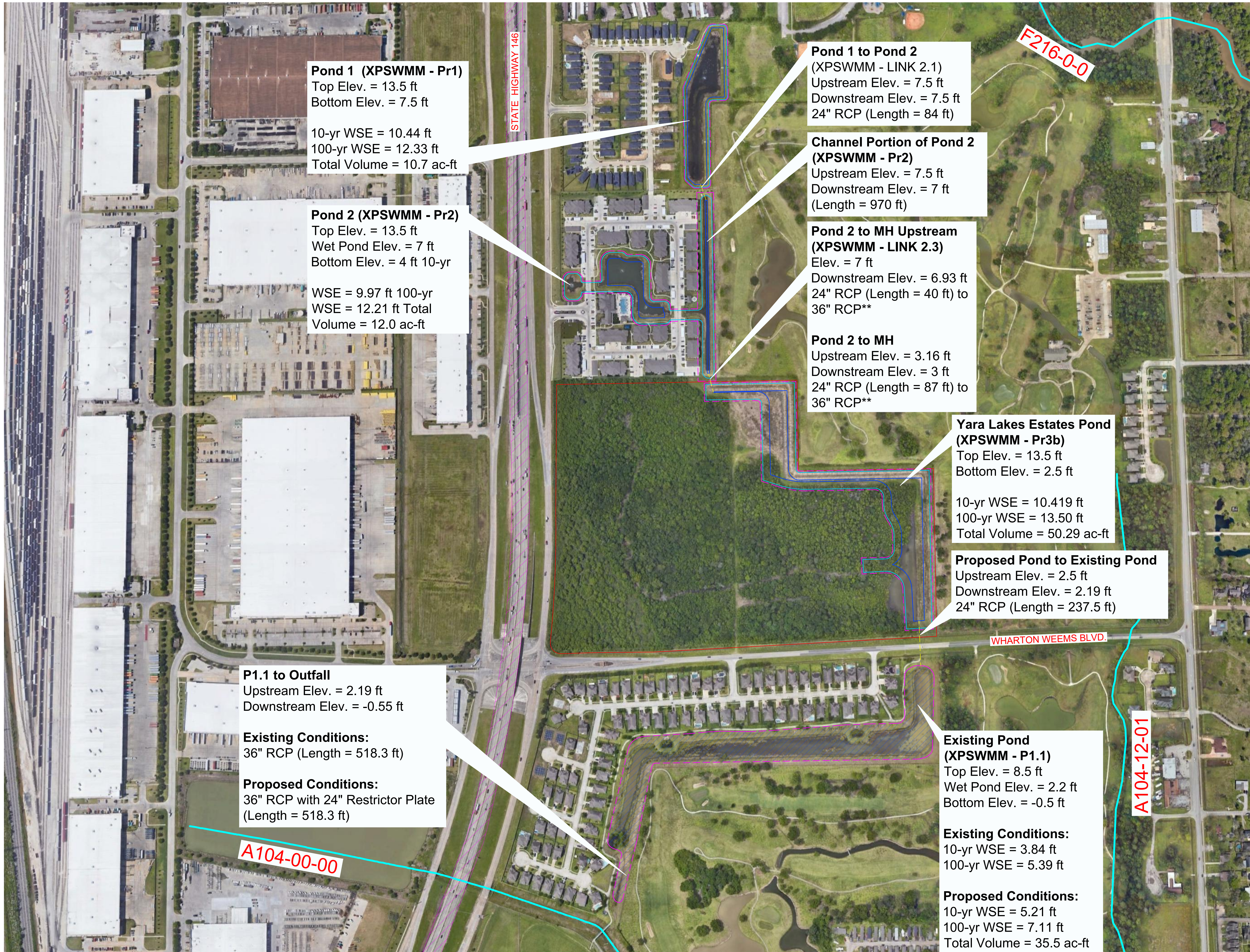
SCALE:
 NTS.

FILE:ML/2023/SOPHA FILE/GRAND MISSION/EXHIBITS

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SHEET:
4 / 5

EXHIBIT 4 - PROPOSED DRAINAGE AREAS MAP
 NTS.



Pond 1 (XPSWMM - Pr1)
 Top Elev. = 13.5 ft
 Bottom Elev. = 7.5 ft
 10-yr WSE = 10.44 ft
 100-yr WSE = 12.33 ft
 Total Volume = 10.7 ac-ft

Pond 2 (XPSWMM - Pr2)
 Top Elev. = 13.5 ft
 Wet Pond Elev. = 7 ft
 Bottom Elev. = 4 ft 10-yr
 WSE = 9.97 ft 100-yr
 WSE = 12.21 ft Total
 Volume = 12.0 ac-ft

Pond 1 to Pond 2 (XPSWMM - LINK 2.1)
 Upstream Elev. = 7.5 ft
 Downstream Elev. = 7.5 ft
 24" RCP (Length = 84 ft)

Channel Portion of Pond 2 (XPSWMM - Pr2)
 Upstream Elev. = 7.5 ft
 Downstream Elev. = 7 ft
 (Length = 970 ft)

Pond 2 to MH Upstream (XPSWMM - LINK 2.3)
 Elev. = 7 ft
 Downstream Elev. = 6.93 ft
 24" RCP (Length = 40 ft) to
 36" RCP**

Pond 2 to MH
 Upstream Elev. = 3.16 ft
 Downstream Elev. = 3 ft
 24" RCP (Length = 87 ft) to
 36" RCP**

Yara Lakes Estates Pond (XPSWMM - Pr3b)
 Top Elev. = 13.5 ft
 Bottom Elev. = 2.5 ft
 10-yr WSE = 10.419 ft
 100-yr WSE = 13.50 ft
 Total Volume = 50.29 ac-ft

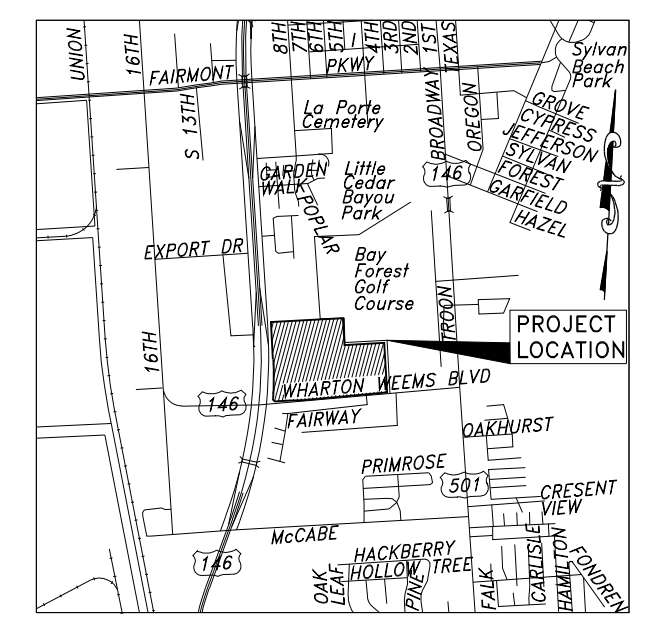
Proposed Pond to Existing Pond
 Upstream Elev. = 2.5 ft
 Downstream Elev. = 2.19 ft
 24" RCP (Length = 237.5 ft)

P1.1 to Outfall
 Upstream Elev. = 2.19 ft
 Downstream Elev. = -0.55 ft
Existing Conditions:
 36" RCP (Length = 518.3 ft)
Proposed Conditions:
 36" RCP with 24" Restrictor Plate
 (Length = 518.3 ft)

Existing Pond (XPSWMM - P1.1)
 Top Elev. = 8.5 ft
 Wet Pond Elev. = 2.2 ft
 Bottom Elev. = -0.5 ft

Existing Conditions:
 10-yr WSE = 3.84 ft
 100-yr WSE = 5.39 ft

Proposed Conditions:
 10-yr WSE = 5.21 ft
 100-yr WSE = 7.11 ft
 Total Volume = 35.5 ac-ft



VICINITY MAP
 CITY OF LA PORTE, HARRIS COUNTY
 KEY MAP # 580-K

LEGEND

[Red outline]	PROJECT AREA
[Cyan line]	HCFCD STREAMS
[Yellow line]	OUTFALL PIPES
[Pink outline]	MAINTENANCE BERM
[Blue outline]	TOP OF POND
[Dark blue outline]	BOTTOM OF POND

IN THE CITY OF LA PORTE, TEXAS
 HARRIS COUNTY

**YARA LAKES ESTATES SUBDIVISION
 56.7 AC. RESIDENTIAL / COMMERCIAL
 DEVELOPMENT
 LA PORTE, TEXAS**

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REVISIONS:

NO.	DATE	DESCRIPTION

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 Mario E. Lanza, P.E.
 DATE:
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 SCALE:
 NTS.
 FILE:ML/2023/SOPHA FILE/GRAND MISSION/EXHIBITS
 DRAWING:

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EXHIBIT 5 - PROPOSED
 DRAINAGE SYSTEM LAYOUT
 NTS.

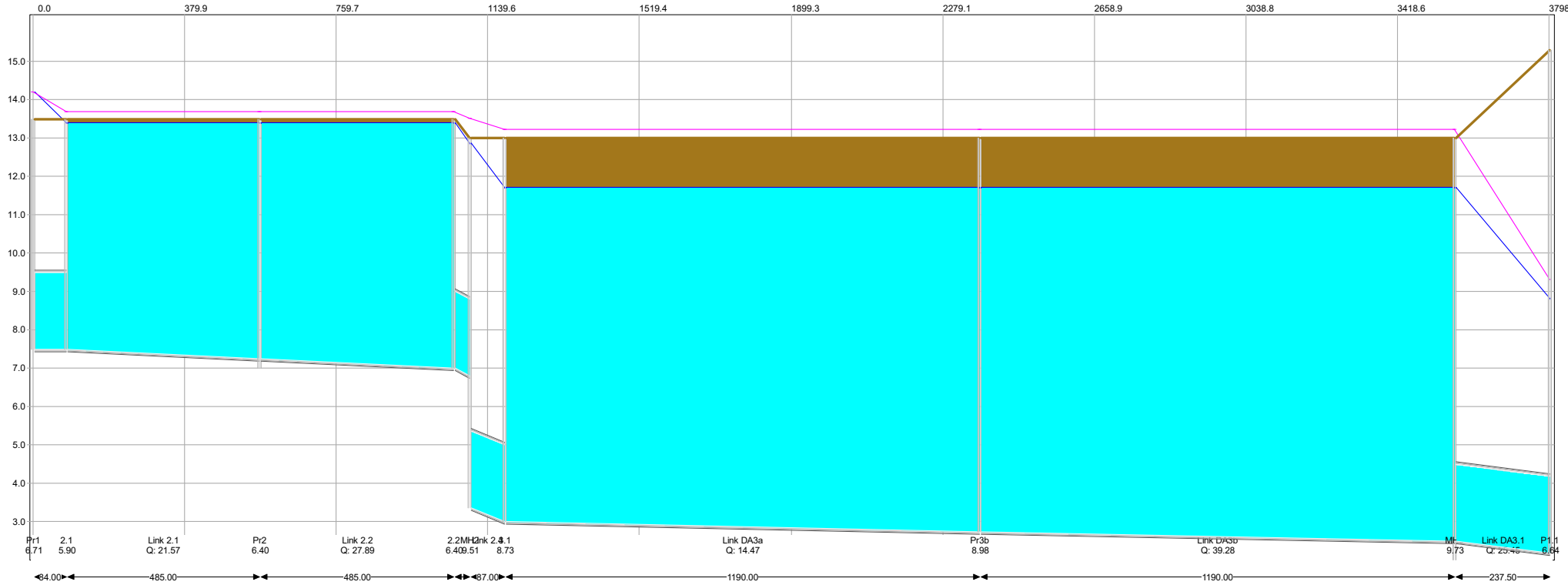


EXHIBIT-6a: XPSWMM EXIST. CONDITIONS 1% PROFILE

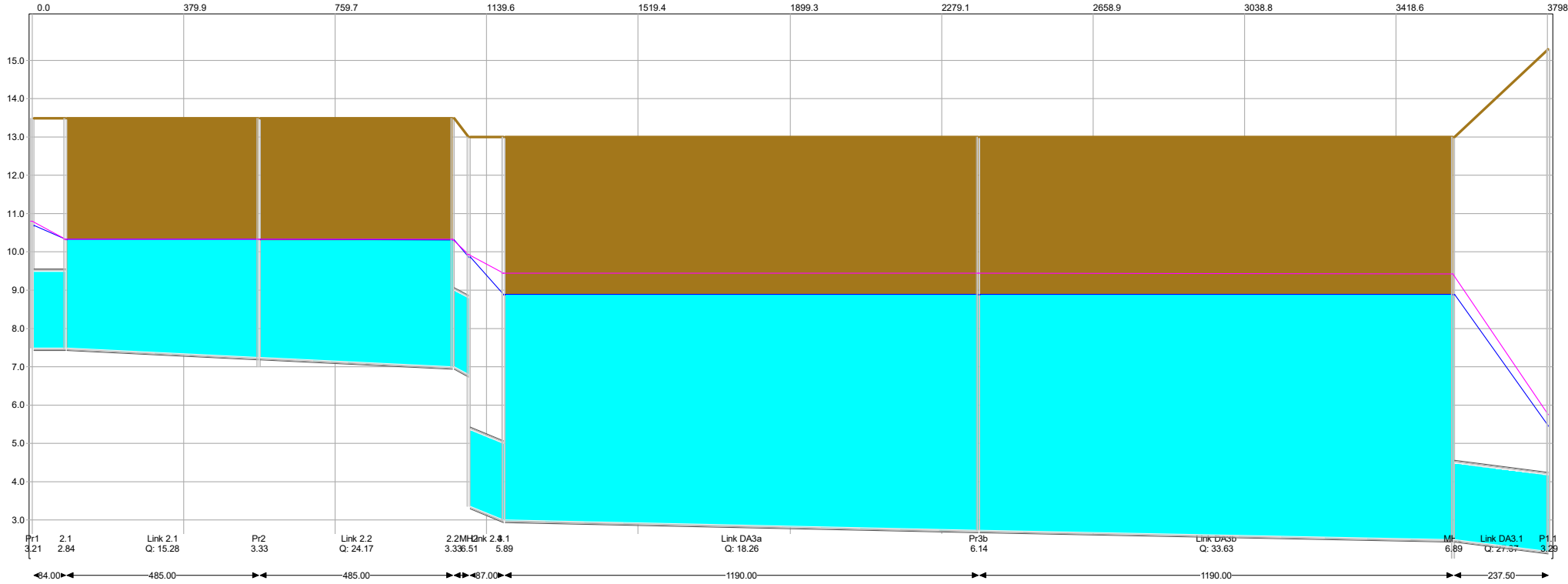
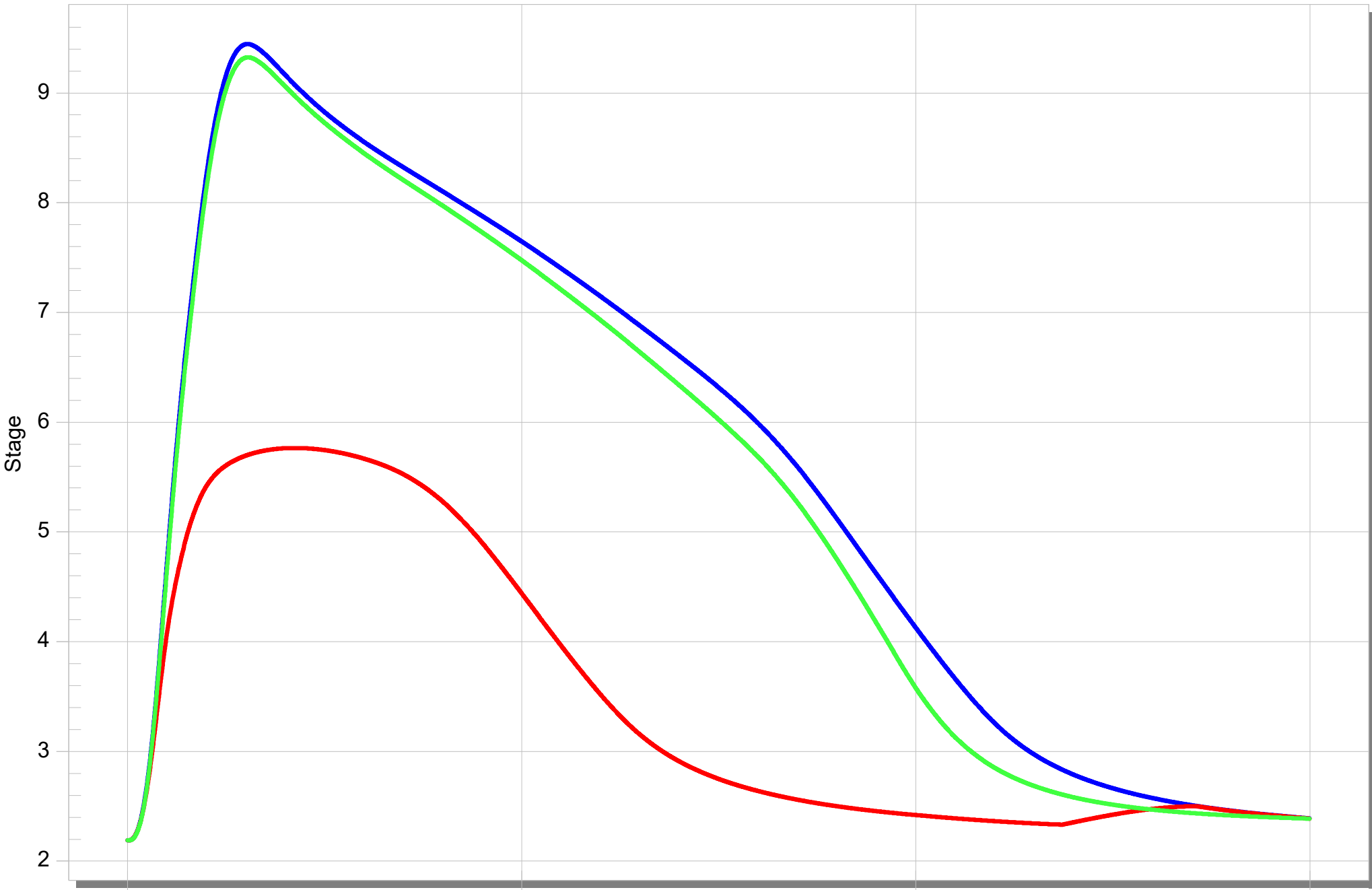


EXHIBIT-6b: XPSWMM EXIST. CONDITIONS 10% PROFILE

Base Scenario[Max 9.446]

10yr[Max 5.765]

100yr-Free[Max 9.325]



1 Wed
Jan 2014

2 Thu

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3 Fri

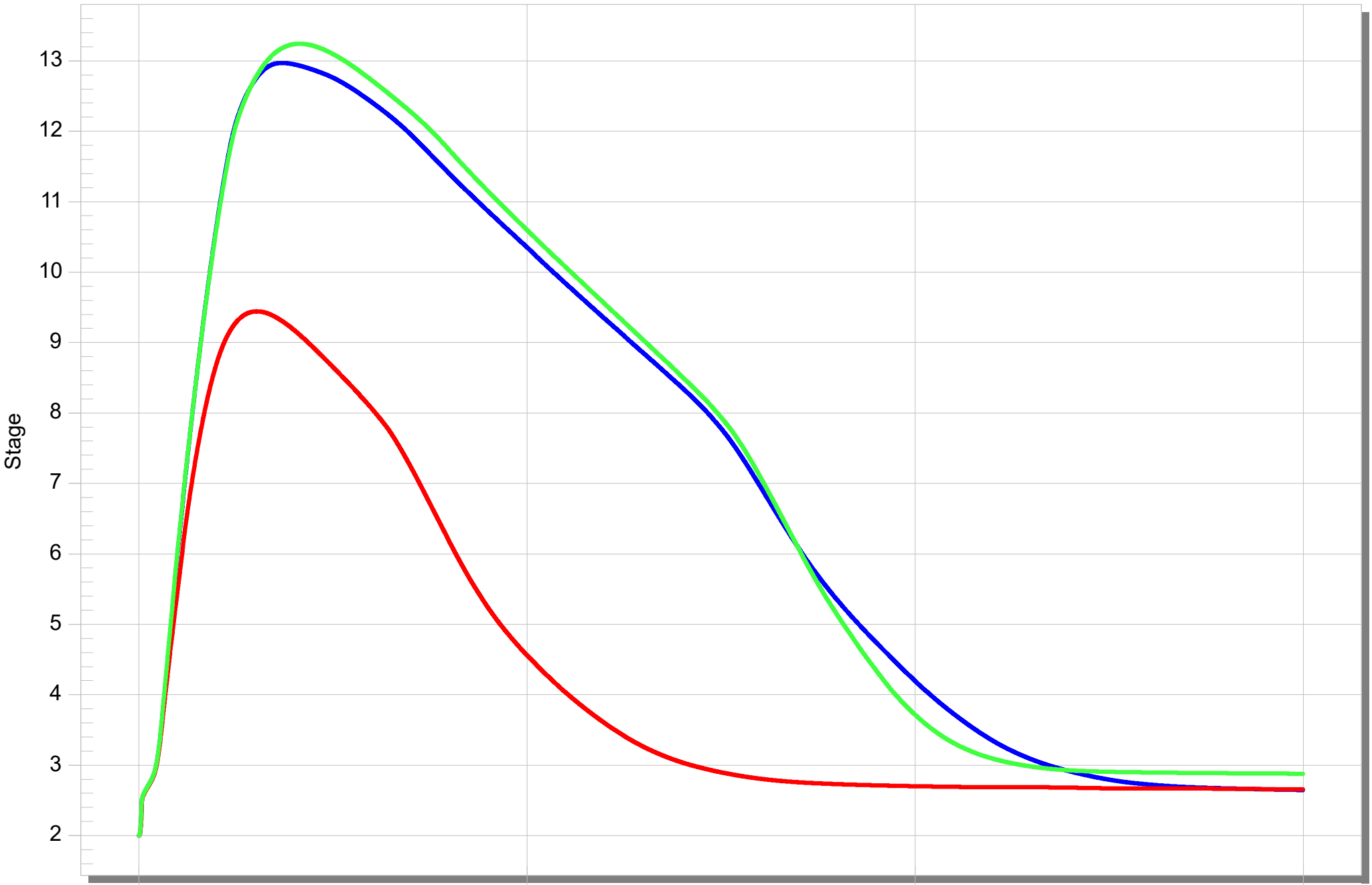
4 Sat

Time

Base Scenario[Max 12.971]

10yr[Max 9.443]

100yr-Free[Max 13.242]



1 Wed
Jan 2014

2 Thu

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3 Fri

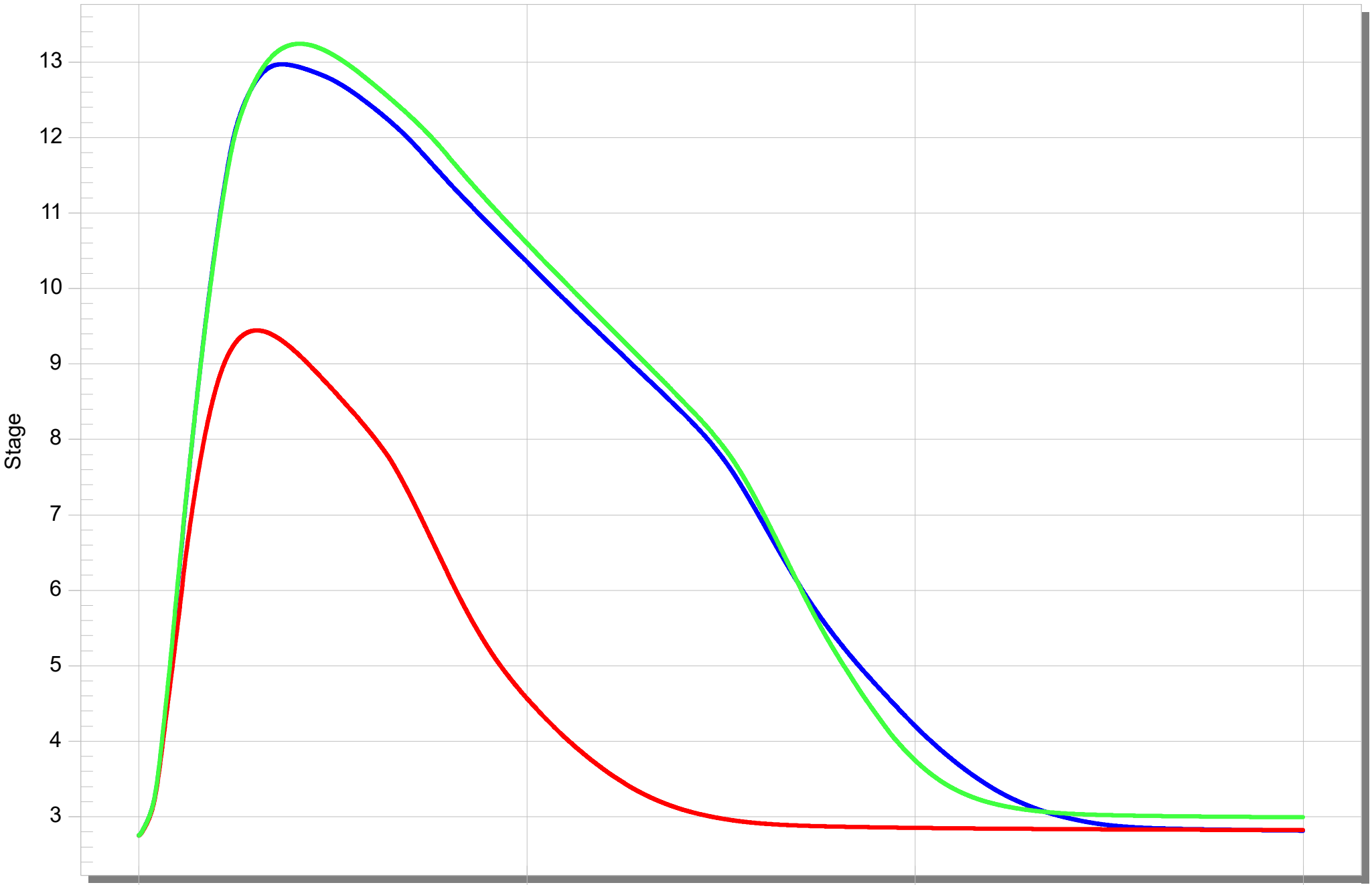
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Time

Base Scenario[Max 12.971]

10yr[Max 9.445]

100yr-Free[Max 13.243]



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Jan 2014

2 Thu

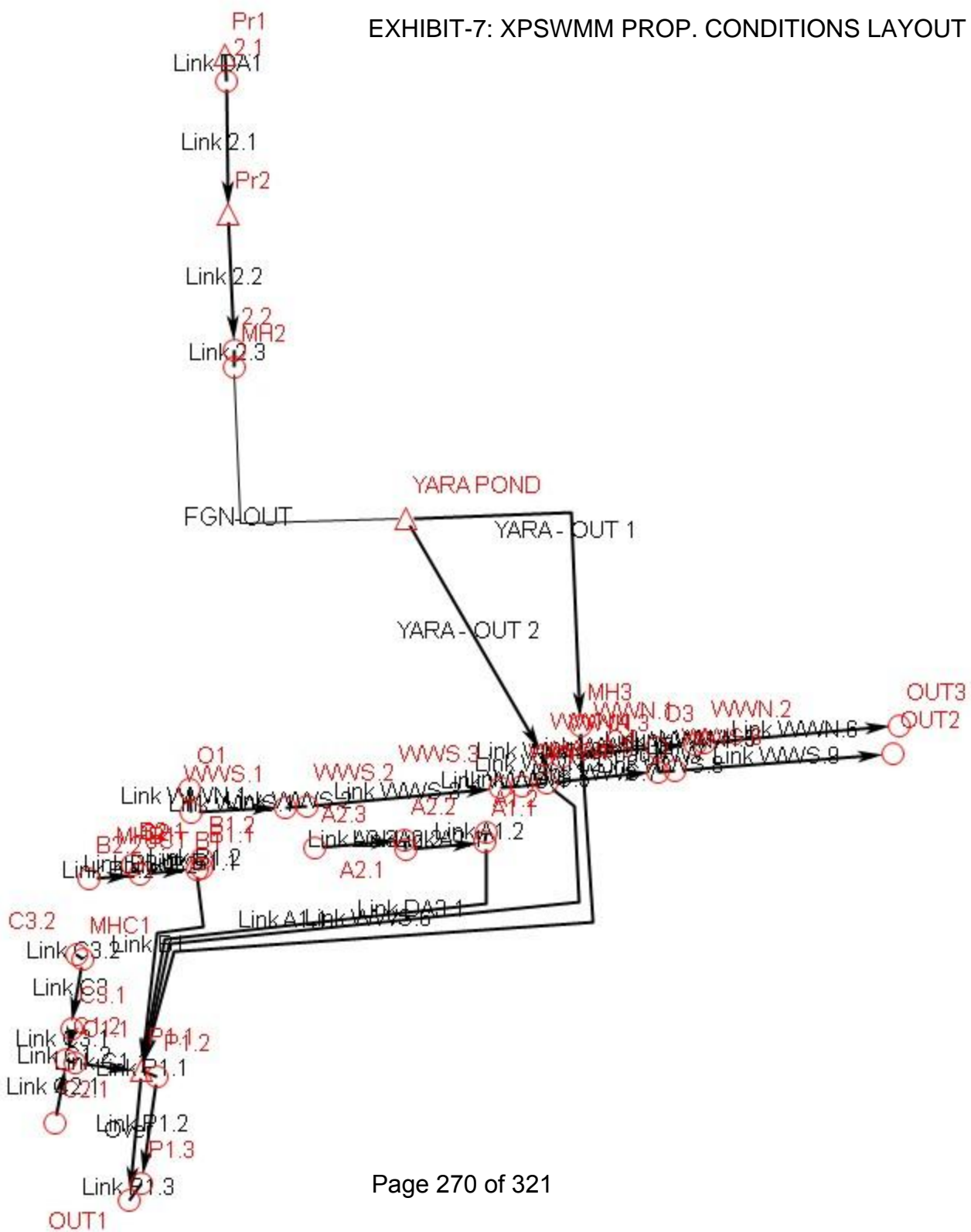
Page 269 of 321

3 Fri

4 Sat

Time

EXHIBIT-7: XPSWMM PROP. CONDITIONS LAYOUT



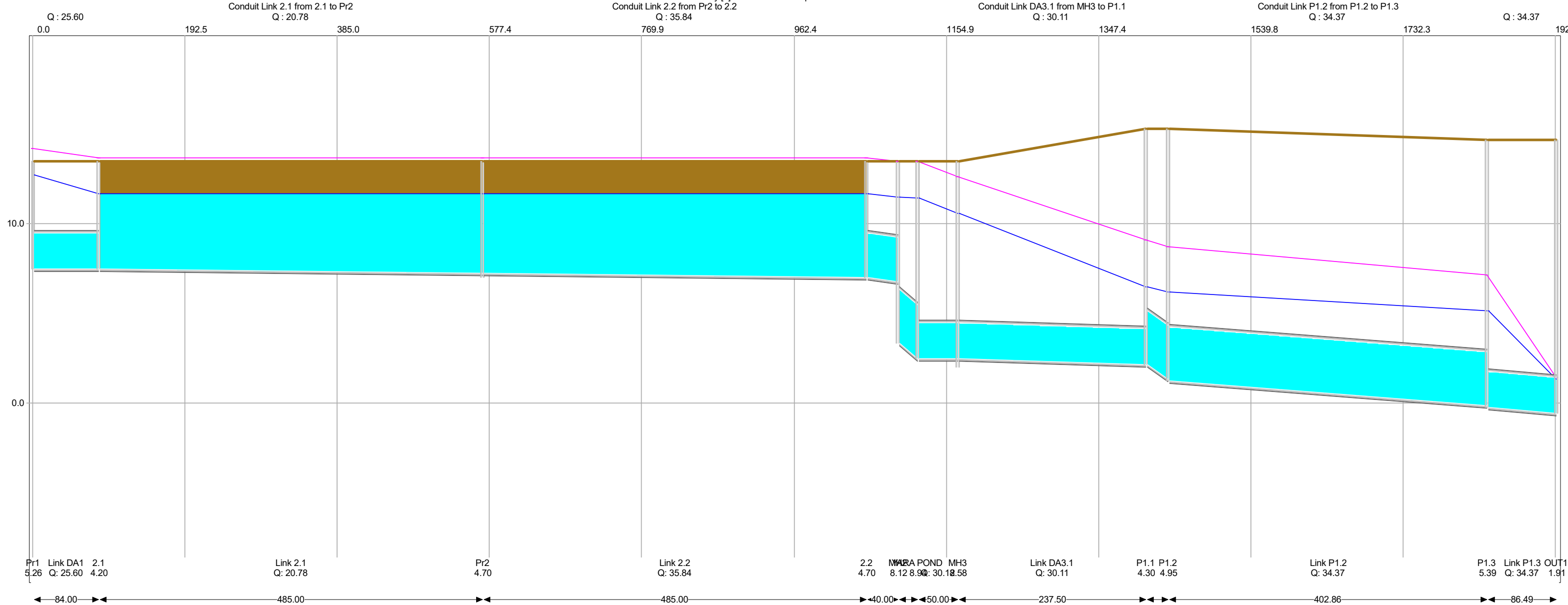


EXHIBIT-7a: XPSWMM PROP. CONDITIONS 1% PROFILE

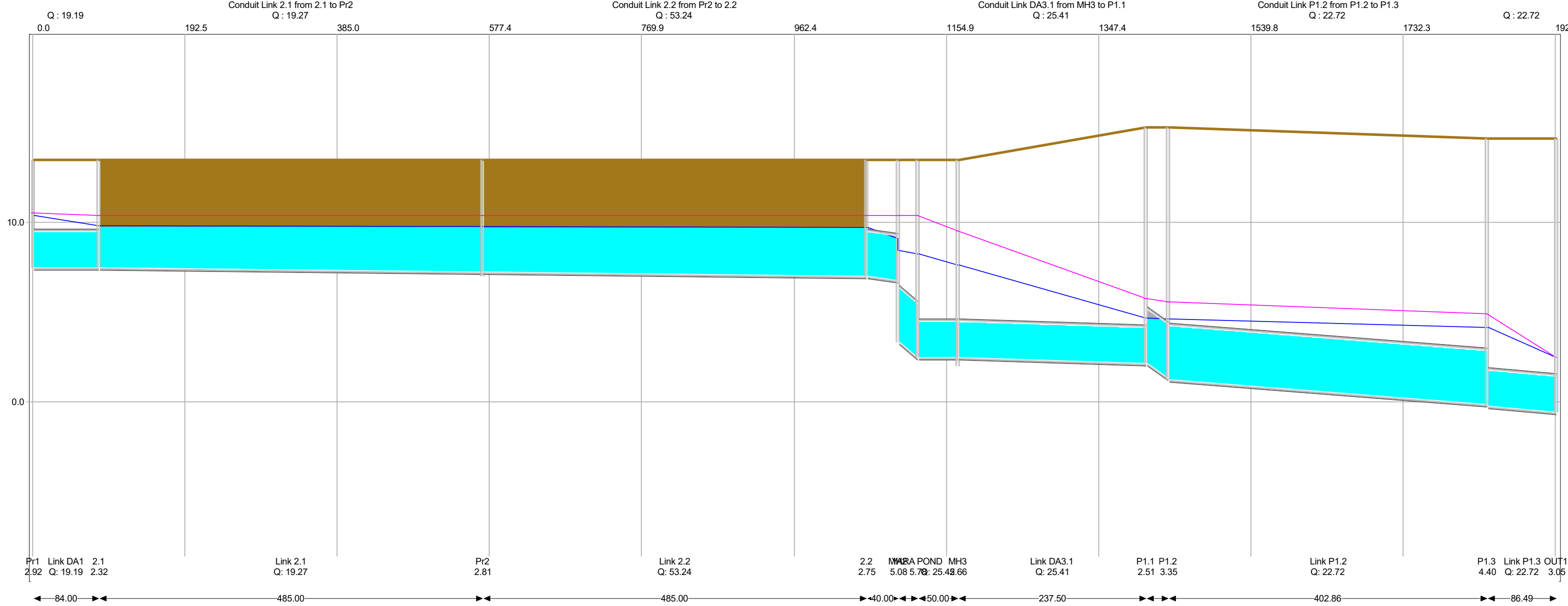
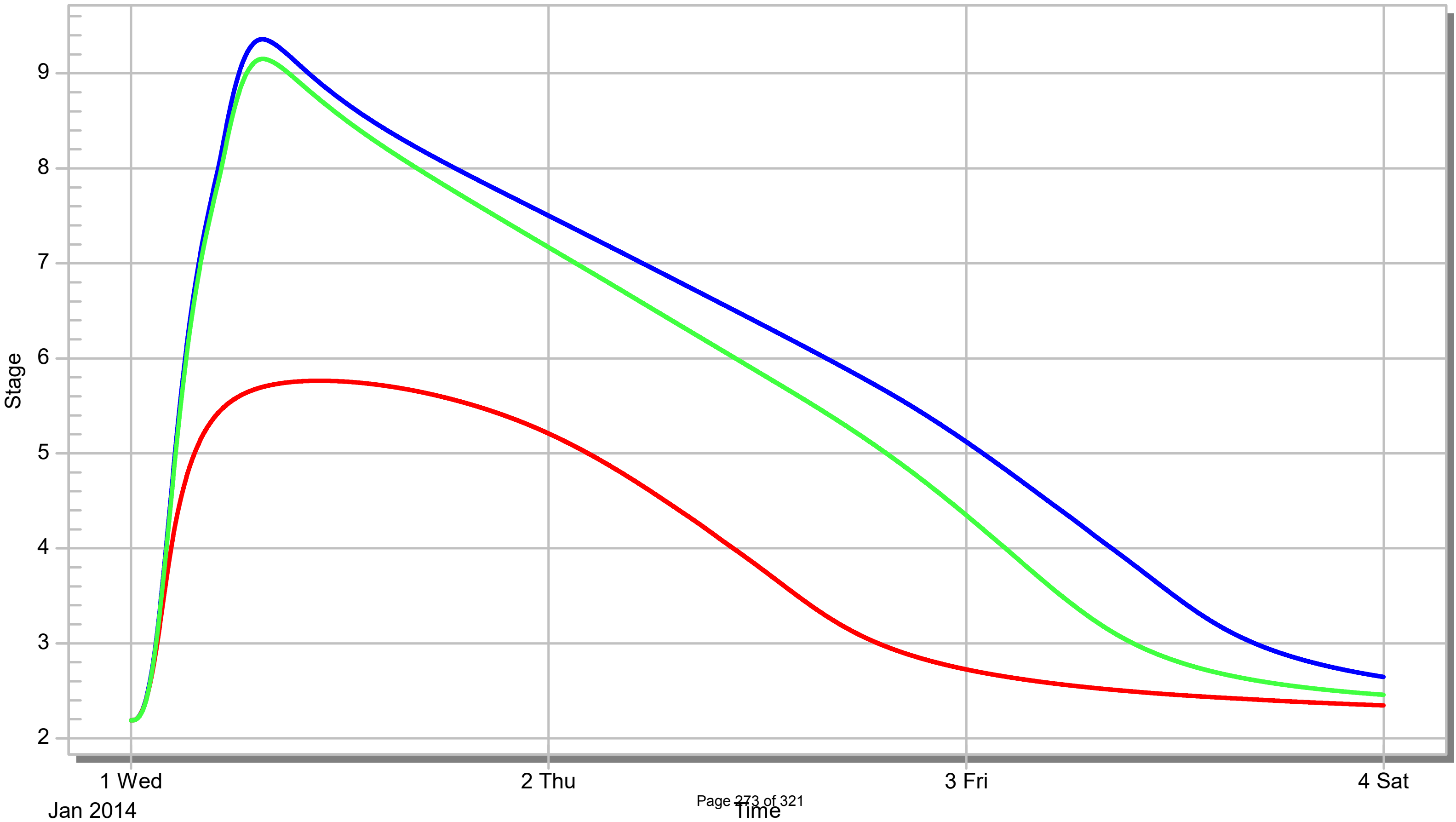


EXHIBIT-7b: XPSWMM PROP. CONDITIONS 10% PROFILE

Base Scenario [Max 9.359]

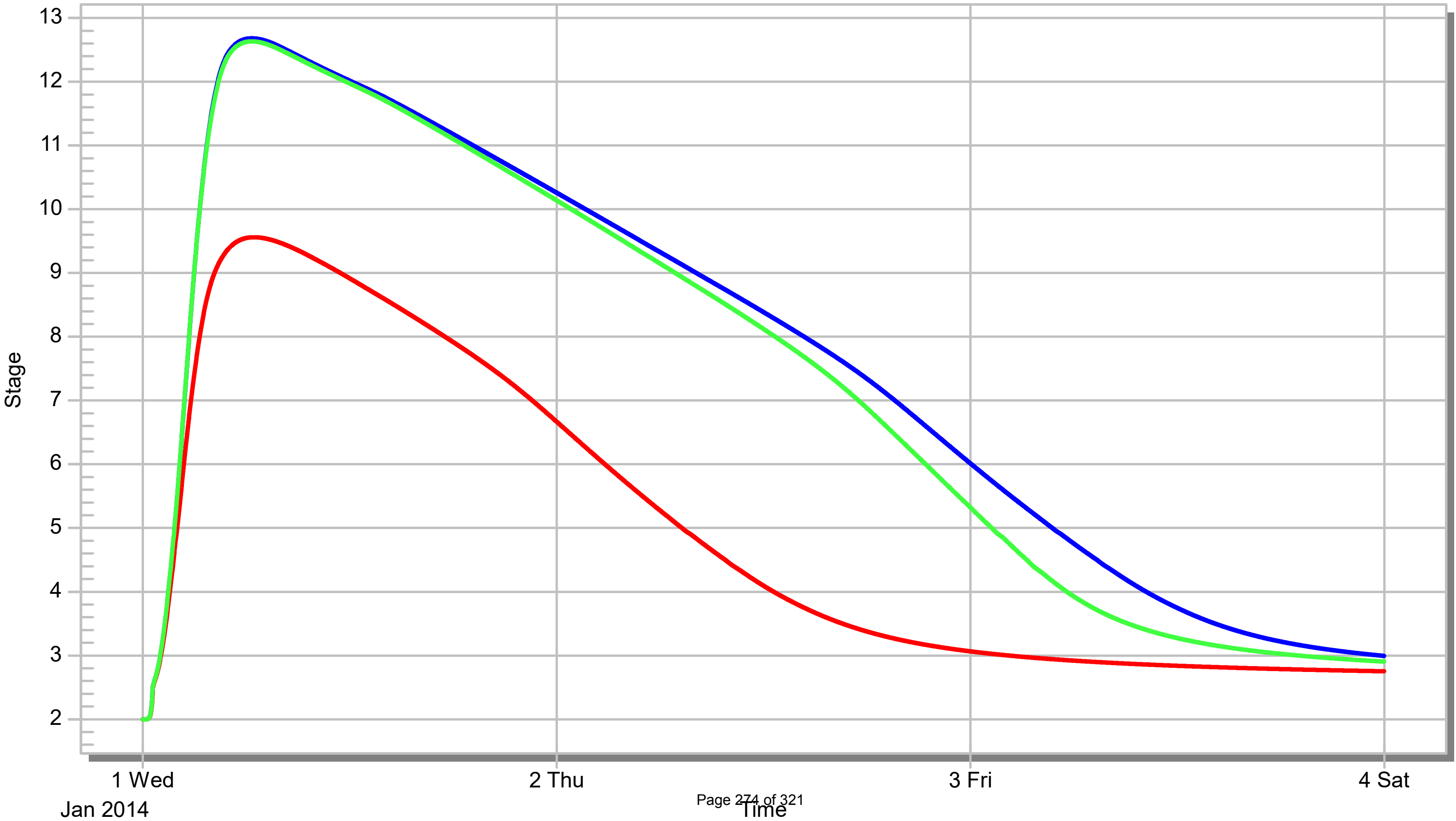
10yr [Max 5.764]

100yr-Free [Max 9.152]



Node - MH3

Base Scenario [Max 12.681] 10yr [Max 9.561] 100yr-Free [Max 12.633]

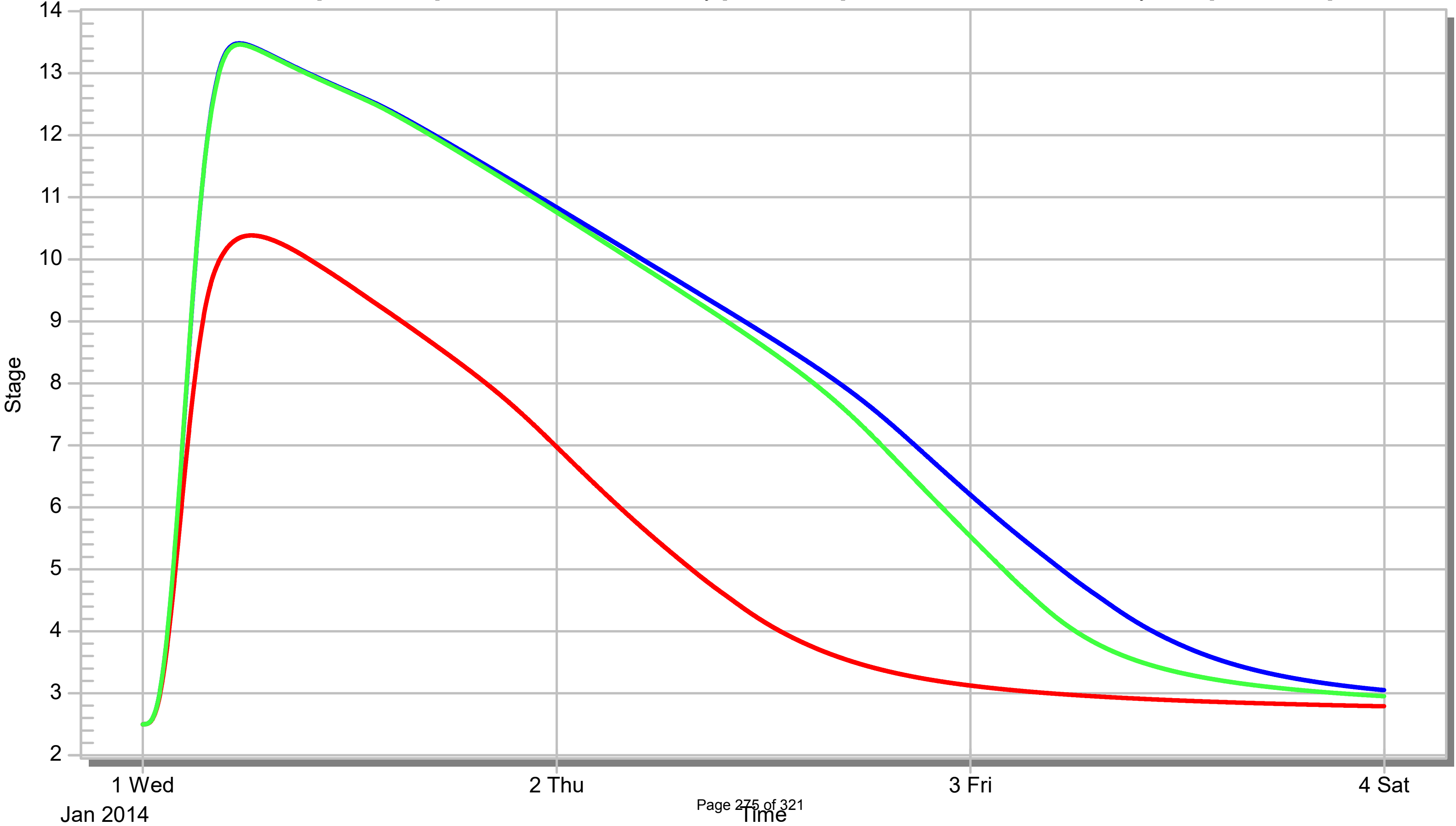


Node - YARA POND

Base Scenario[Max 13.483]

10yr[Max 10.385]

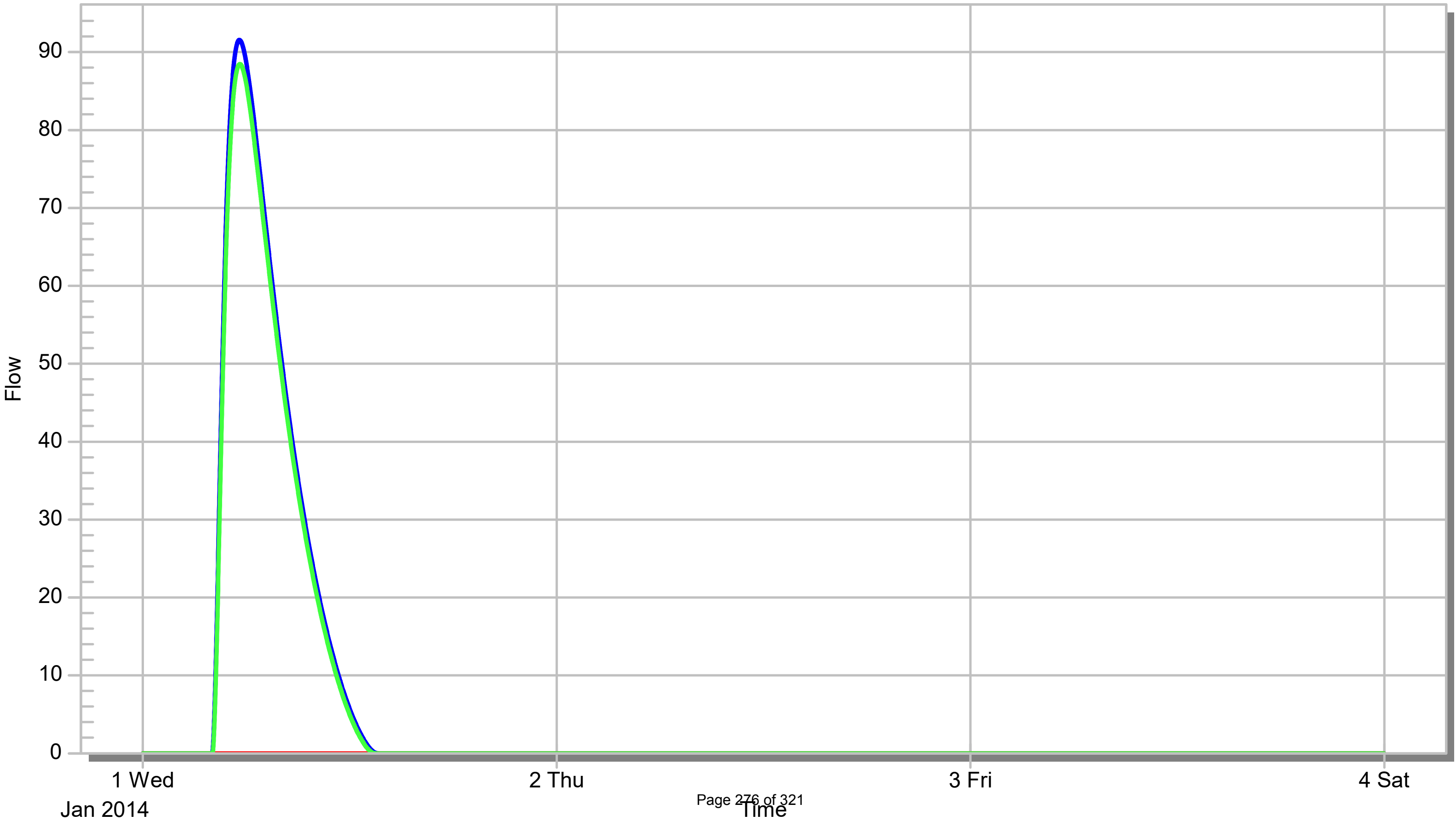
100yr-Free[Max 13.465]



Base Scenario[Max 91.560]

10yr[Max 0.000]

100yr-Free[Max 88.465]



Re: SCUP-2024-0003, Yara Estates

From Matthews, Johnna <MatthewsJ@laportetx.gov>
Date Wed 4/8/2026 10:47 AM
To Cinthia Pavon <cpavon@mlanzaengineering.com>; Hvitlok, Ryan <HvitlokR@laportetx.gov>
Cc Mario Lanza <mlanza@mlanzaengineering.com>; Vatsal Monpara <vmonpara@mlanzaengineering.com>; Sophia FilFil <sophia@gardenburedevelopment.com>

Cinthia,

This item is scheduled for the April 27 City Council meeting.



Johnna Matthews | Planning Manager
604 W. Fairmont | La Porte, TX 77571
p. 281.470.5063 | f. 281.470.5005
[website](#) | [map](#) | [email](#) | [f](#) [t](#) [i](#)

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Effective **February 10, 2025**, the City of La Porte has adopted:

- The **2024 International Code Council (ICC) Codes**
- The **2023 National Electrical Code (NEC)**



From: Cinthia Pavon <cpavon@mlanzaengineering.com>
Sent: Wednesday, April 8, 2026 9:48 AM
To: Hvitlok, Ryan <HvitlokR@laportetx.gov>; Matthews, Johnna <MatthewsJ@laportetx.gov>
Cc: Mario Lanza <mlanza@mlanzaengineering.com>; Vatsal Monpara <vmonpara@mlanzaengineering.com>; Sophia FilFil <sophia@gardenburedevelopment.com>
Subject: RE: SCUP-2024-0003, Yara Estates

Good morning Mrs. Matthews,

Can you please let us know if our SCUP will be able to be scheduled for the April 27 City council meeting?

Thank you,

Cinthia Pavon
M LANZA ENGINEERING, PLLC
Civil-Structural Engineers & Planners
11603 Spring Cypress Rd. Suite-B
Tomball, Texas 77377
T 936.529.0817 T 832.212.0969
cpavon@mlanzaengineering.com
www.mlanzaengineering.com

From: Hvitlok, Ryan <HvitlokR@laportetx.gov>
Sent: Monday, April 6, 2026 11:56 AM
To: Cinthia Pavon <cpavon@mlanzaengineering.com>; Matthews, Johnna <MatthewsJ@laportetx.gov>
Cc: Mario Lanza <mlanza@mlanzaengineering.com>; Vatsal Monpara <vmonpara@mlanzaengineering.com>; Sophia FilFil <sophia@gardenburedevelopment.com>
Subject: Re: SCUP-2024-0003, Yara Estates

Cinthia,

Good morning! I will await Ms. Matthews return to the office tomorrow, but you all are tentatively scheduled for the April 27 City Council meeting. I will have Ms. Matthews follow up tomorrow with confirmation. I am looking forward to getting this project back before City Council for their consideration. Thank you again and please let me know if you do not hear something back from Ms. Matthews by close of business tomorrow (Tuesday).

Ryan



Ryan Hvitløk, AICP, CFM | DIRECTOR
Planning & Development
604 W Fairmont Pkwy | La Porte, TX 77571
p. 281.470.5056 | c. 346.233.5018
[website](#) | [map](#) [f](#) [t](#) [i](#)
[Book time to meet with me](#)

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Helpful How-To Guides: [Building Permit Services](#) | [La Porte, TX - Official Website \(laportetx.gov\)](#)

If you have any questions or need assistance, please don't hesitate to call our main permit line at 281-470-5073 or email permits@laportetx.gov.

From: Cinthia Pavon <cpavon@mlanzaengineering.com>
Sent: Monday, April 6, 2026 10:45 AM
To: Matthews, Johnna <MatthewsJ@laportetx.gov>; Hvitlok, Ryan <HvitlokR@laportetx.gov>
Cc: Mario Lanza <mlanza@mlanzaengineering.com>; Vatsal Monpara <vmonpara@mlanzaengineering.com>; Sophia FilFil <sophia@gardenburedevelopment.com>
Subject: RE: SCUP-2024-0003, Yara Estates

Good morning Mrs. Matthews/Mr. Hvitlok,

Can you please confirm if we will be scheduled for the next city council meeting now that the drainage is approved.

Thank you,

Cinthia Pavon
M LANZA ENGINEERING, PLLC
Civil-Structural Engineers & Planners
11603 Spring Cypress Rd. Suite-B
Tomball, Texas 77377
T 936.529.0817 T 832.212.0969
cpavon@mlanzaengineering.com
www.mlanzaengineering.com

From: Candyce Ward <CWard@cobbhendley.com>
Sent: Monday, April 6, 2026 10:41 AM
To: Vatsal Monpara <vmonpara@mlanzaengineering.com>
Cc: Mario Lanza <mlanza@mlanzaengineering.com>; Cinthia Pavon <cpavon@mlanzaengineering.com>; Matthews, Johnna <matthewsj@laportetx.gov>; Hvitlok, Ryan <hvitlokr@laportetx.gov>
Subject: RE: SCUP-2024-0003, Yara Estates

Vatsal,

I completed my review on Thursday and had no further comments.

I have approved permit SCUP-2026-0001 on my end.

CANDYCE WARD, PE, CFM
Principal | Hydrology + Hydraulics Senior Project Manager
Licensed: TX, NM
Cobb, Fendley & Associates, Inc.

From: Vatsal Monpara <vmonpara@mlanzaengineering.com>
Sent: Monday, April 6, 2026 10:14 AM
To: Candyce Ward <CWard@cobbhendley.com>
Cc: Mario Lanza <mlanza@mlanzaengineering.com>; Cinthia Pavon <cpavon@mlanzaengineering.com>; Matthews, Johnna <matthewsj@laportetx.gov>; Hvitlok, Ryan <hvitlokr@laportetx.gov>
Subject: RE: SCUP-2024-0003, Yara Estates

Good Morning Candyce, this is just a follow up email to see if you got a chance to review the latest submittal for the Drainage Report and XPSWMM model sent over. Please let me know if you have any questions.

Thank you.

Best Regards,
Vatsal Monpara
M LANZA ENGINEERING, PLLC
Civil-Structural Engineers & Planners
11603 Spring Cypress Rd. Suite-B
Tomball, Texas 77377
O 832-212-0969
Direct 682-552-2127
vmonpara@mlanzaengineering.com
www.mlanzaengineering.com

Noise Analysis Technical Report

Yara Lakes Estates Development Along SH 146 and Wharton Weems Blvd

La Porte, Texas
March 2026

Prepared for GardenBure Development LLC.

By BGE, Inc.



Matthew Clinton

Matthew Clinton CWB
TxDOT Precertification #11899
Category 2.1.1 Traffic Noise Analysis 5/14/03

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INTRODUCTION

GardenBure Development LLC. is currently planning to develop a residential community in La Porte, TX. The Yara Lakes Estates Development is located east of SH 146 and is bound to the north by Hawthorne at Bay Forest Apartment complex, to the east by Bay Forest Gold Course and to the south by Wharton Weems Blvd. Due to the close proximity of the future subdivision with SH 146, a noise analysis was needed in order to proceed with development of that area. The current preliminary development plan (Appendix A) shows the project area for this noise analysis along SH 146 and Wharton Weems Blvd.

This analysis aims to determine the most effective noise reduction for future Yara Lakes Estates residents. Traffic data was generated using 2024 Design Hourly Volume (DHV) traffic data. Several assumptions were made such as growth rate, k-factor, vehicle percentages, and directional distribution. These assumptions were based upon other projects and similar conditions in the general area.

NOISE ANALYSIS

This analysis was accomplished in accordance with TxDOT's (FHWA approved) Guidelines for Analysis and Abatement of Roadway Traffic Noise (2011). The FHWA traffic noise modeling (TNM) software (version 2.5) was used to calculate existing and predicted traffic noise levels. The model primarily considers the number, type, and speed of vehicles; highway alignment and grade; cuts, fills and natural berms; surrounding terrain features; and the locations of activity areas likely to be impacted by the associated traffic noise.

Sound from highway traffic is generated primarily from a vehicle's tires, engine, and exhaust. It is commonly measured in decibels and is expressed as "dB."

Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear; therefore, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dB(A)."

Also, because traffic sound levels are never constant due to the changing number, type, and speed of vehicles, a single value is used to represent the average or equivalent sound level and is expressed as "Leq."

The traffic noise analysis typically includes the following elements:

- Identification of land use activity areas that might be impacted by traffic noise.
- Determination of existing noise levels.
- Identification of possible noise impacts.
- Consideration and evaluation of measures to reduce noise impacts.

The FHWA has established the following Noise Abatement Criteria (NAC) for various land use activity areas that are used as one of two means to determine when a traffic noise impact would occur.

FHWA Noise Abatement Criteria (NAC)		
Activity Category	dB(A) Leq	Description of Land Use Activity Areas
A	57 (exterior)	Lands on which serenity and quiet are of extra-ordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 (exterior)	Residential
C	67 (exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio stations, recording studios, schools, and television studios
E	72 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F
F	--	Agricultural, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	--	Undeveloped lands that are not permitted

A noise impact occurs when either the absolute or relative criterion is met:

Absolute criterion – The predicted noise level at a receiver approaches, equals or exceeds the NAC. “Approach” is defined as one dB(A) below the NAC. For example: a noise impact would occur at a Category B residence if the noise level is predicted to be 67 dB(A) or above.

Relative criterion – The predicted noise level substantially exceeds the existing noise level at a receiver even though the predicted noise level does not approach, equal or exceed the NAC. “Substantially exceeds” is defined as more than 10 dB(A). For example: a noise impact would occur at a Category B residence if the existing level is 54 dB(A) and the predicted level is 65 dB(A).

When a traffic noise impact occurs, noise abatement measures must be considered. A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area.

RESULTS

Existing traffic noise levels were modeled at proposed receiver locations that represent the land use activity areas adjacent to the proposed project that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement. All receivers are classified as an NAC Category B land use. **Table 1** shows the noise levels with no noise wall, a 6-foot, and an 8-foot concrete or brick wall surrounding the proposed Yara Lakes Estates Development. The noise level reduction from the different wall heights can be compared by analyzing the table.

Table 1: Traffic Noise Levels dB(A) Leq – Comparison Analysis									
Receiver	NAC Level	No Wall dB(A)	No Wall Impacts	6-ft Wall dB(A)	6-foot Wall Impacts	8-foot Wall dB(A)	8-foot Wall Impacts	12-foot Wall dB(A)	12-foot Wall Impacts
R1 – Residential	67	70	Yes	67	Yes	65	No	64	No
R2 – Residential	67	71	Yes	67	Yes	63	No	60	No
R3 – Residential	67	71	Yes	67	Yes	64	No	60	No
R4 – Residential	67	71	Yes	66	No	63	No	60	No
R5 – Residential	67	71	Yes	67	Yes	64	No	60	No
R6 – Residential	67	70	Yes	68	Yes	64	No	61	No
R7 – Residential	67	70	Yes	67	Yes	64	No	61	No
R8 – Residential	67	69	Yes	68	Yes	64	No	61	No
R9 – Residential	67	69	Yes	68	Yes	64	No	60	No
R10 – Residential	67	69	Yes	68	Yes	64	No	61	No
R11 – Residential	67	69	Yes	68	Yes	65	No	61	No
R12 – Residential	67	69	Yes	68	Yes	65	No	61	No
R13 – Residential	67	69	Yes	69	Yes	65	No	61	No
R14 – Residential	67	64	No	63	No	62	No	61	No
R15 – Residential	67	63	No	62	No	61	No	59	No
R16 – Residential	67	63	No	61	No	60	No	59	No
R17 – Residential	67	62	No	60	No	59	No	58	No
R18 – Residential	67	62	No	60	No	59	No	57	No
R19 – Residential	67	62	No	59	No	57	No	55	No
R20 – Residential	67	62	No	59	No	57	No	55	No
R21 – Residential	67	63	No	60	No	58	No	54	No
R22 – Residential	67	62	No	59	No	56	No	54	No
R23 – Residential	67	63	No	60	No	57	No	53	No
R24 – Residential	67	63	No	60	No	57	No	53	No
R25 – Residential	67	63	No	60	No	57	No	53	No

As indicated in **Table 1**, the no-build alternative results in 13 receivers being impacted with db(A) above the NAC levels. The 6-foot wall results in 12 receivers being impacted with db(A) above the NAC levels. The 8-foot and 12-foot walls result in zero receivers being impacted with db(A) above the NAC levels.

A noise barrier 8-feet in height would reduce noise levels by at least 5 dB(A) for 14 receivers and meet the noise reduction design goal of 7 dB(A) for four of those receivers. A noise barrier 12-feet in height would reduce noise levels by at least 5 dB(A) for 21 receivers and meet the noise reduction design goal of 7 dB(A) for 18 of those receivers.

CONCLUSION

Based on the traffic noise modeling results, multiple sound wall heights were evaluated to determine their effectiveness in meeting applicable noise abatement criteria for the proposed Yara Lakes Estates Development. The analysis indicates that a 6-foot sound wall would offer limited

noise reduction, while an 8-foot sound wall would fully meet the applicable noise-abatement criteria. Therefore, installation of a 12-foot sound wall is not justified.

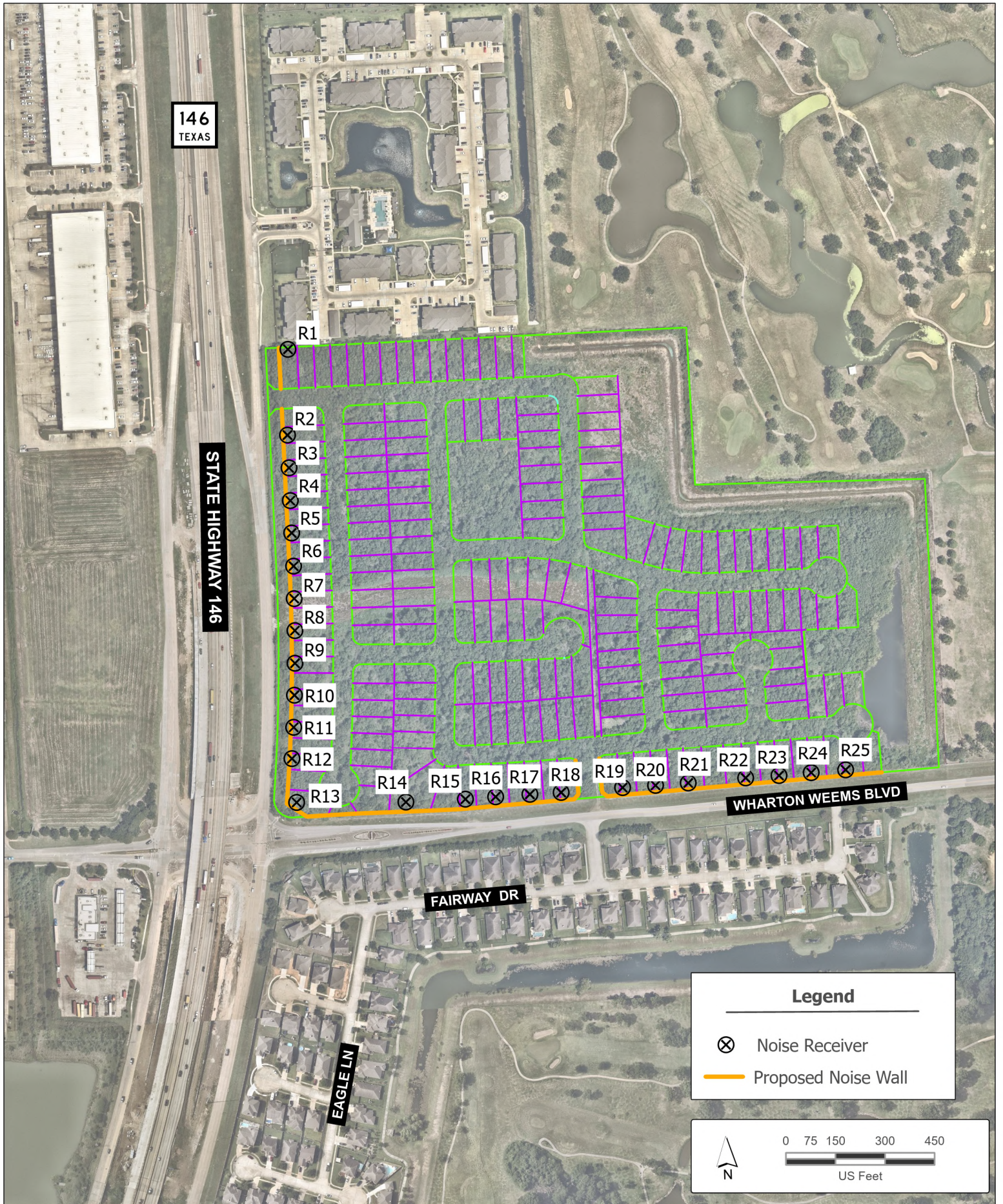
Based on these findings, BGE confirms that an 8-foot sound barrier is sufficient to function as an effective sound wall and would provide adequate noise attenuation for the proposed Yara Lakes Estates Development, consistent with the conclusions of the approved noise study.

Appendix A

YARA LAKES ESTATES SITE PLAN

Appendix B

NOISE RECEIVER EXHIBIT



Appendix C
TNM 2.5 Output

Yara Lakes Estates
Morgan Manning, BGE, Inc.

10 September 2025
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT:

15470-00

RUN:

Traffic Noise Barrier Analysis

BARRIER DESIGN:

6-foot Barrier

Average pavement type shall be used unless
a State highway agency substantiates the use
of a different type with approval of FHWA.

ATMOSPHERICS:

68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h dBA	No Barrier				With Barrier				
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h dBA	Noise Reduction		Calculated minus Goal dBA
				Calculated dBA	Crit'n dBA	Calculated dB	Crit'n Sub'l Inc dB			Calculated dB	Goal dB	
R1	1	1	0	70.8	66	70.8	11	Snd Lvl	67.9	2.9	5	-2.1
R2	2	1	0	71.1	66	71.1	11	Snd Lvl	67.0	4.1	5	-0.9
R3	3	1	0	71.2	66	71.2	11	Snd Lvl	67.8	3.4	5	-1.6
R4	4	1	0	71.2	66	71.2	11	Snd Lvl	66.4	4.8	5	-0.2
R5	5	1	0	71.3	66	71.3	11	Snd Lvl	67.4	3.9	5	-1.1
R6	6	1	0	70.6	66	70.6	11	Snd Lvl	68.1	2.5	5	-2.5
R7	7	1	0	70.0	66	70.0	11	Snd Lvl	67.9	2.1	5	-2.9
R8	8	1	0	69.5	66	69.5	11	Snd Lvl	68.3	1.2	5	-3.8
R9	9	1	0	69.2	66	69.2	11	Snd Lvl	68.1	1.1	5	-3.9
R10	10	1	0	69.2	66	69.2	11	Snd Lvl	68.6	0.6	5	-4.4
R11	11	1	0	69.1	66	69.1	11	Snd Lvl	68.5	0.6	5	-4.4
R12	12	1	0	69.3	66	69.3	11	Snd Lvl	68.8	0.5	5	-4.5
R13	13	1	0	69.7	66	69.7	11	Snd Lvl	69.2	0.5	5	-4.5
R14	14	1	0	64.7	66	64.7	11	----	63.7	1.0	5	-4.0
R15	15	1	0	63.5	66	63.5	11	----	62.1	1.4	5	-3.6
R16	16	1	0	63.1	66	63.1	11	----	61.8	1.3	5	-3.7
R17	17	1	0	62.6	66	62.6	11	----	60.9	1.7	5	-3.3
R18	18	1	0	62.6	66	62.6	11	----	60.6	2.0	5	-3.0
R19	19	1	0	62.4	66	62.4	11	----	59.8	2.6	5	-2.4
R20	20	1	0	62.5	66	62.5	11	----	59.5	3.0	5	-2.0
R21	21	1	0	63.1	66	63.1	11	----	60.5	2.6	5	-2.4
R22	22	1	0	62.9	66	62.9	11	----	59.5	3.4	5	-1.6
R23	23	1	0	63.3	66	63.3	11	----	60.2	3.1	5	-1.9
R24	25	1	0	63.2	66	63.2	11	----	60.2	3.0	5	-2.0
R25	26	1	0	63.3	66	63.3	11	----	60.6	2.7	5	-2.3

Dwelling Units	# DUs	Noise Reduction		
		Min dB	Avg dB	Max dB
All Selected	25	0.5	2.2	4.8
All Impacted	13	0.5	2.2	4.8
All that meet NR Goal	0	0	0	0

Noise Reduction Criteria Level	#	Receivers (R#)
Meets 5 dB(A) Criteria	0	N/A
Meets 7 dB(A) Criteria	0	N/A

Yara Lakes Estates
Morgan Manning, BGE, Inc.

10 September 2025
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT:

15470-00

RUN:

Traffic Noise Barrier Analysis

BARRIER DESIGN:

8-foot Barrier

Average pavement type shall be used unless
a State highway agency substantiates the use
of a different type with approval of FHWA.

ATMOSPHERICS:

68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h dBA	No Barrier				With Barrier				
				L Aeq1h		Increase over existing		Type Impact	Calculated LAeq1h dBA	Noise Reduction		Calculated minus Goal dBA
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc			Calculated	Goal	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R1	1	1	0	70.8	66	70.8	11	Snd Lvl	65.7	5.1	5	0.1
R2	2	1	0	71.1	66	71.1	11	Snd Lvl	63.8	7.3	5	2.3
R3	3	1	0	71.2	66	71.2	11	Snd Lvl	64.0	7.2	5	2.2
R4	4	1	0	71.2	66	71.2	11	Snd Lvl	63.5	7.7	5	2.7
R5	5	1	0	71.3	66	71.3	11	Snd Lvl	64.1	7.2	5	2.2
R6	6	1	0	70.6	66	70.6	11	Snd Lvl	64.6	6.0	5	1.0
R7	7	1	0	70.0	66	70.0	11	Snd Lvl	64.0	6.0	5	1.0
R8	8	1	0	69.5	66	69.5	11	Snd Lvl	64.7	4.8	5	-0.2
R9	9	1	0	69.2	66	69.2	11	Snd Lvl	64.0	5.2	5	0.2
R10	10	1	0	69.2	66	69.2	11	Snd Lvl	64.7	4.5	5	-0.5
R11	11	1	0	69.1	66	69.1	11	Snd Lvl	65.4	3.7	5	-1.3
R12	12	1	0	69.3	66	69.3	11	Snd Lvl	65.7	3.6	5	-1.4
R13	13	1	0	69.7	66	69.7	11	Snd Lvl	65.8	3.9	5	-1.1
R14	14	1	0	64.7	66	64.7	11	----	62.9	1.8	5	-3.2
R15	15	1	0	63.5	66	63.5	11	----	61.1	2.4	5	-2.6
R16	16	1	0	63.1	66	63.1	11	----	60.7	2.4	5	-2.6
R17	17	1	0	62.6	66	62.6	11	----	59.6	3.0	5	-2.0
R18	18	1	0	62.6	66	62.6	11	----	59.0	3.6	5	-1.4
R19	19	1	0	62.4	66	62.4	11	----	57.7	4.7	5	-0.3
R20	20	1	0	62.5	66	62.5	11	----	57.2	5.3	5	0.3
R21	21	1	0	63.1	66	63.1	11	----	58.0	5.1	5	0.1
R22	22	1	0	62.9	66	62.9	11	----	56.8	6.1	5	1.1
R23	23	1	0	63.3	66	63.3	11	----	57.0	6.3	5	1.3
R24	25	1	0	63.2	66	63.2	11	----	57.3	5.9	5	0.9
R25	26	1	0	63.3	66	63.3	11	----	57.6	5.7	5	0.7

Dwelling Units	# DUs	Noise Reduction		
		Min dB	Avg dB	Max dB
All Selected	25	1.8	5	7.7
All Impacted	13	3.6	5.6	7.7
All that meet NR Goal	14	5.1	6.2	7.7

Noise Reduction Criteria Level	#	Receivers (R#)
Meets 5 dB(A) Criteria	14	R1 - R7, R9, R20 - R25
Meets 7 dB(A) Criteria	4	R2 - R5

Yara Lakes Estates
Morgan Manning, BGE, Inc.

10 September 2025
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT:

15470-00

RUN:

Traffic Noise Barrier Analysis

BARRIER DESIGN:

12-foot Barrier

Average pavement type shall be used unless
a State highway agency substantiates the use
of a different type with approval of FHWA.

ATMOSPHERICS:

68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h dBA	No Barrier				With Barrier				
				LAeq1h		Increase over existing		Type Impact	Calculated LAeq1h dBA	Noise Reduction		Calculated minus Goal dBA
				Calculated dBA	Crit'n dBA	Calculated dB	Crit'n Sub'l Inc dB			Calculated dB	Goal dB	
R1	1	1	0	70.8	66	70.8	11	Snd Lvl	64.4	6.4	5	1.4
R2	2	1	0	71.1	66	71.1	11	Snd Lvl	60.7	10.4	5	5.4
R3	3	1	0	71.2	66	71.2	11	Snd Lvl	60.7	10.5	5	5.5
R4	4	1	0	71.2	66	71.2	11	Snd Lvl	60.4	10.8	5	5.8
R5	5	1	0	71.3	66	71.3	11	Snd Lvl	60.7	10.6	5	5.6
R6	6	1	0	70.6	66	70.6	11	Snd Lvl	61.1	9.5	5	4.5
R7	7	1	0	70.0	66	70.0	11	Snd Lvl	61.0	9.0	5	4.0
R8	8	1	0	69.5	66	69.5	11	Snd Lvl	61.0	8.5	5	3.5
R9	9	1	0	69.2	66	69.2	11	Snd Lvl	60.8	8.4	5	3.4
R10	10	1	0	69.2	66	69.2	11	Snd Lvl	61.1	8.1	5	3.1
R11	11	1	0	69.1	66	69.1	11	Snd Lvl	61.3	7.8	5	2.8
R12	12	1	0	69.3	66	69.3	11	Snd Lvl	61.5	7.8	5	2.8
R13	13	1	0	69.7	66	69.7	11	Snd Lvl	61.4	8.3	5	3.3
R14	14	1	0	64.7	66	64.7	11	----	61.9	2.8	5	-2.2
R15	15	1	0	63.5	66	63.5	11	----	59.8	3.7	5	-1.3
R16	16	1	0	63.1	66	63.1	11	----	59.0	4.1	5	-0.9
R17	17	1	0	62.6	66	62.6	11	----	58.0	4.6	5	-0.4
R18	18	1	0	62.6	66	62.6	11	----	57.2	5.4	5	0.4
R19	19	1	0	62.4	66	62.4	11	----	55.7	6.7	5	1.7
R20	20	1	0	62.5	66	62.5	11	----	55.0	7.5	5	2.5
R21	21	1	0	63.1	66	63.1	11	----	54.9	8.2	5	3.2
R22	22	1	0	62.9	66	62.9	11	----	54.1	8.8	5	3.8
R23	23	1	0	63.3	66	63.3	11	----	53.8	9.5	5	4.5
R24	25	1	0	63.2	66	63.2	11	----	53.8	9.4	5	4.4
R25	26	1	0	63.3	66	63.3	11	----	53.9	9.4	5	4.4

Dwelling Units	# DUs	Noise Reduction		
		Min dB	Avg dB	Max dB
All Selected	25	2.8	7.8	10.8
All Impacted	13	6.4	8.9	10.8
All that meet NR Goal	21	5.4	8.6	10.8

Noise Reduction Criteria Level	#	Receivers (R#)
Meets 5 dB(A) Criteria	21	R1 - R13, R18 - R25
Meets 7 dB(A) Criteria	18	R2 - R13, R20 - R25



Honorable Mayor Helton and City Council
City of La Porte

RE: P&Z Recommendation to Council – Special Conditional Use Permit (SCUP)
#SCUP-2024-0003

Dear Mayor Helton and City Council:

The La Porte Planning and Zoning Commission held a public hearing on January 15, 2026, to consider Special Conditional Use Permit (SCUP) #SCUP-2024-0003, to allow for a residential subdivision including 204 single-family lots, generally located at the northeast corner of Wharton Weems Blvd. and SH 146 and on four tracts of land including a total of 56.75-acre tract of land, La Porte; Harris County, Texas.

The Planning and Zoning Commission voted on a motion to recommend Approval of Special Conditional Use Permit (SCUP) #SCUP-2024-0003 to the La Porte City Council, by a vote of 9 in favor and 0 against.

Respectfully submitted,

Chairperson
On Behalf of the Planning and Zoning Commission

**City of La Porte, Texas
Planning and Zoning Commission**



January 15, 2026

AGENDA ITEM 6.a

Special Conditional Use Permit SCUP-2024-0003

A request by Mario Lanza/M Lanza Engineering, PLLC, applicant on behalf of 925 Fairmont Lakes, property owner, for approval of a Special Conditional Use Permit (SCUP) to allow a residential subdivision including 204 lots within the Planned Unit Development (PUD) zoning district, generally located at the northeast corner of Wharton Weems Blvd. and SH 146 including approximately 56.75 acres of land (HCAD Parcels: 0402780010036, 0242530670001, 0402440030021, and 0402440030022) La Porte; Harris County, Texas.

Project Manager: Johnna Matthews, Planning Manager
Planning and Development Division
City of La Porte, TX

Planning and Development Department Staff Report

REQUEST

Consider a recommendation to the La Porte City Council to approve a Special Conditional Use Permit (SCUP) to allow a residential subdivision including 204 single-family lots located within the Planned Unit Development (PUD) zoning district.

DISCUSSION

Location:

The subject property includes approximately 56.75 acres of land located at the northeast corner of Wharton Weems Blvd. and SH 146.

Background Information:

The below summarizes development proposals submitted for the subject property dating back to 2021:

- **2021 SCUP Approval:**
A SCUP was submitted to allow a mixed-use development consisting of residential townhomes and patio homes, with a limited commercial component. On March 18, 2021, the Planning and Zoning Commission recommended approval of the SCUP. On April 12, 2021, the La Porte City Council approved Ordinance No. 2021-3822, with conditions, authorizing the SCUP, with removal of the commercial component. The project did not move forward and the SCUP expired.
- **2023 SCUP Application:**
A new applicant submitted a SCUP to allow a mixed-use development, with a layout similar to the previous SCUP. The Planning and Zoning Commission considered the proposal at their November 16, 2023, meeting and voted to table the SCUP to allow the applicant time to revise the proposed concept plan based on Commission feedback.
- **2024 Revised Mixed-Use Proposal:**
The applicant removed the commercial component and returned to the Planning and Zoning Commission to present the updated proposal at the February 15, 2024, meeting. The Commission recommend denial of the SCUP due to concerns regarding the proposed detached townhome lots. The applicant withdrew the application prior to proceeding to City Council.
- **2024 Single-Family Detached Proposal:**
A new SCUP application was submitted proposing a single-family detached residential development incorporating a hybrid of the city's detached single-

family and single-family special lot line standards. At its May 2, 2024, meeting, the Planning and Zoning Commission recommended approval. At its June 10, 2024, meeting, the City Council denied the request.

- **2024-2025 Single-Family Subdivision Proposal:**

The applicant submitted a new SCUP application proposing a single-family subdivision consisting of 205 single-family lots, each with a two-car garage. The development proposed two points of access: one from SH 146 to the west and one from Wharton Weems Blvd. to the south. The development proposal included approximately 1.9 acres of landscaping and open space, including a sound wall and landscaping along SH 146 and Wharton Weems; approximately 9.7 acres of detention; and approximately 2.7 acres of parkland dedication. A jogging trail was also proposed along the western boundary of the detention pond.

At its November 21, 2024, meeting, the Planning and Zoning Commission recommended approval of the SCUP, with deviations. At its January 27, 2025, meeting, the City Council postponed the item to allow the applicant time to address their concerns regarding drainage, traffic and the height of the proposed sound wall.

- **2025 Resubmittal and Remand**

The applicant resubmitted documents intended to address City Council concerns. At its December 8, 2025, meeting, City Council remanded the application back to the Planning and Zoning Commission due to changes made to the proposal.

Current Proposal:

The applicant is requesting approval of a SCUP to allow development of a single-family subdivision including 204 lots, each with a two-car garage. The proposal includes two access points: one from SH 146 to the west and one from Wharton Weems Blvd. to the south.

One modification from the development proposal presented to the Planning and Zoning Commission in November involves the relocation of the Wharton Weems access point. The access is proposed farther east, rather than directly opposite the first existing access point serving the Lakes at Fairmont Greens subdivision to the south. The new access point is proposed across from the secondary eastern access to the Lakes at Fairmont Greens.

This change was made in response to concerns expressed by City Council and property owners within Lakes at Fairmont Greens. Wharton Weems Blvd. is owned and maintained by TxDOT, and all driveway access will require TxDOT review, approval, and permitting. It should be noted that TxDOT does not typically approve offset driveway configurations.

The applicant continues to propose approximately 1.9 acres of landscaping and open space, including a 40-foot-wide landscaped berm with a maximum height of two feet and a six-foot sound wall located atop the berm along SH 146 and

Wharton Weems Blvd. The proposal also reduces the total detention area from approximately 9.8 acres to approximately 9.6 acres. Approximately 2.7 acres of parkland dedication remains proposed, consisting of 1.47 acres to be dedicated as a park within Reserve B and a 1.2-acre jogging trail along the western boundary of the proposed detention pond within Reserve C.

Proposed lot sizes will range from 6,005.95 square feet to 16,291.05 square feet. With lot widths ranging from 33.33 feet to 85.79 feet. The proposal includes five lots with widths below the minimum required 50 feet including Block 1, Lots 38-40 and Block 2, Lots 3 and 4.

Requested Deviations:

As part of the SCUP process, the applicant is seeking the following deviation from the city’s standard development requirements:

- **Front Yard Setback:** A reduction in the front yard setback from 25 feet to 20 feet on 16 cul-de-sac lots (Block 1, Lots 22-26; Block 2, Lots 8-13; and Block 2, Lots 30-34)

Zoning

The subject property is zoned Planned Unit Development (PUD). The table below summarizes the surrounding zoning districts and land uses:

	Zoning	Land Use
North	Planned Unit Development (PUD)	Hawthorne at Bay Forest
South	Planned Unit Development (PUD)	Lakes at Fairmont Greens
West	Planned Unit Development (PUD)	SH 146
East	Planned Unit Development (PUD)	Bay Forest Golf Course

Analysis:

There are a number of different considerations staff evaluated during the review of this application. The following describes staff’s analysis:

1. **Land Use.** The future land use designation for the subject property is Low-Density Residential. The proposed development is compatible with the future land use designation and surrounding land uses. According to the Comprehensive Plan, the Low-Density Residential Future Land Use designation is for single-family detached homes in a traditional neighborhood pattern where each dwelling unit is located on an individual lot. Other residential dwelling types may be allowed based on compatibility with adjacent uses. The level of density may vary between neighborhoods

or within the same neighborhood to encourage diversity in housing types. Residential and certain non-residential uses that support the residential development, such as parks, recreation facilities, and schools may be appropriate.

2. **Access**. The site will have two points of access; from SH 146 to the west and Wharton Weems to the south. Both access points are from TxDOT roadways and will require TxDOT approval.
3. **Utilities**. Water and sewer services are available to serve the property.

Notification Requirements:

Staff finds that the public hearing notification requirements outlined in Section 106-171 were performed in accordance with code provisions, including the following: notice in a newspaper of general circulation at least 15 days prior to the hearing; written notice mailed to owners of real property within 300 feet of the site within 15 days of the hearing; and two (2) signs were posted on the property within 15 days of the hearing. In accordance with state law, notice of the public hearing was also posted at City Hall and on the City’s website.

RECOMMENDATION

Staff recommends approval of SCUP-2024-0003, subject to the conditions list in Exhibit E (SCUP Document), to allow a residential subdivision including 204 lots within the Planned Unit Development (PUD) zoning district, generally located at the northeast corner of Wharton Weems Blvd. and SH 146 including approximately 56.75 acres of land.

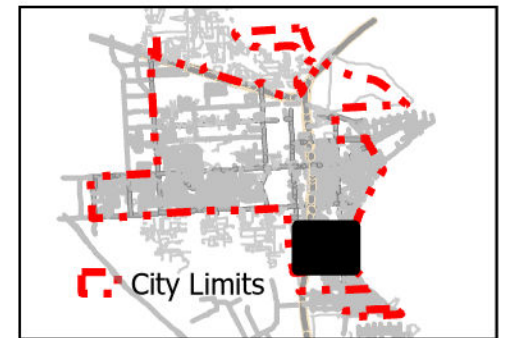
ATTACHMENTS

- Exhibit A: Aerial Map
- Exhibit B: Zoning Map
- Exhibit C: Future Land Use (FLUP) Map
- Exhibit D: Notification Map
- Exhibit E: SCUP Document
- Exhibit F: Legal Ad
- Exhibit G: Concept Plan and Lot Data Table
- Exhibit H: Site Photos

Aerial Map

Parcel #: 0402780010036,
0242530670001, 0402440030021,
0402440030022
Case: #SCUP-2024-0003

 Subject Property



This product is for informational purposes only and may not have been prepared for or be suitable for legal purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of the property boundaries

0 330 660 Feet

1 inch = 650 feet



CITY OF LA PORTE PLANNING DEPARTMENT








Zoning Map

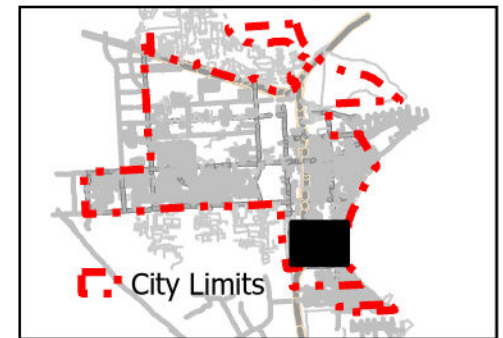
Parcel #: 0402780010036,
0242530670001, 0402440030021,
0402440030022

Case: #SCUP-2024-0003

 Subject Property

Zoning

-  Low Density Residential
-  High Density Residential
-  Manufactured Housing
-  Neighborhood Commercial
-  Planned Unit Development



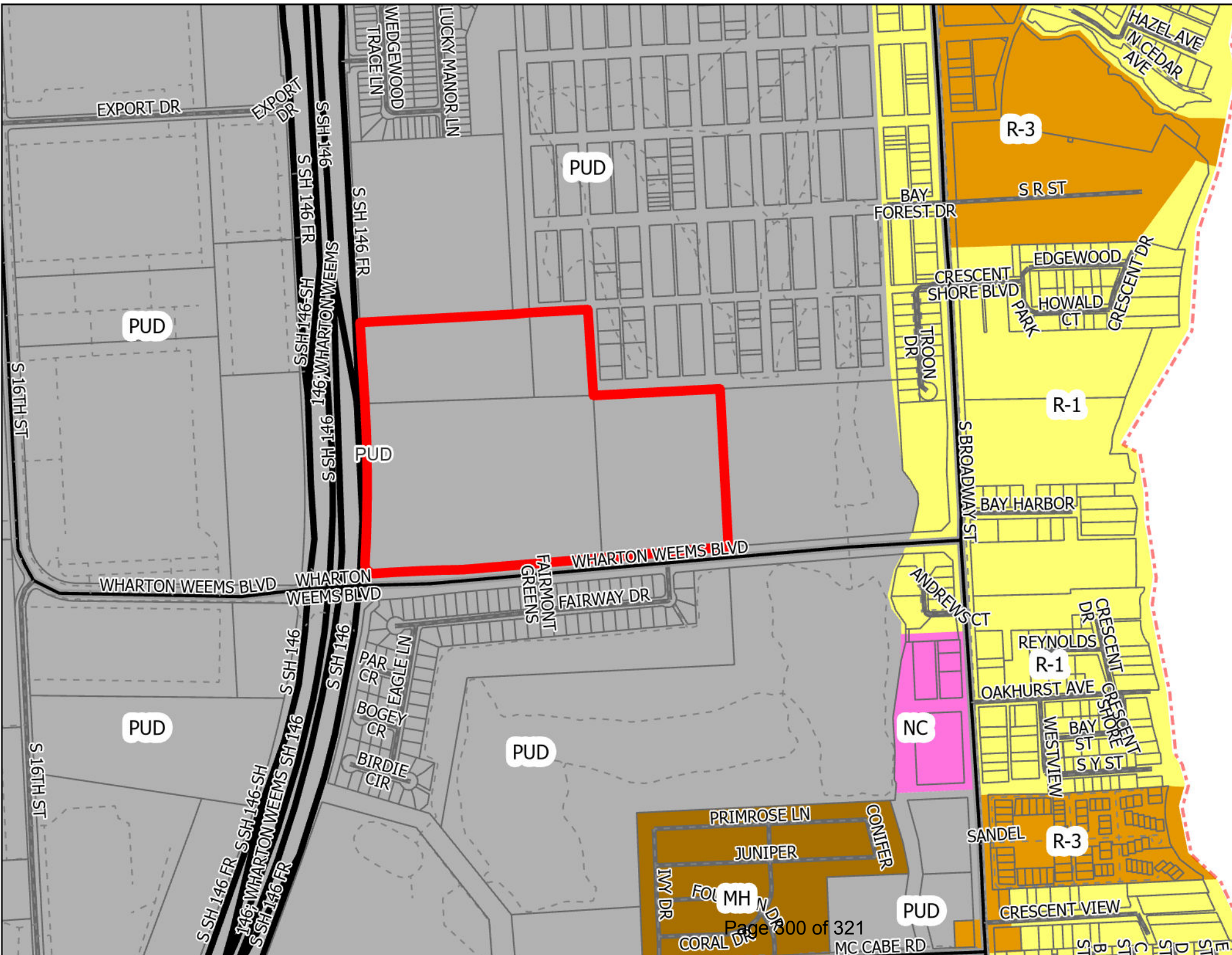
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0 325 650 Feet

1 inch = 650 feet



CITY OF LA PORTE PLANNING DEPARTMENT



FLUP Map

Parcel #: 0402780010036,
 0242530670001, 0402440030021,
 0402440030022
 Case: #SCUP-2024-0003

- Subject Property
- FLUP
- Low Density Residential
- Mid Density Residential
- High Density Residential
- Neighborhood Commercial
- Commercial
- Business Industrial
- Light Industrial
- Public / Institutional
- Parks and Open Space



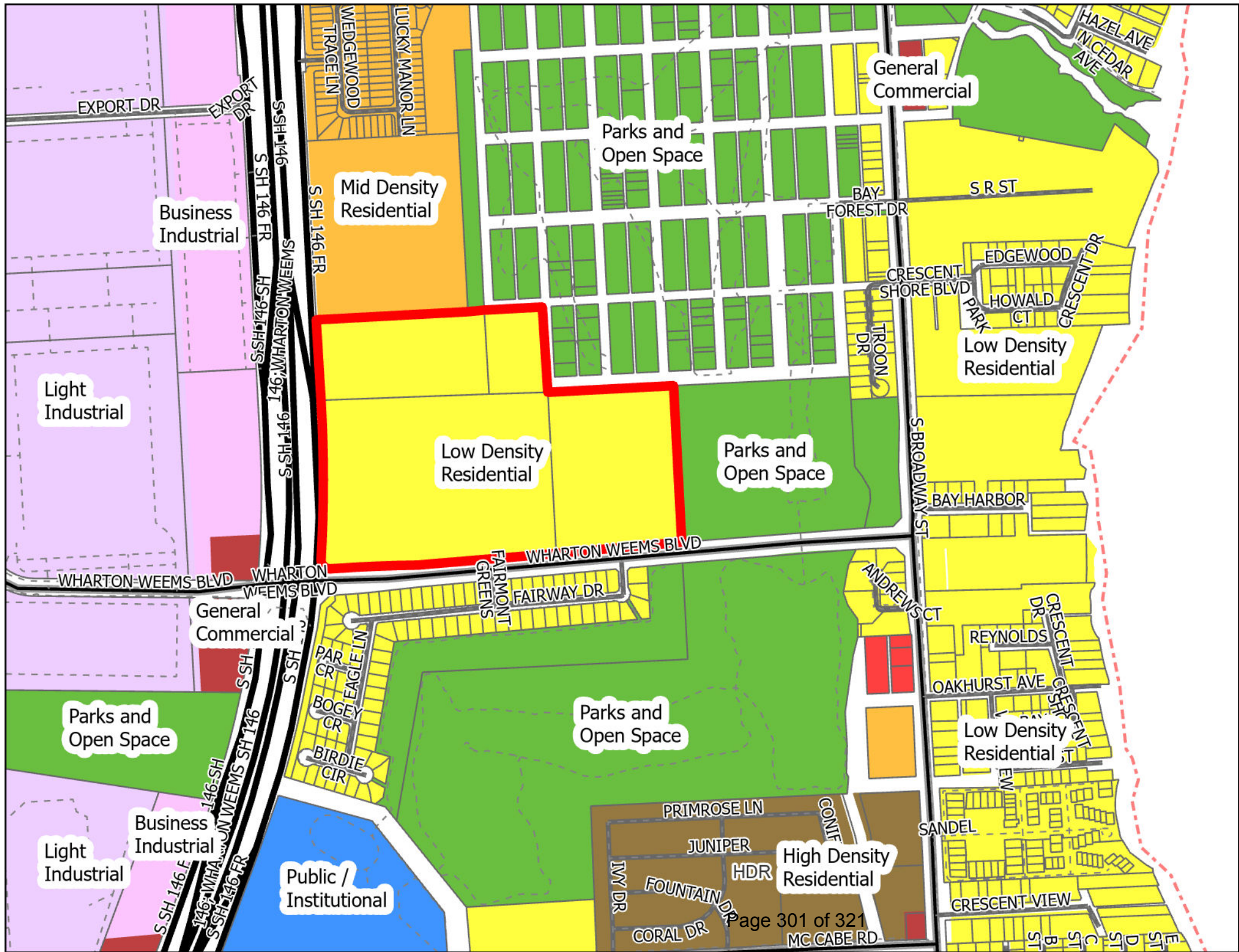
This product is for informational purposes only and may not have been prepared for or be suitable for legal purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of the property boundaries

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1 inch = 650 feet



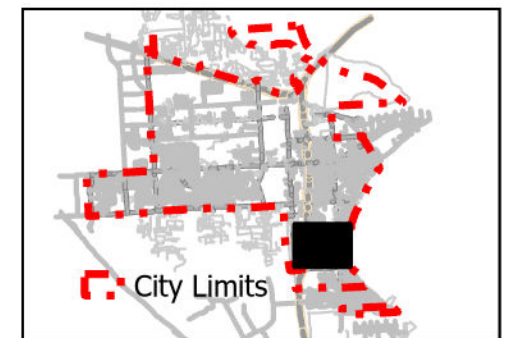
CITY OF LA PORTE PLANNING DEPARTMENT



Notification Map

Parcels within 300 feet of
Parcel #: 0402780010036,
0242530670001, 0402440030021,
0402440030022
Case: #SCUP-2024-0003

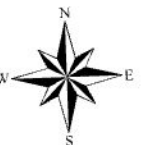
-  Subject Property
-  Properties Notified



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0 325 650 Feet

1 inch = 650 feet



CITY OF LA PORTE PLANNING DEPARTMENT

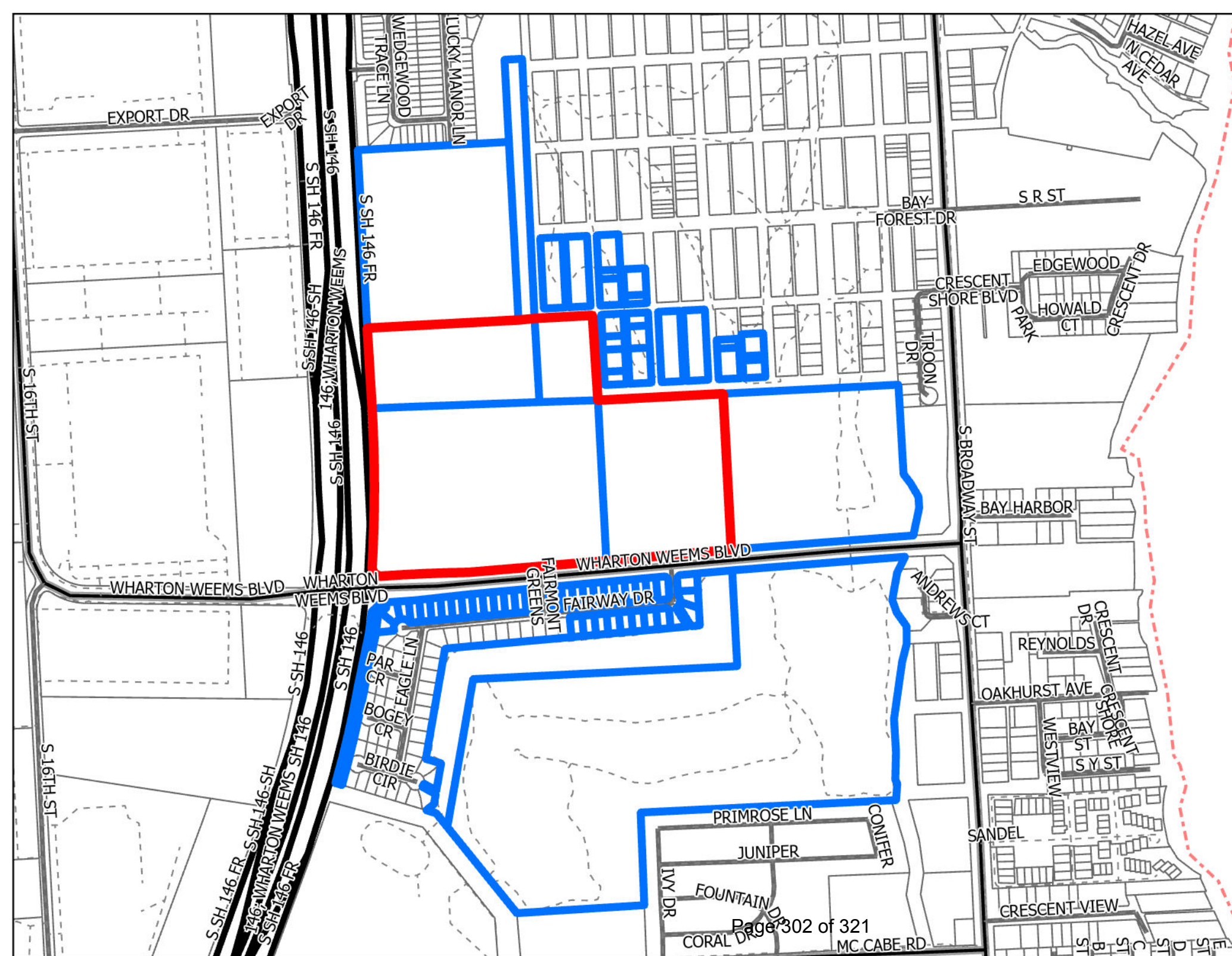


Exhibit G

Site Photos





PLAN SNAPSHOT REPORT SCUP-2026-0001 FOR CITY OF LA PORTE

Plan Type: Special Conditional Use Permit (SCUP)	Project:	App Date: 02/24/2026
Work Class: Special Conditional Use Permit (SCUP)	District: Blank	Exp Date: 02/24/2027
Status: Submitted	Square Feet: 0.00	Completed: NOT COMPLETED
Valuation: \$0.00	Assigned To: Matthews, Johnna	Approval Expire Date:

Description: Wharton Weems and 146 "This is request is for the SCUP of a new Residential Subdivision consisting in 205 lots with a minimum lot size of 50'x125', 9.7639AC for detention, 2.6974AC for park land dedication and 1.4206AC for landscape/open space."

Parcel: 0402440030021	Main	Address:	Zone: PUD(PUD)
------------------------------	------	-----------------	-----------------------

Applicant Mario Lanza 11603 Spring Cypress Rd STE B STE B Tomball, TX 77377 Home: (832) 212-0969 Business: (832) 212-0969 Mobile: (832) 212-0969	Authorized Agent Sophia Filfil Mobile: (713) 398-7927	Owner DR MALLADI REDDY Mobile: (281) 468-5190
--	---	---

Plan Custom Fields

Proposed NAICS Code 236115

Attachment File Name	Added On	Added By	Attachment Group	Notes
1058(Rev 9-23)wSpecialProvisions.pdf	03/04/2026 10:52	Nagoor, Netra	Available Online	
2.10.26 Drainage Report Comments from Cobb Fendley.pdf	03/04/2026 10:52	Nagoor, Netra	Available Online	
Book1.xlsx	03/04/2026 10:52	Nagoor, Netra	Available Online	
CITY OF LA PORTE DECEMBER SCUP COMMISSIONERS COMMENTS REVISIONS TO SITE LAND PLAN_v3.pdf	03/04/2026 10:52	Nagoor, Netra	Available Online	
D_SCUPs_SCUP-2024-0003, Wharton Weems_RE_SCUP-20.pdf	03/04/2026 10:52	Nagoor, Netra	Available Online	
JUSTIFICATION LETTER_v2.pdf	03/04/2026 10:52	Nagoor, Netra	Available Online	
NEW SITE LAND PLAN 07 10 2024_v1_Comments.pdf	03/04/2026 10:52	Nagoor, Netra	Available Online	
NEW SITE LAND PLAN 07 10 2024_v1_KL.pdf	03/04/2026 10:52	Nagoor, Netra	Available Online	
NEW SITE LAND PLAN 07 10 2024_v1_Response to Comments.pdf	03/04/2026 10:52	Nagoor, Netra	Available Online	
Signature_Mario_Lanza_8_7_2024.jpg	03/04/2026 10:52	Nagoor, Netra	Available Online	
Yara Lakes Estates Noise Analysis 20251029 signed_v1_v2.pdf	03/04/2026 10:52	Nagoor, Netra	Available Online	

Note	Created By	Date and Time Created
1. This is copy of SCUP-2024-0003	Malik Michel	02/24/2026 11:35
2. For all submittals prior to 2/26/26, see SCUP-2024-0003.	Netra Nagoor	02/26/2026 8:25

Invoice No.	Fee	Fee Amount	Amount Paid
NOT INVOICED	Special Conditional Use Permit	\$0.00	\$0.00
Total for Invoice NOT INVOICED		\$0.00	\$0.00
Grand Total for Plan		\$0.00	\$0.00

PLAN SNAPSHOT REPORT (SCUP-2026-0001)

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Planning Review v.1	Requires Re-submit	03/04/2026	03/13/2026	03/16/2026	Yes	Yes
Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Engineering	Engineering	Ward, Candyce	Requires Re-submit	03/04/2026	03/13/2026	03/05/2026
Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning Division	Planning	Matthews, Johnna	Requires Re-submit	03/04/2026	03/13/2026	03/16/2026
Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Planning Review v.2	In Review	03/20/2026	03/31/2026		No	No
Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Engineering	Engineering	Ward, Candyce	Approved	03/20/2026	03/31/2026	04/02/2026
Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Planning Division	Planning	Matthews, Johnna	In Review	03/20/2026	03/31/2026	

Workflow Step / Action Name	Action Type	Start Date	End Date
Fees v.1			
Invoice Fees v.1	Generic Action		
Confirm Fees Paid v.1	Generic Action		
Review v.1			
Planning Review v.1	Receive Submittal	03/04/2026 0:00	03/16/2026 8:35
Planning Review v.2	Receive Submittal	03/20/2026 0:00	
Application Completeness Check v.1			
Confirm Application Completeness v.1	Generic Action		
Planning & Zoning Commission Meeting v.1			
Schedule PZ Public Hearing Hold Hearing v.1	Hold Hearing		
Email Applicant Scheduled Hearing (PZ) v.1	Generic Action		
PZ Order Labels Task v.1	Task		
PZ Pick up Labels Task v.1	Task		
PZ Send Notice to Newspaper Task v.1	Task		
PZ Publish PH Notice on Website Task v.1	Task		
PZ Confirm Newspaper Published Task v.1	Task		
PZ Mail Notice of Public Hearing Task v.1	Task		
PZ Post PH Sign on Property Task v.1	Task		
Prepare and Distribute Staff Report v.1	Generic Action		
Staff Report Approval v.1	Generic Action		
PZ Post & Email Agenda Packet Task v.1	Task		
PZ Hearing Task v.1	Task		
PZ Update PH Notice on Website Task v.1	Task		
PZ Recommendation Task v.1	Task		
City Council v.1			
Schedule CC Public Hearing v.1	Hold Hearing		
Email Applicant Scheduled Hearing (CC) v.1	Generic Action		
CC Post PH Sign on Property Task v.1	Task		
CC Agenda Request & Ordinance Draft Task v.1	Task		
CC Presentation Task v.1	Task		
CC Hearing Task v.1	Task		

PLAN SNAPSHOT REPORT (SCUP-2026-0001)

CC Update PH Notice on Website Task v.1	Task
CC Pick up PH Sign Task v.1	Task
Issue Ordinance v.1	
Issue Ordinance v.1	Generic Action
GIS v.1	
GIS Map Update Task v.1	Task
Close Application v.1	
Complete & Close Application v.1	Generic Action

ORDINANCE NO. 2025-4036

AN ORDINANCE AMENDING THE CODE OF ORDINANCES OF THE CITY OF LA PORTE, CHAPTER 106, MORE COMMONLY REFERRED TO AS THE ZONING ORDINANCE OF THE CITY OF LA PORTE, TEXAS, BY GRANTING SPECIAL CONDITIONAL USE PERMIT NO. 2026-0001, TO ALLOW A RESIDENTIAL SUBDIVISION INCLUDING 204 LOTS ON 56.75 ACRES OF LAND LOCATED AT THE NORTHEAST CORNER OF WHARTON WEEMS BLVD. AND STATE HIGHWAY 146, AND LEGALLY DESCRIBED AS TR 5 ABST 30 W P HARRIS, TR 5L ABST 30 W P HARRIS, TR 1M ABST 35 J HUNTER, AND LTS 1 THRU 32 BLK 1267 & TR 33 LA PORTE; HARRIS COUNTY, TEXAS; MAKING CERTAIN FINDINGS OF FACT RELATED TO THE SUBJECT; FINDING COMPLIANCE WITH THE OPEN MEETINGS ACT; AND PROVIDING AN EFFECTIVE DATE HEREOF;

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LA PORTE, TEXAS:

Section 1. Chapter 106 “Zoning” of the Code of Ordinances is hereby amended by granting Special Conditional Use Permit #2026-0001 attached hereto as Exhibit A and incorporated by reference for all purposes, to allow a 204-lot single-family subdivision on 56.75 acres of land located at the northeast corner of Wharton Weems Blvd. and State Highway 146, and legally described as TR 5 ABST 30 W P HARRIS, TR 5L ABST 30 W P HARRIS, TR 1M ABST 35 J HUNTER, and LTS 1 THRU 32 BLK 1267 & TR 33 LA PORTE; Harris County, Texas.

Section 2. All ordinances or parts of ordinances inconsistent with the terms of this ordinance are hereby repealed; provided, however, that such repeal shall be only to the extent of such inconsistency and in all other respects this ordinance shall be cumulative of other ordinances regulating and governing the subject matter covered by this ordinance.

Section 3. Should any section or part of this ordinance be held unconstitutional, illegal, or invalid, or the application to any person or circumstance for any reasons thereof ineffective or inapplicable, such unconstitutionality, illegality, invalidity, or ineffectiveness of such section or part shall in no way affect, impair or invalidate the remaining portions thereof; but as to such remaining portion or portions, the same shall be and remain in full force and effect and to this end the provisions of this ordinance are declared to be severable.

Section 4. The City Council officially finds, determines, recites and declares that a sufficient written notice of the date, hour, place and subject of this meeting of the City Council is posted at a place convenient to the public at the City Hall of the city for the time required by law preceding this meeting, as required by Chapter 551, TX. Gov’t Code; and that this meeting has been open to the public as required by law at all times during which this ordinance and the subject matter thereof has been discussed, considered and formally acted upon. The City Council further ratifies, approves and confirms such written notice and the contents and posting thereof.

Section 5. The City Council of the City of La Porte hereby finds that public notice was properly mailed to all owners of all properties located within three hundred feet (300’) of the properties under consideration.

Section 6. The City Council of the City of La Porte hereby finds, determines, and declares that all

prerequisites of law have been satisfied and hereby determines and declares that the amendments to the City of La Porte Zoning Classification contained in this Ordinance as amendments thereto are desirable and in furtherance of the goals and objectives stated in the City of La Porte's Comprehensive Plan.

Section 7. This ordinance shall be effective after its passage and approval.

PASSED AND APPROVED THIS _____ day of _____ 2026.

CITY OF LA PORTE, TEXAS

Rick Helton, Mayor

ATTEST:

APPROVED AS TO FORM:

Lee Woodward, City Secretary

Clark T. Askins, City Attorney

Exhibit A

**City of La Porte
Special Conditional Use Permit
SCUP # 2026-0001**

This permit is issued to: 925 Fairmont Estates
Owner or Agent

9018 Tri City Beach Road, Baytown, TX 77523
Address

For Development of: A 204-lot single-family subdivision
Development Name

Location: Northeast corner of SH 146 and Wharton Weems Blvd.

Legal Description: TR 5 ABST 30 W P HARRIS, TR 1M ABST 35 J Hunter, TR 5L
ABST 30 WP Harris, and LTS 1-32, BLK 1267 & TR 33 La
Porte; Harris County, Texas.

Zoning: PUD, Planned Unit Development

Use: Residential Subdivision

Permit Conditions:

This Special Conditional Use Permit (SCUP) for the development of a 204-lot single-family subdivision with deviations and an underlying zoning district of Single-Family Residential-1 (R-1) is applicable for the subject property, a copy of which shall be maintained in the files of the City's Planning and Development Department upon approval. Project development shall be in accordance with the following conditions:

1. A site development plan where necessary shall be submitted in accordance with applicable requirements of the City of La Porte's Development Ordinance and shall comply with all provisions of Chapter 106, "Zoning" of the City's Code of Ordinances, and all other department reviews and applicable laws and ordinances of the City of La Porte and the State of Texas.
2. Land uses permitted within the development are restricted to "Single Family" residential, and shall be constructed in accordance with the requirements outlined in Section 106-333 of the Code of Ordinances, the required standards listed within the SCUP document, and applicable building codes with the following deviations:

- Front Yard Setback: A reduction in the front yard setback from 25 feet to 20 feet on cul-de-sac lots identified as follows: Block 1, Lots 22-26; Block 2, Lots 8-13; and Block 2, Lots 30-34.
- 3. Corporate housing shall be prohibited within the development.
- 4. Gutters shall be installed on all homes and shall face the front yard.
- 5. A minimum 40' wide landscaped buffer is required along the western boundary of the site adjacent to SH 146.
- 6. The developer shall install an 8' high masonry fence with soundproofing materials along the western and southern boundaries of the project.
- 7. As an alternative, the developer may install a 6' in height masonry fence with soundproofing materials along the western boundary of the site adjacent to SH 146 atop a 2' in height berm; and a 6' high fence along the southern boundary of the site adjacent to Wharton Weems Blvd., atop a 2' in height berm.
- 8. Anti-Monotony/Anti-Repetition: No front elevation of a single-family home, including its mirror image, shall be repeated more often than once every four lots. Nor shall a front elevation be repeated directly on the opposite side of the right-of-way. Similar elevations shall mean there is no substantial difference in roof lines, size and location of windows and doors, color of materials, etc.
- 9. In lieu of a fence along the eastern boundary of the project, the developer shall be required to plant shade trees, at a minimum 4" caliper and 25' on center. In addition to the shade trees, shrubs shall be planted at no less than 5 gallons in size with a minimum spacing of 3' on center. These plantings are required along the entire length of the eastern and northern boundaries. The landscape shall be owned and maintained by the Homeowner's Association.
- 10. Two-car garages are required for each single-family lot and may not be converted to living space.
- 11. All public streets internal to the development shall be constructed in accordance with the City's Public Improvement Criteria Manual and shall be dedicated to the city.
- 12. Sidewalks shall be required along all Rights-of Way and must meet the minimum requirements of the Public Improvement Criteria Manual (PICM).
- 13. A pedestrian plan is required and shall provide pedestrian connectivity to all public areas.
- 14. The proposed trail shall be a minimum 5 feet in width, constructed of concrete, and shall encompass the perimeter of the detention pond.
- 15. A minimum of 15 benches shall be constructed along the proposed trail, along with a minimum of three pet waste stations.

16. Entry feature signage shall be required along the Wharton Weems entry into the development. An irrigated landscaped area consisting of bushes, shrubs and ornamental grasses equal to or greater in size than the surface area of the monument sign shall be installed around the base of the sign.
17. Access to any public right-of-way is subject to the requirements of Section 106-835, Figure 10-3 and will be reviewed at the time of Site Development Plan. TXDOT right-of-way access permits shall be presented prior to permit issuance for all driveways requested on Highway 146. Maximum driveway widths shall be in compliance with city code requirements.
18. The developer will be required to submit for approval by the City Engineer, a drainage report indicating how the proposed development will accommodate the requirements for stormwater detention in accordance with the City's Public Improvement Criteria Manual, or if discharging in a TXDOT or Harris County system, approval by such authority. The detention pond shall be sized for maximum lot coverage and lot imperviousness. The developer may enhance the existing detention pond to accommodate the development's detention requirements with engineering approval.
19. All necessary documentation for building permit review must be submitted in conjunction with the city's building permit application process.
20. A traffic impact analysis, performed by a licensed engineer agreed to by both the City and the applicant, shall be required and subject to TxDOT criteria and approval. If any mitigation is required by the study, the applicant will be responsible for their portion of the impact. All contributions would be subject to reimbursement through TIRZ, pursuant to approval by the TIRZ Board.
21. If extension of any public water or sanitary sewer line is required as part of this development, the applicant will be required to execute a utility extension agreement with the city and install such improvements at the developer's expense.
22. A sanitary sewer flow impact study shall be required. If the study shows a negative effect downstream, the developer shall perform improvements to the downstream sanitary sewer system at the developer's expense.
23. The subdivision lift station shall be designed and built by the developer, as per TCEQ requirements and approved by the City, at the developer's expense, then turned over to the City for ownership and maintenance after the one (1) year warranty. The warranty will start upon the project acceptance date.
24. Any substantive modifications to this Special Conditional Use Permit will require an amendment to this SCUP in accordance with Chapter 106, "Zoning" of the City's Code of Ordinances.
25. A minimum of \$10,000 shall be contributed to the tree fund for the unauthorized removal of trees. Any future removal of trees is subject to all requirements of the City's Tree Preservation Ordinance.

26. An HOA shall be established.

Failure to begin construction of the site within 12 months after issuance or as scheduled under the terms of a special conditional use permit shall void the permit as approved, except upon an extension of time granted after application to the Planning and Zoning Commission.

If the contract or agreement is terminated following the completion of any development stage, and there is sufficient evidence to demonstrate that further development is not intended, the ordinance establishing the Special Conditional Use Permit may be rescinded by the City Council, either on its own motion or upon the recommendation of the Planning and Zoning Commission of the City of La Porte. Upon such rescission, the prior zoning designation shall be fully reinstated and shall apply to any undeveloped portion of the property.

Validation Date: _____

Director of Planning and Development

City Secretary



REQUEST FOR CITY COUNCIL AGENDA ITEM

Agenda Date Requested: <u>April 27, 2026</u>
Requested By: <u>Jameson Appel</u>
Department: <u>Public Works</u>
<input checked="" type="radio"/> Report <input type="radio"/> Resolution <input type="radio"/> Ordinance

Appropriation	
Source of Funds:	<u>Fund -053</u>
Account Number:	<u>053-7070-530-1100</u>
Amount Budgeted:	<u>\$1,602,421.84</u>
Amount Requested:	<u>\$497,456.89</u>
Budgeted Item:	<input checked="" type="radio"/> Yes <input type="radio"/> No

Exhibits: Construction Masters of Houston proposal request

SUMMARY & RECOMMENDATION

Presentation, discussion, and possible action to approve a change order to incorporate both generators into the first phase of the project, with a cost of \$497,456.89, utilizing the construction contingency.

Package 1 of the Public Works improvements is currently under construction, while Package 2 is in final design and is slated for future construction. Through ongoing coordination between the design team and both CMAR contractors, an opportunity was identified to improve efficiency, reduce risk, and better align project delivery. This action would eliminate the need to procure a generator and the associated tasks in Package 2 of the project, thereby lowering the total cost of the build-out across all phases.

The initial design plan had the generator packages split between construction phases. Revising the construction plan allows the same contractor and electrical team to install both generators, ensuring system compatibility and reducing the risk of conflicts that can occur with multiple contractors. Additionally, installation of large generator systems requires coordination with CenterPoint Gas; completing both installations concurrently minimizes the potential for redesign, rework, and additional costs associated with future utility modifications.

This approach also addresses current market conditions, including extended procurement timelines of 12 to 16 months for generator equipment, and helps mitigate potential cost escalation. From 2023 to 2026 the cost of a 750kw Generac Natural Gas Generator has increased by over 20% (approximately \$95K). Costs are projected to rise an additional 7% by 2027 (approx. \$35K). Purchasing the second generator now will streamline construction sequencing, improve project efficiency, and provide long-term cost savings.

The proposal from Construction Masters includes a 750kw Generac Generator and the necessary upgrades of the gas lines and all required fittings from 3" to 4" for a total cost of \$497,456.89.

Staff has reviewed the proposal and determines it to be a practical and cost-effective solution that supports overall project delivery. Staff recommends the approval of the change order and use of the Package 1 contingency to achieve this goal.

STRATEGIC PLAN KEY FOCUS AREAS AND GUIDING PRINCIPLES

Infrastructure and Utilities: *The City of La Porte will have and maintain a strong infrastructure and up to date facilities to continue to provide superior services for our citizens.*

ACTION REQUIRED BY CITY COUNCIL

Presentation, discussion, and possible action to approve a change order to incorporate both generators into the first phase of the project, with a cost of \$497,456.89, utilizing the construction contingency.

Approved for the City Council meeting agenda

Corby D. Alexander, City Manager

Date



CHANGE ORDER

City of La Porte Public Works Facility Improvements Phase 1

Date of Issuance: 4/14/2026
Contractor: Construction Masters, Inc.
Designer: BRW

Change Order No.: 1
CoP Project No.: _____
P.O. No.: C0000100

Explanation:

This change order encompasses the following:

Description of Work

	<u>Cost</u>	<u>Time</u>
1 CPR # 1 Generator Addition	\$ 497,456.89	60 Days
2	_____	0 Days
3	_____	0 Days
4	_____	0 Days
5	_____	0 Days
6	_____	0 Days
7	_____	0 Days
8	_____	0 Days
9	_____	0 Days
10	_____	0 Days

Please attach back-up documentation

Cost & Time Change Summary

	<u>Cost</u>	<u>Time</u>
Original Contract:	\$ 10,262,938.00	487 Days
Previous Change Order(s):	\$ -	0 Days
Contract prior to this change order:	\$ 10,262,938.00	487 Days
Net increase (decrease) from this change order	\$ 497,456.89	60 Days
Revised Contract:	\$ 10,760,394.89	547 Days

City Manager: _____ Date: _____

RECOMMENDED:

RECOMMENDED:

By: _____ Date: _____
Design Firm

By: _____ Date: _____
Construction Manager

ACCEPTED*:

APPROVED:

By: Dennis Busby Date: 4/14/2026
Contractor

By: _____ Date: _____
Owner

*Contractor agrees to perform change(s) included in this Change Order for the price and time indicated. The prices for changes included all costs associated with this Change Order.
 No work is to be done until this change order is executed. No payment to the Contractor (or Consultant) shall be made for work included in the change order until the Contractor's pay estimate is updated.

Revise the project plans and specifications as referenced and insofar as the original project drawings and specifications are inconsistent, this Change Order governs. Upon execution by all parties, the following changes identified for the contract value and/or contract time shown, are made part of the contract.



P.O. Box 1587 – Pearland, Texas 77588 – 281/997-2640 – Fax: 281 / 485-4702

Change Proposal Request

Project: City Of La Porte – Public Works Facility
 Date: 4/14/26
 Request No: 1
 To: Jameson Appel

Construction Masters is proposing to make the following changes to the original scope of work for the La Porte Public Work Facility Phase 1 Project.

Description: Response to Additional Generator Requested

Genrg	\$	457,255.00
IPS	\$	12,870.00
Subtotal	\$	470,125.00
OH&P	\$	19,980.31
Additional Bond Premium (2.5% up to \$100K; 1.5% up to \$500K)	\$	7,351.58
Total Change Proposal Request	\$	497,456.89

Reason: Owners Request

1. Generac Generator 750kw:
 - a. Generator
 - b. Crane for placement
 - c. Set-up of Monitoring, Load Bank Testing, Factory start-up with warranty registration and on-site customer orientation
 - d. Labor
 - e. Equipment
2. Gas Line Changes
 - a. Increase service line size from 3” poly gas pipe to 4” poly gas pipe.
 - b. Change transition risers from 3” to 4”.
 - c. Change poly gas fittings from 3” to 4”.
 - d. Rental of required equipment (4” fusion and alignment machine).
 - e. Increase service valve from 3” to 4” (2x).
 - f. Connect Phase 2 Generator with 4” black steel schedule 40
3. 60 Additional Contract Days

Attachments: Genrg, IPS

Approvals

Owner

Architect/ Engineer/ Designer



April 9, 2026

LP Public Works
2963 N 23Rd St.
La Porte, Tx 77571

Per changes in the scope of work requested, we are pleased to offer for your consideration the following change order for the electrical work at the above address per NEC and Local Electrical Code. We propose to provide all the labor, material, and equipment needed to complete this work for the lump sum amount of.

Generac Generator (750kw): \$457,255.00

Generac Generator 750kw:

- Generator
- Crane for placement
- Set-up of Monitoring, Load Bank Testing, Factory start-up with warranty registration and on-site customer orientation
- Labor
- Equipment

(713)644-2051
6329 Dixie Drive
Houston, Tx 77087

Regulated by the Texas Department of Licensing and Regulation
Contractor's License # 34472

PO Box 12157 Austin, TX 78711-2157

(800) 803-9202 | (512) 463-6599 | www.tdlr.texas.gov

Adopted Administrative Rules: 73.51. (c) Electrical Contractors' Responsibilities

Revision: June 2017

Innovative Plumbing Solutions Of Pearland, LLC

April 8, 2026

Construction Masters of Houston
309 3rd Street
Pearland, TX 77581

Attn: Dennis Busby

Re: Phase 2 Generator – PS1.1 Mark-up Gas Changes
City of La Porte Public Works Improvements
2962 23rd Street
La Porte, Tx. 77550

Dennis,

Here is the additional cost for the changes as indicated in drawing PS1.1 Mark-up received on 4-6-26. The additional cost is the cost difference of material changes and additional labor that differs from previous proposal dated 2-3-26, ASI-03 Additional Cost - Plumbing . The changes are as follows:

1. Increase service line size from 3" poly gas pipe to 4" poly gas pipe.
2. Change transition risers from 3" to 4".
3. Change poly gas fittings from 3" to 4".
4. Rental of required equipment (4" fusion and alignment machine).
5. Increase service valve from 3" to 4" (2x).
6. Connect Phase 2 Generator with 4" black steel schedule 40 (painting by others).
7. Additional pipe stands.

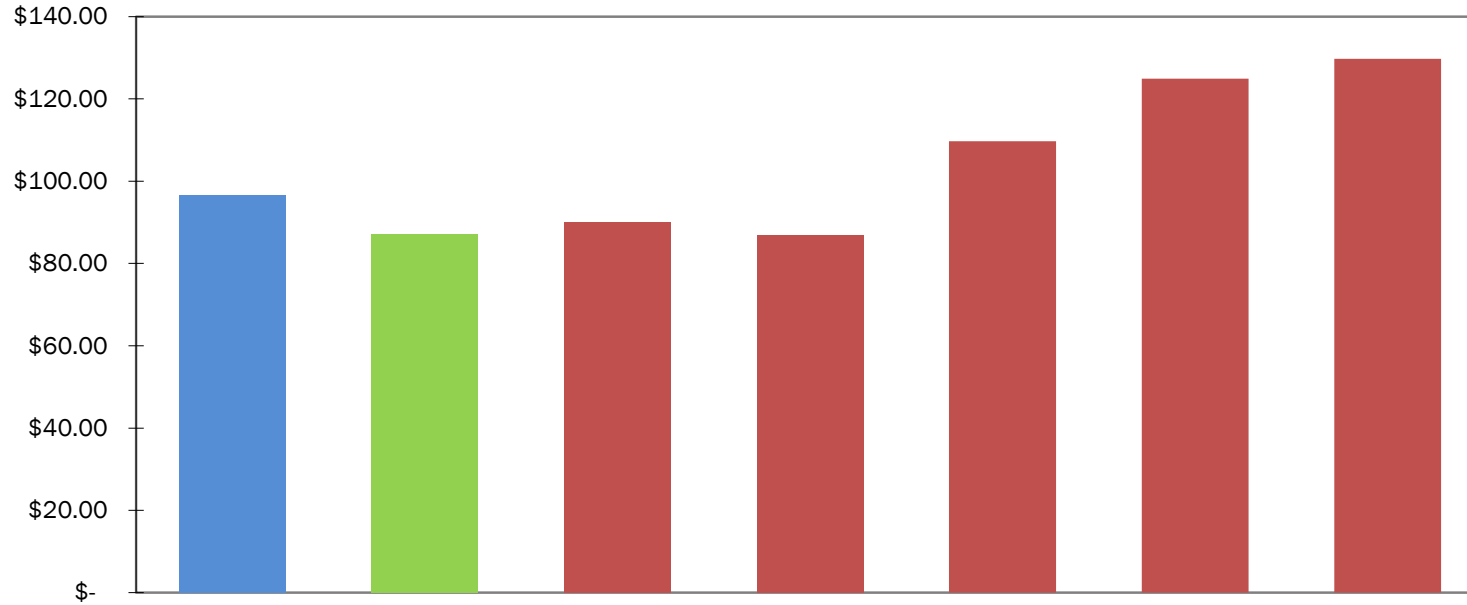
Note: Solenoid and gas flex for generators are to be supplied by others, all materials are per specification and local codes. All labor is per prevailing wage scale. There is no concrete or pavement removal or replacement, no boring or

William R. Giese M-14562

2429 Parkview Dr.
Pearland TX 77581
832-275-6167
281-520-3061 fax
bgiese.ips@gmail.com

Texas State Board of
Plumbing Examiners
512-936-5200
www.tsbpe.state.tx.us

General Fund



	Sep-25	FY 2026 Projected	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26
Fund Balance	\$ 96.64	\$ 87.25	\$ 90.15	\$ 86.89	\$ 109.69	\$ 124.95	\$ 129.78
Expenditures	\$ 72.45	\$ 83.88	\$ 6.81	\$ 13.35	\$ 19.59	\$ 25.78	\$ 32.01
Days of Working Capital	487	380	410	397	515	596	612

Blue bar is audited fund balances.

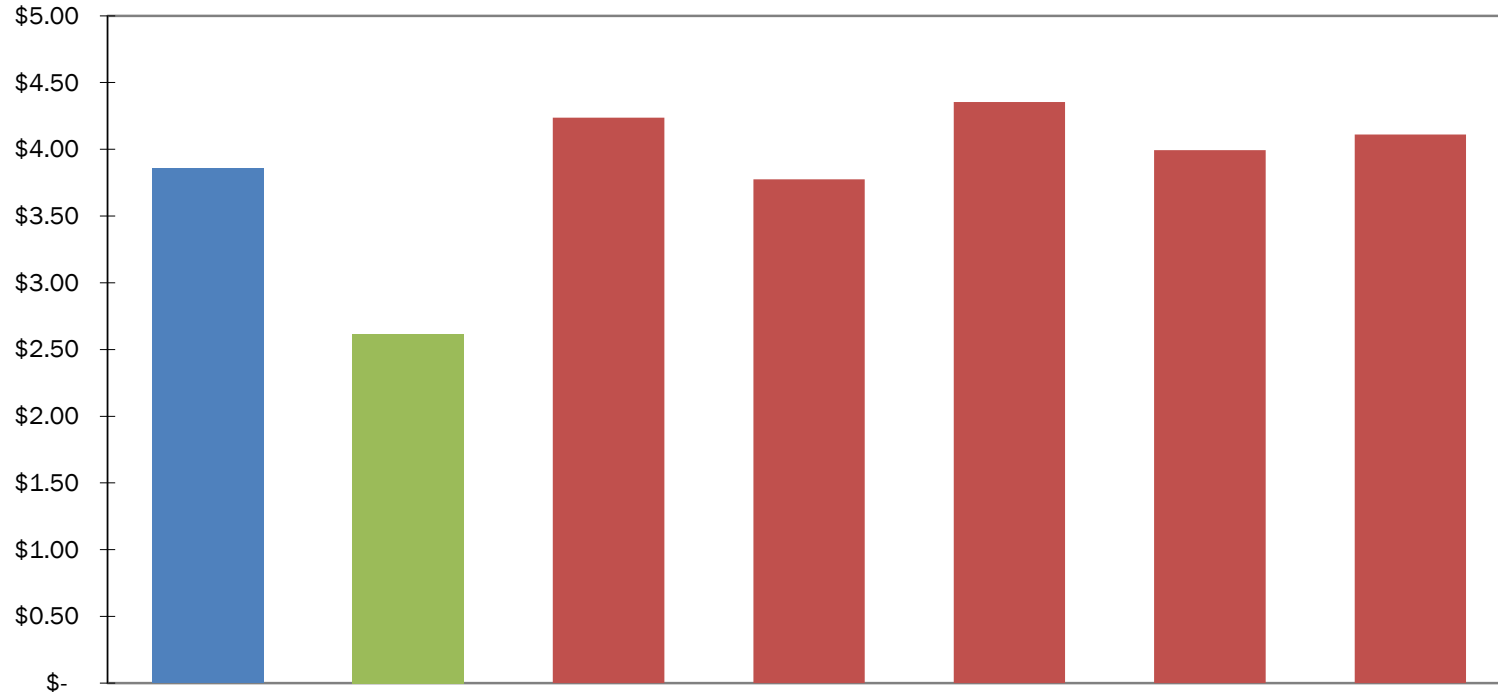
Green bar is projected fund balance.

Red bar is the cumulative fund balance: working capital based on current expenditures divided by cumulative days.

Fund balance will return to the projected green bar.

The City strives to maintain a minimum reserve balance of 90 to 120 days of operating expenditures in the General Fund and Utility Fund, and 60 to 90 days of operating expenses in all other operating funds.

Utility Fund



	FY 2026						
	Sep-25	Projected	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26
Working Capital	\$ 3.85	\$ 2.62	\$ 4.24	\$ 3.78	\$ 4.35	\$ 3.99	\$ 4.11
Expenses	\$ 10.37	\$ 10.86	\$ 0.58	\$ 1.48	\$ 2.35	\$ 3.14	\$ 3.98
Days of Working Capital	136	88	228	155	170	156	157

Blue bar is audited retained earnings.

Green bar is projected retained earnings.

Red bar is the cumulative retained earnings: working capital based on current expenditures divided by cumulative days.

Retained earnings will return to the projected green bar.

The City strives to maintain a minimum reserve balance of 90 to 120 days of operating expenditures in the General Fund and Utility Fund, and 60 to 90 days of operating expenses in all other operating funds.