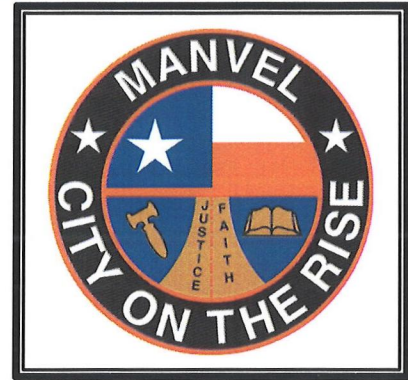


**December 1, 2025 CITY COUNCIL MEETING AGENDA**

**THE STATE OF TEXAS §**  
**COUNTY OF BRAZORIA §**  
**CITY OF MANVEL §**



KEITH BONNER, COUNCIL PLACE 1  
 DAVID LANDS, COUNCIL PLACE 2  
 HARRY OPLIGER, COUNCIL PLACE 3  
 CARMYN ROBEY-ROBINSON, COUNCIL PLACE 4  
 CRYSTAL SARMIENTO, COUNCIL PLACE 5  
 GARRETT ROSSI KNOX, COUNCIL PLACE 6



DAN DAVIS, MAYOR  
 DAN JOHNSON, CITY MANAGER  
 TAMMY BELL, CITY SECRETARY


**NOTICE OF A CITY COUNCIL MEETING OF  
 THE CITY OF MANVEL  
 December 1, 2025**

**NOTICE IS HEREBY GIVEN  
 5:00 P.M. WORKSHOP – 6:00 P.M. REGULAR SESSION**

**Taxpayer Impact Statement**  
 This statement shows the estimated annual property tax bill for a median-valued homestead in Manvel (\$359,719), comparing the previous FY tax rate, the no-new-revenue rate, and the adopted tax rate for FY 2025-2026.

Tax Rate Scenario	Tax Rate per \$100 Valuation	Estimated Annual Tax Bill	Difference from Previous FY
FY 2024-25	\$0.560000	\$2,014.43	—
No-New-Revenue Rate	\$0.539339	\$1,940.10	-\$74.33
Adopted Rate FY 2025-26 – \$0.56	\$0.560000	\$2,014.43	No change

**Adopted Budget**  
 A physical copy is available at City Hall and online at <https://cityofmanvel.news/AdoptedBudgetFY25-26>



QR to Budget

Pursuant to Chapter 551, Title 5 of the Texas Government Code, the Texas Open Meetings Act, notice is hereby given that the Manvel City Council will convene a regular meeting at the Manvel City Hall, located at **20031 Hwy 6, Manvel Tx 77578** for the purpose of discussing and if appropriate, take action with respect to the following items:

**NOTE:** The City Council of the City of Manvel reserves the right to discuss any items in Closed Session whenever authorized under the Texas Open Meetings Act, Chapter 551, of the Texas Government Code. The City Council may discuss the items on this agenda in any order.

**This facility is wheelchair accessible, and accessible parking spaces are available. Requests for accommodation or interpreter services must be made 48 hours prior to the meeting. Please contact the City Secretary at 281- 489-0630 x6 for further information.**

**CITY OF MANVEL MISSION STATEMENT**

*The City of Manvel is a safe and responsible community, embracing the values of our past, present, and future citizens.*

**Workshop Session**  
**Executive Session**

City Council will convene into Executive Session pursuant to Texas Government Code, Sec. 551.087 – *deliberation regarding economic development negotiation, and Texas Government Code, Sec. 551.071 – Consultation with Attorney, to discuss the following:*

Discuss 380 agreement with BCS Capital Group

**WORKSHOP CONTINUED**

Discussion on any topic as listed on the current agenda.

**Regular Session**

**Call To Order**

**Invocation**

**Inspirational Reading - Council Member Sarmiento**

**Pledge**

Pledge of Allegiance and Texas Pledge: "Honor the Texas flag; I pledge allegiance to thee Texas, one state under God, one and indivisible.

**Presentations**

Alyssa Deaton - 5-year employment anniversary.

**Public Comments: "Comment Card" Required**

o Members of the public with business before the board, NOT scheduled on the agenda as a public hearing (that have submitted a public comment card) may have three (3) minutes to address the board. o The board may not participate in any discussion and cannot vote on the subject you present unless it is listed on the agenda as an action item.

**City Manager Update**

Update on current events and city issues.

**Consent Agenda**

1. Acceptance of the meeting minutes to date.
2. Approve the second and final reading of Resolution 2025-R-47;  
A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MANVEL, TEXAS, APPROVING AS A PROJECT OF THE MANVEL ECONOMIC DEVELOPMENT CORPORATION CERTAIN PROJECT NUMBER 2025-03 – RICH’S CAR WASH, MANVEL TX – SITE IMPROVEMENTS LOCATED AT 19212 HIGHWAY 6, MANVEL TEXAS TO APPROVE AN EXPENDITURE OF UP TO \$20,000.00 FOR REIMBURSEMENT FOR SITE IMPROVEMENTS/UTILITIES FOR CAR WASH COMMERCIAL BUSINESS IN A COMMERCIALY TARGETED AREA, WHICH WILL FURTHER ECONOMIC DEVELOPMENT, CREATE COMMERCIAL INVESTMENT, AND CREATE AND/OR RETAIN JOBS; CONTAINING FINDINGS AND OTHER PROVISIONS RELATING TO THE SUBJECT; PROVIDING THAT THIS RESOLUTION SHALL BECOME EFFECTIVE FROM AND AFTER ITS PASSAGE AND ADOPTION.
3. Acceptance of infrastructure improvements for Water Distribution, Wastewater Collection, Storm Water Facilities, and Paving to serve Meridiana Section Twenty Five - A for Brazoria County MUD 57, to begin the Two-Year Maintenance Period.

**Items Removed from Consent Agenda**

**Regular Agenda**

1. Consideration and possible action to approve the second and final reading of Ordinance 2025-O-34;  
AN ORDINANCE TO ANNEX CERTAIN TERRITORY BEING AN APPROXIMATE 47.3156 ACRES OF LAND, PROPOSED FOR ANNEXATION INTO CITY OF MANVEL'S CITY LIMITS AND SUBSEQUENT DEVELOPMENT AS A RETAIL CENTER; LOCATED AT THE NORTHWEST CORNER OF STATE HIGHWAY (SH) 6 AND KIRBY DRIVE INTERSECTION; CONTAINING A 34.2791 ACRE TRACT AND A 11.3999 ACRE TRACT SEPARATED BY A 40-FOOT-WIDE (0.844 ACRE) UNIMPROVED RIGHT-OF-WAY; SITUATED IN H.T. & B. RAILROAD COMPANY SURVEY, SECTION 71, ABSTRACT NO. 291, BRAZORIA COUNTY, TEXAS, AND A 1.6366 ACRE TRACT BEING A PORTION OF LOT 29 OF EMIGRATION LAND COMPANY SUBDIVISION OF IOWA COLONY H.T. & B. RAILROAD COMPANY SURVEY NO. 71 (ALSO REFERRED TO AS THE IMMIGRATION LAND COMPANY SUBDIVISION OF SECTION 71, H.T. & B.R.R. COMPANY SURVEY) ABSTRACT 291, BRAZORIA COUNTY, TEXAS). (ACTION POSTPONED AT 11/3/2025 CITY COUNCIL MEETING)
  
2. Consideration and possible action to approve the second and final reading of Ordinance 2025-O-33;  
AN ORDINANCE TO ESTABLISH PLANNED UNIT DEVELOPMENT (PUD) ZONING DISTRICT AND ADOPTING A PUD DOCUMENT PROVIDING FOR ZONING AND DEVELOPMENT RELATED PROVISIONS AND REQUIREMENTS IN ACCORDANCE WITH SECTION 77-79.(A) OF CITY OF MANVEL'S ZONING ORDINANCE; FOR AN APPROXIMATE 47.3156 ACRES OF LAND, PROPOSED FOR ANNEXATION INTO CITY OF MANVEL'S CITY LIMITS AND SUBSEQUENT DEVELOPMENT AS A RETAIL CENTER; LOCATED AT THE NORTHWEST CORNER OF STATE HIGHWAY (SH) 6 AND KIRBY DRIVE INTERSECTION; CONTAINING A 34.2791 ACRE TRACT AND A 11.3999 ACRE TRACT SEPARATED BY A 40-FOOT-WIDE (0.844 ACRE) UNIMPROVED RIGHT-OF-WAY; SITUATED IN H.T. & B. RAILROAD COMPANY SURVEY, SECTION 71, ABSTRACT NO. 291, BRAZORIA COUNTY, TEXAS, AND A 1.6366 ACRE TRACT BEING A PORTION OF LOT 29 OF EMIGRATION LAND COMPANY SUBDIVISION OF IOWA COLONY H.T. & B. RAILROAD COMPANY SURVEY NO. 71 (ALSO REFERRED TO AS THE IMMIGRATION LAND COMPANY SUBDIVISION OF SECTION 71, H.T. & B.R.R. COMPANY SURVEY) ABSTRACT 291, BRAZORIA COUNTY, TEXAS). (Tabled by PD&Z on 10/27/25)
  
3. Consideration and possible action to approve an Economic Development Agreement between the City of Manvel and BCS Capital Group.

4. Consideration and possible action to approve a Mutual Aid Agreement between the Department of Public Safety (DPS), the Brazoria County Sheriff's Office, and the City of Manvel.
5. Consideration and possible action on the 2026-2027 TCAP Board of Directors Ballot.
6. Consideration and possible action regarding direction to staff on the selection of an election polling location

**Mayor and Council Comments**

Update on current events and city issues.

Additionally, pursuant to Texas Government Code § 551.0415, City Council Members and city staff may make a report about items of community interest during a meeting of the governing body without having given notice of the report.

Items of community interest include:

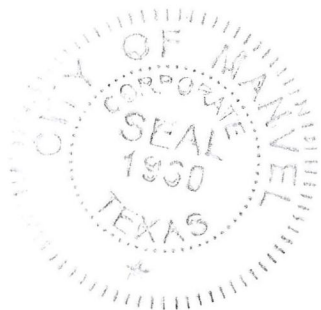
- Expressions of thanks, congratulations, or condolence;
- Information regarding holiday schedules;
- An honorary or salutary recognition of a public official, public employee, or other citizen, except that a discussion regarding a change in the status of a person's public office or public employment is not an honorary or salutary recognition for purposes of this subdivision;
- A reminder about an upcoming event organized or sponsored by the governing body;
- Information regarding a social, ceremonial, or community event organized or sponsored by an entity other than the governing body that was attended or is scheduled to be attended by a member of the governing body or an official or employee of the municipality; and
- Announcements involving an imminent threat to the public health and safety of people in the municipality that has arisen after the posting of the agenda.

**Adjourn**

**CERTIFICATION**

I, Tammy Bell, City Secretary for the City of Manvel, do hereby certify that the foregoing Agenda of the Manvel City Council is true and correct and that I posted such notice on the bulletin board at the Manvel City Hall; a place convenient and readily accessible to the public November 21, 2025 in accordance with the Texas Open Meetings Act (Tex. Gov't. Code §551.001 et.seq). Said notice remained posted for at least 3 business days preceding the scheduled day of the meeting.

TAMMY BELL, CITY SECRETARY  
CITY OF MANVEL, TEXAS



**RESOLUTION NO. 2025-R-47**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MANVEL, TEXAS, APPROVING AS A PROJECT OF THE MANVEL ECONOMIC DEVELOPMENT CORPORATION CERTAIN PROJECT NUMBER 2025-03 – RICH’S CAR WASH, MANVEL TX – SITE IMPROVEMENTS LOCATED AT 19212 HIGHWAY 6, MANVEL TEXAS TO APPROVE AN EXPENDITURE OF UP TO \$20,000.00 FOR REIMBURSEMENT FOR SITE IMPROVEMENTS/UTILITIES FOR CAR WASH COMMERCIAL BUSINESS IN A COMMERCIALY TARGETED AREA, WHICH WILL FURTHER ECONOMIC DEVELOPMENT, CREATE COMMERCIAL INVESTMENT, AND CREATE AND/OR RETAIN JOBS; CONTAINING FINDINGS AND OTHER PROVISIONS RELATING TO THE SUBJECT; PROVIDING THAT THIS RESOLUTION SHALL BECOME EFFECTIVE FROM AND AFTER ITS PASSAGE AND ADOPTION.**

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**WHEREAS**, pursuant to Tex. Rev. Civ. Stat. Ann. Art. 5190.6, Section 4B (now Chapter 505 of the Texas Local Government Code) (the “Act”), the City created the Manvel Economic Development Corporation (MEDC), and collects, on behalf of the MEDC, an additional sales and use tax that may be used by the MEDC to pay the costs of “projects” as defined in the Act and to pay certain maintenance and operation costs of such projects; and

**WHEREAS**, HPR Wash, LLC, d/b/a Rich’s Car Wash made application for a grant for certain costs associated with site improvements/utilities for the car wash facility in a commercially targeted area, which will further economic development, create commercial investment, and create and/or retain jobs in the City of Manvel, and MEDC approved this application on November 12, 2025, as an MEDC Project, and authorized the MEDC Board President, and City Attorney to negotiate the terms of the Performance Agreement; and

**WHEREAS**, pursuant to Texas Local Government Code §501.073, all programs and expenditures of an economic development corporation must be approved by the authorizing city council;

**BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MANVEL, TEXAS:**

**SECTION 1.** The City Council of the City of Manvel, Texas, does hereby approve as a project of the Manvel Economic Development Corporation, certain project number 2025-03, and

approves an expenditure of up to \$20,000.00 to applicant HPR Wash, LLC, d/b/a Rich's Car Wash ., to provide for the reimbursement of costs for site improvements/utilities for the car wash facility in a commercially targeted area, which will further economic development, create commercial investment, and create and/or retain jobs in the City of Manvel, and authorizes the MEDC President and City Attorney to negotiate the terms of the Performance Agreement. The City Council finds that this project will further economic development and retain jobs in the City of Manvel.

**SECTION 2:** That this Resolution shall be in full force and effect from and after its passage and adoption.

PASSED AND APPROVED on first reading this \_\_\_\_\_ day of \_\_\_\_\_, 2025.

PASSED, APPROVED, AND ADOPTED on second and final reading this \_\_\_\_\_ day of \_\_\_\_\_, 2025.

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Dan Davis, Mayor  
City of Manvel, Texas

ATTEST:

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Tammy Bell, City Secretary

APPROVED AS TO FORM:

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Robert Gervais, City Attorney



# MANVEL CITY COUNCIL DATA SHEET

**MEETING DATE:** \_\_\_\_\_

**TOPIC:** Requesting Acceptance of Public Infrastructure Improvements

Project Name: \_\_\_\_\_

This is a request for:     **Initial Acceptance** (Start 2-year maintenance period)  
  **Final Acceptance** (Bond Release)

MUD District: \_\_\_\_\_

**BACKGROUND:**

City Staff has approved the final walk through on this project for the civil site work.  
The applicant has submitted the Two-Year Maintenance Bond  
The As-Built Construction Plans have been submitted  
This is a Final Acceptance and release of associated Maintenance Bond.

**STAFF RECOMMENDATION:**

Staff recommends approval of this request:                    YES            NO

Notes (if applicable):

**ATTACHMENTS:** Request Form and Project Details

**FUNDING ISSUES**

- \_\_\_ Not applicable
- \_\_\_ Not budgeted
- \_\_\_ Full amount already budgeted
- \_\_\_ Funds to be transferred from Acct.#

**SUBMITTING STAFF MEMBER**

**PUBLIC WORKS DIRECTOR APPROVAL** \_\_\_\_\_

**FINANCE DIRECTOR APPROVAL** \_\_\_\_\_

**CITY MANAGER APPROVAL** \_\_\_\_\_



# INFRASTRUCTURE ACCEPTANCE PROJECT DETAILS

**PROJECT DETAILS** (To be filled in by requestor)

Project Name: \_\_\_\_\_

Project Cost: \_\_\_\_\_

Project Type: WS&D, Paving, Other \_\_\_\_\_

***WS&D Total Quantity (ft & in)***

Water Line Size:	Water Line Length:
Sanitary Line Size:	Sanitary Line Length:
Storm Line Size:	Storm Line Length:

Other Quantities: \_\_\_\_\_

***Street Total Quantity (ft & in) by Street name (if applicable)***

Street Name	Length	Width	Thickness

***Sidewalk Total Quantity (ft & in) by Street name (if applicable)***

Street Name	Length	Width	Thickness

Prepared by: \_\_\_\_\_

Company Name: \_\_\_\_\_

Email: \_\_\_\_\_ Ph: \_\_\_\_\_



**DEVELOPMENT SERVICES**

20025 HIGHWAY 6  
MANVEL, TX 77578  
P: 281-489-0630  
F: 281-668-5061

**INFRASTRUCTURE ACCEPTANCE REQUEST FORM**

**INSTRUCTIONS**

- This request form, along with any required documents must be sent to [permits@cityofmanvel.com](mailto:permits@cityofmanvel.com) no later than **8 business days** before the proposed date of infrastructure acceptance by City Council (meeting date).
- Inspection (final walk) of the infrastructure proposed to be accepted must be completed and approved prior to submitting this form.
- For Initial Acceptance, this form must be submitted **on the same day or after** the paper copy of the Maintenance Bond has been delivered to Permits Department at City Hall Annex, 20025 Highway 6, Manvel, TX. 77578.
- Include a **copy of this form as cover sheet** when submitting paper copy of the maintenance bond.
- For Final Acceptance, provide accurate plat name below to avoid delay in plat recordation.

**PROJECT DETAILS:** This is a request for **Initial Acceptance** **Final Acceptance** (Bond Release)

Project Name: \_\_\_\_\_

Project Type: WS&D, Paving, Other | Total Project Cost: \_\_\_\_\_

MUD (if applicable): \_\_\_\_\_

MyGov Permit No.: \_\_\_\_\_ Inspection (Final Walk) Approval Date: \_\_\_\_\_

Proposed Acceptance Date (Council Meeting Date): \_\_\_\_\_

Approved Plat Name: \_\_\_\_\_

**REQUESTER CONTACT INFORMATION**

Name & Company Name: \_\_\_\_\_

Email: \_\_\_\_\_ Phone No. \_\_\_\_\_

**INFRASTRUCTURE ACCEPTANCE CHECKLIST:** *(Please check applicable items in the following checklist)*

Required Documents	Check
➤ <i>Inspection (final walk) is complete and approved with no outstanding punch list items</i>	
➤ <i>Initial Acceptance required documents have been submitted or are provided with this form</i>	
• Physical copy of Two-year maintenance bond (100% of the total cost)	
• PDF Copy of Two-year maintenance bond (100% of the total cost)	
• Updated Original Tax Certificate (showing no delinquent taxes)	
• As-built Plans (PDF)	
➤ <i>Final Acceptance to release maintenance Bond. No Document Required.</i>	

Notes (if any): \_\_\_\_\_

Requester Signature: Dane Kendall Date: \_\_\_\_\_



# MANVEL CITY COUNCIL DATA SHEET

**MEETING DATE: November 17, 2025**

**TOPIC:** Public Hearing (*continued from 11.03.25*) to hear input on a request for annexation of approximately 47.3156 acres of land, located at the northwest corner of Kirby Drive and State Highway 6/Morris Avenue (Property IDs: 1676950 & 167695), into City of Manvel City Limits,

**BACKGROUND:**

- The subject site is generally bounded by Manvel Town Center to the east and State Highway 6/Morris Avenue to the south. The property, approximately 47.3156 acres, is currently undeveloped and located within the City of Manvel Extraterritorial Jurisdiction (ETJ).
- In addition to the annexation, potential developer is requesting the establishment of a Planned Unit Development (PUD) district and consideration of a 380 agreement.
- The proposed PUD, titled "Manvel Crossing," is proposed as a master-planned, mixed-use commercial development, including retail, office, hotel, and restaurant uses. Required public hearing for the consideration of the PUD is included on tonight's agenda.
- The requirements of notice of public hearing have been met, and staff is not aware of any opposition.
- The approval of the PUD and 380 agreement is dependent on the annexation of the subject site. For the applicant, this annexation is beneficial only if the City Council approves the requested PUD and 380 agreements.
- Please note that PD&Z Commission is forwarding a recommendation of approval for the proposed PUD with a condition that deficiencies and comments provided at the 11.03.2025 meeting are addressed.

**STAFF RECOMMENDATION:** Staff is in support of this proposed annexation and recommends that action is taken in conjunction with the action on proposed PUD document and 380 agreement.

**ATTACHMENTS:**

**FUNDING ISSUES**

- Not applicable
- Not budgeted
- Full amount already budgeted
- Funds to be transferred from Acct.#

<p><b>SUBMITTING STAFF MEMBER</b> Jose Abraham, Director of Development Services</p>	<p><b>FINANCE DIRECTOR APPROVAL</b> __NA__</p> <p><b>CITY MANAGER APPROVAL</b> __YES__</p>
--	--

**ORDINANCE NO. 2025-O-34**

**AN ORDINANCE EXTENDING THE CORPORATE LIMITS OF THE CITY OF MANVEL, TEXAS, TO ANNEX CERTAIN TERRITORY INTO THE CITY OF MANVEL, SAID TERRITORY BEING APPROXIMATELY 47.3156 ACRES OF LAND, PROPOSED FOR DEVELOPMENT AS A RETAIL CENTER, LOCATED AT THE NORTHWEST CORNER OF STATE HIGHWAY (SH) 6 AND KIRBY DRIVE INTERSECTION; SAID TERRITORY CONTAINING A 34.2791 ACRE TRACT AND A 11.3999 ACRE TRACT SEPARATED BY A 40-FOOT-WIDE (0.844 ACRE) UNIMPROVED RIGHT-OF-WAY, SITUATED IN H.T. & B. RAILROAD COMPANY SURVEY, SECTION 71, ABSTRACT NO. 291, BRAZORIA COUNTY, TEXAS, AND A 1.6366 ACRE TRACT BEING A PORTION OF LOT 29 OF EMIGRATION LAND COMPANY SUBDIVISION OF IOWA COLONY H.T. & B. RAILROAD COMPANY SURVEY NO. 71 (ALSO REFERRED TO AS THE IMMIGRATION LAND COMPANY SUBDIVISION OF SECTION 71, H.T. & B.R.R.COMPANY SURVEY) ABSTRACT 291, BRAZORIA COUNTY, TEXAS), SAID TERRITORY BEING MORE SPECIFICALLY DESCRIBED IN EXHIBIT "A" ATTACHED HERETO; FIRST APPROVING A SERVICE AGREEMENT FOR ALL OF THE AREA WITHIN SUCH TERRITORY AS REQUIRED BY TEXAS LOCAL GOVERNMENT CODE § 43.0672; MAKING FINDINGS; CONTAINING OTHER PROVISIONS RELATED TO THE SUBJECT; AND PROVIDING A SAVING AND A SEVERABILITY CLAUSES.**

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**WHEREAS**, the Texas Local Government Code, Subchapter C-3. *Annexation of Area On Request of Owners*, Sec. 43.0671. et seq. provides a legal mechanism and procedure for the voluntary annexation of certain Territory into the city limits of a home-rule municipality; and

**WHEREAS**, on or about October 2, 2025, the City of Manvel received request(s) for voluntary annexation of certain Territory into the City by BCS and the corresponding property owners of said Territory; and

**WHEREAS**, said Territory is approximately 47.3156 acres generally located at the Northwest Corner of SH 6 and Kirby Drive, in the City of Manvel, Texas; and

**WHEREAS**, the land use for the Territory proposed for annexation is intended to be commercial (retail center), with land use being more definitely defined by a Planned Unit Development zoning district and document; and

**WHEREAS**, it is the intent that this annexation and related Service Agreement only be approved along with the approval of the Planned Unit Development zoning district and other related agreements mutually agreed to by the property owner(s)/designee and City of Manvel; and

**WHEREAS**, pursuant to receipt of said request(s) for voluntary annexation, a public hearing was held at 6:00 p.m. on November 3, 2025; and

**WHEREAS**, the public hearing was convened at in the City Council Chambers, located at 20031 Morris Avenue, Manvel, Texas, and all interested parties were given an opportunity to be heard; and

**WHEREAS**, notice of such public hearing was given by publication on the City of Manvel's internet website, and in the *Alvin Sun* on October 19, 2025, said newspaper having general circulation within the City and within the Territory proposed to be annexed. Such notices and hearings were all in conformity with the Chapter 43, **Texas Local Government Code**, as amended; and

**WHEREAS**, the City Council of the City of Manvel, Texas (the "City") now finds, determines and declares that the Territory is described as being approximately 47.3156 acres of land, located at the Northwest Corner of SH6 intersection, said Territory containing a 34.2791 acre tract and a 11.3999 acre tract separated by a 40-foot wide (0.844 acre) unimproved right-of-way, situated in H.T. & B. Railroad Company Survey, Section 71, Abstract No. 291, Brazoria County, Texas, and a 1.6366 acre tract being a portion of Lot 29 of Emigration Land Company Subdivision

of Iowa Colony H.T. & B. Railroad Company Survey No. 71 (also referred to as the Immigration Land Company Subdivision of Section 71, H.T. & B.R.R. Company Survey) Abstract 291, Brazoria County, Texas; said Territory is more particularly described herein and more particularly described and shown in Exhibit “A,” attached hereto and made a part hereof (the “Territory”).

**NOW THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF MANVEL:**

**Section 1.** The facts and recitations set forth in the preamble of this Ordinance are hereby found to be true and correct. The City Council hereby finds that all laws of the State of Texas and the City Charter and ordinances of the City of Manvel regulating annexation of areas into the City of Manvel have been met.

**Section 2.** As a prerequisite required by **Texas Local Government Code** § 43.0672, the “Service Agreement” for the extension of municipal services into the Territory to be annexed into the City by the provisions of this Ordinance is hereby approved first. The Service Agreement is attached hereto as Exhibit “B” and made a part hereof for all purposes. Such Service Agreement sets forth the list of each service the City will provide, and a schedule. The City Manager is authorized to execute the Service Agreement upon approval as to form by the City Attorney, and upon full adoption of this Ordinance.

**Section 3.** The boundary limits of the City of Manvel, Texas, are hereby extended to embrace and include all of the Territory described as being approximately 47.3156 acres of land, located at the Northwest Corner of SH6 intersection, said Territory containing a 34.2791 acre tract and a 11.3999 acre tract separated by a 40-foot wide (0.844 acre) unimproved right-of-way, situated in H.T. & B. Railroad Company Survey, Section 71, Abstract No. 291, Brazoria County, Texas, and a 1.6366 acre tract being a portion of Lot 29 of Emigration Land Company Subdivision of Iowa Colony H.T. & B. Railroad Company Survey No. 71 (also referred to as the Immigration Land Company Subdivision of Section 71, H.T. & B.R.R. Company Survey) Abstract 291, Brazoria

County, Texas; said Territory is more particularly described and shown in Exhibit “A” attached hereto, and such Territory is hereby annexed to and made a part of the City for all purposes.

**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 was 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, Texas Government 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 hereof 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 secretary is hereby directed to file a certified copy of this ordinance with the County Clerk of Brazoria County, and such other appropriate officials and agencies as may be required by law.

**Section 6.** Savings Clause. If any section or part of this Ordinance be held unconstitutional, illegal, or invalid, or the application thereof ineffective or inapplicable as to any territory, such unconstitutionality, illegality, invalidity, or ineffectiveness of such section or part shall in no wise affect, impair, or invalidate the remaining portion or portions thereof, but as to such remaining portion or portions, the same shall be and remain in full force and effect; and should this Ordinance for any reason be ineffective as to any part of the Territory hereby annexed to the City of Manvel, such ineffectiveness of this Ordinance as to any such part or parts of any such Territory shall not affect the effectiveness of this Ordinance as to all of the remainder of such Territory or area, and the City Council hereby declares it to be its purpose to annex to the City of Manvel every part of the Territory described in Section 2 of this Ordinance, regardless of whether any other part of such described Territory is hereby effectively annexed to the City. Provided, further, if there is included in the general description of the Territory set out in Section 3 of this Ordinance to be hereby annexed to the City of Manvel any territory which is already a part of and included within the general limits of the City of Manvel, or which is presently part of and included in the limits or extraterritorial jurisdiction of any other city, town, or village, or which is not within the City of Manvel’s jurisdiction to annex, the same is

hereby excluded and excepted from the Territory to be annexed hereby as fully as if such excluded and excepted territory were especially and specifically described herein.

**Section 7.** This Ordinance shall be effective upon its final adoption by City Council.

**PASSED AND APPROVED** on first reading this \_\_\_\_\_ day of \_\_\_\_\_, 2025.

**PASSED, APPROVED, AND ADOPTED** on second and final reading this \_\_\_\_\_ day of \_\_\_\_\_, 2025.

**CITY OF MANVEL, TEXAS**

\_\_\_\_\_  
Dan Davis, Mayor

**ATTEST:**

\_\_\_\_\_  
Tammy Bell  
City Secretary

**APPROVED AS TO FORM:**

\_\_\_\_\_  
Robert Gervais, City Attorney

**EXHIBIT A**  
**TERRITORY DESCRIPTION/MAP**

**EXHIBIT B**  
**SERVICE AGREEMENT**



# MANVEL CITY COUNCIL DATA SHEET

**MEETING DATE: December 01, 2025**

**TOPIC:** Consideration and action on a request to establish a Planned Unit Development (PUD) with State Highway 6 Overlay (PUD/SH6) zoning district, for approximately 47.3156 acres of land, proposed for annexation into City of Manvel City Limits, located at the northwest corner of Kirby Drive and State Highway 6/Morris Avenue (Property IDs: 1676950,167695 & 167690).

## **BACKGROUND:**

- The subject site is generally bounded by Manvel Town Center to the east and State Highway 6/Morris Avenue to the south. The property, approximately 47.3156 acres, is currently undeveloped and located within the City of Manvel Extraterritorial Jurisdiction (ETJ). The applicant, EHRA Engineering, on behalf of property owner, is requesting annexation of the site into the City of Manvel City Limits and the establishment of a Planned Unit Development (PUD) district with a potential 380 agreement.
- The proposed PUD, titled "Manvel Crossing," is proposed as a master-planned, mixed-use commercial development, including retail, office, hotel, and restaurant uses. The project is intended to incorporate coordinated architecture, a comprehensive land use table, landscaping requirements, pedestrian-friendly amenities, and internal circulation, including multiple access points from SH6 and Kirby Drive. Surrounding properties are primarily undeveloped, agricultural, or commercial along SH6. The applicant has provided a PUD document that will govern the land use allowances and development standard for the development. The proposed PUD document includes certain provisions that deviate from the current City standards but are necessary for the development according to the applicant. Staff has provided input and comments on the PUD document for the applicant to consider prior to the meeting. (The applicant has provided a revised PUD document addressing staff comments)
- The Notice of Public Hearing was published in the newspaper of general circulation and all property owners within 200 feet of the property were notified. At the time of writing this report, no information inquiries have been received, and staff is not aware of opposition.
- At their November 10, 2025, meeting, PD&Z Commission recommended approval with a condition that outstanding comments regarding the PUD document are addressed. At the November 17, 2025, meeting, the first reading of the ordinance was approved with a condition that comments discussed at the meeting shall be addressed. The applicant has provided a revised PUD document addressing comments.

**PD&Z PUBLIC HEARING (October 27, 2025):** No Public comments were received. The applicant addressed the Commission to explain the proposed project. The Commission expressed the need for additional time to review the PUD document.

**STAFF RECOMMENDATION:** Staff supports the establishment of a PUD for the subject site being proposed for annexation. The proposed project aligns with the goals of the Comprehensive Plan, however, some of the details included in the PUD document need reconsideration. These details that need reconsideration include landuse allowances, general clarifications, revising or adding exhibits, reorganizing sections, and possible typographic errors.

**PD&Z RECOMMENDATION:** The PD&Z Commission voted to table the item

**PD&Z MEETING (November 10, 2025):** The applicant made a quick presentation highlighting the proposed project and the changes made to the PUD document since the initial submittal. Staff discussed the PUD document and explained several deficiencies (listed in the report). Staff recommended approval of the PUD with the condition that the deficiencies discussed at the meeting were addressed.

**PD&Z RECOMMENDATION:** The PD&Z Commission is recommending approval with the condition that deficiencies identified by staff and additional comments provided by PD&Z Commission are addressed.

**ATTACHMENTS:** PDZ Final Report, PUD document (revised since last Council meeting), Redline version of the PUD, Traffic Impact Analysis, and Application material.



**FUNDING ISSUES**

- Not applicable
- Not budgeted
- Full amount already budgeted
- Funds to be transferred from Acct.#

<p><b>SUBMITTING STAFF MEMBER</b> Jose Abraham, Director of Development Services</p>	<p><b>FINANCE DIRECTOR APPROVAL</b> __NA__</p> <p><b>CITY MANAGER APPROVAL</b> __YES__</p>
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## STAFF REPORT TO PLANNING, DEVELOPMENT, AND ZONING COMMISSION

### Planned Unit Development

<b>Agenda of:</b>	December 01, 2025	<b>Initiated By:</b>	Jose Abraham Director, Development Services
<b>Subject:</b>	Establishing a PUD with State Highway 6 Overlay (PUD/SH6)	<b>Presented By:</b>	Jose Abraham Director, Development Services
<b>Recommended Action:</b>	Consideration and action to approve proposed Ordinance No. 2025-0-33 pertaining to establishing a PUD for an approximate 47.3156 acres of land proposed for annexation.		

#### **SUMMARY**

The subject site, located at the northwest corner of Kirby Drive and State Highway 6/Morris Avenue (Property IDs: 1676950 & 167695), is generally bounded by Manvel Town Center to the east and State Highway 6/Morris Avenue to the south. The property, approximately 47.3156 acres in size, is currently undeveloped and located outside the City limits within Manvel’s Extraterritorial Jurisdiction (ETJ). The applicant, EHRA Engineering, on behalf of the property owner, BCS Capital Group, is requesting annexation of the subject tract into the City of Manvel and the establishment of a Planned Unit Development (PUD) district. The proposed PUD, titled “Manvel Crossing,” is intended to facilitate a mixed-use commercial development that includes light commercial uses such as hotels, retail, offices, and restaurants. The applicant has provided a PUD document that will govern the land use allowances and development standard for the development. The proposed PUD document includes certain provisions that deviate from the current City standards but are necessary for the development according to the applicant. Staff has provided input and comments on the PUD document for the applicant to consider prior to the meeting. A public hearing was held at October 27, 2025, with no public comments received the item was tabled for further review of the document. At their November 10, 2025, meeting, PD&Z Commission recommended approval with a condition that outstanding comments regarding the PUD document are addressed. At the November 17, 2025, meeting, the first reading of the ordinance was approved with a condition that comments discussed at the meeting shall be addressed. The applicant has provided a revised PUD document addressing comments (Review notes provided in the recommendation).

*Staff Recommendation:* Conditional approval.

*PDZ Recommendation:* Conditional approval.

#### **EXHIBITS**

Aerial Vicinity Map, Zoning Vicinity Map, Major Thoroughfare Plan Map, Letter of Request, and Public Hearing Notice. (Attachment – Survey, Service unit equivalency, PUD application, proposed TIA)

#### **GENERAL SITE INFORMATION**

The following is a summary of general site information.

<b>Surrounding Property Zoning</b>	<p><b>North:</b> City of Manvel’s Extra Territorial Jurisdiction (ETJ) / Planned Unit Development (PUD) / Light Commercial District (LC) / State Highway 6 Overlay District (SH6)</p> <p><b>South:</b> PUD / LC / SH6</p> <p><b>East:</b> ETJ / PUD / SH6</p> <p><b>West:</b> PUD / SH6</p>
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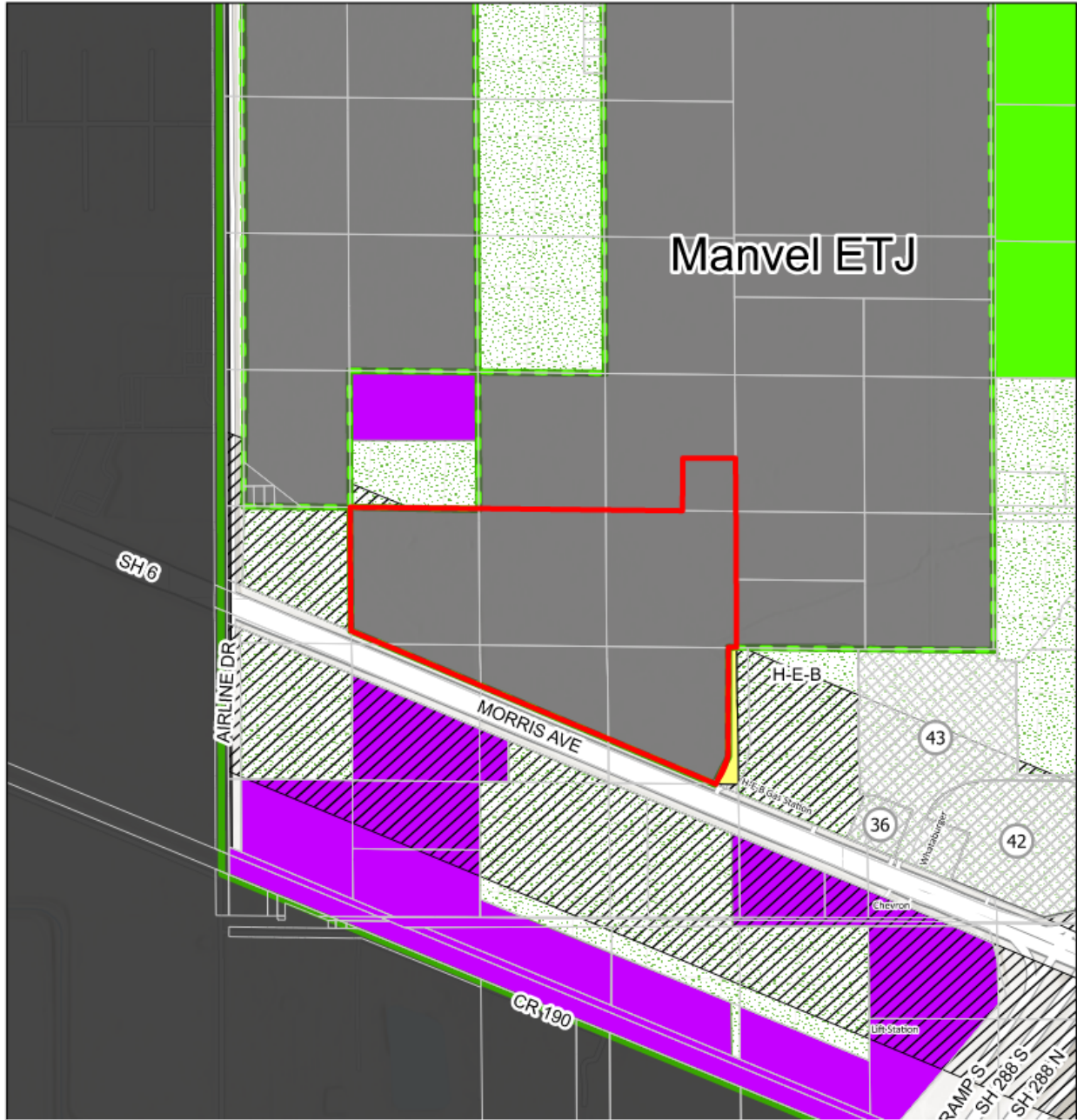
<p><b>Surrounding Land Use</b></p>	<p><b>North:</b> Future Manvel Town Center / Future Primrose Residential Development  <b>South:</b> Future Manvel Town Center / undeveloped land / Chevron gas station with convenience store  <b>East:</b> Manvel Town Center HEB / Future Primrose Residential Development  <b>West:</b> Future Manvel Town Center</p>
<p><b>Major Thoroughfare</b></p>	<p>Subject site is located along State Highway 6/Morris Avenue and Kirby Drive.</p>

**AERIAL VICINITY MAP**






**ZONING VICINITY MAP**



**SPECIFIC USE PERMITS LEGEND**


Label No	Address	Specific Use Description	Ordinance No	Effective Date	Zoning Classification
36	17205 Highway 6/ Morris Ave	NACIS USE OFFICE OF DENTISTS	2023-O-15	3/20/2023	PUD/SH6-SUP
42	21708 Highway 288	NAICS USE 621493 "Ambulatory Health Care Services"	2024-O-17	5/6/2024	PUD/SH6-SUP
43	17221 State Highway 6, Suite 103	NAICS USE 812113 "Nail Salon"	2024-O-25	7/1/2024	PUD/SH6-SUP

**Manvel Crossing PUD (PID: 167695 & 167690)**




This map is made available for reference purposes only and is not intended to be used for any other purpose. The City of Manvel will not accept liability of any kind for information published on this site.

Manvel Crossing	Parcels	Specific Use Permits	Multi-Family District
City of Manvel ETJ	Light Commercial District	Heavy Commercial District	Planned Unit Development
City of Manvel City Limits	Open Single-Family Residential District	Single-Family Residential District	



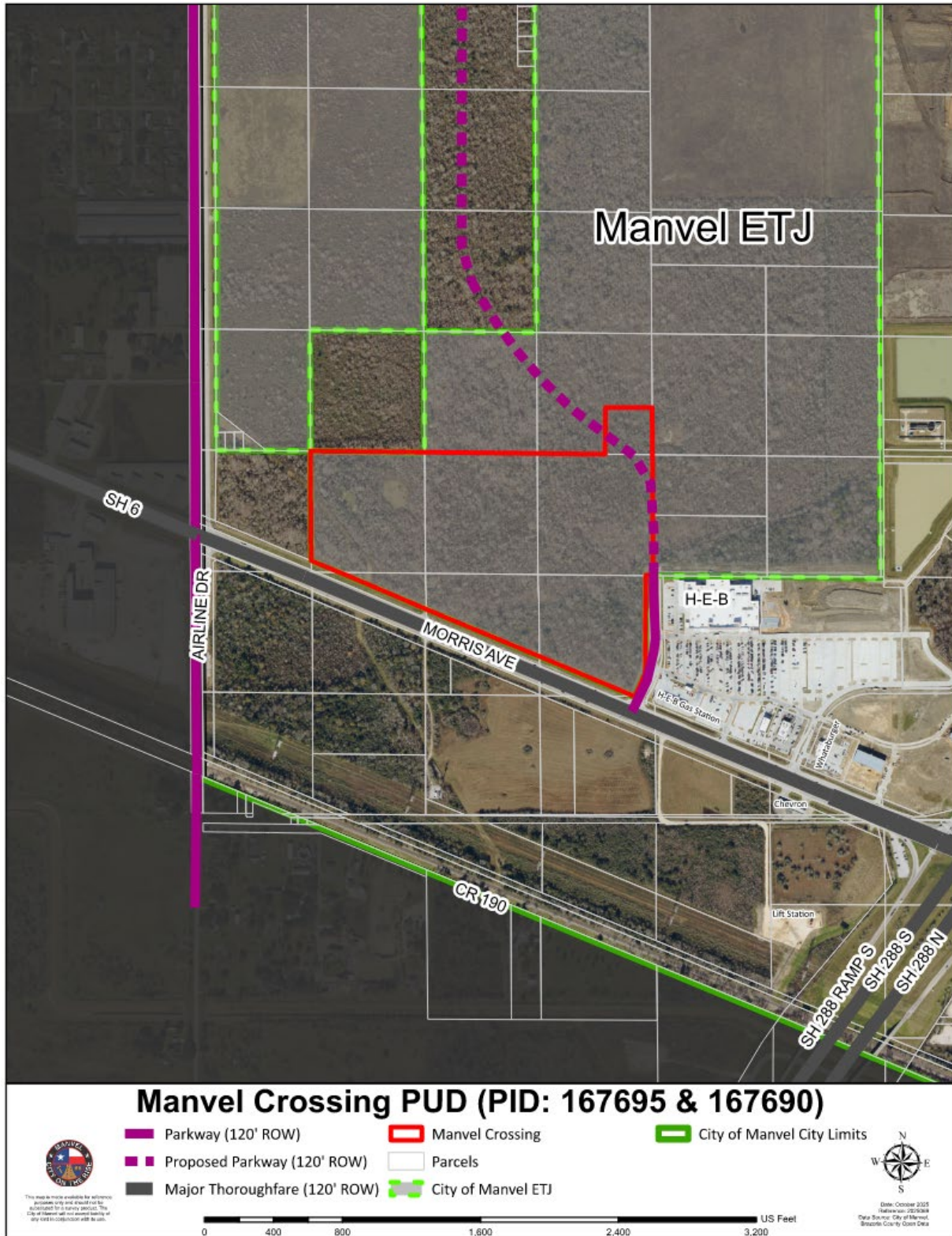
Date: October 2025  
Reference: 2025009  
Data Source: City of Manvel,  
Brazoria County Open Data



US Feet



**MAJOR THOROUGHFARE PLAN MAP**





### **ZONING ORDINANCE PROVISIONS FOR ANNEXATION**

In the Section 77-79, *Zoning at time of annexation*, of the Zoning Ordinance, it states: “*the default zoning district for any area annexed into the city for full purposes shall be open single-family residential (O-SFR). Notwithstanding the foregoing, the council may establish a different zoning district for land being annexed into the city, based on the city's comprehensive plan, at the same time as the land is annexed into the city limits.*”

**The applicant is requesting to establish a Manvel Crossing Planned Unit Development for the subject site proposed for annexation into City of Manvel City Limits. State Highway 6 Overlay district (PUD/SH6) will apply to a large portion of the subject site.**

### **PURPOSE AND INTENT OF THE PROPOSED ZONING DISTRICT**

According to the section 77-29, *Planned Unit Development (PUD) district*, of the Zoning Ordinance purpose of PUD “*is to promote diversity and creativity in site design. The PUD process is provided as an option to encourage unique developments which may combine a mixture of residential and non-residential land uses and building functions. The PUD allows flexibility in the application of development standards by permitting departures from the conventional siting, setback, and density requirements of a particular zoning district in the interest of achieving site development not otherwise possible.*”

### **PROJECT DETAILS**

The proposed Manvel Crossing PUD encompasses approximately 47.3156 acres located at the northwest corner of Kirby Drive and State Highway 6. According to the ordinance, the project qualifies as a Medium PUD Development based on its total area. The project is designed as a master-planned, mixed-use commercial development intended to establish a cohesive destination for retail, dining, and professional services in the growing Manvel area. The PUD proposes a combination of light commercial uses including retail centers, restaurants, hotels, offices, and supporting services, creating an active commercial corridor along Highway 6 that complements nearby developments such as Manvel Town Center.

The development will feature a comprehensive internal circulation network with multiple access points from Highway 6 and Kirby Drive, supported by pedestrian connections and landscaped public areas. The PUD establishes detailed architectural and site design standards to ensure high-quality development, including masonry requirements, signage criteria, and landscape buffering. Stormwater management will be provided through on-site detention facilities designed to meet City and Brazoria County Drainage District No. 4 requirements. Upon annexation, the site will be served by City water and wastewater infrastructure. Overall, Manvel Crossing aims to provide expanded commercial amenities, employment opportunities, and tax base growth while maintaining the “town and country” character of Manvel through consistent design and landscaping standards.

**The applicant has submitted a revised PUD document with a redline version (attached) since Nov 17, 2025. City Council meeting. The revised document addresses majority of the concerns discussed at the meeting, however, getting clarity on some issues would be beneficial.**

The following sections provide staff’s analysis of the proposed Manvel Crossing PUD and some key points for consideration.



1. *The proposal is unique in design to warrant the use of a PUD and the development is not possible using the existing zoning regulation of the property:*

The Manvel Crossing proposal represents a master-planned commercial development integrating retail, office, hotel, and restaurant uses with coordinated architecture, internal circulation, shared drainage, and unified signage. These features cannot be achieved under standard Light Commercial (LC) zoning. The PUD is necessary to:

- Combine multiple uses with shared infrastructure and coordinated design.
- Allow flexibility in setbacks, signage, and drainage placement.

2. *The project depicts creative land development, providing a variety in the development patterns of the city which conform to the intended purpose of the city's comprehensive plan and vision statement:*

The PUD introduces a master-planned commercial development that aligns with the City of Manvel Comprehensive Plan, promoting economic growth and a balanced land-use mix. Key elements include:

- Multi-parcel layout with internal connectivity to reduce SH6 driveway congestion.
- Architectural and landscape guidelines creating a unified visual character.
- Enhanced pedestrian routes and landscape design promoting walkability.

3. *Mixed uses and building functions if proposed shall be complementary, and pose minimal impact to adjacent uses or function:*

The PUD's land uses—retail, office, hotel, and restaurants—are designed to complement surrounding areas, including Manvel Town Center and nearby residential developments. Standards include:

- Sufficient access to minimize traffic impacts.
- Buffers and landscaping along the site perimeter.
- Restrictions on incompatible uses and transitions in height and materials.

4. *Development within the PUD encourages the use of alternative transportation circulation between structures and open spaces, including pedestrian and bicyclist:*

The PUD includes an Internal Circulation Plan (Exhibit 2) providing public access easements (PAEs) parallel and perpendicular to SH6, which allow interconnectivity among parcels and adjacent tracts. Additionally:

- The plan encourages walkable retail nodes and shared pedestrian corridors between buildings.
- Landscape buffers and shaded pedestrian routes enhance comfort and connectivity.

5. *Landscaping areas shall visually enhance the structures within the development and conform to the city's comprehensive plan and vision statement:*

The PUD includes landscaping standards to enhance site aesthetics and create a cohesive development. Features include: Street trees, parking lot landscaping, and trees along SH6.

6. *The proposed project complies with the minimum development requirements described in the PUD Manual:*



In general, the PUD demonstrates conformance with the City’s PUD Manual. However, some outstanding items must be verified or revised and are required to be addressed, including:

- Legal description and acreage.
- Permitted and prohibited uses.
- Infrastructure, architectural, signage, and landscape standards.
- Drainage coordination with adjacent properties.
- Master Plan.
- Future phase plan.
- Site plan.

### **STAFF RECOMMENDATION TO PD&Z**

Staff supports the establishment of a PUD for the subject site being proposed for annexation. The proposed project aligns with the goals of the Comprehensive Plan, however, some of the details included in the PUD document need reconsideration prior to City Council action. These details that need reconsideration include landuse allowances, and general clarifications. Staff recommended approval with the condition that the PUD document shall be revised to address certain issues and that clarification on certain issues will be provided. (Proposed Ordinance No. 2025-0-33).

Following are some of the significant items that need reconsideration/discussion (Details shall be discussed at the meeting by staff and presentation from the applicant):

1. Clarification/ revision need regarding reference to Public Access Easement (PAE) on Page 10. It appears that it was intended to be Parallel Access Easement referenced in the city’s HWY 6 overlay district requirement.
2. Remove reference to Impact fees (page 10) or revise to reflect the terms of the potential 380 agreement.
3. Need additional details and clarification of the temporary detention.
4. Provide clarification on referenced Design Guideline and how it differs from the Design standards of the PUD.
5. Revise to ensure NAICS code and its description are accurate. (E.g. 336390 is *other motor vehicles parts manufacturing*).
6. Carwash and Gas stations are not included in the Non-permitted table as discussed previously. Carwash is still in the definition section.
7. Permitted use table includes uses that generally requires SUP but the PUD document does not include any locational criteria limitation on number of uses. (mini warehouse, hotel, motel, Tire shop, Auto Repair). These uses may need to be considered on a case-by-case basis through PUD amendment.
8. It would be helpful to include reference separation requirements for restaurants and auto related uses in the permitted table. Additionally, the provision should consider the 2 mile separation used in the City’s zoning ordinance.
9. Document references Mixed use and definition still references residential.
10. Sidewalk section in the document should address sidewalks along HWY 6 and Kirby. PUD is considering a variance to requirement of sidewalk along HWY 6.
11. Applicability of SH6 Overlay district requirements is not clearly addressed (Page 18).
12. Building material requirements specify 75% masonry and 40% non-masonry. Need additional clarification.



13. Building material for nationally and regionally recognized businesses should have additional parameters or be as approved by the Zoning Official.
14. Temporary/ long-terms Storage allowance of 12% needs discussion and clarity.
15. Reduced parking count provision needs clarification that it would only apply to Home Improvement stores with garden centers.
16. PUD document includes a provision for 50% spaces to be smaller. Such requests in the past have not been supported/approved.
17. Provide clarification if the shared parking analysis based on a widely accepted planning/ engineering publication. If not, we need to see example calculations to see the outcome before it can be approved.
18. Tree preservation and Tree Survey requirements are not clear within the PUD document. The applicant has provided tree survey of sample areas.
19. Maximum allowance for Multi-tenant signs along HWY 6 should not exceed 40 feet (MTC Signs are 40 ft tall).
20. Wall mounted sign allowance need additional parameters (such as maximum allowed span, maximum area, spacing requirements from edge of building etc). Need clarification that sign allowance is based on square footage. Need clarification of additional height allowance for logos.
21. Clarification needed on Directional signs. Temporary signage allowance to be based on the ordinance as amended.
22. PUD document doesn't include a separate section on Fence. Specifying fence related requirements could be beneficial.
23. Update the definition list. It includes several terms that are not in the document and does not include several critical terms.
24. Remove reference to City's designated official. Revise to remove any language that allows administrative determination of land uses.
25. Update exhibits to match the text of the document and other considerations.
26. Revise the PUD document to address formatting, any possible repetition of text and errors.
27. There has been some discussion on providing trails and amenities as part of the detention, but the language below doesnot provide sufficient clarity: *"All pervious area shall be counted toward the total landscape area, including the maintenance berm of detention ponds, if maintenance berms incorporate landscaping and pedestrian trails where feasible to enhance connectivity and visual appeal."*

#### **PD&Z COMMISSION RECOMMENDATION**

The PD&Z Commission voted unanimously to recommend approval with the condition that deficiencies identified by staff and the following additional comments provided by PD&Z Commission are addressed:

1. Telecom tower use be identified as a non-permitted use.
2. Sidewalk shall be required along Hwy 6.
3. Consider 2-mile separation for certain uses unless reviewed and amended in future.
4. No allowance for reduced parking spaces.
5. Considering additional handicap parking spaces.
6. Tree Survey and Preservation requirement to apply to the development.
7. If waiver is considered for landscape requirements or tree preservation requirements, larger tree size tree (4" caliper) planting requirement be considered.



8. If auto repair use is allowed, no repair work or other operations are allowed outside the building.
9. Setting minimum requirement for detention areas to make it a feature with good aesthetic value.
10. Consider optimization of signage.

**STAFF RECOMMENDATION AND REVIEW NOTES REGARDING CHANGES MADE SINCE THE FIRST READING**

The applicant has made significant changes to address comments and concerns discussed at the first reading of the ordinance. Upon review of the revised document, staff would like to note the following. Staff recommends approval of the requested PUD upon getting clarification or making any revision needed for the following items:

- 1) The PUD considers allowing one Hotel (721110 Hotels (except Casino Hotels)) located north of the parallel access easement with no frontage on Highway 6 or Kirby Drive. Based on input from PD&Z and City Council, it would be beneficial to include conditions provided in Section 77-50.(g)1.a., of the city's Zoning Ordinance pertaining to Hotel allowance.
- 2) The PUD considers allowing one climate-controlled multi-level storage facility (531130 Lessors of Miniwarehouses and Self-Storage Units) with no frontage on Highway 6 or Kirby Drive. Both PD&Z and City Council indicated that this use is not appropriate for this development.
- 3) The PUD considers allowing freestanding Emergency Rooms (621493 Freestanding Ambulatory Surgical and Emergency Centers) as a permitted use. The SUP conditions are included in the PUD but does not include a restriction on the number of Emergency Rooms that are allowed within the PUD.
- 4) According to Texas Occupations Code, political subdivisions cannot adopt standards that are more restrictive for massage establishments than for other health care establishments. The PUD allows Healthcare uses as a permitted use but does not Massage establishment as a permitted use. City's zoning ordinance currently requires SUP for both healthcare and massage establishment uses.
- 5) Pylon sign definition should be revised to clarify that structural poles and pylons of the sign shall be concealed using architectural design features.
- 6) Height-related variance need to be removed from the list of variances.
- 7) The PUD document is proposed additional ADA parking spaces for larger parking lots, but shall meet the minimum requirement for smaller parking lots.
- 8) Clarification is needed on larger sign height allowance for Logos. It is not clear if this allowance applies to all buildings and if it would be work for smaller scale buildings.

**PUBLIC HEARING**

The Notice of Public Hearing was published in the newspaper of general circulation. All property owners within 200 feet of the property were notified. At the time of writing this report, staff has received one informational inquiry and is not aware of any opposition to the request.



**PUBLIC HEARING NOTICE PUBLISHED ON SUNDAY 10/19/2025**

**A PUBLIC HEARING WILL BE HELD AT MANVEL CITY HALL, 20031 HWY 6, MANVEL, TX 77578 AT 6:00 P.M. ON MONDAY, OCTOBER 27, 2025 BEFORE THE MANVEL PLANNING, DEVELOPMENT, AND ZONING COMMISSION AND AT 6:00 P.M., ON MONDAY, NOVEMBER 03, 2025 BEFORE THE MANVEL CITY COUNCIL TO HEAR INPUT FROM THE PUBLIC REGARDING AN ORDINANCE OF THE CITY OF MANVEL, TEXAS, TO ESTABLISH PLANNED UNIT DEVELOPMENT (PUD) ZONING DISTRICT AND ADOPTING A PUD DOCUMENT PROVIDING FOR ZONING AND DEVELOPMENT RELATED PROVISIONS AND REQUIREMENTS IN ACCORDANCE WITH SECTION 77-79.(A) OF CITY OF MANVEL'S ZONING ORDINANCE; FOR AN APPROXIMATE 47.3156 ACRES OF LAND, PROPOSED FOR ANNEXATION INTO CITY OF MANVEL'S CITY LIMITS AND SUBSEQUENT DEVELOPMENT AS A RETAIL CENTER; LOCATED AT THE NORTHWEST CORNER OF STATE HIGHWAY (SH) 6 AND KIRBY DRIVE INTERSECTION; CONTAINING A 34.2791 ACRE TRACT AND A 11.3999 ACRE TRACT SEPARATED BY A 40-FOOT-WIDE (0.844 ACRE) UNIMPROVED RIGHT-OF-WAY; SITUATED IN H.T.&B. RAILROAD COMPANY SURVEY, SECTION 71, ABSTRACT NO. 291, BRAZORIA COUNTY, TEXAS, AND A 1.6366 ACRE TRACT BEING A PORTION OF LOT 29 OF EMIGRATION LAND COMPANY SUBDIVISION OF IOWA COLONY H.T.&B. RAILROAD COMPANY SURVEY NO. 71 (ALSO REFERRED TO AS THE IMMIGRATION LAND COMPANY SUBDIVISION OF SECTION 71, HT&B RR COMPANY SURVEY) ABSTRACT 291, BRAZORIA COUNTY, TEXAS); PROVIDING FOR THE AMENDMENT OF THE CITY'S OFFICIAL ZONING MAP; PROVIDING A PENALTY IN AN AMOUNT NOT TO EXCEED \$2,000 FOR EACH DAY OF VIOLATION OF ANY PROVISION HEREOF. /S/ TAMMY BELL, CITY SECRETARY.**



**REQUEST LETTER**



TBPE No. F-726  
TBPLS No. 10092300

October 8, 2025

Jose Abraham  
Director of Development Services  
City of Manvel  
20031 Highway 6  
Manvel, TX 77578

Re: BCS Commercial Project - Planned Unit Development (PUD)

Jose,

On behalf of our client, BCS Capital Group, I respectfully request the Manvel Crossing Planned Unit Development located adjacent to Kirby Dr and Highway 6, west of State Highway 288, and generally east of County Road 46. A metes and bounds description and survey can be found attached to this application.

This request is for a Planned Unit Development, with the intent of creating a commercial shopping center that will offer amenities to the surrounding area. The site is roughly forty-nine 49 acres, composed of 13 commercial lots, with three detention reserves. With this request, deviations from the original regulations will be requested to provide the city with unique quality development not limited to a mixture of retail, commercial services, and food options. The deviation table can be found in the draft PUD document.

The developer intends to construct a portion of Kirby Dr due north, as well as build a stub out for future Rodeo Dr as part of the project. Please refer to the exhibits in the draft PUD for reference.

Should any additional information or supporting documentation be required, please do not hesitate to contact me. I would be happy to assist in any way necessary.

Thank you for your consideration,

Regards,

Ian Knox  
Planner III | Planning and Visioning  
EHRA Engineering

Attachment: Draft PUD Document  
Attachment: Survey and Metes and Bounds  
Attachment: Letters of Consent



**SITE PICTURES**



View of the subject site from Highway 6 (south east corner)



View of the subject site from Highway 6 (south west corner)



**SITE PICTURES**



View of the subject site from Highway 6 (40 foot undeveloped ROW)



View of Kirby Drive from North to the south



**SITE PICTURES**



View of the subject site from Manvel Town Center - HEB



# Manvel Crossing Planned Unit Development District

## The City of Manvel

Ordinance #XXXXXX

Submitted: November 20, 2025

Prepared for:  
BCS Capital Group  
5847 San Felipe, Suite 2030  
Houston, TX 77057  
214.905.1505



10011 Meadowglen Lane  
Houston, Texas 77042  
EHRAinc.com | 713.784.4500  
TBPE No. F-726 | TBPLS No. 10092300

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Appendix 1 - Site Survey

Appendix 2 - Approved Tree List

Appendix 3 - Zoning Regulations

Appendix 4 - PUD Ordinance

Appendix 5 - Annexation Ordinance

## **I. INTRODUCTION**

### **A. Summary**

The Planned Unit Development District (PUD) establishes comprehensive guidance and regulations for Manvel Crossing Commercial Development. Manvel Crossing is comprised of approximately 49 acres of privately owned land. The entirety of the property currently lies in the Extraterritorial Jurisdiction (ETJ) of the City of Manvel (City) but is intended to be annexed into the City.

The PUD will offer flexibility to encourage the most appropriate uses and amenities, providing access to more diversified shopping options for citizens and visitors alike. The PUD will achieve this by providing a means by which development may occur in an orderly and responsible manner and establishing guidelines that ensure quality development and specifically address the goals of both the City and the developer.

### **B. Purpose of the PUD**

A PUD establishes customized development standards for a specific property, allowing the City and the developer to create a unified plan that ensures high-quality design, clear expectations, and alignment with the City's long-term vision.

### **C. Project Location**

The Project is located east of Old Airline Road (County Road 48), north of and adjacent to State Highway 6, and abutting Kirby Drive to the east. The property is within Brazoria County and will be annexed into the City of Manvel.

### **D. Site History**

Based on a review of historical information, the site consisted of undeveloped and/or agricultural land starting around the mid to late 1930's continuing through the 1960's. In the 1960's an on-site pipeline easement was established, and throughout this time up to the 1980's, the land appears to have been utilized for rice farming. The site has remained undeveloped to present day.

### **E. Existing Zoning**

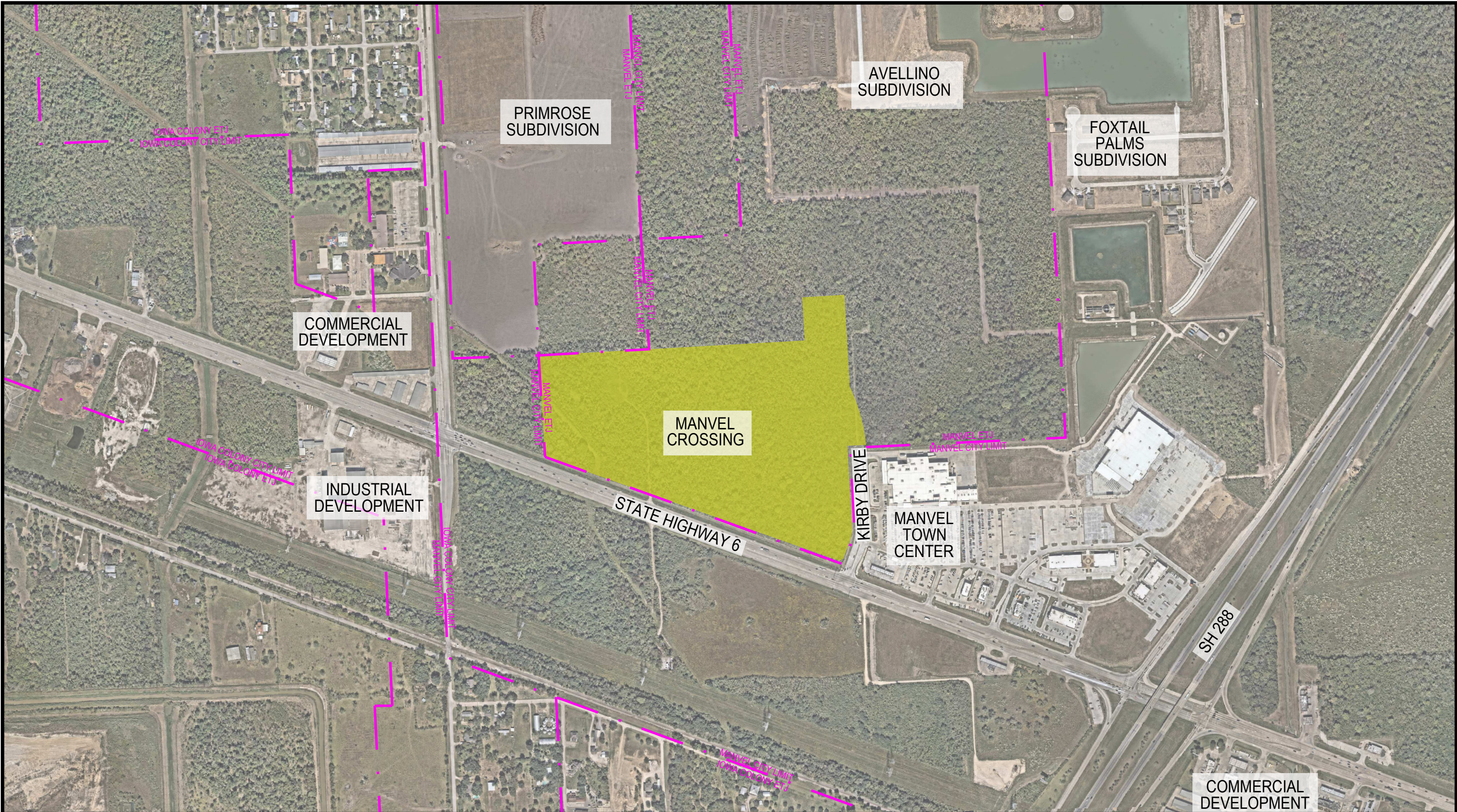
The entirety of the site is located in the ETJ of the City of Manvel and therefore has no zoning district classification. Upon annexation and approval of the PUD, the site will be assigned a base zoning designation of Light Commercial with a PUD overlay. In addition to the applicable base zoning classification and PUD, the requirements of the Highway 6 Overlay District will apply to approximately 33 acres of the site along Highway 6 frontage at a depth of 700 feet, subject only to those requirements that are not superseded by the PUD. Should the PUD expire, the land will revert back to the Light Commercial zoning district and the Highway 6 Overlay District.

### **F. Surrounding Land Use**

The property is situated along State Highway 6, which forms its southern boundary, and is surrounded by a mix of developed properties and agricultural or undeveloped land planned for future single-family communities. To the east is Manvel Town Center, which contains a mix of commercial uses, and to the north there are several single-family residential communities—including Rodeo Palms, Foxtail Palms, and Primrose—that are existing or under active development.

### **G. Existing Site Conditions**

The site contains no notable natural features, though the western portion includes a cleared area reflecting previous agricultural use. A thirty-foot (30') pipeline easement enters from the west property line and then shifts south toward Highway 6. Near Kirby Drive, a few manmade drainage canals are present, but overall, the property is flat and lacks meaningful topographic variation. A Phase One Environmental Site Assessment was completed across the entire tract and reported no significant environmental issues or presence of endangered species.



# Exhibit 1 - Vicinity Map

November, 2025

0 | 200' | 400' | 800'  
 SCALE: 1"=800'  
 TRUE SCALE AT 11" x 17"



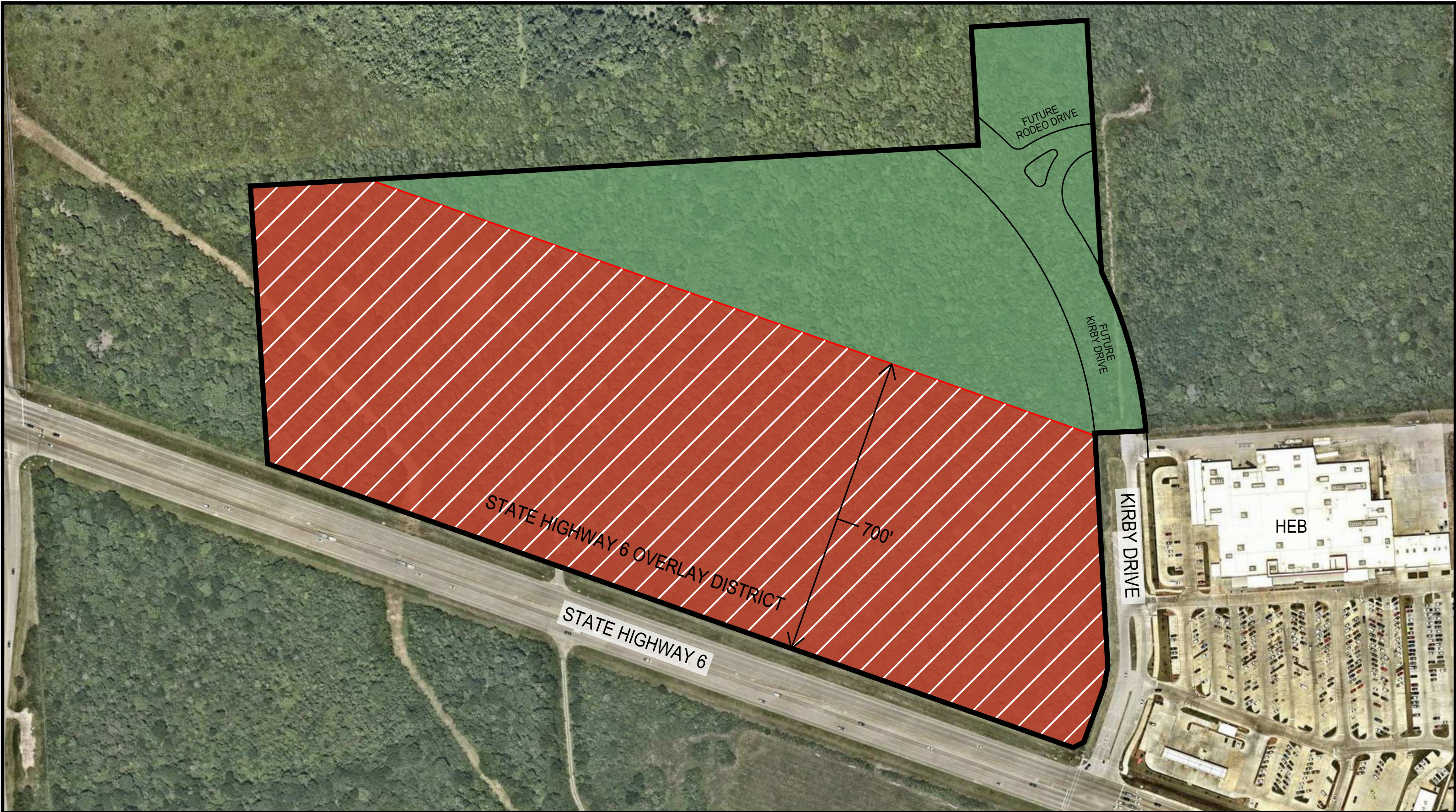
EHRA JOB NO.  
231-085-00

No warranty or representation of intended use, design or proposed improvements are made herein. All Plans for land or facilities are subject to change without notice.



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# Exhibit 2 - State Highway 6 Overlay District

November 2025

0 50' 100' 200'  
 SCALE: 1"=200'  
 TRUE SCALE AT 11" x 17"



EHRA JOB NO.  
 231-085-00

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## **II. DEVELOPMENT PLAN**

### **A. Purpose & Intent**

The purpose of the Development Plan is to clarify the planning considerations within the plan area and to guide the implementation of the project’s overall vision. It establishes a framework for Manvel Crossing by setting standards that address the essential elements of a successful commercial development—ensuring the project is executed responsibly, fulfills the vision for Manvel Crossing, enhances the City of Manvel, and supports the City’s exceptionally rapid growth. This section outlines the goals, objectives, and policies of the PUD, along with the key plan components that will guide the development’s design principles.

### **B. Goals & Objectives**

The primary goal of the Manvel Crossing Planned Unit Development District is to establish a master planned commercial development that supports the City’s long-term vision by annexing into the City, expanding the local tax base, and contributing to the funding of public services and improvements. Additionally, the development will enhance community access to goods, services, and resources.

To achieve this goal, key objectives have been established to guide development and reinforce the overall vision for the community. These objectives align with the vision statement contained in the 2045 Strategic Plan adopted by the City and are as follows:

#### **1. Ensure Quality Development**

Manvel Crossing will ensure high-quality development by establishing design guidelines that regulate architectural standards, enhanced landscaping, attractive and coordinated signage, adequate parking, and other key elements that contribute to a cohesive and well-designed commercial environment.

#### **2. A Broader, Deeper Tax Base and Employment Opportunities**

Manvel Crossing will broaden the City’s tax base and create new employment opportunities, both of which strengthen the City’s ability to fund essential public services and improvements.

### **3. Guide and Manage Development Along Highway 6**

Manvel Crossing is located west of Highway 288, a corridor that serves as a natural transition into the more rural character of the City of Manvel. This area is particularly well suited for commercial uses and remains easily accessible to residents throughout the community. Positioned at the City's edge and surrounded by existing commercial activity, the site provides an ideal location for new commercial development that will support and complement the significant residential growth occurring in Manvel.

### **4. Providing a Wider Range of Community Amenities and Commercial Services**

Manvel Crossing is intended to bring a broader selection of high-quality restaurants, retail offerings, and commercial services to the community. This expanded mix of uses will increase local shopping and dining options while generating additional tax revenue that supports enhanced public amenities and community improvements.

## **C. Transportation**

Manvel Crossing will establish a coordinated transportation network that includes internal circulation and multiple modes of access, all designed to comply with the City's Major Thoroughfare Plan (the Transportation Corridor Plan within the adopted Comprehensive Plan) as approved by City Council August 2, 2021. This network will support mobility needs along Highway 6 and provide appropriate connectivity to the north and to surrounding properties as they develop.

### **1. Existing Access**

Manvel Crossing currently benefits from direct access to Highway 6 and from Kirby Drive along the eastern boundary. The site is also located near Old Airline Road (County Road 48), which provides convenient north-south connectivity to Pearland. In addition, Highway 288 lies just to the east, offering direct regional access to the City of Houston and the Gulf Coast.

### **2. Future Access**

With the future extension of Kirby Drive to the north and its planned connection to Rodeo Drive, Manvel Crossing will become a highly accessible commercial destination for surrounding neighborhoods. This enhanced connectivity will help relieve congestion in the area and strengthen the overall local street network. No issues are anticipated with the City's ongoing update efforts. Rodeo Drive will be classified as a local street and constructed within a 60-foot right-of-way. The portion of Rodeo Drive addressed in this PUD is limited solely to the segment located within the PUD boundaries. The roadway will consist of a 28-foot-wide pavement section with 5-foot sidewalks on both sides to support pedestrian connectivity and accessibility.

---

Kirby Drive will be classified as a Parkway and constructed within a 120-foot right-of-way. The portion of Kirby Drive addressed in this PUD is limited solely to the segment located within the PUD boundaries and will serve as the primary access point to the eastern portion of the site. If City Council takes action to reduce the required right-of-way width for Kirby Drive through an update to the City's Major Thoroughfare Plan, the reduced width shall supersede the requirements of this PUD.

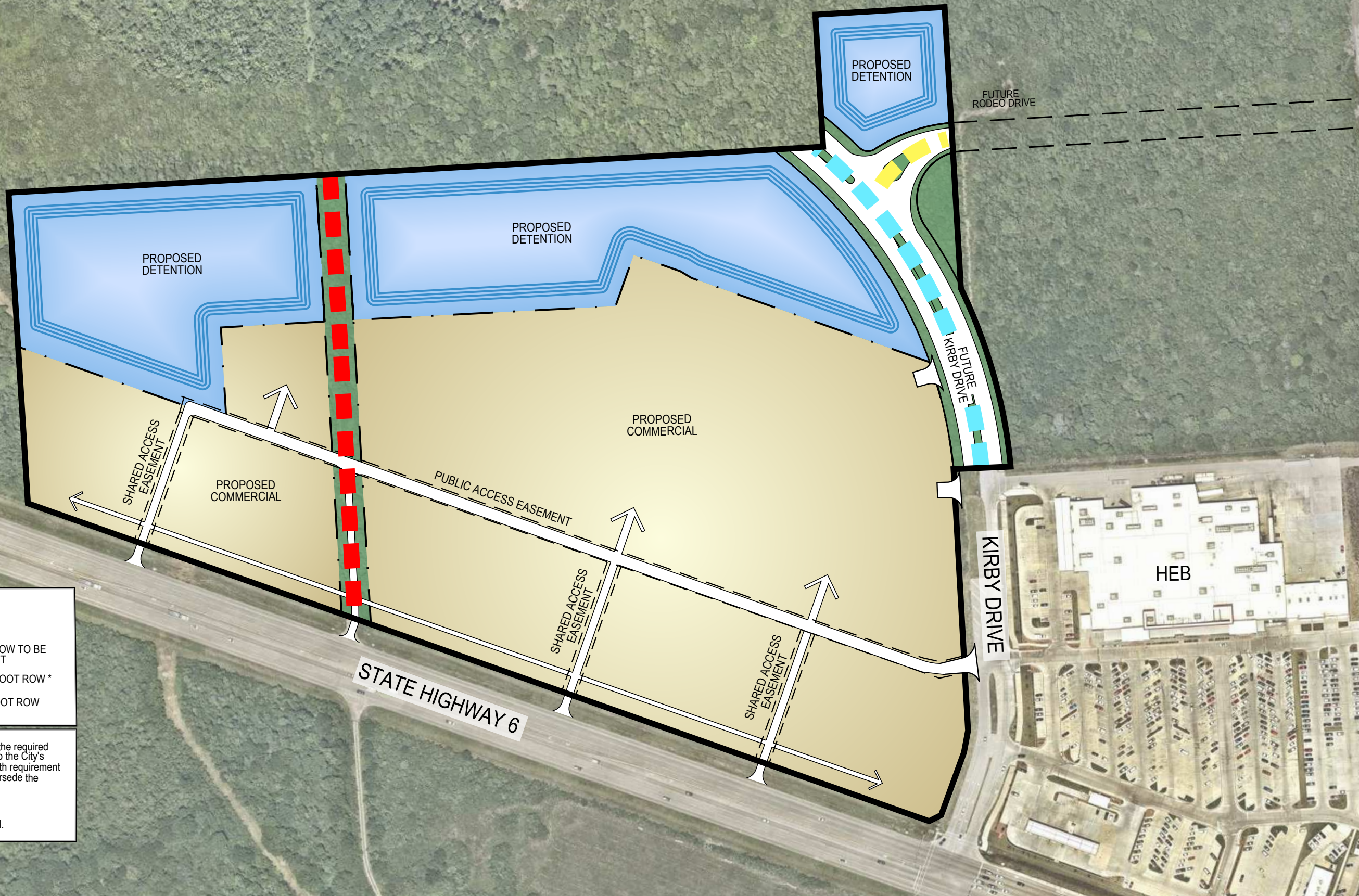
The intersection of Kirby Drive and Rodeo Drive shall be designed and constructed in accordance with the recommendations outlined in the Traffic Impact Analysis (TIA). A TIA has been submitted to and requires approval by the City of Manvel. Dedication of both sections of road for property within the PUD shall occur with the recording of the final plat.

### **3. Site Internal Circulation Plan**




Internal circulation throughout the Manvel Crossing development will consist of an interior east/west oriented road located in a parallel access easement that will grant access to all the businesses, including the proposed businesses at the rear of the site. There are four (4) possible entrances from Highway 6 per TxDOT spacing requirements, however only three (3) are proposed per the TIA. If a fourth access point from Highway 6 is approved by TxDOT, a fourth access point shall be permitted. Additionally, there are three (3) proposed entrances to Kirby Drive. Additional access points from Kirby Drive may be permitted if allowed by City ordinance.

The City agrees that the PUD may provide "satisfactory access" to certain parcels that may not have physical frontage on an abutting public road from a twenty-five (25) foot wide cross-access easement(s) which will provide for public access and be noted on a subdivision plat after being filed for record. The final subdivision plat will show the recorded cross access easement(s) and/or notate the cross-access easement agreement on the face of the plat.

There is an existing forty (40) foot right-of-way dividing the western 1/3 of the site that runs north/south and provides access to an out parcel to the north. This right-of-way will be widened and improved, if required by the City, to meet the standards of the City of Manvel Design Criteria Manual. It will continue to provide access through a portion of the site; however, the right-of-way may be rerouted or abandoned in the future with further action by City Council. Should City Council proceed with this option, this PUD shall not be required to be amended.



**LEGEND**

	EXISTING 40 FT ROW TO BE WIDENED TO 60 FT
	PROPOSED 120 FOOT ROW *
	PROPOSED 60 FOOT ROW

NOTES: 1) Should City Council take action to reduce the required ROW width for Kirby Drive via an update to the City's Major Thoroughfare Plan, the reduced width requirement of the Major Thoroughfare Plan shall supersede the requirements of this PUD.

2) 60 ft ROW may be abandoned and/or rerouted by separate action by City Council.

# Exhibit 3 - Internal Circulation Plan

November, 2025  
 0 50' 100' 200'  
 SCALE: 1"=200'  
 TRUE SCALE AT 11" x 17"



EHRA JOB NO. 231-085-00  
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## **D. Infrastructure**

### **1. Water & Wastewater**

The water distribution system within the Manvel Crossing development will be designed to meet or exceed applicable requirements. Once annexed into the City limits, the site will be served by City water and wastewater services.

### **2. Storm Drainage & Detention System**

The drainage plan and storm sewer system will be designed in accordance with City of Manvel and Brazoria County Drainage District #4 regulations. The storm water runoff within the Manvel Crossing site will be routed to storm sewer lines that will outfall into detention ponds located at the rear of the site. The internal detention ponds will provide storage volume for the increased storm water runoff resulting from development of the property. The storm water from the detention ponds will outfall in a controlled fashion to an offsite drainage channel and tie into storm sewers to the east.

The drainage collection systems will be designed to convey the 100-year sheet flow either in the collection system near the outfall point or by sheet flow drainage through the curb and gutter streets with maximum ponding per agency requirements. The proposed internal detention pond system will be sized to contain the excess run-off resulting from a 24-hour, 100-year frequency rainfall event for developed and undeveloped conditions, with a minimum freeboard of one (1) foot before outfalling into the receiving stream. The storm sewer system will consist of reinforced concrete pipe and box culverts sized per agency requirements. Concrete channelization will be minimized.

Detention facilities intended to serve Manvel Crossing may be located off-site. Any off-site detention capacity shall be recorded with the County and provided to the City of Manvel so long as the off-site property owner grants their written acknowledgement and approval.

Should detention footprints be reduced in size or otherwise create additional usable acreage, such acreage may be developed for commercial purposes and shall be incorporated into the overall PUD uses and requirements.



NOTES: 1) OFFSITE DRAINAGE TO BE APPROVED BY SEPARATE AGREEMENT WITH NEIGHBORING PROPERTY OWNERS  
 2) ACREAGE SHOWN IS APPROXIMATE AND IS SUBJECT TO CHANGE

# Exhibit 4 - Preliminary Drainage Plan

November, 2025  
 0 125 250  
 SCALE: 1"=250'  
 TRUE SCALE AT 11" x 17"



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### 3. **Other Utilities**

Electricity, natural gas, telecommunications, and cable services will be provided to the Manvel Crossing site through agreements with private or public (CenterPoint Energy Gas and Power) utility companies as development occurs.

## III. **DEVELOPMENT REGULATIONS**

### A. **Purpose & Intent**

The purpose of the development regulations is to serve as the primary means of achieving the goals and objectives of the Development Plan.

They are designed to establish clear minimum development standards, promote productive and streamlined processes that facilitate the timely delivery of tax-generating development, and provide a reasonable degree of flexibility to accommodate future needs.

### B. **General Provisions**

#### 1. **Applicability**

The regulations contained herein shall apply to all property located within the boundaries of the Manvel Crossing PUD. Appendix 1 contains the legal description of the property.

All construction and development within the PUD area shall comply with applicable provisions of the City of Manvel codes and ordinances as they exist on the date of adoption of this PUD and the laws of the State of Texas for three (3) years from the acceptance of this PUD, except as modified within this PUD. Applicable International Code Council Codes adopted by the City of Manvel shall apply as amended from time to time.

If specific development standards are not established or if an issue, condition, or situation arises or occurs that is not clearly addressed or understandable in the PUD, then those regulations and standards of the City of Manvel codes and ordinances that are applicable for the most similar issue, condition, or situation shall apply as determined by the City's Zoning Official. Appeal of any determination regarding applicability may be made to the Zoning Board of Adjustments.

This PUD may be amended by the same procedure as it was adopted, by ordinance. Each

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amendment shall include all sections or portions of the PUD that are affected by the change.

## **2. Existing Utilities**

Existing utilities and all uses permitted under current easements shall be maintained and allowed to continue within all applicable designations of the PUD.

## **C. Development Standards.**

The development standards outlined herein are intended to guide a high-quality, thoughtfully planned project that delivers meaningful value to the community. These standards set clear expectations, support efficient implementation, and ensure that the project is positioned for long-term success.

The following tables list permitted uses and non-permitted uses as part of this development. The uses are classified in the 2022 version of the North American Industry Classification System (NAICS), which is a number code assigned by the NAICS Association to simplify the process of identifying what category a specific land use falls under. Definitions for each use listed below are found in the 2022 version of the NAICS.

**1. Permitted Land Use Table**

	<b>NAICS Code</b>	<b>Classification</b>
1	311811	Retail Bakeries
2	312120	Breweries- *Subject to Section c.
3	315250	Cut and Sew Apparel Manufacturing (except Contractors)
4	423220	Home Furnishing Merchant Wholesalers
5	423450	Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers
6	441330	Automotive Part and Accessories Retailers - *Subject to Section a.
7	441340	Automotive Tire Dealers - *Subject to Section a.
8	444110	Home Centers
9	444140	Hardware Retailers
10	445110	Supermarkets and Other Grocery Retailers (except Convenience Retailers)
11	445298	All Other Specialty Food Retailers
12	449110	Furniture Retailers
13	449210	Radio and television stores
14	449210	Electronics and Appliance Retailers
15	455110	Department Stores
16	455211	Warehouse Clubs and Supercenters
17	456110	Drug stores
18	458110	Clothing and Clothing Accessories Retailers
19	4582	Shoe Retailers
20	459110	Sporting Goods Stores
21	459120	Hobby, Toy, and Game Retailers
22	459140	Musical Instrument and Supplies Retailers
23	459210	Book Stores
24	459310	Florists
25	459410	Office Supplies and Stationery Retailers
26	459420	Gift, Novelty, and Souvenir Retailers
27	459510	Antique shops
28	459920	Art galleries retailing art
29	459999	Art supply stores
30	491110	Postal Service
31	492110	Couriers and Express Delivery Services
32	512131	Motion Picture Theaters (except Drive-Ins)
33	516110	Radio Broadcasting Stations *(excluding tower)
34	522110	Commercial Banking
35	522310	Mortgage and Nonmortgage Loan Brokers
36	531120	Lessors of Nonresidential Buildings (except Mini warehouses)
37	531130	Lessor of mini-warehouse and self-storage *Subject to Section e.
38	531210	Offices of Real Estate Agents and Brokers

39	541191	Title Abstract and Settlement Offices
40	5412	Accounting, Tax Preparation, Bookkeeping and Payroll Services
41	541340	Drafting Services
42	541611	Administrative Management and General Management Consulting Services
43	541810	Advertising Agencies
44	541940	Veterinary Services
45	541990	All Other Professional, Scientific, and Technical Services
46	561510	Travel agencies
47	561622	Locksmiths
48	611710	Educational Support Services
49	621111	Offices of Physicians (except Mental Health Specialists)
50	621210	Offices of Dentists
51	621320	Offices of Optometrists
52	621493	Freestanding Ambulatory Surgical and Emergency Centers
53	622110	General Medical and Surgical Hospitals
54	624410	Child Care Services
55	711120	Dance Companies
56	713120	Amusement Arcades
57	713940	Fitness and Recreational Sports Centers
58	721110	Hotels (Except Casino Hotels)- *Subject to Section d.
59	722410	Drinking Places (Alcoholic Beverages) - *Subject to Section f.
60	722511	Brew pub restaurants, primarily serving meals, full service - *Subject to Section b.
61	722511	Full-Service Restaurants - *Subject to Section b.
62	722513	Limited-Service Restaurants - *Subject to Section b.
63	722514	Cafeterias, Grill Buffets, and Buffets - *Subject to Section b.
64	811111	General Automotive Repair - *Subject to Section a.
65	811412	Appliance Repair and Maintenance
66	812112	Beauty Salons
67	812320	Dry cleaning and Laundry Services (except Coin-Operated)
68	926130	Regulation and Administration of Communications, Electric, Gas, and Other Utilities

**a. Automotive Uses** - Only one (1) nationally or regionally recognized automotive-oriented use shall be permitted for each of the following categories:

- **811111 General Automotive Repair:**  
Includes, but is not limited to: Take 5, Valvoline, Firestone, Jiffy Lube, or other similar nationally recognized vehicle maintenance or repair concepts.
- **441340 Automotive Tire Dealers:** Includes, but is not limited to: Discount Tire, Mavis, NTB, or other similar nationally recognized tire retail concepts primarily engaged in the sale of tires and related accessories.

- **441330 Automotive Parts and Accessories Retailers:**

Includes, but is not limited to: Advance Auto Parts, AutoZone, O'Reilly Auto Parts, NAPA Auto Parts, or other similar nationally recognized retail concepts primarily engaged in the sale of automotive parts and accessories.

All approved automotive-related uses shall be restricted to locations within the westernmost eight hundred (800) feet of Highway 6 frontage.

- b. **Restaurant Uses** – Specific restaurant concepts/franchises shall not locate or operate a site within Manvel Crossing if they own, lease, or control another site within a two-mile radius of the Project.
- c. **Permitted Uses Subject to Specific Use Permit** – the uses listed in the Permitted Use table-specifically Drinking Places, Bars, Taverns, Micro-Breweries- are subject to Specific Use Permits to be reviewed and approved by City staff and City council.
- d. **Hotel Use** - Only one (1) nationally or regionally recognized hotel flag shall be permitted within the PUD, and such hotel use shall be restricted to the north side of the parallel access easement, with no frontage on Highway 6 or Kirby Drive. Hotel uses may include, but are not limited to, the following nationally or regionally recognized brands or similar concepts:
  - **Full-Service and Select-Service Hotels:**  
Marriott, Hilton, Hyatt, Sheraton, Westin, Embassy Suites, DoubleTree, Renaissance, or other comparable full-service or select-service hotel brands.
  - **Limited-Service Hotels:**  
Hampton Inn, Holiday Inn Express, Fairfield Inn & Suites, Courtyard by Marriott, Hilton Garden Inn, Best Western Plus, La Quinta, Comfort Suites, or other comparable limited-service hotel brands.

All approved hotel uses shall be subject to City Ordinances regarding Hotel Licensing, Operations, and Hotel human trafficking training.

- e. **Lessor of Mini-Warehouse and Self-Storage** - Only one (1) climate-controlled, multi-level storage facility shall be permitted within the PUD, and such use shall be restricted to the north side of the parallel access easement, with no frontage on Highway 6 or Kirby Drive. This use shall be limited to fully enclosed, climate-controlled storage units contained within a multi-story building and shall not include any outdoor storage, drive-up units, or mini-warehouse style facilities.

**f. Freestanding Ambulatory Surgical and Emergency Centers** - Freestanding Ambulatory Surgical and Emergency Centers as defined by NAICS No. 621493, Permitted Uses, shall include the following conditions:

- i. Unless otherwise required by state law or regulation, the facility is only permitted to operate during the hours of 7:00 a.m. to 10:00 p.m. each day;
- ii. All waiting and/or lobby areas shall maintain an unobstructed view from the outside; and
- iii. All doors shall remain unlocked and accessible during normal business hours.

**2. Non-Permitted Land Use Table**

2. 493190 - Other Warehousing and Storage	11. 522299 - International, Secondary Market, and All Other Nondepository Credit Intermediation
3. 238990 - All Other Specialty Trade Contractors	12. Sexually oriented businesses
4. 441110 – Automobile dealers, new only or new and used	13. 459510 - Flea markets, used merchandise, permanent
5. 811192 – Car Washes	14. 812199 - Tattoo Parlors
6. 812220 – Cemeteries and Crematories	15. 115210-17 - Support Activities for Animal Production
7. 512132 - Drive-in motion picture theaters	16. 811121 - Upholstery shops, automotive
8. 424910 - Farm Supplies Merchant Wholesalers	17. 459991 - Vape shops
9. 812910 - Pet Care (except Veterinary) Services	18. 237130 - Power and Communication Line and Related Structures Construction
10. 457110 - Gas Stations with Convenience Stores	

**3. Special Events**

Temporary events shall follow the requirements of Article XII. – Special Events, of the City of Manvel Code of Ordinances.

**4. Additional Uses**

In the event that a proposed use has not specifically been listed or determined to be similar and compatible to a permitted use in a particular land use category within the PUD, an amendment to the PUD will be necessary to add the unlisted use.

## 5. Site Standards

### *Minimum Setbacks:*

#### *Along Major Roads:*

- Front: 25 feet
- Rear: 15 feet
- Side: 15 feet

#### *Along collector or internal streets/drives:*

- Front: 10 feet
- Side: 10 feet
- Rear: 10 feet
- Corner Side: 10 feet

#### *Adjacent to Residential and undeveloped land:*

- Side: 10 feet
- Rear: 10 feet

Architectural features may encroach into the setback area a maximum of three (3) feet.

Fences constructed on the site shall comply with Sec. 77-43. - Fences, of the City of Manvel Code of Ordinances.

## 6. Architectural Standards:

### *a. Maximum Building Height:*

#### *Pad Sites:*

- Maximum 35 feet

#### *Commercial Anchor Tenants:*

- Maximum 60 feet

#### *Commercial Mixed-use (Office/Medical/Retail):*

- Maximum 60 feet

### *b. Building Materials:*

To encourage architectural flexibility and meaningful façade articulation, all commercial buildings shall incorporate a variety of high-quality exterior materials. Buildings must include a minimum of 75% masonry on front and side façades and 50% masonry on rear and service façades, exclusive of windows, doors, and other

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transparent materials. The following materials shall qualify as masonry for the purposes of this requirement:

- Stone
- Brick
- Concrete
- Hollow clay tile
- Glass block
- True Stucco
- Insulated Concrete Forms

Non-masonry materials may not exceed the remainder of the building's elevation.

Additional permitted non-masonry materials (with proof of compliance to ICC and Texas Windstorm standards):

- Cementitious fiber
- EIFS
- Architectural metal panels
- Composite Wood-Look Cladding

Secondary power connections for new development from existing power poles located within the right-of-way of State Highway 6 will be placed underground.

Electrical panel boxes will not be located on a building façade facing State Highway 6 and be located on the rear of the buildings.

- c. *Parking Requirement:* Shall comply with the parking standards established in this section.
- d. *Open Storage:* Open storage is permitted within the parking lot for temporary seasonal sales or temporary promotional events. Additionally, NAICS code 444110 – Home Centers and 455211 – Superstores (i.e., food and general merchandise), located in buildings with 80,000 square feet of gross leasable floor area or more are permitted to use off-street parking spaces required by the City of Manvel's parking standards and PUD for permanent, long-term, or seasonal storage of inventory, equipment, vehicles, or other business-related property, provided that required parking is preserved and the use does not result in cross-parking impacts or deficiencies. Such storage shall not exceed twelve percent (12%) of all parking spaces provided for that building. No permits are required for temporary storage. A permit will be required for permanent storage to review location and construction materials, as well as to calculate remaining parking requirements.

## **7. Parking**

Parking within the Manvel Crossing site shall be provided according to Sec. 77-45. of the City of Manvel Zoning Ordinance, with the addition of a reduction in the required number of parking spaces from 5.0 spaces to 4.0 spaces per 1,000 square feet of gross leasable floor area for NAICS code 444110 – Home Centers, plus an additional 2.0 parking spaces for each 1,000 square feet of the floor area designated as an outdoor garden center.

Accessible parking spaces shall be provided in quantities meeting or exceeding the minimum requirements of the Texas Accessibility Standards (TAS), plus one (1) additional accessible parking space for every one hundred fifty (150) standard parking spaces above the first one hundred and fifty parking spaces required by TAS, or fraction thereof. All accessible spaces shall comply with applicable TAS and ADA design, dimension, slope, and signage standards.

The City's Zoning Official shall determine the minimum number of parking spaces required for any use not specified. Appeals to the interpretation may be made to the Zoning Board of Adjustments within thirty (30) days of the date of the determination.

## **8. Sidewalks**

Sidewalks shall be installed per Sec. 62-113. – Sidewalks, of the City of Manvel Code of Ordinances. Any internal sidewalks must meet American Disability Act (ADA) and Texas Accessibility Standards (TAS). Sidewalks must be a minimum of five (5) feet wide and four and a half (4.5) inches thick with steel reinforcement, unless otherwise required in the City's approved Master Thoroughfare Plan.

## **9. Landscaping**

- a. Landscaping for the Manvel Crossing development will adhere to Sec. 77-44. - Tree preservation, landscaping, fencing and screening of the City of Manvel Code of Ordinances, in addition to the new standards below.
- b. Minimum 10% of site (excluding building footprint) must be landscaped. Minimum 5% of the site must be distributed as street, building, and parking lot landscaping. Specific tree and shrub spacing and screening requirements apply.
- c. Manvel Crossing shall design, construct, and install a detention and drainage system that incorporates landscaping, pedestrian trails, and other complementary amenities

- 
- with continuous connectivity to internal sidewalks and surrounding developments. These enhancements shall be integrated into the detention areas to improve connectivity, promote aesthetic quality, and create a welcoming and enjoyable environment for the community. The berms and areas with aesthetic improvements in these areas shall count toward the 10% landscaping requirement.
- d. Landscaping and/or decorative fences shall screen outside storage areas, loading docks, garbage collection bins and delivery entrances from adjacent property and public street right of way.
  - e. A ten (10) foot wide landscaping buffer will be provided between commercial and residential zoning districts.
  - f. Street Trees
    - i. A minimum of one (1) street tree is required for every thirty (30) feet of street frontage.
    - ii. No street tree shall be less than two and a half (2.5) inch caliper
  - g. Parking lot landscaping
    - i. In addition to the Street Trees noted above, a tree of minimum one and a half (1.5) inch caliper shall be provided within or adjacent to the parking area at tree islands that:
      - 1. Are at least nine (9) feet wide (back of curb to back of curb).
      - 2. Each have a square footage of minimum one-hundred eighty (180).
      - 3. Are located so that no parking space is further than one hundred feet (100) feet from a tree island.
    - ii. Shrub planting shall be placed along the perimeter of a parking lot in order to screen the parking lot. The shrubs shall be maintained at a maximum height of thirty-six (36) inches.
    - iii. At entrance and exits, shrubs shall be no higher than twelve (12) inches in height.
  - h. Trees Along Highway 6
    - i. Trees along Highway 6 will be staggered, with small and ornamental trees closest to Highway 6, and shade trees set back per distances listed below for a more natural look, as well as a precaution from unnecessary trimming near the power line.

1. Small and Ornamental Trees: May be planted up to ten (10) feet from any power lines and may constitute up to 60% of the trees planted on site.
  - a. Of small or ornamental trees, crape myrtles may constitute up to 30% of the trees planted.
2. Shade trees: May be planted up to twenty (20) feet from the powerline.
  - b. Evergreen trees shall constitute a minimum of 40% of trees planted.

See “Appendix 3” for a list of approved trees.

## 10. Signage

All signage must be composed of materials and colors compatible with the associated use and the overall development. See “Exhibit 6” for an example of multi-tenant signage (subject to change). LED front, side, or backlit signage is recommended within the development for all business types. The following regulations shall apply:

- a. General Signage Requirements
  - i. All signage shall be located at a minimum of ten (10) feet from the property line.
  - ii. All signage must be perpendicular to the right of way.
  - iii. Directional/informational signs within the Manvel Crossing project indicating the location of a business, street or facility within the project are permitted up to one (1) sign, four (4) feet in height and six (6) square feet in area per side.
  - iv. Temporary Signage: Temporary signage shall be subject to the regulations listed in Section 53-10 of the City of Manvel Code of Ordinances in effect January 16, 2024, as amended.
  - v. Prohibited Signage: Unless specifically permitted in the above regulations, all signage listed in 53-11 of the City of Manvel Code of Ordinances in effect January 16, 2024, is prohibited.
- b. *Multi-Tenant Monument/Pylon Signs* - A multi-tenant sign is defined as a freestanding sign with signage panels for multiple tenants within a single development.
  - i. Multi-tenant signs may be constructed up to forty (40) feet with a maximum width of twenty-five (25) feet.

- 
- ii. The bottom of such multi-tenant pylon sign message area shall not be less than ten (10) feet above the surrounding finished grade level.
  - iii. Each multi-tenant monument tenant sign may not exceed five (5) feet in height or fifty (50) square feet in area.
  - iv. In some instances, a multi-tenant sign may be considered off-premises if included within the Manvel Crossing development.
  - v. Two (2) total multi-tenant pylon signs are permitted along Highway 6 and one (1) along Kirby Drive.
- c. *Single-Tenant Monument* – A single-tenant sign is defined as a freestanding sign advertising a single use.
- i. Single-tenant signs may be constructed up to twelve (12) feet in height and sixty (60) square feet in area.
  - ii. One (1) single tenant monument sign is permitted for each platted or otherwise designated tract or parcel. If a parcel has frontage on two public roadways/highways, thoroughfares, one (1) monument sign is permitted on each street frontage.
  - iii. No single tenant monument sign shall be permitted within seventy-five (75) feet of any other single tenant monument sign or within ten (10) feet from side property lines.
- d. *Wall Mounted Signage* – A wall sign is defined as a sign anchored to a wall elevation of a business.
- i. Buildings thirty (30) feet or less in height.
    - Wall signs are limited to 15% of the elevation they are placed on not to exceed two hundred (200) square feet. All parts of the elevation are used in this calculation.
    - Maximum Letter Height – thirty-six (36) inches for one line of text, eighteen (18) inches for two (2) lines of text.
    - Maximum Overall Height – thirty-six (36) inches for one line of text, forty-two (42) inches for two (2) lines of text.
    - The signage face shall not exceed 80% of storefront width.

- 
- ii. Buildings over thirty (30) feet in height.
    - Wall signs are limited to 25% of the elevation they are placed on not to exceed four hundred (400) square feet. All parts of the elevation are used in this calculation.
    - For every additional six (6) feet in height over thirty (30) feet, an additional twelve (12) inches of letter height is permitted, up to a maximum overall height of seventy-two (72) inches.
    - The signage face shall not exceed 80% of the storefront width.
  - iii. No wall sign can extend above the parapet.
  - iv. For individual uses greater than 80,000 square feet in gross floor area, up to one hundred twenty (120) inches of letter height is permitted.
  - v. For buildings over 120,000 square feet of gross floor area, up to one-hundred thirty (130) inches in overall height is permitted.
  - vi. Wall mounted logos, symbols, and related branding shall not exceed one-hundred ninety-eight (198) inches in height.

## **11. Lighting**

LED lighting is recommended for all streetlights, path lights, and building illumination where possible and must comply with the Outdoor Lighting Standards and Regulations listed within the City of Manvel Ordinance No. 2024-O-36, as amended from time to time.

## **12. Design Criteria Manual**

The Project shall abide by the version of the City of Manvel Design Criteria Manual dated May 6, 2024 for a period of three (3) years, at which time it will abide by the most recently amended iteration.



# Exhibit 5 - Approximate Sign Locations

November 2025  
 0 50' 100' 200'  
 SCALE: 1"=200'  
 TRUE SCALE AT 11" x 17"



EHRA JOB NO.  
 231-085-00  
 No warranty or representation of intended use, design or proposed improvements are made herein. All Plans for land or facilities are subject to change without notice.



10011 MEADOWGLEN LANE  
 HOUSTON, TEXAS 77042  
 713.784.4500  
 WWW.EHRA.TEAM  
 TBPE NO. F-726  
 TBPLS NO. 10092300

25'0"

40'0"

MANVEL CROSSING

This sign elevation is conceptual in nature and subject to change.

# Exhibit 6 - Multi-Tenant Pylon Sign Elevation

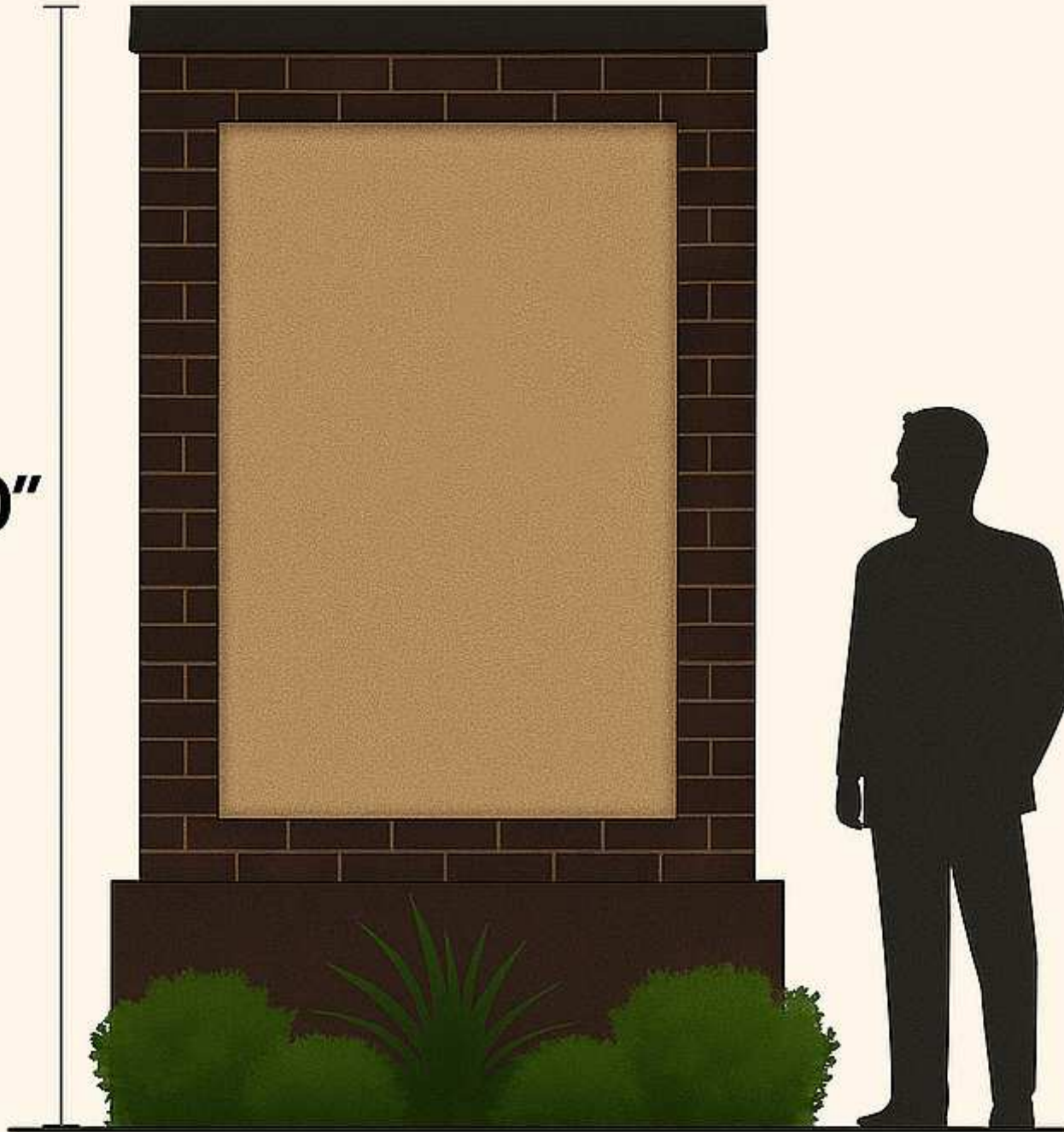
November, 2025

**EHRA**

ENGINEERING THE FUTURE  
SINCE 1936

10011 MEADOWGLEN LANE  
HOUSTON, TEXAS 77042  
713.784.4500  
WWW.EHRA.TEAM  
TBPE NO. F-726  
TBPLS NO. 10092300

12'0"



5'0"

This sign elevation is conceptual in nature and subject to change.

## Exhibit 7 - Manvel Crossing Single-Tenant Sign

November 2025

**EHRA**

ENGINEERS THE FUTURE  
SINCE 1936

10011 MEADOWGLEN LANE

HOUSTON, TEXAS 77042

713.784.4500

WWW.EHRA.TEAM

TBPE NO. F-726

TBPLS NO. 10092300



**BUILDING ELEVATION**

This sign elevation is conceptual in nature and subject to change.

# Exhibit 8 - Manvel Crossing Wall Sign

November 2025



EHRA JOB NO.  
231-085-00

No warranty or representation of intended use, design or proposed improvements are made herein. All Plans for land or facilities are subject to change without notice.



ENGINEERING THE FUTURE  
SINCE 1936

10011 MEADOWGLEN LANE  
HOUSTON, TEXAS 77042  
713.784.4500  
WWW.EHRA.TEAM  
TBPE NO. F-726  
TBPLS NO. 10092300

### 13. Definitions

*ADA (Americans with Disabilities Act)* - A U.S. civil rights law enacted in 1990 that prohibits discrimination against individuals with disabilities in public life, including employment, transportation, public accommodations, and communications. In construction and design, ADA sets accessibility standards for buildings, facilities, and signage (e.g., wheelchair ramps, tactile lettering, accessible restrooms).

*Architectural Feature* – an ornamentation or decorative feature attached to or protruding from the exterior wall of a building. Architectural features may include but are not limited to windows (e.g. bay windows), chimneys, columns, awnings, marquees, façade or facia.

*Architectural Metal Panels* - Decorative or functional exterior cladding made from aluminum, steel, or other metals used for modern aesthetics, durability, and weather resistance.

*Brick* - Rectangular blocks made from clay or shale, hardened by firing used for walls, pavements, and facades that are known for their strength, fire resistance, and classic appearance.

*Building* – a structure used for or supporting any use or occupancy that requires a building permit.

*Cementitious Fiber* - A building material made of cement reinforced with cellulose fibers that is commonly used for siding and panels, known for fire resistance, durability, and ability to mimic wood, stone, or stucco finishes

*Collector Street* – a public street designated as a “minor corridor” on the City’s Major Thoroughfare Plan.

*Commercial Mixed-use* – A tract of land, building, or structure developed for two or more different uses such as, but not limited to, office, retail, public, or entertainment. The mix of uses may occur either on the same tract of land, but compartmentalized into separate buildings, or located within the same building (e.g. retail on the first floor and office on the floors above the retail).

*Composite Wood-Look Cladding* - Exterior siding panels made from engineered materials (often resins, plastics, or wood fibers) that is designed to mimic the appearance of natural wood while offering durability, low maintenance, and resistance to rot or insects.

*Concrete* - A composite material made of cement, water, sand, and aggregates.

*Council* – Shall mean the City Council of the City of Manvel.

*Environmental Site Assessment (ESA)* - A study conducted to evaluate the environmental condition of a property.

*EIFS (Exterior Insulation and Finish System)* - A multi-layered exterior wall system that provides insulation and a finished surface that is lightweight and energy-efficient.

*Development Plan* - A detailed document or drawing that outlines how a piece of land will be used and built upon, that ensures that growth is orderly, sustainable, and aligned with community goals.

*Frontage* – Frontage shall mean that portion of any lot or tract that abuts a street or approved common area. A lot or tract abutting more than one (1) street shall have frontage on only one (1) street which shall be deemed to be the side having the shortest dimension unless otherwise indicated on the subdivision plat.

*Glass Block* - Hollow or solid blocks of glass used in walls or partitions.

*Gross Floor Area* - Gross floor area (GFA) shall be defined as the sum in square feet of all floors of the building measured from the exterior face of the exterior walls. The gross floor area shall include all enclosed habitable space, including elevators, hallways, and stairwells on stories containing habitable space.

*Hollow Clay Tile* - Clay-based masonry units with hollow cores that are lightweight compared to solid brick, with good thermal and sound insulation properties.

*Hotel Flag* – A hotel flag represents the hotel’s brand standards, marketing, and loyalty programs. For example, a property might be independently owned but operate under the flag of a certain company.

*Insulated Concrete Forms (ICFs)* - Hollow foam blocks or panels that are stacked to form walls, then filled with reinforced concrete.

*Landscaping* – Planting and related improvements for the purpose of beautifying and enhancing a portion of land and for the control of erosion and the reduction of glare, dust and noise. Rocks and/or gravel, by itself shall not constitute landscaping.

*LED Signage* – Any sign that uses light-emitting diodes (LEDs) as its illumination source. LED signage is energy efficient, durable, and low maintenance.

*Lot* – An undivided tract of land having frontage on a public or private street which is designated as a separate and distinct tract and identified by numerical identification on a duly and properly recorded subdivision plat.

*Major Thoroughfare Plan* - A long-range planning document that maps out the primary roadways and transportation corridors in a city or region.

*Monument Sign* - A low-profile, ground-mounted sign, often with a solid base made of masonry, stone, or concrete.

*Multi-Tenant Sign* - A sign that lists multiple businesses located within the same property or shopping center, often placed at entrances to plazas or office complexes.

*NAICS* - North American Industry Classification System (NAICS), which is a number code assigned by the NAICS Association to simplify the process of identifying what category a specific land use falls under.

*Parallel Access Easement* - A legal right granted to allow access across a property, typically running parallel to a major roadway.

*Parapet* - A low protective wall or barrier that extends above the edge of a roof, balcony, terrace, or bridge.

*Parkway* - A right-of-way with a total width of 120 feet, designed for higher traffic transportation.

*Pylon Sign* - A tall, freestanding sign supported by one or more poles.

*Project* – The approximately 49 acres of land which is the subject of this PUD, the legal description of which is contained in the appendix of this document.

*Retail* – Retail sales of any article, substance, or commodity within a building or structure.

*Sexually Oriented Businesses* - Establishments that provide adult entertainment or sell adult products, such as strip clubs, adult bookstores, or adult video stores.

*Shade Tree* - A shade tree is a tree planted or valued primarily for the shade it provides, rather than for fruit, beauty, or other purposes.

*Shrub* - A woody plant smaller than a tree, usually with multiple stems growing from the base.

*Single-Tenant Sign* - A sign identifying one business or tenant on a property.

*Small or Ornamental Tree* - a tree that is grown for its aesthetic appeal, such as attractive flowers, fall foliage, or unique bark, rather than for practical purposes like fruit or wood

*Stone* - Natural rock material used in construction for walls, facades, and landscaping.

*Subdivision* – The division of a lot, tract, or parcel of land into two or more lots, plats, sites or other divisions of land for the purpose of industrial, office, and business development or other uses.

*TAS (Texas Accessibility Standards)* - State-level accessibility requirements in Texas, aligned with the ADA that is Administered by the Texas Department of Licensing and Regulation (TDLR) and provides detailed technical specifications for accessible design in buildings and facilities within Texas.

*True Stucco* - A traditional plaster-like finish made from cement, lime, sand, and water applied in multiple coats directly to masonry or lath.

*Wall-Mounted Sign* - A sign attached directly to the exterior wall of a building.

## **IV. GENERAL ADMINISTRATION & AMENDMENTS**

### **A. Purpose**

This section establishes guidelines regarding the administration and future amendments to the PUD.

#### **i. Changes to the Zoning Ordinance**

The Development Regulations section of the PUD addresses only those areas that differ from the City of Manvel Zoning Ordinance. In the event that an issue, condition, or situation arises that is not specifically addressed in the PUD, the City of Manvel Zoning Ordinance in place at the time of the adoption of this document shall be used by the City's Zoning Official as the basis to resolve the issue.

#### **ii. Variances from the Zoning and Subdivision Ordinance**

The criteria established in this PUD require variances from the City of Manvel Subdivision Ordinance as amended on May 6, 2023. These variances are necessary to achieve the community vision established in the City's

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Comprehensive Plan. Table 2 describes the requested variances and their corresponding section of the subdivision ordinance. These variances shall apply to all property within the PUD. Should any additional variances be sought in the future, this document will be amended with City Council approval.

**B. Interpretation**

The City's Zoning Official shall be responsible for interpreting the provisions of the PUD. Appeals to the Zoning Official's interpretation may be made to the Zoning Board of Adjustments within thirty (30) days of the date of the interpretation. Appeals shall be heard by the Zoning Board of Adjustments a maximum of sixty (60) days after receipt by City staff.

**C. Appeal to the Zoning Board of Adjustments**

Appeals to the Zoning Official's interpretation may be made to the Zoning Board of Adjustments within thirty (30) days of the date of the interpretation. Appeals shall be heard by the Zoning Board of Adjustments a maximum of sixty (60) days after receipt by City staff.

The following categories shall be considered administrative changes, but are not limited to:

- The addition of new information to the PUD, including maps or text that does not change or affect any of the regulations or guidelines contained therein.
- Changes to the development infrastructure phasing and alignment, such as roads, drainage, water and sewer systems, excluding water and sewer plant locations.
- The determination that a use may be allowed which is not specifically listed as a permitted use, but may be determined to be analogous and/or accessory to a permitted use as determined by the City's PD&Z.

**D. Substantial Change**

The PUD may be substantially amended by the procedure outlined in the City of Manvel Zoning Ordinance, Section 7 of the City of Manvel Zoning Ordinance. Any scrivener's errors or typographical issues may be corrected administratively without requiring an amendment to this PUD.

**E. Fees**

All fees associated with the entitlement process shall be assessed as indicated by the City's adopted fee schedule that is in place at the time of Council approval, as amended from time to time. All fees shall be fair and reasonable.

**Table 2  
Zoning and Subdivision Variances**

Ordinance reference	Requirement	Proposed	Difference	Justification
Sec. 77-31. – Light-commercial (LC) district (c)	<p><i>Setbacks.</i></p> <p>(1) Minimum front yard setback is 25 feet.</p> <p>(2) Minimum rear yard setback is 10 feet.</p> <p>(3) Minimum side yard and corner side yard are 5 feet.</p>	<p><i>Minimum Setbacks:</i></p> <p><i>Along Major Roads:</i></p> <p>Front: 25 feet, Rear: 15 feet, Side: 15 feet</p> <p><i>Along collector or internal streets:</i></p> <p>Front: 10 feet, Side: 10 feet, Rear: 10 feet, Corner Side: 10 feet</p> <p><i>Adjacent to Residential and Undeveloped Land:</i></p> <p>Side: 10 feet, Rear: 10 feet</p> <p>Landscape buffer of 10 feet required between commercial and residential zoning districts.</p> <p>Architectural features may encroach into the setback area a maximum of 3 feet.</p>	<p>15-foot reduction for front setbacks along collector or internal streets</p> <p>5-foot reduction for side setbacks along collector or internal streets</p> <p>10-foot reduction for rear setbacks adjacent to commercial</p> <p>5-foot reduction for side setbacks adjacent to commercial</p>	<p>With the intended design of the site and pad placements, the setbacks will be reduced for adequate use of the property, as it is a larger site not fronting on Highway 6 directly.</p>
Sec. 77-31. – Light-commercial (LC) district (d)	<p><i>Maximum building height.</i> The maximum height of any building in the light commercial district may not exceed 60 feet measured from the finished grade to the highest point of the roof, not including ancillary structures such as chimneys.</p>	<p><i>Commercial Mixed use/Office/Medical:</i></p> <p>Maximum 150 feet</p> <p>Additional setback of 1 foot per 10 feet in height exceeding 60 feet in height.</p>	<p>90-foot increase in height specifically for Mixed use/Office/Medical</p>	<p>This type of use will likely incorporate several stories.</p>
Sec. 62-108. – Lots (a) (8)	<p><i>Any subdivision of land shall provide each lot with access to a public street as specified in the design criteria manual. The public street shall have a minimum width of 60 feet, or the proposed plat must dedicate the necessary additional rights-of-way to provide a minimum width of 30 feet from the centerline of the existing or original right-of-way.</i></p>	<p><i>Parcels without public road frontage may use recorded cross-access easements to meet access requirements</i></p>	<p>Cross-access easements for access to properties</p>	<p>This is a typical course of action for sites with multiple tenants along major highways</p>

<p><b>Sec. 77-36. State Highway 6 overlay (SH-6) district. (c)</b></p>	<p><i>Exterior building materials.</i>  <i>(1) All building façades must be constructed of a minimum of 90 percent masonry materials on all non-transparent portions of all exterior walls. The percentage of masonry materials is calculated on a per façade basis. Permitted masonry materials include:</i>  <i>a. Stone;</i>  <i>b. Brick;</i>  <i>c. Concrete;</i>  <i>d. Hollow clay tile;</i>  <i>e. Decorative concrete block or tile;</i>  <i>f. Glass block;</i>  <i>g. True stucco.</i>  <i>The use of any material that is not specified on the above permitted masonry materials list is prohibited.</i>  <i>(2) Up to the remaining ten percent of all exterior walls on non-transparent portions of the building may be constructed of materials not listed in the permitted masonry materials list but under no circumstances will the following prohibited materials be allowed:</i>  <i>a. Sheet metal material; coated, galvanized, or uncoated with a metal thickness less than one-quarter inch;</i>  <i>b. Smooth concrete masonry units (CMU) or block, painted or un-painted;</i>  <i>c. Exterior insulation finish systems (EIFS);</i>  <i>d. Plywood or oriented strand board (OSB).</i>  <i>(3) No more than 75 percent of any façade may consist of glass.</i></p>	<p>All commercial buildings must be composed of a <b>minimum of 75% on fronts and sides and 50% on rears and service facades</b> masonry, exclusive of windows, doors, or other transparent materials. The following materials shall meet the masonry requirement:</p> <ul style="list-style-type: none"> <li>• Stone</li> <li>• Brick</li> <li>• Concrete</li> <li>• Hollow clay tile</li> <li>• Glass block</li> <li>• True Stucco</li> <li>• Insulated Concrete Forms</li> </ul> <p>Non-masonry materials <b>may not exceed the remainder</b> of the building's elevation.  <b>Additional permitted non-masonry materials</b> (with proof of compliance to ICC and Texas Windstorm standards):</p> <ul style="list-style-type: none"> <li>• Cementitious fiber</li> <li>• EIFS</li> <li>• Architectural metal panels</li> </ul> <p><b>Nationally or regionally recognized chains</b> may use <b>company-specific materials</b> (e.g., metal roofing/siding, wood siding), which are <b>not typically allowed</b> under standard ordinance.</p>	<p>Insulated concrete forms added as approved, the addition of non-masonry materials approved for the remainder of the elevations utilizing cementitious fiber, EIFS, or architectural metal panels, nationally or regionally recognized chains may use company specific materials</p>	<p>This will allow the developer more freedom to build with more contrast in materials for different locations within the site</p>
<p><b>Sec. 77-45. – Parking. (a)</b></p>	<p>Use not listed in table</p>	<p>Reduce the required number of parking spaces from 5.0 spaces to 4.0 spaces per 1,000 square feet of gross leasable floor area for any building with 80,000 square feet or more, plus an additional 2.0 parking spaces for each 1,000 square feet of the floor area designated as an outdoor garden center</p>	<p>Reduced parking for store area with the addition of 2 spaces per 1,000 square feet for outdoor shopping</p>	<p>Reduced parking will lower the impervious coverage, and remove unneeded spaces for some uses</p>
<p><b>Sec. 77-52. – Open storage and display of items</b></p>	<p>Open storage of items not for sale and for sale is permitted when incidental to principal land use on the same property.</p>	<p>Open temporary or permanent storage is permitted within the parking lot for temporary seasonal sales or temporary promotional events. No permits are required for temporary storage. Buildings with 80,000 square feet of gross leasable floor area or more are permitted to use off-street parking spaces provided to comply with the City of Manvel's parking requirements for permanent, long-term or seasonal storage of inventory, equipment, vehicles, or other business-related property, not to exceed twelve percent (12%) of all parking spaces provided for that building.</p>	<p>Temporary or permanent outdoor sales can occur in the parking areas, and buildings of 80,000 square feet of GLA are permitted to use off-street parking for storage of various business related equipment, not exceeding 12% of the parking</p>	<p>This allows flexibility to the businesses to utilize a small portion of their parking lot for business purposes</p>

<p><b>Sec. 53-16. – Shopping center and integrated business developments (2)</b></p>	<p><i>Sign district B.</i></p> <p>a. Each shopping center or integrated business development is permitted one single or double-faced monument sign not exceeding 100 square feet in area plus an additional ten square feet for each business establishment located in such shopping center or integrated business development, or 150 square feet, whichever is less, and not exceeding 15 feet in height above the surrounding finished grade level. Additionally, each monument sign shall not exceed 22 feet in width.</p> <p>b. The location of a monument sign is subject to the approval of the sign administrator to ensure that such location does not create hazards to traffic or pedestrians; provided, however, all monument signs shall be located outside of the sight distance triangle corresponding to the nearest street intersection.</p> <p>c. An additional monument sign may be permitted for each shopping center or integrated business development that is on the corner of an intersection of two public streets. One sign shall face each adjacent street. Such additional sign shall not exceed 15 feet in height above the surrounding finished grade level. The total sign area of both signs combined shall not exceed 250 square feet.</p>	<p><i>Multi-Tenant Monument/Pylon Signs</i> - A multi-tenant sign is defined as a freestanding sign with signage panels for multiple tenants within a single development.</p> <p>Multi-tenant signs may be constructed up to fifty (40) feet when located on Highway 6.</p> <p>The bottom of such sign message area shall not be less than ten feet (10') feet above the surrounding finished grade level. Each tenant sign may not exceed five (5) feet in height or fifty (5) square feet in area.</p> <p>In some instances, a multi-tenant sign may be considered off-premises if included within the Manvel Crossing development.</p> <p>Two multi-tenant signs along Highway 6 and one along Kirby Dr allowed.</p>	<p>Increased height and area for multi-tenant monument signs, and to provide rear property tenants visibility from Highway 6.</p> <p>Number of signs: 2 on Highway 6, 1 on Kirby Drive.</p>	<p>These deviations are requested to provide more flexibility in placement and design of the multi-tenant signs.</p>
<p><b>Sec. 53-10. – Allowed Signs (b)(8)</b></p>	<p><i>(8) Wall signs. Each business establishment is allowed wall signage not exceeding the total square feet of the facade to which it is affixed:</i></p> <p><i>a. Fifteen percent of the business frontage or a maximum 200 square feet for the side with the principal entrance;</i></p> <p><i>Ten percent of the business frontage or a maximum 150 square feet for the side(s) fronting on a public street;</i></p> <p><i>c. Ten percent of the business frontage or a maximum 150 square feet for all other sides;</i></p> <p><i>d. Ten percent per side for canopies related to a business;</i></p> <p><i>e. A maximum of 32 square feet for freestanding menu boards in addition to wall signs; or</i></p> <p><i>Wall signage may not project above the lower edge of the roof line or parapet of a building.</i></p>	<p><i>Wall Mounted Signage</i> – A Wall sign is defined as a sign anchored to a wall elevation of a business.</p> <p>Wall signs are limited to 25% of the elevation they are placed on. All parts of the elevation are used in this calculation.</p> <p>No wall sign can extend above the parapet.</p> <p>For individual uses greater than 8,000 square feet in gross floor area, up to one hundred twenty inches (120") of letter height is permitted.</p> <p>For buildings over one 120,000 square feet of gross floor area Wall mounted signage lettering may not exceed one-hundred thirty inches (130") in overall height.</p> <p>Wall mounted logos, symbols, and related branding shall not exceed one-hundred ninety-eight inches (198") in height.</p>	<p>An increase in the allowable size of wall signs.</p>	<p>This request is similar to that of the neighboring development, and varying business sizes and locations may require larger signs for street visibility.</p>

**Appendix 1**  
**Metes & Bounds Description and Boundary Map**



# WINDROSE

LAND SURVEYING | PLATTING

## DESCRIPTION OF 34.28 ACRES OR 1,493,196 SQ. FT.

A TRACT OR PARCEL CONTAINING 34.28 ACRES OR 1,493,196 SQUARE FEET OF LAND SITUATED IN THE H. T. & B. RR. CO. SURVEY, SECTION 71, ABSTRACT NO. 291, BRAZORIA COUNTY, TEXAS, SAME BEING CALLED "PART ONE, TRACT ONE" OR 35.905 ACRES OF LAND DESCRIBED IN DEED TO TH PROPERTY, INC., RECORDED UNDER BRAZORIA COUNTY PLAT RECORDS (B.C.P.R.) NO. 2022037379, AND BRAZORIA COUNTY CLERK'S FILE (B.C.C.F.) NO. 2002056335, WITH SAID 34.28 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS, WITH ALL BEARINGS BASED ON THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE (NAD 83):

**BEGINNING**, AT BEGINNING AT A CAPPED 5/8 INCH IRON ROD STAMPED "BGE" FOUND MARKING THE SOUTH END OF A CUTBACK CORNER OF THE INTERSECTION OF THE NORTH RIGHT-OF-WAY (R.O.W.) LINE OF SAID STATE HIGHWAY NO. 6 (200' WIDE) AS RECORDED UNDER MAP OR PLAT NO. 2022037379, B.C.P.R. AND THE WEST R.O.W. LINE OF KIRBY DRIVE (120' WIDE) AS RECORDED UNDER MAP OR PLAT NO. 2022037379, B.C.P.R., SAME BEING THE MOST SOUTHERLY SOUTHEAST CORNER OF SAID 35.905 ACRE TRACT AND THE HEREIN DESCRIBED TRACT;

**THENCE**, NORTH 70 DEG. 28 MIN. 31 SEC. WEST, ALONG THE SOUTH LINE OF SAID 35.905 ACRES AND NORTH LINE OF SAID HWY NO. 6, A DISTANCE OF 1,248.34 FEET TO A 5/8 INCH IRON ROD FOUND ON THE SOUTHEAST CORNER OF A 40 FEET R.O.W. (UNIMPROVED), AS RECORDED UNDER MAP OR PLAT VOL. 2, PG. 81-82, B.P.C.R., AND THE SOUTHWEST CORNER OF SAID 35.905 ACRE TRACT AND THE HEREIN DESCRIBED TRACT;

**THENCE**, NORTH 03 DEG. 15 MIN. 50 SEC. WEST, ALONG THE EAST LINE OF SAID 40 FEET R.O.W. AND WEST LINE OF SAID 35.905 ACRE TRACT, A DISTANCE OF 927.47 FEET TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET ON THE EAST LINE OF SAID 40 FEET R.O.W. AND THE SOUTHWEST CORNER OF CALLED LOT 21 BEING A PART OF CALLED 201.0164 ACRE TRACT OF LAND DESCRIBED IN DEED TO NEW RODEO 288, LTD., AS RECORDED UNDER MAP OR PLAT VOL. 2, PG. 81. B.C.P.R. AND BRAZORIA COUNTY CLERK'S FILE (B.C.C.F.) NO. 2006043836., AND THE NORTHWEST CORNER OF SAID 35.905 ACRE TRACT AND THE HEREIN DESCRIBED TRACT;

**THENCE**, NORTH 86 DEG. 53 MIN. 57 SEC. EAST, ALONG THE SOUTH LINE OF SAID 201.0164 ACRE TRACT AND NORTH LINE OF SAID 35.905 ACRE TRACT, A DISTANCE OF 1,280.25 FEET TO A CORNER FOR THE SOUTHEAST CORNER OF CALLED LOT 29, BEING A PROTION OF SAID 201.0164 ACRE TRACT OF LAND AND ON THE WEST LINE OF CALLED 40 FEET R.O.W., AS RECORDED UNDER MAP OR PLAT VOL. 2, PG. 81-82 B.C.P.R. AND B.C.C.F. NO. 2019057985, AND B.C.C.F. NO. 2019057983, AND SAME BEING THE NORTHEAST CORNER OF SAID 35.905 ACRE AND OF THE HERIEN DESCRIBED TRACT FROM A 5/8 INCH IRON ROD BEARS SOUTH 16 DEG. 18 MIN. 34 SEC. WEST FOR A DISTANCE OF 0.366 FEET;

**THENCE**, SOUTH 03 DEG. 15 MIN. 50 SEC. EAST, ALONG THE WEST LINE OF SAID 40 FEET R.O.W. AND EAST LINE OF SAID 35.905 ACRE TRACT, A DISTANCE OF 681.87 FEET TO CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET ON THE WEST LINE OF SAID 40 FEET R.O.W., AND MARKING THE MOST NORTHEASTERLEY CORNER OF SAID KIRBY DRIVE AND THE MOST EASTERLY CORNER OF SAID 35.905 ACER TRACT AND THE HEREIN DESCRIBED TRACT;

**THENCE**, SOUTH 86 DEG. 39 MIN. 32 SEC. WEST, ALONG THE COMMON LINE OF SAID KIRBY DRIVE AND SAID 35.905 ACRE TRACT, A DISTANCE OF 36.57 FEET TO A CAPPED 5/8 INCH IRON ROD STAMPED "BGE INC." FOR THE NORTHWEST CORNER OF SAID KIRBY DRIVE AND THE EAST CORNER OF SAID 35.905 ACRE TRACT, AND THE HEREIN DESCRIBED TRACT;

**THENCE**, SOUTH 03 DEG. 20 MIN. 28 SEC. EAST, ALONG THE WEST R.O.W. LINE OF SAID KIRBY DRIVE AND THE EAST LINE OF SAID 35.905 ACRE TRACT, A DISTANCE OF 499.85 FEET, TO A POINT STARTING A NONTANGENT CURVE TO THE RIGHT FROM WHICH A FOUND 5/8 INCH IRON ROD BEARS SOUTH 46 DEG. 58 MIN. 53 SEC. WEST FOR A DISTANCE OF 0.267 FEET;

**THENCE**, CONTIUNING ALONG THE COMMON LINE OF SAID KIRBY DRIVE AND SAID 35.905 ACRE TRACT, WITH A CURVE TO THE RIGHT, HAVING A RADIUS OF 270.05 FEET, A CENTRAL ANGLE OF 22 DEG. 51 MIN. 57 SEC., AN ARC LENGTH OF 107.77 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 08 DEG. 05 MIN. 31 SEC. WEST, - 107.06 FEET TO A FOUND 5/8 INCH IRON ROD ON THE SAME SAID COMMON LINE OF SAID KIRBY DRIVE AND SAID 35.905 ACRE TRACT AND THE HEREIN DESCRIBED TRACT;

**THENCE**, SOUTH 19 DEG. 31 MIN. 29 SEC. WEST, CONTINUING ALONG THE COMMON LINE OF SAID KIRBY DRIVE AND SAID 35.905 ACRE TRACT, A DISTANCE OF 119.23 FEET TO A 5/8 INCH IRON ROD FOUND MARKING THE NORTH END OF A CUT BACK CORNER OF THE INTERSECTION OF THE WEST R.O.W. LINE OF SAID KIRBY DRIVE AND THE NORTH R.O.W. LINE OF SAID HWY 6, SAME BEING THE MOST SOUTHEASTERLY CORNER OF SAID 35.905 ACRE TRACT AND THE HEREIN DESCRIBED TRACT;

**THENCE**, SOUTH 64 DEG. 31 MIN. 29 SEC. WEST, ALONG THE SAME SAID CUTBACK LINE OF THE INTERSECTION OF SAID HWY 6 AND SAID KIRBY DRIVE, A DISTANCE OF 28.29 FEET THE **POINT OF BEGINNING** AND CONTAINING 34.28 ACRES OR 1,493,196 SQUARE FEET OF LAND, AS SHOWN ON JOB NO. 59121-BND, PREPARED BY WINDROSE.

\_\_\_\_\_  
LUCAS G. DAVIS  
R.P.L.S. NO. 6599  
STATE OF TEXAS  
FIRM REGISTRATION NO. 10108800

\_\_\_\_\_  
10-31-2023  
DATE:



# WINDROSE

LAND SURVEYING | PLATTING

## DESCRIPTION OF 11.3999 ACRES OR 496,581 SQ. FT.

A TRACT OR PARCEL CONTAINING 11.399 ACRES OR 496.581 SQUARE FEET OF LAND SITUATED IN THE H. T. & B. RR.CO. SURVEY, SECTION 71, ABSTRACT NO. 291, BRAZORIA COUNTY, TEXAS, SAME BEING CALLED "PART TWO OF TRACT FOUR" 11.395 ACRES OF LAND DESCRIBED IN DEED TO TH PROPERTY, INC., RECORDED UNDER BRAZORIA COUNTY PLAT RECORDS (B.C.P.R.) NO. 2022037379, AND BRAZORIA COUNTY CLERK'S FILE (B.C.C.F.) NO. 2002056335, WITH SAID 11.3999 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS, WITH ALL BEARINGS BASED ON THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE (NAD 83):

**COMMENCING**, AT BEGINNING AT A CAPPED 5/8 INCH IRON ROD STAMPED "BGE" FOUND MARKING THE SOUTH END OF A CUTBACK CORNER OF THE INTERSECTION OF THE NORTH RIGHT-OF-WAY (R.O.W.) LINE OF STATE HIGHWAY NO. 6 (200' WIDE) AS RECORDED UNDER PLAT NO. 2022037379, (B.C.P.R.) AND THE WEST R.O.W. LINE OF KIRBY DRIVE (120' WIDE) AS RECORDED UNDER PLAT NO. 2022037379, (B.C.P.R.), SAME BEING THE MOST SOUTHERLY SOUTHEAST CORNER OF CALLED 35.905 ACRES OF LAND DESCRIBED IN DEED TO TH PROPERTY, INC. AS RECORDED UNDER MAP OR PLAT NO. 2022037379 AND B.C.C.F. NO. 2002056335,;

**THENCE**, NORTH 70 DEG. 28 MIN. 31 SEC. WEST, ALONG THE NORTH R.O.W. LINE OF SAID HWY 6 PASSING A FOUND 5/8 INCH IRON ROD FOR A DISTANCE OF 1248.34 FEET MARKING THE SOUTHEAST CORNER OF A 40 FEET R.O.W. (UNIMPROVED) RECORDED UNDER A MAP OR PLAT VOL.2, PG. 81-82, B.C.P.R., AND THE SOUTHWEST CORNER OF SAID 35.905 ACRE TRACT, TO A FOUND 5/8 INCH IRON ROD FOR A TOTAL DISTANCE OF 1291.68 FEET MARKING THE SOUTHWEST CORNER OF SAID 40 FEET R.O.W. AND THE SOUTHEAST CORNER OF SAID 11.395 ACRE TRACT SAME BEING THE **POINT OF BEGINNING** OF THE HEREIN DESCRIBED TRACT;

**THENCE**, NORTH 70 DEG. 28 MIN. 31 SEC. WEST, CONTIUNG ALONG THE NORTH R.O.W. LINE OF SAID HWY 6 AND THE SOUTH LINE OF SAID 11.395 ACRE TRACT, A DISTANCE OF 692.21 FEET TO A FOUND 5/8 INCH IRON ROD MARKING THE SOUTHEAST CORNER OF CALLED LOT 6 AND LOT 7, 8.28689 ACRES OF LAND DESCRIBED IN DEED TO JERRY A. ARGOVITZ, AS RECORDED UNDER MAP OR PLAT VOL. 2, PG. 81, B.C.P.R. AND VOL. 1151, PG. 839 OF B.C.C.F., AND THE SOUTHWEST CORNER OF SAID 11.395 ACRES AND THE HEREIN DESCRIBED TRACT;

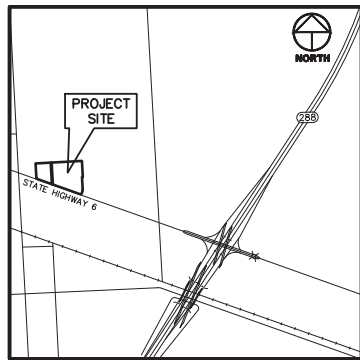
**THENCE**, NORTH 03 DEG. 21 MIN. 05 SEC. WEST, ALONG THE COMMON LINE OF SAID LOT 6 AND LOT 7 AND SAID 11.395 ACRE TRACT, FOR A DISTANCE OF 644.48 FEET TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET FOR THE SOUTHEAST CORNER OF CALLED LOT 5 BEING A PART OF CALLED 201.0164 ACRES OF LAND DESCRIBED IN DEED TO NEW RODEO 288, LTD., AS RECORDED UNDER MAP OR PLAT THEREOF VOL. 2, PG. 81, B.C.P.R. AND B.C.C.F. NO. 2005039031, AND VOL. 1181, PG. 884 OF B.C.C.F., AND THE SOUTHWEST CORNER OF CALLED LOT 13 OR CALLED 10.30 ACRES OF LAND DESCRIBED IN DEED TO J.W. WINZELLER AND LESLIE R. WINZELLER AS RECORDED UNDER MAP OR PLAT THEREOF VOL. 2, PG. 81-82, B.C.P.R. AND B.C.C.F. NO. 200539091 AND SAME BEING THE NORTHWEST CORNER OF SAID 11.395 ACRE TRACT AND THE HEREIN DESCRIBED TRACT;

**THENCE**, NORTH 86 DEG. 53 MIN. 57 SEC. EAST, ALONG THE COMMON LINE OF SAID LOT 13 AND 11.395 ACRE TRACT, A DISTANCE OF 639.16 FEET TO A CORNER ON THE WEST R.O.W. LINE OF SAID 40 FEET AND THE SOUTHEAST CORNER OF SAID LOT 13 AND THE NORTHEAST CORNER OF SAID 11.395 ACRE TRACT AND THE HEREIN DESCRIBED TRACT FROM WHICH FOUND 5/8 INCH IRON ROD BEARS SOUTH 16 DEG. 54 MIN. 59 SEC. WEST, FOR A DISTANCE OF .304 FEET;

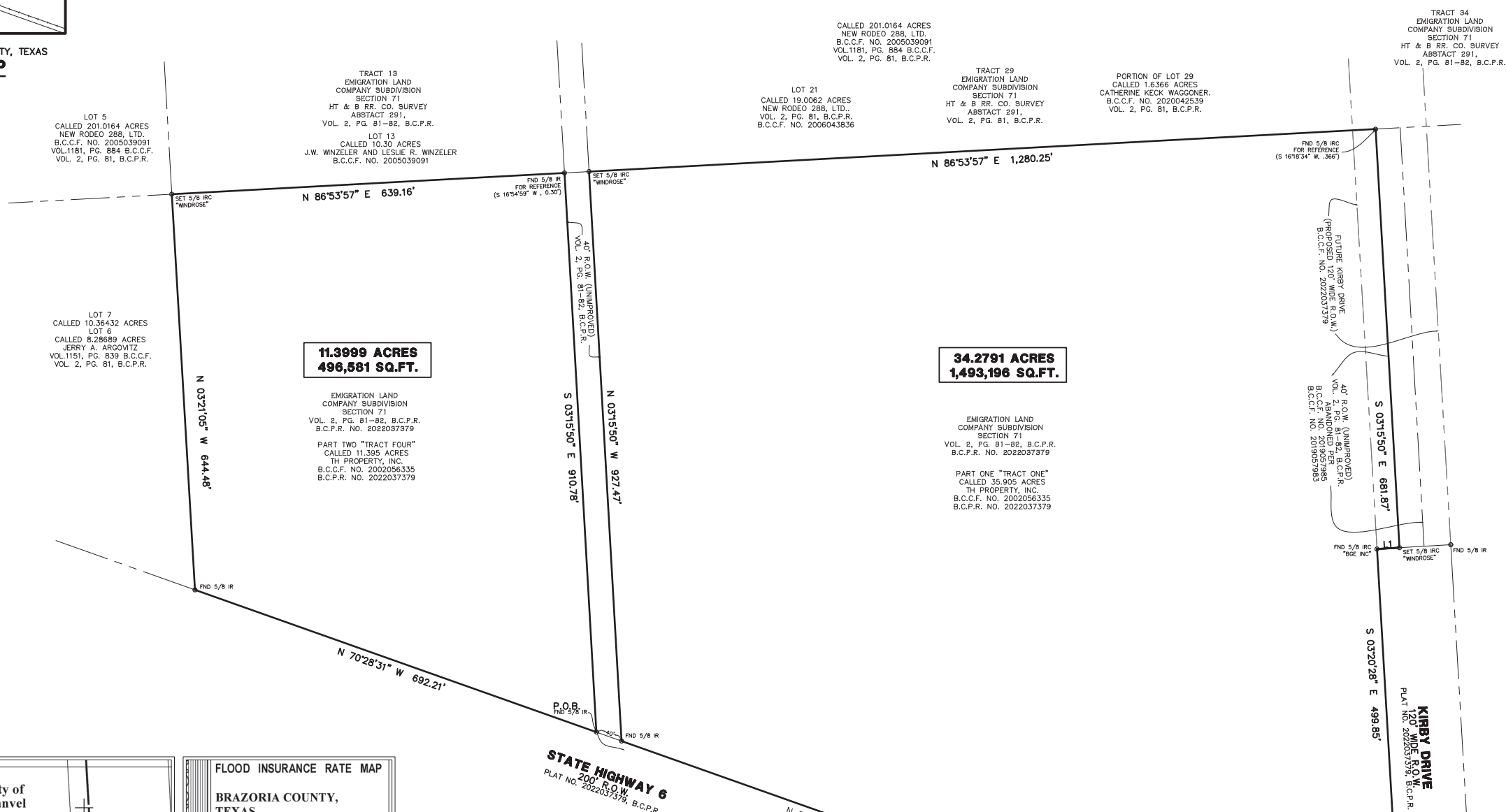
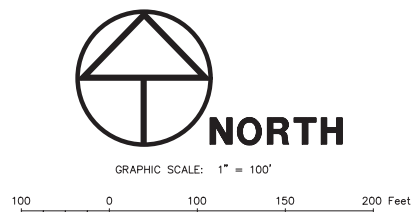
**THENCE**, SOUTH 03 DEG. 15 MIN. 50 SEC. EAST, ALONG THE WEST R.O.W. LINE OF SAID 40 FEET AND THE EAST LINE OF SAID 11.395 ACRE TRACT, A DISTANCE OF 910.78 FEET TO THE **POINT OF BEGINNING** AND CONTAINING 11.3999 ACRES OR 496,581 SQUARE FEET OF LAND, AS SHOWN ON JOB NO. 59121-BND, PREPARED BY WINDROSE.

\_\_\_\_\_  
LUCAS G. DAVIS  
R.P.L.S. NO. 6599  
STATE OF TEXAS  
FIRM REGISTRATION NO. 10108800

\_\_\_\_\_  
10-31-2023  
DATE:



CITY OF MANVEL, BRAZORIA COUNTY, TEXAS  
**VICINITY MAP**  
 SCALE: 1" = 2000'



**BENCHMARK PUBLISHED ELEVATION - 59.14'**  
 PROJECT BENCHMARK IS BRAZORIA COUNTY DRAINAGE DISTRICT NO. 4 BENCHMARK NO. CR58-1, BEING A BRASS DISK STAMPED "CR58-1" FOUND ON A CONCRETE HEADWALL AT THE INTERSECTION OF OUTFALL "A" AND THE NORTH SIDE OF COUNTY ROAD 58, NEAR CR58 WEST DETENTION. ELEVATION - NAVD88, 2001 ADJUSTMENT.

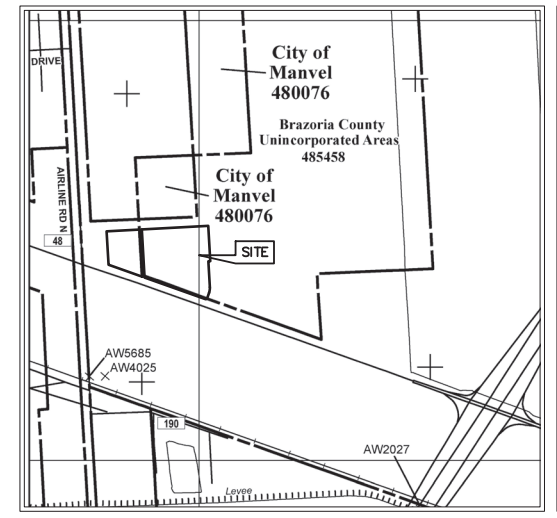
**TEMPORARY BENCHMARK "A" ELEVATION - 54.64'**  
 TEMPORARY BENCHMARK "A" IS A BOX CUT ON THE CONCRETE FRAME OF AN ELECTRIC PULL BOX LOCATED ON THE NORTH SIDE OF STATE HIGHWAY 6, APPROXIMATELY 1325 WEST OF ITS INTERSECTION WITH KIRBY DRIVE, AND ABOUT 42 FEET WEST OF THE CENTER OF AN ACCESS DRIVE.

**TEMPORARY BENCHMARK "B" ELEVATION - 56.68'**  
 TEMPORARY BENCHMARK "B" IS A BOX CUT ON A TYPE "C" STORM CURB INLET LOCATED ON THE NORTH SIDE OF STATE HIGHWAY 6, AT ITS INTERSECTION WITH KIRBY DRIVE AND ON THE EAST SIDE OF KIRBY DRIVE, APPROXIMATELY 27 FEET NORTHWEST OF A TRAFFIC SIGNAL POLE.

LINE TABLE				
LINE	BEARING	DISTANCE		
L1	S 86°39'32" W	36.57'		
L2	S 64°31'29" W	28.29'		

CURVE CHART					
CURVE	RADIUS	DELTA	LENGTH	BEARING	CHORD
C1	270.05'	22°51'57"	107.77'	S 08°05'31" W	107.06'



**FLOOD INSURANCE RATE MAP**  
 BRAZORIA COUNTY, TEXAS  
 AND INCORPORATED AREAS  
 PANEL 110 OF 925  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALVIN, CITY OF	485451	0110	K
BRAZORIA COUNTY	485668	0110	K
IOWA COLONY, CITY OF	481071	0110	K
MANVEL, CITY OF	480076	0110	K
PEARLAND, CITY OF	480077	0110	K

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
 48039C0110K  
**MAP REVISED**  
 DECEMBER 30, 2020

**SURVEYOR'S CERTIFICATION**  
 TO: FIDELITY NATIONAL TITLE INSURANCE COMPANY  
 MEMORIAL ACQUISITIONS, LLC.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6a, 7c, 7d, 7e, 8, 9, 11b, 15, 14, 16, 17, 18, AND 19 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON OCTOBER 20, 2023.

*Lucas G. Davis*  
 LUCAS G. DAVIS  
 Registered Professional Land Surveyor  
 Texas Registration No. 6599

10/30/2023

**WINDROSE**  
 LAND SURVEYING & PLATTING  
 5353 W SAM HOUSTON PKWY N, STE 150 | HOUSTON, TX 77041 | 713.458.2281  
 FIRM REGISTRATION NO. 10108800 | WINDROSESERVICES.COM

ALTA/NSPS LAND TITLE & TOPOGRAPHIC SURVEY  
 34.2791 ACRES OR 1,493,196 SQ. FT.  
 11.3999 ACRES OR 496,581 SQ. FT.  
 SITUATED IN THE  
 H. T. & B. RR. CO. SURVEY, SECTION 71  
 ABSTRACT NO. 291  
 BRAZORIA COUNTY, TEXAS

FIELD BY: RP    CHECKED BY: CL    JOB NO. 59121  
 DRAWN BY: AO    DATE: OCTOBER 2023    SHEET NO. 1 OF 10



**WINDROSE**  
LAND SURVEYING | PLATTING

(PRELIMINARY)

**DESCRIPTION OF  
1.649 ACRES OR 71,831 SQ. FT.**

BEING A TRACT OR PARCEL CONTAINING 1.649 ACRES OR 71,831 SQUARE FEET OF LAND, SITUATED IN THE H.T. & B. RR. CO. SURVEY, SECTION 71, ABSTRACT NO. 291, BRAZORIA COUNTY, TEXAS, BEING PART OF AND OUT OF LOT 29 OF EMIGRATION LAND COMPANY SUBDIVISION COMPANY SUBDIVISION, ACCORDING TO THE MAP OR PLAT THEREOF RECORDED UNDER VOLUME 2, PAGES 81-82 OF THE BRAZORIA COUNTY PLAT RECORDS (B.C.P.R.), AND BEING ALL OF A CALLED 1.6366 ACRE TRACT OF LAND DESCRIBED IN DEED TO CATHERINE KECK WAGGONER AS RECORDED UNDER BRAZORIA COUNTY CLERK'S FILE (B.C.C.F.) NO. 2020042539, WITH SAID 1.649 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

**COMMENCING** AT A 5/8 INCH IRON ROD STAMPED "BGE" FOUND IN THE WEST LINE OF RESTRICTED RESERVE "A", BLOCK 1 OF MANVEL TOWN CENTER DETENTION PONDS AND MUD FACILITIES, ACCORDING TO THE MAP OR PLAT THEREOF RECORDED UNDER PLAT NO. 2023010263, B.C.P.R., SAME BEING THE MOST NORTHERLY NORTHEAST CORNER OF UNRESTRICTED RESERVE "B", BLOCK 1 OF MANVEL TOWN CENTER SECTION ONE, ACCORDING TO THE MAP OR PLAT THEREOF RECORDED UNDER PLAT NO. 2022042761, B.C.P.R., AND SAME BEING THE SOUTHEAST CORNER OF LOT 40 OF SAID EMIGRATION LAND COMPANY SUBDIVISION AND THE SOUTHEAST CORNER OF A CALLED 52.788 ACRE TRACT OF LAND (TRACT 3) DESCRIBED TO KL LB BUY 5 LLC AS RECORDED UNDER B.C.C.F. NO. 2024046753, FROM WHICH A CAPPED 5/8 INCH IRON ROD STAMPED "BGE" FOUND FOR THE SOUTHWEST CORNER OF SAID RESTRICTED RESERVE "A", SAME BEING AN INTERIOR CORNER OF SAID UNRESTRICTED RESERVE "B" BEARS FOR REFERENCE, SOUTH 03 DEG. 20 MIN. 28 SEC. EAST - 64.88 FEET;

**THENCE**, NORTH 03 DEG. 26 MIN. 07 SEC. WEST, ALONG THE WEST LINE OF SAID RESTRICTED RESERVE "A", SAME BEING THE EAST LINE OF SAID LOT 40, A DISTANCE OF 676.26 FEET TO THE SOUTHEAST CORNER OF LOT 39 OF SAID EMIGRATION LAND COMPANY SUBDIVISION;

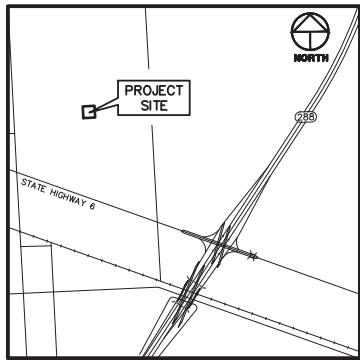
**THENCE**, SOUTH 86 DEG. 53 MIN. 57 SEC. WEST, ALONG THE COMMON LINE OF SAID LOTS 39 AND 40, AND WITH THE COMMON LINE OF LOTS 34 AND 35 OF SAID EMIGRATION LAND COMPANY SUBDIVISION, A DISTANCE OF 1,361.44 FEET TO THE COMMON EAST CORNER OF LOTS 29 AND 30 OF SAID EMIGRATION LAND COMPANY SUBDIVISION, SAME BEING THE SOUTHEAST CORNER OF SAID 1.6366 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT AND THE **POINT OF BEGINNING**;

**THENCE**, SOUTH 86 DEG. 53 MIN. 57 SEC. WEST, CONTINUING ALONG THE COMMON LINE OF SAID LOTS 29 AND 30 AND WITH THE SOUTH LINE OF SAID 1.6366 ACRE TRACT, A DISTANCE OF 269.03 FEET TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET MARKING THE SOUTHWEST CORNER OF SAID 1.6366 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT;

**THENCE**, NORTH 03 DEG. 15 MIN. 50 SEC. WEST, OVER AND ACROSS SAID LOT 29 AND WITH THE WEST LINE OF SAID 1.6366 ACRE TRACT, A DISTANCE OF 267.00 FEET TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET FOR THE NORTHWEST CORNER OF SAID 1.6366 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT;

**THENCE**, NORTH 86 DEG. 53 MIN. 57 SEC. EAST, CONTINUING OVER AND ACROSS SAID LOT 39 AND WITH THE NORTH LINE OF SAID 1.6366 ACRE TRACT, A DISTANCE OF 269.03 FEET TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET ON THE WEST LINE OF A CALLED 40' WIDE R.O.W. (UNIMPROVED) AS RECORDED UNDER VOLUME 2, PAGES. 81-82, B.C.P.R., SAME BEING THE NORTHEAST CORNER OF SAID 1.6366 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT;

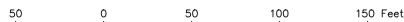
**THENCE**, SOUTH 03 DEG. 15 MIN. 50 SEC. EAST, WITH THE COMMON LINE OF SAID 40' R.O.W. AND SAID 1.6366 ACRE TRACT, A DISTANCE OF 267.00 FEET TO THE **POINT OF BEGINNING**, AND CONTAINING 1.649 ACRES OR 71,831 SQUARE FEET OF LAND, MORE OR LESS, AS SHOWN ON JOB NO. 59121-1.6AC, PREPARED BY WINDROSE, WITH ALL BEARINGS BASED ON THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE (4204).



CITY OF MANVEL, BRAZORIA COUNTY, TEXAS  
**VICINITY MAP**  
SCALE: 1" = 2000'



GRAPHIC SCALE: 1" = 50'



**SCHEDULE 'B' NOTES**

10h. A PIPELINE EASEMENT GRANTED TO TRUNKLINE GAS COMPANY, BY INSTRUMENT RECORDED IN VOLUME 747, PAGE 283, B.C.C.F., AS AFFECTED BY ASSIGNMENT AND ASSUMPTION FILED OF RECORD UNDER B.C.C.F. NOS. 98 028304 AND 98 028307. (NOT WITHIN SUBJECT TRACT.)

INVESTIGATION INTO OIL, GAS, & MINERAL LEASES OR RIGHTS IS BEYOND THE SCOPE OF THIS SURVEY.

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S 03°20'28" E	64.88'
L2	S 86°53'57" W	40.00'

**DESCRIPTION**

BEING A TRACT OR PARCEL CONTAINING 1.649 ACRES OR 71,831 SQUARE FEET OF LAND, SITUATED IN THE H.T. & B. RR. CO. SURVEY, SECTION 71, ABSTRACT NO. 291 BRAZORIA COUNTY, TEXAS, BEING PART OF AND OUT OF LOT 29 OF EMIGRATION LAND COMPANY SUBDIVISION COMPANY SUBDIVISION, ACCORDING TO THE MAP OR PLAT THEREOF RECORDED UNDER VOLUME 2, PAGES 81-82 OF THE BRAZORIA COUNTY PLAT RECORDS (B.C.P.R.), AND BEING ALL OF A CALLED 1.6366 ACRE TRACT OF LAND DESCRIBED IN DEED TO CATHERINE KECK WAGGONER AS RECORDED UNDER BRAZORIA COUNTY CLERK'S FILE (B.C.C.F.) NO. 2020042539, WITH SAID 1.649 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A 5/8 INCH IRON ROD STAMPED "BGE" FOUND IN THE WEST LINE OF RESTRICTED RESERVE "A", BLOCK 1 OF MANVEL TOWN CENTER DETENTION PONDS AND MUD FACILITIES, ACCORDING TO THE MAP OR PLAT THEREOF RECORDED UNDER PLAT NO. 2023010263, B.C.P.R., SAME BEING THE MOST NORTHERLY NORTHEAST CORNER OF UNRESTRICTED RESERVE "B", BLOCK 1 OF MANVEL TOWN CENTER SECTION ONE, ACCORDING TO THE MAP OR PLAT THEREOF RECORDED UNDER PLAT NO. 2022042761, B.C.P.R., AND SAME BEING THE SOUTHWEST CORNER OF LOT 40 OF SAID EMIGRATION LAND COMPANY SUBDIVISION AND THE SOUTHWEST CORNER OF A CALLED 52.788 ACRE TRACT OF LAND (TRACT 3) DESCRIBED TO KL LB BUY 5 LLC AS RECORDED UNDER B.C.C.F. NO. 2024046753, FROM WHICH A CAPPED 5/8 INCH IRON ROD STAMPED "BGE" FOUND FOR THE SOUTHWEST CORNER OF SAID RESTRICTED RESERVE "A", SAME BEING AN INTERIOR CORNER OF SAID UNRESTRICTED RESERVE "B" BEARS FOR REFERENCE, SOUTH 03 DEG. 20 MIN. 28 SEC. EAST - 64.88 FEET;

THENCE, NORTH 03 DEG. 28 MIN. 07 SEC. WEST, ALONG THE WEST LINE OF SAID RESTRICTED RESERVE "A", SAME BEING THE EAST LINE OF SAID LOT 40, A DISTANCE OF 676.26 FEET TO THE SOUTHWEST CORNER OF LOT 39 OF SAID EMIGRATION LAND COMPANY SUBDIVISION;

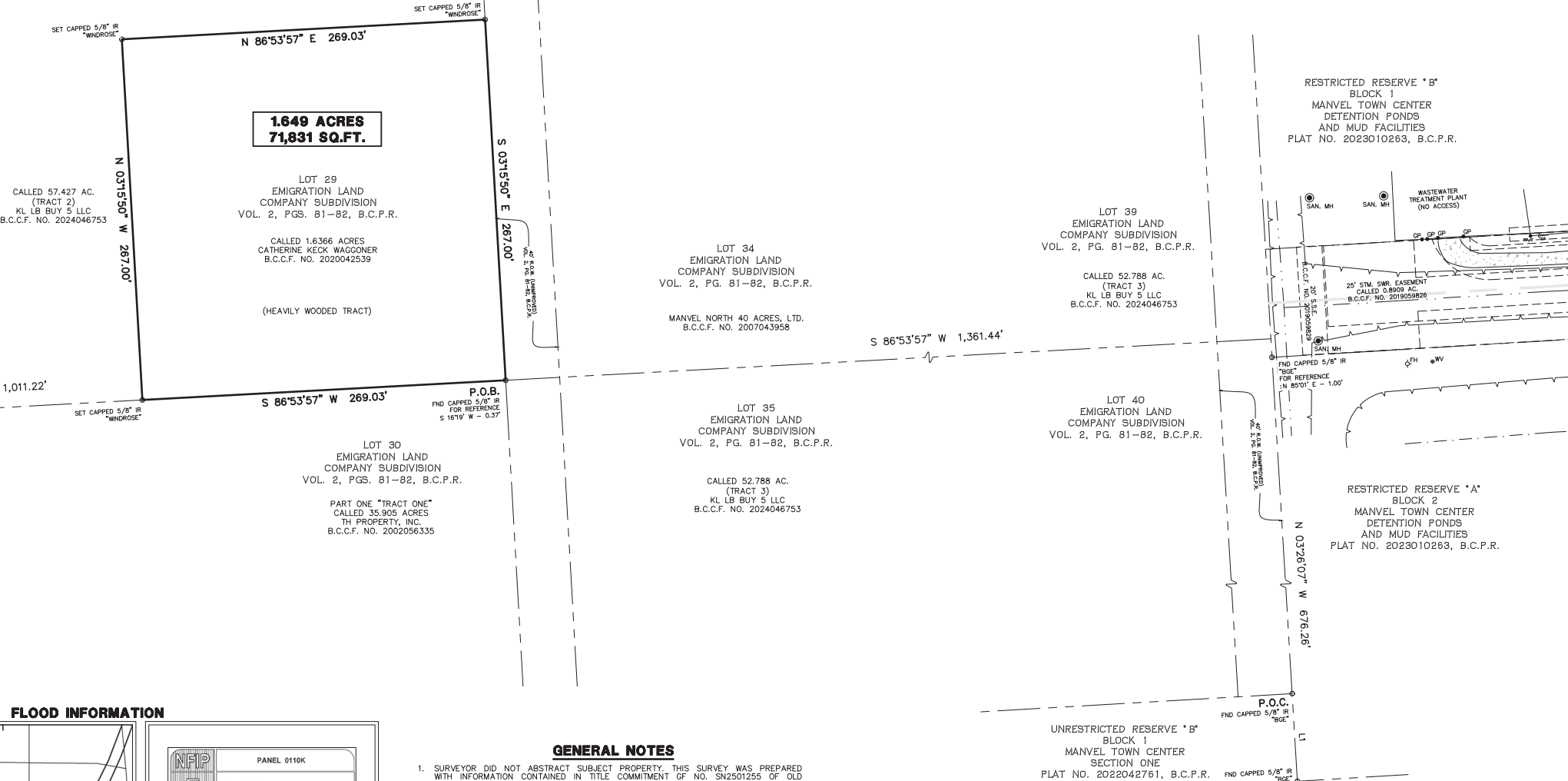
THENCE, SOUTH 86 DEG. 53 MIN. 57 SEC. WEST, ALONG THE COMMON LINE OF SAID LOTS 39 AND 40 AND WITH THE COMMON LINE OF LOTS 34 AND 35 OF SAID EMIGRATION LAND COMPANY SUBDIVISION, A DISTANCE OF 1,361.44 FEET TO THE COMMON EAST CORNER OF LOTS 29 AND 30 OF SAID EMIGRATION LAND COMPANY SUBDIVISION, SAME BEING THE SOUTHWEST CORNER OF SAID 1.6366 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT AND THE POINT OF BEGINNING;

THENCE, SOUTH 86 DEG. 53 MIN. 57 SEC. WEST, CONTINUING ALONG THE COMMON LINE OF SAID LOTS 29 AND 30 AND WITH THE SOUTH LINE OF SAID 1.6366 ACRE TRACT, A DISTANCE OF 269.03 FEET TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET MARKING THE SOUTHWEST CORNER OF SAID 1.6366 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT;

THENCE, NORTH 03 DEG. 15 MIN. 50 SEC. WEST, OVER AND ACROSS SAID LOT 29 AND WITH THE WEST LINE OF SAID 1.6366 ACRE TRACT, A DISTANCE OF 267.00 FEET TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET FOR THE NORTHWEST CORNER OF SAID 1.6366 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT;

THENCE, NORTH 86 DEG. 53 MIN. 57 SEC. EAST, CONTINUING OVER AND ACROSS SAID LOT 39 AND WITH THE NORTH LINE OF SAID 1.6366 ACRE TRACT, A DISTANCE OF 269.03 FEET TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET ON THE WEST LINE OF A CALLED 40' WIDE R.O.W. (UNIMPROVED) AS RECORDED UNDER VOLUME 2, PAGES 81-82, B.C.P.R., SAME BEING THE NORTHEAST CORNER OF SAID 1.6366 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT;

THENCE, SOUTH 03 DEG. 15 MIN. 50 SEC. EAST, WITH THE COMMON LINE OF SAID 40' R.O.W. AND SAID 1.6366 ACRE TRACT, A DISTANCE OF 267.00 FEET TO THE POINT OF BEGINNING, AND CONTAINING 1.649 ACRES OR 71,831 SQUARE FEET OF LAND, MORE OR LESS, AS SHOWN ON JOB NO. 59121-1.6AC. PREPARED BY WINDROSE, WITH ALL BEARINGS BASED ON THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE (4204).



**SURVEYOR'S CERTIFICATION**

TO: BCS ACQUISITIONS, LLC  
OLD REPUBLIC NATIONAL TITLE INSURANCE COPMANY

I DO HEREBY CERTIFY TO THE ABOVE LISTED THAT THIS SURVEY WAS THIS DAY MADE ON THE GROUND AND WAS PERFORMED UNDER MY SUPERVISION. THAT THIS PLAT CORRECTLY REPRESENTS THE PROPERTY LEGALLY DESCRIBED HEREON. THAT THE FACTS FOUND AT THE TIME OF THIS SURVEY SHOW THE IMPROVEMENTS AND THAT THERE ARE NO VISIBLE ENCROACHMENTS APPARENT ON THE GROUND, EXCEPT AS SHOWN. THIS SURVEY SUBSTANTIALLY CONFORMS TO THE CURRENT TEXAS SOCIETY OF PROFESSIONAL SURVEYORS STANDARDS AND SPECIFICATIONS FOR A CATEGORY 1A, CONDITION II SURVEY, TO THE BEST OF MY KNOWLEDGE.

**FOR REVIEW ONLY  
PRELIMINARY**

THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT 10-31-2025

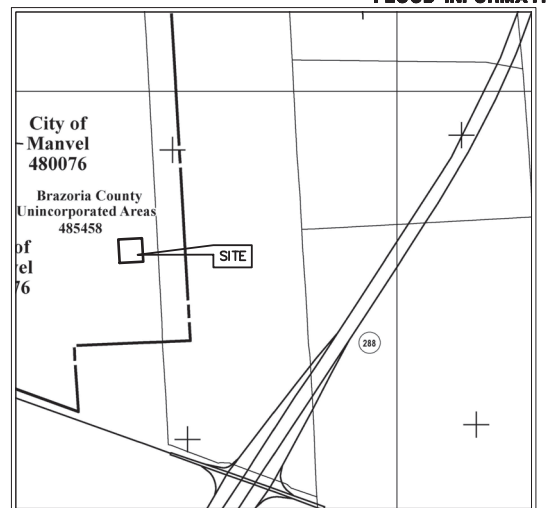
DUSTIN C. KAISER, R.P.L.S.  
Registered Professional Land Surveyor  
Texas Registration No. 6918

**WINDROSE**  
LAND SURVEYING & PLATTING  
5353 W SAM HOUSTON PKWY N, STE 150 | HOUSTON, TX 77041 | 713.458.2281  
FIRM REGISTRATION NO. 10108800 | WINDROSESERVICES.COM

LAND TITLE SURVEY OF  
1.649 AC. / 71,831 SQ. FT., OUT OF  
LOT 29, EMIGRATION LAND COMPANY SUBDIVISION  
COMPANY SUBDIVISION, VOL. 2, PGS. 81-82, B.C.P.R.  
SITUATED IN THE  
H.T. & B. RR. CO. SURVEY, SECTION 71, ABSTRACT NO. 291  
BRAZORIA COUNTY, TEXAS

DATE	REASON	BY

**FLOOD INFORMATION**



PANEL 0110K  
**FIRM**  
FLOOD INSURANCE RATE MAP  
BRAZORIA COUNTY,  
TEXAS  
AND INCORPORATED AREAS  
PANEL 110 OF 925  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY	NUMBER	PANEL	SUFFIX
BRAZORIA COUNTY	48458	0110	K
EMIGRATION CITY	48459	0110	K
MANVEL CITY	48460	0110	K
MANVEL CITY	48461	0110	K

MAP NUMBER  
4803C0110K  
MAP REVISED  
DECEMBER 30, 2020  
Federal Emergency Management Agency

**GENERAL NOTES**

- SURVEYOR DID NOT ABSTRACT SUBJECT PROPERTY. THIS SURVEY WAS PREPARED WITH INFORMATION CONTAINED IN TITLE COMMITMENT OF NO. SN2501255 OF OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY EFFECTIVE DATE OF MAY 30, 2025, ISSUED DATE OF JUNE 5, 2025, AND IS SUBJECT TO THE LIMITATIONS OF THAT COMMITMENT.
- BEARINGS WERE BASED ON THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE (4204). ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES AND MAY BE BROUGHT TO GRID BY APPLYING THE FOLLOWING SCALE FACTOR: 0.9999668381.
- ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), FLOOD INSURANCE RATE MAP (FIRM) FOR BRAZORIA COUNTY, TEXAS, MAP NO. 48039C0110K REVISED DATED DECEMBER 20, 2020, THE SUBJECT TRACT APPEARS TO LIE WITHIN UNSHADDED ZONE "X". THIS DETERMINATION WAS DONE BY GRAPHIC PLOTTING AND IS APPROXIMATE ONLY, AND HAS NOT BEEN FIELD VERIFIED. THIS FLOOD STATEMENT DOES NOT IMPLY THAT THE PROPERTY OR STRUCTURES THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. ON RARE OCCASIONS FLOODS CAN AND WILL OCCUR AND FLOOD HEIGHTS MAY BE INCREASED BY MAN-MADE OR NATURAL CAUSES. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF WINDROSE SURVEYING AND LAND SERVICES.
- READILY VISIBLE IMPROVEMENTS AND UTILITIES WERE LOCATED WITH THIS SURVEY. NO SUBSURFACE PROBING, EXCAVATION OR EXPLORATION WAS PERFORMED BY WINDROSE SURVEYING AND LAND SERVICES.
- ENVIRONMENTAL AND DRAINAGE ISSUES ARE BEYOND THE SCOPE OF THIS SURVEY.
- THE SQUARE FOOTAGE TOTALS SHOWN HEREON ARE BASED ON THE MATHEMATICAL CLOSURE OF THE COURSES AND DISTANCES REFLECTED ON THE SURVEY. IT DOES NOT INCLUDE THE TOLERANCES THAT MAY BE PRESENT DUE TO THE POSITIONAL ACCURACY OF THE BOUNDARY MONUMENTATION.
- FENCES SHOWN HEREON WITH DIMENSIONAL TIES ARE SHOWN WHERE THEY ARE PHYSICALLY MEASURED. THE FENCE MAY MEANDER BETWEEN MEASURED LOCATIONS.
- THE WORD "CERTIFY" OR "CERTIFICATE" AS SHOWN AND USED HEREON MEANS AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THE FACTS OF THE SURVEY AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE EXPRESSED OR IMPLIED.

**Appendix 2**  
**Approved Tree List**

## Plant List for Manvel Crossing

The following is a list of approved trees and shrubs. Alternative plants not specified in this list may be approved by the Director if determined that an alternative is substantially equal to or better than a specified material and the use will not violate any provision of the PUD.

### Shade Trees:

Pecan	<i>Carya Illinoensis</i>
Fringe Tree	<i>Chionanthus virginicus</i>
Japanese Blueberry	<i>Elaeocarpus decipiens</i>
Nellie R. Stevens Holly	<i>Ilex x attenuata 'Nellie R. Stevens'</i>
Savannah Holly	<i>Ilex attenuata 'Savannah'</i>
Southern Magnolia	<i>Magnolia grandiflora</i>
Loblolly Pine	<i>Pinus taeda</i>
Texas Pistache	<i>Pistacia texana</i>
Sycamore	<i>Platanus occidentalis'</i>
Bur Oak	<i>Quercus macrocarpa</i>
Chinkapin Oak	<i>Quercus muehlenbergii</i>
Monterey Oak	<i>Quercus polymorpha</i>
Water Oak	<i>Quercus nigra</i>
Live Oak	<i>Quercus virginiana</i>
Shumard Oak	<i>Quercus shumardii</i>
Bald Cypress	<i>Taxodium distichum</i>
Pond Cypress	<i>Taxodium ascendens</i>
Cedar Elm	<i>Ulmus crassifolia</i>
Bosque or Drake Elm	<i>Ulmus parvifolia 'Bosque' or 'Drake'</i>

### Small & Ornamental Trees:

Texas Redbud	<i>Cercs canadensis 'var. texensis'</i>
European Fan Palm	<i>Chamaerops humilis</i>
Desert Willow	<i>Chilopsis linearis</i>
Smokebush	<i>Cotinus obovatus</i>
Loquat	<i>Eryobotrya japonica</i>
Foster Holly	<i>Ilex x attenuata 'Fosterii'</i>
Possumhaw Holly	<i>Ilex decidua</i>
Yaupon Holly	<i>Ilex vomitoria</i>
Columnar Junlper	<i>Juniporus spp.</i>
Crape Myrtle	<i>Lagerstroemia indica 'Basham's Pink', 'Natchez', 'Muskogee'</i>
Little Gem Magnolia	<i>Magnolia grandiflora 'Little Gem'</i>
Tree form (MT) Ligustrum	<i>Ligustrum japonicum</i>
Saucer Magnolia	<i>Magnolia x soulangeana</i>
Sweetbay Magnolia	<i>Magnolia virginiana</i>
Tree Wax Myrtle	<i>Myrica cerifica</i>
Mexican Plum	<i>Prunus mexicana</i>
Texas Sable Palm	<i>Sabal texana</i>
Texas Mountain Laurel	<i>Sophora secundiflora</i>
Windmill Palm	<i>Trachycarpus fortunei</i>
Chaste Tree	<i>Vitex agnus-castus</i>

**Shrubs:**

Abelia	<i>Abelia x grandiflora</i> 'Prostrata', 'Sherwoodii', 'Edward Goucher'
Dwarf Bottlebrush	<i>Callistemon citrinus</i> 'Austraflora', 'Firebrand', 'Little John', 'Splendens'
Japanese Cleyera	<i>Ternstroemia gymnanthera</i>
Sago Palm	<i>Cycas revoluta</i>
Umbrella Plant	<i>Cyperus alternifolius</i>
African/Butterfly Iris	<i>Dietses iridioides</i> , <i>Dietses bicolor</i>
Elaeagnus Ebbingel	<i>Elaeagnus macrophylla</i>
Silverberry	<i>Elaeagnus fruitlandii</i>
Pineapple Guava	<i>Feijoa sellowiana</i>
Red Yucca	<i>Hesperaloe parviflora</i>
Barbados Cherry	<i>Malpighia glabra</i>
Fatsia	<i>Fatsia japonica</i>
Dwarf Burford Holly	<i>Ilex cornuta</i> 'Bufordii Nana'
Chinese Holly	<i>Ilex cornuta</i> 'Rotunda'
Dwarf Yaupon	<i>Ilex vomitoria</i> 'Nana'
Louisiana Iris	<i>Iris louisiana</i>
Dwarf Crape Myrtle	<i>Lagerstroemia indica</i> 'Nana'
Ligustrum	<i>Ligustrum japonicum</i>
Waxleaf Glossy Privet	<i>Ligustrum lucidum</i>
Fringe Flower	<i>Loropetalum chinense</i>
Maiden Grass	<i>Miscanthus sinensis</i> var.
Dwarf Wax Myrtle	<i>Myrica pusilla</i>
Nandina	<i>Nandina domestica</i>
Purple Fountain Grass	<i>Pennisetum setaceum</i>
Indian Hawthorn	<i>Raphiolepis indica</i> 'Clara'
Shrub Rose	<i>Rosa</i> spp. 'Knockout', 'The Fairy', 'Bonica', 'Carefree Wonder'
Society Garlic	<i>Tulbaghia violacea</i>
Sweet Viburnum	<i>Viburnum</i> spp.
Bridal Wreath Spirea	<i>Spirea prunifolia</i>
Oleander	<i>Nerium oleander</i>
Dwarf Oleander	<i>Nerium oleander</i> 'Petite Pink', 'Little Red'
Plumbago	<i>Plumbago auriculata</i>
Dwarf Pomegranate	<i>Punica granatum</i> 'Nana'
Kumquat	<i>Fortunella</i> spp.
Muhly Grass	<i>Meuhlenbergia lindheimeri</i>
Dwarf Maiden Grass	<i>Miscanthus sinensis</i> 'Morning Light'

**Evergreen Trees:**

Japanese Blueberry	<i>Elaeocarpus decipiens</i>
Nellie R. Stevens Holly	<i>Ilex x 'Nellie R. Stevens'</i>
Savannah Holly	<i>Ilex x attenuata 'Savannah'</i>
Southern Magnolia	<i>Magnolia grandiflora</i>
Loblolly Pine	<i>Pinus taeda</i>
Live Oak	<i>Quercus virginiana</i>
European Fan Palm	<i>Chamaerops humilis</i>
Loquat	<i>Eriobotrya japonica</i>
Foster Holly	<i>Ilex x attenuata 'Fosteri'</i>
Yaupon Holly	<i>Ilex vomitoria</i>
Columnar Juniper	<i>Juniperus spp.</i>
Little Gem Magnolia	<i>Magnolia grandiflora 'Little Gem'</i>
Tree Form Ligustrum	<i>Ligustrum japonicum</i>
Sweetbay Magnolia	<i>Magnolia virginiana</i>
Tree Wax Myrtle	<i>Morella cerifera</i>
Texas Sable Palm	<i>Sabal mexicana</i>
Texas Mountain Laurel	<i>Sophora secundiflora</i>
Windmill Palm	<i>Trachycarpus fortunei</i>

# **Appendix 3**

## **Zoning Regulations**

- 
- (6) *Future revisions.* Future revisions to the open planned unit development plan may only be approved following a recommendation by the planning commission and adoption of an ordinance by council.

(Ord. No. 2020-O-15, § 3, 10-19-2020; Ord. No. 2023-O-40, § 3, 12-4-2023)

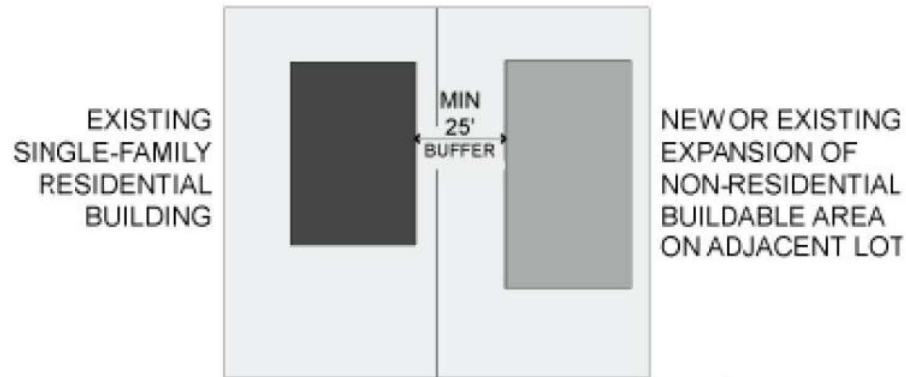
**Sec. 77-30. Multi-family (MF) district.**

- (a) *Land uses allowed.* Uses permitted in a MF, multi-family district, are set forth in section 77- 26(f), permitted use table. This is the only district permitting apartments as a permitted use.
- (b) *Setbacks, minimum.*
- (1) All setbacks adjacent to a street shall be a minimum of 25 feet.
  - (2) Rear or side yard setbacks not adjacent to a street shall be a minimum of 15 feet and ten feet for accessory structures.
- (c) *Density.*
- (1) Apartment density. Apartments shall have a maximum density of 15 units per gross acre.
  - (2) Condominiums, townhomes, and patio homes shall have a maximum density of seven units per gross acre.
- (d) *Maximum building height.* The maximum height of any building in the multifamily district shall not exceed 40 feet measured from the finished grade to the highest point of the roof, not including ancillary structures such as chimneys.

(Ord. No. 2020-O-15, § 3, 10-19-2020; Ord. No. 2023-O-40, § 3, 12-4-2023)

**Sec. 77-31. Light-commercial (LC) district.**

- (a) *Land uses allowed.* Uses permitted in a LC, light-commercial district, are set forth in section 77- 26(f), permitted use table.
- (b) *Minimum lot size.*
- (1) The minimum lot width is 60 feet measured at the setback line.
  - (2) The minimum lot depth is 100 feet measured at the setback line.
- (c) *Setbacks.*
- (1) Minimum front yard setback is 25 feet.
  - (2) Minimum rear yard setback is ten feet.
  - (3) Minimum side yard and corner side yard is five feet.
  - (4) Accessory structure. A minimum side and rear yard setback of five feet and corner side setback of ten feet. Accessory structures shall not extend past the front line of the principal structure.
- (d) *Maximum building height.* The maximum height of any building in the light commercial district may not exceed 60 feet measured from the finished grade to the highest point of the roof, not including ancillary structures such as chimneys.
- (e) Open storage and display of new or used cars for sale shall only be permitted where in compliance with section 77-52.



(g) *Parking.*

- (1) Refer to section 77-45, parking, for on-site parking requirements for this section.
- (2) All new non-residential buildings within the HMU will locate parking behind the primary building but not between the primary building and the street ROW.

(h) *Building height.*

- (1) Maximum height for any single-family residential building will not exceed 40 feet measured from the finished grade to the highest point in the roof with a maximum of three stories, but not to include ancillary structures such as chimneys.
- (2) Maximum building height for any non-residential building will not exceed 60 feet measured from the finished grade to the highest point in the roof with a maximum of five stories, but not to include ancillary structures such as chimneys.
- (3) Maximum building height for any building containing a combination of residential and non-residential uses will not exceed 60 feet measured from the finished grade to the highest point in the roof with a maximum of five stories, but not to include ancillary structures such as chimneys.

(Ord. No. 2020-O-15, § 3, 10-19-2020; Ord. No. 2023-O-40, § 3, 12-4-2023)

**Sec. 77-36. State Highway 6 overlay (SH-6) district.**

- (a) *Purpose.* The purpose of the State Highway 6 (S.H. 6) overlay district is to manage critical visual elements and to promote future development that showcases S.H. 6 as a high-quality, mixed-use, multi-modal transportation corridor in Manvel. This overlay is intended to direct development in the S.H. 6 corridor toward compliance with the comprehensive plan.

As an overlay district, the requirements specified herein are in addition to the existing zoning districts, and as such, do not replace any current zoning or any specific requirements of the existing zoning districts.

- (b) *Location.* The S.H. 6 overlay district will extend along S.H. 6 from the eastern city limit to the western city limit at a depth of 700 feet from the right-of-way along both sides of S.H. 6. In the event a parcel is bisected, the current zoning district will remain in place for the portion of the parcel that is located outside the S.H. 6 overlay district, and the S.H. 6 overlay requirements will not.
- (c) *Exterior building materials.*

---

(1) All building façades must be constructed of a minimum of 90 percent masonry materials on all non-transparent portions of all exterior walls. The percentage of masonry materials is calculated on a per façade basis. Permitted masonry materials include:

- a. Stone;
- b. Brick;
- c. Concrete;
- d. Hollow clay tile;
- e. Decorative concrete block or tile;
- f. Glass block;
- g. True stucco.

The use of any material that is not specified on the above permitted masonry materials list is prohibited.

(2) Up to the remaining ten percent of all exterior walls on non-transparent portions of the building may be constructed of materials not listed in the permitted masonry materials list but under no circumstances will the following prohibited materials be allowed:

- a. Sheet metal material; coated, galvanized, or uncoated with a metal thickness less than one-quarter inch;
- b. Smooth concrete masonry units (CMU) or block, painted or un-painted;
- c. Exterior insulation finish systems (EIFS);
- d. Plywood or oriented strand board (OSB).

(3) No more than 75 percent of any façade may consist of glass.

(d) *Parking.*

(1) Refer to section 77-45, parking.

(e) *Dumpster/mechanical screening.*

(1) Exterior trash receptacles and recycle bins should be located behind a building and not visible from S.H. 6. If an exterior trash receptacle or recycle bin cannot be located behind a building, it must be enclosed on all sides with screening material at least as high as the top of the receptacle/bin and composed of the same materials as used in the building façade. The enclosure gate must be of solid metal painted to match the color of the enclosure material(s).

(2) All building systems and mechanical equipment must be screened from public view by being located at the rear of a building, on the roof out of public view, or fully screened by the same materials as used in the building façade.

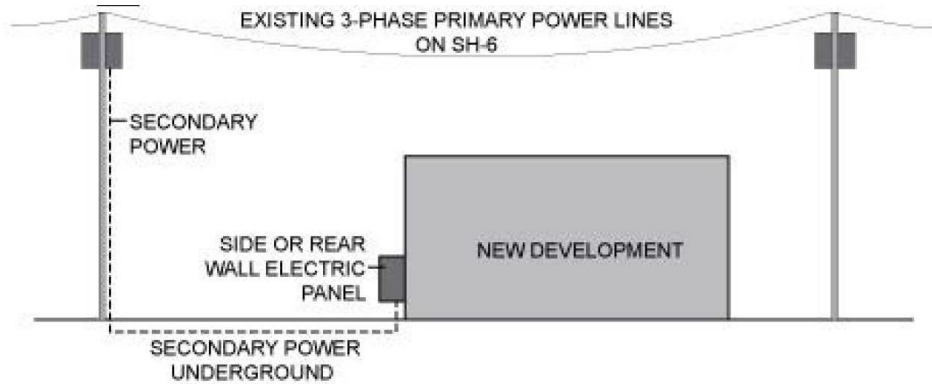
(f) *Electric, phone, utility and cable line location.*

(1) When determined by the utility provider as physically possible, all new three-phase (primary) overhead power lines will be located at the rear of new developed property.

(2) Secondary power connections for new development and substantial improvement from existing power poles will be placed underground.

(3) Electrical panel boxes will not be located on a building façade facing S.H. 6.

**Figure H.1: Electric, Phone, Utility, and Cable Line Location**



(g) *Vehicular access and circulation.*

- (1) All developments must provide public access easements (PAE) allowing reciprocal travel between adjacent parcels that meet the following minimum standards:
  - a. The PAE must be a minimum 25 feet in width;
  - b. The PAE must be continuous between property lines;
  - c. The PAE must be paved;
  - d. No parking or loading activity within, or with direct access to, the 25-foot minimum PAE is permitted; and
  - e. All PAEs within a property must connect to each other and a connection must also be made to any existing PAE located on the property line of an adjacent development.
- (2) Perpendicular PAEs (providing circulation and access perpendicular to S.H. 6):
  - a. All developments located within the S.H. 6 overlay district must provide at least one PAE, approximately perpendicular to S.H. 6, from the front property line to the rear property line if any part of the proposed development is more than 1,000 feet from either an existing perpendicular PAE that intersects S.H. 6 or an existing paved public street that intersects S.H. 6.
  - b. Perpendicular PAEs must not be more than 1,000 feet apart.
- (3) Parallel PAEs (providing circulation and access parallel to S.H. 6):
  - a. All developments within the S.H. 6 overlay district must provide at least one PAE, approximately parallel to S.H. 6; from one side property line to the opposite side property line located no more than 700 feet from S.H. 6.
  - b. Parallel PAEs are not required on parcels less than 300 feet deep from S.H. 6.
- (4) In heavy commercial zones only, in lieu of a PAE, an emergency access easement (EAE) between adjacent properties is required and must meet the following standards:
  - a. The gates must be 20 feet wide, marked as emergency access, and equipped with a Knox box.
  - b. The EAE must be an improved hard surface incorporated into the fire lanes and able to accommodate emergency vehicles.

(Ord. No. 2020-O-15, § 3, 10-19-2020; Ord. No. 2023-O-40, § 3, 12-4-2023)

**Appendix 4**  
**Ordinance No. XXXX-XX (PUD Ordinance)**

**Appendix 5**  
**Ordinance No. XXXX-XX**  
**(Annexation Ordinance)**



# Manvel Crossing Planned Unit Development District

## The City of Manvel

Ordinance #XXXXXX  
Submitted: November 19<sup>2</sup>,  
2025

Prepared for:  
BCS Capital Group  
5847 San Felipe, Suite 2030  
Houston, TX 77057  
214.905.1505

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- Exhibit 2 Highway 6 Overlay District
- Exhibit 3 Internal Circulation Plan and Proposed Right-of-ways
- Exhibit 4 Preliminary Drainage and Detention Plan
- Exhibit 5 Approximate Sign Locations
- Exhibit 6 Multi-tenant Pylon Sign Elevation
- Exhibit 7 Single-tenant Monument Sign Elevation
- Exhibit 8 Wall Sign Elevation

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- Site Survey
- Approved Tree List PUD
- Ordinance
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## I. INTRODUCTION

### A. Summary

The Planned Unit Development District (PUD) establishes comprehensive guidance and regulations for Manvel Crossing Commercial Development. Manvel Crossing is comprised of approximately 49 acres of privately owned land. The entirety of the property currently lies in the Extraterritorial Jurisdiction (ETJ) of the City of Manvel but is intended to be annexed into the City.

The PUD will offer flexibility to encourage the most appropriate uses and amenities, providing access to more diversified options for citizens and visitors alike. The PUD will achieve this by providing a means by which development may occur in an orderly and responsible manner and establishing guidelines that ensure quality development and specifically address the goals of both the city and the developer.

### B. Purpose of the PUD

~~A PUD establishes customized development standards for a specific property, allowing the City and the developer to create a unified plan that ensures high-quality design, clear expectations, and alignment with the City's long-term vision. The City of Manvel is growing at an exponential rate. The Census Bureau predicts that by the end of 2025, there will be double the number of residents documented in the 2020 Census. With such a fast-paced rate of growth, commercial development is pivotal for the development to maintain its independence without needing to travel out of town for goods or services. This PUD will allow the Manvel Crossing site to develop in a way that will achieve this goal.~~

### C. Project Location

The Project is located ~~generally~~ east of Old Airline Road (County Road 48), north of and adjacent to State Highway 6, and abutting Kirby Drive to the east. The property is currently ~~wholly located~~ within Brazoria County and will be annexed into the City of Manvel.

### D. Site History

Based on a review of historical information, the site consisted of undeveloped and/or agricultural land starting around 1938 through the 1960's. In the 1960's an on-site pipeline easement was established, and throughout this time up to the 1980's, the land appears to have been utilized for rice farming. The site has remained undeveloped to present day.

### **E. Existing Zoning**

The entirety of the site is located in the ETJ of the City of Manvel and therefore has no zoning district classification. Upon annexation and approval of the PUD, the site will be assigned a base zoning designation of Light Commercial with a PUD overlay. In addition to the applicable base zoning classification and PUD, the requirements of the Highway 6 Overlay District will apply to approximately 33 acres of the site along Highway 6 frontage at a depth of 700 feet, subject only to those requirements that are not superseded by the PUD. Should the PUD expire, the land will revert back to the Light Commercial zoning district and the Highway 6 Overlay District.

### **F. Surrounding Land Use**

The property is situated along State Highway 6, which forms its southern boundary, and is surrounded by a mix of developed properties and agricultural or undeveloped land planned for future single-family communities. To the east is Manvel Town Center, which contains a mix of commercial uses, and to the north there are several single-family residential communities—including Rodeo Palms, Yanni Palms, Foxtail Palms, and Primrose— that are existing or under active development.

### **G. Existing Site Conditions**

~~The site contains no notable natural features, though the western portion includes a cleared area reflecting previous agricultural use. A thirty-foot (30') pipeline easement enters from the west property line and then shifts south toward Highway 6. Near Kirby Drive, a few manmade drainage canals are present, but overall the property is flat and lacks meaningful topographic variation. A Phase One Environmental Site Assessment was completed across the entire tract and reported no significant environmental issues or presence of endangered species. There are no major natural features on the site, however, there is a clearing where agricultural activity took place on the western portion of the property. A thirty (30') foot pipeline easement starts at the west property line and turns to the south into Highway 6. There appear to be a small number of manmade drainage canals close to Kirby Drive, but aside from this, the property is generally flat with little topography. A Phase One environmental site assessment was conducted for the entire property, and no significant environmental conditions or endangered species were found.~~

## II. DEVELOPMENT PLAN

### A. Purpose & Intent

~~The purpose of the Development Plan is to clarify the planning considerations within the plan area and to guide the implementation of the project's overall vision. It establishes a framework for Manvel Crossing by setting standards that address the essential elements of a successful commercial development—ensuring the project is executed responsibly, fulfills the vision for Manvel Crossing, enhances the City of Manvel, and supports the City's exceptionally rapid growth. The purpose of the Development Plan is to clarify planning considerations within the plan area and guide the implementation of the vision for the development in addition to establishing a framework for Manvel Crossing by establishing standards that address the many aspects of a successful commercial development that not only responsibly achieves the vision of Manvel Crossing, but also enhances the City of Manvel and supports its exceedingly fast growth.~~

~~This section outlines the goals, objectives, and policies of the PUD, along with the key plan components that will guide the development's design principles. This section contains a description of the goals, objectives, and policies of the PUD combined with various plan components intended to guide the design principles of the development.~~

### B. Goals & Objectives

The primary goal of the Manvel Crossing Planned Unit Development District is to ~~create~~ establish a master planned commercial development that ~~will assist~~ supports the City's ~~long-term in implementing its~~ vision by annexing into the City, ~~and increasing~~ expanding the area's local tax base, ~~and contributing to the funding of which in turn will fund~~ public services and improvements. Additionally, the development will ~~provide more~~ access enhance community access to goods, services, and resources.

~~In order to~~ To achieve this goal, key objectives have been established to guide development and ~~provide direction for~~ reinforce the overall vision ~~of for~~ the community. These objectives ~~are consistent~~ align with the vision statement contained in the 2045 Strategic Plan adopted by the City and are as follows:

#### 1. Ensure Quality Development

Manvel Crossing will ensure high-quality development by establishing design guidelines that regulate architectural standards, enhanced landscaping, attractive and coordinated signage, adequate parking, and other key elements that contribute to a

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~~cohesive and well-designed commercial environment. Manvel Crossing will ensure the quality of development through the establishment of design guidelines that regulate architectural standards, robust landscaping, attractive signage, adequate parking, and other common elements of the development.~~

## **2. A Broader Deeper Tax Base and Employment Opportunities**

~~Manvel Crossing will broaden the City's tax base and create new employment opportunities, both of which strengthen the City's ability to fund essential public services and improvements. The addition of Manvel Crossing to the City of Manvel will not only increase the tax base, which in turn will provide funding for needed infrastructure improvements, but will also provide employment opportunities for the citizens of Manvel.~~

## **3. Guide and Manage Development Along Highway 6**

~~Manvel Crossing is located west of Highway 288, a corridor that serves as a natural transition into the more rural character of the City of Manvel. This area is particularly well suited for commercial uses and remains easily accessible to residents throughout the community. Positioned at the city's edge and surrounded by existing commercial activity, the site provides an ideal location for new commercial development that will support and complement the significant residential growth occurring in Manvel. The location of the development is west of Highway 288 which acts as a boundary line for transition into the country feel of the City of Manvel. This location is best suited for commercial development, that is easily accessible by those further into town. Being located at the edge of the city limits and surrounded by other commercial uses, it is an ideal location for commercial development that will support the residential growth happening in the city.~~

## **4. Providing a Wider Range of Community Amenities and Commercial Services**

~~Manvel Crossing is intended to bring a broader selection of high-quality restaurants, retail offerings, and commercial services to the community. This expanded mix of uses will increase local shopping and dining options while generating additional tax revenue that supports enhanced public amenities and community improvements. This development is designed to bring a broader range of high-quality restaurants and commercial services to Manvel Crossing. More shopping means more tax revenue, which can in turn be used to improve local amenities for the citizens to enjoy.~~

## **C. Transportation**

Manvel Crossing will establish a coordinated transportation network ~~that -consisting of internal~~includes internal circulation and ~~other forms of transportation~~multiple modes of access, all designed to that will comply with the City's Major Thoroughfare Plan (the Transportation Corridor Plan ~~contained~~ within the adopted Comprehensive Plan) as approved~~adopted~~ by City Council August 2, 2021, ~~and meet the.~~ This network will support mobility needs of the community along Highway 6 and provide appropriate connectivity; ~~and~~ to the north and to surrounding lands~~properties~~ as they develop.

~~This~~The proposed transportation ~~network layout~~ is ~~in compliance~~consistent with the City's Major Thoroughfare Plan, as amended on August 2, 2021, and ~~there are no~~ conflicts ~~are~~ anticipated ~~issues~~ with the City's ongoing update efforts.

### 1. Existing Access

Manvel Crossing currently benefits from direct access to Highway 6 and from Kirby Drive along the eastern boundary. The site is also located near Old Airline Road (County Road 48), which provides convenient north-south connectivity to Pearland. In addition, Highway 288 lies just to the east, offering direct regional access to the City of Houston and the Gulf Coast. ~~Manvel Crossing currently has access directly from Highway 6 and from Kirby Drive to the east. In addition, Old Airline Road (County Road 48) is in close proximity to the site, which gives direct north-south access to Pearland. Highway 288 is to the east for direct access to the City of Houston and the Gulf Coast.~~

### 2. Future Access

With the future extension of Kirby Drive to the north and its planned connection to Rodeo Drive, Manvel Crossing will become a highly accessible commercial destination for surrounding neighborhoods. This enhanced connectivity will help relieve congestion in the area and strengthen the overall local street network. No issues are anticipated with the City's ongoing update efforts. ~~With the construction of the eventual continuation of Kirby Drive to the north, and its planned connection to Rodeo Drive, Manvel Crossing will become an easily accessible shopping area for the surrounding neighborhoods. This planned connectivity will lessen the congestion from the surrounding area and improve the local street network. There are no anticipated issues with ongoing update efforts.~~

Rodeo Drive ~~shall~~will be classified as a local street and constructed within a 60-foot

right-of-way. ~~This section of Rodeo Drive will be limited to the property within the PUD and will serve as. It will be a tertiary entry point to the Foxtail Palms single family development. The portion of Rodeo Drive addressed in this PUD is limited solely to the segment located within the PUD boundaries.~~ The roadway will consist of a 28-foot-wide pavement section with 5-foot sidewalks on both sides to support pedestrian connectivity and accessibility.

Kirby Drive ~~shall~~will be classified as a Parkway and constructed within a 120-foot right-of-way. ~~This section of Kirby Drive, limited to the property within the PUD, will serve as the primary access point to the eastern portion of the site. The portion of Kirby Drive addressed in this PUD is limited solely to the segment located within the PUD boundaries and will serve as the primary access point to the eastern portion of the site.~~ If City Council take action to reduce the required right-of-way width for Kirby Drive through an update to the City's Major Thoroughfare Plan, the reduced width shall supersede the requirements of this PUD.

The intersection of Kirby Drive and Rodeo Drive shall be designed and constructed in accordance with the recommendations outlined in the Traffic Impact Analysis (TIA), which has been submitted to and is subject to approval by the City of Manvel. Dedication of both sections of road for property within the PUD shall occur with the recording of the final plat.

### 3. Site Internal Circulation Plan

Internal circulation throughout the Manvel Crossing development will consist of an interior east/west oriented road located in a parallel access easement that will grant access to all the businesses, including the proposed businesses at the rear of the site. There are four (4) possible entrances from Highway 6 per TxDOT spacing requirements, however only three (3) are proposed per the TIA. If a fourth access point from Highway 6 is approved by TxDOT, a fourth access point shall be permitted. Additionally, there are three (3) proposed entrances to ~~a currently proposed from~~ Kirby Drive. Additional access points from Kirby Drive may be permitted if allowed per City ordinance.

The City agrees that the PUD may provide "satisfactory access" to certain parcels that may not have physical frontage on an abutting public road from a twenty-five (25) foot wide cross-access easement(s) which will provide for public access and be noted on a subdivision plat after being filed for record. The subdivision plat will show the recorded cross access easement(s) and/or notate the cross-access easement agreement on the face of the plat.

~~Additionally, t~~There is an existing forty (40) foot right-of-way dividing the western 1/3 of the site that runs north/south and provides access to ~~the an~~ out parcel to the north. This right-of-way will be widened and improved, if required by the City, to meet the

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standards of the City of Manvel Design Criteria Manual and will continue to provide access through a portion of the site; however, the right-of-way may be rerouted or abandoned in the future with further action by City Council. Should City Council proceed with this option, this PUD shall not be required to be amended.

#### **D. Infrastructure**

##### **1. Water & Wastewater**

The water distribution system within the Manvel Crossing development will be designed to meet or exceed applicable requirements. Once annexed into the city limits, the site will be served by city water and wastewater services.

##### **2. Storm Drainage & Detention System**

The drainage plan and storm sewer system will be designed in accordance with City of Manvel and Brazoria County Drainage District #4 regulations. The storm water runoff within the Manvel Crossing site will be routed to storm sewer lines that will outfall into detention ponds located at the rear of the site. The internal detention ponds will provide storage volume for the increased storm water runoff resulting from development of the property. The storm water from the detention ponds will outfall in a controlled fashion to an offsite wet drainage channel and tie into storm sewers to the east.

The drainage collection systems will be designed to convey the 100-year sheet flow either in the collection system near the outfall point or by sheet flow drainage through the curb and gutter streets with maximum ponding per agency requirements. The proposed internal detention pond system will be sized to contain the excess run-off resulting from a 24-hour 100-year frequency rainfall event for developed and undeveloped conditions with a minimum freeboard of one (1') foot before outfalling into the receiving stream. The storm sewer system will consist of reinforced concrete pipe and box culverts sized per agency requirements. Concrete channelization will be minimized.

Detention facilities intended to serve Manvel Crossing may be located off-site. Any off-site detention capacity shall be recorded with the County and provided to the City of Manvel so long as the off-site property owner grants their written acknowledgement and approval.

Should detention footprints be reduced in size or otherwise create additional usable acreage, such acreage may be developed for commercial purposes and shall be

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incorporated into the overall PUD uses and requirements.

### **3. Other Utilities**

Electricity, natural gas, telecommunications, and cable services will be provided to the Manvel Crossing site through agreements with private or public (CenterPoint Energy Gas and Power) utility companies as development occurs. When determined by the utility provider as physically possible, all new three-phase (primary) overhead power lines will be located at the rear of new developed property.

## **III. DEVELOPMENT REGULATIONS**

### **A. Purpose & Intent**

The purpose of the development regulations is to serve as the primary means of achieving the goals and objectives of the Development Plan.

They are designed to establish clear minimum development standards, promote productive and streamlined processes that facilitate the timely delivery of tax-generating development, and provide a reasonable degree of flexibility to accommodate future needs.

### **B. General Provisions**

#### **1. Applicability**

The regulations contained herein shall apply to all property located within the boundaries of the Manvel Crossing PUD. Appendix 1 contains the legal description of the property.

All construction and development within the PUD area shall comply with applicable provisions of the City of Manvel codes and ordinances as they exist on the date of adoption of this PUD and the laws of the State of Texas for 3 (three) years from the acceptance of this PUD, except as modified within this PUD. Applicable International Code Council Codes adopted by the City of Manvel shall apply as amended from time to time.

If specific development standards are not established or if an issue, condition, or situation arises or occurs that is not clearly addressed or understandable in the PUD, then those regulations and standards of the City of Manvel codes and ordinances that are applicable for the most similar issue, condition, or situation shall apply as determined by the City's Zoning Official. Appeal of any determination regarding applicability may be made to the Zoning Board of Adjustments.

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This PUD may be amended by the same procedure as it was adopted, by ordinance. Each amendment shall include all sections or portions of the PUD that are affected by the change.

## 2. Existing Utilities

Existing utilities and all uses permitted under current easements shall be maintained and allowed to continue within all applicable designations of the PUD.  
~~Existing utilities and all uses allowed by existing easements shall continue to be in all designations within the PUD.~~

## C. Development Standards

The development standards outlined herein are intended to guide a high-quality, thoughtfully planned project that delivers meaningful value to the community. These standards set clear expectations, support efficient implementation, and ensure that the project is positioned for long-term success.

The following tables list permitted uses and non-permitted uses as part of this development. The uses are classified in the 2022 version of the North American Industry Classification System (NAICS) ~~format~~, which is a number code assigned by the NAICS Association to simplify the process of identifying what category a specific land use falls under. Definitions for each use listed below are found in the 2022 version of the NAICS.

**1. Permitted Land Use Table**

	<b>NAICS-Code</b>	<b>Classification</b>
1	5412	Accounting, Tax Preparation, Bookkeeping and Payroll Services
2	541611	Administrative Support Services
3	541810	Advertising agency
4	621493	Ambulatory Health Care Services
5	459510	Antique store
6	459920	Art gallery; Studio (art, music or photo)
7	459999	Arts and crafts store
8	811111	Automobile repair and maintenance—*Subject to Section 2
9	441330	Automotive Part and Accessory Retailers—*Subject to Section 2
10	441320	Automotive Tire Dealers—*Subject to Section 2
11	311811	Bakery (Retail)
12	522110	Banks and financial institutions, including drive-through and outdoor ATM
13	812111	Barber or beauty shop
14	459210	Bookstore; Record and tape store
15	444	Building material, garden equipment, and supplies dealers
16	722514	Cafeteria
17	722320	Catering
18	449210	Cellular phone sales and repair store, Computer sales and repair store; Home appliance store
19	624410	Child care facility
20	621111	Clinic
21	458110	Clothing store (no re-used clothing)
22	561440	Collection agency
23	711120	Dance studio
24	492110	Delivery service
25	621210	Dental clinic
26	455110	Department store, Personal or Household Goods Store
27	541340	Drafting Service
28	722410	Drinking Places (Alcoholic Beverages), Taverns—*Subject to Section 4
29	456110	Pharmacy, Drug store, with or without liquor or beer and wine sales
30	812320	Dry cleaning storefront, but not dry-cleaning plant
31	611710	Educational Support Services
32	811412	Electronic sales and repair store
33	713940	Fitness and Recreational Sports Centers (including martial arts, dance studios, ballet, etc.)
34	459310	Florist shop
35	445298	Food and Beverage Store
36	722511	Full-Service Restaurant—*Subject to Section 3
37	449110	Furniture store

38	455219	General Merchandise Retailers
39	459420	Gift shop
40	445110	Grocery store
41	444140	Hardware store
42	444110	Home improvement store
43	423220	House wares and linens store
44	451120	Hobby, Toy, and Game Store
45	531130	Lessor of mini-warehouse and self-storage (climate controlled only)
46	561622	Locksmith
47	622110	Medical and healthcare services
48	423450	Medical supply store
49	312120	Micro-Brewery, Restaurant with micro-brewery —*Subject to Section 4
50	926130	Minor utilities
51	522310	Mortgage company
52	721110	Motels and hotels
53	512131	Motion picture theaters and dinner theaters
54	459140	Musical instrument store
55	444240	Nursery, Garden center, and Farm Supply Retailers
56	459410	Office supply store
57	621320	Optician or optometrist
58	491110	Postal Service
59	531120	Professional office
60	92	Public facilities
61	922120	Public safety site
62	334220	Radio sales and repair
63	516110	Radio studio (excluding tower)
64	531210	Real Estate
65	722513	Restaurants (limited service and quick service), with or without drive thru.
66	455211	Retail Warehouse Clubs and Supercenters
67	541990	Scientific and Technical Services
68	448210	Shoe store and repair shop
69	459110	Sporting Goods Store Gun Shop
70	315250	Tailor
71	541191	Title Abstract and Settlement Offices
72	459120	Toy store
73	561510	Travel agency
74	541940	Veterinary Services
75	713120	Video Arcade

	<u>NAICS Code</u>	<u>Classification</u>
<u>1</u>	<u>311811</u>	<u>Retail Bakeries</u>
<u>2</u>	<u>312120</u>	<u>Breweries- *Subject to Section 6</u>
<u>3</u>	<u>315250</u>	<u>Cut and Sew Apparel Manufacturing (except Contractors)</u>
<u>4</u>	<u>423220</u>	<u>Home Furnishing Merchant Wholesalers</u>
<u>5</u>	<u>423450</u>	<u>Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers</u>
<u>6</u>	<u>441330</u>	<u>Automotive Part and Accessories Retailers - *Subject to Section 2</u>
<u>7</u>	<u>441340</u>	<u>Automotive Tire Dealers - *Subject to Section 2</u>
<u>8</u>	<u>444110</u>	<u>Home Centers</u>
<u>9</u>	<u>444140</u>	<u>Hardware Retailers</u>
<u>10</u>	<u>445110</u>	<u>Supermarkets and Other Grocery Retailers (except Convenience Retailers)</u>
<u>11</u>	<u>445298</u>	<u>All Other Specialty Food Retailers</u>
<u>12</u>	<u>449110</u>	<u>Furniture Retailers</u>
<u>13</u>	<u>449210</u>	<u>Radio and television stores</u>
<u>14</u>	<u>449210</u>	<u>Electronics and Appliance Retailers</u>
<u>15</u>	<u>455110</u>	<u>Department Stores</u>
<u>16</u>	<u>455211</u>	<u>Warehouse Clubs and Supercenters</u>
<u>17</u>	<u>456110</u>	<u>Drug stores</u>
<u>18</u>	<u>458110</u>	<u>Clothing and Clothing Accessories Retailers</u>
<u>19</u>	<u>4582</u>	<u>Shoe Retailers</u>
<u>20</u>	<u>459110</u>	<u>Sporting Goods Stores</u>
<u>21</u>	<u>459120</u>	<u>Hobby, Toy, and Game Retailers</u>
<u>22</u>	<u>459140</u>	<u>Musical Instrument and Supplies Retailers</u>
<u>23</u>	<u>459210</u>	<u>Book Stores</u>
<u>24</u>	<u>459310</u>	<u>Florists</u>
<u>25</u>	<u>459410</u>	<u>Office Supplies and Stationery Retailers</u>
<u>26</u>	<u>459420</u>	<u>Gift, Novelty, and Souvenir Retailers</u>
<u>27</u>	<u>459510</u>	<u>Antique shops</u>
<u>28</u>	<u>459920</u>	<u>Art galleries retailing art</u>
<u>29</u>	<u>459999</u>	<u>Art supply stores</u>
<u>30</u>	<u>491110</u>	<u>Postal Service</u>
<u>31</u>	<u>492110</u>	<u>Couriers and Express Delivery Services</u>
<u>32</u>	<u>512131</u>	<u>Motion Picture Theaters (except Drive-Ins)</u>
<u>33</u>	<u>516110</u>	<u>Radio Broadcasting Stations *(excluding tower)</u>
<u>34</u>	<u>522110</u>	<u>Commercial Banking</u>
<u>35</u>	<u>522310</u>	<u>Mortgage and Nonmortgage Loan Brokers</u>
<u>36</u>	<u>531120</u>	<u>Lessors of Non residential Buildings (except Miniwarehouses)</u>
<u>37</u>	<u>531130</u>	<u>Lessor of mini-warehouse and self-storage *Subject to Section 5</u>
<u>38</u>	<u>531210</u>	<u>Offices of Real Estate Agents and Brokers</u>
<u>39</u>	<u>541191</u>	<u>Title Abstract and Settlement Offices</u>

<u>40</u>	<u>5412</u>	<u>Accounting, Tax Preparation, Bookkeeping and Payroll Services</u>
<u>41</u>	<u>541340</u>	<u>Drafting Services</u>
<u>42</u>	<u>541611</u>	<u>Administrative Management and General Management Consulting Services</u>
<u>43</u>	<u>541810</u>	<u>Advertising Agencies</u>
<u>44</u>	<u>541940</u>	<u>Veterinary Services</u>
<u>45</u>	<u>541990</u>	<u>All Other Professional, Scientific, and Technical Services</u>
<u>46</u>	<u>561510</u>	<u>Travel agencies</u>
<u>47</u>	<u>561622</u>	<u>Locksmiths</u>
<u>48</u>	<u>611710</u>	<u>Educational Support Services</u>
<u>49</u>	<u>621111</u>	<u>Offices of Physicians (except Mental Health Specialists)</u>
<u>50</u>	<u>621210</u>	<u>Offices of Dentists</u>
<u>51</u>	<u>621320</u>	<u>Offices of Optometrists</u>
<u>52</u>	<u>621493</u>	<u>Freestanding Ambulatory Surgical and Emergency Centers</u>
<u>53</u>	<u>622110</u>	<u>General Medical and Surgical Hospitals</u>
<u>54</u>	<u>624410</u>	<u>Child Care Services</u>
<u>55</u>	<u>711120</u>	<u>Dance Companies</u>
<u>56</u>	<u>713120</u>	<u>Amusement Arcades</u>
<u>57</u>	<u>713940</u>	<u>Fitness and Recreational Sports Centers</u>
<u>58</u>	<u>721110</u>	<u>Hotels (Except Casino Hotels)- *Subject to Section 4</u>
<u>59</u>	<u>722410</u>	<u>Drinking Places (Alcoholic Beverages) - *Subject to Section 6</u>
<u>60</u>	<u>722511</u>	<u>Brew pub <b>restaurants</b>, primarily serving meals, full service - *Subject to Section 3</u>
<u>61</u>	<u>722511</u>	<u>Full-Service Restaurants - *Subject to Section 3</u>
<u>62</u>	<u>722513</u>	<u>Limited-Service Restaurants - *Subject to Section 3</u>
<u>63</u>	<u>722514</u>	<u>Cafeterias, Grill Buffets, and Buffets - *Subject to Section 3</u>
<u>64</u>	<u>811111</u>	<u>General Automotive Repair - *Subject to Section 2</u>
<u>65</u>	<u>811412</u>	<u>Appliance Repair and Maintenance</u>
<u>66</u>	<u>812112</u>	<u>Beauty Salons</u>
<u>67</u>	<u>812320</u>	<u>Drycleaning and Laundry Services (except Coin-Operated)</u>
<u>68</u>	<u>926130</u>	<u>Regulation and Administration of Communications, Electric, Gas, and Other Utilities</u>

**a. Automotive Uses** - Only one (1) nationally or regionally recognized automotive-oriented use shall be permitted for each of the following categories:

- **811111 General Automotive Repair**  
**Automotive Service/Repair:** Includes, but is not limited to, Take 5, Valvoline, Firestone, Jiffy Lube, or other similar nationally recognized vehicle maintenance or repair concepts.
- **44134030 Automotive Tire Dealers:** Includes, but is not limited to, Discount Tire, Mavis, NTB, or other similar nationally recognized tire retail concepts primarily engaged in the sale of tires and related accessories.
- **441330 Automotive Parts and Accessories Retailers**  
**Automotive Parts/Accessories:** Includes, but is not limited to, Advance Auto Parts,

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AutoZone, O'Reilly Auto Parts, NAPA Auto Parts, or other similar nationally recognized retail concepts primarily engaged in the sale of automotive parts and accessories.

All approved automotive-related uses shall be restricted to locations within the westernmost 800' of Highway 6 frontage.

**b. Restaurant Uses** – Specific restaurant concepts/franchises shall not locate or operate a site within Manvel Crossing if they own, lease, or control another site within a two-mile radius of the Project.

**c. Permitted Uses Subject to Specific Use Permit** – the uses listed in the Permitted Use table-specifically Drinking Places, Bars, Taverns, Micro-Breweries- are subject to Specific Use Permits to be reviewed and approved by city staff and city council.

**d. Hotel Use** - Only one (1) nationally or regionally recognized hotel flag shall be permitted within the PUD, and such hotel use shall be restricted to the north side of the parallel access easement, with no frontage on Highway 6 or Kirby Drive. Hotel uses may include, but are not limited to, the following nationally or regionally recognized brands or similar concepts:

- **Full-Service and Select-Service Hotels:**

Marriott, Hilton, Hyatt, Sheraton, Westin, Embassy Suites, DoubleTree, Renaissance, or other comparable full-service or select-service hotel brands.

- **Limited-Service Hotels:**

Hampton Inn, Holiday Inn Express, Fairfield Inn & Suites, Courtyard by Marriott, Hilton Garden Inn, Best Western Plus, La Quinta, Comfort Suites, or other comparable limited-service hotel brands.

All approved hotel uses shall be subject to City Ordinances regarding Hotel Licensing, Operations, and Hotel human trafficking training.

**e. Lessor of Mini-Warehouse and Self-Storage** - Only one (1) climate-controlled, multi-level storage facility shall be permitted within the PUD, and such use shall be restricted to the north side of the parallel access easement, with no frontage on Highway 6 or Kirby Drive. This use shall be limited to fully enclosed, climate-controlled storage units contained within a multi-story building and shall not include any outdoor storage, drive-up units, or mini-warehouse style facilities.

**f. Freestanding Ambulatory Surgical and Emergency Centers** - Freestanding Ambulatory Surgical and Emergency Centers as defined by NAICS No. 621493, Permitted Uses, shall include the following conditions:

- i. Unless otherwise required by state law or regulation, the facility is only permitted to operate during the hours of 7:00 a.m. to 10:00 p.m. each day;
- ii. All waiting and/or lobby areas shall maintain an unobstructed view from the outside; and
- iii. All doors shall remained unlocked and accessible during normal business hours.

**2. Non-Permitted Land Use Table**

<del>1. 455219 - Auction only</del>	10. <u>457110</u> - Gas Stations with Convenience Stores
2. <del>493190 - Automobile repair, major, with outside work or storage</del> <u>Other Warehousing and Storage</u>	11. <u>522299 - International, Secondary Market, and All Other Nondepository Credit Intermediation</u> <del>Pawn shop</del>
3. <u>238990 - All Other Specialty Trade Contractors</u> <del>Billboards</del>	12. Sexually oriented businesses
4. <del>336390-441110 - Automobile dealers, new only or new and used</del> <u>Car Dealerships</u>	13. <del>454390-459510 - Flea markets, used merchandise, permanent</del> <u>Swap meet</u>
5. <u>811192 - Car Washes</u>	14. <u>812199 - Tattoo shops</u> <del>Parlors</del>
6. <del>812220 - Cemeteries</del> <u>and Crematories</u>	15. <u>115210-17 - Support Activities for Animal Production</u> <del>Taxidermist</del>
7. <u>512132 - Drive-in motion picture theaters</u>	16. <u>811121 - Upholstery shops,</u> <del>automotive</del> <u>Upholstery only</u>
8. <u>424910 - Farm Supplies Merchant</u> <u>Wholesalers</u> <del>Feed store</del>	17. <u>459991 - Vape shops</u>
9. <u>812910 - Pet Care (except Veterinary)</u> <u>Services</u> <del>Kennel (Commercial)</del>	18. <u>237130 - Power and Communication Line and Related Structures Construction</u>

**3. Special Events**

Temporary events shall follow the requirements of Article XII. – Special Events, of the City of Manvel Code of Ordinances.

**4. Additional Uses**

In the event that a proposed use has not specifically been listed or determined to be similar and compatible to a permitted use in a particular land use category within the

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PUD, an amendment to the PUD will be necessary to add the unlisted use.

## 5. Site Standards

### *Minimum Setbacks:*

#### *Along Major Roads:*

1. Front: 25 feet
2. Rear: 15 feet
3. Side: 15 feet

#### *Along collector or internal streets/drives:*

4. Front: 10 feet
5. Side: 10 feet
6. Rear: 10 feet
7. Corner Side: 10 feet

#### *Adjacent to Residential and undeveloped land:*

8. Side: 10 feet
9. Rear: 10 feet

~~An additional one (1) foot setback per ten (10) feet in height above sixty (60) feet is required from residential zoning districts.~~

Architectural features may encroach into the setback area a maximum of three (3) feet.

Fences constructed on the site shall comply with Sec. 77-43. - Fences, of the City of Manvel Code of Ordinances.

## 6. Architectural Standards:

### *a. Maximum Building Height:*

#### *Pad Sites:*

- Maximum 35 feet

#### *Commercial Anchor Tenants:*

- Maximum 60 feet

#### *Commercial Mixed-use (Office/Medical/Retail):*

- Maximum ~~150~~60 feet

### *b. Building Materials:*

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To encourage architectural flexibility and meaningful façade articulation, all commercial buildings shall incorporate a variety of high-quality exterior materials. Buildings must include a minimum of 75% masonry on front and side façades and 50% masonry on rear and service façades, exclusive of windows, doors, and other transparent materials. The following materials shall qualify as masonry for the purposes of this requirement:

- Stone
- Brick
- Concrete
- Hollow clay tile
- Glass block
- True Stucco
- Insulated Concrete Forms

Non-masonry materials may not exceed the remainder of the building's elevation.

Additional permitted non-masonry materials (with proof of compliance to ICC and Texas Windstorm standards):

- Cementitious fiber
- EIFS
- Architectural metal panels
- Composite Wood-Look Cladding

~~Nationally or regionally recognized chains may incorporate company-specific materials such as metal roofing or siding and wood siding that would not ordinarily be permitted under the standard ordinance or PUD, provided such materials are approved by the Zoning Official.~~

Secondary power connections for new development from existing power poles located within the right-of-way of State Highway 6 will be placed underground.

Electrical panel boxes will not be located on a building façade facing State Highway 6 and be located on the rear of the buildings.

- c. *Parking Requirement:* Shall comply with the parking standards established in this section.
- d. *Open Storage:* Open storage is permitted within the parking lot for temporary seasonal sales or temporary promotional events. Additionally, NAICS code 444110 – ~~Building Material and Supplies Dealers~~Home Centers and 455211 – ~~Superstores or Superstores (i.e., food and general merchandise)~~Big-Box Retailers, located in buildings with 80,000 square feet of gross leasable floor area or more are permitted to use off-street parking spaces required by the City of Manvel's parking standards and PUD for permanent,

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long-term, or seasonal storage of inventory, equipment, vehicles, or other business-related property, provided that required parking is preserved and the use does not result in cross-parking impacts or deficiencies. Such storage shall not exceed twelve percent (12%) of all parking spaces provided for that building. No permits are required for temporary storage.

## 7. Parking

Parking within the Manvel Crossing site shall be provided according to Sec. 77-45. of The City of Manvel Zoning Ordinance, with the addition of a reduction in the required number of parking spaces from 5.0 spaces to 4.0 spaces per 1,000 square feet of gross leasable floor area for NAICS code 444110 – ~~Building Material and Supplies Dealers~~Home Centers, plus an additional 2.0 parking spaces for each 1,000 square feet of the floor area designated as an outdoor garden center.

Accessible parking spaces shall be provided in quantities meeting or exceeding the minimum requirements of the Texas Accessibility Standards (TAS), plus one (1) additional accessible parking space for every fifty (50) standard parking spaces above the first one hundred and fifty parking spaces required by TAS, or fraction thereof. All accessible spaces shall comply with applicable TAS and ADA design, dimension, slope, and signage standards.

The City's ~~PD&Z~~ Zoning Official shall determine the minimum number of parking spaces required for any use not specified. Appeals to the interpretation may be made to the Zoning Board of Adjustments within thirty (30) days of the date of the determination.

~~Shared parking should be encouraged where appropriate. Adjustment of the minimum number of parking spaces required to serve a combination of occupancies shall be determined according to the following formula:~~

- ~~1. Determine the parking requirement for each occupancy as though it were a separate use;~~
- ~~2. Multiply each amount by the corresponding percentage for each applicable time period shown in the following schedule:~~

Shared Parking Table					
Use	Weekday-Night (12 AM to 6 AM)	Weekday-Day (6 AM to 6 PM)	Weekday-Evening (6 PM to 12 AM)	Weekend-Day (6 AM to 6 PM)	Weekend-Evening (6 PM to 12 AM)
Office	5%	100%	10%	10%	5%
Retail/Commercial	5%	70%	90%	100%	70%
Commercial-Lodging	80%	80%	100%	50%	100%
Restaurant	10%	50%	100%	50%	100%
Entertainment	10%	40%	100%	80%	100%
All Others	100%	100%	100%	100%	100%

Illustrative Shared Parking Credit Calculation					
EXAMPLE: A retail establishment has 50,000 square feet of space, and an office complex has 50,000 square feet of space. Separately these uses would require a total of 450 parking spaces, but given the time of day, some uses require less spaces. Combined, the two uses					
Use	Weekday-Night (12 AM to 6 AM)	Weekday-Day (6 AM to 6 PM)	Weekday-Evening (6 PM to 12 AM)	Weekend-Day (6 AM to 6 PM)	Weekend-Evening (6 PM to 12 AM)
Office (200 spaces)	$5\% \times 200 = 10$	$100\% \times 200 = 200$	$10\% \times 200 = 20$	$100\% \times 200 = 200$	$5\% \times 200 = 10$
Retail/Commercial (250 spaces)	$5\% \times 250 = 13$	$70\% \times 250 = 123$	$90\% \times 250 = 225$	$50\% \times 250 = 125$	$70\% \times 250 = 175$
Commercial-Lodging	$80\% \times 0 = 0$	$80\% \times 0 = 0$	$100\% \times 0 = 0$	$100\% \times 0 = 0$	$100\% \times 0 = 0$
Restaurant	$100\% \times 0 = 0$	$50\% \times 0 = 0$	$100\% \times 0 = 0$	$50\% \times 0 = 0$	$100\% \times 0 = 0$
Entertainment	$100\% \times 0 = 0$	$50\% \times 0 = 0$	$100\% \times 0 = 0$	$50\% \times 0 = 0$	$100\% \times 0 = 0$
All Others	$100\% \times 0 = 0$	$50\% \times 0 = 0$	$100\% \times 0 = 0$	$50\% \times 0 = 0$	$100\% \times 0 = 0$
<b>COLUMN TOTALS</b>	<b>23</b>	<b>323</b>	<b>250</b>	<b>325</b>	<b>185</b>
<b>TABLE NOTE:</b>					
The largest number, 323, is the number of parking spaces that are required. This example is a 29-percent reduction compared to individual calculations.					

3. Calculate the column total for each time period;

4. The column with the highest value shall be the parking requirement.

The intent of shared parking is to allow uses that are more intense at certain times of the day to utilize an adjacent use's available parking at a time in the day that their need for parking is less intense. The result is a reduction in the need to park farther away when unexpected situations arise, in turn reducing potential for pedestrian harm. A signed agreement between business owners will be required to be submitted to the City

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~~before utilizing a shared parking plan.~~

## 8. Sidewalks

Sidewalks shall be installed per Sec. 62-113. – Sidewalks, of the City of Manvel Code of Ordinances. Any internal sidewalks must meet American Disability Act (ADA) and Texas Accessibility Standards (TAS). Sidewalks must be a minimum of 5 feet wide and 4.5 inches thick with steel reinforcement, unless otherwise required in the City's approved Master Thoroughfare Plan.

## 9. Landscaping

1. Landscaping for the Manvel Crossing development will adhere to Sec. 77-44. - Tree preservation, landscaping, fencing and screening of the City of Manvel Code of Ordinances.
2. Minimum 10% of site (excluding building footprint) must be landscaped. Minimum 5% of the site must be distributed as street, building, and parking lot landscaping. Specific tree and shrub spacing and screening requirements apply.
3. Manvel Crossing shall design, construct, and install a detention and drainage system that incorporates landscaping, pedestrian trails, and other complementary amenities with continuous connectivity to internal sidewalks and surrounding developments~~where feasible~~. These enhancements shall be integrated into the detention areas to improve connectivity, promote aesthetic quality, and create a welcoming and enjoyable environment for the community. The berms and areas with aesthetic improvements in these areas shall count toward the 10% landscaping requirement.
4. Landscaping and/or decorative fences shall screen outside storage areas, loading docks, garbage collection bins and delivery entrances from adjacent property and public street right of way.
5. A ten (10) foot wide landscaping buffer will be provided between commercial and residential zoning districts.
6. Street Trees
  - i. A minimum of one (1) street tree is required for every thirty (30) feet of street frontage.
  - ii. No street tree shall be less than two and a half (2.5) inch caliper
7. Parking lot landscaping

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- i. In addition to the Street Trees noted above, a tree of minimum one and a half (1.5) inch caliper shall be provided within or adjacent to the parking area at tree islands that:
    - a. Are at least nine feet (9') wide (back of curb to back of curb).
    - b. Each have a square footage of minimum 180.
    - c. Are located so that no parking space is further away than one hundred feet (100') from a tree island.
  - ii. Shrub planting shall be placed along the perimeter of a parking lot in order to screen the parking lot. The shrubs shall be maintained at a maximum height of 36 inches.
  - iii. At entrance and exits, shrubs shall be no higher than twelve (12) inches in height.

#### 8. Trees Along Highway 6

- i. Trees along Highway 6 will be staggered, with small and ornamental trees closest to Highway 6, and shade trees set back per distances listed below for a more natural look, as well as a precaution from unnecessary trimming near the power line.
  - a. Small and Ornamental Trees: May be planted up to 10 feet from any power lines and may constitute up to 60% of the site's landscaping.
    - 1) Of small or ornamental trees, crape myrtles may constitute up to 30% of the trees planted.
  - b. Shade trees: May be planted up to 20 feet from the powerline.
    - 1) Evergreen trees shall constitute a minimum of 40% of trees planted.

See "Appendix 3" below for a list of approved trees.

#### 10. Signage

All signage must be composed of materials and colors compatible with the associated use and the overall development. LED signage is permitted throughout the development so long as they do not flash or pulse, move at a fast pace, or use blue and red lights that mimic emergency vehicles. All signage will comply with the City of Manvel Lighting Standards. See "Exhibit 6" for an example of multi-tenant signage (subject to change). The following regulations shall apply:

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- a. General Signage Requirements
    - i. All signage shall be located a minimum of ten (10) feet from the property line.
    - ii. All signage must be perpendicular to the right of way.
    - iii. Directional/informational signs within the Manvel Town Center project indicating the location of a business, street or facility within the project are permitted up to one (1) sign, four (4) feet in height and six (6) square feet in area per side.
    - iv. Temporary Signage: Temporary signage shall be subject to the regulations listed in Section 53-10 of the City of Manvel Code of Ordinance in effect January 16, 2024 as amended.
    - v. Prohibited Signage: Unless specifically permitted in the above regulations, all signage listed in 53-11 of the City of Manvel Code of Ordinances in effect January 16, 2024, is prohibited.
  
  - b. *Multi-Tenant Monument/Pylon Signs* - A multi-tenant sign is defined as a freestanding sign with signage panels for multiple tenants within a single development.
    - i. Multi-tenant signs may be constructed up to forty (40) feet with a maximum width of twenty-five (25) feet.
    - ii. The bottom of such multi-tenant pylon sign message area shall not be less than ten feet (10') feet above the surrounding finished grade level.
    - iii. Each multi-tenant monument tenant sign may not exceed five (5) feet in height or fifty (50) square feet in area.
    - iv. In some instances, a multi-tenant sign may be considered off-premises if included within the Manvel Crossing development.
    - v. Two (2) total multi-tenant pylon signs are permitted along Highway 6 and one (1) along Kirby Drive.
  
  - c. *Single-Tenant Monument* – A single-tenant sign is defined as a freestanding sign advertising a single use.
    - i. Single-tenant signs may be constructed up to twelve feet (12') in height and sixty (60) square feet in area.
    - ii. One single tenant monument sign is permitted for each platted of otherwise designated tract or parcel. If a parcel has frontage on two public roadways/highways, thoroughfares, one monument sign is permitted on each street frontage.
    - iii. No single tenant monument sign shall be permitted within seventy five (75') feet of any other single tenant monument sign or within ten (10') feet from side property lines.

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- d. *Wall Mounted Signage* – A Wall sign is defined as a sign anchored to a wall elevation of a business.
- i. Buildings thirty (30') feet or less in height.
    - Wall signs are limited to 15% of the elevation they are placed on not to exceed 200 square feet. All parts of the elevation are used in this calculation.
    - Maximum Letter Height – thirty-six (36") inches for one line of text, eighteen (18") inches for two lines of text.
    - Maximum Overall Height – thirty-six (36") inches for one line of text, forty-two (42") inches for two lines of text.
    - The signage face shall not exceed 80% of storefront width.
  - ii. Buildings over thirty (30') feet in height.
    - Wall signs are limited to 25% of the elevation they are placed on not to exceed 400 square feet. All parts of the elevation are used in this calculation.
    - For every additional six (6') feet in height over thirty (30') feet, an additional twelve (12") inches of letter height is permitted, up to a maximum overall height of seventy-two (72") inches.
    - The signage face shall not exceed 80% of the storefront width.
  - iii. No wall sign can extend above the parapet.
  - iv. For individual uses greater than 80,000 square feet in gross floor area, up to one hundred twenty inches (120") of letter height is permitted.
  - v. For buildings over 120,000 square feet of gross floor area, up to one-hundred thirty inches (130") in overall height is permitted.
  - vi. Wall mounted logos, symbols, and related branding shall not exceed one-hundred ninety-eight inches (198") in height.

## **11. Lighting**

LED signage is recommended within the development for all business types and must comply with the Outdoor Lighting Standards and Regulations listed within the City of Manvel Ordinance No. 2024-O-36, as amended from time to time.

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## 12. Design Criteria Manual

The Project shall abide by the version of the City of Manvel Design Criteria Manual dated May 6, 2024 for a period of three (3) years, at which time it will abide by the most recently amended iteration.

## 13. Definitions

~~*Abstract or title company*—an establishment that examines historical records to create a summary of a piece of real estate, showing ownership, liens, mortgages, or other encumbrances, and often will issue title insurance to protect against ownership disputes.~~

~~*Accounting, tax preparation, bookkeeping and payroll services*—a business that functions to perform financial analysis and strategic advising, performs tax preparation for individuals or businesses, and may handle employee compensation for payroll related responsibilities.~~

~~*ADA (Americans with Disabilities Act)* - A U.S. civil rights law enacted in 1990 that prohibits discrimination against individuals with disabilities in public life, including employment, transportation, public accommodations, and communications. In construction and design, ADA sets accessibility standards for buildings, facilities, and signage (e.g., wheelchair ramps, tactile lettering, accessible restrooms).~~

~~*Administrative support services*—an establishment that handles day-to-day operations for other businesses or entities, including but not limited to office operations, information management, internal and external communication, scheduling, documenting, and other forms of support.~~

~~*Advertising agency*—a business that prepares strategies and products meant to seek the attraction, or to direct the attention, of the public to any goods, services, merchandise, purpose or cause.~~

~~*Ambulatory Health Care Services*—medical services performed on an outpatient basis, without admission to a hospital or other facility.~~

~~*Antique store*—a retail business that buys and sells old items, sch as furniture, art, and collectible, which are considered valuable due to their age, historical significance or rarity.~~

*Architectural feature* – an ornamentation or decorative feature attached to or protruding

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from the exterior wall of a building. Architectural features may include, but are not limited to windows (e.g. bay windows), chimneys, columns, awnings, marquees, façade or facia.

~~Architectural Metal Panels - Decorative or functional exterior cladding made from aluminum, steel, or other metals used for modern aesthetics, durability, and weather resistance.~~

~~Art gallery—a room or building used for the display or sale of works of art.~~

~~Arts and crafts store—a retail store selling a wide variety of supplies, materials, and tools for artistic creativity.~~

~~Auction—a public or private sale where goods or property are sold to the highest bidder.~~

~~Automobile parts and accessory retailers—This industry comprises establishments primarily engaged in retailing new, used, and/or rebuilt automotive parts and accessories, with or without repairing automobiles; and/or establishments primarily engaged in retailing and installing automotive accessories.~~

~~Automotive repair and maintenance—a facility used for the repair or replacement of engines, transmissions, differentials, drivetrains, or any parts thereof, in addition to the replacement of parts, service, and incidental repairs to private passenger vehicles. A private passenger vehicle is defined as automobiles, motorcycles, station wagons, vans, SUVs, or pickup trucks reserved for personal use.~~

~~Bakery (retail)—an establishment that produces and sells baked goods to the public in a storefront setting.~~

~~Banking or financial institution—a chartered financial institution that engages in deposit banking and closely related functions such as making loans, investments and other fiduciary activities. Drive-up windows and drive-thru automated teller machines (ATM) are permitted as an accessory use.~~

~~Barber or beauty shop—a business that offers hairdressing, cosmetology, and personal grooming services.~~

~~Billboards—large outdoor advertising structures typically found along highways or in high-traffic areas.~~

~~Bookstore—means a retail establishment that engages in the sale, rental, or other charge-for-use of books, magazines, newspapers, greeting cards, postcards, videotapes, computer software, or any other printed or electronically conveyed information or media,~~

~~excluding any "adult bookstore," "adult theater," "theater," or "studio theater."~~

Brick - Rectangular blocks made from clay or shale, hardened by firing used for walls, pavements, and facades that are known for their strength, fire resistance, and classic appearance.

*Building* – a structure used for or supporting any use or occupancy that requires a building permit.

~~*Building material, garden equipment, and supplies dealers* – retail establishments that sell building materials (like lumber, paint, hardware) and lawn and garden products (such as plants, tools, and outdoor power equipment) to consumers and contractors.~~

~~*Cafeteria* – a restaurant or dining room located in part of a business in which customers serve themselves or are served from a counter and pay before eating.~~

~~*Candy store* – a specialized retail business that provides sweet treats as their primary inventory.~~

~~*Catering* – a business that provides food and beverage for an event at a location other than a traditional restaurant, handling everything from menu planning to food preparation, set-up, serving, and cleanup.~~

~~*Cellular phone sales and repair store* – a business that provides small-scale electronic repair services for items of the general public, including, but not limited to cellphone repair and other related minor repairs.~~

~~*Childcare facility* – a commercial or non-profit facility that provides shelter, care, activity, and supervision of children for periods of less than 24 hours a day and is licensed by the state.~~

~~*Clinic* – a building, other than a hospital as herein defined, used by one (1) or more licensed physicians for the purpose of receiving and treating patients.~~

~~*Clothing store (no re-used clothing)* – a small retail establishment that sells fashionable clothing or accessories.~~

~~*Collection Agency* – an business that attempt to collect past due or unpaid debts on behalf of a creditor or lender, or purchases the debt itself to collect.~~

Cementitious Fiber - A building material made of cement reinforced with cellulose fibers that is commonly used for siding and panels, known for fire resistance, durability, and

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ability to mimic wood, stone, or stucco finishes

*Collector street* – a public street designated as a “minor corridor” on the City’s Major Thoroughfare Plan.

Commercial Mixed-use – A tract of land, building, or structure developed for two or more different uses such as, but not limited to, office, retail, public, or entertainment. The mix of uses may occur either on the same tract of land, but compartmentalized into separate buildings, or located within the same building (e.g. retail on the first floor and office on the floors above the retail).

Composite Wood-Look Cladding - Exterior siding panels made from engineered materials (often resins, plastics, or wood fibers) that is designed to mimic the appearance of natural wood while offering durability, low maintenance, and resistance to rot or insects.

Concrete - A composite material made of cement, water, sand, and aggregates.

*Council* – Shall mean the City Council of the City of Manvel.

Environmental Site Assessment (ESA) - A study conducted to evaluate the environmental condition of a property.

~~*Dance studio* – a facility in which students are instructed and educated on the particulars of a physical art form. This does not include adult uses such as adult cabaret.~~

~~*Delivery service* – a commercial service that transports goods, parcels, or prepared food from a point of origin to a customer-specified destination.~~

~~*Dental Clinic* – a healthcare facility where dental services are provided.~~

~~*Department store* – a retail establishment that conducts business under a single owner’s name wherein a variety of unrelated merchandise and services are housed and are exhibited and sold directly to the customer for whom the goods and services are furnished.~~

~~*Drafting service* – a business that provides technical drawings and plans used in architecture, engineering, or manufacturing.~~

~~*Drinking places (alcoholic beverages)* – establishments primarily serving alcoholic drinks, such as bars, pubs, and lounges.~~

~~*Drug store, with or without liquor or beer and wine sales* – an establishment that sells prescription medications, health products, and may also offer alcoholic beverages depending on licensing.~~

~~*Dry cleaning storefront, but not dry cleaning plant*—A retail location where customers drop-off and pick-up garments for cleaning; the actual cleaning is done off-site.~~

~~*EIFS (Exterior Insulation and Finish System)* - A multi-layered exterior wall system that provides insulation and a finished surface that is lightweight and energy-efficient.~~

~~*Educational support services*—non-instructional services that assist educational institutions, such as curriculum development, testing, or tutoring.~~

~~*Electronic sales and repair store*—sells and repairs electronics including but not limited to, appliances, air conditioners, refrigerators, dishwashers, and clothing washers and driers.~~

~~*Fitness and recreational sports center*—facilities offering exercise equipment, fitness classes, and wellness programs.~~

~~*Florist shop*—a business that sells flowers, floral arrangements, and related decorative items~~

~~*Food and beverage store*—a store that sells perishable goods for human consumption, and includes grocery stores, convenience stores, and specialty food retailers.~~

~~*Development Plan* - A detailed document or drawing that outlines how a piece of land will be used and built upon, that ensures that growth is orderly, sustainable, and aligned with community goals.~~

*Frontage* – Frontage shall mean that portion of any lot or tract that abuts a street or approved common area. A lot or tract abutting more than one (1) street shall have frontage on only one (1) street which shall be deemed to be the side having the shortest dimension unless otherwise indicated on the subdivision plat.

~~*Full-service restaurants*—a restaurant where meals are primarily prepared individually for the customer and are served to customers at their table by wait staff. A restaurant which is a fast-food restaurant, or which has drive thru facilities is not considered a full-service restaurant.~~

~~*Furniture store*—a store that sells household or office furniture such as sofas, tables, and beds.~~

~~*General merchandise retailers*—stores offering a wide variety of goods, such as department stores or big-box retailers.~~

~~*Gift shop*—a store that sells novelty items, souvenirs, and small gifts.~~

~~*Grocery store*—A retail establishment primarily selling prepackaged and perishable food as well as other convenience and household goods. The sale of alcohol is permitted as an accessory use.~~

*Glass Block* - Hollow or solid blocks of glass used in walls or partitions.

*Gross floor area* - Gross floor area (GFA) shall be defined as the sum in square feet of all floors of the building measured from the exterior face of the exterior walls. The gross floor area shall include all enclosed habitable space, including elevators, hallways, and stairwells on stories containing habitable space.

~~*Gun shop*—a store that sells firearms, ammunition, and related accessories.~~

~~*Hardware store*—a store that sells tools, building materials, and home repair supplies.~~

~~*Home appliance store*—a store that sells large and small appliances like refrigerators, washers, and microwaves.~~

~~*Home improvement store*—a store that offers products for remodeling, construction, and DIY projects.~~

~~*House wares and linens store*—a store that sells kitchenware, bedding, towels, and other household items.~~

*Hollow Clay Tile* - Clay-based masonry units with hollow cores that are lightweight compared to solid brick, with good thermal and sound insulation properties.

~~*Institutional use*—A use designated for public facilities including, but not limited to major and minor utilities, public safety sites, libraries, schools (both public and private) and other civic uses.~~

*Insulated Concrete Forms (ICFs)* - Hollow foam blocks or panels that are stacked to form walls, then filled with reinforced concrete.

*Landscaping* – Planting and related improvements for the purpose of beautifying and enhancing a portion of land and for the control of erosion and the reduction of glare, dust and noise. Rocks and/or gravel, by itself shall not constitute landscaping.

*LED Signage* – Any sign that uses light-emitting diodes (LEDs) as its illumination source. LED signage is energy efficient, durable, and low maintenance.

~~*Locksmith*—services related to locks, keys, and security systems, including installation and emergency access.~~

~~*Lodging facilities*— A building in which lodging is offered for compensation for a period of less than seven (7) days. This use includes hotels, motels, inns, and bed and breakfast residences, but does not include group homes and boarding houses.~~

*Lot* – An undivided tract of land having frontage on a public or private street which is designated as a separate and distinct tract and identified by numerical identification on a duly and properly recorded subdivision plat.

~~*Maintenance facility*— A facility intended to store equipment related to the maintenance, upkeep, or repair of the parks, open space, and detention/drainage areas inside the Project.~~

~~*Medical and health care services*— a healthcare facility offering inpatient services such as diagnosis, treatment, and preventive care. Examples of such a use are multi-specialty medical group practices providing outpatient care, offices of physicians, and general medical and surgical hospitals.~~

~~*Medical supply store*— a store that sells medical equipment and supplies like wheelchairs, bandages, and diagnostic tools.~~

~~*Micro-brewery, with or without food service*— a small-scale brewery producing limited quantities of beer, often with an on-site tasting room or restaurant, that has the necessary permits per the Texas Alcoholic Beverage Code.~~

~~*Minor utility*— Small scale facilities that are necessary to support development and that involve only minor structures. Minor utilities include, but are not limited to facilities such as power lines, water and sewer lines, storm drainage facilities, transformers, hydrants, switching boxes, wastewater lift stations, and similar structures.~~

~~*Major Thoroughfare Plan* - A long-range planning document that maps out the primary roadways and transportation corridors in a city or region.~~

~~*Monument Sign* - A low-profile, ground-mounted sign, often with a solid base made of masonry, stone, or concrete.~~

~~*Multi-Tenant Sign* - A sign that lists multiple businesses located within the same property or shopping center, often placed at entrances to plazas or office complexes.~~

~~*NAICS* - North American Industry Classification System (NAICS), which is a number code assigned by the NAICS Association to simplify the process of identifying what category a specific land use~~

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falls under.

~~*Mortgage Company*—a business that provides loans for purchasing real estate and may offer refinancing or financial consulting services.~~

~~*Motels and Hotels*—lodging establishments offering overnight accommodations, with varying levels of amenities and services.~~

~~*Motion picture theater companies and dinner theaters (with or without food service or alcoholic beverage sales)*—a venue for screening films to the public, which may include concessions or full dining options.~~

~~*Musical instrument store*—a store that sells instruments, sheet music, and accessories; may also offer rentals or repairs.~~

~~*Nursery, garden center, and farm supply retailers*—a business that primarily sell plants, such as trees, shrubs, and flowers, as well as garden and farm supplies like seeds, fertilizers, tools, and animal feed.~~

~~*Office supply and machinery store and repairs*—a store that sells office equipment and supplies and may provide repair services for items like printers or copiers.~~

~~*Optician or optometrist*—Provides vision care services including eye exams, prescriptions, and eyewear fittings.~~

~~*Parkway*—A right of way with a total width of 120 feet, designed for higher-traffic transportation.~~

~~*Personal and household goods store*—services that sell, fix, or maintain items like appliances, furniture, electronics, or clothing.~~

~~*Personal services*—a business that includes but is not limited to salons, spas, dry cleaners, and other businesses that cater to individual needs and grooming.~~

~~*Pharmacy*—an establishment that dispenses prescription medications and offers health-related products and advice.~~

~~*Postal Service*—an establishment that offers mail and package delivery, shipping, and related services, either publicly or privately operated.~~

~~*Private utilities*—Utilities other than water and wastewater. Other utilities may be public and/or private in nature and may include, but are not limited to electrical power, gas, telephone, wireless communication, internet, and cable television.~~

~~*Professional office*—A room or group of rooms used for conducting the affairs of a business,~~

~~medical, professional or service industry.~~

~~Parallel Access Easement - A legal right granted to allow access across a property, typically running parallel to a major roadway.~~

~~Pylon Sign - A tall, freestanding sign supported by one or more poles.~~

*Project* – The approximately 49 acres of land which is the subject of this PUD, the legal description of which is contained in the appendix of this document.

~~*Public facilities* — Any non-commercial land use (whether publicly or privately owned) which is to be used and/or allocated for the general good of the public. These uses include, but are not limited to governmental offices, libraries, parks, and major and minor utilities.~~

~~*Public safety site* — a location dedicated to emergency services such as police stations, fire departments, or emergency response centers~~

~~*Public utilities* — Any utilities that are provided by the city, county or municipal utility district which may include, but are not limited to water and wastewater.~~

~~*Radio sales and repair* — businesses that sell and/or repair radio equipment and related electronics.~~

~~*Radio Studio (excluding tower)* — a facility for producing and broadcasting radio programs, not including transmission towers.~~

~~*Real estate* — services related to buying, selling, leasing, or managing property.~~

~~*Record and tape store* — a store that sells music in physical formats such as vinyl records, cassette tapes, and CDs.~~

~~*Recreational facilities* — Any structure or building intended for active recreational use. Recreational uses shall include, but are not limited to clubhouses, tennis courts, basketball courts, sports fields, pools, playground equipment, bleachers, etc.~~

~~*Restaurant — limited service (LSR) and quick service* — a dining establishment emphasizing speed and convenience, where customers typically order and pay before eating and often help themselves to drinks, cutlery, and table maintenance. Quick Service Restaurant (QSR) is a specific type of LSR, a subset that is synonymous with "fast food," prioritizing very fast, efficient service, often with a consistent, streamlined menu and limited table service or a drive-thru window.~~

~~*Restaurant with micro-brewery* — a restaurant where meals are primarily prepared~~

~~individually for the customer and are served to customers at their table by wait staff, where malt liquors or beer are produced on site, as permitted by the Texas Alcoholic Beverage Code.~~

*Retail* – Retail sales of any article, substance, or commodity within a building or structure.

~~*Retail warehouse clubs and supercenters* – a business that sells goods directly to consumers (retail) or in bulk to other businesses (wholesale).~~

~~*Scientific and technical services* – professional services involving research, engineering, consulting, or specialized technical expertise.~~

~~*School (public or private)* – An institution for the teaching of children or adults including primary and secondary schools, colleges, professional schools, art schools, trade schools, and similar facilities.~~

*Sexually oriented Businesses* - Establishments that provide adult entertainment or sell adult products, such as strip clubs, adult bookstores, or adult video stores.

*Shade Tree* - A shade tree is a tree planted or valued primarily for the shade it provides, rather than for fruit, beauty, or other purposes.

*Shrub* - A woody plant smaller than a tree, usually with multiple stems growing from the base.

*Single-Tenant Sign* - A sign identifying one business or tenant on a property.

~~*Shared parking* – the use of the same off street parking stall or stalls to satisfy the off-street parking requirements for two or more individual land uses without significant conflict or encroachment.~~

~~*Shoe store and repair shop* – a store that sells footwear and provides shoe repair services.~~

*Small or ornamental tree* - a tree that is grown for its aesthetic appeal, such as attractive flowers, fall foliage, or unique bark, rather than for practical purposes like fruit or wood

~~*Sporting goods store* – a store that sells equipment, apparel, and accessories for sports and outdoor activities.~~

~~*Studio (art, music or photo)* – a space used for creating or teaching visual arts, music, or photography.~~

*Stone* - Natural rock material used in construction for walls, facades, and landscaping.

---

*Subdivision* – the division of a lot, tract, or parcel of land into two or more lots, plats, sites or other divisions of land for the purpose of industrial, office, and business development or other uses.

*TAS (Texas Accessibility Standards) - State-level accessibility requirements in Texas, aligned with the ADA that is Administered by the Texas Department of Licensing and Regulation (TDLR) and provides detailed technical specifications for accessible design in buildings and facilities within Texas.*

~~*Tailor* – an establishment that alters, repairs, or customizes clothing to fit individual clients.~~

~~*Tattoo shop* – a business where licensed artists perform body modification, including but not limited to applying permanent body art using ink and needles, and piercings.~~

~~*Tavern* – an establishment that primarily serving alcoholic beverages, often with food and entertainment.~~

~~*Taxidermist* – A professional who prepares, stuffs, and mounts the skins of animals for display.~~

~~*Toy store* – a store that sells toys, games, and educational items for children.~~

~~*Travel agency* – a business that offers travel planning, booking, and tourism related services.~~

*True Stucco* - A traditional plaster-like finish made from cement, lime, sand, and water applied in multiple coats directly to masonry or lath.

~~*Upholstery shop* – a business that repairs or replaces fabric, padding, and springs on furniture or vehicle interiors.~~

~~*Veterinary services* – medical care and treatment for animals, including surgeries and vaccinations.~~

~~*Video arcade* – a venue offering coin-operated or digital games for public entertainment, including pinball machines, racing simulators, shooting games, and other interactive amusements. These establishments are designed for recreational play and social engagement, often catering to families and youth. Gambling activities, including games of chance with monetary payouts or betting mechanisms, are strictly prohibited in video arcades to maintain compliance with state law.~~

---

*Wall-Mounted Sign* - A sign attached directly to the exterior wall of a building.

~~*Warehouse and storage — ancillary to primary use*~~ facilities for storing goods, either for distribution, safekeeping, or inventory management, located on the same site as a compatible use.

**e. GENERAL ADMINISTRATION & AMENDMENTS**

**a. Purpose**

This section establishes guidelines regarding the administration and future amendments to the PUD.

**1. Changes to the Zoning Ordinance**

The Development Regulations section of the PUD addresses only those areas that differ from the City of Manvel Zoning Ordinance. In the event that an issue, condition, or situation arises that is not specifically addressed in the PUD, the City of Manvel Zoning Ordinance in place at the time of the adoption of this document shall be used by the City's Zoning Official as the basis to resolve the issue.

**2. Variances from the Zoning Ordinance**

The criteria established in this PUD require variances from the City of Manvel Subdivision Ordinance as amended on May 6, 2023. These variances are necessary to achieve the community vision established in the City's Comprehensive Plan. The table below describes the requested variances and their corresponding section of the subdivision ordinance. These variances shall apply to all property within the PUD. Should any additional variances be sought in the future, this document will be amended with City Council approval.

**3. Variances from the Design Criteria Manual**

The criteria established in this PUD require variances from the City of Manvel Design Manual as adopted on May 6, 2024. These variances are necessary to achieve the community vision established in the City's Comprehensive Plan. Table 8 describes the requested variances and their corresponding section of the design manual. These variances shall apply to all property within the PUD.

---

## **B. Interpretation**

The City's Zoning Official shall be responsible for interpreting the provisions of the PUD. Appeals to the Zoning Official's interpretation may be made to the Zoning Board of Adjustments within thirty (30) days of the date of the interpretation. Appeals shall be heard by the Zoning Board of Adjustments a maximum of sixty (60) days after receipt by City staff.

## **C. Appeal to the Zoning Board of Adjustments**

Decisions by the Zoning Official or PD&Z regarding administrative changes shall be subject to appeal by the Zoning Board of Adjustments. The following categories shall be considered administrative changes, but are not limited to:

- The addition of new information to the PUD, including maps or text that does not change or affect any of the regulations or guidelines contained therein.
- Changes to the development infrastructure phasing and alignment, such as roads, drainage, water and sewer systems, excluding water and sewer plant locations.
- The determination that a use may be allowed which is not specifically listed as a permitted use, but may be determined to be analogous and/or accessory to a permitted use as determined by the City's PD&Z.

## **D. Substantial Change**

The PUD may be substantially amended by the procedure outlined in the City of Manvel Zoning Ordinance, Section 7 of the City of Manvel Zoning Ordinance. Any scrivener's errors or typographical issues may be corrected administratively without requiring an amendment to this PUD.

## **E. Fees**

All fees associated with the entitlement process shall be assessed as indicated by the City's adopted fee schedule that is in place at the time of Council approval, as amended from time to time. All fees shall be fair and reasonable.

**Appendix 1**  
**Metes & Bounds Description and Boundary Map**

**Appendix 2**  
**Approved Tree List**

**Appendix 3**  
**Ordinance No. XXXX-XX (PUD Ordinance)**

**Section 5.0 Application Materials**

This section includes:

- 1) Application Materials Checklist
- 2) Submission Fees
- 3) Application
- 4) Application Flowchart

**Application Materials Checklist**

To apply for a Planned Unit Development (PUD), eight (8) complete sets of the following materials and the required PUD plan exhibits to the City of Manvel (Please check all items submitted):

- Completed PUD application form
- Application fee
- Original letter of consent signed by all owners (if applicable)
- 24" x 36" prints of the PUD plan exhibits (Refer to Minimum Exhibit Requirements)
- Title Report, Letter, or Attorney Statement
- Copy of the confirmation of review from Alvin Independent School District
- Certificates of water and sewer availability
- Traffic study or letter from City Traffic Engineer stating no such study is required
- Letter detailing the development, anticipated build-out (number of units for residential, gross floor area for office and commercial) the amount of land to be developed, preserved or dedicated, and how public and/or private services will be provided
- Flood Impact Analysis if any portion of the PUD is located within the 100-year floodplain of floodway
- Original stamped, PUD plan mark-up from pre-application meeting (if any)
- Letter stating that all comments made by DRC at the pre-application meeting have been addressed
- List of requested deviations, if any from the established PUD guidelines with a statement of justification.

**Certification**

The undersigned hereby certifies that the enclosed Planned Unit Development Application and materials meets all of the City of Manvel requirements contained in Section 77-29 of the Zoning Ordinance and the PUD Manual.

\_\_\_\_\_  
NAME

\_\_\_\_\_  
DATE

\_\_\_\_\_  
TITLE

**Submission Fees**

A onetime fee of \$2,500.00 will be paid for by the applicant for each pre-application meeting with the DRC prior to the formal submittal of a PUD application.

All fees related to the review and processing of PUD applications must be received by the City prior to the initiation of the PUD review process. No pre-application meetings and/or formal application submittals will be processed until all required fees have been paid. ALL FEES MUST BE PAID IN FULL before the PUD application can be placed on the Planning, Development and Zoning Commission agenda or the City Council agenda for action.

PUD fees are as follows:

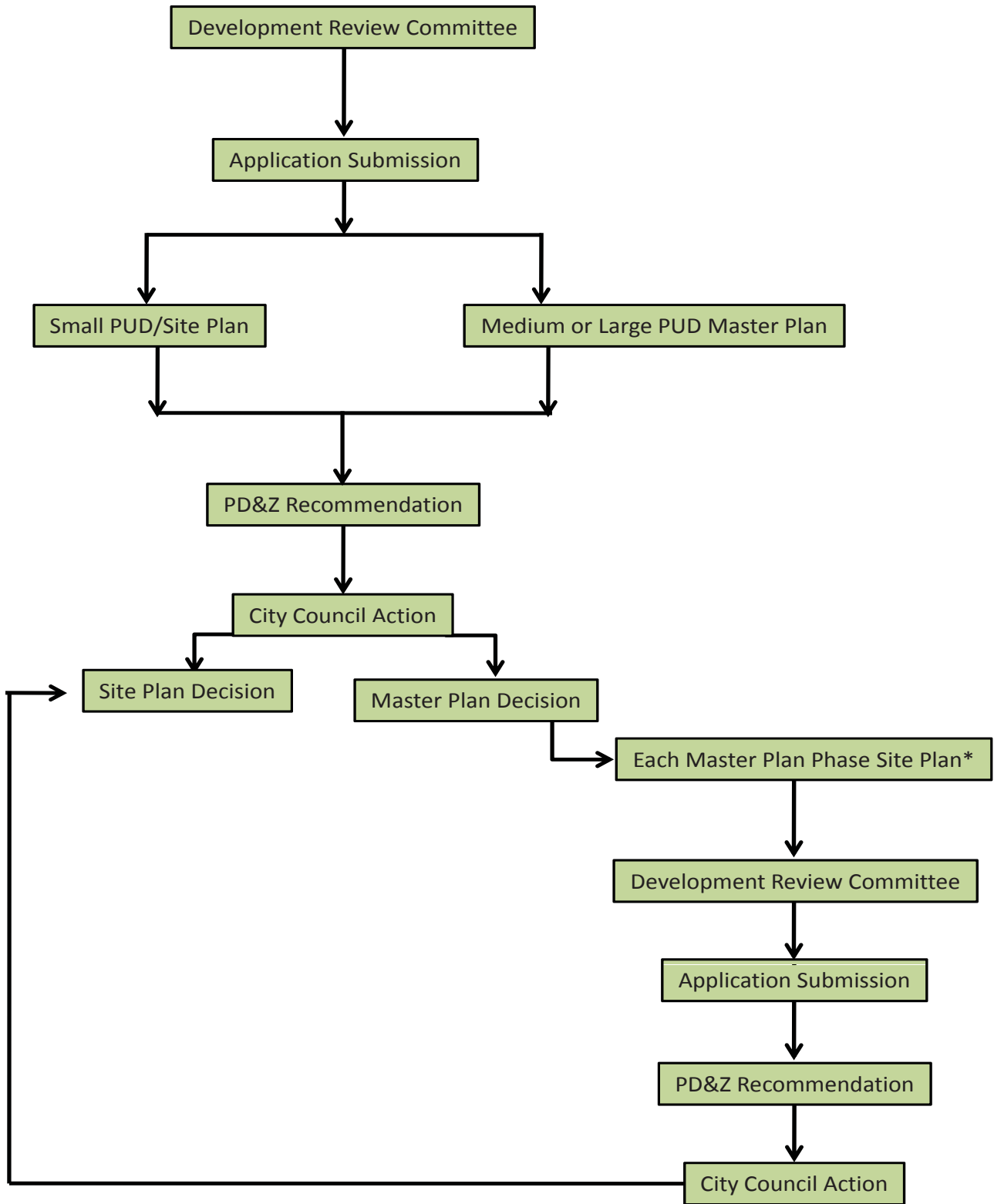
1. Review Fees: All PUD applications must be accompanied with a Review Fee based on the size of the PUD.
  - A. Small PUD:
    1. Four Thousand Dollars (\$4,000)
  - B. Medium PUD (Master Plan only, all future phases must be submitted for site plan review and pay appropriate fees as shown below)
    1. Four Thousand Dollars (\$4,000), and
      - a. Per Acre Fee of Forty Dollars (\$40) per acre or any part thereof
  - C. Large PUD (Master Plan only, all future phases must be submitted for site plan review and pay appropriate fees as shown below)
    1. Master plan less than one thousand (1,000) acres
      - a. Ten Thousand Dollars (\$10,000), and
      - b. Per Acre Fee of Thirty Dollars (\$30) per acre or any part thereof, or
    2. Master plan greater than one thousand (1,000) acres
      - a. Twenty Thousand Dollars (\$20,000), and
      - b. Per Acre Fee of Twenty Dollars (\$20) per acre or any part thereof in excess of 1,000 acres
  - D. Site plan review fees (does not apply to Small PUDs)
    1. Three Thousand Dollars (\$3,000)
      - a. 10 - 40 acres will have a per acre fee of Forty Dollars (\$40),
      - b. 41 - 160 acres will have a per acre fee of Twenty-five Dollars (\$25), and;
      - c. Per acre fee Twenty Dollars (\$20) per acre of any part thereof in excess of 160 acres.

**Public Notice Fee:** A One Hundred and Fifty Dollar (\$150) fee will be charged to the applicant for any review process that requires a public notification.

**Additional Services Fee:** In addition to the Review Fee, and the Public Notice Fee, an Additional Service Fee, based on the actual hourly cost to the City for staff or outside consultant will be charged to the applicant for the following:

- a. Any pre-submission meetings requested by the applicant
- b. Any additional review of PUD application submissions, other than the review covered in the Review Fee, requested by the applicant

**Figure 6 - Application Process**



\* Each subsequent development phase must follow the process detailed below.



<b>Staff Use Only:</b> Date Received: _____ Received by: _____ Date Complete: _____ Completeness Review by: _____
--

**Planned Unit Development (PUD) Application**

Incomplete Applications will not be accepted.  
 Please review application submittal requirements  
 contained in the City of Manvel PUD Manual.

(Please Type or Print Clearly with Dark Ink)

Master Plan PUD     
  Small PUD     
  Site Plan Only

**General Information**

PUD Name: \_\_\_\_\_  
 Number of Units Proposed: \_\_\_\_\_ Current Zoning Designation: \_\_\_\_\_  
 Zoning District under Which PUD Will Be Designed: \_\_\_\_\_  
 Address/Location: \_\_\_\_\_  
 Brazoria County Parcel Number (s): \_\_\_\_\_ Acres: \_\_\_\_\_  
 Legal Description: \_\_\_\_\_  
 \_\_\_\_\_

**Applicant Information**

Name: \_\_\_\_\_ Daytime Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City/State/Zip: \_\_\_\_\_  
 Contact Person: \_\_\_\_\_  
 Email Address: \_\_\_\_\_

**Property Owner Information (If different from applicant; attach additional signature page or appropriate letter of consent/agreement if more than one property owner)**

Name: \_\_\_\_\_ Daytime Phone: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 City/State/Zip: \_\_\_\_\_  
 Email Address: \_\_\_\_\_

**CITY OF MANVEL PLANNED UNIT DEVELOPMENT APPLICATION, PAGE 2**

(Attach additional sheets if necessary to fully answer the following.)

1. Contiguous Land Ownership- Please specify if the owner(s) own any property that is directly adjacent to the proposed PUD and describe any future projects in adjacent property: \_\_\_\_\_

2. Concept Statement- Brief description of the project including proposed the use or uses: \_\_\_\_\_

*The proposed activities and uses shall be shown on an attached PUD plan based on the exhibit requirements for master plan and site plan review. Please refer to the City of Manvel PUD Manual for the master plan and site plan requirements.*

3. Statement of Justification- Brief description outlining how the proposed PUD is consistent with the purpose of the Zoning Ordinance and all departures from the provisions of the underlying zoning district that are necessary to provide superior site development: \_\_\_\_\_

4. Statement of Compliance with the Comprehensive Plan- Description of how the PUD meets or exceeds the City vision as described in the Comprehensive Plan: \_\_\_\_\_

5. Statement of Compatibility- Describe how the proposed project is compatible with the surrounding uses and will not have significant adverse impacts on the properties: \_\_\_\_\_

\_\_\_\_\_  
Date

\_\_\_\_\_  
Applicant's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Owner's Signature (If different from Applicant)

The above signed property owners, certify that the above information is true and correct to the best of our knowledge and state that we are the legal owners of the property included in this application and/or designate the applicant to act as our agent with respect to this application. If there are more than one property owner(s), attach additional signature sheets or letter of consent to application.

# **RAVEN** Environmental Services, Inc.

**CONSULTING AND MANAGEMENT**

## ½ Acre Sample Plot Tree Inventory

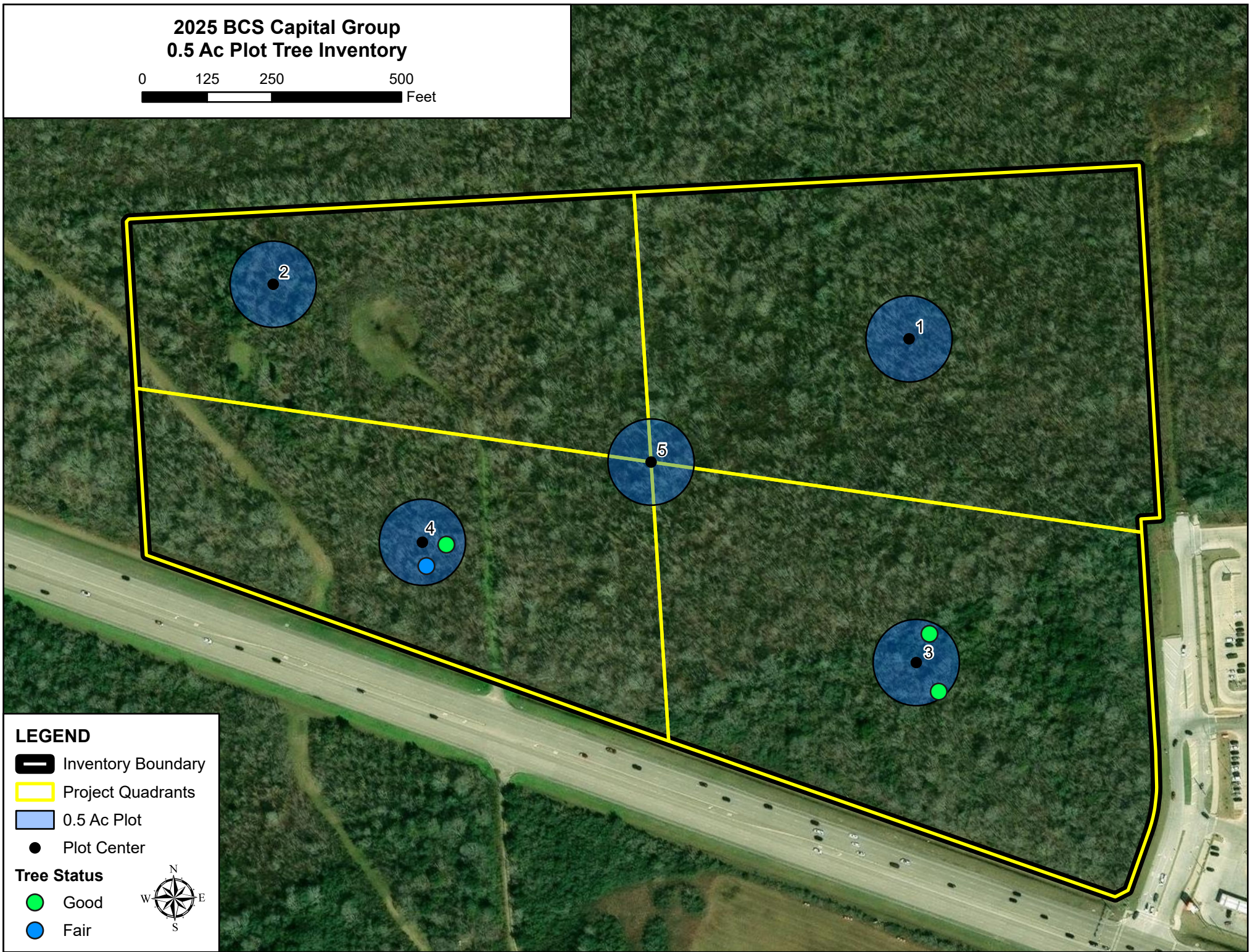
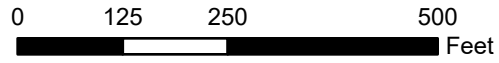
On September 29th, 2025, five ½ acre plots were inventoried on the property located near highway 6 and County Road 48, Manvel, TX (attached map). The two western plot locations were adjusted due to clearings falling within plot boundaries. Vegetation composition for all plots consisted of non-protected trees ranging from 3-15 inches in DBH with blackberry/yaupon holly dominating the understory. Chinese Tallow was the prevalent tree species followed by American Elm and Hackberry. No protected trees fell within plots 1,2 and 5. Vegetation composition for plot 4 was the same as the previous plots but an American Elm with a DBH of 20 inches fell within plot boundaries. Additionally, a multi-stem American Elm was inventoried with the 3 stems measuring 8, 10 and 16 inches. Information on how to record multi-stem DBH was not found after looking through section 77-44. However, if the square root of the sum of the squares methodology was used then the multi-stem tree would equal 20 inches DBH ( $\sqrt{8^2+10^2+16^2}$ ). Vegetation Composition for plot 3 consisted of Chinese Tallow, American Elm, Hackberry and Eastern Red-Cedar. Chinese tallow was the dominate tree species. Plot 3 had 2 protected trees, an American Elm measuring 21 inches and another American Elm measuring 24 inches.

<b>Protected Tree Inventory</b>			
<b>Plot #</b>	<b>Species</b>	<b>DBH</b>	<b>Health</b>
4	American Elm	20	Good
3	American Elm	21	Good
3	American Elm	24	Good

If you have any questions or concerns, please contact me.

Thank you,  
Trey Marrero  
Wildlife Biologist/ISA Certified Arborist TX-5004A  
tmarrero@ravenenvironmental.com

# 2025 BCS Capital Group 0.5 Ac Plot Tree Inventory



## LEGEND

- Inventory Boundary
- Project Quadrants
- 0.5 Ac Plot
- Plot Center

## Tree Status

- Good
- Fair



## **Tree Inventory and Preservation Summary**

A certified arborist with Raven Environmental Services conducted five ½-acre sample plots (2.5 acres total) across the 47-acre tract on September 29, 2025. The sampled areas were overwhelmingly dominated by **Chinese Tallow** and other non-protected species in the 3"–15" DBH range, with **yaupon** and **blackberry** comprising the understory. Only **three protected-caliber American Elm** trees in good condition (20", 21", and 24" DBH) were identified, and all occurred within the same general portion of the site; multiple other plots contained **zero** protected trees. Using standard acreage extrapolation, the upper-bound estimate would be roughly **50 protected-class trees** across all 47 acres. However, because protected trees did not appear in the plots representative of the rear/interior portions of the property—which consist almost entirely of invasive tallow scrub—the actual number of protected-quality trees across the site is expected to be **meaningfully lower than that upper-bound estimate**.

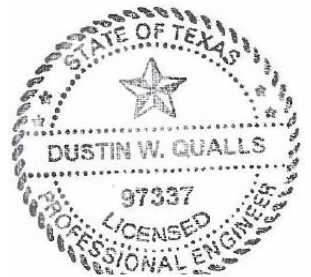
The **Planned Unit Development's tree-installation guidelines** require a **larger quantity of desirable native and protected species** to be planted throughout the project, resulting in a higher-quality and more sustainable canopy post-development.

**Accordingly, we respectfully request that this PUD incorporate approval pursuant to Section 77-44(b)(7)(d) of the Zoning Ordinance, which allows the City to accept a partial tree survey in lieu of a full survey when protected trees are confined to a limited portion of the site.** Given that all identified protected trees are concentrated within the front portion of the property and the remainder is dominated by non-protected invasive vegetation, this finding directly satisfies the intent and criteria of that provision.



# Traffic Impact Analysis

**Manvel Commercial Development  
SH 6 at Kirby Drive  
Manvel, Texas 77578**



-prepared by-

**QUALLS  
DESIGN**

TBPE Firm: F-23500

*Dustin W. Qualls, PE, PTOE*

October 9, 2025

10207 Birchline Dr  
Spring, TX 77379  
(713) 398-7461

[dustin@quallsdesign.com](mailto:dustin@quallsdesign.com)  
<http://QuallsDesign.com>

## Executive Summary

The *Manvel Commercial* development is proposed to be located on the north side of SH 6, just west of Kirby Drive, in Manvel, Texas. The proposed site location is shown outlined in red in **Figure 1** below.



*Figure 1: Manvel Commercial Proposed Development Location*

The Manvel Commercial development proposes to construct various retail land uses within the tract including:

- 28,630 total square footage of retail (shopping center)
- 11,567 total square footage of fast-food or fast-casual restaurants
- 5,312 total square footage of convenience store with 12 gasoline fueling stations
- 106,631 square feet of a home improvement superstore
- 49,500 square feet of a medical clinic
- 4,260 square feet of a car wash
- 2,549 square feet of an oil change service center
- 7,020 square feet of an auto parts store

Full buildout of the development is modeled as a single phase of construction with ultimate buildout by the end of 2028. A growth rate of 5% compounded annually for three years is utilized to develop the no-build baseline conditions prior to full buildout. The existing site is

mostly undeveloped, with an HEB shopping center located adjacent to the site on the east side of Kirby Drive.

The proposed development will provide six points of access:

- **Driveway 1 at SH 6** – this driveway is proposed to provide right-in/right-out access to SH 6 at the west side of the development. The driveway will function as a T-intersection.
- **Driveway 2 at SH 6** – this driveway is proposed to provide full-access to SH 6 from the center of the development. The driveway is proposed to align with an existing median opening on SH 6 that has left-turn lanes already servicing the median opening.
- **Driveway 3 at SH 6** – this driveway is proposed to provide right-in/right-out access to SH 6 at the east side of the development. The driveway will function as a T-intersection.
- **Driveway 4 at Kirby Drive** – this driveway will provide full access to Kirby Drive from the southeast portion of the development and align with an existing HEB driveway on the east side of Kirby Drive.
- **Driveway 5 at Kirby Drive** - this driveway will provide full access to Kirby Drive from the northeast portion of the development.
- **Driveway 6 at Kirby Drive** - this driveway will provide full access to Kirby Drive from the northern portion of the development.

The purpose of this Traffic Impact Analysis is to analyze the impacts of the Manvel Commercial development on adjacent critical roadways and recommend mitigation as necessary.

## Data Collection

Weekday AM and PM peak hour turning movement counts (TMCs) were collected on Wednesday, September 24<sup>th</sup>, by Qualls Design. The raw traffic counts can be found in **Appendix A**. Traffic control and existing traffic circulation patterns were observed in the field and documented as a part of this study. From the TMC data collected, the weekday AM peak hour for the overall study area was determined to be 7:00 AM to 8:00 AM, and the weekday PM peak hour was similarly calculated to be 5:00 PM to 6:00 PM.

## Traffic Impact Analysis Assumptions

Assumptions utilized in the study are listed below, along with justification for their use:

- Growth Rate: A 5% growth rate compounded annually is used in this study; this growth rate is consistent in context with the surrounding developments, site location, and relatively low growth in and around the study area.
- Internal Capture: No internal capture traffic volumes are assumed for this study to model worst-case conditions.
- Passerby Trips: Passerby traffic volumes are included according to the Institute of Transportation Engineers (ITE) *Trip Generation* passerby methodology.
- Trip Distribution: Percentages for global trip distribution were assumed based on proposed origins and destinations of the development. Globally, the trip distribution percentages assumed are as follows:
  - 50% to/from the east of the development via SH 6
  - 35% to/from the west of the development via SH 6
  - 10% to/from the northwest of the development via County Road 48
  - 5% to/from the southwest of the development via County Road 48

## Site Plan

The proposed site plan is shown on the next page in **Figure 2** with plan north being at the left of the image.

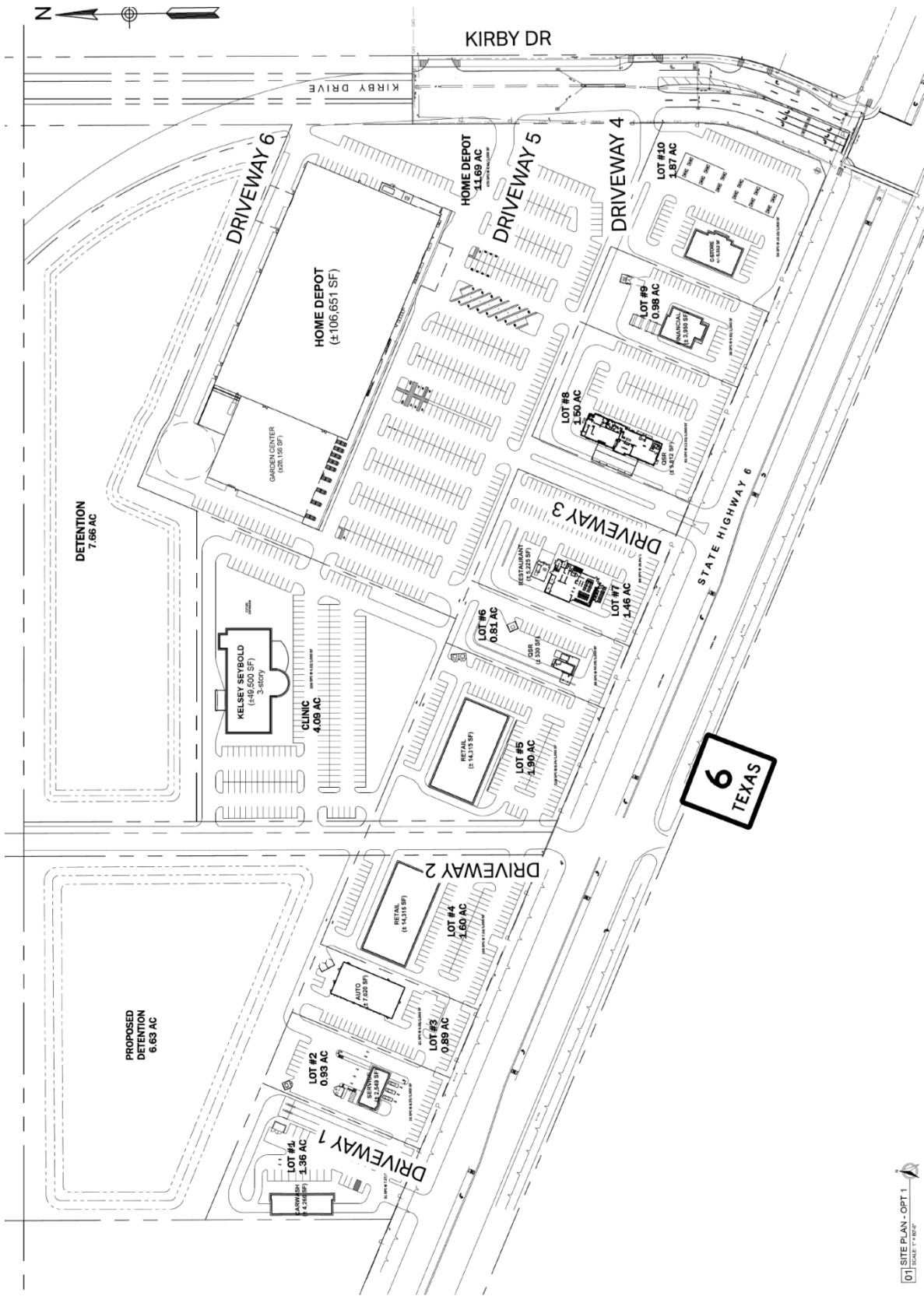


Figure 2: Manvel Commercial Proposed Site Plan

## Mitigation and Recommendations

Based on the capacity analyses performed for the proposed Manvel Commercial development, the following findings and findings are made:

- Construct a westbound right-turn deceleration lane at the proposed intersection of SH 6 at Driveway 3. A minimum taper length of 100 feet with a minimum storage length of 200 feet will suffice for the right-turn lane based on the buildout queue length analysis.
- Construct an extension of Kirby Drive north from the current terminus at the HEB property line to the proposed property line of the Manvel Commercial tract.
- Construct northbound left-turn lanes for Driveway 5 and Driveway 6 at the intersections with Kirby Drive.
- No additional mitigation measures are recommended for the critical intersections of the study area.

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## Introduction

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- 49,500 square feet of a medical clinic
- 4,260 square feet of a car wash
- 2,549 square feet of an oil change service center
- 7,020 square feet of an auto parts store

Full buildout of the development is modeled as a single phase of construction with ultimate buildout by the end of 2028. A growth rate of 5% compounded annually for three years is utilized to develop the no-build baseline conditions prior to full buildout. The existing site is mostly undeveloped, with an HEB shopping center located adjacent to the site on the east side of Kirby Drive.

The proposed development will provide six points of access:

- **Driveway 1 at SH 6** – this driveway is proposed to provide right-in/right-out access to SH 6 at the west side of the development. The driveway will function as a T-intersection.
- **Driveway 2 at SH 6** – this driveway is proposed to provide full-access to SH 6 from the center of the development. The driveway is proposed to align with an existing median opening on SH 6 that has left-turn lanes already servicing the median opening.
- **Driveway 3 at SH 6** – this driveway is proposed to provide right-in/right-out access to SH 6 at the east side of the development. The driveway will function as a T-intersection.
- **Driveway 4 at Kirby Drive** – this driveway will provide full access to Kirby Drive from the southeast portion of the development and align with an existing HEB driveway on the east side of Kirby Drive.
- **Driveway 5 at Kirby Drive** - this driveway will provide full access to Kirby Drive from the northeast portion of the development.

- **Driveway 6 at Kirby Drive** - this driveway will provide full access to Kirby Drive from the northern portion of the development.

## Existing Conditions

### Study Roadways

Existing land use in the vicinity of the proposed Manvel Commercial development is primarily low-density residential, with commercial development located along SH 6. The critical roadways that will be impacted by the proposed development include:

#### SH 6:

- Typical 6-lane, undivided major thoroughfare with raised ribbon medians providing median openings and left-turn lanes at specific locations
- Drainage provided by open ditches on both sides of the roadway
- Posted speed limit: 60 MPH
- Sidewalks are not present on either side of the roadway

#### Kirby Drive:

- Typical 2-lane, undivided collector roadway
- Drainage provided by open drainage ditches on both sides of the roadway
- Posted speed limit: 40 MPH
- A sidewalk is present along the east side of Kirby Drive
- Kirby Drive terminates as a dead-end north of the proposed site driveways; this project will construct an extension of Kirby Drive north to the property line

## Data Collection

Weekday AM and PM peak hour turning movement counts (TMCs) were collected on Wednesday, September 24<sup>th</sup>, by Qualls Design. The raw traffic counts can be found in **Appendix A**. Traffic control and existing traffic circulation patterns were observed in the field and documented as a part of this study. From the TMC data collected, the weekday AM peak hour for the overall study area was determined to be 7:00 AM to 8:00 AM, and the weekday PM peak hour was similarly calculated to be 5:00 PM to 6:00 PM.

### Existing Peak Hour Turning Movement Counts (2025)

The summarized peak hour TMCs by critical intersection can be seen in **Figure 3** for the weekday AM peak hour (7:00 AM to 8:00 AM) and **Figure 4** for the weekday PM peak hour (5:00 PM to 6:00 PM) respectively.

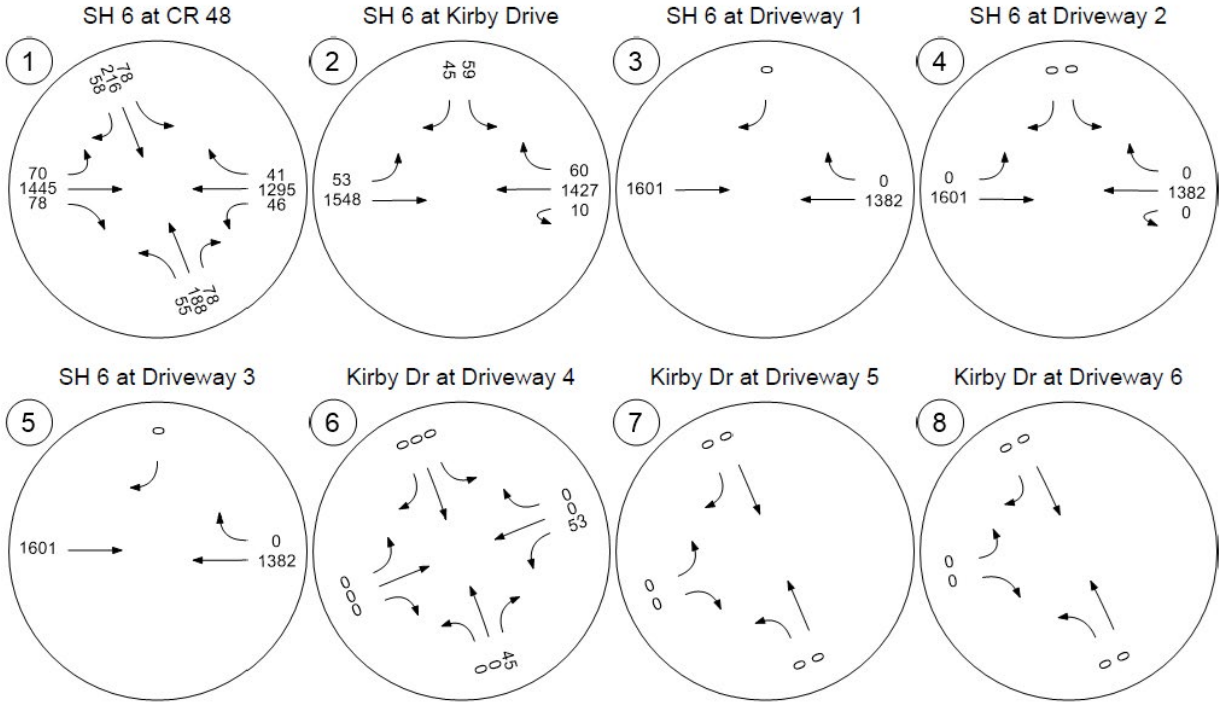


Figure 3: Existing AM Peak Hour TMCs (2025)

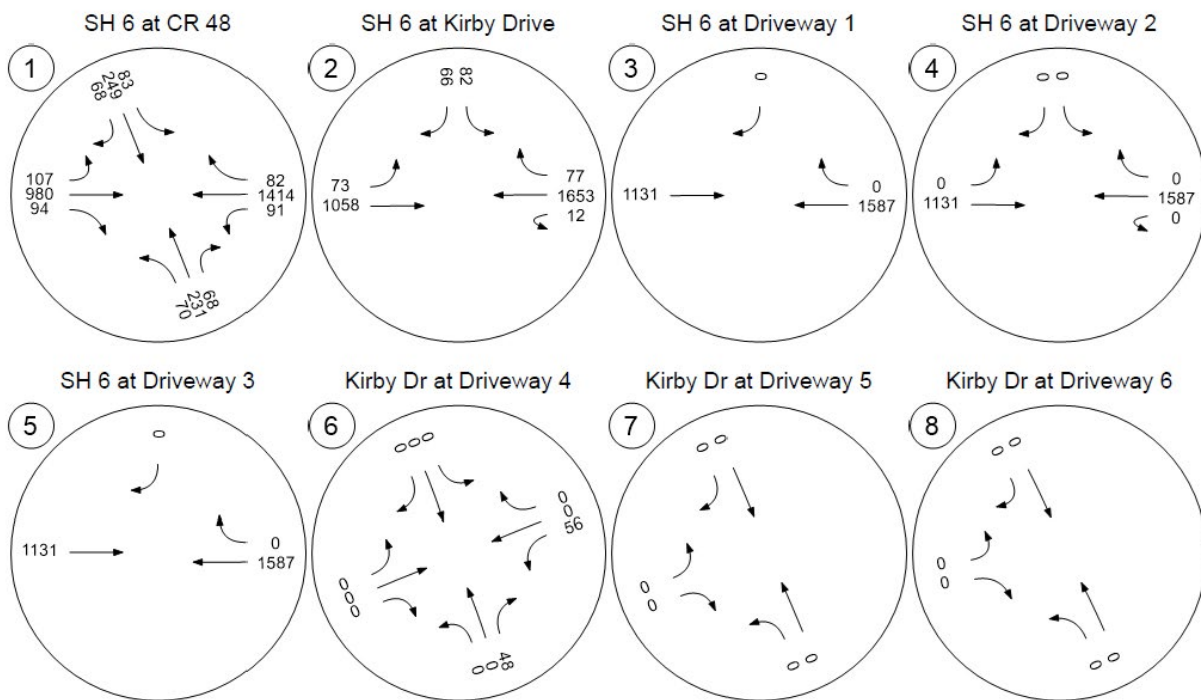


Figure 4: Existing PM Peak Hour TMCs (2025)

## No-Build Conditions

### Future Roadway Improvements

Existing land use in the vicinity of the proposed Manvel Commercial development is primarily low-density residential with commercial developments fronting along SH 6. For the purposes of this study, no future roadway improvements are included in the background conditions of the traffic modeling analysis.

### No-Build Traffic Volume Methodology

The methodology to calculate the no-build traffic volumes involves collecting existing traffic volumes, combining them with known future background volume generation from adjacent developments, and then growing the traffic volumes up to the design year of the development. The no-build projected traffic volumes will include existing traffic volumes grown for three years up to the buildout horizon timeframe of 2028.

### Growth Rate

A 5% growth rate compounded annually is used in this study; this growth rate is consistent in context with the surrounding developments, site location, and potential growth of the SH 6 corridor near the study area.

### No-Build Peak Hour Turning Movement Counts (2028)

The summarized no-build peak hour TMCs by intersection can be seen in **Figure 5** for the weekday AM peak hour (7:00 AM to 8:00 AM) and **Figure 6** for the weekday PM peak hour (5:00 PM to 6:00 PM) respectively.

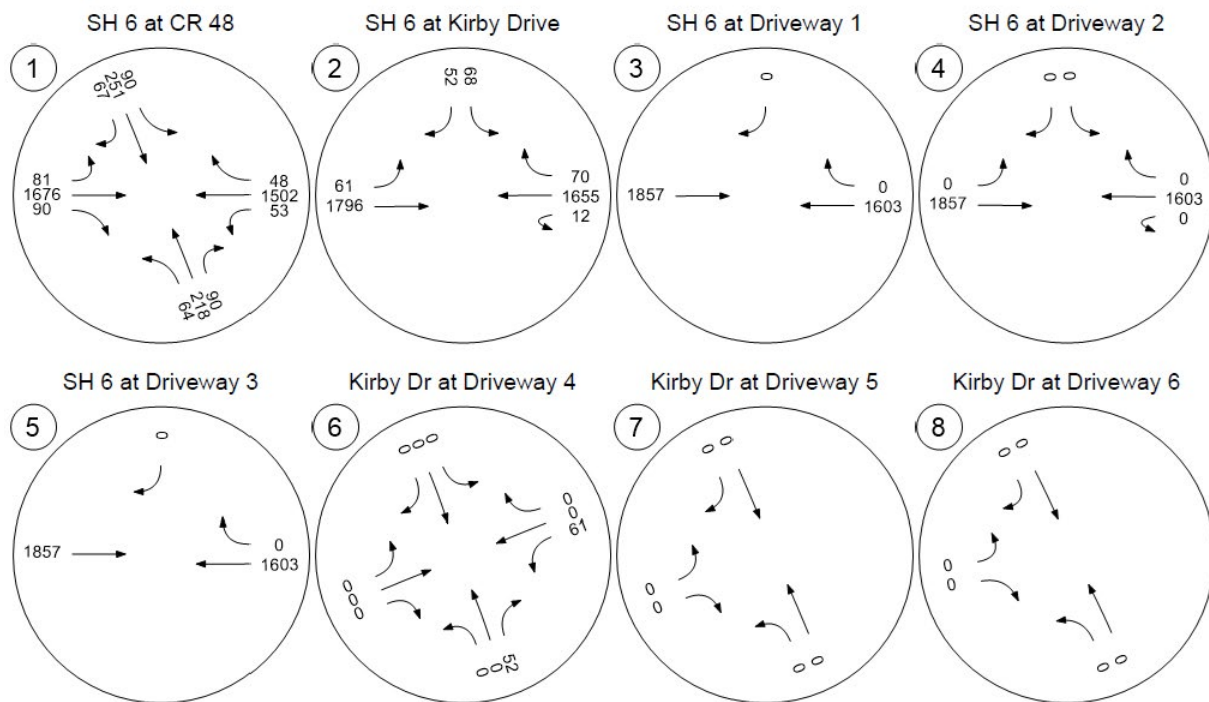


Figure 5: No-Build AM Peak Hour TMCs (2028)

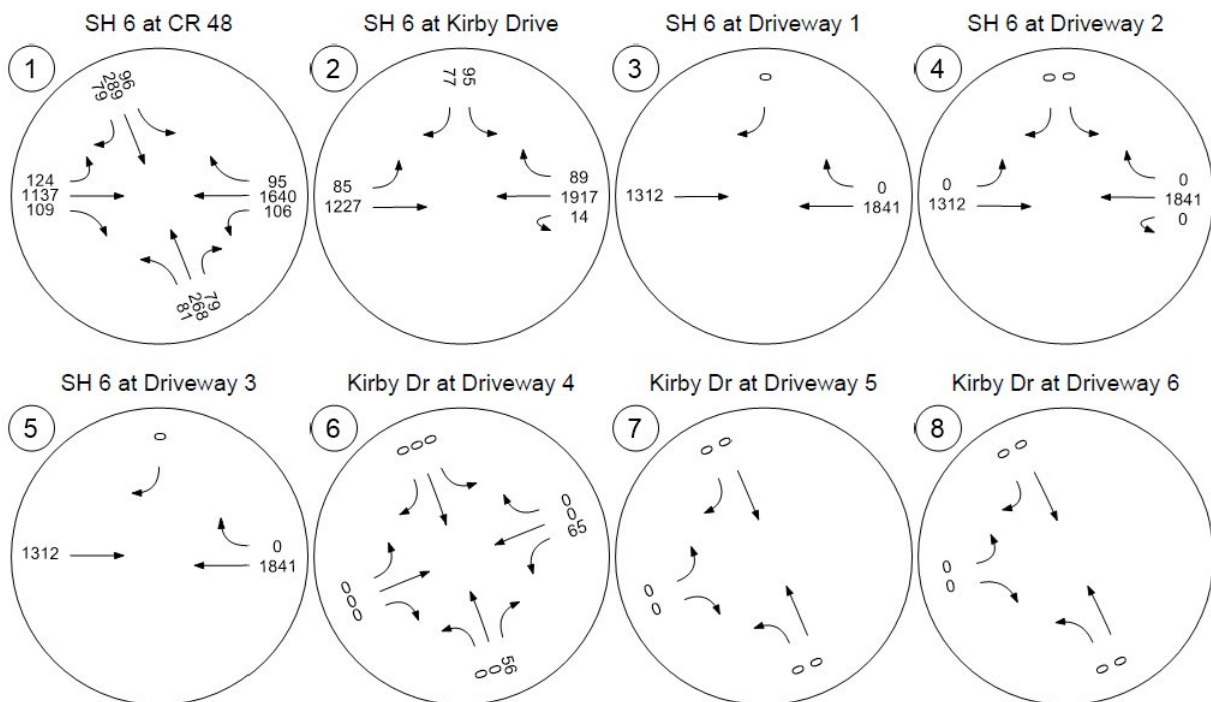
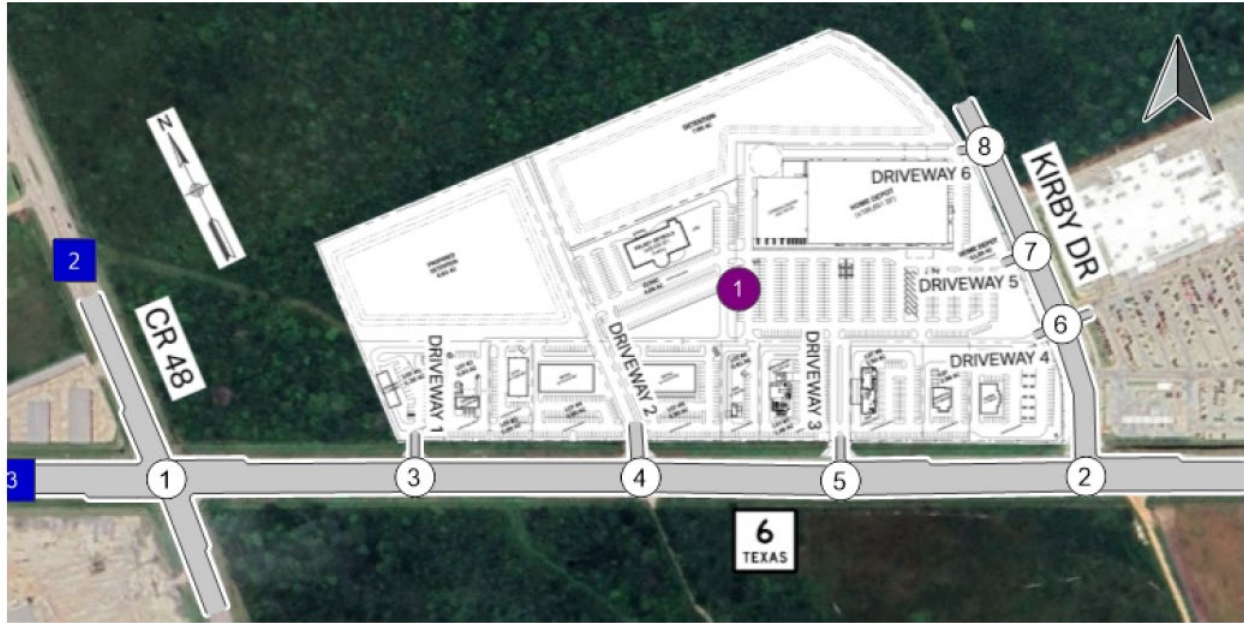


Figure 6: No-Build PM Peak Hour TMCs (2028)

## Proposed Development

### Site Plan

An enlarged Manvel Commercial site plan is shown in **Figure 7**, with plan north being at the left of the image.

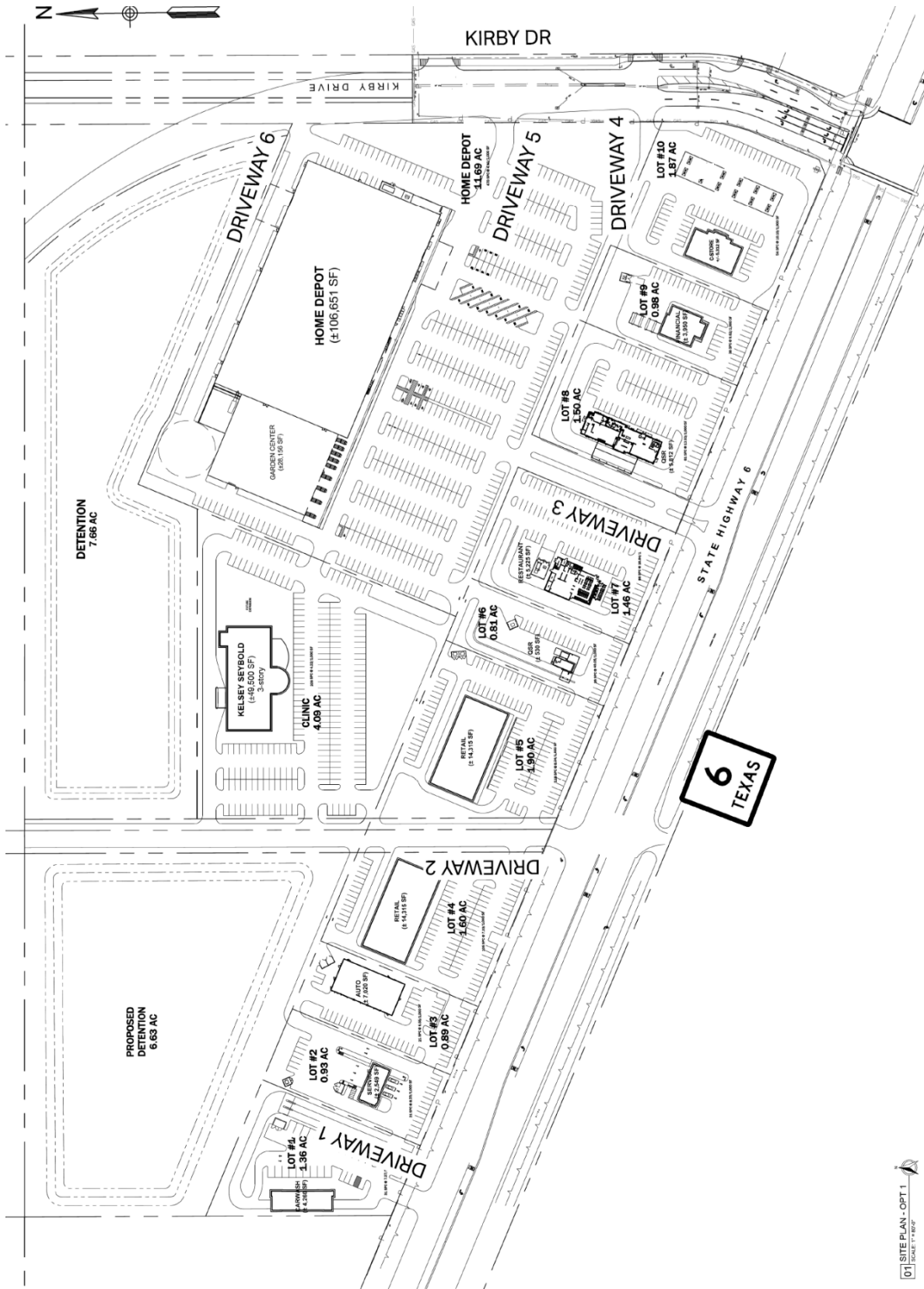


Figure 7: Manvel Commercial Proposed Site Plan

## Critical Study Intersections

Critical existing study intersections included in the capacity analyses section of the study to follow include:

### SH 6 at Kirby Drive

- This existing intersection is located adjacent to the development and is controlled by a traffic signal.
- The eastbound approach of SH 6 provides one left-turn lane and three through lanes. The westbound approach of SH 6 provides one U-turn lane, three through lanes, and one right-turn lane. The southbound approach of Kirby Drive provides two left-turn lanes and one right-turn lane.

### SH 6 at County Road 48

- This existing intersection is located west of the development and is controlled by a traffic signal.
- The eastbound and westbound approaches of SH 6 provide one left-turn lane, three through lanes, and one right-turn lane. The northbound and southbound approaches of County Road 48 provide one left-turn lane, one shared left-turn/through lane, one through lane and one right-turn lane.

### SH 6 at Proposed Driveways

- Driveway 1 and Driveway 3 will provide one lane for ingress and one lane for egress. Driveway 2 will provide one lane of ingress and two lanes of egress.

### Kirby Drive at Proposed Driveways

- Driveway 4, Driveway 5, and Driveway 6 will provide one lane for ingress and one lane for egress.

## Trip Generation

The *Institute of Transportation Engineers (ITE) Trip Generation, Latest Edition*, was utilized to best approximate the generated trips for Manvel Commercial development. **Table 1** displays the ITE trip generation for the proposed development as shown in **Figure 7**. The ITE trip generation worksheets can be found in **Appendix B**.

ITE Land Use Category	Size	Daily Weekday Trips			Weekday AM Peak Trips			Weekday PM Peak Trips		
		Total Trips	Trips Entering	Trips Exiting	Total Trips	Trips Entering	Trips Exiting	Total Trips	Trips Entering	Trips Exiting
Strip Retail Plaza (Code: 822)	28,630 SF	1,557	779	778	67	40	27	188	94	94
Fast-Food w/ Drive-Thru (Code: 934)	11,567 SF	5,423	2,711	2,712	517	264	253	383	199	184
Home Improvement (Code: 862)	106,651 SF	3,277	1,638	1,639	161	92	69	244	120	124
Convenience Store w/ Gas (Code: 945)	12 Fuel Stations	3,086	1,543	1,543	324	162	162	273	137	136
Drive-In Bank (Code: 912)	3,950 SF	391	196	195	39	23	15	82	41	41
Automated Car Wash (Code: 948)	4,260 SF	122	62	60	-	-	-	61	31	30
Medical Clinic (Code: 630)	49,500 SF	1,861	931	930	136	110	26	183	55	128
Quick Lubrication (Code: 941)	2,549 SF	174	87	87	15	11	4	22	9	13
Automobile Parts (Code: 843)	7,020 SF	382	191	191	18	10	8	34	16	18
Passerby Trips (Code 822, 40% in PM):		-	-	-	-	-	-	76	38	38
Passerby Trips (Code 934, 50% AM, 55% PM):		-	-	-	259	132	127	210	109	101
Passerby Trips (Code 945, 76% AM, 75% PM):		-	-	-	246	123	123	204	102	102
<b>Total Passerby Trips:</b>		-	-	-	<b>505</b>	<b>255</b>	<b>250</b>	<b>490</b>	<b>249</b>	<b>241</b>
<b>Total Generated Trips:</b>					<b>772</b>	<b>457</b>	<b>314</b>	<b>980</b>	<b>453</b>	<b>527</b>

Table 1: ITE Trip Generation Manvel Commercial

## Trip Distribution

Percentages for global trip distribution were assumed based on proposed origins and destinations of the development. Globally, the trip distribution percentages assumed are as follows:

- 50% to/from the east of the development via SH 6
- 35% to/from the west of the development via SH 6
- 10% to/from the northwest of the development via County Road 48
- 5% to/from the southwest of the development via County Road 48

## Traffic Model

*VISTRO* software was utilized to develop a traffic model of the study area. The network was designed with Manvel Commercial development as a “zone” that generates new trips and adds to the existing roadway network. The zone was then routed to the directional “gates” according to a gravity model and ease-of-access methodology. The *Highway Capacity Manual (HCM)* capacity analyses methodology is embedded within *VISTRO* and is utilized in this study for determinations of Levels-of-Service (LOS).

## Peak Hour Generated Trips

The following **Figure 8** and **Figure 9** graphically displays the trips generated at each critical intersection during the AM peak hour (7:00 AM to 8:00 AM) and during the PM peak hour (5:00 PM to 6:00 PM) respectively.

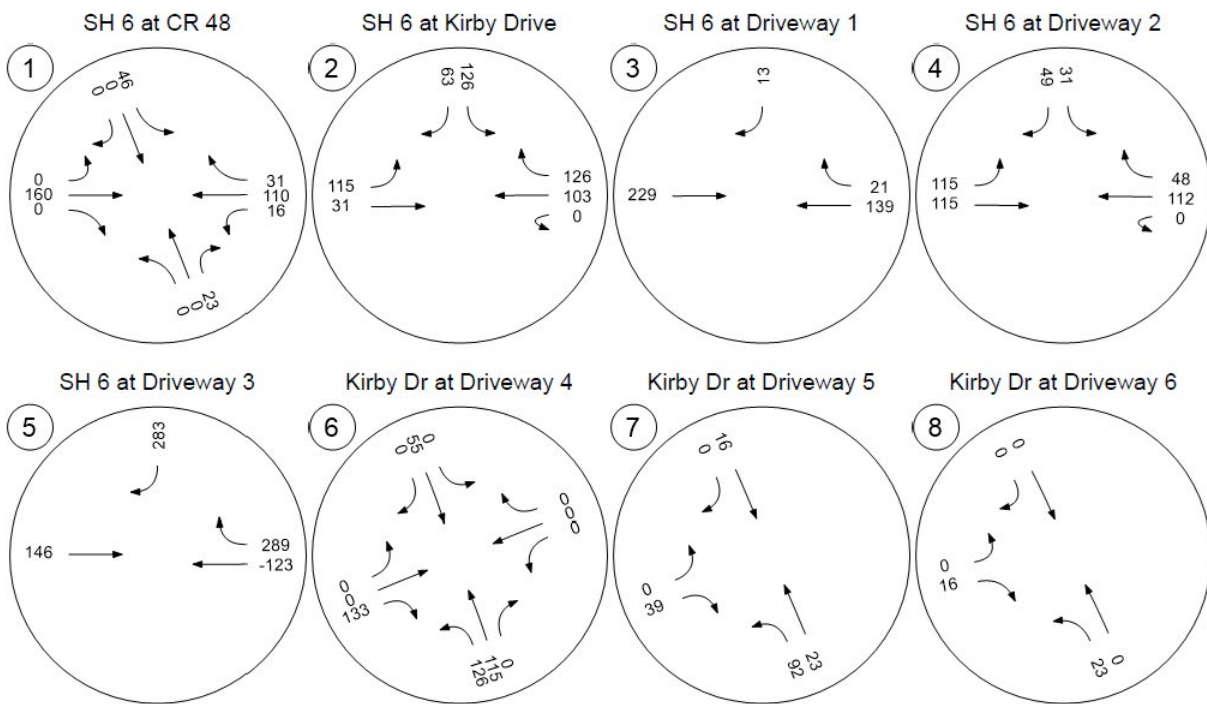
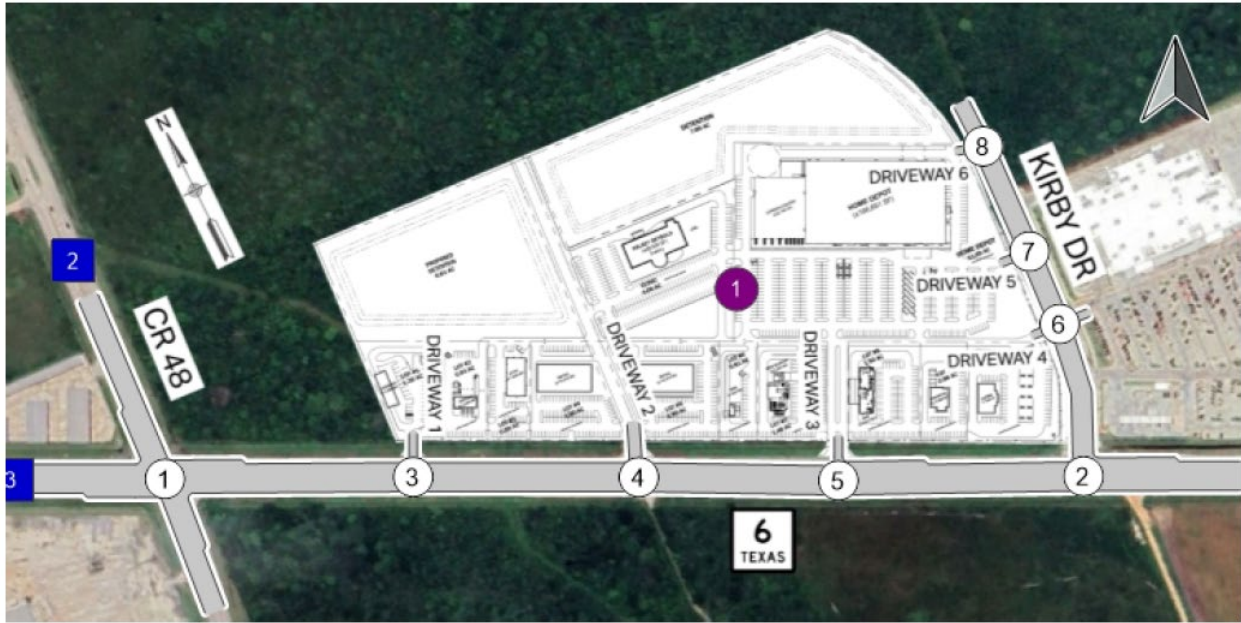


Figure 8: AM Peak Hour Generated Trips by Intersection

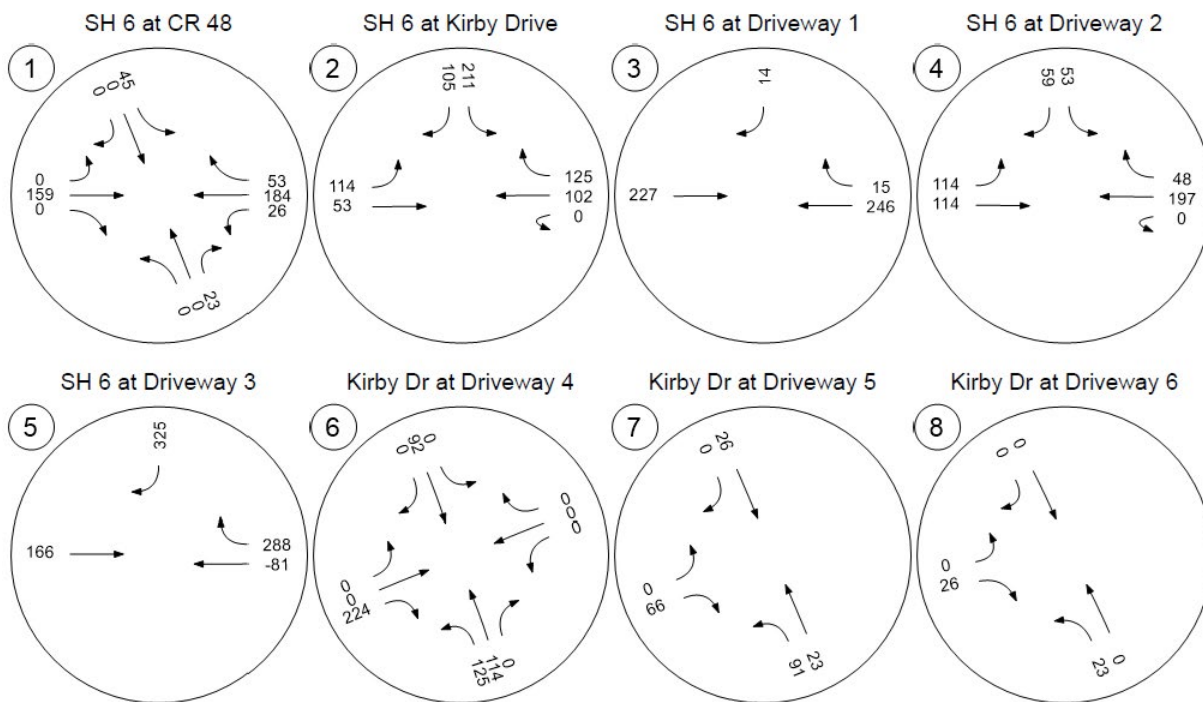


Figure 9: PM Peak Hour Generated Trips by Intersection

### Proposed Intersection Lanes Assignments and Traffic Control

The following **Figure 10** graphically displays lane assignments and traffic control for the critical study intersections. Existing lane assignments are shown for intersections that currently exist, and proposed lane assignments are shown according to the proposed site plan and results of the forthcoming HCM capacity analyses.

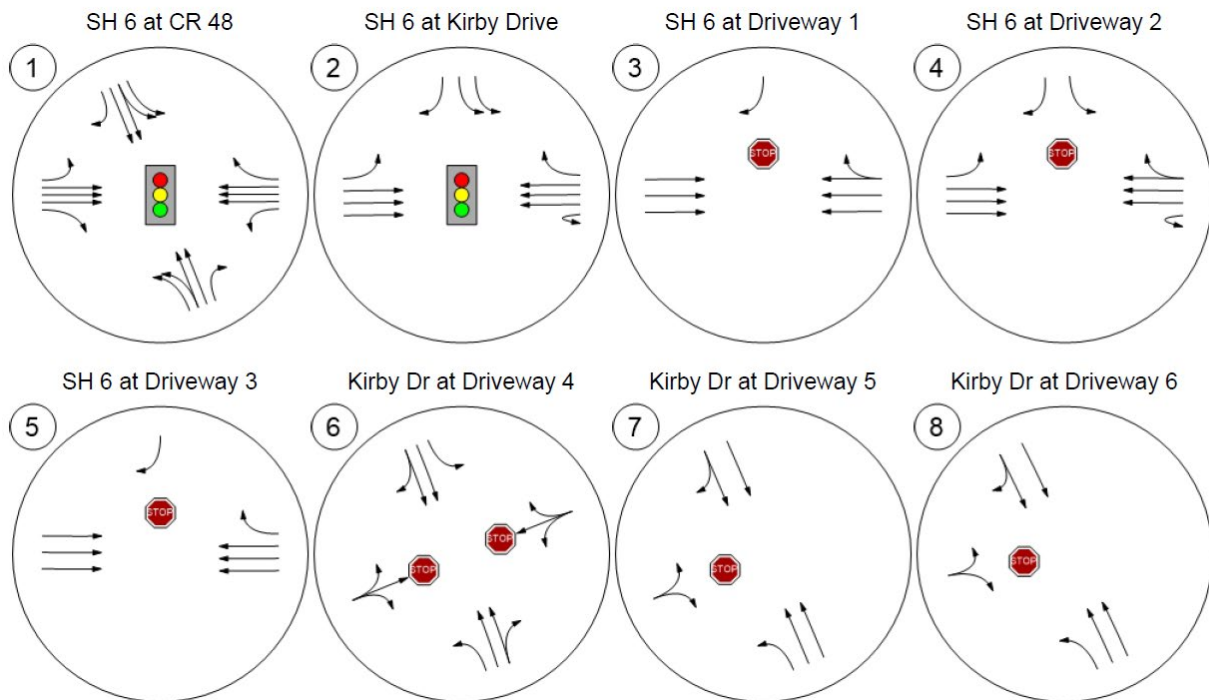


Figure 10: Lane Assignments and Traffic Control

### Buildout Turning Movement Counts

Trips generated by Manvel Commercial development were distributed according to the trip distribution percentages listed earlier in the study and then combined with the baseline (no-build) traffic volumes. The buildout TMCs are summarized by AM Peak hour in **Figure 11** and PM peak hour in **Figure 12**.

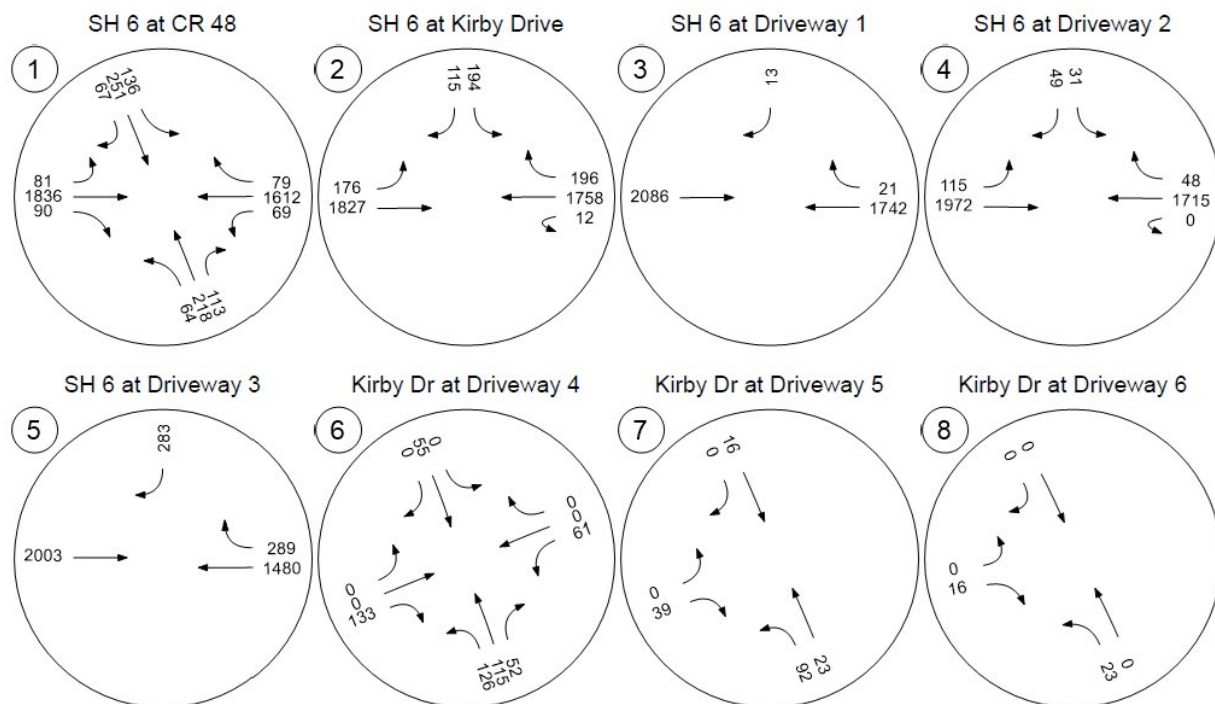


Figure 11: Buildout AM Peak Hour TMCs (2028)

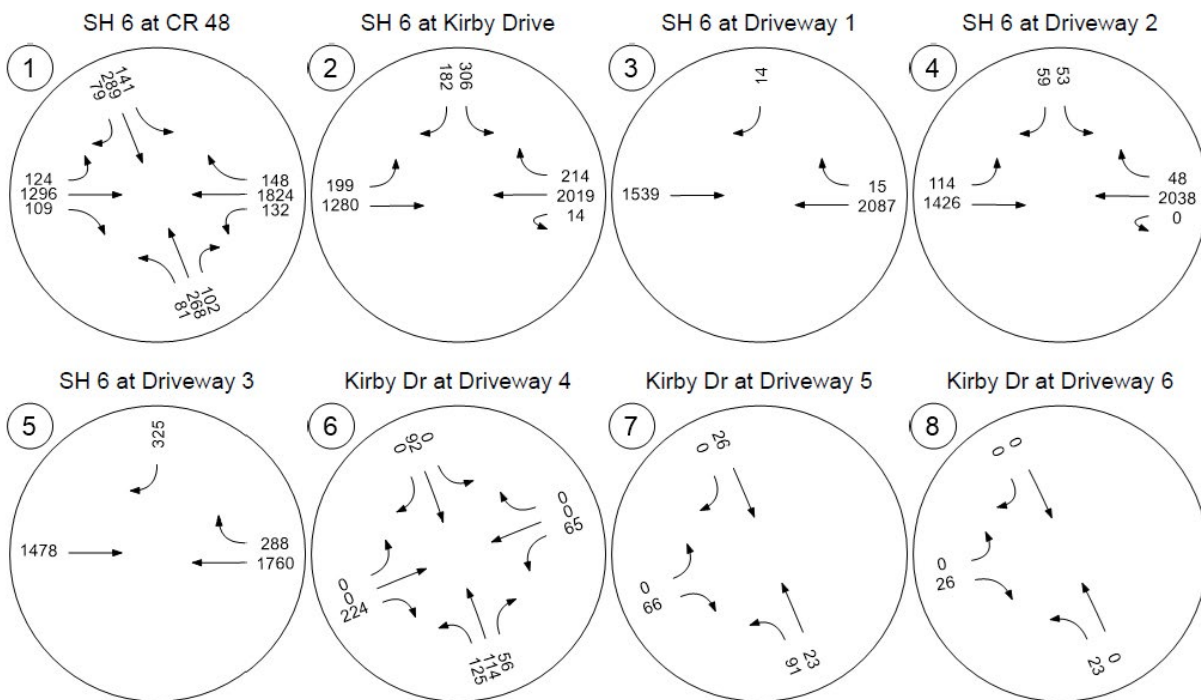


Figure 12: Buildout PM Peak Hour TMCs (2028)

## Highway Capacity Manual Level-of-Service

Capacity analyses were conducted for existing (2025), no-build (2028) and buildout (2028) traffic conditions. The level-of-service indicates the average seconds of delay experienced by a motorist at a signalized intersection, or at the stop-controlled approaches of an unsignalized intersection. As a frame of reference, intersection levels-of-service range from A to F, with LOS A representing free flow conditions and LOS F representing congested conditions. In general, a signalized intersection or stop controlled approach at an unsignalized intersection operating at LOS D or better in an urban area is characterized by acceptable delays. Results of the capacity analyses are provided in **Appendices C and D** and **Tables 2 and 3** for the AM and PM peak hours, respectively.

INTERSECTION	APPROACH	AM Peak Hour					
		2025 Existing		2028 No-Build		2028 Build	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
<b>SIGNALIZED INTERSECTIONS</b>							
SH 6 at CR 48	NB	37.4	D	40.1	D	45.3	D
	SB	37.6	D	40.3	D	45.3	D
	EB	37.4	D	58.5	E	85.4	F
	WB	33.4	D	36.6	D	37.2	D
	<b>Intersection</b>	<b>35.9</b>	<b>D</b>	<b>46.8</b>	<b>D</b>	<b>54.7</b>	<b>D</b>
SH 6 at Kirby Drive	NB	-	-	-	-	-	-
	SB	23.8	C	24.3	C	30.0	C
	EB	5.2	A	5.8	A	8.5	A
	WB	6.7	A	7.7	A	10.9	B
	<b>Intersection</b>	<b>6.5</b>	<b>A</b>	<b>7.3</b>	<b>A</b>	<b>11.2</b>	<b>B</b>
<b>UNSIGNALIZED INTERSECTIONS</b>							
SH 6 at Driveway 1	SB	-	-	-	-	20.3	C
SH 6 at Driveway 2	SB	-	-	-	-	91.8	F
SH 6 at Driveway 3	SB	-	-	-	-	70.1	F
Kirby Drive at Driveway 4	EB	-	-	-	-	9.0	A
Kirby Drive at Driveway 5	EB	-	-	-	-	8.5	A
Kirby Drive at Driveway 6	EB	-	-	-	-	8.4	A

Table 2: AM Peak Hour Capacity Analyses

INTERSECTION	APPROACH	PM Peak Hour					
		2025 Existing		2028 No-Build		2028 Build	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
<b>SIGNALIZED INTERSECTIONS</b>							
SH 6 at CR 48	NB	40.2	D	43.8	D	45.2	D
	SB	40.6	D	44.3	D	46.3	D
	EB	32.8	C	33.5	C	35.7	C
	WB	40.7	D	69.3	E	104.1	F
	<b>Intersection</b>	<b>38.0</b>	<b>D</b>	<b>51.8</b>	<b>D</b>	<b>54.3</b>	<b>D</b>
SH 6 at Kirby Drive	NB	-	-	-	-	-	-
	SB	25.2	C	33.8	C	42.3	D
	EB	5.3	A	5.8	A	12.5	B
	WB	8.2	A	8.6	A	16.0	B
	<b>Intersection</b>	<b>7.9</b>	<b>A</b>	<b>8.8</b>	<b>A</b>	<b>17.8</b>	<b>B</b>
<b>UNSIGNALIZED INTERSECTIONS</b>							
SH 6 at Driveway 1	SB	-	-	-	-	25.1	D
SH 6 at Driveway 2	SB	-	-	-	-	>100	F
SH 6 at Driveway 3	SB	-	-	-	-	37.1	E
Kirby Drive at Driveway 4	EB	-	-	-	-	9.6	A
Kirby Drive at Driveway 5	EB	-	-	-	-	8.6	A
Kirby Drive at Driveway 6	EB	-	-	-	-	8.4	A

Table 3: PM Peak Hour Capacity Analyses

From the results of the capacity analyses, all approaches and critical existing intersections are expected to operate at acceptable levels-of-service (LOS) in both the no-build analysis and buildout analysis. The delay and LOS for the southbound approaches of Driveway 2 and Driveway 3 at SH 6 are to be expected due to the limitations of the traffic model for accurately modeling the two-stage gap acceptance that would be present for the southbound approaches. The LOS and delays for these southbound approaches are expected to operate better in the field than what the results of the capacity analyses are indicating.

## Mitigation Analysis

A right-turn deceleration lane analysis was conducted for the westbound right-turn movements on SH 6 at Driveway 3. From the 2028 Buildout traffic volumes shown in **Figure 11** and **Figure 12**, the following westbound right-turn volumes are projected at the intersection:

- 2028 Buildout AM Peak Hour: 289 westbound right-turns
- 2028 Buildout PM Peak Hour: 288 westbound right-turns

Due to the projected number of peak hour right-turns being over 50 in number in both the 2028 Buildout AM and PM peak hours, a westbound right-turn deceleration lane is recommended on SH 6 at Driveway 3.

## Summary of Findings and Recommendations

Based on the capacity analyses performed for the proposed Manvel Commercial development, the following findings and findings are made:

- Construct a westbound right-turn deceleration lane at the proposed intersection of SH 6 at Driveway 3. A minimum taper length of 100 feet with a minimum storage length of 200 feet will suffice for the right-turn lane based on the buildout queue length analysis.
- Construct an extension of Kirby Drive north from the current terminus at the HEB property line to the proposed property line of the Manvel Commercial tract.
- Construct northbound left-turn lanes for Driveway 5 and Driveway 6 at the intersections with Kirby Drive.
- No additional mitigation measures are recommended for the critical intersections of the study area.

## Appendices

## Appendix A – Traffic Counts

Summary of Turning Movement Counts - from Traffic Count on iOS

SH 6 at County Road 48

Observer Dustin Qualls

Weather Clear

Date: Wed, Sep 24th, 2025

Start Time	County Road 48				County Road 48				SH 6				SH 6			
	Northbound				Southbound				Eastbound				Westbound			
	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn
7:00 AM	12	44	18	-	17	49	13	-	17	346	19	-	11	312	9	-
7:15 AM	13	46	18	-	17	55	13	-	17	355	21	-	12	322	9	-
7:30 AM	15	47	21	-	21	54	14	-	18	366	21	-	9	330	11	-
7:45 AM	15	51	21	-	23	58	18	-	18	378	17	-	14	331	12	-
<b>Total:</b>	<b>55</b>	<b>188</b>	<b>78</b>	<b>0</b>	<b>78</b>	<b>216</b>	<b>58</b>	<b>0</b>	<b>70</b>	<b>1445</b>	<b>78</b>	<b>0</b>	<b>46</b>	<b>1295</b>	<b>41</b>	<b>0</b>
8:00 AM	8	43	19	-	14	51	12	-	15	352	14	-	13	311	8	-
8:15 AM	8	41	18	-	14	40	12	-	15	342	14	-	13	299	8	-
8:30 AM	9	39	18	-	13	45	9	-	14	312	15	-	9	297	6	-
8:45 AM	11	39	14	-	11	41	11	-	16	322	16	-	9	291	6	-
<b>Total:</b>	<b>36</b>	<b>162</b>	<b>69</b>	<b>0</b>	<b>52</b>	<b>177</b>	<b>44</b>	<b>0</b>	<b>60</b>	<b>1328</b>	<b>59</b>	<b>0</b>	<b>44</b>	<b>1198</b>	<b>28</b>	<b>0</b>
PHF:	0.92	0.92	0.93		0.85	0.93	0.81		0.97	0.96	0.93		0.82	0.98	0.85	
4:00 PM	13	44	13	-	14	46	10	-	19	220	14	-	14	266	11	-
4:15 PM	13	45	9	-	13	46	10	-	21	204	14	-	14	267	12	-
4:30 PM	15	48	5	-	15	48	14	-	22	209	18	-	15	275	15	-
4:45 PM	15	49	11	-	17	55	13	-	24	221	19	-	19	281	15	-
<b>Total:</b>	<b>56</b>	<b>186</b>	<b>38</b>	<b>0</b>	<b>59</b>	<b>195</b>	<b>47</b>	<b>0</b>	<b>86</b>	<b>854</b>	<b>65</b>	<b>0</b>	<b>62</b>	<b>1089</b>	<b>53</b>	<b>0</b>
5:00 PM	15	55	14	-	21	56	15	-	25	222	21	-	21	334	18	-
5:15 PM	16	57	14	-	17	59	14	-	26	245	22	-	22	355	18	-
5:30 PM	18	58	17	-	22	66	18	-	28	255	25	-	24	356	22	-
5:45 PM	21	61	23	-	23	68	21	-	28	258	26	-	24	369	24	-
<b>Total:</b>	<b>70</b>	<b>231</b>	<b>68</b>	<b>0</b>	<b>83</b>	<b>249</b>	<b>68</b>	<b>0</b>	<b>107</b>	<b>980</b>	<b>94</b>	<b>0</b>	<b>91</b>	<b>1414</b>	<b>82</b>	<b>0</b>
PHF:	0.83	0.95	0.74		0.90	0.92	0.81		0.96	0.95	0.90		0.95	0.96	0.85	

Summary of Turning Movement Counts - from Traffic Count on iOS

SH 6 at Kirby Drive

Observer Dustin Qualls

Weather Clear

Date: Wed, Sep 24th, 2025

Start Time	Kirby Drive				SH 6				SH 6									
	Northbound				Southbound				Eastbound				Westbound					
	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn		
7:00 AM	-	-	-	-	14	-	11	-	14	367	-	-	-	343	13	-		
7:15 AM	-	-	-	-	14	-	12	-	14	376	-	-	-	355	14	-		
7:30 AM	-	-	-	-	15	-	9	-	16	392	-	-	-	359	15	-		
7:45 AM	-	-	-	-	16	-	13	-	9	413	-	-	-	370	18	-		
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>59</b>	<b>0</b>	<b>45</b>	<b>0</b>	<b>53</b>	<b>1548</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1427</b>	<b>60</b>	<b>0</b>		
8:00 AM	-	-	-	-	15	-	9	-	8	377	-	-	-	341	11	-		
8:15 AM	-	-	-	-	15	-	9	-	11	363	-	-	-	329	12	-		
8:30 AM	-	-	-	-	14	-	11	-	12	331	-	-	-	323	9	-		
8:45 AM	-	-	-	-	11	-	10	-	9	338	-	-	-	316	9	-		
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>55</b>	<b>0</b>	<b>39</b>	<b>0</b>	<b>40</b>	<b>1409</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1309</b>	<b>41</b>	<b>0</b>		
PHF:					0.92	0.87			0.83	0.94					0.96	0.83		
4:00 PM	-	-	-	-	9	-	10	-	14	233	-	-	-	301	13	-		
4:15 PM	-	-	-	-	13	-	14	-	13	213	-	-	-	307	13	-		
4:30 PM	-	-	-	-	14	-	14	-	9	220	-	-	-	319	14	-		
4:45 PM	-	-	-	-	15	-	15	-	16	233	-	-	-	330	15	-		
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>51</b>	<b>0</b>	<b>53</b>	<b>0</b>	<b>52</b>	<b>899</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1257</b>	<b>55</b>	<b>0</b>		
5:00 PM	-	-	-	-	16	-	14	-	16	241	-	-	-	387	18	-		
5:15 PM	-	-	-	-	22	-	15	-	17	259	-	-	-	410	18	-		
5:30 PM	-	-	-	-	23	-	16	-	18	276	-	-	-	418	21	-		
5:45 PM	-	-	-	-	21	-	21	-	22	282	-	-	-	438	20	-		
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>82</b>	<b>0</b>	<b>66</b>	<b>0</b>	<b>73</b>	<b>1058</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1653</b>	<b>77</b>	<b>0</b>		
PHF:					0.89	0.79			0.83	0.94					0.94	0.92		

## Appendix B – ITE Trip Generation Worksheets

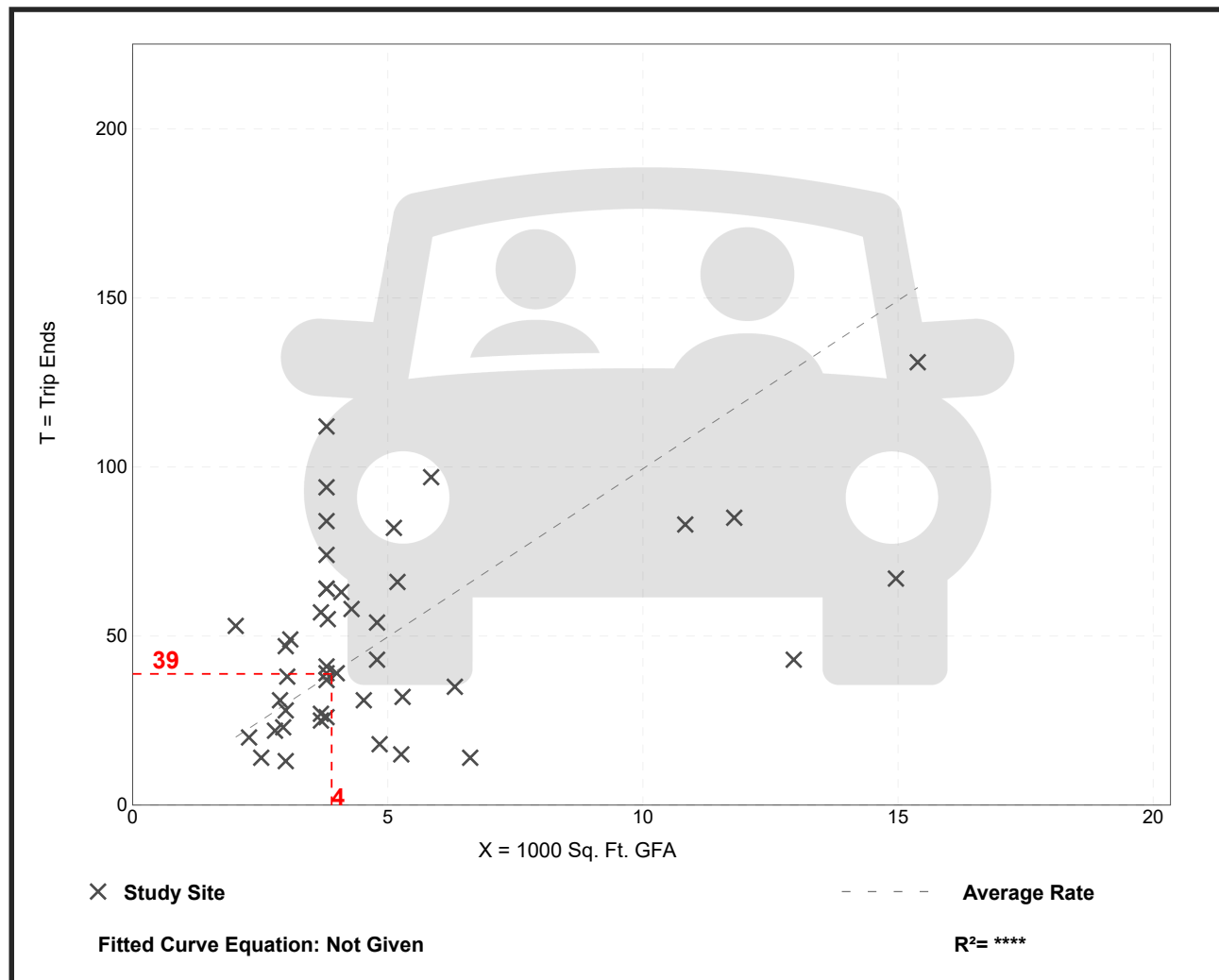
# Drive-in Bank (912)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 44  
 Avg. 1000 Sq. Ft. GFA: 5  
 Directional Distribution: 58% entering, 42% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.95	2.12 - 29.47	6.00

## Data Plot and Equation



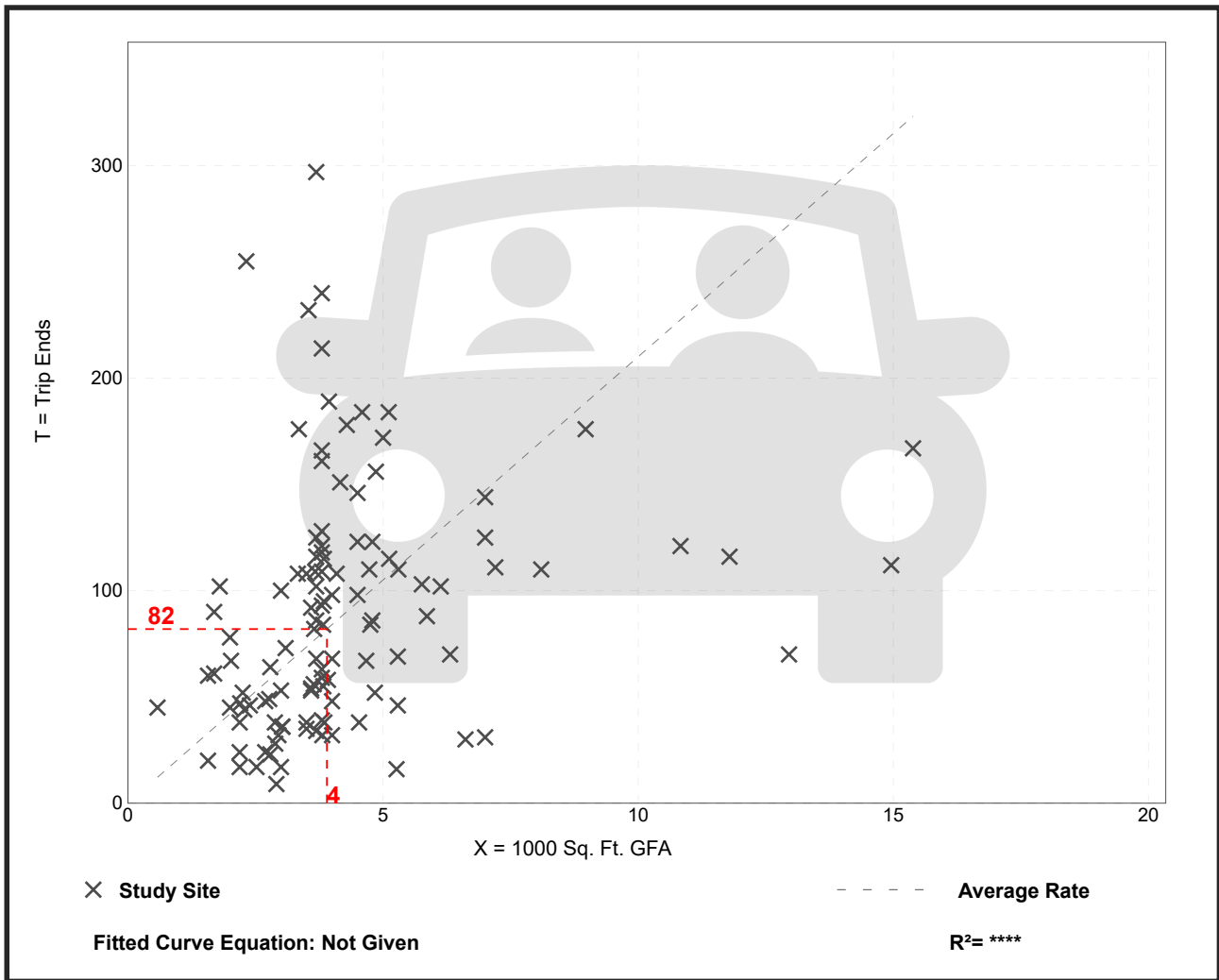
# Drive-in Bank (912)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 114  
 Avg. 1000 Sq. Ft. GFA: 4  
 Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
21.01	3.04 - 109.91	15.13

## Data Plot and Equation





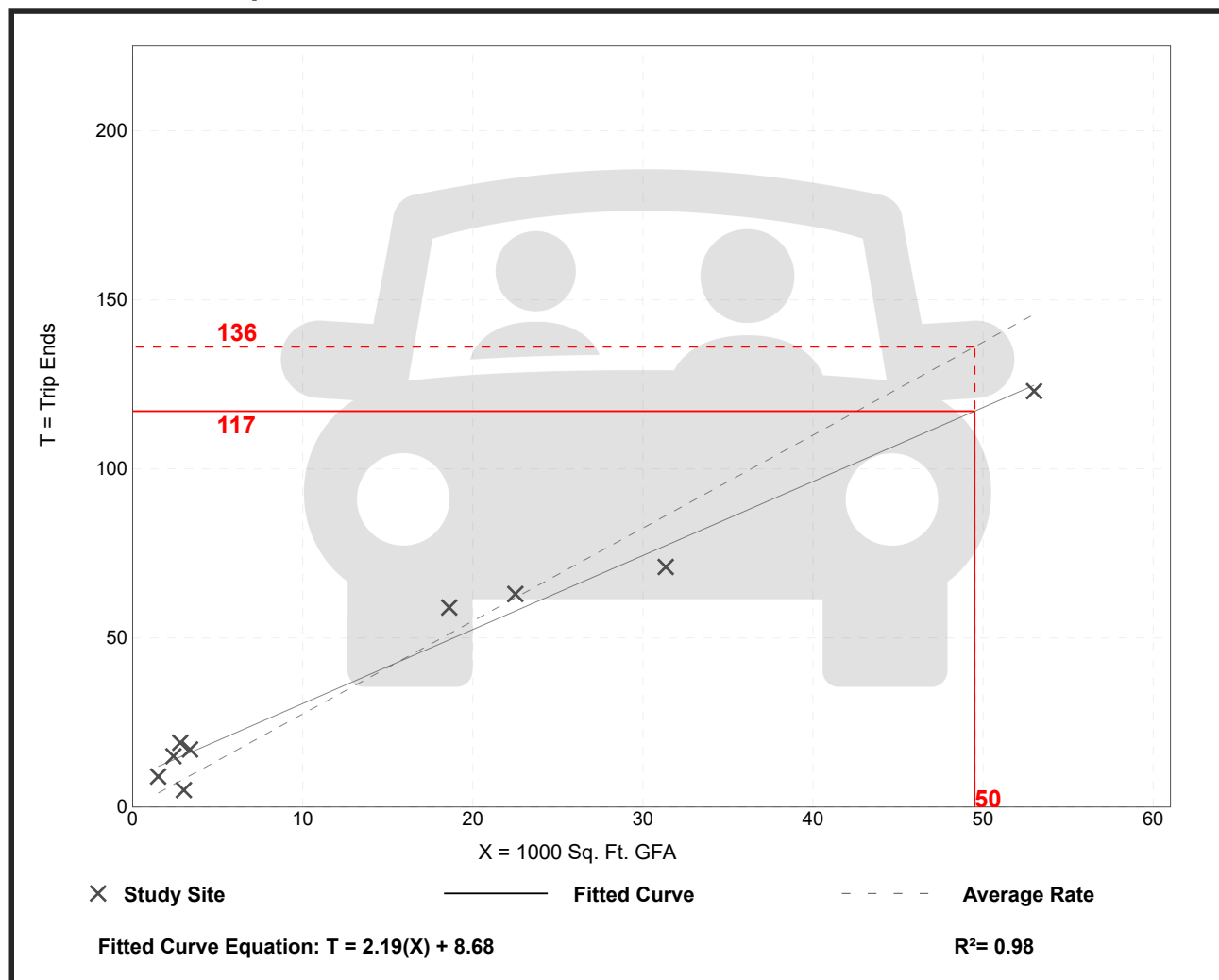
# Clinic (630)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
 On a: Weekday,  
 Peak Hour of Adjacent Street Traffic,  
 One Hour Between 7 and 9 a.m.  
 Setting/Location: General Urban/Suburban  
 Number of Studies: 9  
 Avg. 1000 Sq. Ft. GFA: 15  
 Directional Distribution: 81% entering, 19% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.75	1.66 - 6.79	1.04

## Data Plot and Equation



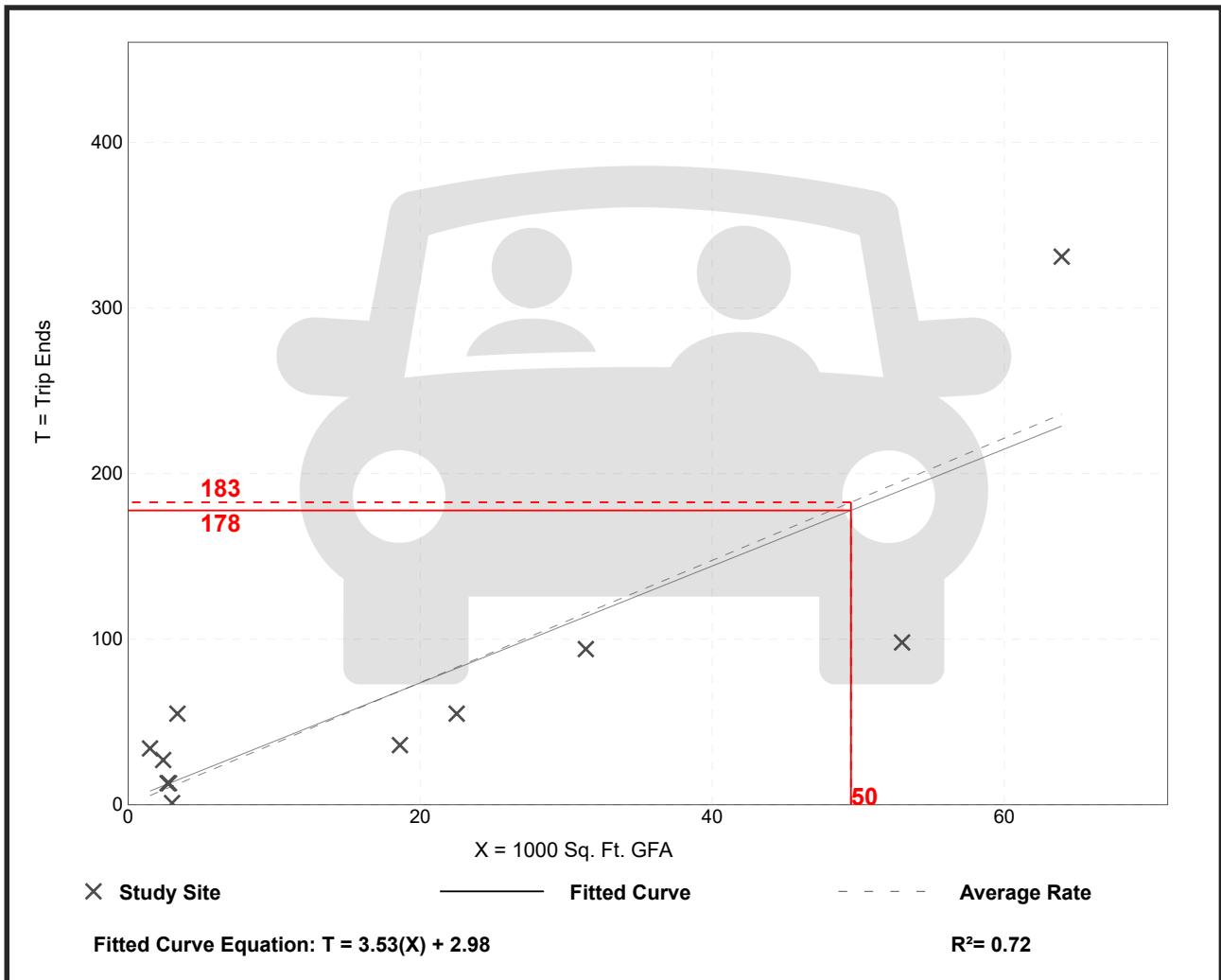
# Clinic (630)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 11  
 Avg. 1000 Sq. Ft. GFA: 19  
 Directional Distribution: 30% entering, 70% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.69	0.33 - 22.67	3.00

## Data Plot and Equation



# Convenience Store/Gas Station - GFA (4-5.5k) (945)

**Vehicle Trip Ends vs: Vehicle Fueling Positions**

**On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 7 and 9 a.m.**

**Setting/Location: General Urban/Suburban**

Number of Studies: 18

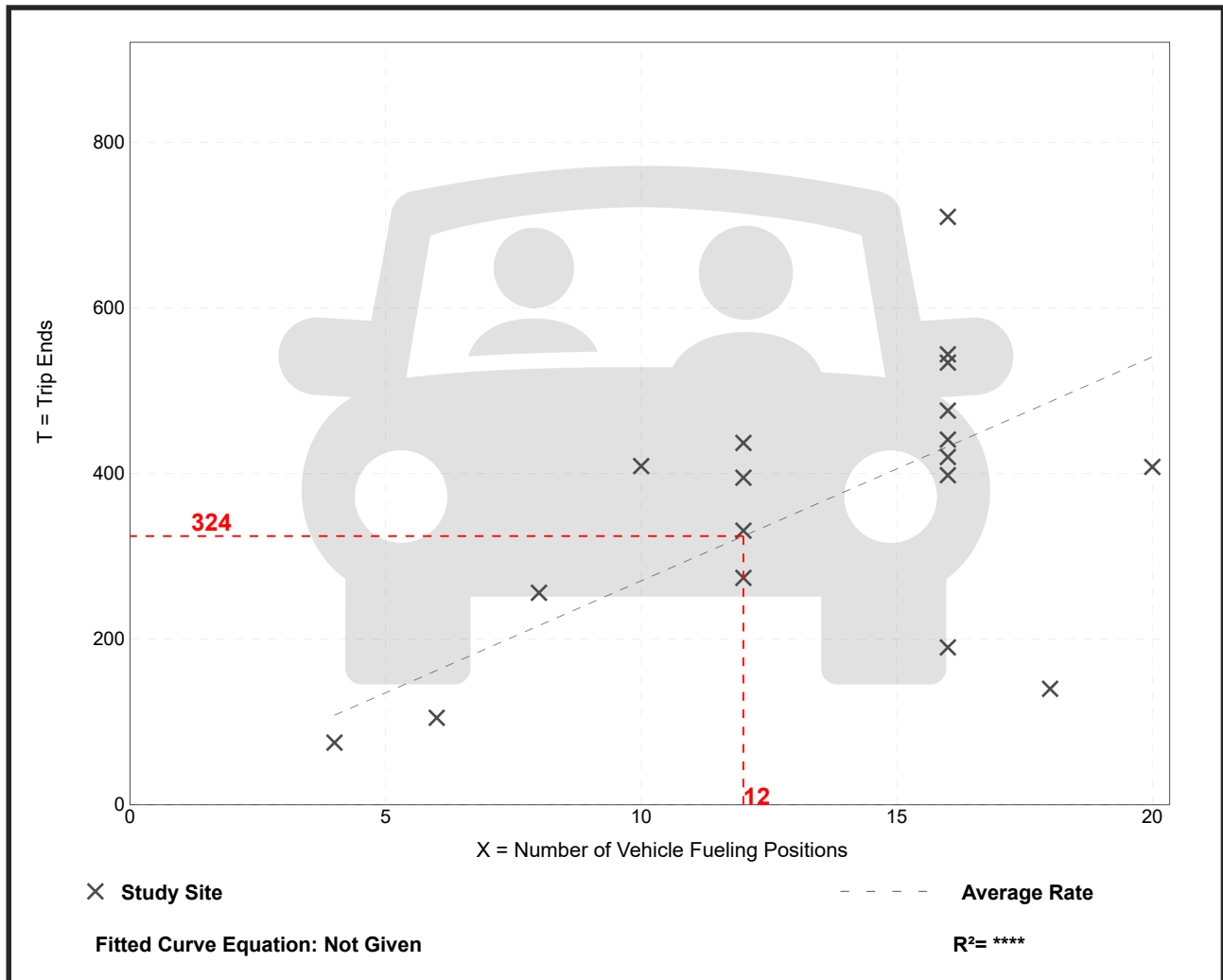
Avg. Num. of Vehicle Fueling Positions: 13

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
27.04	7.78 - 44.38	9.88

## Data Plot and Equation



# Convenience Store/Gas Station - GFA (4-5.5k) (945)

**Vehicle Trip Ends vs: Vehicle Fueling Positions**

**On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 4 and 6 p.m.**

**Setting/Location: General Urban/Suburban**

Number of Studies: 23

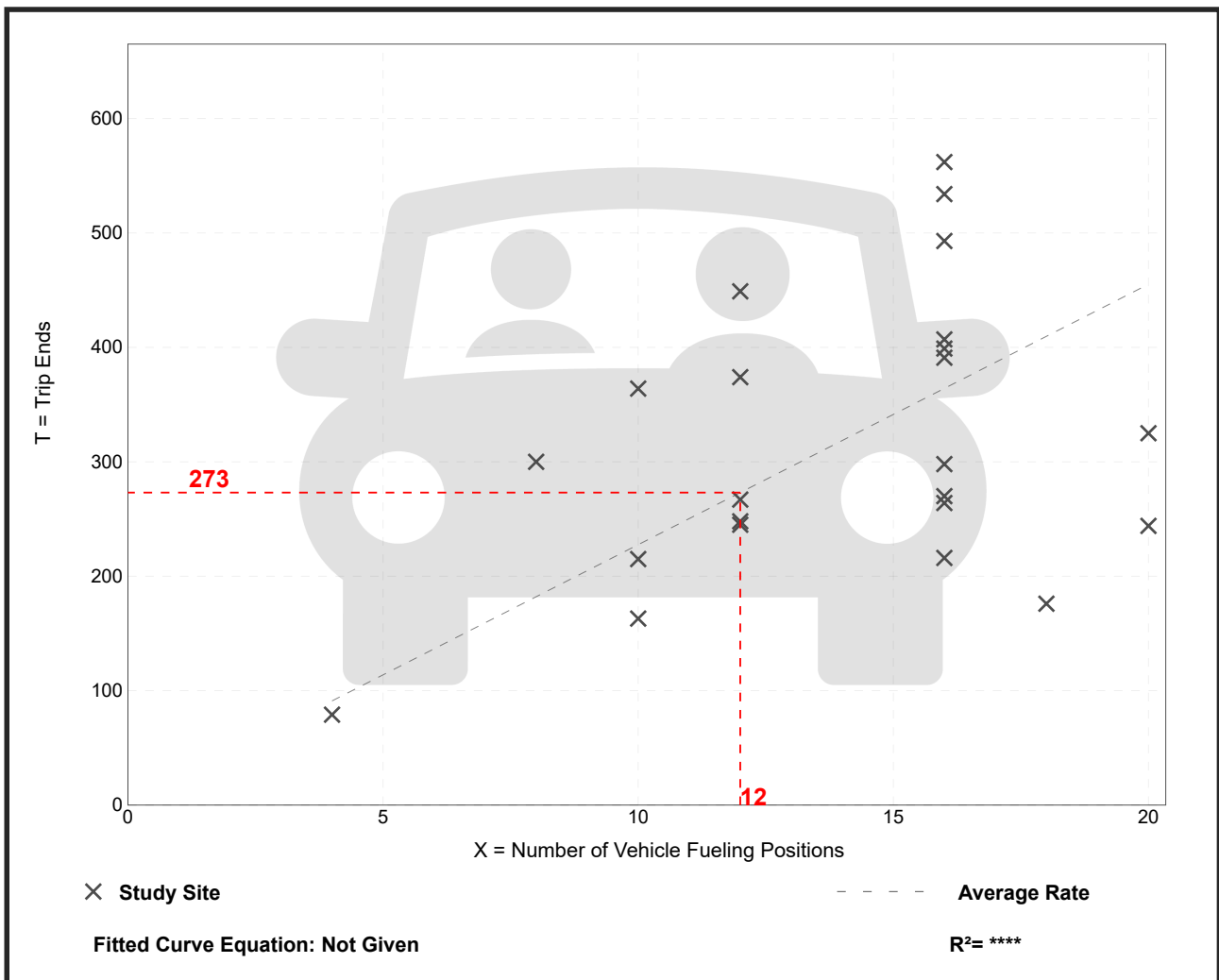
Avg. Num. of Vehicle Fueling Positions: 14

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
22.76	9.78 - 37.50	8.49

## Data Plot and Equation



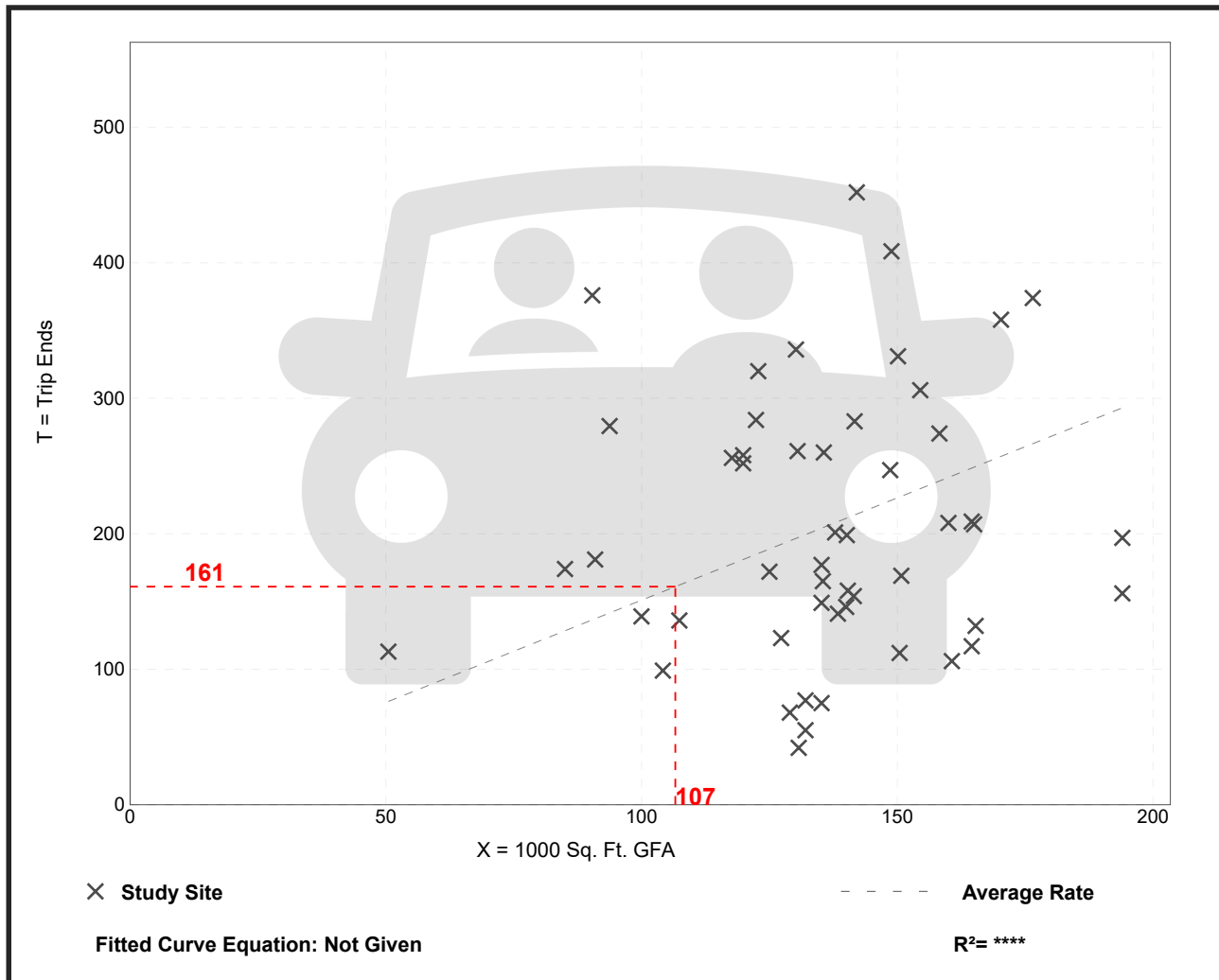
# Home Improvement Superstore (862)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 51  
 Avg. 1000 Sq. Ft. GFA: 136  
 Directional Distribution: 57% entering, 43% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.51	0.32 - 4.16	0.76

## Data Plot and Equation



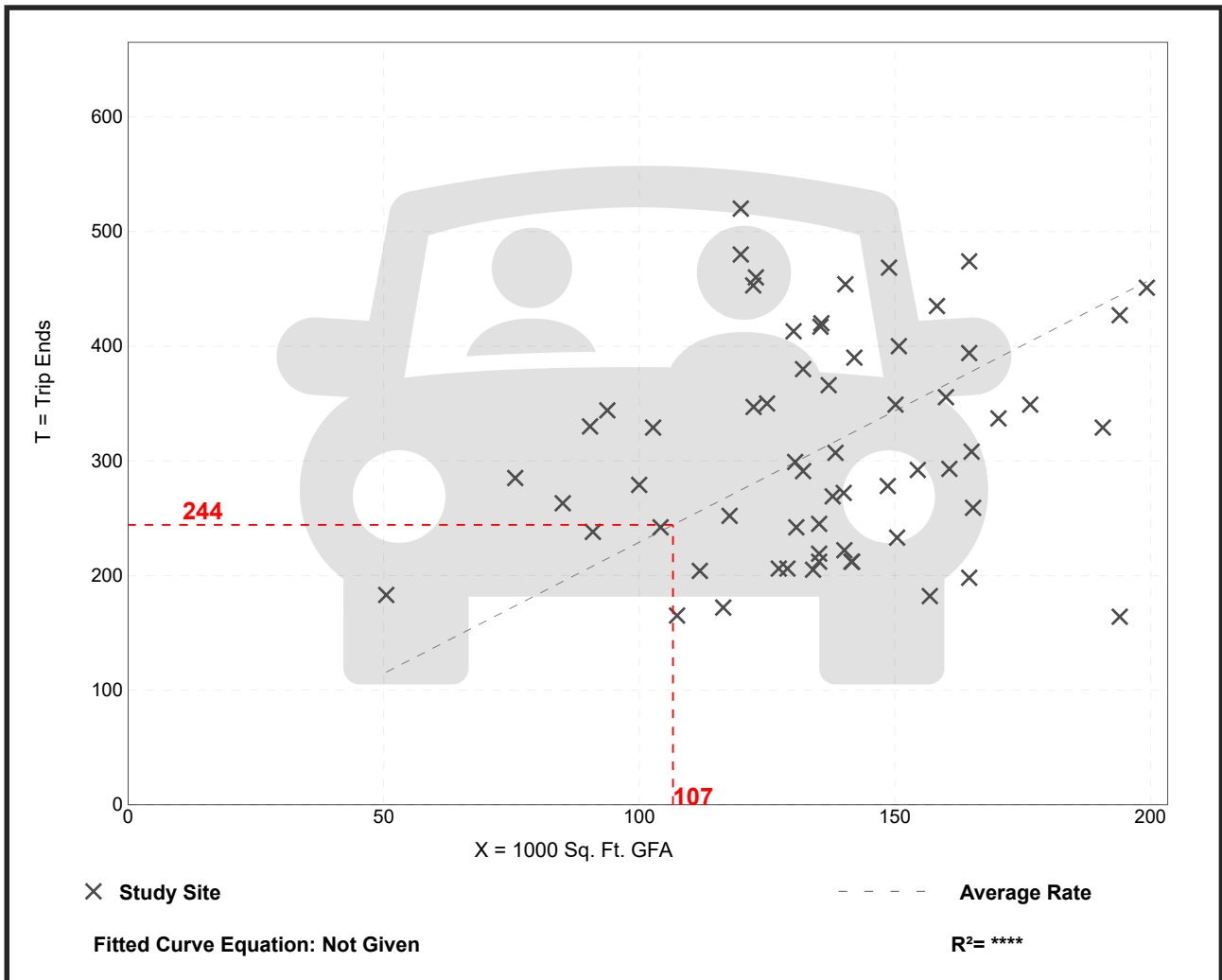
# Home Improvement Superstore (862)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 62  
 Avg. 1000 Sq. Ft. GFA: 136  
 Directional Distribution: 49% entering, 51% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.29	0.85 - 4.34	0.77

## Data Plot and Equation



# Quick Lubrication Vehicle Shop (941)

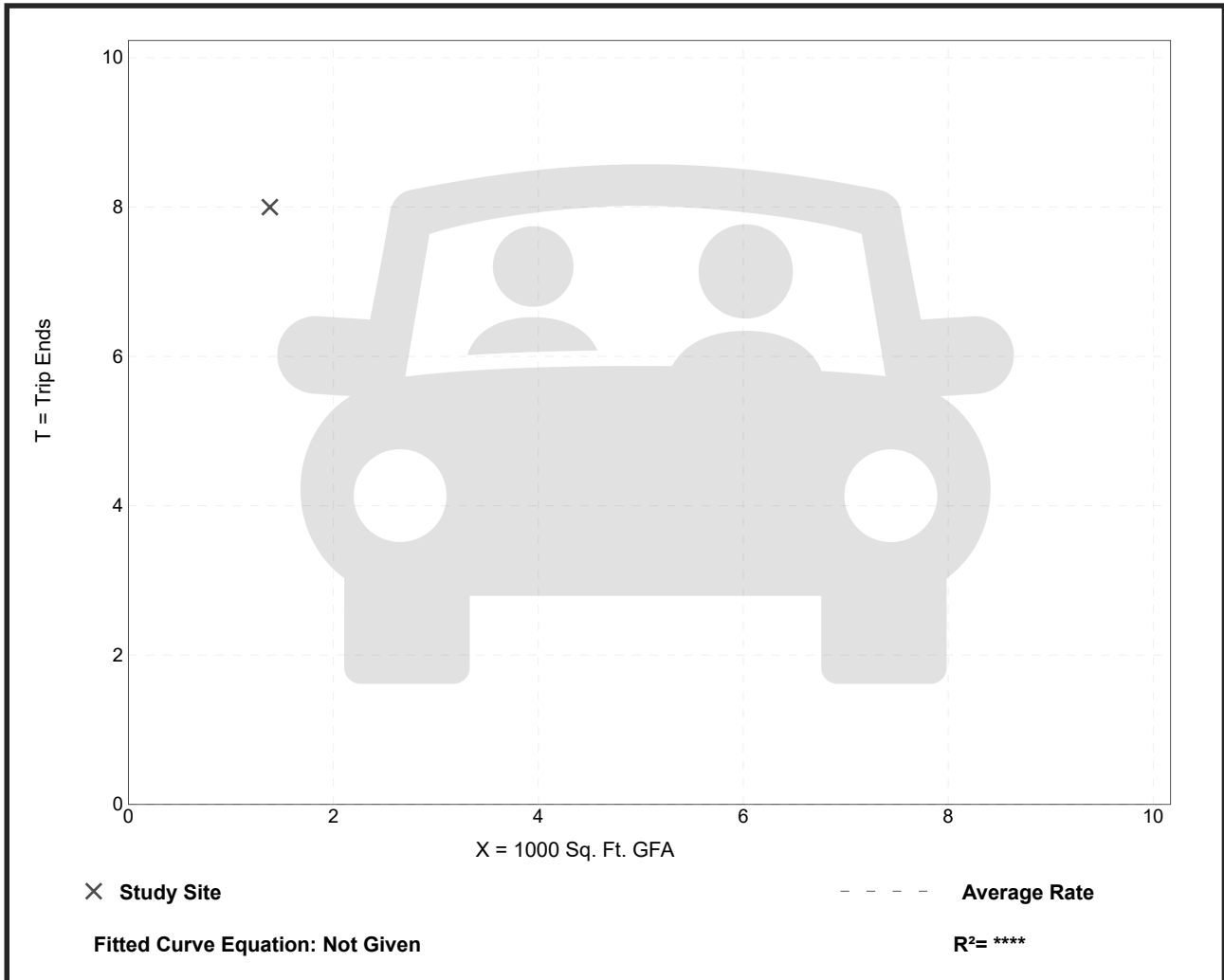
**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 1  
 Avg. 1000 Sq. Ft. GFA: 1  
 Directional Distribution: 75% entering, 25% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
5.80	5.80 - 5.80	*

## Data Plot and Equation

*Caution – Small Sample Size*





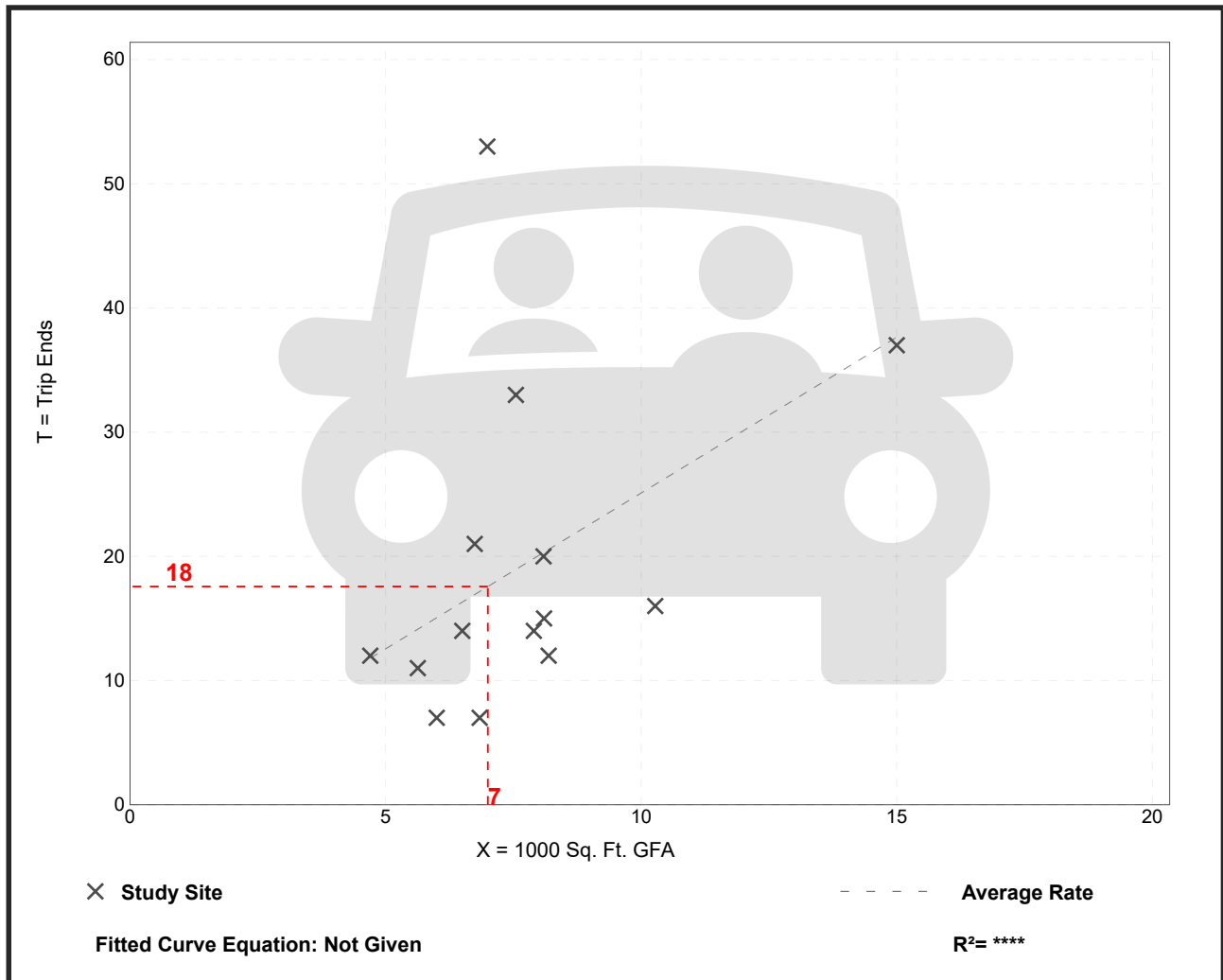
# Automobile Parts Sales (843)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
 On a: Weekday,  
 Peak Hour of Adjacent Street Traffic,  
 One Hour Between 7 and 9 a.m.  
 Setting/Location: General Urban/Suburban  
 Number of Studies: 14  
 Avg. 1000 Sq. Ft. GFA: 8  
 Directional Distribution: 55% entering, 45% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.51	1.02 - 7.58	1.62

## Data Plot and Equation



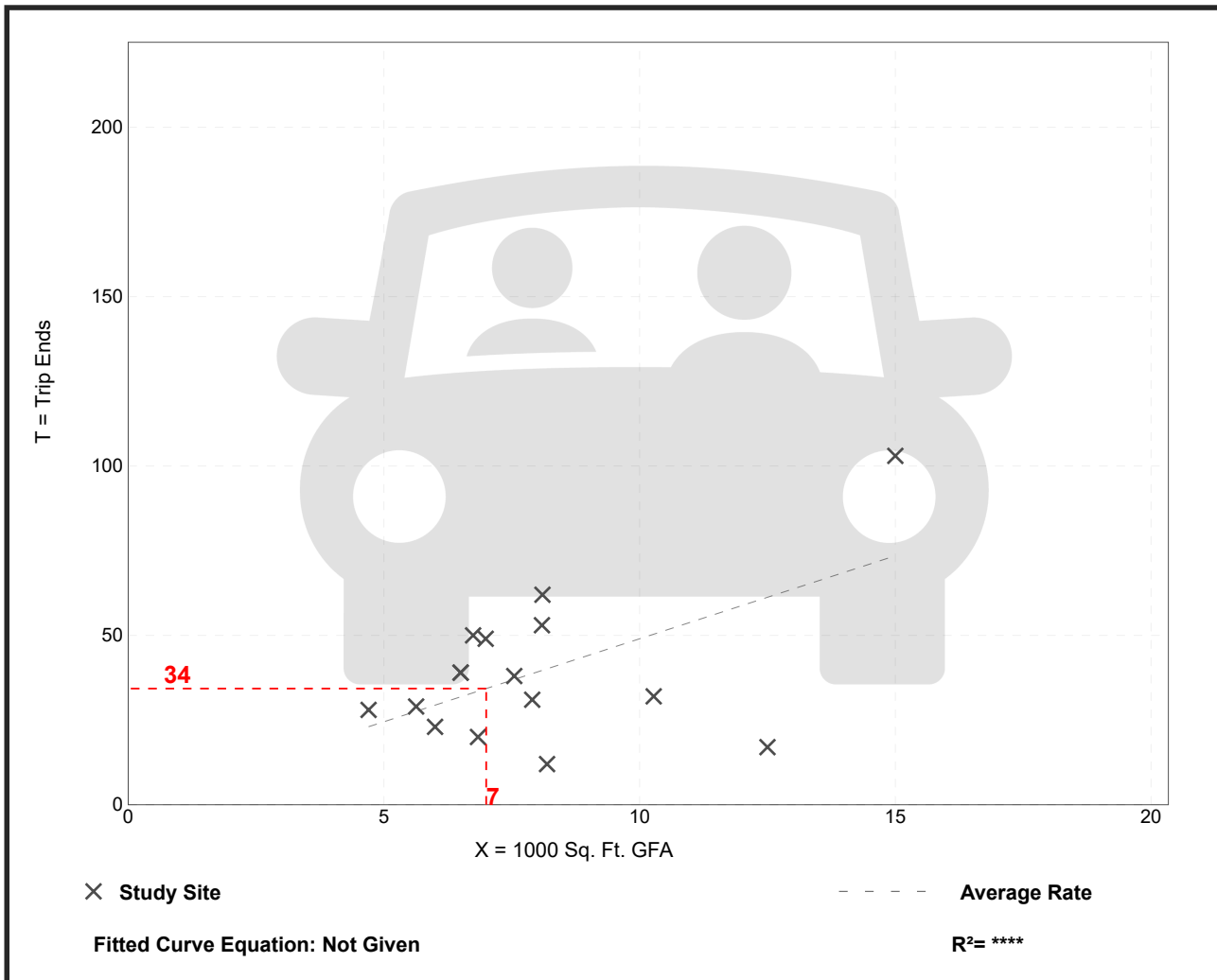
# Automobile Parts Sales (843)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 16  
 Avg. 1000 Sq. Ft. GFA: 8  
 Directional Distribution: 48% entering, 52% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
4.90	1.36 - 7.65	2.17

## Data Plot and Equation



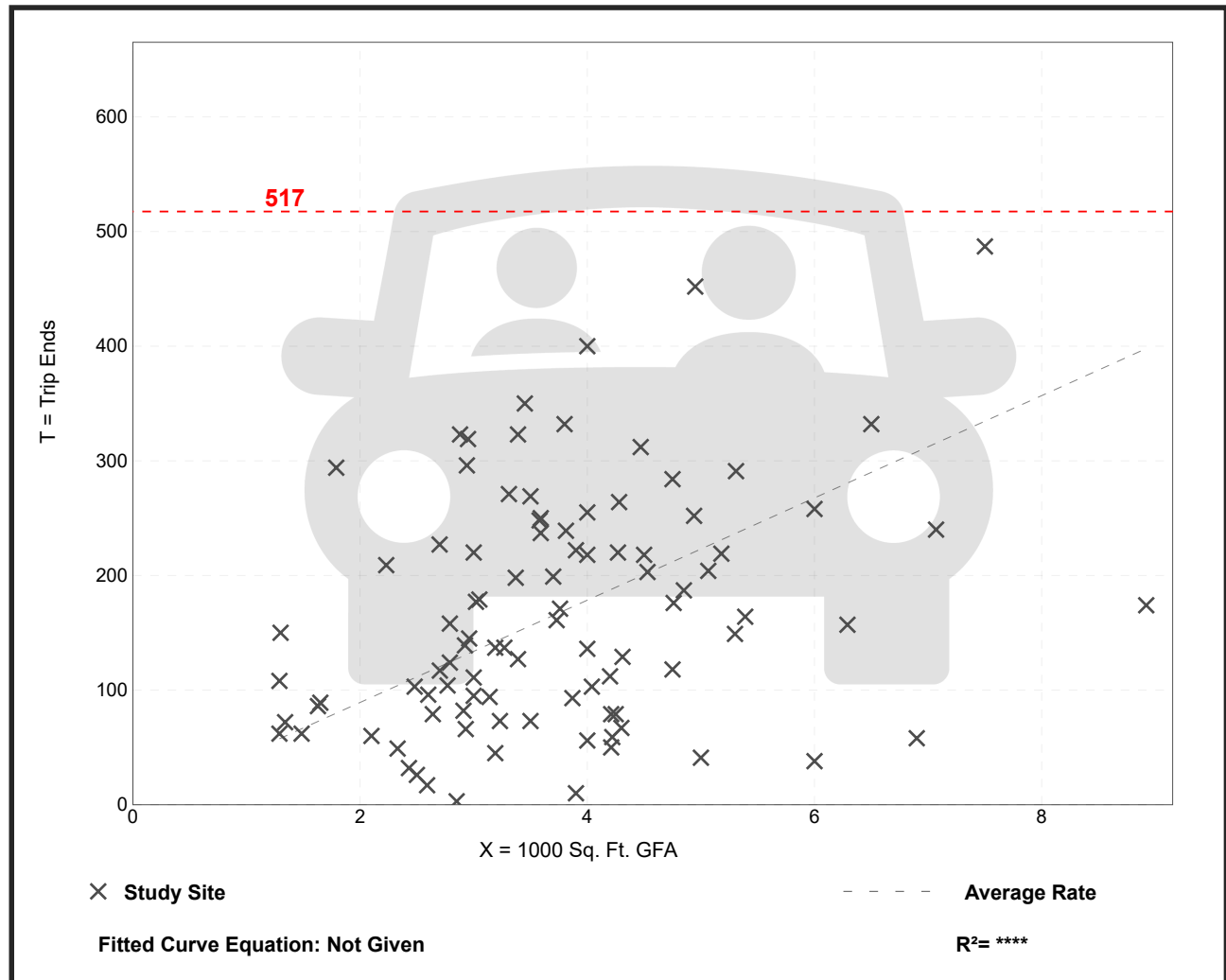
# Fast-Food Restaurant with Drive-Through Window (934)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 96  
 Avg. 1000 Sq. Ft. GFA: 4  
 Directional Distribution: 51% entering, 49% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
44.61	1.05 - 164.25	27.14

## Data Plot and Equation



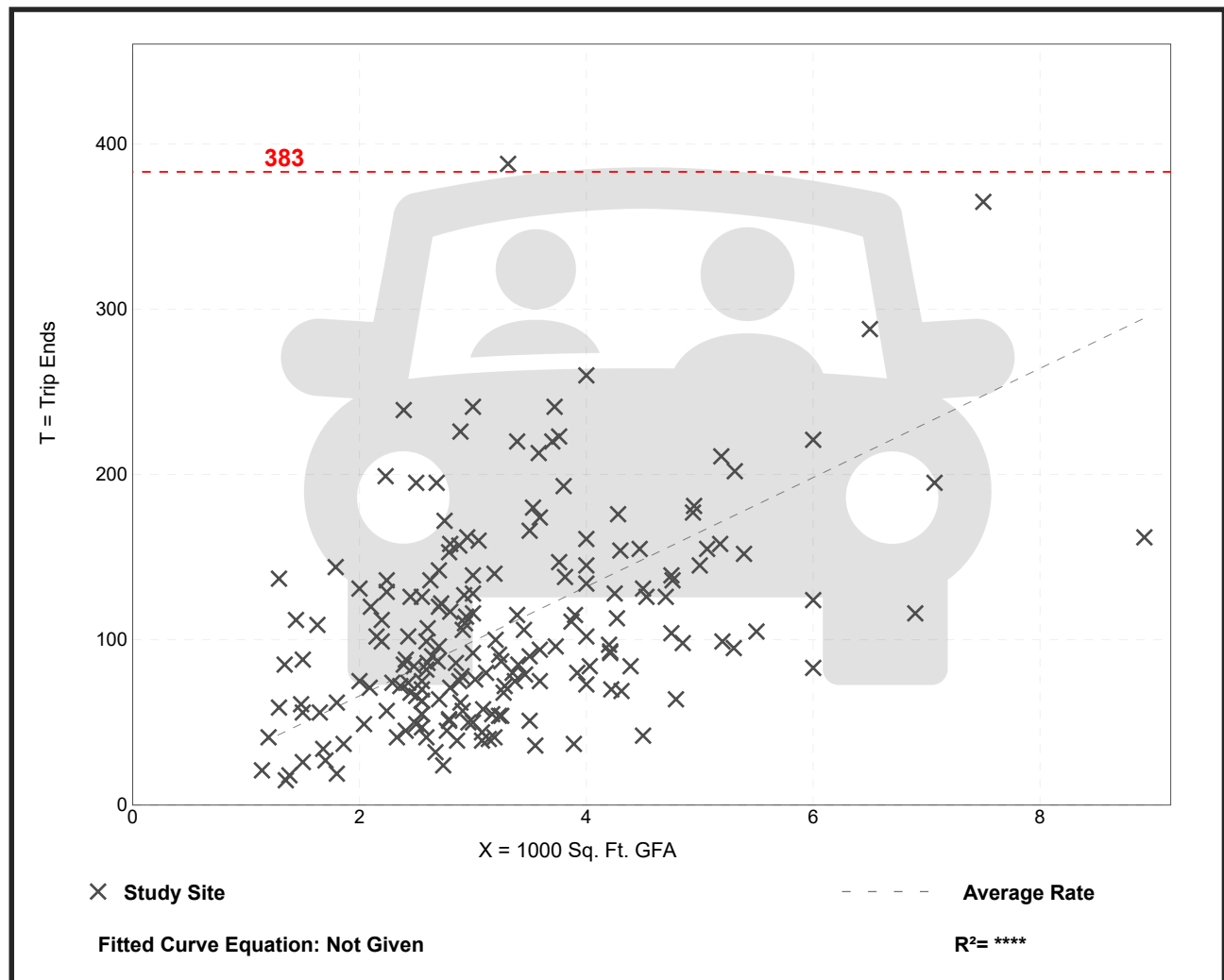
# Fast-Food Restaurant with Drive-Through Window (934)

**Vehicle Trip Ends vs:** 1000 Sq. Ft. GFA  
**On a:** Weekday,  
 Peak Hour of Adjacent Street Traffic,  
 One Hour Between 4 and 6 p.m.  
**Setting/Location:** General Urban/Suburban  
 Number of Studies: 190  
 Avg. 1000 Sq. Ft. GFA: 3  
 Directional Distribution: 52% entering, 48% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
33.03	8.77 - 117.22	17.59

## Data Plot and Equation



# Strip Retail Plaza (<40k) (822)

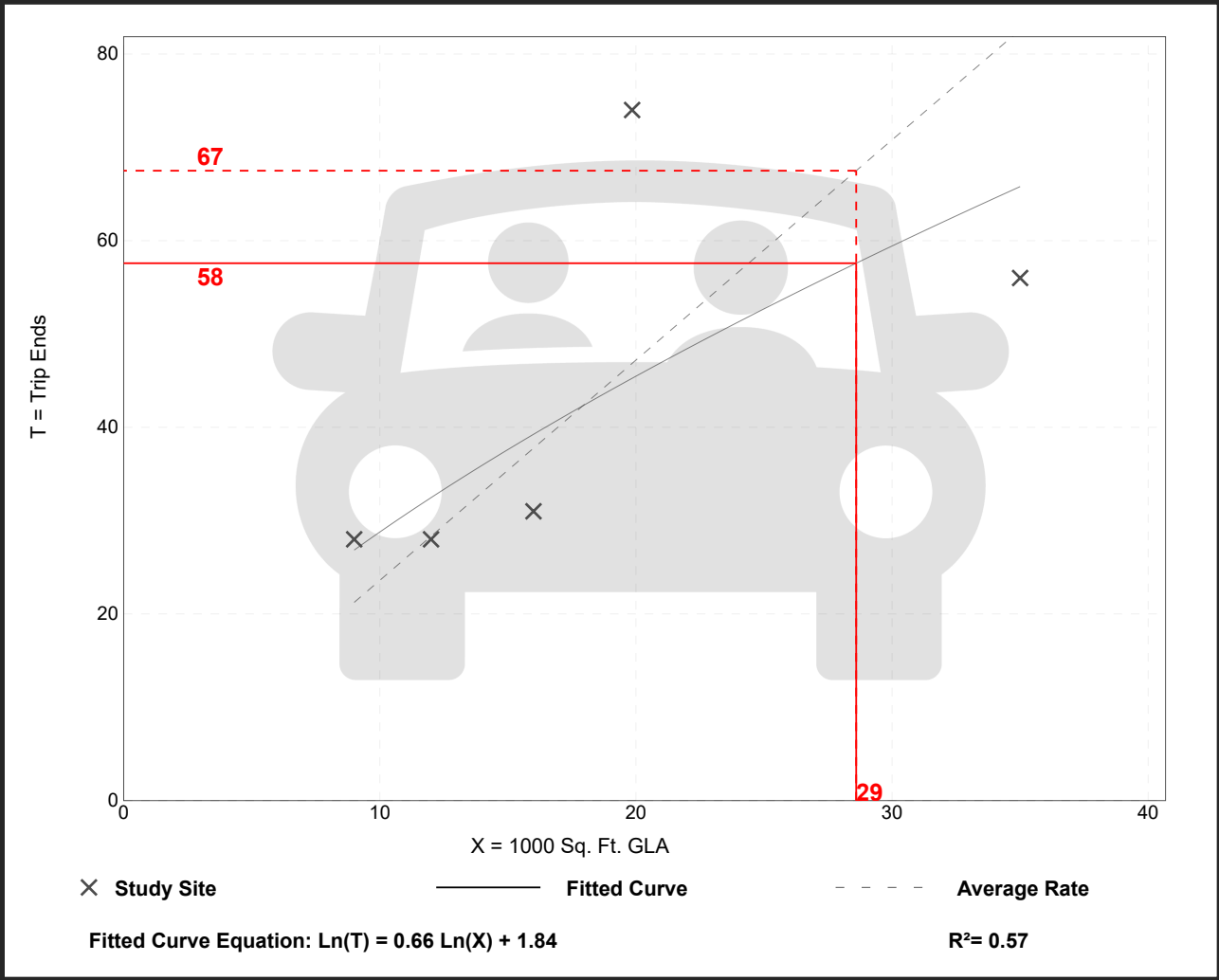
**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 7 and 9 a.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 5  
 Avg. 1000 Sq. Ft. GLA: 18  
 Directional Distribution: 60% entering, 40% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
2.36	1.60 - 3.73	0.94

### Data Plot and Equation

*Caution – Small Sample Size*



# Strip Retail Plaza (<40k)

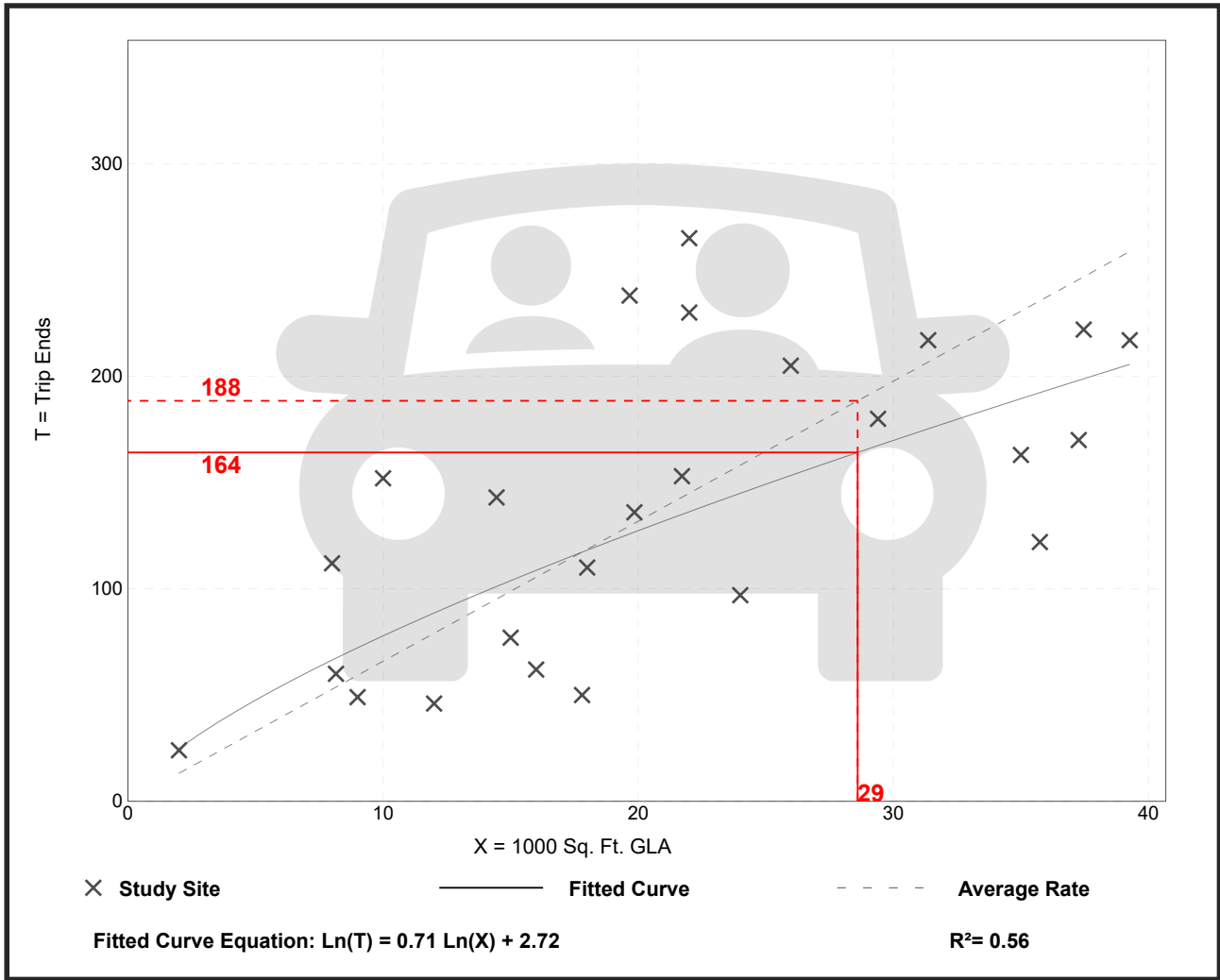
## (822)

**Vehicle Trip Ends vs: 1000 Sq. Ft. GLA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 25  
 Avg. 1000 Sq. Ft. GLA: 21  
 Directional Distribution: 50% entering, 50% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
6.59	2.81 - 15.20	2.94

### Data Plot and Equation



## Appendix C – AM Peak Hour Capacity Analyses

**Intersection Level Of Service Report**  
**Intersection 1: SH 6 at CR 48**

Control Type:	Signalized	Delay (sec / veh):	35.9
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.501

**Intersection Setup**

Name	CR 48			CR 48			SH 6			SH 6		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	150.00	150.00	100.00	150.00	150.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			60.00			60.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

**Volumes**

Name	CR 48			CR 48			SH 6			SH 6		
Base Volume Input [veh/h]	55	188	78	78	216	58	70	1445	78	46	1295	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	188	78	78	216	58	70	1445	78	46	1295	41
Peak Hour Factor	0.9200	0.9200	0.9200	0.9300	0.9300	0.9300	0.9600	0.9600	0.9600	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	51	21	21	58	16	18	376	20	12	330	10
Total Analysis Volume [veh/h]	60	204	85	84	232	62	73	1505	81	47	1321	42
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	40	0	0	40	0	10	30	0	10	30	0
Maximum Green [s]	0	60	0	0	60	0	30	60	0	30	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		Yes			Yes		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	161	161	161	161	161	161	161	161	161	161	161	161	161	161
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	40	40	10	56	56	9	55	55
g / C, Green / Cycle	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.06	0.35	0.35	0.05	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.04	0.07	0.06	0.06	0.05	0.07	0.07	0.04	0.05	0.33	0.06	0.03	0.29	0.03
s, saturation flow rate [veh/h]	1603	1683	1532	1431	1603	1683	1532	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	399	419	381	356	399	419	381	356	96	1594	497	88	1571	490
d1, Uniform Delay [s]	36.45	37.48	37.12	37.17	36.93	37.70	37.51	36.64	71.23	32.36	22.94	71.09	30.89	23.14
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering 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	1.00	1.00
d2, Incremental Delay [s]	0.17	0.35	0.31	0.34	0.26	0.40	0.39	0.23	11.42	3.60	0.15	4.93	1.29	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67
PF, progression 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	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.15	0.27	0.23	0.24	0.21	0.30	0.28	0.17	0.76	0.94	0.16	0.53	0.84	0.09
d, Delay for Lane Group [s/veh]	36.62	37.83	37.43	37.51	37.19	38.09	37.91	36.87	82.65	35.96	23.09	76.02	32.17	23.21
Lane Group LOS	D	D	D	D	D	D	D	D	F	D	C	E	C	C
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.46	2.88	2.20	2.11	2.07	3.16	2.67	1.52	3.06	13.49	1.37	1.88	10.43	0.71
50th-Percentile Queue Length [ft/ln]	36.53	71.98	55.10	52.84	51.81	78.94	66.67	38.00	76.54	337.30	34.24	47.12	260.67	17.80
95th-Percentile Queue Length [veh/ln]	2.63	5.18	3.97	3.80	3.73	5.68	4.80	2.74	5.51	19.52	2.47	3.39	15.72	1.28
95th-Percentile Queue Length [ft/ln]	65.75	129.5	99.18	95.11	93.25	142.0	120.0	68.40	137.77	487.90	61.63	84.82	393.06	32.05

**Movement, Approach, & Intersection Results**

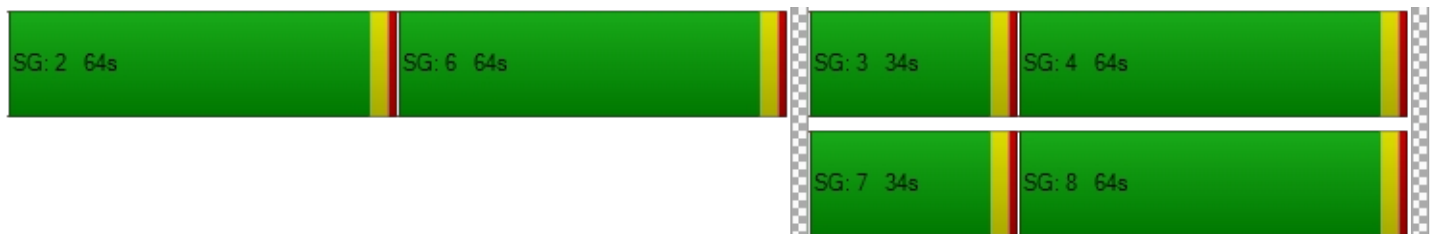
d_M, Delay for Movement [s/veh]	36.62	37.65	37.51	37.19	38.01	36.87	82.65	35.96	23.09	76.02	32.17	23.21
Movement LOS	D	D	D	D	D	D	F	D	C	E	C	C
d_A, Approach Delay [s/veh]	37.44			37.64			37.38			33.37		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	35.92											
Intersection LOS	D											
Intersection V/C	0.501											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersectio	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	747			747			747			747		
d_b, Bicycle Delay [s]	31.55			31.55			31.55			31.55		
I_b,int, Bicycle LOS Score for Intersection	1.848			1.871			2.472			2.335		
Bicycle LOS	A			A			B			B		

**Sequence**

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



**Intersection Level Of Service Report**  
**Intersection 2: SH 6 at Kirby Drive**

Control Type:	Signalized	Delay (sec / veh):	6.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.376

**Intersection Setup**

Name	Kirby Drive		SH 6		SH 6		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration	⇐⇐⇐		⇐		⇐   ⇐		
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	600.00	100.00	225.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		60.00		60.00		
Grade [%]	0.00		0.00		0.00		
Curb Present	No		No		No		
Crosswalk	Yes		Yes		No		

**Volumes**

Name	Kirby Drive		SH 6		SH 6		
Base Volume Input [veh/h]	59	45	53	1548	10	1427	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	45	53	1548	10	1427	60
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	11	13	387	3	357	15
Total Analysis Volume [veh/h]	59	45	53	1548	10	1427	60
Presence of On-Street Parking	No	No	No	No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0		
v_di, Inbound Pedestrian Volume crossing m	0		0		0		
v_co, Outbound Pedestrian Volume crossing	0		0		0		
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0		
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0		
Bicycle Volume [bicycles/h]	0		0		0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Protected	Permissive	Permissive
Signal Group	7	0	5	2	1	6	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	Lead	-	Lead	-	-
Minimum Green [s]	5	0	10	30	10	30	0
Maximum Green [s]	40	0	30	60	30	60	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	0	5	0
Pedestrian Clearance [s]	24	0	0	10	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	Yes	No	Yes	
Maximum Recall	No		No	No	No	No	
Pedestrian Recall	No		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	L	C	R
C, Cycle Length [s]	51	51	51	51	51	51	51
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	5	34	1	30	30
g / C, Green / Cycle	0.08	0.08	0.11	0.66	0.03	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.02	0.03	0.03	0.34	0.01	0.31	0.04
s, saturation flow rate [veh/h]	3113	1431	1603	4584	1603	4584	1431
c, Capacity [veh/h]	241	111	171	3035	45	2674	834
d1, Uniform Delay [s]	22.38	22.67	21.30	4.45	24.54	6.51	4.68
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	2.37	1.02	0.13	2.48	0.17	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.24	0.41	0.31	0.51	0.22	0.53	0.07
d, Delay for Lane Group [s/veh]	22.90	25.04	22.32	4.59	27.01	6.67	4.71
Lane Group LOS	C	C	C	A	C	A	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.31	0.53	0.52	0.48	0.13	1.20	0.11
50th-Percentile Queue Length [ft/ln]	7.84	13.26	12.89	11.93	3.20	30.07	2.84
95th-Percentile Queue Length [veh/ln]	0.56	0.95	0.93	0.86	0.23	2.17	0.20
95th-Percentile Queue Length [ft/ln]	14.11	23.87	23.21	21.47	5.75	54.13	5.12

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	22.90	25.04	22.32	4.59	27.01	6.67	4.71
Movement LOS	C	C	C	A	C	A	A
d_A, Approach Delay [s/veh]	23.83		5.17		6.73		
Approach LOS	C		A		A		
d_I, Intersection Delay [s/veh]	6.51						
Intersection LOS	A						
Intersection V/C	0.376						

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	17.49	17.49	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.328	3.422	0.000
Crosswalk LOS	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1556	2334	2334
d_b, Bicycle Delay [s]	1.26	0.72	0.72
I_b,int, Bicycle LOS Score for Intersection	1.560	2.440	2.383
Bicycle LOS	A	B	B

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 3: SH 6 at Driveway 1**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

**Intersection Setup**

Name	Driveway 1		SH 6		SH 6	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↱				↻	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Driveway 1		SH 6		SH 6	
Base Volume Input [veh/h]	0	0	0	1601	1382	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1601	1382	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	400	346	0
Total Analysis Volume [veh/h]	0	0	0	1601	1382	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	15.85	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	15.85		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 4: SH 6 at Driveway 2**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

**Intersection Setup**

Name	Driveway 2		SH 6		SH 6		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration	⇐⇐		⇐		⇐   ⇐		
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	415.00	100.00	350.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	No		No		No		

**Volumes**

Name	Driveway 2		SH 6		SH 6		
Base Volume Input [veh/h]	0	0	0	1601	0	1382	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1601	0	1382	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	400	0	346	0
Total Analysis Volume [veh/h]	0	0	0	1601	0	1382	0
Pedestrian Volume [ped/h]	0		0		0		

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	1	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	34.35	15.85	19.13	0.00	15.17	0.00	0.00
Movement LOS	D	C	C	A	C	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	25.10		0.00		0.00		
Approach LOS	D		A		A		
d_I, Intersection Delay [s/veh]	0.00						
Intersection LOS	A						

**Intersection Level Of Service Report  
Intersection 5: SH 6 at Driveway 3**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

**Intersection Setup**

Name	Driveway 3		SH 6		SH 6	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↻				↻	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Driveway 3		SH 6		SH 6	
Base Volume Input [veh/h]	0	0	0	1601	1382	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1601	1382	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	400	346	0
Total Analysis Volume [veh/h]	0	0	0	1601	1382	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	15.85	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	15.85		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 6: Kirby Dr at Driveway 4**

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.054

**Intersection Setup**

Name	Kirby Drive			Kirby Drive			Driveway 4			HEB Driveway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Kirby Drive			Kirby Drive			Driveway 4			HEB Driveway		
Base Volume Input [veh/h]	0	0	45	0	0	0	0	0	0	53	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	45	0	0	0	0	0	0	53	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	11	0	0	0	0	0	0	13	0	0
Total Analysis Volume [veh/h]	0	0	45	0	0	0	0	0	0	53	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.31	0.00	0.00	8.52	9.25	8.32	8.86	9.34	8.64
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.17
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.25	4.25	4.25
d_A, Approach Delay [s/veh]	0.00			2.44			8.70			8.86		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	4.79											
Intersection LOS	A											

**Intersection Level Of Service Report  
Intersection 7: Kirby Dr at Driveway 5**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Kirby Drive		Kirby Drive		Driveway 5	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Kirby Drive		Kirby Drive		Driveway 5	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	0.00	8.52	8.32
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	3.61		0.00		8.42	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.01					
Intersection LOS						

**Intersection Level Of Service Report  
Intersection 8: Kirby Dr at Driveway 6**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Kirby Drive		Kirby Dr		Driveway 6	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Kirby Drive		Kirby Dr		Driveway 6	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

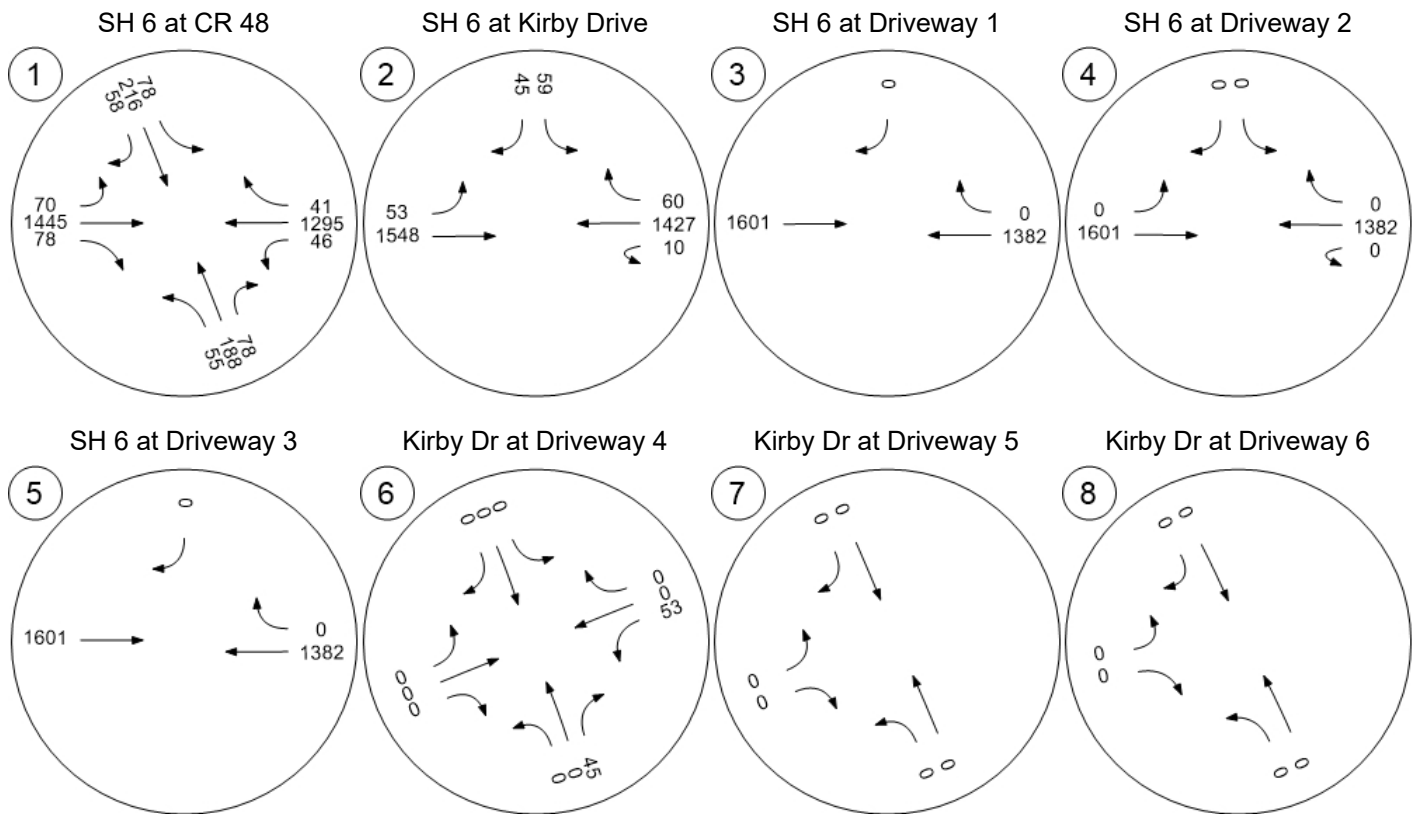
**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	0.00	8.52	8.32
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	3.61		0.00		8.42	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.01					
Intersection LOS						

Traffic Volume - Base Volume



**Intersection Level Of Service Report**  
**Intersection 1: SH 6 at CR 48**

Control Type:	Signalized	Delay (sec / veh):	46.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

**Intersection Setup**

Name	CR 48			CR 48			SH 6			SH 6		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	150.00	150.00	100.00	150.00	150.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			60.00			60.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

**Volumes**

Name	CR 48			CR 48			SH 6			SH 6		
	Base Volume Input [veh/h]	55	188	78	78	216	58	70	1445	78	46	1295
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	218	90	90	251	67	81	1676	90	53	1502	48
Peak Hour Factor	0.9200	0.9200	0.9200	0.9300	0.9300	0.9300	0.9600	0.9600	0.9600	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	59	24	24	67	18	21	436	23	14	383	12
Total Analysis Volume [veh/h]	70	237	98	97	270	72	84	1746	94	54	1533	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	40	0	0	40	0	10	30	0	10	30	0
Maximum Green [s]	0	60	0	0	60	0	30	60	0	30	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		Yes			Yes		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	165	165	165	165	165	165	165	165	165	165	165	165	165	165
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	40	40	10	60	60	9	59	59
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.06	0.36	0.36	0.06	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.04	0.08	0.07	0.07	0.06	0.09	0.08	0.05	0.05	0.38	0.07	0.03	0.33	0.03
s, saturation flow rate [veh/h]	1603	1683	1532	1431	1603	1683	1532	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	388	408	371	346	388	408	371	346	102	1664	519	90	1629	508
d1, Uniform Delay [s]	38.79	40.09	39.64	39.68	39.38	40.39	40.15	39.02	73.06	32.69	21.77	73.25	32.14	22.25
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering 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	1.00	1.00
d2, Incremental Delay [s]	0.22	0.46	0.41	0.44	0.33	0.53	0.52	0.29	14.95	26.33	0.17	6.32	3.38	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67
PF, progression 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	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.18	0.33	0.28	0.28	0.25	0.36	0.33	0.21	0.82	1.05	0.18	0.60	0.94	0.10
d, Delay for Lane Group [s/veh]	39.01	40.56	40.05	40.12	39.72	40.93	40.67	39.31	88.01	59.02	21.94	79.57	35.52	22.33
Lane Group LOS	D	D	D	D	D	D	D	D	F	F	C	E	D	C
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.81	3.55	2.73	2.59	2.54	3.92	3.30	1.87	3.70	19.57	1.54	2.25	13.93	0.81
50th-Percentile Queue Length [ft/ln]	45.15	88.87	68.18	64.73	63.50	98.01	82.55	46.78	92.43	489.32	38.56	56.36	348.30	20.35
95th-Percentile Queue Length [veh/ln]	3.25	6.40	4.91	4.66	4.57	7.06	5.94	3.37	6.66	27.72	2.78	4.06	20.05	1.47
95th-Percentile Queue Length [ft/ln]	81.26	159.9	122.7	116.5	114.2	176.4	148.6	84.21	166.38	692.88	69.41	101.46	501.34	36.63

**Movement, Approach, & Intersection Results**

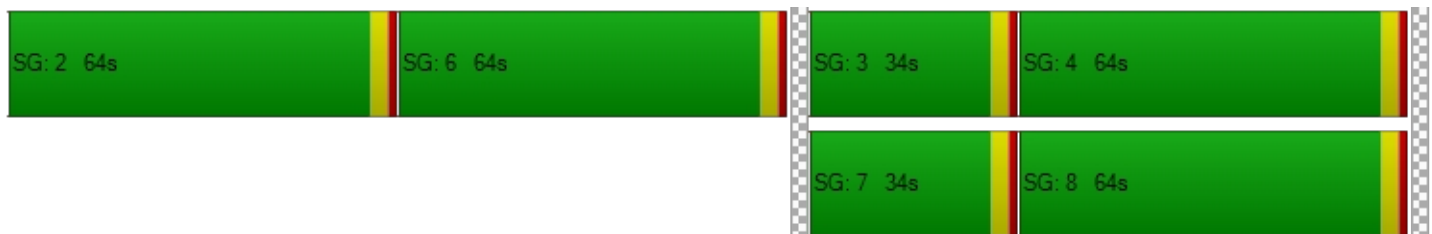
d_M, Delay for Movement [s/veh]	39.01	40.33	40.12	39.72	40.81	39.31	88.01	59.02	21.94	79.57	35.52	22.33
Movement LOS	D	D	D	D	D	D	F	F	C	E	D	C
d_A, Approach Delay [s/veh]	40.05			40.32			58.47			36.58		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	46.84											
Intersection LOS	D											
Intersection V/C	0.581											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersectio	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	726			726			726			726		
d_b, Bicycle Delay [s]	33.55			33.55			33.55			33.55		
I_b,int, Bicycle LOS Score for Intersection	1.894			1.922			2.618			2.459		
Bicycle LOS	A			A			B			B		

**Sequence**

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



**Intersection Level Of Service Report  
Intersection 2: SH 6 at Kirby Drive**

Control Type:	Signalized	Delay (sec / veh):	7.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.436

**Intersection Setup**

Name	Kirby Drive		SH 6		SH 6		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration	⇐⇐⇐		⇐		⇐   ⇐		
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	600.00	100.00	225.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		60.00		60.00		
Grade [%]	0.00		0.00		0.00		
Curb Present	No		No		No		
Crosswalk	Yes		Yes		No		

**Volumes**

Name	Kirby Drive		SH 6		SH 6		
Base Volume Input [veh/h]	59	45	53	1548	10	1427	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	52	61	1796	12	1655	70
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	13	15	449	3	414	18
Total Analysis Volume [veh/h]	68	52	61	1796	12	1655	70
Presence of On-Street Parking	No	No	No	No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0		
v_di, Inbound Pedestrian Volume crossing m	0		0		0		
v_co, Outbound Pedestrian Volume crossing	0		0		0		
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0		
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0		
Bicycle Volume [bicycles/h]	0		0		0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Protected	Permissive	Permissive
Signal Group	7	0	5	2	1	6	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	Lead	-	Lead	-	-
Minimum Green [s]	5	0	10	30	10	30	0
Maximum Green [s]	40	0	30	60	30	60	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	0	5	0
Pedestrian Clearance [s]	24	0	0	10	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	Yes	No	Yes	
Maximum Recall	No		No	No	No	No	
Pedestrian Recall	No		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	L	C	R
C, Cycle Length [s]	52	52	52	52	52	52	52
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	6	34	2	30	30
g / C, Green / Cycle	0.08	0.08	0.11	0.66	0.03	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.02	0.04	0.04	0.39	0.01	0.36	0.05
s, saturation flow rate [veh/h]	3113	1431	1603	4584	1603	4584	1431
c, Capacity [veh/h]	250	115	184	3018	51	2638	823
d1, Uniform Delay [s]	22.63	22.97	21.31	5.02	24.71	7.38	4.96
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.58	2.76	1.04	0.19	2.29	0.25	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.27	0.45	0.33	0.60	0.23	0.63	0.09
d, Delay for Lane Group [s/veh]	23.21	25.73	22.36	5.21	27.00	7.63	5.01
Lane Group LOS	C	C	C	A	C	A	A
Critical Lane Group	No	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.37	0.63	0.60	0.74	0.15	1.70	0.15
50th-Percentile Queue Length [ft/ln]	9.19	15.69	14.95	18.49	3.78	42.41	3.74
95th-Percentile Queue Length [veh/ln]	0.66	1.13	1.08	1.33	0.27	3.05	0.27
95th-Percentile Queue Length [ft/ln]	16.55	28.25	26.92	33.28	6.80	76.34	6.73

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	23.21	25.73	22.36	5.21	27.00	7.63	5.01
Movement LOS	C	C	C	A	C	A	A
d_A, Approach Delay [s/veh]	24.30		5.78		7.66		
Approach LOS	C		A		A		
d_I, Intersection Delay [s/veh]	7.26						
Intersection LOS	A						
Intersection V/C	0.436						

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	17.87	17.87	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.338	3.560	0.000
Crosswalk LOS	B	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1533	2300	2300
d_b, Bicycle Delay [s]	1.42	0.59	0.59
I_b,int, Bicycle LOS Score for Intersection	1.560	2.581	2.515
Bicycle LOS	A	B	B

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 3: SH 6 at Driveway 1**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

**Intersection Setup**

Name	Driveway 1		SH 6		SH 6	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↱				↻	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Driveway 1		SH 6		SH 6	
Base Volume Input [veh/h]	0	0	0	1601	1382	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1857	1603	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	464	401	0
Total Analysis Volume [veh/h]	0	0	0	1857	1603	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	17.82	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	17.82		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 4: SH 6 at Driveway 2**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

**Intersection Setup**

Name	Driveway 2		SH 6		SH 6		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration	⇐⇐		⇐		⇐   ⇐		
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	415.00	100.00	350.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	No		No		No		

**Volumes**

Name	Driveway 2		SH 6		SH 6		
Base Volume Input [veh/h]	0	0	0	1601	0	1382	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1857	0	1603	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	464	0	401	0
Total Analysis Volume [veh/h]	0	0	0	1857	0	1603	0
Pedestrian Volume [ped/h]	0		0		0		

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	1	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	45.50	17.82	23.18	0.00	17.94	0.00	0.00
Movement LOS	E	C	C	A	C	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	31.66		0.00		0.00		
Approach LOS	D		A		A		
d_I, Intersection Delay [s/veh]	0.00						
Intersection LOS	A						

**Intersection Level Of Service Report**  
**Intersection 5: SH 6 at Driveway 3**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

**Intersection Setup**

Name	Driveway 3		SH 6		SH 6	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↱				↱	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Driveway 3		SH 6		SH 6	
Base Volume Input [veh/h]	0	0	0	1601	1382	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1857	1603	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	464	401	0
Total Analysis Volume [veh/h]	0	0	0	1857	1603	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	17.82	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	17.82		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 6: Kirby Dr at Driveway 4**

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.062

**Intersection Setup**

Name	Kirby Drive			Kirby Drive			Driveway 4			HEB Driveway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵			↵↵			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Kirby Drive			Kirby Drive			Driveway 4			HEB Driveway		
Base Volume Input [veh/h]	0	0	45	0	0	0	0	0	0	53	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	52	0	0	0	0	0	0	61	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	13	0	0	0	0	0	0	15	0	0
Total Analysis Volume [veh/h]	0	0	52	0	0	0	0	0	0	61	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.32	0.00	0.00	8.52	9.29	8.32	8.91	9.40	8.69
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.20
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.96	4.96	4.96
d_A, Approach Delay [s/veh]	0.00			2.44			8.71			8.91		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	4.81											
Intersection LOS	A											

**Intersection Level Of Service Report  
Intersection 7: Kirby Dr at Driveway 5**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Kirby Drive		Kirby Drive		Driveway 5	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Kirby Drive		Kirby Drive		Driveway 5	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	0.00	8.52	8.32
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	3.61		0.00		8.42	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.01					
Intersection LOS						

**Intersection Level Of Service Report  
Intersection 8: Kirby Dr at Driveway 6**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Kirby Drive		Kirby Dr		Driveway 6	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Kirby Drive		Kirby Dr		Driveway 6	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

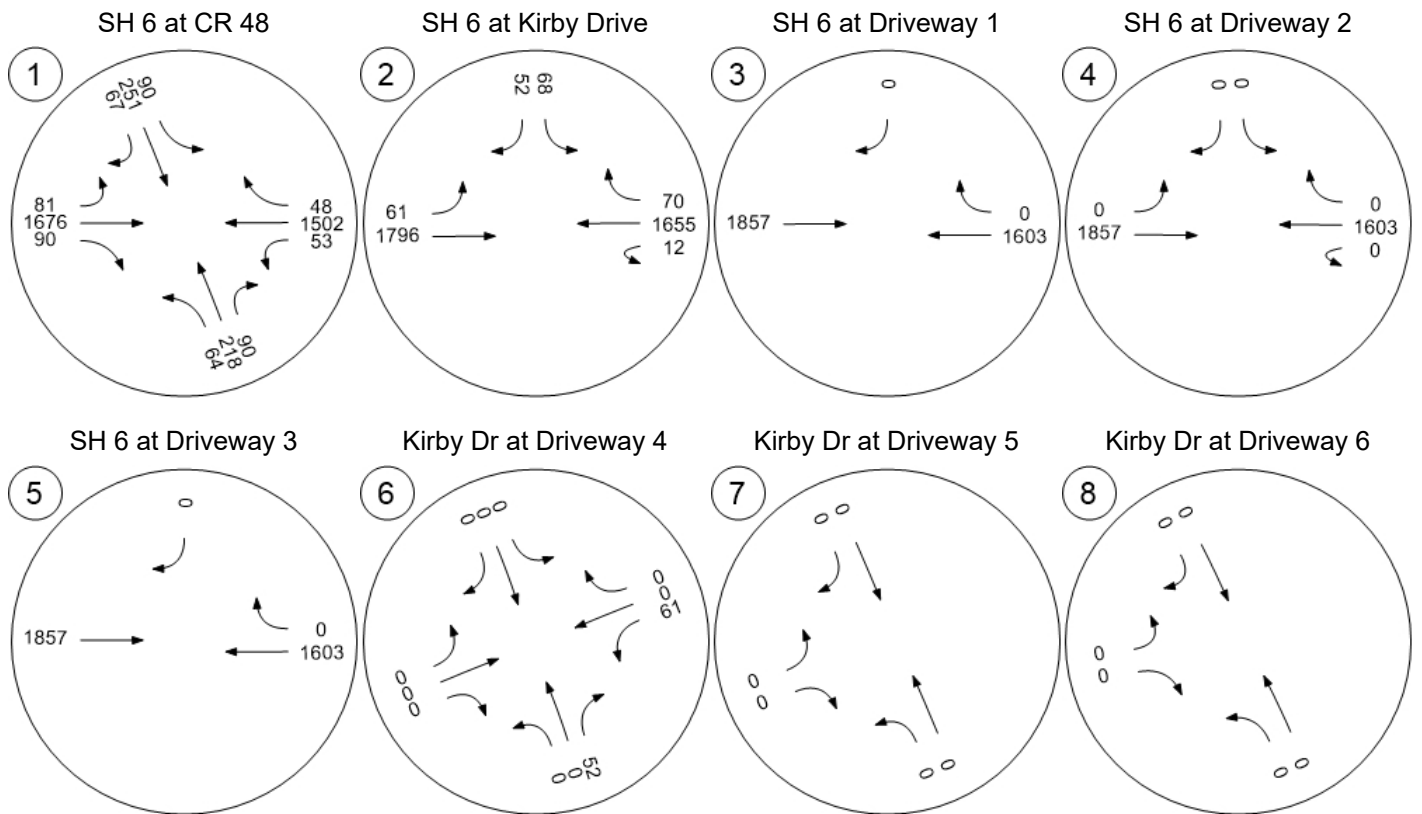
**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	0.00	8.52	8.32
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	3.61		0.00		8.42	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.01					
Intersection LOS						

Traffic Volume - Future Background Volume



**Intersection Level Of Service Report**  
**Intersection 1: SH 6 at CR 48**

Control Type:	Signalized	Delay (sec / veh):	54.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

**Intersection Setup**

Name	CR 48			CR 48			SH 6			SH 6		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	150.00	150.00	100.00	150.00	150.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			60.00			60.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

**Volumes**

Name	CR 48			CR 48			SH 6			SH 6		
Base Volume Input [veh/h]	55	188	78	78	216	58	70	1445	78	46	1295	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	23	46	0	0	0	160	0	16	110	31
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	218	113	136	251	67	81	1836	90	69	1612	79
Peak Hour Factor	0.9200	0.9200	0.9200	0.9300	0.9300	0.9300	0.9600	0.9600	0.9600	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	59	31	37	67	18	21	478	23	18	411	20
Total Analysis Volume [veh/h]	70	237	123	146	270	72	84	1913	94	70	1645	81
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	40	0	0	40	0	10	30	0	10	30	0
Maximum Green [s]	0	60	0	0	60	0	30	60	0	30	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		Yes			Yes		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	167	167	167	167	167	167	167	167	167	167	167	167	167	167
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	40	40	10	61	61	10	60	60
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.06	0.37	0.37	0.06	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.04	0.08	0.07	0.09	0.08	0.08	0.09	0.05	0.05	0.42	0.07	0.04	0.36	0.06
s, saturation flow rate [veh/h]	1603	1683	1532	1431	1603	1677	1532	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	385	405	368	344	385	403	368	344	101	1673	522	93	1650	515
d1, Uniform Delay [s]	33.94	34.99	34.62	35.20	35.15	35.12	35.39	34.13	71.92	22.51	14.75	72.48	23.26	15.36
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering 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	1.00	1.00
d2, Incremental Delay [s]	0.22	0.47	0.41	0.63	0.55	0.51	0.65	0.30	15.44	66.27	0.16	11.39	9.62	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
PF, progression 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	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.18	0.33	0.28	0.36	0.35	0.35	0.38	0.21	0.83	1.14	0.18	0.75	1.00	0.16
d, Delay for Lane Group [s/veh]	34.17	35.46	35.04	35.83	35.70	35.64	36.04	34.43	87.36	88.78	14.91	83.87	32.88	15.50
Lane Group LOS	C	D	D	D	D	D	D	C	F	F	B	F	C	B
Critical Lane Group	No	No	No	Yes	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.58	3.10	2.38	2.88	3.16	3.27	3.30	1.64	3.66	18.48	1.06	2.99	10.09	0.94
50th-Percentile Queue Length [ft/ln]	39.54	77.52	59.61	72.03	79.02	81.63	82.56	40.96	91.41	461.89	26.38	74.74	252.17	23.51
95th-Percentile Queue Length [veh/ln]	2.85	5.58	4.29	5.19	5.69	5.88	5.94	2.95	6.58	27.76	1.90	5.38	15.30	1.69
95th-Percentile Queue Length [ft/ln]	71.17	139.5	107.2	129.6	142.2	146.9	148.6	73.72	164.54	693.88	47.48	134.54	382.39	42.31

**Movement, Approach, & Intersection Results**

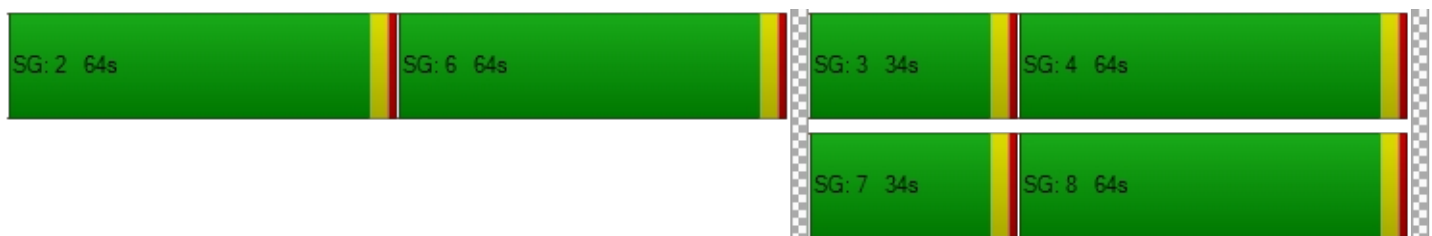
d_M, Delay for Movement [s/veh]	34.17	35.28	35.83	35.70	35.85	34.43	87.36	88.78	14.91	83.87	32.88	15.50
Movement LOS	C	D	D	D	D	C	F	F	B	F	C	B
d_A, Approach Delay [s/veh]	35.25			35.59			85.40			34.08		
Approach LOS	D			D			F			C		
d_I, Intersection Delay [s/veh]	54.67											
Intersection LOS	D											
Intersection V/C	0.639											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersectio	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	720			720			720			720		
d_b, Bicycle Delay [s]	34.09			34.09			34.09			34.09		
I_b,int, Bicycle LOS Score for Intersection	1.914			1.962			2.710			2.547		
Bicycle LOS	A			A			B			B		

**Sequence**

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



**Intersection Level Of Service Report  
Intersection 2: SH 6 at Kirby Drive**

Control Type:	Signalized	Delay (sec / veh):	11.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.574

**Intersection Setup**

Name	Kirby Drive		SH 6		SH 6		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration	⇐⇐⇐		⇐		⇐   ⇐		
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	600.00	100.00	225.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		60.00		60.00		
Grade [%]	0.00		0.00		0.00		
Curb Present	No		No		No		
Crosswalk	Yes		Yes		No		

**Volumes**

Name	Kirby Drive		SH 6		SH 6		
Base Volume Input [veh/h]	59	45	53	1548	10	1427	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	126	63	115	31	0	103	126
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	194	115	176	1827	12	1758	196
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	29	44	457	3	440	49
Total Analysis Volume [veh/h]	194	115	176	1827	12	1758	196
Presence of On-Street Parking	No	No	No	No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0		
v_di, Inbound Pedestrian Volume crossing m	0		0		0		
v_co, Outbound Pedestrian Volume crossing	0		0		0		
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0		
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0		
Bicycle Volume [bicycles/h]	0		0		0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Protected	Permissive	Permissive
Signal Group	7	0	5	2	1	6	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	Lead	-	Lead	-	-
Minimum Green [s]	5	0	10	30	10	30	0
Maximum Green [s]	40	0	30	60	30	60	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	0	5	0
Pedestrian Clearance [s]	24	0	0	10	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	Yes	No	Yes	
Maximum Recall	No		No	No	No	No	
Pedestrian Recall	No		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	L	C	R
C, Cycle Length [s]	66	66	66	66	66	66	66
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	10	44	2	37	37
g / C, Green / Cycle	0.12	0.12	0.15	0.67	0.03	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.06	0.08	0.11	0.40	0.01	0.38	0.14
s, saturation flow rate [veh/h]	3113	1431	1603	4584	1603	4584	1431
c, Capacity [veh/h]	374	172	232	3067	49	2541	793
d1, Uniform Delay [s]	27.44	27.98	27.30	6.06	31.49	10.71	7.65
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.11	4.43	4.99	0.19	2.61	0.34	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.67	0.76	0.60	0.25	0.69	0.25
d, Delay for Lane Group [s/veh]	28.55	32.41	32.29	6.24	34.10	11.05	7.81
Lane Group LOS	C	C	C	A	C	B	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.39	1.82	2.60	1.93	0.20	3.85	0.94
50th-Percentile Queue Length [ft/ln]	34.76	45.56	64.93	48.19	5.00	96.33	23.42
95th-Percentile Queue Length [veh/ln]	2.50	3.28	4.67	3.47	0.36	6.94	1.69
95th-Percentile Queue Length [ft/ln]	62.56	82.01	116.87	86.73	8.99	173.40	42.16

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.55	32.41	32.29	6.24	34.10	11.05	7.81
Movement LOS	C	C	C	A	C	B	A
d_A, Approach Delay [s/veh]	29.99		8.53		10.87		
Approach LOS	C		A		B		
d_I, Intersection Delay [s/veh]	11.16						
Intersection LOS	B						
Intersection V/C	0.574						

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.78	24.78	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.463	3.660	0.000
Crosswalk LOS	B	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1206	1809	1809
d_b, Bicycle Delay [s]	5.23	0.30	0.30
I_b,int, Bicycle LOS Score for Intersection	1.560	2.661	2.641
Bicycle LOS	A	B	B

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 3: SH 6 at Driveway 1**

Control Type:	Two-way stop	Delay (sec / veh):	20.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.052

**Intersection Setup**

Name	Driveway 1		SH 6		SH 6	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↱				↵	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Driveway 1		SH 6		SH 6	
Base Volume Input [veh/h]	0	0	0	1601	1382	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	8	0	229	149	11
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	5	0	0	-10	10
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	13	0	2086	1742	21
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	0	522	436	5
Total Analysis Volume [veh/h]	0	13	0	2086	1742	21
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.05	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	20.27	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.16	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	4.11	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	20.27		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.07					
Intersection LOS	C					

**Intersection Level Of Service Report  
Intersection 4: SH 6 at Driveway 2**

Control Type:	Two-way stop	Delay (sec / veh):	200.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.717

**Intersection Setup**

Name	Driveway 2		SH 6		SH 6		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration	⇐⇐		⇐		⇐   ⇐		
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	415.00	100.00	350.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	No		No		No		

**Volumes**

Name	Driveway 2		SH 6		SH 6		
Base Volume Input [veh/h]	0	0	0	1601	0	1382	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	31	24	115	115	0	137	23
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	25	0	0	0	-25	25
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	49	115	1972	0	1715	48
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	12	29	493	0	429	12
Total Analysis Volume [veh/h]	31	49	115	1972	0	1715	48
Pedestrian Volume [ped/h]	0		0		0		

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	1	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.72	0.20	0.70	0.02	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	200.46	23.00	66.08	0.00	19.42	0.00	0.00
Movement LOS	F	C	F	A	C	A	A
95th-Percentile Queue Length [veh/ln]	2.73	0.72	4.16	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	68.24	17.89	103.94	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	91.76		3.64		0.00		
Approach LOS	F		A		A		
d_I, Intersection Delay [s/veh]	3.80						
Intersection LOS	F						

**Intersection Level Of Service Report  
Intersection 5: SH 6 at Driveway 3**

Control Type:	Two-way stop	Delay (sec / veh):	70.1
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.918

**Intersection Setup**

Name	Driveway 3		SH 6		SH 6	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↻				↻	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Driveway 3		SH 6		SH 6	
Base Volume Input [veh/h]	0	0	0	1601	1382	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	63	0	146	97	69
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	220	0	0	-220	220
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	283	0	2003	1480	289
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	71	0	501	370	72
Total Analysis Volume [veh/h]	0	283	0	2003	1480	289
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.92	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	70.11	0.00	0.00	0.00	0.00
Movement LOS		F		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	8.84	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	221.09	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	70.11		0.00		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	4.89					
Intersection LOS	F					

**Intersection Level Of Service Report  
Intersection 6: Kirby Dr at Driveway 4**

Control Type:	Two-way stop	Delay (sec / veh):	15.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.147

**Intersection Setup**

Name	Kirby Drive			Kirby Drive			Driveway 4			HEB Driveway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Kirby Drive			Kirby Drive			Driveway 4			HEB Driveway		
Base Volume Input [veh/h]	0	0	45	0	0	0	0	0	0	53	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	126	115	0	0	55	0	0	0	133	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	126	115	52	0	55	0	0	0	133	61	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	29	13	0	14	0	0	0	33	15	0	0
Total Analysis Volume [veh/h]	126	115	52	0	55	0	0	0	133	61	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.15	0.00	0.00
d_M, Delay for Movement [s/veh]	7.53	0.00	0.00	7.56	0.00	0.00	12.42	13.54	8.96	15.18	14.26	10.25
Movement LOS	A	A	A	A	A	A	B	B	A	C	B	B
95th-Percentile Queue Length [veh/ln]	0.27	0.00	0.00	0.00	0.00	0.00	0.44	0.44	0.44	0.51	0.51	0.51
95th-Percentile Queue Length [ft/ln]	6.63	0.00	0.00	0.00	0.00	0.00	10.94	10.94	10.94	12.80	12.80	12.80
d_A, Approach Delay [s/veh]	3.24			0.00			8.96			15.18		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	5.66											
Intersection LOS	C											

**Intersection Level Of Service Report  
Intersection 7: Kirby Dr at Driveway 5**

Control Type:	Two-way stop	Delay (sec / veh):	8.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.036

**Intersection Setup**

Name	Kirby Drive		Kirby Drive		Driveway 5	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Kirby Drive		Kirby Drive		Driveway 5	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	92	23	16	0	0	39
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	92	23	16	0	0	39
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	6	4	0	0	10
Total Analysis Volume [veh/h]	92	23	16	0	0	39
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.06	0.00	0.00	0.00	0.00	0.04
d_M, Delay for Movement [s/veh]	7.39	0.00	0.00	0.00	10.17	8.49
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.18	0.00	0.00	0.00	0.11	0.11
95th-Percentile Queue Length [ft/ln]	4.57	0.00	0.00	0.00	2.83	2.83
d_A, Approach Delay [s/veh]	5.91		0.00		8.49	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	5.94					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 8: Kirby Dr at Driveway 6**

Control Type:	Two-way stop	Delay (sec / veh):	8.4
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.015

**Intersection Setup**

Name	Kirby Drive		Kirby Dr		Driveway 6	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Kirby Drive		Kirby Dr		Driveway 6	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	23	0	0	0	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	0	0	0	0	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	0	0	0	4
Total Analysis Volume [veh/h]	23	0	0	0	0	16
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	7.25	0.00	0.00	0.00	8.86	8.37
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.04	0.00	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft/ln]	1.08	0.00	0.00	0.00	1.12	1.12
d_A, Approach Delay [s/veh]	7.25		0.00		8.37	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.71					
Intersection LOS	A					

Buildout Conditions (2028)

Vistro File: C:\...\vistro-manvel commercial.vistro

Scenario 1 AM Peak Hour

Report File: C:\...\vistro-03-am-buildout.pdf

10/9/2025

**Trip Generation summary**

**Added Trips**

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: Manvel Commercial				1.000	0.000	50.00	50.00	457	314	771	100.00
<b>Added Trips Total</b>								<b>457</b>	<b>314</b>	<b>771</b>	<b>100.00</b>

## Buildout Conditions (2028)

Vistro File: C:\...\vistro-manvel commercial.vistro

Scenario 1 AM Peak Hour

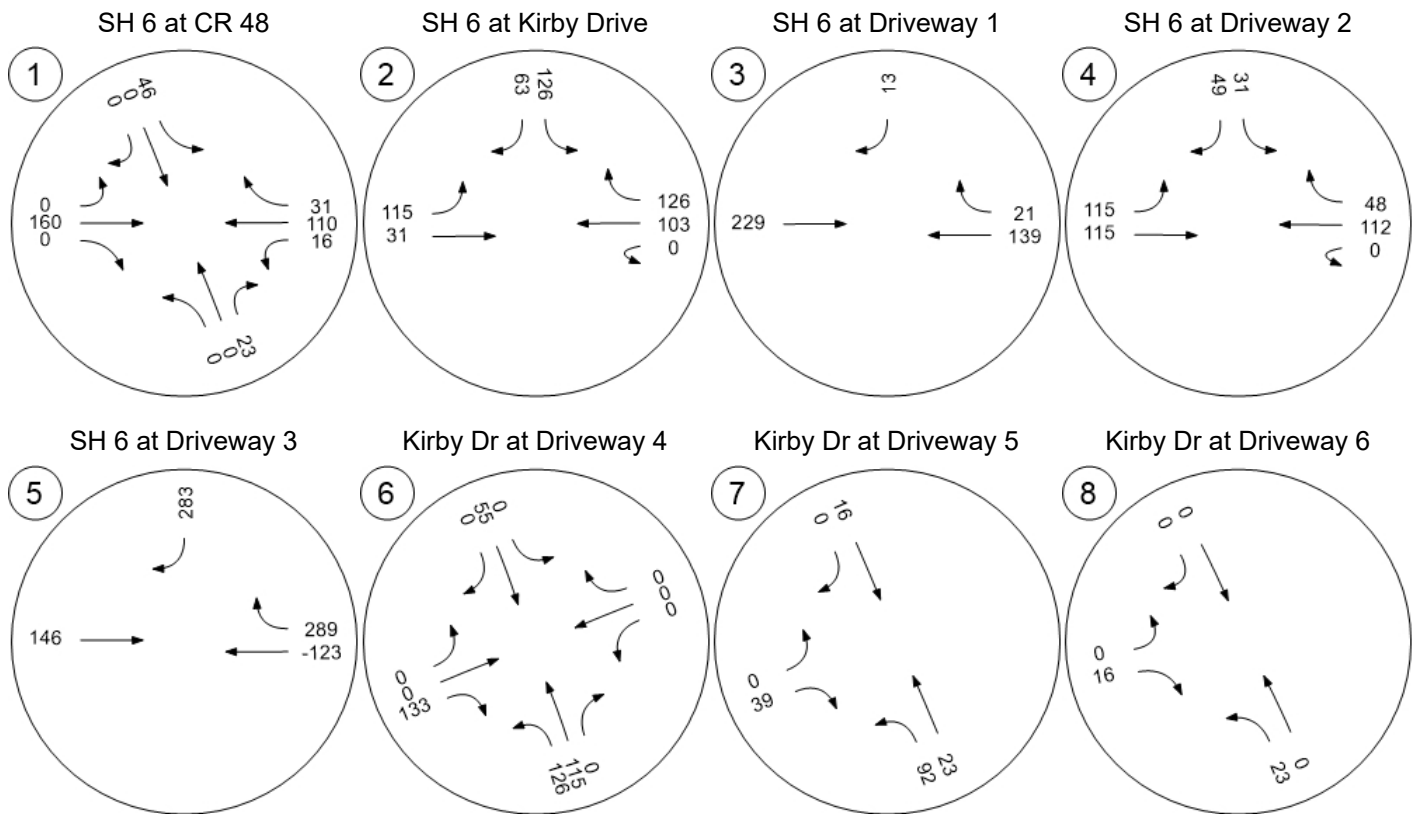
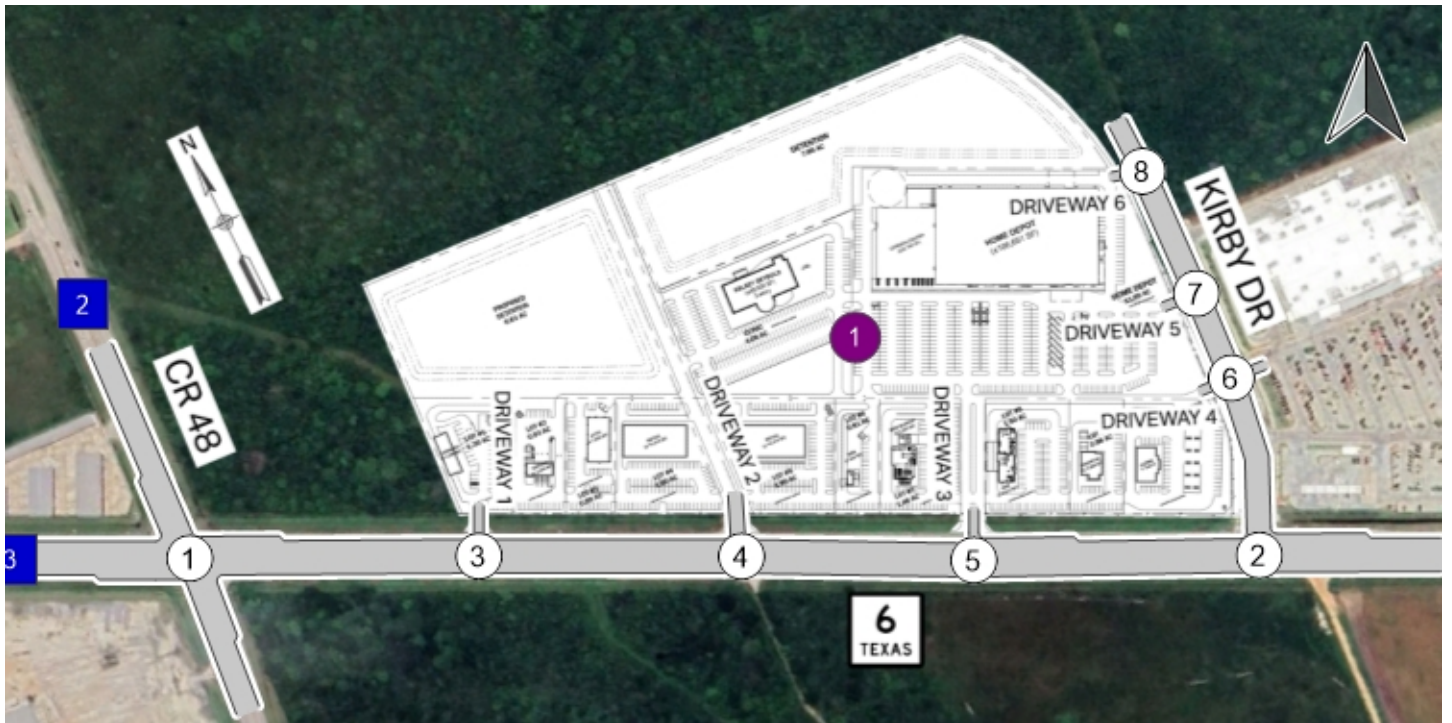
Report File: C:\...\vistro-03-am-buildout.pdf

10/9/2025

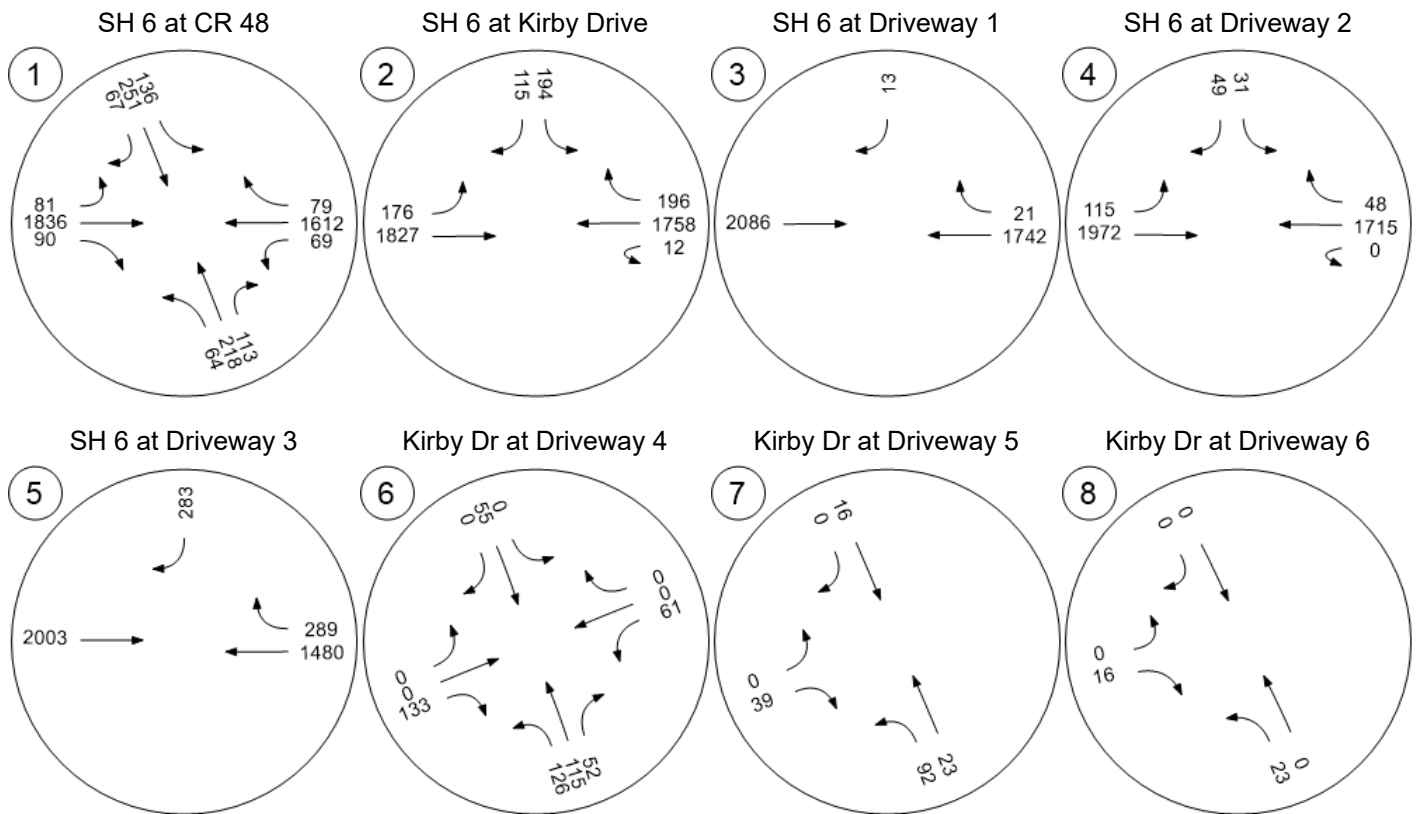
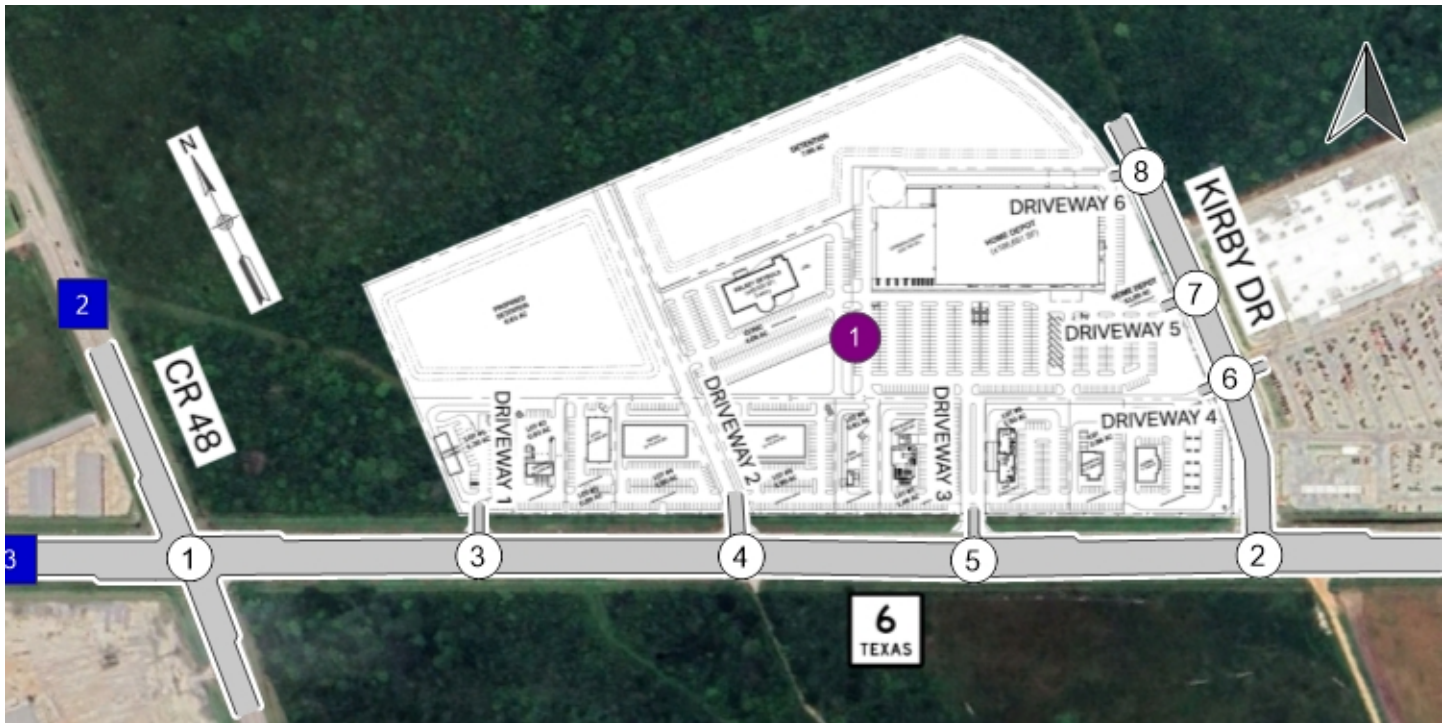
**Trip Distribution summary**

Zone / Gate	Zone 1: Manvel Commercial			
	To Manvel Commercial:		From Manvel Commercial:	
	Share %	Trips	Share %	Trips
2: Gate	10.00	46	10.00	31
3: Gate	35.00	160	35.00	110
4: Gate	5.00	23	5.00	16
5: Gate	50.00	229	50.00	157
<b>Total</b>	<b>100.00</b>	<b>458</b>	<b>100.00</b>	<b>314</b>

Traffic Volume - Net New Site Trips



Traffic Volume - Future Total Volume



## Appendix D – PM Peak Hour Capacity Analyses

**Intersection Level Of Service Report**  
**Intersection 1: SH 6 at CR 48**

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.561

**Intersection Setup**

Name	CR 48			CR 48			SH 6			SH 6		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	150.00	150.00	100.00	150.00	150.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			60.00			60.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

**Volumes**

Name	CR 48			CR 48			SH 6			SH 6		
Base Volume Input [veh/h]	70	231	68	83	249	68	107	980	94	91	1414	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	231	68	83	249	68	107	980	94	91	1414	82
Peak Hour Factor	0.9500	0.9500	0.9500	0.9200	0.9200	0.9200	0.9500	0.9500	0.9500	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	61	18	23	68	18	28	258	25	24	368	21
Total Analysis Volume [veh/h]	74	243	72	90	271	74	113	1032	99	95	1473	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	40	0	0	40	0	10	30	0	10	30	0
Maximum Green [s]	0	60	0	0	60	0	30	60	0	30	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		Yes			Yes		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	166	166	166	166	166	166	166	166	166	166	166	166	166	166
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	40	40	14	58	58	12	56	56
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.08	0.35	0.35	0.07	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.07	0.05	0.06	0.09	0.08	0.05	0.07	0.23	0.07	0.06	0.32	0.06
s, saturation flow rate [veh/h]	1603	1683	1532	1431	1603	1683	1532	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	387	406	369	345	387	406	369	345	131	1608	502	113	1555	485
d1, Uniform Delay [s]	39.13	40.42	39.99	39.28	39.48	40.73	40.36	39.32	70.69	27.54	23.50	72.31	34.68	24.87
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering 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	1.00	1.00
d2, Incremental Delay [s]	0.24	0.48	0.43	0.30	0.30	0.56	0.52	0.31	14.69	0.43	0.19	15.07	3.87	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67
PF, progression 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	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.19	0.34	0.29	0.21	0.23	0.37	0.33	0.21	0.86	0.64	0.20	0.84	0.95	0.18
d, Delay for Lane Group [s/veh]	39.37	40.90	40.41	39.57	39.79	41.29	40.88	39.63	85.38	27.97	23.69	87.38	38.55	25.04
Lane Group LOS	D	D	D	D	D	D	D	D	F	C	C	F	D	C
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.92	3.65	2.84	1.88	2.36	4.03	3.26	1.94	4.87	6.71	1.73	4.16	14.25	1.55
50th-Percentile Queue Length [ft/ln]	48.11	91.31	70.94	47.06	59.03	100.8	81.58	48.43	121.66	167.65	43.20	103.99	356.18	38.69
95th-Percentile Queue Length [veh/ln]	3.46	6.57	5.11	3.39	4.25	7.26	5.87	3.49	8.48	10.95	3.11	7.49	20.44	2.79
95th-Percentile Queue Length [ft/ln]	86.60	164.3	127.6	84.70	106.2	181.4	146.8	87.17	212.11	273.83	77.76	187.19	510.93	69.65

**Movement, Approach, & Intersection Results**

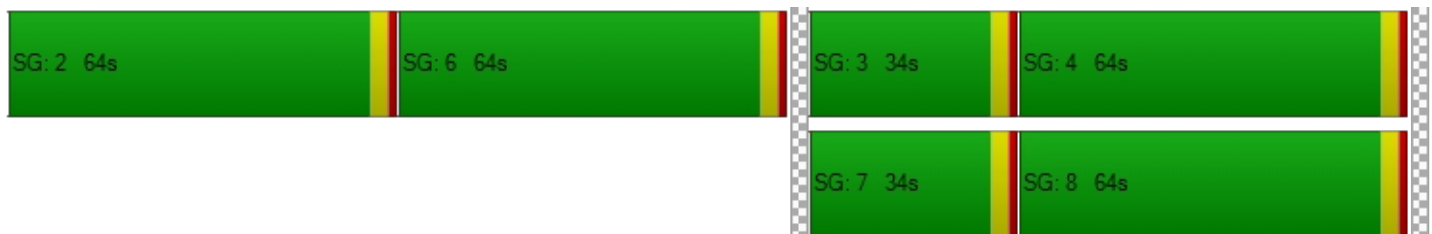
d_M, Delay for Movement [s/veh]	39.37	40.69	39.57	39.79	41.11	39.63	85.38	27.97	23.69	87.38	38.55	25.04
Movement LOS	D	D	D	D	D	D	F	C	C	F	D	C
d_A, Approach Delay [s/veh]	40.23			40.58			32.84			40.66		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	37.99											
Intersection LOS	D											
Intersection V/C	0.561											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersectio	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	724			724			724			724		
d_b, Bicycle Delay [s]	33.76			33.76			33.76			33.76		
I_b,int, Bicycle LOS Score for Intersection	1.881			1.918			2.244			2.469		
Bicycle LOS	A			A			B			B		

**Sequence**

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



**Intersection Level Of Service Report  
Intersection 2: SH 6 at Kirby Drive**

Control Type:	Signalized	Delay (sec / veh):	7.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

**Intersection Setup**

Name	Kirby Drive		SH 6		SH 6		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration	⇐⇐⇐		⇐		⇐   ⇐		
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	600.00	100.00	225.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		60.00		60.00		
Grade [%]	0.00		0.00		0.00		
Curb Present	No		No		No		
Crosswalk	Yes		Yes		No		

**Volumes**

Name	Kirby Drive		SH 6		SH 6		
Base Volume Input [veh/h]	82	66	73	1058	12	1653	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	82	66	73	1058	12	1653	77
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	17	18	265	3	413	19
Total Analysis Volume [veh/h]	82	66	73	1058	12	1653	77
Presence of On-Street Parking	No	No	No	No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0		
v_di, Inbound Pedestrian Volume crossing m	0		0		0		
v_co, Outbound Pedestrian Volume crossing	0		0		0		
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0		
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0		
Bicycle Volume [bicycles/h]	0		0		0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Protected	Permissive	Permissive
Signal Group	7	0	5	2	1	6	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	Lead	-	Lead	-	-
Minimum Green [s]	5	0	10	30	10	30	0
Maximum Green [s]	40	0	30	60	30	60	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	0	5	0
Pedestrian Clearance [s]	24	0	0	10	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	Yes	No	Yes	
Maximum Recall	No		No	No	No	No	
Pedestrian Recall	No		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	L	C	R
C, Cycle Length [s]	53	53	53	53	53	53	53
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	7	35	2	30	30
g / C, Green / Cycle	0.08	0.08	0.13	0.66	0.03	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.03	0.05	0.05	0.23	0.01	0.36	0.05
s, saturation flow rate [veh/h]	3113	1431	1603	4584	1603	4584	1431
c, Capacity [veh/h]	262	121	201	3021	50	2589	808
d1, Uniform Delay [s]	22.93	23.40	21.33	4.03	25.17	7.89	5.33
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.67	3.82	1.10	0.07	2.40	0.26	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.31	0.55	0.36	0.35	0.24	0.64	0.10
d, Delay for Lane Group [s/veh]	23.60	27.23	22.42	4.10	27.57	8.15	5.38
Lane Group LOS	C	C	C	A	C	A	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.45	0.83	0.72	0.38	0.16	1.93	0.19
50th-Percentile Queue Length [ft/ln]	11.33	20.82	18.10	9.46	3.88	48.34	4.70
95th-Percentile Queue Length [veh/ln]	0.82	1.50	1.30	0.68	0.28	3.48	0.34
95th-Percentile Queue Length [ft/ln]	20.40	37.48	32.59	17.02	6.98	87.02	8.46

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	23.60	27.23	22.42	4.10	27.57	8.15	5.38
Movement LOS	C	C	C	A	C	A	A
d_A, Approach Delay [s/veh]	25.22		5.28		8.16		
Approach LOS	C		A		A		
d_I, Intersection Delay [s/veh]	7.92						
Intersection LOS	A						
Intersection V/C	0.452						

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	18.34	18.34	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.351	3.362	0.000
Crosswalk LOS	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1505	2258	2258
d_b, Bicycle Delay [s]	1.63	0.44	0.44
I_b,int, Bicycle LOS Score for Intersection	1.560	2.182	2.518
Bicycle LOS	A	B	B

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 3: SH 6 at Driveway 1**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

**Intersection Setup**

Name	Driveway 1		SH 6		SH 6	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↱				↻	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Driveway 1		SH 6		SH 6	
Base Volume Input [veh/h]	0	0	0	1131	1587	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1131	1587	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	283	397	0
Total Analysis Volume [veh/h]	0	0	0	1131	1587	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	17.66	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	17.66		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 4: SH 6 at Driveway 2**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

**Intersection Setup**

Name	Driveway 2		SH 6		SH 6		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration	⇐⇐		⇐		⇐   ⇐		
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	415.00	100.00	350.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	No		No		No		

**Volumes**

Name	Driveway 2		SH 6		SH 6		
Base Volume Input [veh/h]	0	0	0	1131	0	1587	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1131	0	1587	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	283	0	397	0
Total Analysis Volume [veh/h]	0	0	0	1131	0	1587	0
Pedestrian Volume [ped/h]	0		0		0		

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	1	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	42.97	17.66	22.85	0.00	11.56	0.00	0.00
Movement LOS	E	C	C	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	30.32		0.00		0.00		
Approach LOS	D		A		A		
d_I, Intersection Delay [s/veh]	0.00						
Intersection LOS	A						

**Intersection Level Of Service Report  
Intersection 5: SH 6 at Driveway 3**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

**Intersection Setup**

Name	Driveway 3		SH 6		SH 6	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↱				↱	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Driveway 3		SH 6		SH 6	
Base Volume Input [veh/h]	0	0	0	1131	1587	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1131	1587	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	283	397	0
Total Analysis Volume [veh/h]	0	0	0	1131	1587	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	17.66	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	17.66		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 6: Kirby Dr at Driveway 4**

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.057

**Intersection Setup**

Name	Kirby Drive			Kirby Drive			Driveway 4			HEB Driveway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Kirby Drive			Kirby Drive			Driveway 4			HEB Driveway		
Base Volume Input [veh/h]	0	0	48	0	0	0	0	0	0	56	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	48	0	0	0	0	0	0	56	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	12	0	0	0	0	0	0	14	0	0
Total Analysis Volume [veh/h]	0	0	48	0	0	0	0	0	0	56	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.31	0.00	0.00	8.52	9.27	8.32	8.88	9.36	8.66
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.18
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.52	4.52	4.52
d_A, Approach Delay [s/veh]	0.00			2.44			8.70			8.88		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	4.78											
Intersection LOS	A											

**Intersection Level Of Service Report  
Intersection 7: Kirby Dr at Driveway 5**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Kirby Drive		Kirby Drive		Driveway 5	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Kirby Drive		Kirby Drive		Driveway 5	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	0.00	8.52	8.32
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	3.61		0.00		8.42	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.01					
Intersection LOS						

**Intersection Level Of Service Report  
Intersection 8: Kirby Dr at Driveway 6**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Kirby Drive		Kirby Dr		Driveway 6	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Kirby Drive		Kirby Dr		Driveway 6	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

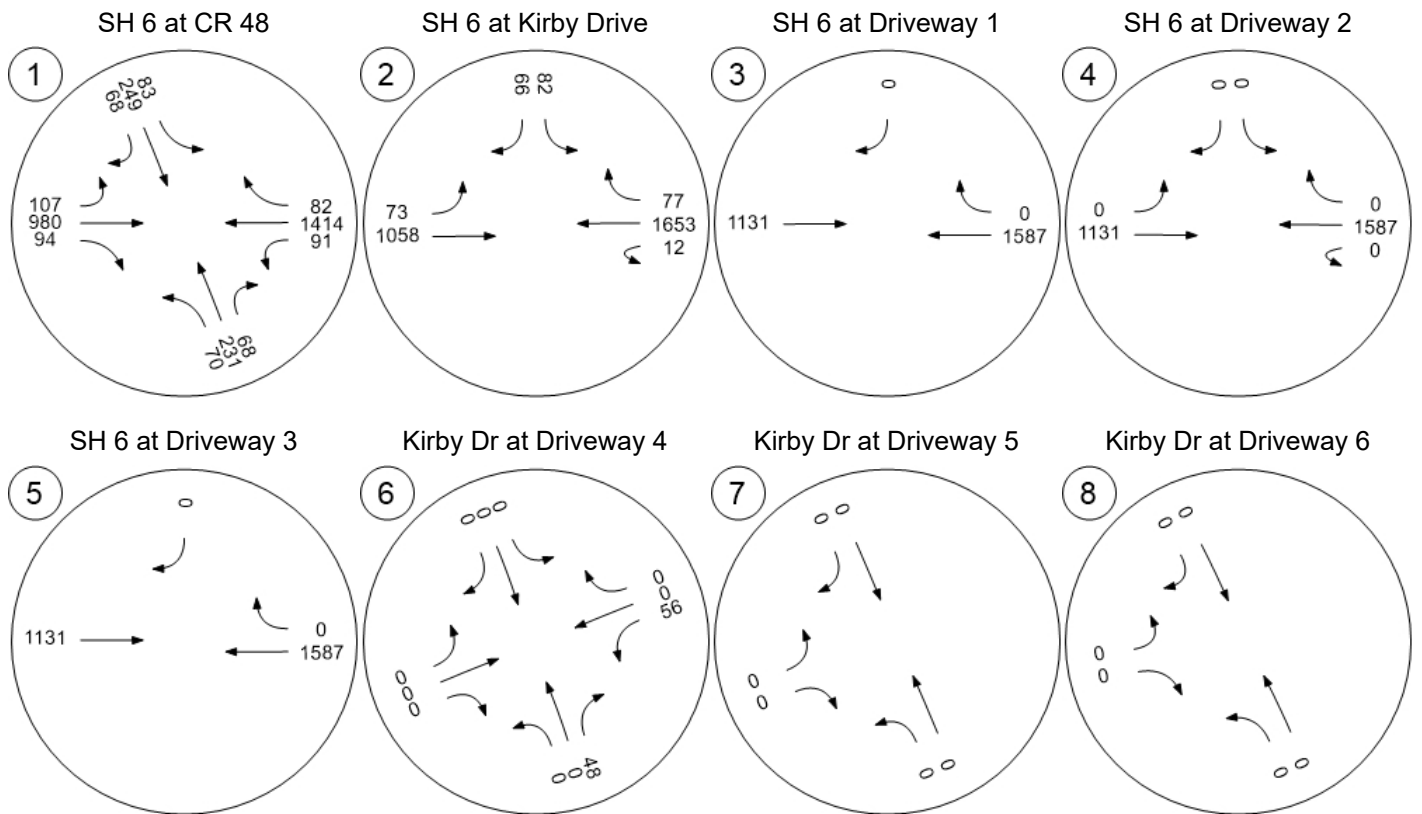
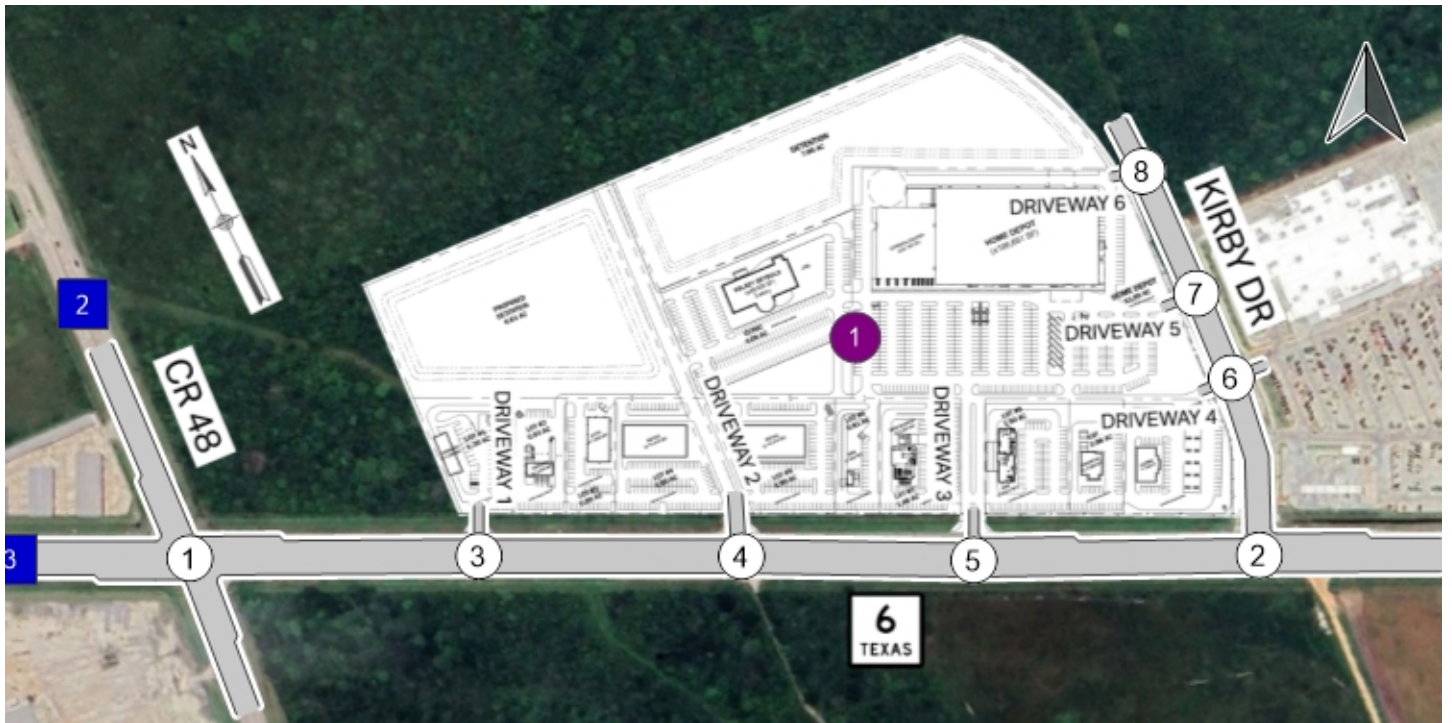
**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	0.00	8.52	8.32
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	3.61		0.00		8.42	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.01					
Intersection LOS						





Traffic Volume - Base Volume



**Intersection Level Of Service Report**  
**Intersection 1: SH 6 at CR 48**

Control Type:	Signalized	Delay (sec / veh):	51.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.651

**Intersection Setup**

Name	CR 48			CR 48			SH 6			SH 6		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	150.00	150.00	100.00	150.00	150.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			60.00			60.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

**Volumes**

Name	CR 48			CR 48			SH 6			SH 6		
Base Volume Input [veh/h]	70	231	68	83	249	68	107	980	94	91	1414	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	81	268	79	96	289	79	124	1137	109	106	1640	95
Peak Hour Factor	0.9500	0.9500	0.9500	0.9200	0.9200	0.9200	0.9500	0.9500	0.9500	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	71	21	26	79	21	33	299	29	28	427	25
Total Analysis Volume [veh/h]	85	282	83	104	314	86	131	1197	115	110	1708	99
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	40	0	0	40	0	10	30	0	10	30	0
Maximum Green [s]	0	60	0	0	60	0	30	60	0	30	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		Yes			Yes		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	172	172	172	172	172	172	172	172	172	172	172	172	172	172
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	40	40	16	62	62	14	60	60
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.09	0.36	0.36	0.08	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.05	0.09	0.08	0.06	0.06	0.10	0.09	0.06	0.08	0.26	0.08	0.07	0.37	0.07
s, saturation flow rate [veh/h]	1603	1683	1532	1431	1603	1683	1532	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	373	392	356	333	373	392	356	333	149	1658	517	128	1597	498
d1, Uniform Delay [s]	42.32	44.04	43.45	42.51	42.79	44.44	43.95	42.60	71.76	28.12	23.10	73.66	36.10	24.71
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering 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	1.00	1.00
d2, Incremental Delay [s]	0.31	0.67	0.58	0.39	0.40	0.78	0.71	0.41	14.65	0.61	0.21	14.83	34.58	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67	1.67
PF, progression 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	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.23	0.40	0.35	0.25	0.28	0.44	0.40	0.26	0.88	0.72	0.22	0.86	1.07	0.20
d, Delay for Lane Group [s/veh]	42.62	44.71	44.03	42.90	43.19	45.22	44.66	43.00	86.41	28.73	23.32	88.49	70.68	24.90
Lane Group LOS	D	D	D	D	D	D	D	D	F	C	C	F	F	C
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.38	4.59	3.55	2.33	2.94	5.06	4.09	2.42	5.77	8.49	2.01	4.93	21.54	1.82
50th-Percentile Queue Length [ft/ln]	59.41	114.8	88.79	58.37	73.47	126.5	102.3	60.60	144.36	212.25	50.18	123.29	538.55	45.45
95th-Percentile Queue Length [veh/ln]	4.28	8.11	6.39	4.20	5.29	8.75	7.37	4.36	9.72	13.27	3.61	8.57	30.48	3.27
95th-Percentile Queue Length [ft/ln]	106.9	202.6	159.8	105.0	132.2	218.7	184.1	109.0	242.88	331.71	90.32	214.34	762.12	81.80

**Movement, Approach, & Intersection Results**

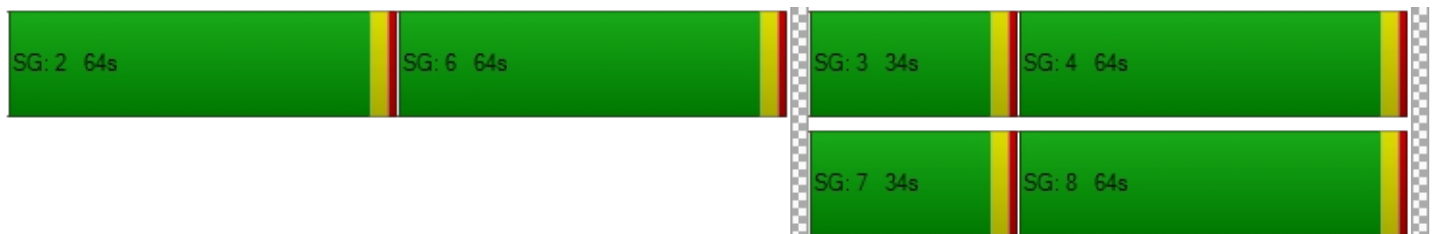
d_M, Delay for Movement [s/veh]	42.62	44.41	42.90	43.19	44.97	43.00	86.41	28.73	23.32	88.49	70.68	24.90
Movement LOS	D	D	D	D	D	D	F	C	C	F	F	C
d_A, Approach Delay [s/veh]	43.79			44.27			33.54			69.34		
Approach LOS	D			D			C			E		
d_I, Intersection Delay [s/veh]	51.77											
Intersection LOS	D											
Intersection V/C	0.651											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersectio	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	697			697			697			697		
d_b, Bicycle Delay [s]	36.50			36.50			36.50			36.50		
I_b,int, Bicycle LOS Score for Intersection	1.931			1.975			2.353			2.614		
Bicycle LOS	A			A			B			B		

**Sequence**

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



**Intersection Level Of Service Report  
Intersection 2: SH 6 at Kirby Drive**

Control Type:	Signalized	Delay (sec / veh):	8.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.525

**Intersection Setup**

Name	Kirby Drive		SH 6		SH 6		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration	⇐⇐⇐		⇐		⇐   ⇐		
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	600.00	100.00	225.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		60.00		60.00		
Grade [%]	0.00		0.00		0.00		
Curb Present	No		No		No		
Crosswalk	Yes		Yes		No		

**Volumes**

Name	Kirby Drive		SH 6		SH 6		
Base Volume Input [veh/h]	82	66	73	1058	12	1653	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	77	85	1227	14	1917	89
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	19	21	307	4	479	22
Total Analysis Volume [veh/h]	95	77	85	1227	14	1917	89
Presence of On-Street Parking	No	No	No	No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0		
v_di, Inbound Pedestrian Volume crossing m	0		0		0		
v_co, Outbound Pedestrian Volume crossing	0		0		0		
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0		
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0		
Bicycle Volume [bicycles/h]	0		0		0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Protected	Permissive	Permissive
Signal Group	7	0	5	2	1	6	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	Lead	-	Lead	-	-
Minimum Green [s]	5	0	10	30	10	30	0
Maximum Green [s]	40	0	30	60	30	60	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	0	5	0
Pedestrian Clearance [s]	24	0	0	10	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	Yes	No	Yes	
Maximum Recall	No		No	No	No	No	
Pedestrian Recall	No		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	L	C	R
C, Cycle Length [s]	71	71	71	71	71	71	71
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	8	50	2	44	44
g / C, Green / Cycle	0.08	0.08	0.12	0.71	0.03	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.03	0.05	0.05	0.27	0.01	0.42	0.06
s, saturation flow rate [veh/h]	3113	1431	1603	4584	1603	4584	1431
c, Capacity [veh/h]	263	121	185	3261	55	2890	902
d1, Uniform Delay [s]	30.56	31.31	29.21	4.02	33.24	8.30	5.15
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.83	5.47	1.78	0.07	2.38	0.26	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.36	0.64	0.46	0.38	0.25	0.66	0.10
d, Delay for Lane Group [s/veh]	31.40	36.79	30.99	4.09	35.62	8.56	5.20
Lane Group LOS	C	D	C	A	D	A	A
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.75	1.37	1.27	0.81	0.24	3.36	0.30
50th-Percentile Queue Length [ft/ln]	18.66	34.32	31.66	20.20	6.10	84.02	7.40
95th-Percentile Queue Length [veh/ln]	1.34	2.47	2.28	1.45	0.44	6.05	0.53
95th-Percentile Queue Length [ft/ln]	33.59	61.78	57.00	36.36	10.97	151.24	13.33

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.40	36.79	30.99	4.09	35.62	8.56	5.20
Movement LOS	C	D	C	A	D	A	A
d_A, Approach Delay [s/veh]	33.81		5.84		8.60		
Approach LOS	C		A		A		
d_I, Intersection Delay [s/veh]	8.80						
Intersection LOS	A						
Intersection V/C	0.525						

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.86	26.86	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.379	3.504	0.000
Crosswalk LOS	B	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1134	1700	1700
d_b, Bicycle Delay [s]	6.62	0.79	0.79
I_b,int, Bicycle LOS Score for Intersection	1.560	2.281	2.671
Bicycle LOS	A	B	B

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 3: SH 6 at Driveway 1**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

**Intersection Setup**

Name	Driveway 1		SH 6		SH 6	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↱				↵	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Driveway 1		SH 6		SH 6	
Base Volume Input [veh/h]	0	0	0	1131	1587	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1312	1841	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	328	460	0
Total Analysis Volume [veh/h]	0	0	0	1312	1841	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	20.37	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	20.37		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 4: SH 6 at Driveway 2**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

**Intersection Setup**

Name	Driveway 2		SH 6		SH 6		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration	⇐⇐		⇐		⇐   ⇐		
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	415.00	100.00	350.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	No		No		No		

**Volumes**

Name	Driveway 2		SH 6		SH 6		
Base Volume Input [veh/h]	0	0	0	1131	0	1587	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1312	0	1841	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	328	0	460	0
Total Analysis Volume [veh/h]	0	0	0	1312	0	1841	0
Pedestrian Volume [ped/h]	0		0		0		

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	1	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	60.12	20.37	28.92	0.00	12.76	0.00	0.00
Movement LOS	F	C	D	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	40.24		0.00		0.00		
Approach LOS	E		A		A		
d_I, Intersection Delay [s/veh]	0.00						
Intersection LOS	A						

**Intersection Level Of Service Report  
Intersection 5: SH 6 at Driveway 3**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

**Intersection Setup**

Name	Driveway 3		SH 6		SH 6	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↱				↱	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Driveway 3		SH 6		SH 6	
Base Volume Input [veh/h]	0	0	0	1131	1587	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1312	1841	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	328	460	0
Total Analysis Volume [veh/h]	0	0	0	1312	1841	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	20.37	0.00	0.00	0.00	0.00
Movement LOS		C		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	20.37		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 6: Kirby Dr at Driveway 4**

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.066

**Intersection Setup**

Name	Kirby Drive			Kirby Drive			Driveway 4			HEB Driveway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Kirby Drive			Kirby Drive			Driveway 4			HEB Driveway		
Base Volume Input [veh/h]	0	0	48	0	0	0	0	0	0	56	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	56	0	0	0	0	0	0	65	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	14	0	0	0	0	0	0	16	0	0
Total Analysis Volume [veh/h]	0	0	56	0	0	0	0	0	0	65	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	7.33	0.00	0.00	8.52	9.31	8.32	8.94	9.43	8.72
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.21	0.21
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.33	5.33	5.33
d_A, Approach Delay [s/veh]	0.00			2.44			8.72			8.94		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	4.80											
Intersection LOS	A											

**Intersection Level Of Service Report  
Intersection 7: Kirby Dr at Driveway 5**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Kirby Drive		Kirby Drive		Driveway 5	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Kirby Drive		Kirby Drive		Driveway 5	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	0.00	8.52	8.32
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	3.61		0.00		8.42	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.01					
Intersection LOS						

**Intersection Level Of Service Report  
Intersection 8: Kirby Dr at Driveway 6**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Kirby Drive		Kirby Dr		Driveway 6	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Kirby Drive		Kirby Dr		Driveway 6	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0	0	0	0	0	0

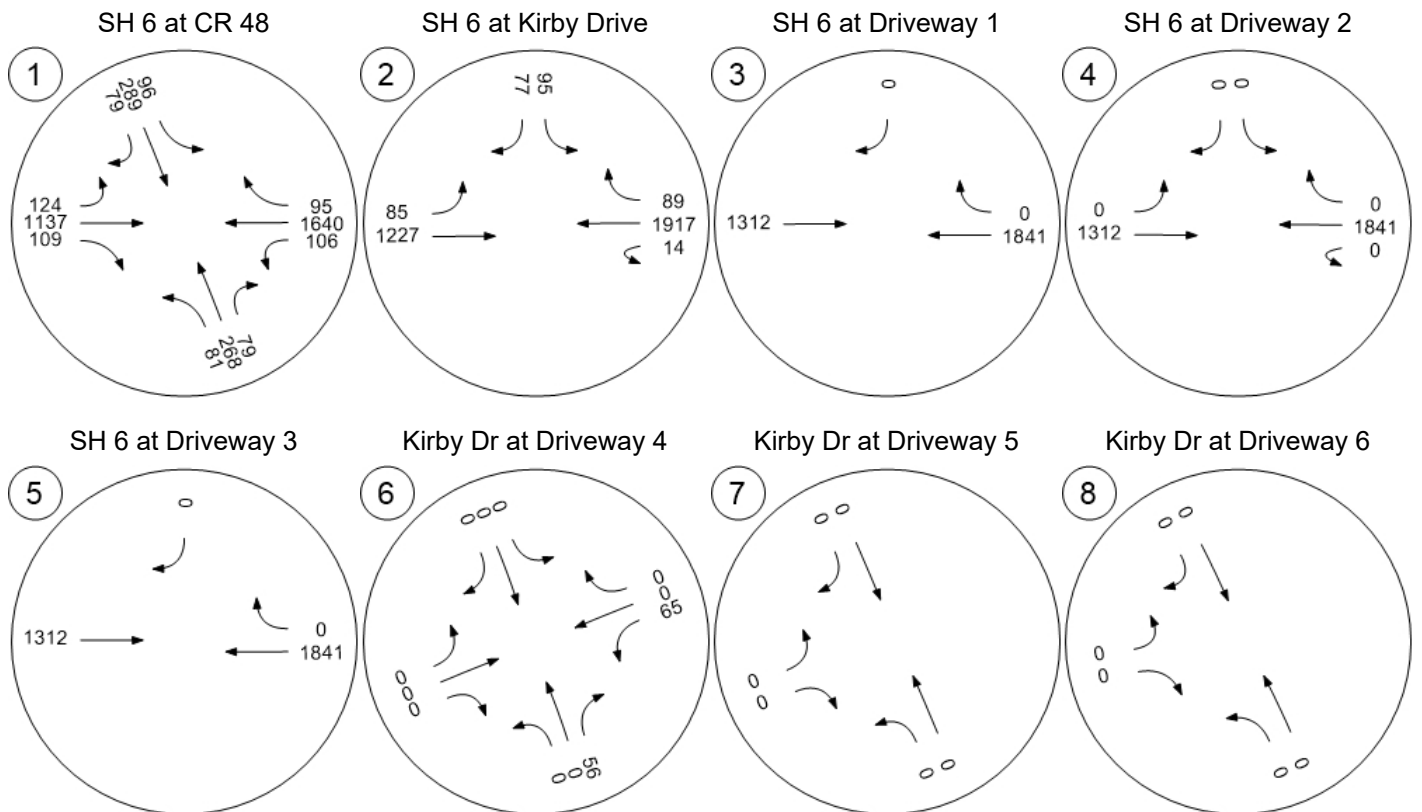
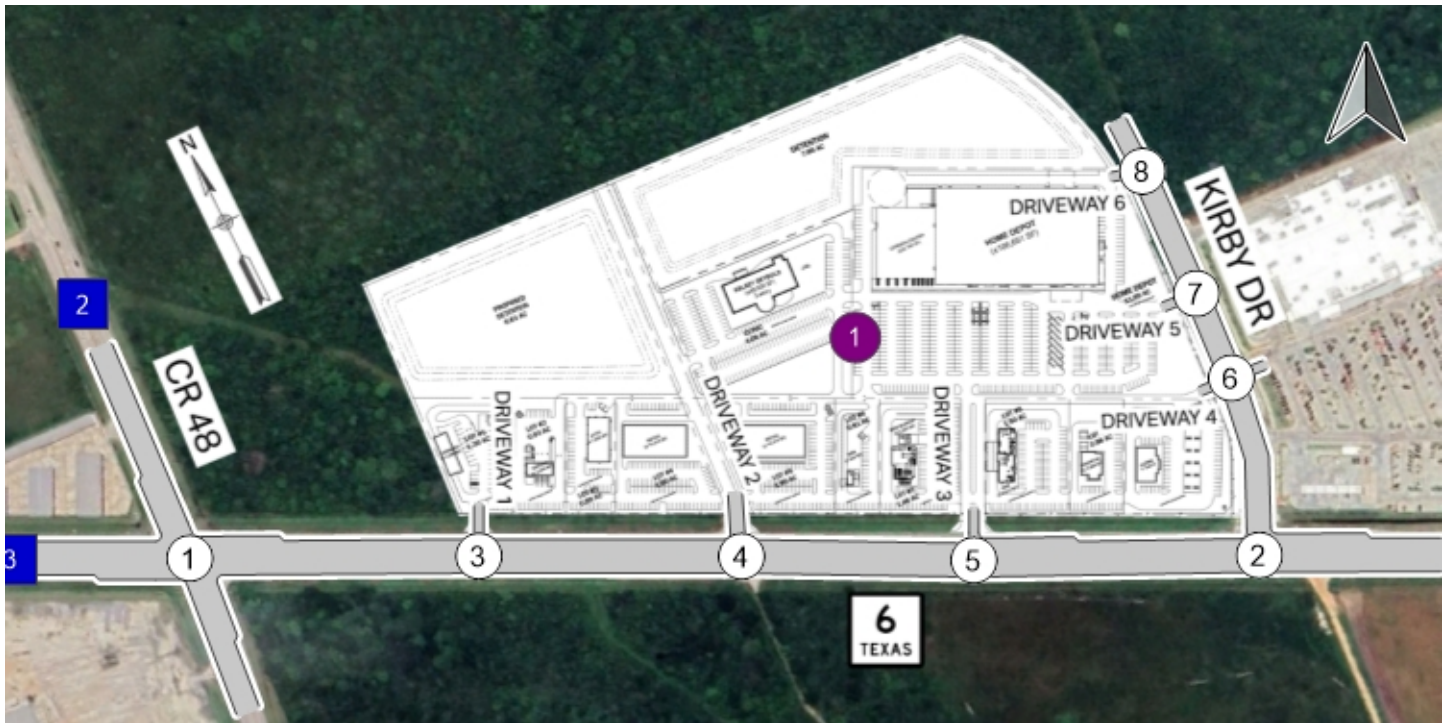
**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.22	0.00	0.00	0.00	8.52	8.32
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	3.61		0.00		8.42	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.01					
Intersection LOS						

Traffic Volume - Future Background Volume



**Intersection Level Of Service Report**  
**Intersection 1: SH 6 at CR 48**

Control Type:	Signalized	Delay (sec / veh):	54.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.693

**Intersection Setup**

Name	CR 48			CR 48			SH 6			SH 6		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Entry Pocket Length [ft]	150.00	100.00	150.00	150.00	100.00	150.00	150.00	100.00	150.00	150.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			60.00			60.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

**Volumes**

Name	CR 48			CR 48			SH 6			SH 6		
Base Volume Input [veh/h]	70	231	68	83	249	68	107	980	94	91	1414	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	23	45	0	0	0	159	0	26	184	53
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	81	268	102	141	289	79	124	1296	109	132	1824	148
Peak Hour Factor	0.9500	0.9500	0.9500	0.9200	0.9200	0.9200	0.9500	0.9500	0.9500	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	71	27	38	79	21	33	341	29	34	475	39
Total Analysis Volume [veh/h]	85	282	107	153	314	86	131	1364	115	138	1900	154
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	6	0	0	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	40	0	0	40	0	10	30	0	10	30	0
Maximum Green [s]	0	60	0	0	60	0	30	60	0	30	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		Yes			Yes		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering 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

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	C	R	L	C	R	L	C	R
C, Cycle Length [s]	172	172	172	172	172	172	172	172	172	172	172	172	172	172
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	40	40	16	59	59	17	60	60
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.09	0.34	0.34	0.10	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.05	0.09	0.08	0.07	0.09	0.09	0.10	0.06	0.08	0.30	0.08	0.09	0.41	0.11
s, saturation flow rate [veh/h]	1603	1683	1532	1431	1603	1682	1532	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	373	392	357	333	373	392	357	333	149	1578	492	156	1598	499
d1, Uniform Delay [s]	36.74	38.13	37.66	37.45	38.15	38.12	38.47	36.97	69.17	23.71	18.38	68.42	26.06	18.06
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering 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	1.00	1.00
d2, Incremental Delay [s]	0.31	0.67	0.58	0.55	0.71	0.67	0.86	0.41	15.05	1.53	0.24	15.04	86.49	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
PF, progression 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	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.23	0.40	0.35	0.32	0.41	0.40	0.44	0.26	0.88	0.86	0.23	0.89	1.19	0.31
d, Delay for Lane Group [s/veh]	37.05	38.80	38.24	38.00	38.86	38.79	39.34	37.37	84.22	25.24	18.62	83.46	112.56	18.41
Lane Group LOS	D	D	D	D	D	D	D	D	F	C	B	F	F	B
Critical Lane Group	No	Yes	No	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.07	3.98	3.08	2.65	3.81	3.96	4.00	2.11	5.59	7.36	1.57	5.84	23.26	2.07
50th-Percentile Queue Length [ft/ln]	51.66	99.38	77.04	66.33	95.35	99.04	100.0	52.67	139.68	184.09	39.20	146.04	581.46	51.74
95th-Percentile Queue Length [veh/ln]	3.72	7.16	5.55	4.78	6.87	7.13	7.20	3.79	9.46	11.81	2.82	9.81	34.66	3.73
95th-Percentile Queue Length [ft/ln]	92.99	178.8	138.6	119.3	171.6	178.2	180.1	94.80	236.59	295.34	70.57	245.14	866.50	93.13

**Movement, Approach, & Intersection Results**

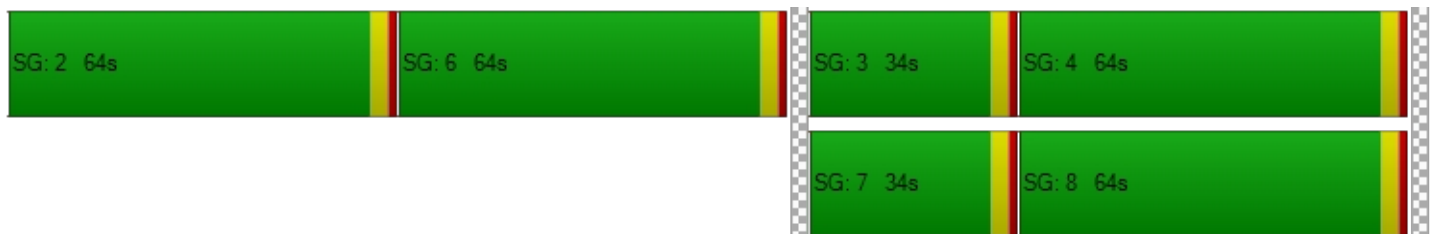
d_M, Delay for Movement [s/veh]	37.05	38.55	38.00	38.86	39.06	37.37	84.22	25.24	18.62	83.46	112.56	18.41
Movement LOS	D	D	D	D	D	D	F	C	B	F	F	B
d_A, Approach Delay [s/veh]	38.16			38.75			29.57			104.11		
Approach LOS	D			D			C			F		
d_I, Intersection Delay [s/veh]	54.30											
Intersection LOS	D											
Intersection V/C	0.693											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersectio	0.000			0.000			0.000			0.000		
Crosswalk LOS	F			F			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	698			698			698			698		
d_b, Bicycle Delay [s]	36.47			36.47			36.47			36.47		
I_b,int, Bicycle LOS Score for Intersection	1.951			2.016			2.445			2.765		
Bicycle LOS	A			B			B			C		

**Sequence**

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



**Intersection Level Of Service Report  
Intersection 2: SH 6 at Kirby Drive**

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

**Intersection Setup**

Name	Kirby Drive		SH 6		SH 6		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration	⇐⇐⇐		⇐		⇐   ⇐		
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	600.00	100.00	225.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		60.00		60.00		
Grade [%]	0.00		0.00		0.00		
Curb Present	No		No		No		
Crosswalk	Yes		Yes		No		

**Volumes**

Name	Kirby Drive		SH 6		SH 6		
Base Volume Input [veh/h]	82	66	73	1058	12	1653	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00						
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	211	105	114	53	0	102	125
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	306	182	199	1280	14	2019	214
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	46	50	320	4	505	54
Total Analysis Volume [veh/h]	306	182	199	1280	14	2019	214
Presence of On-Street Parking	No	No	No	No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0		
v_di, Inbound Pedestrian Volume crossing m	0		0		0		
v_co, Outbound Pedestrian Volume crossing	0		0		0		
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0		
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0		
Bicycle Volume [bicycles/h]	0		0		0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Protected	Permissive	Permissive
Signal Group	7	0	5	2	1	6	0
Auxiliary Signal Groups							
Lead / Lag	Lead	-	Lead	-	Lead	-	-
Minimum Green [s]	5	0	10	30	10	30	0
Maximum Green [s]	40	0	30	60	30	60	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	0	5	0
Pedestrian Clearance [s]	24	0	0	10	0	14	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No		No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	Yes	No	Yes	
Maximum Recall	No		No	No	No	No	
Pedestrian Recall	No		No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	L	C	R
C, Cycle Length [s]	98	98	98	98	98	98	98
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	14	67	3	56	56
g / C, Green / Cycle	0.16	0.16	0.15	0.69	0.03	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.10	0.13	0.12	0.28	0.01	0.44	0.15
s, saturation flow rate [veh/h]	3113	1431	1603	4584	1603	4584	1431
c, Capacity [veh/h]	492	226	233	3149	52	2632	821
d1, Uniform Delay [s]	38.50	39.78	40.82	6.66	46.21	15.88	10.45
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.30	6.64	8.58	0.08	2.68	0.48	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.62	0.81	0.85	0.41	0.27	0.77	0.26
d, Delay for Lane Group [s/veh]	39.80	46.42	49.39	6.75	48.90	16.36	10.61
Lane Group LOS	D	D	D	A	D	B	B
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.40	4.49	4.86	2.54	0.35	8.91	1.88
50th-Percentile Queue Length [ft/ln]	85.09	112.27	121.61	63.53	8.75	222.79	46.95
95th-Percentile Queue Length [veh/ln]	6.13	7.97	8.48	4.57	0.63	13.81	3.38
95th-Percentile Queue Length [ft/ln]	153.17	199.15	212.04	114.35	15.75	345.18	84.51

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.80	46.42	49.39	6.75	48.90	16.36	10.61
Movement LOS	D	D	D	A	D	B	B
d_A, Approach Delay [s/veh]	42.27		12.48		16.02		
Approach LOS	D		B		B		
d_I, Intersection Delay [s/veh]	17.82						
Intersection LOS	B						
Intersection V/C	0.692						

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	40.30	40.30	0.00
I_p,int, Pedestrian LOS Score for Intersectio	2.540	3.625	0.000
Crosswalk LOS	B	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	818	1227	1227
d_b, Bicycle Delay [s]	17.07	7.30	7.30
I_b,int, Bicycle LOS Score for Intersection	1.560	2.373	2.795
Bicycle LOS	A	B	C

**Sequence**

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 3: SH 6 at Driveway 1**

Control Type:	Two-way stop	Delay (sec / veh):	25.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.073

**Intersection Setup**

Name	Driveway 1		SH 6		SH 6	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↱				↵	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Driveway 1		SH 6		SH 6	
Base Volume Input [veh/h]	0	0	0	1131	1587	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	13	0	227	250	11
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	1	0	0	-4	4
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	14	0	1539	2087	15
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	0	385	522	4
Total Analysis Volume [veh/h]	0	14	0	1539	2087	15
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.07	0.00	0.02	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	25.24	0.00	0.00	0.00	0.00
Movement LOS		D		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.23	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	5.84	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	25.24		0.00		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	0.10					
Intersection LOS	D					

**Intersection Level Of Service Report  
Intersection 4: SH 6 at Driveway 2**

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Driveway 2		SH 6		SH 6		
Approach	Southbound		Eastbound		Westbound		
Lane Configuration	⇐⇐		⇐		⇐   ⇐		
Turning Movement	Left	Right	Left	Thru	U-turn	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	415.00	100.00	350.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00		
Grade [%]	0.00		0.00		0.00		
Crosswalk	No		No		No		

**Volumes**

Name	Driveway 2		SH 6		SH 6		
Base Volume Input [veh/h]	0	0	0	1131	0	1587	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	53	39	114	114	0	222	23
Diverted Trips [veh/h]	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	20	0	0	0	-25	25
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	59	114	1426	0	2038	48
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	15	29	357	0	510	12
Total Analysis Volume [veh/h]	53	59	114	1426	0	2038	48
Pedestrian Volume [ped/h]	0		0		0		

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	Yes		
Number of Storage Spaces in Median	1	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.30	1.01	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	10000.00	31.44	158.93	0.00	13.63	0.00	0.00
Movement LOS	F	D	F	A	B	A	A
95th-Percentile Queue Length [veh/ln]	8.87	1.22	6.60	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	221.66	30.53	164.94	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	4748.70		11.77		0.00		
Approach LOS	F		B		A		
d_I, Intersection Delay [s/veh]	147.13						
Intersection LOS	F						

**Intersection Level Of Service Report  
Intersection 5: SH 6 at Driveway 3**

Control Type:	Two-way stop	Delay (sec / veh):	202.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.304

**Intersection Setup**

Name	Driveway 3		SH 6		SH 6	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↱				↱	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	225.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		60.00		60.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Driveway 3		SH 6		SH 6	
Base Volume Input [veh/h]	0	0	0	1131	1587	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	105	0	166	139	68
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	220	0	0	-220	220
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	325	0	1478	1760	288
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	81	0	370	440	72
Total Analysis Volume [veh/h]	0	325	0	1478	1760	288
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	1.30	0.00	0.01	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	202.53	0.00	0.00	0.00	0.00
Movement LOS		F		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	16.75	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	418.69	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	202.53		0.00		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	17.09					
Intersection LOS	F					

**Intersection Level Of Service Report  
Intersection 6: Kirby Dr at Driveway 4**

Control Type:	Two-way stop	Delay (sec / veh):	17.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.181

**Intersection Setup**

Name	Kirby Drive			Kirby Drive			Driveway 4			HEB Driveway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

**Volumes**

Name	Kirby Drive			Kirby Drive			Driveway 4			HEB Driveway		
Base Volume Input [veh/h]	0	0	48	0	0	0	0	0	0	56	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	125	114	0	0	92	0	0	0	224	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	114	56	0	92	0	0	0	224	65	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	29	14	0	23	0	0	0	56	16	0	0
Total Analysis Volume [veh/h]	125	114	56	0	92	0	0	0	224	65	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.18	0.00	0.00
d_M, Delay for Movement [s/veh]	7.62	0.00	0.00	7.56	0.00	0.00	13.34	14.47	9.56	17.24	15.37	10.97
Movement LOS	A	A	A	A	A	A	B	B	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.27	0.00	0.00	0.00	0.00	0.00	0.84	0.84	0.84	0.65	0.65	0.65
95th-Percentile Queue Length [ft/ln]	6.80	0.00	0.00	0.00	0.00	0.00	21.10	21.10	21.10	16.31	16.31	16.31
d_A, Approach Delay [s/veh]	3.23			0.00			9.56			17.24		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	6.23											
Intersection LOS	C											

**Intersection Level Of Service Report  
Intersection 7: Kirby Dr at Driveway 5**

Control Type:	Two-way stop	Delay (sec / veh):	8.6
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.062

**Intersection Setup**

Name	Kirby Drive		Kirby Drive		Driveway 5	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Kirby Drive		Kirby Drive		Driveway 5	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	91	23	26	0	0	66
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	91	23	26	0	0	66
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	6	7	0	0	17
Total Analysis Volume [veh/h]	91	23	26	0	0	66
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.06	0.00	0.00	0.00	0.00	0.06
d_M, Delay for Movement [s/veh]	7.41	0.00	0.00	0.00	10.32	8.61
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.18	0.00	0.00	0.00	0.20	0.20
95th-Percentile Queue Length [ft/ln]	4.56	0.00	0.00	0.00	4.95	4.95
d_A, Approach Delay [s/veh]	5.91		0.00		8.61	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.03					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 8: Kirby Dr at Driveway 6**

Control Type:	Two-way stop	Delay (sec / veh):	8.4
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.024

**Intersection Setup**

Name	Kirby Drive		Kirby Dr		Driveway 6	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	Kirby Drive		Kirby Dr		Driveway 6	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.1600	1.1600	1.1600	1.1600	1.1600	1.1600
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	23	0	0	0	0	26
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	0	0	0	0	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	0	0	0	0	7
Total Analysis Volume [veh/h]	23	0	0	0	0	26
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	7.25	0.00	0.00	0.00	8.89	8.40
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.04	0.00	0.00	0.00	0.07	0.07
95th-Percentile Queue Length [ft/ln]	1.08	0.00	0.00	0.00	1.84	1.84
d_A, Approach Delay [s/veh]	7.25		0.00		8.40	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.86					
Intersection LOS	A					

Buildout Conditions (2028)

Vistro File: C:\...\vistro-manvel commercial.vistro

Scenario 2 PM Peak Hour

Report File: C:\...\vistro-06-pm-buildout.pdf

10/9/2025

**Trip Generation summary**

**Added Trips**

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: Manvel Commercial				1.000	0.000	50.00	50.00	453	527	980	100.00
<b>Added Trips Total</b>								<b>453</b>	<b>527</b>	<b>980</b>	<b>100.00</b>

## Buildout Conditions (2028)

Vistro File: C:\...\vistro-manvel commercial.vistro

Scenario 2 PM Peak Hour

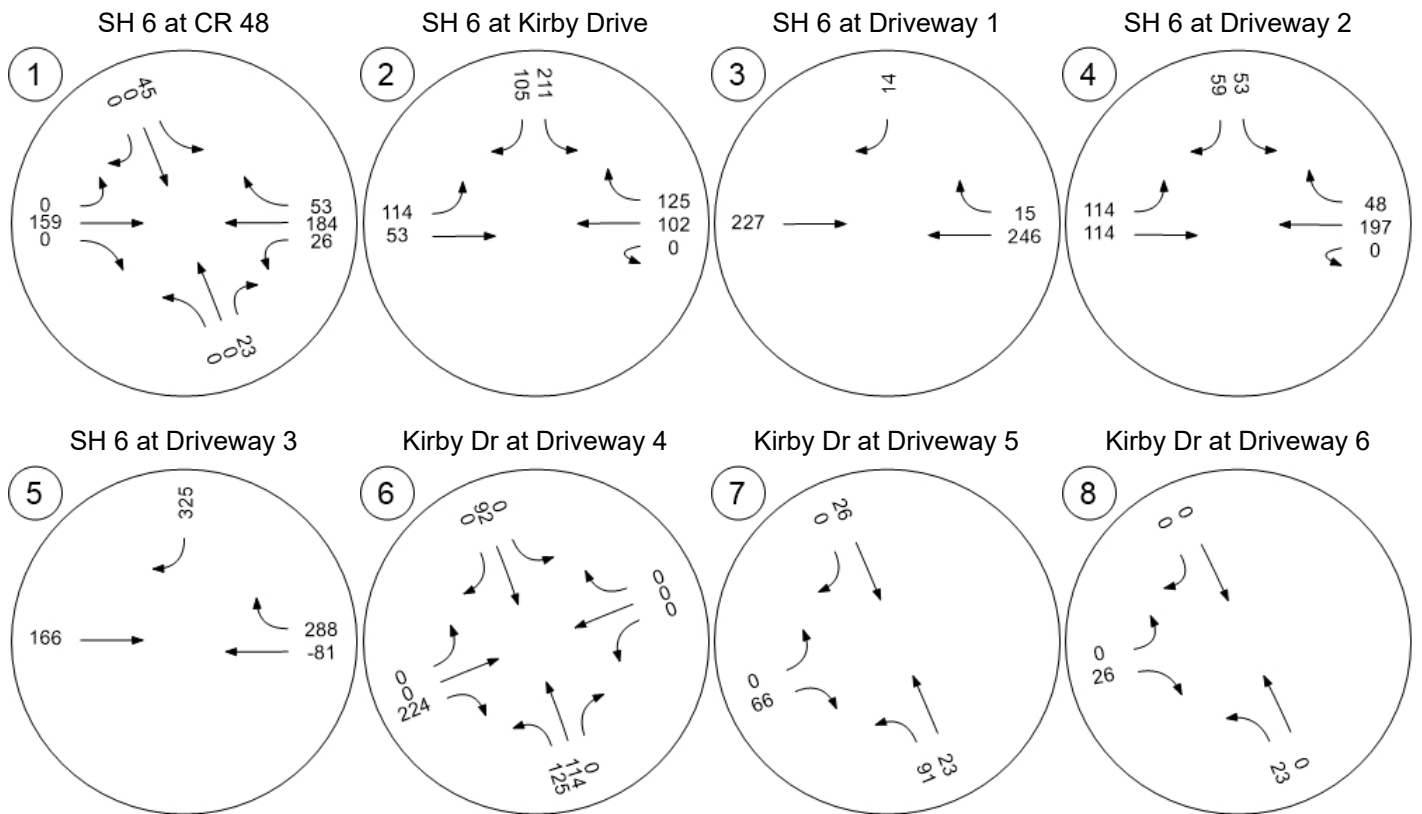
Report File: C:\...\vistro-06-pm-buildout.pdf

10/9/2025

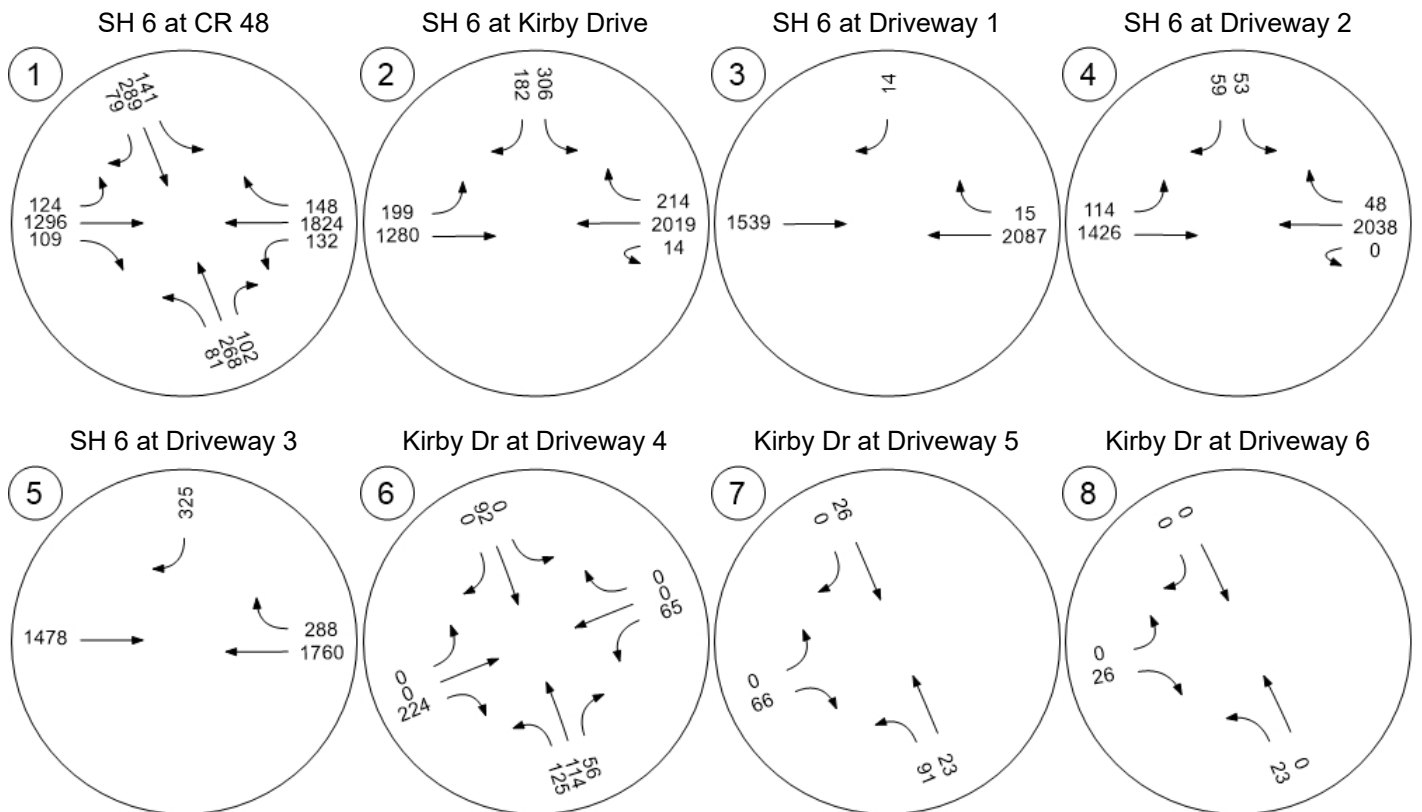
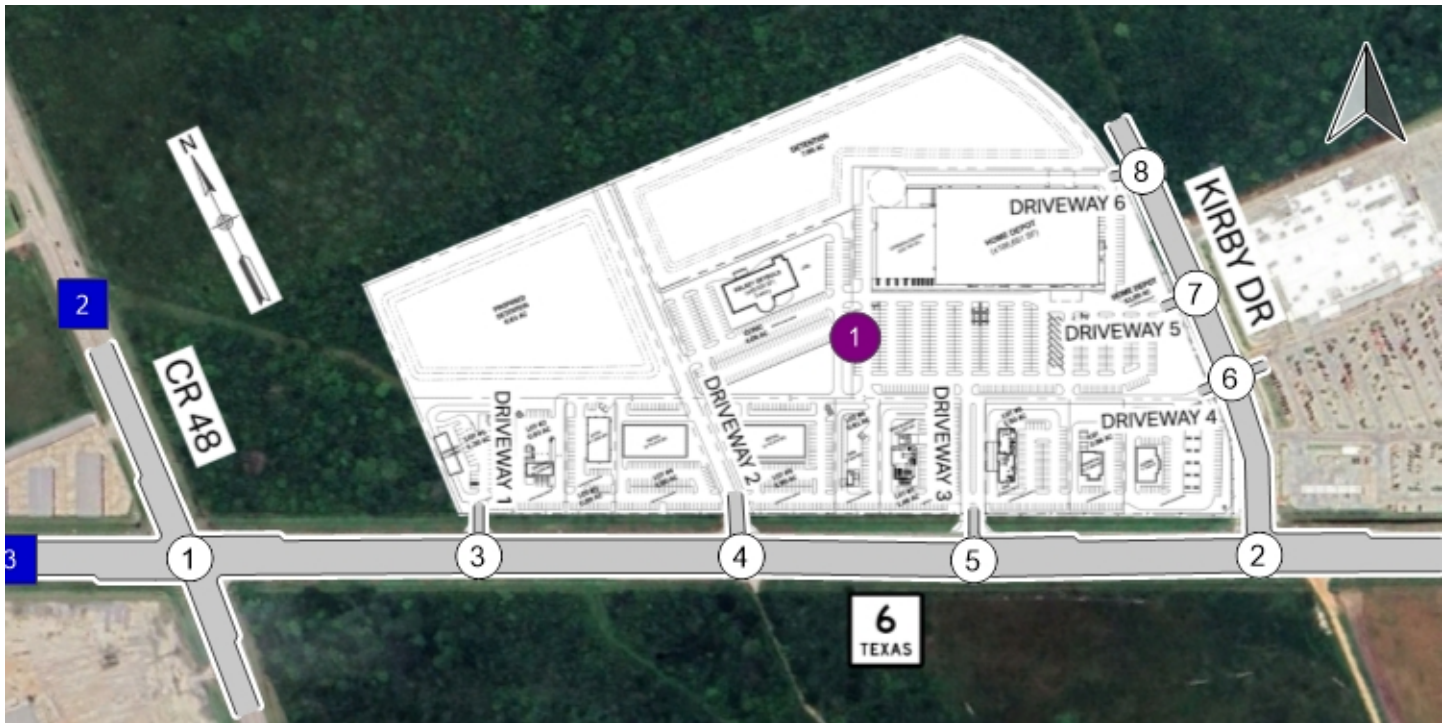
**Trip Distribution summary**

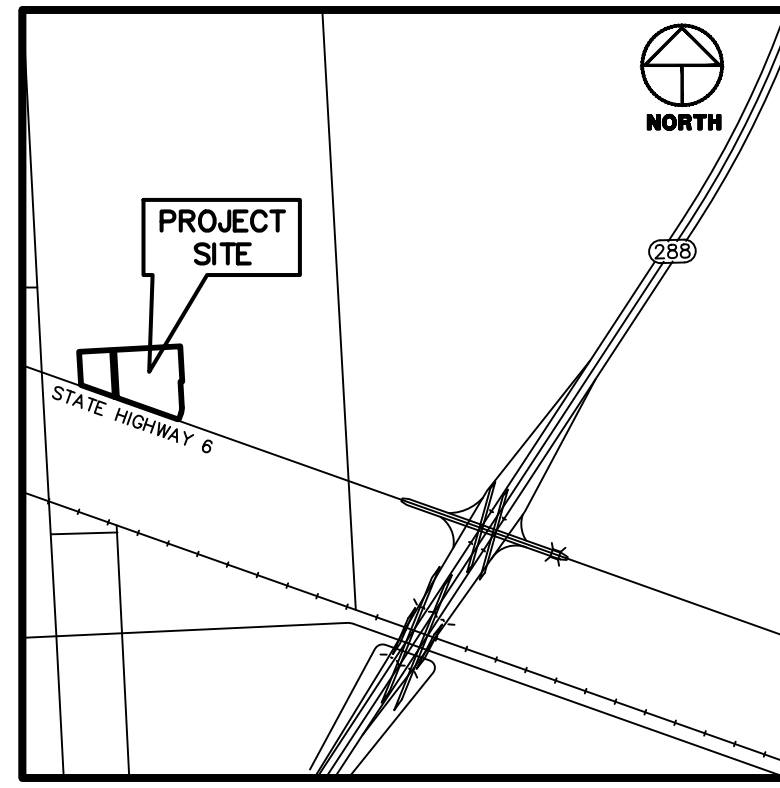
Zone / Gate	Zone 1: Manvel Commercial			
	To Manvel Commercial:		From Manvel Commercial:	
	Share %	Trips	Share %	Trips
2: Gate	10.00	45	10.00	53
3: Gate	35.00	159	35.00	184
4: Gate	5.00	23	5.00	26
5: Gate	50.00	227	50.00	264
<b>Total</b>	<b>100.00</b>	<b>454</b>	<b>100.00</b>	<b>527</b>

Traffic Volume - Net New Site Trips

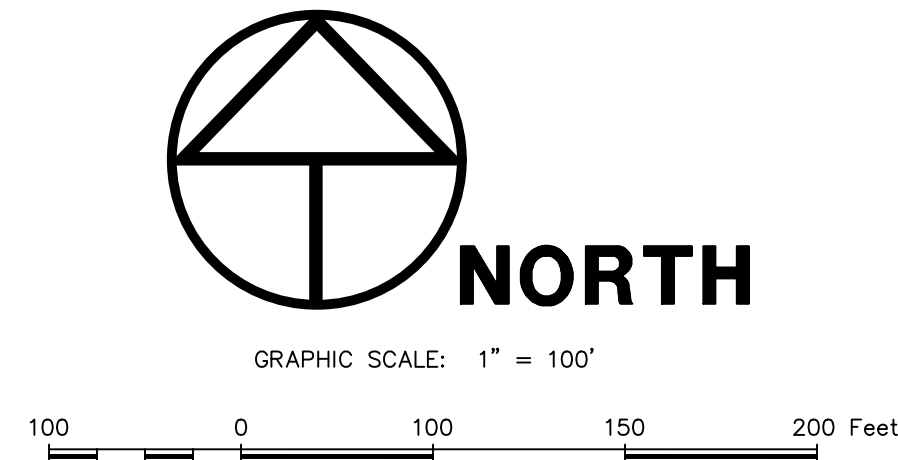


Traffic Volume - Future Total Volume





CITY OF MANVEL, BRAZORIA COUNTY, TEXAS  
**VICINITY MAP**  
 SCALE: 1" = 2000'



LOT 5  
 CALLED 201,0164 ACRES  
 NEW RODEO 288, LTD.  
 B.C.C.F. NO. 2005039091  
 VOL. 1181, PG. 884 B.C.C.F.  
 VOL. 2, PG. 81, B.C.P.R.

LOT 7  
 CALLED 10,36432 ACRES  
 LOT 6  
 CALLED 8,28689 ACRES  
 JERRY A. ARGOVITZ  
 VOL. 1151, PG. 839 B.C.C.F.  
 VOL. 2, PG. 81, B.C.P.R.

TRACT 13  
 EMIGRATION LAND  
 COMPANY SUBDIVISION  
 SECTION 71  
 HT & B RR. CO. SURVEY  
 ABSTRACT 291,  
 VOL. 2, PG. 81-82, B.C.P.R.

LOT 13  
 CALLED 10.30 ACRES  
 J.W. WINZELER AND LESLIE R. WINZELER  
 B.C.C.F. NO. 2005039091

TRACT 21  
 CALLED 19,062 ACRES  
 NEW RODEO 288, LTD.  
 VOL. 2, PG. 81, B.C.P.R.  
 B.C.C.F. NO. 2006043836

TRACT 29  
 EMIGRATION LAND  
 COMPANY SUBDIVISION  
 SECTION 71  
 HT & B RR. CO. SURVEY  
 ABSTRACT 291,  
 VOL. 2, PG. 81, B.C.P.R.

PORTION OF LOT 29  
 CALLED 1.6366 ACRES  
 CATHERINE KECK WAGGONER,  
 B.C.C.F. NO. 2020042539  
 VOL. 2, PG. 81, B.C.P.R.

TRACT 34  
 EMIGRATION LAND  
 COMPANY SUBDIVISION  
 SECTION 71  
 HT & B RR. CO. SURVEY  
 ABSTRACT 291,  
 VOL. 2, PG. 81-82, B.C.P.R.

**11.40 ACRES**  
**496,581 SQ.FT.**

EMIGRATION LAND  
 COMPANY SUBDIVISION  
 SECTION 71  
 VOL. 2, PG. 81-82, B.C.P.R.  
 B.C.P.R. NO. 2022037379  
 PART TWO "TRACT FOUR"  
 CALLED 11,395 ACRES  
 TH PROPERTY, INC.  
 B.C.C.F. NO. 2002056335  
 B.C.P.R. NO. 2022037379

APPROX. LOCATION  
 30" WIDE PIPELINE EASEMENT  
 TRUNKLINE GAS COMPANY  
 VOL. 747, PG. 283, B.C.D.R.

**34.28 ACRES**  
**1,493,196 SQ.FT.**

EMIGRATION LAND  
 COMPANY SUBDIVISION  
 SECTION 71  
 VOL. 2, PG. 81-82, B.C.P.R.  
 B.C.P.R. NO. 2022037379

PART ONE "TRACT ONE"  
 CALLED 35,905 ACRES  
 TH PROPERTY, INC.  
 B.C.C.F. NO. 2002056335  
 B.C.P.R. NO. 2022037379

BENCHMARK PUBLISHED ELEVATION - 59.14'

PROJECT BENCHMARK IS BRAZORIA COUNTY DRAINAGE DISTRICT NO. 4 BENCHMARK NO. CR58-1, BEING A BRASS DISK STAMPED "CR58-1" FOUND ON A CONCRETE HEADWALL AT THE INTERSECTION OF OUTFALL "A" AND THE NORTH SIDE OF COUNTY ROAD 58, NEAR CR58 WEST DETENTION. ELEVATION - NAVD88, 2001 ADJUSTMENT.

TEMPORARY BENCHMARK "A" ELEVATION - 54.64'

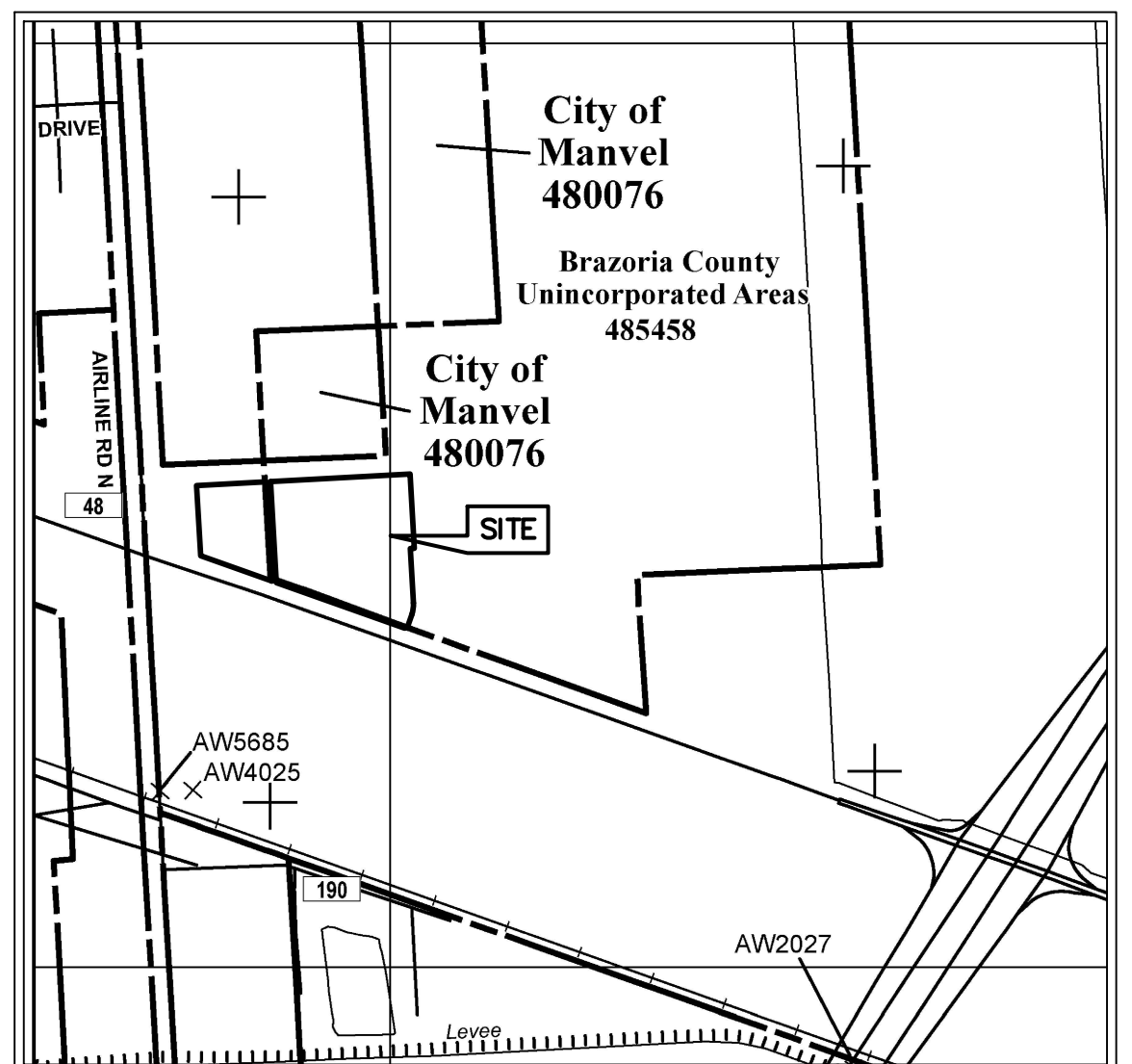
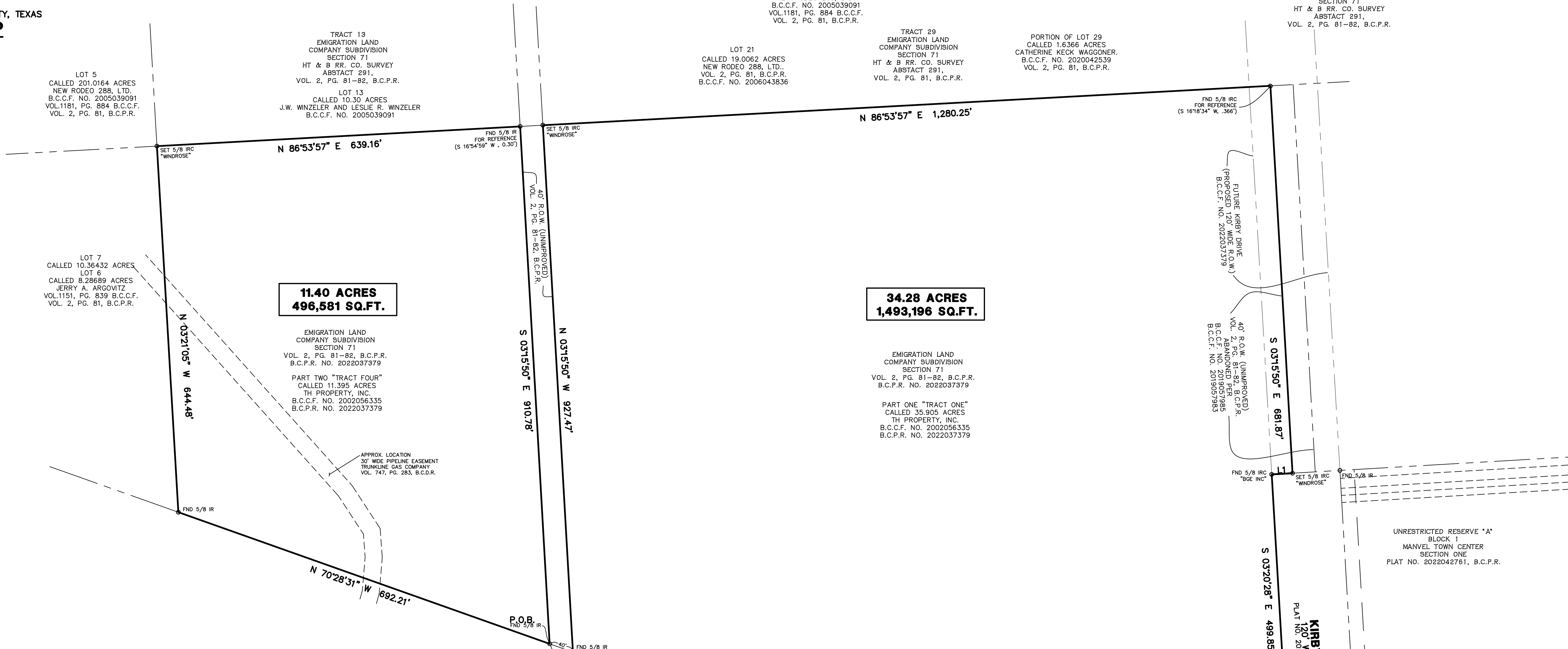
TEMPORARY BENCHMARK "A" IS A BOX CUT ON THE CONCRETE FRAME OF AN ELECTRIC PULL BOX LOCATED ON THE NORTH SIDE OF STATE HIGHWAY 6, APPROXIMATELY 1325 WEST OF ITS INTERSECTION WITH KIRBY DRIVE, AND ABOUT 42 FEET WEST OF THE CENTER OF AN ACCESS DRIVE.

TEMPORARY BENCHMARK "B" ELEVATION - 56.68'

TEMPORARY BENCHMARK "B" IS A BOX CUT ON A TYPE "C" STORM CURB INLET LOCATED ON THE NORTH SIDE OF STATE HIGHWAY 6, AT ITS INTERSECTION WITH KIRBY DRIVE AND ON THE EAST SIDE OF KIRBY DRIVE, APPROXIMATELY 27 FEET NORTHWEST OF A TRAFFIC SIGNAL POLE.

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S 86°39'32" W	36.57'
L2	S 64°31'29" W	28.29'

CURVE CHART					
CURVE	RADIUS	DELTA	LENGTH	BEARING	CHORD
C1	270.05'	22°51'57"	107.77'	S 08°05'31" W	107.06'



**FLOOD INSURANCE RATE MAP**  
 BRAZORIA COUNTY, TEXAS  
 AND INCORPORATED AREAS  
 PANEL 110 OF 925  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)  
 CONTAINS:  
 COMMUNITY NUMBER PANEL SUFFIX  
 ALVIN, CITY OF 485451 0110 K  
 BRAZORIA COUNTY 485456 0110 K  
 COWA COLONY, CITY OF 481071 0110 K  
 MANVEL, CITY OF 480076 0110 K  
 PEARLAND, CITY OF 480077 0110 K

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
 48039C0110K  
**MAP REVISED**  
 DECEMBER 30, 2020

**SURVEYOR'S CERTIFICATION**  
 TO: AQU CAPITAL LLC  
 FIDELITY NATIONAL TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6a, 7c, 7d, 8, 9, 11b, 13, 14, 16, 17, 18, AND 19 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON OCTOBER 20, 2023.

Lucas G. Davis  
 Registered Professional Land Surveyor  
 Texas Registration No. 6599

10/30/2023  
 DATE

REVISIONS		
DATE	REASON	BY
11-27-2023	ADD MONUMENT PIPELINE	CL
07-29-2024	ADD OFFSITE TOPO	DG

**WINDROSE**  
 LAND SURVEYING & PLATTING  
 5353 W SAM HOUSTON PKWY N, STE 150 | HOUSTON, TX 77041 | 713.458.2281  
 FIRM REGISTRATION NO. 10108800 | WINDROSESERVICES.COM

ALTA/NSPS LAND TITLE & TOPOGRAPHIC SURVEY  
 34.28 ACRES OR 1,493,196 SQ. FT.  
 11.40 ACRES OR 496,581 SQ. FT.  
 SITUATED IN THE  
 H. T. & B. RR. CO. SURVEY, SECTION 71  
 ABSTRACT NO. 291  
 BRAZORIA COUNTY, TEXAS

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FILED BY: RP CHECKED BY: CL JOB NO. 59121  
 DRAWN BY: AO DATE: OCTOBER 2023 SHEET NO. 1 OF 10



# WINDROSE

LAND SURVEYING | PLATTING

## DESCRIPTION OF 11.3999 ACRES OR 496,581 SQ. FT.

A TRACT OR PARCEL CONTAINING 11.399 ACRES OR 496.581 SQUARE FEET OF LAND SITUATED IN THE H. T. & B. RR.CO. SURVEY, SECTION 71, ABSTRACT NO. 291, BRAZORIA COUNTY, TEXAS, SAME BEING CALLED "PART TWO OF TRACT FOUR" 11.395 ACRES OF LAND DESCRIBED IN DEED TO TH PROPERTY, INC., RECORDED UNDER BRAZORIA COUNTY PLAT RECORDS (B.C.P.R.) NO. 2022037379, AND BRAZORIA COUNTY CLERK'S FILE (B.C.C.F.) NO. 2002056335, WITH SAID 11.3999 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS, WITH ALL BEARINGS BASED ON THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE (NAD 83):

**COMMENCING**, AT BEGINNING AT A CAPPED 5/8 INCH IRON ROD STAMPED "BGE" FOUND MARKING THE SOUTH END OF A CUTBACK CORNER OF THE INTERSECTION OF THE NORTH RIGHT-OF-WAY (R.O.W.) LINE OF STATE HIGHWAY NO. 6 (200' WIDE) AS RECORDED UNDER PLAT NO. 2022037379, (B.C.P.R.) AND THE WEST R.O.W. LINE OF KIRBY DRIVE (120' WIDE) AS RECORDED UNDER PLAT NO. 2022037379, (B.C.P.R.), SAME BEING THE MOST SOUTHERLY SOUTHEAST CORNER OF CALLED 35.905 ACRES OF LAND DESCRIBED IN DEED TO TH PROPERTY, INC. AS RECORDED UNDER MAP OR PLAT NO. 2022037379 AND B.C.C.F. NO. 2002056335,;

**THENCE**, NORTH 70 DEG. 28 MIN. 31 SEC. WEST, ALONG THE NORTH R.O.W. LINE OF SAID HWY 6 PASSING A FOUND 5/8 INCH IRON ROD FOR A DISTANCE OF 1248.34 FEET MARKING THE SOUTHEAST CORNER OF A 40 FEET R.O.W. (UNIMPROVED) RECORDED UNDER A MAP OR PLAT VOL.2, PG. 81-82, B.C.P.R., AND THE SOUTHWEST CORNER OF SAID 35.905 ACRE TRACT, TO A FOUND 5/8 INCH IRON ROD FOR A TOTAL DISTANCE OF 1291.68 FEET MARKING THE SOUTHWEST CORNER OF SAID 40 FEET R.O.W. AND THE SOUTHEAST CORNER OF SAID 11.395 ACRE TRACT SAME BEING THE **POINT OF BEGINNING** OF THE HEREIN DESCRIBED TRACT;

**THENCE**, NORTH 70 DEG. 28 MIN. 31 SEC. WEST, CONTIUNG ALONG THE NORTH R.O.W. LINE OF SAID HWY 6 AND THE SOUTH LINE OF SAID 11.395 ACRE TRACT, A DISTANCE OF 692.21 FEET TO A FOUND 5/8 INCH IRON ROD MARKING THE SOUTHEAST CORNER OF CALLED LOT 6 AND LOT 7, 8.28689 ACRES OF LAND DESCRIBED IN DEED TO JERRY A. ARGOVITZ, AS RECORDED UNDER MAP OR PLAT VOL. 2, PG. 81, B.C.P.R. AND VOL. 1151, PG. 839 OF B.C.C.F., AND THE SOUTHWEST CORNER OF SAID 11.395 ACRES AND THE HEREIN DESCRIBED TRACT;

**THENCE**, NORTH 03 DEG. 21 MIN. 05 SEC. WEST, ALONG THE COMMON LINE OF SAID LOT 6 AND LOT 7 AND SAID 11.395 ACRE TRACT, FOR A DISTANCE OF 644.48 FEET TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET FOR THE SOUTHEAST CORNER OF CALLED LOT 5 BEING A PART OF CALLED 201.0164 ACRES OF LAND DESCRIBED IN DEED TO NEW RODEO 288, LTD., AS RECORDED UNDER MAP OR PLAT THEREOF VOL. 2, PG. 81, B.C.P.R. AND B.C.C.F. NO. 2005039031, AND VOL. 1181, PG. 884 OF B.C.C.F., AND THE SOUTHWEST CORNER OF CALLED LOT 13 OR CALLED 10.30 ACRES OF LAND DESCRIBED IN DEED TO J.W. WINZELLER AND LESLIE R. WINZELLER AS RECORDED UNDER MAP OR PLAT THEREOF VOL. 2, PG. 81-82, B.C.P.R. AND B.C.C.F. NO. 200539091 AND SAME BEING THE NORTHWEST CORNER OF SAID 11.395 ACRE TRACT AND THE HEREIN DESCRIBED TRACT;

**THENCE**, NORTH 86 DEG. 53 MIN. 57 SEC. EAST, ALONG THE COMMON LINE OF SAID LOT 13 AND 11.395 ACRE TRACT, A DISTANCE OF 639.16 FEET TO A CORNER ON THE WEST R.O.W. LINE OF SAID 40 FEET AND THE SOUTHEAST CORNER OF SAID LOT 13 AND THE NORTHEAST CORNER OF SAID 11.395 ACRE TRACT AND THE HEREIN DESCRIBED TRACT FROM WHICH FOUND 5/8 INCH IRON ROD BEARS SOUTH 16 DEG. 54 MIN. 59 SEC. WEST, FOR A DISTANCE OF .304 FEET;

**THENCE**, SOUTH 03 DEG. 15 MIN. 50 SEC. EAST, ALONG THE WEST R.O.W. LINE OF SAID 40 FEET AND THE EAST LINE OF SAID 11.395 ACRE TRACT, A DISTANCE OF 910.78 FEET TO THE **POINT OF BEGINNING** AND CONTAINING 11.3999 ACRES OR 496,581 SQUARE FEET OF LAND, AS SHOWN ON JOB NO. 59121-BND, PREPARED BY WINDROSE.

LUCAS G. DAVIS  
R.P.L.S. NO. 6599  
STATE OF TEXAS  
FIRM REGISTRATION NO. 10108800



10-31-2023  
DATE:



# WINDROSE

LAND SURVEYING | PLATTING

## DESCRIPTION OF 34.28 ACRES OR 1,493,196 SQ. FT.

A TRACT OR PARCEL CONTAINING 34.28 ACRES OR 1,493,196 SQUARE FEET OF LAND SITUATED IN THE H. T. & B. RR. CO. SURVEY, SECTION 71, ABSTRACT NO. 291, BRAZORIA COUNTY, TEXAS, SAME BEING CALLED "PART ONE, TRACT ONE" OR 35.905 ACRES OF LAND DESCRIBED IN DEED TO TH PROPERTY, INC., RECORDED UNDER BRAZORIA COUNTY PLAT RECORDS (B.C.P.R.) NO. 2022037379, AND BRAZORIA COUNTY CLERK'S FILE (B.C.C.F.) NO. 2002056335, WITH SAID 34.28 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS, WITH ALL BEARINGS BASED ON THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE (NAD 83):

**BEGINNING**, AT BEGINNING AT A CAPPED 5/8 INCH IRON ROD STAMPED "BGE" FOUND MARKING THE SOUTH END OF A CUTBACK CORNER OF THE INTERSECTION OF THE NORTH RIGHT-OF-WAY (R.O.W.) LINE OF SAID STATE HIGHWAY NO. 6 (200' WIDE) AS RECORDED UNDER MAP OR PLAT NO. 2022037379, B.C.P.R. AND THE WEST R.O.W. LINE OF KIRBY DRIVE (120' WIDE) AS RECORDED UNDER MAP OR PLAT NO. 2022037379, B.C.P.R., SAME BEING THE MOST SOUTHERLY SOUTHEAST CORNER OF SAID 35.905 ACRE TRACT AND THE HEREIN DESCRIBED TRACT;

**THENCE**, NORTH 70 DEG. 28 MIN. 31 SEC. WEST, ALONG THE SOUTH LINE OF SAID 35.905 ACRES AND NORTH LINE OF SAID HWY NO. 6, A DISTANCE OF 1,248.34 FEET TO A 5/8 INCH IRON ROD FOUND ON THE SOUTHEAST CORNER OF A 40 FEET R.O.W. (UNIMPROVED), AS RECORDED UNDER MAP OR PLAT VOL. 2, PG. 81-82, B.P.C.R., AND THE SOUTHWEST CORNER OF SAID 35.905 ACRE TRACT AND THE HEREIN DESCRIBED TRACT;

**THENCE**, NORTH 03 DEG. 15 MIN. 50 SEC. WEST, ALONG THE EAST LINE OF SAID 40 FEET R.O.W. AND WEST LINE OF SAID 35.905 ACRE TRACT, A DISTANCE OF 927.47 FEET TO A CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET ON THE EAST LINE OF SAID 40 FEET R.O.W. AND THE SOUTHWEST CORNER OF CALLED LOT 21 BEING A PART OF CALLED 201.0164 ACRE TRACT OF LAND DESCRIBED IN DEED TO NEW RODEO 288, LTD., AS RECORDED UNDER MAP OR PLAT VOL. 2, PG. 81. B.C.P.R. AND BRAZORIA COUNTY CLERK'S FILE (B.C.C.F.) NO. 2006043836., AND THE NORTHWEST CORNER OF SAID 35.905 ACRE TRACT AND THE HEREIN DESCRIBED TRACT;

**THENCE**, NORTH 86 DEG. 53 MIN. 57 SEC. EAST, ALONG THE SOUTH LINE OF SAID 201.0164 ACRE TRACT AND NORTH LINE OF SAID 35.905 ACRE TRACT, A DISTANCE OF 1,280.25 FEET TO A CORNER FOR THE SOUTHEAST CORNER OF CALLED LOT 29, BEING A PROTION OF SAID 201.0164 ACRE TRACT OF LAND AND ON THE WEST LINE OF CALLED 40 FEET R.O.W., AS RECORDED UNDER MAP OR PLAT VOL. 2, PG. 81-82 B.C.P.R. AND B.C.C.F. NO. 2019057985, AND B.C.C.F. NO. 2019057983, AND SAME BEING THE NORTHEAST CORNER OF SAID 35.905 ACRE AND OF THE HERIEN DESCRIBED TRACT FROM A 5/8 INCH IRON ROD BEARS SOUTH 16 DEG. 18 MIN. 34 SEC. WEST FOR A DISTANCE OF 0.366 FEET;

**THENCE**, SOUTH 03 DEG. 15 MIN. 50 SEC. EAST, ALONG THE WEST LINE OF SAID 40 FEET R.O.W. AND EAST LINE OF SAID 35.905 ACRE TRACT, A DISTANCE OF 681.87 FEET TO CAPPED 5/8 INCH IRON ROD STAMPED "WINDROSE" SET ON THE WEST LINE OF SAID 40 FEET R.O.W., AND MARKING THE MOST NORTHEASTERLEY CORNER OF SAID KIRBY DRIVE AND THE MOST EASTERLY CORNER OF SAID 35.905 ACER TRACT AND THE HEREIN DESCRIBED TRACT;

**THENCE**, SOUTH 86 DEG. 39 MIN. 32 SEC. WEST, ALONG THE COMMON LINE OF SAID KIRBY DRIVE AND SAID 35.905 ACRE TRACT, A DISTANCE OF 36.57 FEET TO A CAPPED 5/8 INCH IRON ROD STAMPED "BGE INC." FOR THE NORTHWEST CORNER OF SAID KIRBY DRIVE AND THE EAST CORNER OF SAID 35.905 ACRE TRACT, AND THE HEREIN DESCRIBED TRACT;

**THENCE**, SOUTH 03 DEG. 20 MIN. 28 SEC. EAST, ALONG THE WEST R.O.W. LINE OF SAID KIRBY DRIVE AND THE EAST LINE OF SAID 35.905 ACRE TRACT, A DISTANCE OF 499.85 FEET, TO A POINT STARTING A NONTANGENT CURVE TO THE RIGHT FROM WHICH A FOUND 5/8 INCH IRON ROD BEARS SOUTH 46 DEG. 58 MIN. 53 SEC. WEST FOR A DISTANCE OF 0.267 FEET;

**THENCE**, CONTINUING ALONG THE COMMON LINE OF SAID KIRBY DRIVE AND SAID 35.905 ACRE TRACT, WITH A CURVE TO THE RIGHT, HAVING A RADIUS OF 270.05 FEET, A CENTRAL ANGLE OF 22 DEG. 51 MIN. 57 SEC., AN ARC LENGTH OF 107.77 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 08 DEG. 05 MIN. 31 SEC. WEST, - 107.06 FEET TO A FOUND 5/8 INCH IRON ROD ON THE SAME SAID COMMON LINE OF SAID KIRBY DRIVE AND SAID 35.905 ACRE TRACT AND THE HEREIN DESCRIBED TRACT;

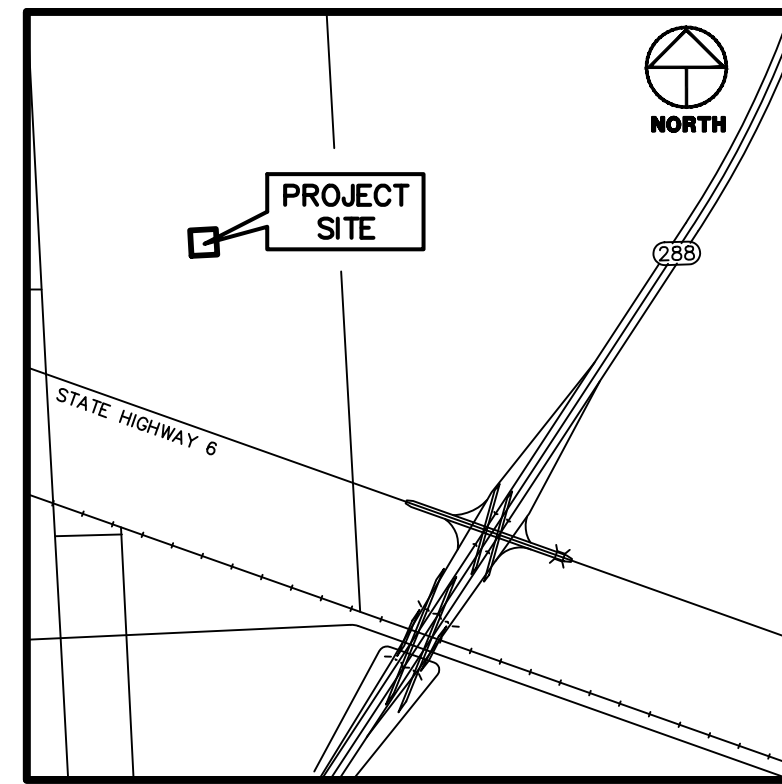
**THENCE**, SOUTH 19 DEG. 31 MIN. 29 SEC. WEST, CONTINUING ALONG THE COMMON LINE OF SAID KIRBY DRIVE AND SAID 35.905 ACRE TRACT, A DISTANCE OF 119.23 FEET TO A 5/8 INCH IRON ROD FOUND MARKING THE NORTH END OF A CUT BACK CORNER OF THE INTERSECTION OF THE WEST R.O.W. LINE OF SAID KIRBY DRIVE AND THE NORTH R.O.W. LINE OF SAID HWY 6, SAME BEING THE MOST SOUTHEASTERLY CORNER OF SAID 35.905 ACRE TRACT AND THE HEREIN DESCRIBED TRACT;

**THENCE**, SOUTH 64 DEG. 31 MIN. 29 SEC. WEST, ALONG THE SAME SAID CUTBACK LINE OF THE INTERSECTION OF SAID HWY 6 AND SAID KIRBY DRIVE, A DISTANCE OF 28.29 FEET THE **POINT OF BEGINNING** AND CONTAINING 34.28 ACRES OR 1,493,196 SQUARE FEET OF LAND, AS SHOWN ON JOB NO. 59121-BND, PREPARED BY WINDROSE.

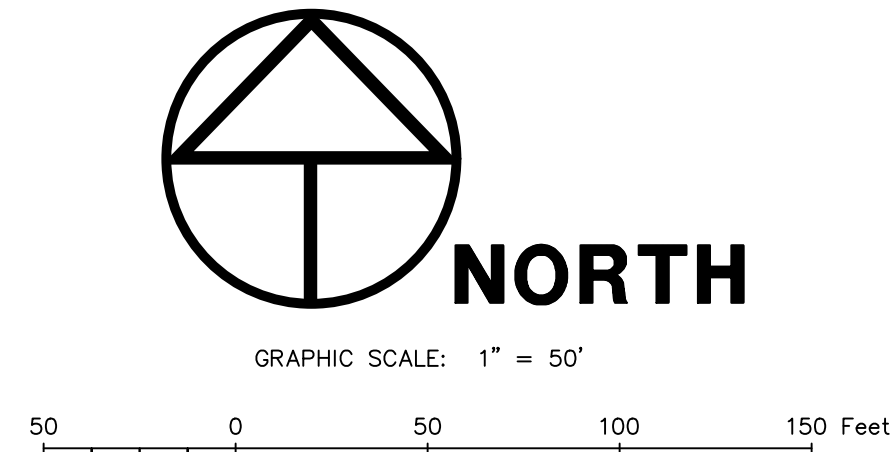
LUCAS G. DAVIS  
R.P.L.S. NO. 6599  
STATE OF TEXAS  
FIRM REGISTRATION NO. 10108800



10-31-2023  
DATE:



CITY OF MANVEL, BRAZORIA COUNTY, TEXAS  
VICINITY MAP  
SCALE: 1" = 2000'



**GENERAL NOTES**

- SURVEYOR DID NOT ABSTRACT SUBJECT PROPERTY. THIS SURVEY WAS PREPARED WITH INFORMATION CONTAINED IN TITLE COMMITMENT OF NO. SN2501266 OF OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY EFFECTIVE DATE OF NOVEMBER 6, 2025, ISSUED DATE OF NOVEMBER 13, 2025, AND IS SUBJECT TO THE LIMITATIONS OF THAT COMMITMENT.
- BEARINGS WERE BASED ON THE TEXAS COORDINATE SYSTEM OF 1983, SOUTH CENTRAL ZONE (4204). ALL DISTANCES SHOWN HEREON ARE SURFACE DISTANCES AND MAY BE BROUGHT TO GRID BY APPLYING THE FOLLOWING SCALE FACTOR: 0.9999868361.
- ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), FLOOD INSURANCE RATE MAP (FIRM) FOR BRAZORIA COUNTY, TEXAS, MAP NO. 48039C0110K REVISED/DATED DECEMBER 20, 2020, THE SUBJECT TRACT APPEARS TO LIE WITHIN UNSHADED ZONE "X". THIS DETERMINATION WAS DONE BY GRAPHIC PLOTTING AND IS APPROXIMATE ONLY, AND HAS NOT BEEN FIELD VERIFIED. THIS FLOOD STATEMENT DOES NOT IMPLY THAT THE PROPERTY OR STRUCTURES THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE, ON RARE OCCASIONS FLOODS CAN AND WILL OCCUR AND FLOOD HEIGHTS MAY BE INCREASED BY MAN-MADE OR NATURAL CAUSES. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF WINDROSE SURVEYING AND LAND SERVICES.
- READILY VISIBLE IMPROVEMENTS AND UTILITIES WERE LOCATED WITH THIS SURVEY. NO SUBSURFACE PROBING, EXCAVATION OR EXPLORATION WAS PERFORMED BY WINDROSE SURVEYING AND LAND SERVICES. SUBJECT TRACT IS HEAVILY WOODED AND INUNDATED WITH OVERGROWN VEGETATION. SURVEYOR DOES NOT GUARANTEE THAT ALL FEATURES AND IMPROVEMENTS HAVE BEEN LOCATED.
- ENVIRONMENTAL AND DRAINAGE ISSUES ARE BEYOND THE SCOPE OF THIS SURVEY.
- THE SQUARE FOOTAGE TOTALS SHOWN HEREON ARE BASED ON THE MATHEMATICAL CLOSURE OF THE COURSES AND DISTANCES REFLECTED ON THE SURVEY. IT DOES NOT INCLUDE THE TOLERANCES THAT MAY BE PRESENT DUE TO THE POSITIONAL ACCURACY OF THE BOUNDARY MONUMENTATION.
- FENCES SHOWN HEREON WITH DIMENSIONAL TIES ARE SHOWN WHERE THEY ARE PHYSICALLY MEASURED. THE FENCE MAY MEANDER BETWEEN MEASURED LOCATIONS.
- THE WORD "CERTIFY" OR "CERTIFICATE" AS SHOWN AND USED HEREON MEANS AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THE FACTS OF THE SURVEY AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE EXPRESSED OR IMPLIED.

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S 03°20'28" E	64.88'
L2	S 86°53'57" W	40.00'

**DESCRIPTION**

BEING A TRACT OR PARCEL CONTAINING 1.649 ACRES OR 71,831 SQUARE FEET OF LAND, SITUATED IN THE H.T. & B. RR. CO. SURVEY, SECTION 71, ABSTRACT NO. 291, BRAZORIA COUNTY, TEXAS, BEING PART AND OUT OF LOT 29 OF EMIGRATION LAND COMPANY SUBDIVISION COMPANY SUBDIVISION, ACCORDING TO THE MAP OR PLAT THEREOF RECORDED UNDER VOLUME 2, PAGES 81-82 OF THE BRAZORIA COUNTY PLAT RECORDS (B.C.P.R.) AND BEING ALL OF A CALLED 1.6366 ACRE TRACT OF LAND DESCRIBED IN DEED TO CATHERINE KECK WAGGONER AS RECORDED UNDER BRAZORIA COUNTY CLERK'S FILE (B.C.C.F.) NO. 2020042539, WITH SAID 1.649 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT AN IRON ROD WITH PLASTIC CAP STAMPED "BGE" FOUND IN THE WEST LINE OF RESTRICTED RESERVE "A", BLOCK 1 OF MANVEL TOWN CENTER DETENTION PONDS AND MUD FACILITIES, ACCORDING TO THE MAP OR PLAT THEREOF RECORDED UNDER PLAT NO. 2023010263, B.C.P.R., SAME BEING THE MOST NORTHERLY NORTHEAST CORNER OF UNRESTRICTED RESERVE "B", BLOCK 1 OF MANVEL TOWN CENTER SECTION ONE, ACCORDING TO THE MAP OR PLAT THEREOF RECORDED UNDER PLAT NO. 2022042761, B.C.P.R., AND SAME BEING THE SOUTHEAST CORNER OF LOT 40 OF SAID EMIGRATION LAND COMPANY SUBDIVISION AND THE SOUTHWEST CORNER OF A CALLED 52,788 ACRE TRACT OF LAND (TRACT 3) DESCRIBED TO KL LB BUY 5 LLC AS RECORDED UNDER B.C.C.F. NO. 2024046753; FROM WHICH AN IRON ROD WITH PLASTIC CAP STAMPED "BGE" FOUND FOR THE SOUTHWEST CORNER OF SAID RESTRICTED RESERVE "A", SAME BEING AN INTERIOR CORNER OF SAID UNRESTRICTED RESERVE "B" BEARS FOR REFERENCE, SOUTH 03 DEG. 20 MIN. 28 SEC. EAST - 64.88 FEET;

THENCE, NORTH 03 DEG. 28 MIN. 07 SEC. WEST, ALONG THE WEST LINE OF SAID RESTRICTED RESERVE "A", SAME BEING THE EAST LINE OF SAID LOT 40, A DISTANCE OF 676.26 FEET TO THE SOUTHWEST CORNER OF LOT 39 OF SAID EMIGRATION LAND COMPANY SUBDIVISION;

THENCE, SOUTH 86 DEG. 53 MIN. 57 SEC. WEST, ALONG THE COMMON LINE OF SAID LOTS 39 AND 40, AND WITH THE COMMON LINE OF LOTS 34 AND 35 OF SAID EMIGRATION LAND COMPANY SUBDIVISION, A DISTANCE OF 1,361.44 FEET TO THE COMMON EAST CORNER OF LOTS 29 AND 30 OF SAID EMIGRATION LAND COMPANY SUBDIVISION, SAME BEING THE SOUTHWEST CORNER OF A CALLED 1.6366 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT AND THE POINT OF BEGINNING, FROM WHICH AN IRON ROD WITH PLASTIC CAP FOUND BEARS FOR REFERENCE, SOUTH 16 DEG. 19 MIN. WEST - 0.37 FEET, AND ALSO FROM WHICH AN IRON ROD WITH PLASTIC CAP STAMPED "SURVEY" FOUND ON THE NORTH LINE OF KIRBY DRIVE (120' WIDE) AS RECORDED UNDER PLAT NO. 2022037379, B.C.P.R., BEARS FOR REFERENCE, SOUTH 03 DEG. 15 MIN. 50 SEC. EAST - 681.87 FEET;

THENCE, SOUTH 86 DEG. 53 MIN. 57 SEC. WEST, CONTINUING ALONG THE COMMON LINE OF SAID LOTS 29 AND 30 AND WITH THE SOUTH LINE OF SAID 1.6366 ACRE TRACT, A DISTANCE OF 269.03 FEET TO THE SOUTHWEST CORNER OF SAID 1.6366 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT, FROM WHICH A 5/8 INCH IRON ROD FOUND FOR THE SOUTHWEST CORNER OF A CALLED 57,427 ACRE TRACT OF LAND (KNOWN AS TRACT 2) DESCRIBED TO KL LB BUY 5 LLC AS RECORDED UNDER B.C.C.F. NO. 2024046753 BEARS FOR REFERENCE, SOUTH 86 DEG. 53 MIN. 57 SEC. WEST - 1,011.22 FEET;

THENCE, NORTH 03 DEG. 15 MIN. 50 SEC. WEST, OVER AND ACROSS SAID LOT 29 AND WITH THE WEST LINE OF SAID 1.6366 ACRE TRACT, A DISTANCE OF 267.00 FEET TO THE NORTHWEST CORNER OF SAID 1.6366 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT, FROM WHICH A 5/8 INCH IRON ROD FOUND BEARS FOR REFERENCE, SOUTH 72 DEG. 38 MIN. 17 SEC. WEST - 1,083.86 FEET;

THENCE, NORTH 86 DEG. 53 MIN. 57 SEC. EAST, CONTINUING OVER AND ACROSS SAID LOT 39 AND WITH THE NORTH LINE OF SAID 1.6366 ACRE TRACT, A DISTANCE OF 269.03 FEET TO A POINT IN THE WEST LINE OF A CALLED 40' WIDE R.O.W. (UNIMPROVED) AS RECORDED UNDER VOLUME 2, PAGES 81-82 OF B.C.P.R. SAID POINT BEING THE NORTHEAST CORNER OF SAID 1.6366 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT;

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**SCHEDULE 'B' NOTES**

NONE AFFECTING THE SUBJECT TRACT.  
INVESTIGATION INTO OIL, GAS, & MINERAL LEASES OR RIGHTS IS BEYOND THE SCOPE OF THIS SURVEY.

**SURVEYOR'S CERTIFICATION**

TO: BCS ACQUISITIONS, LLC  
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY  
CATHERINE KECK WAGGONER

I DO HEREBY CERTIFY TO THE ABOVE LISTED THAT THIS SURVEY WAS THIS DAY MADE ON THE GROUND AND WAS PERFORMED UNDER MY SUPERVISION, THAT THIS PLAT CORRECTLY REPRESENTS THE PROPERTY LEGALLY DESCRIBED HEREON, THAT THE FACTS FOUND AT THE TIME THIS SURVEY WAS MADE ARE TRUE AND CORRECT AND THAT THERE ARE NO VISIBLE ENCROACHMENTS APPARENT ON THE GROUND, EXCEPT AS SHOWN. THIS SURVEY SUBSTANTIALLY CONFORMS TO THE CURRENT TEXAS SOCIETY OF PROFESSIONAL SURVEYORS STANDARDS AND SPECIFICATIONS FOR A CATEGORY "A", CONDITION II SURVEY, TO THE BEST OF MY KNOWLEDGE.



DUSTIN C. KAISER, RPLS  
DUSTIN C. KAISER, R.P.L.S.  
Registered Professional Land Surveyor  
Texas Registration No. 9918  
DATE: 11-21-2025  
NOV 23, 2025

**WINDROSE**  
LAND SURVEYING | PLATTING

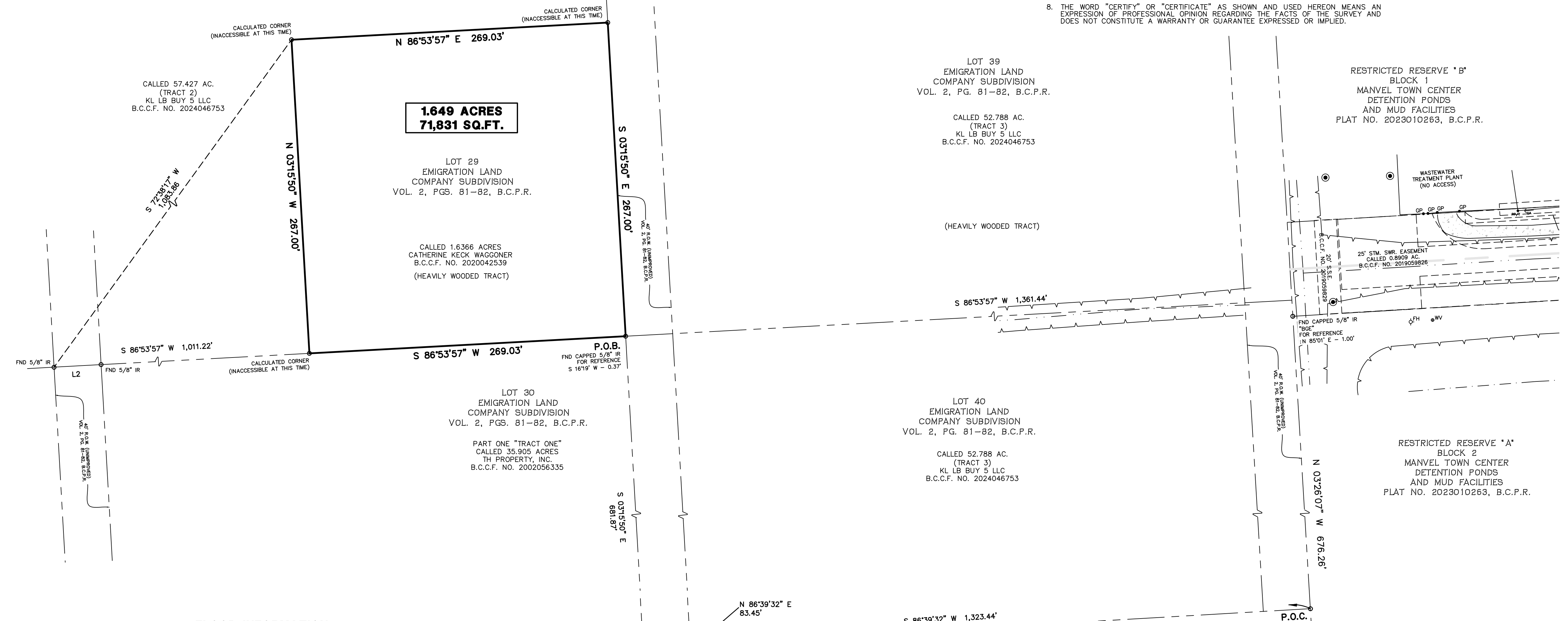
5355 W SAM HOUSTON PKWY N, STE 150 | HOUSTON, TX 77041 | 713.458.2281  
FIRM REGISTRATION NO. 10108800 | WINDROSESERVICES.COM

LAND TITLE SURVEY OF  
1.649 AC. / 71,831 SQ. FT., OUT OF  
LOT 29, EMIGRATION LAND COMPANY SUBDIVISION  
COMPANY SUBDIVISION, VOL. 2, PGS. 81-82, B.C.P.R.  
SITUATED IN THE  
H.T. & B. RR. CO. SURVEY, SECTION 71, ABSTRACT NO. 291  
BRAZORIA COUNTY, TEXAS

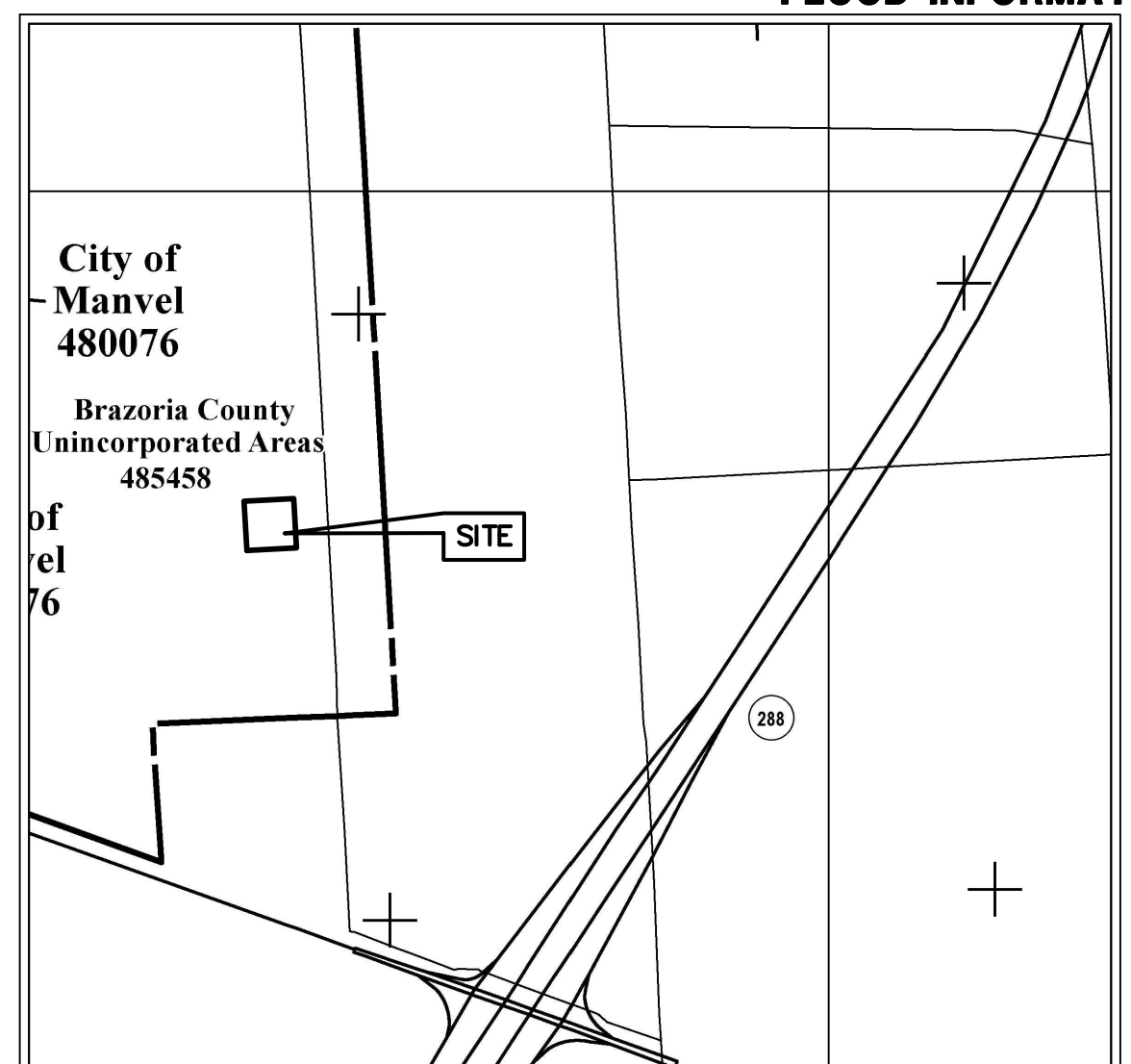
COPYRIGHT © WINDROSE LAND SERVICES THIS DOCUMENT IS COPYRIGHTED AND IS AN INSTRUMENT OF SERVICE FOR THE SPECIFIC PROJECT OR TRANSACTION FOR WHICH IT WAS PREPARED. REUSE, COPYING OR MODIFICATION OF THIS DOCUMENT WHETHER IN HARD COPY OR ELECTRONIC FORMAT OTHER THAN FOR THE SPECIFIC PURPOSE INTENDED, WITHOUT WRITTEN PERMISSION FROM WINDROSE LAND SERVICES IS A VIOLATION OF FEDERAL COPYRIGHT LAW.

FILED BY: CC CHECKED BY: DK JOB NO. 59121-1.6AC  
DRAWN BY: CL DATE: OCTOBER 2025 SHEET NO. 1 OF 1

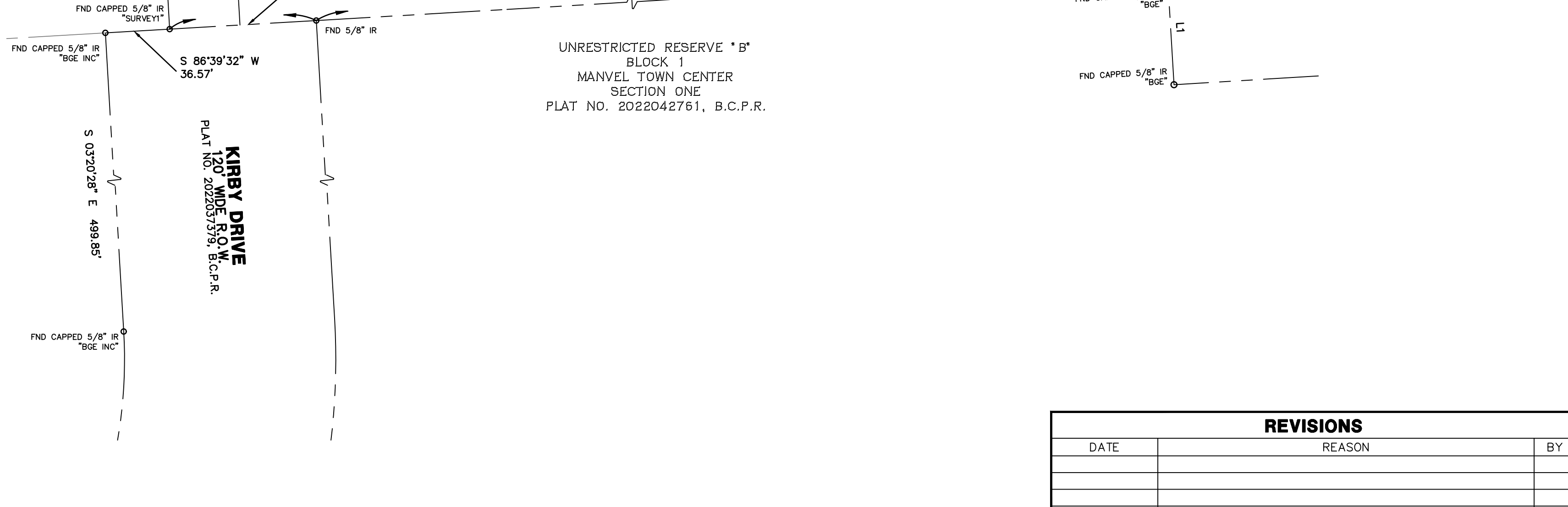
REVISIONS		
DATE	REASON	BY



**FLOOD INFORMATION**



**NATIONAL FLOOD INSURANCE PROGRAM**  
FIRM  
FLOOD INSURANCE RATE MAP  
BRAZORIA COUNTY, TEXAS  
AND INCORPORATED AREAS  
PANEL 110 OF 925  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)  
CONTAINS:  
COMMUNITY NUMBER PANEL EFFECTIVE DATE  
BRAZORIA COUNTY 48039 0110 X  
MANVEL, CITY OF 48037 0110 X  
PEARLAND, CITY OF 48037 0110 X  
Notes in Use: The Map Number shown below should be used when (2025) map errors, the Community Number should always be used to ensure accurate application to the correct community.  
MAP NUMBER 48039C0110K  
MAP REVISED DECEMBER 30, 2020  
Federal Emergency Management Agency





# WINDROSE

LAND SURVEYING | PLATTING

## DESCRIPTION OF 1.649 ACRES OR 71,831 SQ. FT.

BEING A TRACT OR PARCEL CONTAINING 1.649 ACRES OR 71,831 SQUARE FEET OF LAND, SITUATED IN THE H.T. & B. RR. CO. SURVEY, SECTION 71, ABSTRACT NO. 291, BRAZORIA COUNTY, TEXAS, BEING PART OF AND OUT OF LOT 29 OF EMIGRATION LAND COMPANY SUBDIVISION COMPANY SUBDIVISION, ACCORDING TO THE MAP OR PLAT THEREOF RECORDED UNDER VOLUME 2, PAGES 81-82 OF THE BRAZORIA COUNTY PLAT RECORDS (B.C.P.R.), AND BEING ALL OF A CALLED 1.6366 ACRE TRACT OF LAND DESCRIBED IN DEED TO CATHERINE KECK WAGGONER AS RECORDED UNDER BRAZORIA COUNTY CLERK'S FILE (B.C.C.F.) NO. 2020042539, WITH SAID 1.649 ACRE TRACT BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

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**THENCE**, NORTH 03 DEG. 26 MIN. 07 SEC. WEST, ALONG THE WEST LINE OF SAID RESTRICTED RESERVE "A", SAME BEING THE EAST LINE OF SAID LOT 40, A DISTANCE OF 676.26 FEET TO THE SOUTHEAST CORNER OF LOT 39 OF SAID EMIGRATION LAND COMPANY SUBDIVISION;

**THENCE**, SOUTH 86 DEG. 53 MIN. 57 SEC. WEST, ALONG THE COMMON LINE OF SAID LOTS 39 AND 40, AND WITH THE COMMON LINE OF LOTS 34 AND 35 OF SAID EMIGRATION LAND COMPANY SUBDIVISION, A DISTANCE OF 1,361.44 FEET TO THE COMMON EAST CORNER OF LOTS 29 AND 30 OF SAID EMIGRATION LAND COMPANY SUBDIVISION, SAME BEING THE SOUTHEAST CORNER OF SAID 1.6366 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT AND THE **POINT OF BEGINNING**, FROM WHICH AN IRON ROD WITH PLASTIC CAP FOUND BEARS FOR REFERENCE, SOUTH 16 DEG. 19 MIN. WEST - 0.37 FEET, AND ALSO FROM WHICH AN IRON ROD WITH PLASTIC CAP STAMPED "SURVEY1" FOUND ON THE NORTH LINE OF KIRBY DRIVE (120' WIDE) AS RECORDED UNDER PLAT NO. 2022037379, B.C.P.R., BEARS FOR REFERENCE, SOUTH 03 DEG. 15 MIN. 50 SEC. EAST - 681.87 FEET;

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DUSTIN C. KAISER, RPLS

DUSTIN C. KAISER, R.P.L.S.  
R.P.L.S. NO. 6918  
STATE OF TEXAS  
FIRM REGISTRATION NO. 10108800

11/21/2025

DATE:

A handwritten signature in blue ink, appearing to read "Dustin C. Kaiser", written over the seal.

**ORDINANCE NO. 2025-O-33**

**AN ORDINANCE OF THE CITY OF MANVEL, TEXAS, AMENDING THE ZONING ORDINANCE OF THE CITY, BY ESTABLISHING THE ZONING CLASSIFICATION OF LAND ANNEXED INTO THE CITY BY ORDINANCE NO. 2025-O-34, SAID ANNEXED AREA OF ORDINANCE NO. 2025-O-34 DESCRIBED AS APPROXIMATELY 47.3156 ACRES OF LAND, ANNEXED INTO CITY OF MANVEL'S CITY LIMITS AND SUBSEQUENT DEVELOPMENT AS A RETAIL CENTER, GENERALLY LOCATED AT THE NORTHWEST CORNER OF STATE HIGHWAY (SH) 6 AND KIRBY DRIVE INTERSECTION; SAID TERRITORY CONTAINING A 34.2791 ACRE TRACT AND A 11.3999 ACRE TRACT SEPARATED BY A 40-FOOT-WIDE (0.844 ACRE) UNIMPROVED RIGHT-OF-WAY, SITUATED IN H.T. & B. RAILROAD COMPANY SURVEY, SECTION 71, ABSTRACT NO. 291, BRAZORIA COUNTY, TEXAS, AND A 1.6366 ACRE TRACT BEING A PORTION OF LOT 29 OF EMIGRATION LAND COMPANY SUBDIVISION OF IOWA COLONY H.T. & B. RAILROAD COMPANY SURVEY NO. 71 (ALSO REFERRED TO AS THE IMMIGRATION LAND COMPANY SUBDIVISION OF SECTION 71 , H.T. & B.R.R.COMPANY SURVEY) ABSTRACT 291, BRAZORIA COUNTY, TEXAS), SAID TERRITORY BEING MORE SPECIFICALLY DESCRIBED IN EXHIBIT "A" ATTACHED HERETO; ESTABLISHING THE INITIAL ZONING DISTRICT AS PLANNED UNIT DEVELOPMENT (PUD) ZONING DISTRICT IN ACCORDANCE WITH SECTION 77-79.(A) OF CITY OF MANVEL'S ZONING ORDINANCE; ADOPTING A PUD DOCUMENT PROVIDING FOR ZONING AND DEVELOPMENT RELATED PROVISIONS AND REQUIREMENTS; PROVIDING FOR THE AMENDMENT OF THE CITY'S OFFICIAL ZONING MAP; PROVIDING FOR SEVERABILITY; AND PROVIDING A PENALTY IN AN AMOUNT NOT TO EXCEED \$2,000 FOR EACH DAY OF VIOLATION OF ANY PROVISION HEREOF.**

\* \* \* \* \*

WHEREAS, on \_\_\_\_\_, 2025, the city council adopted Ordinance No. 2025-O-34 annexing into the city land described as being approximately 47.3156 acres of land, located at the Northwest Corner of SH6 intersection, said land containing a 34.2791 acre tract and a 11.3999 acre tract separated by a 40-foot wide (0.844 acre) unimproved right-of-way, situated in H.T. & B. Railroad Company Survey, Section 71, Abstract No. 291, Brazoria County, Texas, and a 1.63 acre tract being a portion of Lot 29 of Emigration Land Company Subdivision of Iowa Colony H.T. & B.

Railroad Company Survey No. 71 (also referred to as the Immigration Land Company Subdivision of Section 71, H.T. & B.R.R. Company Survey) Abstract 291, Brazoria County, Texas, described herein and more particularly described and shown in Exhibit “A,” attached hereto and made a part hereof; and

**WHEREAS**, section 77-79 of the City Code, also known as the zoning ordinance, requires the city council to take appropriate measures to establish a zoning district for land that is annexed into the City of Manvel; and

**WHEREAS**, the City of Manvel seeks to establish the zoning district of said annexed land as Planned Unit Development (PUD), and adopt a PUD Document providing for zoning and development related provisions and requirements; and

**WHEREAS**, the Planning, Development, and Zoning Commission and the City Council have conducted, in the time and manner required by law and the Zoning Ordinance of the City, the notices and public hearings on such request, as required by law; and

**WHEREAS**, the Planning, Development, and Zoning Commission has recommended approval of PUD zoning district named herein and amendment of the city’s official zoning map; now, therefore,

**BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF MANVEL, TEXAS:**

Section 1. The facts and matters set forth in the preamble of this Ordinance are hereby found to be true and correct.

Section 2. The zoning classification of the land annexed by Ordinance No. 2025-O-34 is hereby established as Planned Unit Development (PUD) District, for uses as permitted within such zone classifications, subject to the regulations, restrictions, and conditions hereinafter set forth. Said area of Ordinance No. 2025-O-34 is described as being approximately

47.3156 acres of land, located at the Northwest Corner of SH6 intersection, said land containing a 34.2791 acre tract and a 11.3999 acre tract separated by a 40-foot wide (0.844 acre) unimproved right-of-way, situated in H.T. & B. Railroad Company Survey, Section 71, Abstract No. 291, Brazoria County, Texas, and a 1.63 acre tract being a portion of Lot 29 of Emigration Land Company Subdivision of Iowa Colony H.T. & B. Railroad Company Survey No. 71 (also referred to as the Immigration Land Company Subdivision of Section 71, H.T. & B.R.R. Company Survey) Abstract 291, Brazoria County, Texas, described herein and more particularly described/shown in Exhibit "A," attached hereto and made a part hereof.

Section 3. The official Zoning District Map of the City of Manvel shall be revised and amended to show the designation of territory, as described and as provided in Section 2 above, with the appropriate reference thereon to the number and effective date of this Ordinance and a brief description of the nature of the change.

Section 4. Development of the land annexed by Ordinance No. 2025-O-34 shall strictly comply with the Manvel Crossing PUD Document, attached hereto as Exhibit "B" and made a part of hereof for all purposes.

Section 5. The City Council hereby finds and determines that said rezoning comports to the City's comprehensive land use plan, and to the extent of any conflict, amends said comprehensive land use plan. This Ordinance shall in no manner amend, change, supplement, or revise any provision of any ordinance of the City of Manvel, save and except the change in zoning classifications of said territory as described above.

Section 6. In the event any section, paragraph, subdivision, clause, phrase, provision, sentence, or part of this Ordinance or the application of the same to any person or circumstance shall for any reason be adjudged invalid or held unconstitutional by a court of competent

jurisdiction, it shall not affect, impair, or invalidate this Ordinance as a whole or any part or provision hereof other any part or provision hereof other than the part declared to be invalid or unconstitutional; and the City Council of the City of Manvel, Texas, declares that it would have passed each and every part of the same notwithstanding the omission of any and every part of the same notwithstanding the omission of any such part thus declared to be invalid or unconstitutional, or whether there be one or more parts.

Section 7. Any person who shall intentionally, knowingly, recklessly or with criminal negligence violate any provision of this Ordinance shall be deemed guilty of a misdemeanor and upon conviction, shall be fined in an amount not to exceed \$2,000.00. Each day of violation shall constitute a separate offense.

PASSED, AND APPROVED on this \_\_\_\_\_ day of \_\_\_\_\_, 2025.

PASSED, APPROVED, AND ADOPTED on this \_\_\_\_\_ day of \_\_\_\_\_,  
2025.

\_\_\_\_\_  
Dan Davis, Mayor

ATTEST:

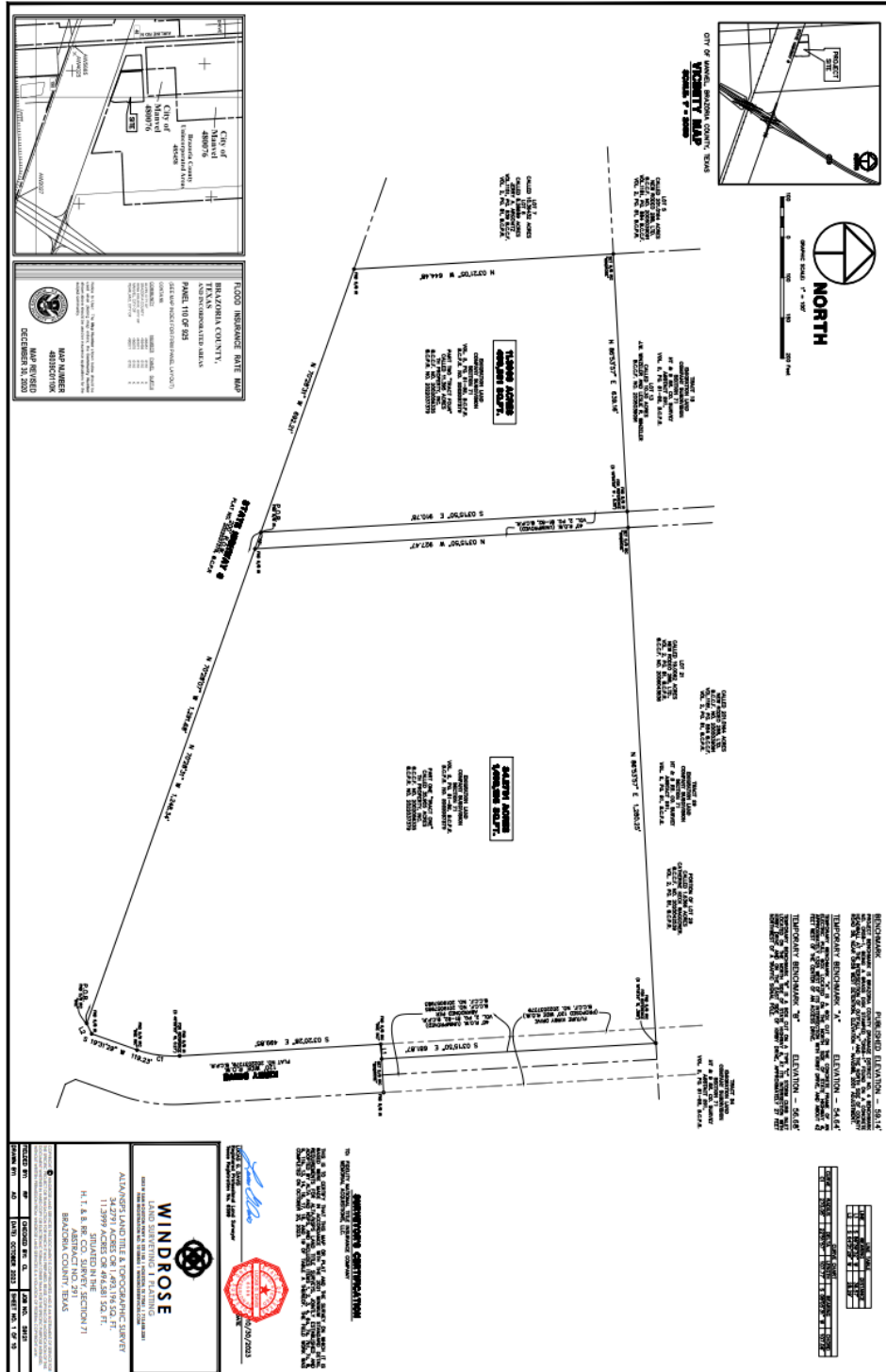
\_\_\_\_\_  
Tammy Bell, City Secretary

APPROVED AS TO FORM:

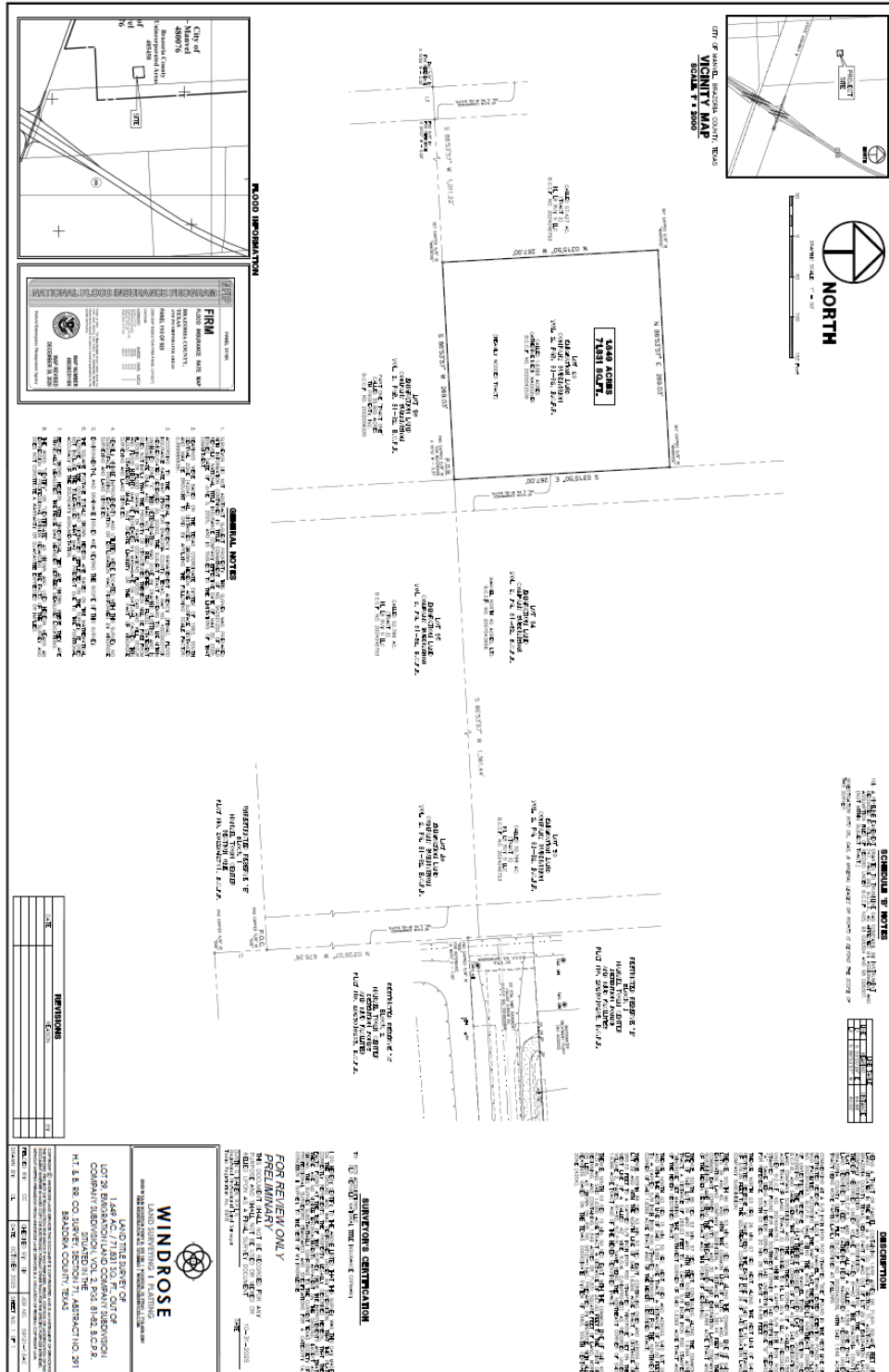
\_\_\_\_\_  
Robert Gervais, City Attorney

## EXHIBIT A (Property Description)

A 34.2791 acre tract and a 11.3999 acre tract separated by a 40-foot wide (0.844 acre) unimproved right-of-way, situated in H.T. & B. Railroad Company Survey, Section 71, Abstract No. 291, Brazoria County, Texas, and a 1.63 acre tract being a portion of Lot 29 of Emigration Land Company Subdivision of Iowa Colony H.T. & B. Railroad Company Survey No. 71 (also referred to as the Immigration Land Company Subdivision of Section 71, H.T. & B.R.R. Company Survey) Abstract 291, Brazoria County, Texas.



1.63 acre tract being a portion of Lot 29 of Emigration Land Company Subdivision of Iowa Colony H.T. & B. Railroad Company Survey No. 71 (also referred to as the Immigration Land Company Subdivision of Section 71, H.T. & B.R.R. Company Survey) Abstract 291, Brazoria County, Texas



**EXHIBIT B**  
**MANVEL CROSSING**  
**PUD DOCUMENT**

# MUTUAL AID AGREEMENT FOR COMPLEX EMERGENCY RESPONSE AND INVESTIGATION PLANNING

## I. PARTIES

This Mutual Aid Agreement (Agreement) is between the Department of Public Safety (DPS), the Brazoria County Sheriff's Office, and the \_\_\_\_\_ for Complex Emergency Response and Investigation Planning related to active attack incidents at primary and secondary school facilities in Brazoria County.

## II. DEFINITIONS

- A. For purposes of this Agreement, governmental entities that employ first responders include the following:
1. A peace officer described by Texas Code of Criminal Procedure Article 2A.001;
  2. An individual included as a fire protection personnel in Texas Government Code Section 419.021; and
  3. An individual included as emergency medical services personnel in Health and Safety Code Section 773.003.

## III. BACKGROUND AND PURPOSE

House Bill (H.B.) 33 of the 89<sup>th</sup> Texas Regular Legislative Session, codified into Texas Government Code Section 772.013, mandates that DPS and certain local governmental entities employing first responders in each County, as identified by the County Sheriff's Office, enter into an agreement that establishes the procedures for the provision of resources, personnel, facilities, equipment, and supplies necessary to respond to active attack incidents at primary and secondary school facilities in the County in a vertically integrated manner.

This Agreement establishes the overall framework for collaboration by the parties and each party's respective duties to carry out the mandates of HB 33. The parties will separately enter into a working protocols agreement that will establish the specific procedures that the parties will follow to ensure the provision of comprehensive resources, personnel, facilities, equipment and supplies necessary for responding to and investigating active attack incidents at primary and secondary school facilities in the County.

## IV. STATEMENT OF DUTIES TO BE PERFORMED

### A. DPS RESPONSIBILITIES

1. Consult with the County Sheriff's Office to determine which governmental entities employing first responders are reasonably likely to respond to an active attack incident at the primary and secondary school facilities in the County.
2. Invite any appropriate federal agencies, as determined by DPS, to participate in the multiagency tabletop exercises and in-person drills.
3. Invite any appropriate federal agencies, as determined by DPS, to enter into this Agreement as a Party.

## **B. COUNTY SHERIFF'S OFFICE RESPONSIBILITIES**

Provide input to DPS on all the local governmental entities employing first responders that are reasonably likely, in the Sheriff's opinion, to respond to an active attack incident at the primary and secondary school facilities in the County. If the County has more than one school district, the County shall identify, as needed, the different governmental entities likely to respond to the different districts in the County.

## **C. MUTUAL RESPONSIBILITIES**

DPS, the County Sheriff's Office and the signatories to this MOU understand and agree to the following:

1. To participate in a multiagency tabletop exercise at least once each odd-numbered year. The parties will collaboratively determine how often the tabletop exercise will be conducted in each odd-numbered year and the date(s) of the exercise.
2. To participate in an in-person drill at least once each even-numbered year. The parties will collaboratively determine how often the in-person drill will be conducted in each even-numbered year and the date(s) of the exercise.
3. To collaboratively establish procedures in a separate working protocols agreement, incorporated by this reference as an exhibit to this Agreement, for the provision of resources, personnel, facilities, equipment, and supplies in responses to critical active attack incidents at primary and secondary school facilities in the County in a vertically integrated fashion. DPS and the County will determine if more than one working protocols agreement is required if the County has more than one school district.
4. When establishing the procedures, DPS and local law enforcement agencies will:
  - a. give priority to establishing the interoperability of communications equipment among the parties to this Agreement;
  - b. establish procedures for interagency coordination in activities arising from critical active attack incidents, including evidence collection;
  - c. set jurisdictional boundaries; and
  - d. determine the capabilities, processes, and expectations among the parties to this Agreement.

## **V. TERM OF CONTRACT AND AMENDMENTS**

This Agreement is effective on the date of the last party to sign. The parties will review the Agreement each year from the date of execution to determine if any amendments need to be made. This Agreement may only be amended by mutual written agreement of the parties.

## **VI. NO LIABILITY; NO APPARENT AGENCY AUTHORITY**

The parties are associated with each other only for the purposes and to the extent set forth in this Agreement.

The parties agree that they shall have no liability for the actions or omissions of the other parties and are solely responsible for their own actions or omissions; however, only to the extent required by Texas law.

The parties do not have authority for or on behalf of the other parties except as provided in this Agreement. No other authority, power, partnership, or rights are granted or implied.

**VII. NOTICE**

The respective party will provide any required notice as noted in this section. Either party may change its information by giving the other party written notice and the effective date of the change.

If to DPS: TBD; name, title, address, email address, phone, fax

If to County Sheriff’s Office: TBD; name, title, address, email address, phone, fax

If to Local Governmental Entity: TBD; name, title, address, email address, phone, fax

If to Federal Agency: TBD; name, title, address, email address, phone, fax

The undersigned signatories have full authority to enter into this Agreement on behalf of the respective Parties.

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Signature	Printed Name	Title/Agency	Date
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Signature	Printed Name	Title/Agency	Date
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Signature	Printed Name	Title/Agency	Date
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Signature	Printed Name	Title/Agency	Date
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Signature	Printed Name	Title/Agency	Date
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# 2026-2027 TCAP Board Ballot

## **BALLOT – 2026/2027 TCAP BOARD OF DIRECTORS**

### Instructions for Voting:

**Only one ballot per member city/entity.** The member representative is entitled to cast seven for the seven current positions. **PLEASE BE SURE THAT NO MORE THAN EIGHT CANDIDATES HAVE BEEN CHECKED!** **Ballots with more than eight cast votes will be rejected.** No more than one vote may be cast for the same nominee. Places 2, 4, and 6 will be filled by the three candidates in the high consumption (HC) category receiving the most votes. Place 8 will be filled by the candidate in the medium consumption (MC) category receiving the most votes. Place 10 will be filled by the candidate in the low consumption (LC) category receiving the most votes. Places 12 and 14 will be filled by the two candidates receiving the most votes but who were not elected to a particular consumption category. The exception to this rule is the requirement in TCAP Bylaws that stipulates the board of directors include at least one member from each of the four ERCOT zones (North, South, West, and Houston). Nominees who are incumbents (I) are noted on the ballot.

**After the seven positions are filled, the next highest low consumption candidate will be placed in the unexpired Place 11 term.**

**(Vote for eight)**

Names were randomly drawn for ballot order

<input type="checkbox"/> Omar Williams, Fate – LC	<input type="checkbox"/> Darrel Sharpe, Parker – LC
<input type="checkbox"/> Courtney Alvarez, Kingsville – MC (I)	<input type="checkbox"/> Brady Olsen, Bedford – LC
<input type="checkbox"/> Jace Berryman, Wilmer – LC	<input type="checkbox"/> Nicole Ganey, Deer Park – HC
<input type="checkbox"/> Cesar Garcia, Kemah – LC	<input type="checkbox"/> Henry Arredondo, – Dilley, LC (I)
<input type="checkbox"/> Aaron Smith, Odessa – HC (I)	<input type="checkbox"/> Dewey Stoffels, Grapevine – HC
<input type="checkbox"/> Isaac Tawil, McAllen – HC (I)	<input type="checkbox"/> Gary Broz, Edna – LC (I)
<input type="checkbox"/> Kinley Heggland, Wichita Falls – HC (I)	<input type="checkbox"/> David Esquivel, Tomball – MC (I)

<p>Please complete and return by <b>5 p.m. C.S.T., January 2nd, 2026</b> to: Drew Shores, TCAP Secretary P.O. Box 5 Addison, TX 75001 or <a href="mailto:dshores@tcaptx.com">dshores@tcaptx.com</a> You may also submit in person by 9:00 a.m. at the January 9, 2026 TCAP Annual Membership Meeting</p>	<p>Submitted by (MUST BE COMPLETED):</p> <p>Printed Name _____</p> <p>Signature _____</p> <p>Member City/Entity: _____</p>
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# 2026/2027 TCAP Board Biographies

(alphabetical order)



## **Courtney Alvarez, City of Kingsville**

Courtney Alvarez is the City Attorney for the City of Kingsville, Texas. She has served as a city attorney for Kingsville since 2000. She received a BBA in International Business and a BBA in Finance from the University of Texas in Austin. Courtney attended law school at the South Texas College of Law in Houston and interned at the Texas Supreme Court. Prior to her career in Kingsville, she worked at an insurance defense firm in Corpus Christi. She was involved with the South Texas Aggregation Project (STAP) from its creation in 2001 to its later merger with Cities Aggregation Power Project (CAPP) in 2011 to form TCAP. Courtney has served on the TCAP Board of Directors since its formation in 2011. She has been licensed to practice law in the State of Texas for thirty years. Courtney is a member of several professional organizations which include the State Bar of Texas, the Texas Bar College, the Texas Municipal Courts Association, the International Municipal Lawyers Association, the Texas City Attorneys Association, and the Texas Bar Government Law Council. She currently serves as the TCAP President.



## **Henry Arredondo, City of Dilley**

Henry Arredondo is Senior Manager with over 30 years of experience in manufacturing, distribution, banking, and municipal management operations. Currently he works at the City of Dilley where he is the City Administrator. Henry Arredondo holds a Master's degree in Business Administration and Bachelor's degree in Finance and is passionate about youth sports. In his free time, he enjoys golfing, fishing, and cycling.



## **Jace Berryman, City of Wilmer**

**Jace Armani Garcia Berryman** is an emerging public administrator and current Assistant to the City Administrator for the City of Wilmer, Texas. He supports citywide operations and strategic initiatives with a focus on grant management, policy compliance, and employee engagement. In his current role, Jace helps administer the City's EPA Clean Ports grant; serves as a liaison to Municipal Court administration; Oversees Special Events; and designs recruitment and community-facing materials aligned with municipal branding.

Previously, Jace consulted on congressional and municipal campaigns, leading canvassing teams, producing data-driven reports, fundraising, and developing cohesive campaign materials. With a passion for community involvement and improvement, he has delivered an outcomes framework and Impact Report for Helping Hands Open Hearts, a nonprofit geared towards feeding the homeless populations of the DFW Metroplex.

Jace is completing a Master of Public Affairs at The University of Texas at Dallas in December 2025 and holds a B.A. in Political Science from Austin College. His technical toolkit spans ArcGIS, SPSS/Stata, Laserfiche, Microsoft 365/Google Workspace, and Adobe Creative Suite. He is motivated by transparency, equitable service delivery, and measurable community impact.

# **2026/2027 TCAP Board Biographies**

(alphabetical order)



## **Gary Broz, City of Edna**

Gary was born on September 15, 1955, in San Angelo, Texas. Gary and his siblings grew up just outside San Angelo. He graduated from Paint Rock High School then went to College at Sul Ross State University in Alpine, Texas, where he received a bachelor's degree in 1977.

After school, I came back home to the family farm and ranch. Mid-80's were bad farming years. He went back to work outside the family farm and ranch as General Manager of the Paint Rock Wool Warehouse, where they brokered wool, lamb feedlot, general store and an automotive center.

In 1987, Gary went to work for the City of Brady, beginning as Purchasing Agent and moving up to Director of Public Works. He soon became Assistant City Manager and was promoted to City Manager in 1997.

After leaving Brady in November 2000 accepted the position of City Manager in Port Lavaca, where he worked until November 2009. Then Gary and his wife moved to Liberty, Texas, as he continued his career as City Manager in Liberty until his retirement in June 2018. Where he guided the upgrade of the City's Electrical System. After retiring, he and his wife moved outside Columbus, Texas to start enjoying retirement. In July 2018, Gary was asked to be the City Manager in Eagle Lake, Texas where he worked until May of 2020. When the City of Edna proudly hired Gary to be their City Manager where he is now.

Gary has been married to Georgia for forty-six (46) years. They have two children. Their daughter Shauna and her husband live in Bay City, Texas with two (2) granddaughters and son Jonathan and his wife live in Port Lavaca, Texas with their grandson and two granddaughters.



## **David Esquivel, PE City of Tomball**

David Esquivel currently serves as City Manager for the City of Tomball. David previously served the City of Cleburne for 11 years in various capacities including Public Works director and Assistant City Manager. David came to the City of Tomball as the Public Works director and then served as the Assistant City Manager before the City Council appointed him as the City Manager in July 2021. David holds a Bachelor of Science degree in civil engineering from Texas Tech University and is a registered professional engineer. David has a wonderful wife, Brandilyn, and blessed with 3 terrific kids. Twin daughters Nadia and Sophia and a son Joaquin.



## **Kinley Hegglund, City of Wichita Falls**

Kinley Hegglund is the City Attorney for the City of Wichita Falls. He has served in the Wichita Falls City Attorney's Office since May of 2000, first as the City Prosecutor, then as the Senior Assistant City Attorney before being appointed City Attorney in 2014. Kinley was born and raised in San Angelo, Texas. He graduated with a Doctorate of Jurisprudence from the Texas Tech School of Law in 1999 and received his bachelor of Business Administration degree from Texas A&M in 1995. He was licensed to practice law in Texas in 1999 and is also admitted as an attorney authorized to practice before the United States Court of Appeals for the Fifth Circuit as well as before the Supreme Court

# **2026/2027 TCAP Board Biographies**

(alphabetical order)

of the United States. He was the genesis of the gang injunction program in Wichita Falls, and has become the leading authority on gang injunction litigation in Texas. Kinley was recognized by the International Municipal Lawyers Association as a Local Government Fellow in 2014 and was awarded the Susan Rocha Award for Outstanding Service by an Assistant City Attorney in June 2014 by the Texas City Attorneys Association. In addition to representing the City, Kinley is the legal advisor for the Wichita Falls Economic Development Corporation, 4B Sales Tax Corporation, and the City-County Hospital Board. He is also the City's representative to the Atmos Cities Steering Committee and the ONCOR Cities Steering Committee. Kinley has 2 children, Timothy and Gabrielle. He is a current member of the Board of Directors for United Regional Health Care System.



## **Nicole Ganey, City of Deer Park**

I am a highly motivated, dedicated, and ambitious municipal finance professional with over eight years experience in local government. I am experienced in a broad range of municipal financial functions. I started my local government career as a Utility Billing Clerk and am currently serving as the Director of Finance for the City of Deer Park. In addition, I serve as the Secretary of the Gulf Coast Chapter Government Finance Officers Association (GCGFOA). I hold memberships in multiple other local government organizations. I would be honored to be considered to represent my peers on the Texas Coalition for Affordable Power (TCAP) Board of Directors.



## **Cesar Garcia, City of Kemah**

Cesar Garcia is the City Administrator for Kemah, Texas, bringing nearly two decades of public service experience to the role. He holds a Master's degree in Sports Administration from the University of Miami and has a diverse background spanning parks and recreation, hospitality, events, economic development, and government operations. With a passion for energy, sustainability, tourism, and open government, he is honored to be nominated to serve on the TCAP Board. He is currently serving on TCMA Region 6 Board as the Secretary/Treasurer and well as Bay Area Houston Economic Partnership's Tourism Committee Chair.

Garcia's leadership philosophy centers on communication, empathy, and collaboration to drive progress and positive change within the community. As city Administrator, he focuses on advancing key infrastructure projects, fostering economic development, and ensuring the continued success of Kemah as a premier destination for residents and visitors alike.



## **Brady Olsen, City of Bedford**

Brady Olsen has served Texas cities for the past nine years. He currently serves as the Director of Finance for the City of Bedford, where he applies his expansive knowledge of accounting, investments, and budgeting to lead a team of 17. Brady worked three years with Moody's Investor's Service as an Associate Analyst. During his tenure with Moody's, he reviewed rated and reviewed local government municipal bonds primarily in Texas. He also is a Certified Government Finance Officer and Registered Tax Assessor Collector. Brady is also a proud graduate of Texas A&M, where he holds both a Master's in Public Service and Administration and two Bachelor's degrees: Political Science and Economics. He is also an avid community volunteer. He serves on the board for the Women's

# 2026/2027 TCAP Board Biographies

(alphabetical order)

Center of Tarrant County and is a Member of the Government Finance Officers Association Legislative Committee, as well as many others.



## **Darrel Sharpe, City of Parker**

I've lived in Parker for 6 years, originally moving to take advantage of its spacious lots and peaceful setting - all while being close to my place of work.

My family is my "Why." Husband of Sarah since 2001, we have been blessed by three children (Christian, Logan, and Katie). Christian serves in the Navy, and Logan and Katie attend Collin College. Our other family members - our border collies - keep us happy and busy.

I have a career spanning 3 decades in engineering, consulting and sales. I received my Bachelors of Science in Computer Engineering from the University of Missouri, later a Masters of Science in Computer Science from Johns Hopkins University in Baltimore.

While I'm originally from Missouri, Texas has been my home for over 15 years. As the saying goes, "I didn't have the good fortune to be born in Texas, but I got here as soon as I could."

I'm an avid cook, and I like to endanger the waistlines of my family with the cuisine of my adopted home like brisket as the cuisine of my family, like ragù.



## **Aaron Smith, City of Odessa**

Aaron Smith serves as Assistant City Manager for the City of Odessa, bringing extensive operations, project management, and municipal leadership expertise. He is a past City Manager of Tulia Texas, Ogallala Nebraska, Whitehouse Texas and past City Administrator of Kemah Texas. In addition, Aaron served as a Senior Managing Director at Texas Tech University, Operations Division. With a strong focus on efficiency and innovation, Aaron oversees key initiatives that enhance the city's infrastructure, services, and community engagement. His commitment to excellence ensures that Odessa remains a vibrant and thriving place to live, work, and visit. Known for his collaborative approach, Aaron excels at streamlining processes and implementing strategic solutions that drive meaningful outcomes. His dedication to public service reflects a deep passion for building strong communities and fostering growth. Aaron enjoys staying connected to emerging trends in city management. He is a member of the Texas City Management Association. Aaron is married to his wife Jennifer, 19 years, and they have a 12 year old daughter.



## **Dewey Stoffels, City of Grapevine**

Dewey Stoffels is the Environmental Manager for the City of Grapevine, where he manages environmental work in such a way as to promote prosperity while generating a sense of pride in the Grapevine community. His work product is intended to resonate the message “‘Grapevine is a great place to visit’, ‘Grapevine is a great place to work’, and most of all, ‘Grapevine is a great place to live’”.

Key program areas include:

1. Materials Management: Overseeing trash, recycling, reuse, and hazardous waste to minimize environmental impact.

# 2026/2027 TCAP Board Biographies

(alphabetical order)

2. Water Quality Protection to ensure:
  - Potable and groundwater remain drinkable;
  - Lakes and streams stay swimmable and fishable;
  - Wastewater is efficiently treatable.
3. Vector Control: Combating disease-carrying mosquitoes for public health.
4. Air Quality and Sustainable Energy: Promoting efficiency and cleaner air.

Dewey's areas of research and study include: management, drinking water, wastewater, surface water, steam generation water quality, statistical problem solving, marketing, accounting, and law. He has worked as a solar grazer in the field of agrivoltaics, managed environmental affairs for three North Texas cities, taught college science labs for SFA, researched the effects of timber harvesting and lumber yard pollution in forest streams (assessed surface water physical and chemical parameters, benthic macroinvertebrates, & fish) for the US Forest Service, machined tens of thousands of fluid control valve components, worked constructing stock tanks, assembled thousands of airplane seats, waited on hundreds of tables, served a-many-of pizza waiting on customers, he's hauled countless bales of hay, and hand-picked a small mountain of rocks off of the farm field plains of the North Texas Blackland Prairie. He is grateful for God's grace and His creation.



## **Isaac Tawil, City of McAllen**

Isaac Tawil is a proven community leader with over 25 years of dedicated service to Texas municipalities. His extensive experience and expertise span multiple facets of municipal governance, making him an invaluable asset to the communities he serves. On September 13, 2024, Mr. Tawil was appointed as the City Manager of McAllen, where he currently oversees the City's \$650 million budget and is responsible for the daily management of the City's international airport, two international ports of entry, cultural arts facilities and golf course among 36 city departments. Prior to serving as City Manager, Tawil served in the City Attorney's Office for nearly 13 years, most recently as City Attorney, where he provided McAllen with practical legal and management advice on a wide array of issues. His role in negotiating and composing first-of-their-kind economic development agreements and fostering international relationships designed to stimulate local economic growth has been instrumental in McAllen's continued prosperity. Mr. Tawil has significant experience working with airports, public safety, code compliance, human resources, public infrastructure development, land acquisition, real estate, cultural arts, complex construction management, municipal finance, public utilities, and capital improvement procurement. His experience with intergovernmental federal and state cooperation, community and social services, grant compliance, emergency management, and healthcare systems further underscore his comprehensive understanding of municipal operations. Mr. Tawil holds a Bachelor of Arts degree from the University of Texas at Austin and a law degree from St. Mary's University School of Law. He is an active member of Temple Emanuel and enjoys spending time with his wife and three children.



## **Omar Williams, City of Fate**

Omar Williams serves as the Assistant to the City Manager for the City of Fate, Texas, where he supports strategic planning, organizational development, and major capital initiatives that strengthen community infrastructure and enhance resident engagement.

# **2026/2027 TCAP Board Biographies**

(alphabetical order)

He began his public service career in 2012 with the U.S. Navy, serving five years on active duty as a Hospital Corpsman. Following his military service, he worked for the federal government as an auditor, conducting program and performance reviews. Before joining the City of Fate, Omar spent three years with the Texas Coalition for Affordable Power (TCAP), where he served as Assistant to the Executive Director after completing a graduate internship.

Omar holds a B.A. in English from the University of Kansas and an M.P.A. from the University of North Texas. He currently serves on the Texas Advisory Committee for the U.S. Global Leadership Coalition and the Fund for Veterans' Assistance Advisory Committee under the Texas Veterans Commission. He is also a member of the Texas City Management Association (TCMA), International City/County Management Association (ICMA), and the National Forum for Black Public Administrators (NFBPA).

Favorite Quote: "The most damaging phrase in the language is 'We've always done it this way.'" — Rear Admiral Grace Hoppe