



College Station, TX

City Hall
1101 Texas Ave
College Station, TX 77840

Meeting Agenda - Final

City Council Regular

Thursday, August 23, 2018

6:00 PM

City Hall Council Chambers

1. Call to Order, Pledge of Allegiance, Invocation, Consider Absence Request.

Hear Visitors: During this time a citizen may address the City Council on any item which does not appear on the posted Agenda. Registration forms are available in the Office of the City Secretary. This form should be completed and returned to the office by 5:30 PM on the day of the Council meeting. Upon stepping to the podium the speaker must state their name and city of residence, including the state of residence if the city is located out of state. Speakers are encouraged to identify their College Station neighborhood or geographic location. Each speaker's remarks are limited to three minutes. A group of five or more may register at the Office of the City Secretary by 5:30 PM on the day of the meeting and designate an individual to speak for 10 minutes on their behalf. All signers must be in attendance when the speaker is introduced and may not speak individually during Hear Visitors. A speaker who wishes to include computer-based information while addressing the Council must provide the electronic file to the City Secretary by noon on the day of the Council meeting. During presentations a series of timer lights will change from green to yellow and an alarm will sound after two and one-half or nine and one-half minutes to signal thirty seconds remaining. When time expires the timer light will change to red, the final alarm will sound, and the speaker must conclude the remarks. The City Council will listen and receive the information presented by the speaker, ask staff to look into the matter, or place the issue on a future agenda. Topics of operational concerns shall be directed to the City Manager. Comments should not personally attack other speakers, Council or staff.

Consent Agenda

At the discretion of the Mayor, individuals may be allowed to speak on a Consent Agenda Item. Individuals who wish to address the City Council on a consent agenda item not posted as a public hearing shall register with the City Secretary prior to the Mayor's reading of the agenda item. Registration forms are available in the lobby and at the desk of the City Secretary.

2. Presentation, possible action, and discussion of consent agenda items which consists of ministerial or "housekeeping" items required by law. Items may be removed from the consent agenda by majority vote of the Council.

- 2a. [18-0545](#) Presentation, possible action, and discussion of minutes for:
 - August 9, 2018 Workshop
 - August 9, 2018 Regular

Sponsors:

Smith

Attachments: [WKSHP080918 DRAFT Minutes](#)
[RM080918 DRAFT Minutes](#)

- 2b. [18-0516](#) Presentation, possible action, and discussion on an Interlocal Agreement (ILA) with Brazos County and the City of Bryan to apply and accept a U.S. Department of Justice 2018 Justice Assistance Grant (JAG).

Sponsors: Norris

Attachments: [2018 JAG Interlocal Agreement 7-31-18](#)

- 2c. [18-0526](#) Presentation, possible action, and discussion to approve a revised agreement for the City to sell reclaimed water to the Pebble Creek Country Club.

Sponsors: Gibbs

- 2d. [18-0546](#) Presentation, possible action, and discussion for an annual purchase contract with Bound Tree Medical, L.L.C for EMS supplies not to exceed \$120,000.

Sponsors: McMahan

Attachments: [18300694.pdf](#)

Regular Agenda

Individuals who wish to address the City Council on an item posted as a Public Hearing shall register with the Office of the City Secretary. Registration forms are available in the Office of the City Secretary. This form should be completed and returned to the office by 5:30 PM on the day of the Council meeting. Upon stepping to the podium the speaker must state their name and city of residence, including the state of residence if the city is located out of state. Speakers are encouraged to identify their College Station neighborhood or geographic location. Each speaker's remarks are limited to three minutes. A group of five or more may register at the Office of the City Secretary by 5:30 PM on the day of the meeting and designate an individual to speak for 10 minutes on their behalf. All signers must be in attendance when the speaker is introduced and may not speak individually during that Public Hearing. A speaker who wishes to include computer-based information while addressing the Council must provide the electronic file to the City Secretary by noon on the day of the Council meeting. During presentations a series of timer lights will change from green to yellow and an alarm will sound after two and one-half or nine and one-half minutes to signal thirty seconds remaining. When time expires the timer light will change to red, the final alarm will sound, and the speaker must conclude the remarks. If Council needs additional information from the general public after the Public Hearing is closed some limited comments may be allowed at the discretion of the Mayor. Comments should not personally attack other speakers, Council or staff.

1. [18-0535](#) Public Hearing, presentation, possible action, and discussion regarding an ordinance amendment to Appendix A, "Unified

Development Ordinance,” Article 2, “Development Review Bodies”, Section 2.8 “Administrator”; Article 3, “Development Review Procedures”, Section 3.12 “Building Permit” and Section 3.13 “Certificate of Occupancy”; Article 5, “District Purpose Statements and Supplemental Standards”, Section 5.2 “Residential Dimensional Standards”; Article 7, “General Development Standards”, Section 7.3 “Off-Street Parking Standards”, Section 7.6 “Landscaping and Tree Protection”, and Section 7.10 “Non-Residential Architectural Standards”; and Article 8, “Subdivision Design and Improvements”, Section 8.3. “General Requirements and Minimum Standards of Design for Subdivisions within the City Limits”, of the Code of Ordinances of the City of College Station, Texas, to correct text omissions, references, and other clerical errors.

Sponsors:

Gray

Attachments:[Redlines](#)[Ordinance](#)**2. [18-0538](#)**

Public Hearing, presentation, possible action, and discussion regarding an ordinance amending Appendix A, “Unified Development Ordinance,” Article 4, “Zoning Districts,” Section 4.2 “Official Zoning Map,” of the Code of Ordinances of the City of College Station, Texas by changing the zoning district boundaries from R Rural and GS General Suburban to GC General Commercial on approximately 16.9 acres of land generally located at the southeast intersection of General Parkway and Holleman Drive South, along Old Wellborn Road.

Sponsors:

Lazo

Attachments:[Background Information](#)[Vicinity Aerial SAM](#)[Rezoning Exhibit](#)[Zoning Map](#)[Application](#)[TIA 2](#)[Ordinance with Condition](#)[Ordinance without Condition](#)**3. [18-0540](#)**

Public Hearing, presentation, possible action, and discussion regarding an ordinance amending the Comprehensive Plan - Future Land Use & Character Map from Suburban Commercial to Urban for approximately 11.1 acres generally located in the City on the west side of Turkey Creek Road, approximately 500-feet south of HSC Parkway.

Sponsors:

Helton

Attachments: [Loveless background](#)
 [Vicinity & Aerial Map](#)
 [Future Land Use and Character Map](#)
 [Ordinance](#)

4. [18-0542](#) Public Hearing, presentation, possible action, and discussion regarding an ordinance amending Appendix "A", "Unified Development Ordinance," Section 4.2, "Official Zoning Map," of the Code of Ordinances of the City of College Station, Texas by changing the zoning district boundaries from Rural to Multi-Family on approximately 11.1 acres located on the west side of Turkey Creek Road, approximately 500-feet south of HSC Parkway.

Sponsors: Helton

Attachments: [Loveless background](#)
 [Vicinity, Aerial & Small Area Map](#)
 [Rezoning Map](#)
 [TIA Loveless Rezoning](#)
 [Ordinance](#)

5. Presentation, possible action, and discussion on future agenda items and review of standing list of Council generated agenda items: A Council Member may inquire about a subject for which notice has not been given. A statement of specific factual information or the recitation of existing policy may be given. Any deliberation shall be limited to a proposal to place the subject on an agenda for a subsequent meeting.

6. Adjourn.

The City Council may adjourn into Executive Session to consider any item listed on this agenda if a matter is raised that is appropriate for Executive Session discussion. An announcement will be made of the basis for the Executive Session discussion.

I certify that the above Notice of Meeting was posted at College Station City Hall, 1101 Texas Avenue, College Station, Texas, on August 17, 2018 at 5:00 p.m.



City Secretary

This building is wheelchair accessible. Persons with disabilities who plan to attend this meeting and who may need accommodations, auxiliary aids, or services such as interpreters, readers, or large print are asked to contact the City Secretary's Office at (979) 764-3541, TDD at 1-800-735-2989, or email adaassistance@cstx.gov at least two business days prior to the meeting so that appropriate arrangements can be made. If the City does not receive notification at least two business days prior to the meeting, the City will make a reasonable attempt to provide the necessary accommodations.

Penal Code § 30.07. Trespass by License Holder with an Openly Carried Handgun.

"Pursuant to Section 30.07, Penal Code (Trespass by License Holder with an Openly Carried Handgun) A Person Licensed under Subchapter H, Chapter 411, Government Code (Handgun Licensing Law), may not enter this Property with a Handgun that is Carried Openly."

Codigo Penal § 30.07. Traspasar Portando Armas de Mano al Aire Libre con Licencia.

"Conforme a la Seccion 30.07 del codigo penal (traspasar portando armas de mano al aire libre con licencia), personas con licencia bajo del Sub-Capitulo H, Capitulo 411, Codigo de Gobierno (Ley de licencias de arma de mano), no deben entrar a esta propiedad portando arma de mano al aire libre."



Legislation Details (With Text)

File #: 18-0545 **Version:** 1 **Name:** Minutes
Type: Minutes **Status:** Consent Agenda
File created: 8/13/2018 **In control:** City Council Regular
On agenda: 8/23/2018 **Final action:**
Title: Presentation, possible action, and discussion of minutes for:
• August 9, 2018 Workshop
• August 9, 2018 Regular
Sponsors: Tanya Smith
Indexes:
Code sections:
Attachments: [WKSHP080918 DRAFT Minutes](#)
[RM080918 DRAFT Minutes](#)

Date	Ver.	Action By	Action	Result
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Presentation, possible action, and discussion of minutes for:

- August 9, 2018 Workshop
- August 9, 2018 Regular

Relationship to Strategic Goals:

- Good Governance

Recommendation(s): Approval

Summary: N/A

Budget & Financial Summary: None

Attachments:

- August 9, 2018 Workshop
- August 9, 2018 Regular

MINUTES OF THE CITY COUNCIL WORKSHOP
CITY OF COLLEGE STATION
AUGUST 9, 2018

STATE OF TEXAS §
 §
COUNTY OF BRAZOS §

Present:

Karl Mooney, Mayor

Council:

Bob Brick
Jerome Rektorik
Linda Harvell
Barry Moore
John Nichols
James Benham – via remote

City Staff:

Jeff Capps, Interim City Manager
Jeff Kersten, Assistant City Manager
Carla Robinson, City Attorney
Tanya Smith, City Secretary
Lisa McCracken, Record Management Administrator

1. Call to Order and Announce a Quorum is Present

With a quorum present, the Workshop of the College Station City Council was called to order by Mayor Mooney at 4:01 p.m. on Thursday, August 9, 2018 in the Council Chambers of the City of College Station City Hall, 1101 Texas Avenue, College Station, Texas 77840.

2. Executive Session

In accordance with the Texas Government Code §551.071-Consultation with Attorney, §551.072-Real Estate, and §551.074-Personnel, the College Station City Council convened into Executive Session at 4:01 p.m. on Thursday, August 9, 2018 in order to continue discussing matters pertaining to:

- A. Consultation with Attorney to seek advice regarding pending or contemplated litigation; to wit:
- Kathryn A. Stever-Harper as Executrix for the Estate of John Wesley Harper v. City of College Station and Judy Meeks; No. 15,977-PC in the County Court No. 1, Brazos County, Texas; and
 - McCrory Investments II, LLC d/b/a Southwest Stor Mor v. City of College Station; Cause No. 17-000914-CV-361; In the 361st District Court, Brazos County, Texas
 - City of College Station v. Gerry Saum, Individually, and as Independent Executrix of the Estate of Susan M. Wood, Deceased; Cause No. 17-002742-CV-361; In the 361st District Court, Brazos County, Texas

- Maura Juarez Garcia v. Andres Garcia and City of College Station; Cause No. 18-000419-CV-85; In the 85th District Court, Brazos County, Texas.

B. Deliberation on the purchase, exchange, lease, or value of real property; to wit:

- Property located generally in the vicinity of Highway 50 in South Robertson County, Texas.

C. Deliberation on the appointment, employment, evaluation, reassignment, duties, discipline, or dismissal of a public officer; to wit:

- Council self-evaluation
- City Manager

The Executive Session recessed at 5:08 p.m.

3. Take action, if any, on Executive Session.

No action was required from Executive Session.

4. Presentation, possible action and discussion on items listed on the consent agenda.

Items 2c, 2i, 2m and 2p were pulled from Consent for clarification.

(2c): *Tanya Smith*, City Secretary, stated that there was no difference in cost to have the election in even or odd number of years. The 2017 election cost with all (5) entities involved was roughly around \$18,000 and the 2016 election had only (3) entities involved, which our cost was around \$25,600.

(2i): *Kelly Kelbly*, Assistant Director of Parks & Recreation, gave a brief background on cost of the two existing sand volleyball courts at the Barracks Park. The proposed construction contract will resolve drainage issues within both volleyball courts as well as address drainage issues outside the courts. Mrs. Kelbly stated that the smaller park projects are handled internally but larger projects fall under capital projects, which they work with the other departments.

(2m): *Donald Harmon*, Public Works Director, gave a brief background on the base failure of College Station streets. Mr. Harmon explained how the overlay is done on sections of the road that need to be repaired due to base failed.

(2p): *David Schmitz*, Parks & Recreation Director, gave a brief background on the agreement with the City of Bryan regarding the Library. Mr. Schmitz explained the amount of \$1,063,000 we gave the City of Bryan for staffing and operations, and maintenance.

5. Presentation, possible action, and discussion on the FY 2018-2019 Proposed Budget.

Mary Ellen Leonard, Director of Finance, presented the proposed FY2018-2019 Budget and noted that budget workshops are scheduled for August 20 and 21, to review the proposed budget of \$360,680,102 and to discuss key budget decision points. A public hearing is scheduled for September 5 on the tax rate, September 13 a second public hearing on the tax rate and the proposed budget, and final action is scheduled for September 27.

6. Presentation, possible action, and discussion regarding the Neighborhood Conservation Overlay process and possible changes to Section 5.11.D.2, Neighborhood Conservation Overlay Districts, of the Unified Development Ordinance.

Justin Golbabai, Planning and Development, presented a follow-up presentation that 1) clarifies the process for establishing a Neighborhood Conservation Overlay and 2) summarizes the possible options to change this section of the UDO.

UDO Requirements:

- ❖ Required For All SF Overlays (Neighborhood Prevailing and Neighborhood Conservation Overlays):
 - ❖ Specific requirements regarding establishing the boundary of the overlay.
 - ❖ Required neighborhood meeting with Staff.
 - ❖ Requirements for a petition in which 50%+1 of the area property owners must sign in support for a valid application.
 - ❖ Application goes to P&Z Commission for a recommendation and City Council for a final decision.
 - ❖ Required of Neighborhood Conservation Overlay specifically:
 - ❖ 6 property owners serve on a neighborhood stakeholder committee.
 - ❖ The development of a neighborhood conservation study with City staff.

The Planning and Zoning Commission considered possible changes to the Neighborhood Conservation Overlay at their July 5th meeting. Planning and Zoning Commission did not have a consensus on no more than 2 unrelated option but was generally supportive of all other proposed modifications. Planning and Zoning Commission also recommended that the 50%+1 petition support be raised to a support level in the 58%-67% range.

Council directed staff to notify property owners at the stage of the neighborhood meeting and to notify neighborhoods and adjacent subdivisions. Council directed staff to continue to waive the application fee but charge the applicants the cost of notification for the neighborhood meeting and for the rezoning application.

Mayor Mooney recessed the Workshop at 6:19 p.m.

Workshop reconvened at 7:23 p.m.

Justin Golbabai, Planning and Development, presented 12 steps on the aspects of administrative processes establishing a Neighborhood Conservation Overlay and proposed NCO Modifications on lot coverage, tree preservation, off-street (on-site) parking, and other proposed revisions.

The Neighborhood Study stated that College Station should allow a new menu option to restrict the number of unrelated persons living in a single family dwelling from 4 to 2. Planning and Zoning did not reach a consensus on the no more than 2 unrelated option.

Proposed No More than 2-Unrelated Option

- Allowing an NCO option that would allow no more than 2-unrelated individuals.
- This option would be enforced by Code Enforcement.

Proposed NCO Modification – Neighborhood Study:

- Allowing an NCO to move forward to Planning & Zoning Commission and City Council without a neighborhoods study.

Council directed staff to move forward with all recommendations with exception that staff will continue to conduct a Neighborhood Study.

7. Council Calendar

Council reviewed the calendar.

8. Discussion, review and possible action regarding the following meetings: Animal Shelter Board, Annexation Task Force, Arts Council of Brazos Valley, Arts Council Sub-committee, Audit Committee, Bicycle, Pedestrian, and Greenways Advisory Board, Bio-Corridor Board of Adjustments, Blinn College Brazos Valley Advisory Committee, Brazos County Health Dept., Brazos Valley Council of Governments, Bryan/College Station Chamber of Commerce, Budget and Finance Committee, BVSWMA, BVWACS, Compensation and Benefits Committee, Experience Bryan-College Station, Design Review Board, Economic Development Committee, FBT/Texas Aggies Go to War, Gulf Coast Strategic Highway Coalition, Historic Preservation Committee, Interfaith Dialogue Association, Intergovernmental Committee, Joint Relief Funding Review Committee, Landmark Commission, Library Board, Metropolitan Planning Organization, Parks and Recreation Board, Planning and Zoning Commission, Research Valley Partnership, Research Valley Technology Council, Regional Transportation Committee for Council of Governments, Sister Cities Association, Transportation and Mobility Committee, TAMU Economic Development, TAMU Student Senate, Texas Municipal League, Twin City Endowment, Walk with the Mayor, YMCA, Youth Advisory Council, Zoning Board of Adjustments.

No meetings to report at this time.

9. Adjournment

There being no further business, Mayor Mooney adjourned the workshop of the College Station City Council at 8:25 p.m. on Thursday, August 9, 2018.

Karl Mooney, Mayor

ATTEST:

Tanya Smith, City Secretary

MINUTES OF THE REGULAR CITY COUNCIL MEETING
CITY OF COLLEGE STATION
AUGUST 9, 2018

STATE OF TEXAS §
 §
COUNTY OF BRAZOS §

Present:

Karl Mooney, Mayor

Council:

Bob Brick
Jerome Rektorik
Linda Harvell
Barry Moore
John Nichols
James Benham – via remote

City Staff:

Jeff Capps, Interim City Manager
Jeff Kersten, Assistant City Manager
Carla Robinson, City Attorney
Tanya Smith, City Secretary
Lisa McCracken, Record Management Administrator

Call to Order and Announce a Quorum is Present

With a quorum present, the Regular Meeting of the College Station City Council was called to order by Mayor Mooney at 6:30 p.m. on Thursday, August 9, 2018 in the Council Chambers of the City of College Station City Hall, 1101 Texas Avenue, College Station, Texas 77840.

1. Pledge of Allegiance, Invocation, consider absence request.

Proclamation to salute the student leaders of Camp Kesem at Texas A&M University:

Mayor Mooney recognized and presented the student leaders Hannah Lykins and Samantha Buchanan of Camp Kesem at Texas A&M University with a proclamation proclaiming August 12-17, 2018 as Camp Kesem Week.

Hear Visitors Comments

Fred Dupriest, College Park, came before the council to state his concerns on the Neighborhood Conservation Overlay process and possible changes to Section 5.11.D.2, Neighborhood Conservation Overlay Districts, of the Unified Development Ordinance. Mr. Dupriest presented a presentation on the College Station Neighborhood Association recommendations for Overlay Process Improvements.

Jerry Cooper, Southside, stated he has been in Southside over 50 years, and appreciates how organized the Neighborhood Conservation Overlay process is with the College Station Neighborhood Association.

Buck Prewett, Castlegate, stated questions for Council to look at: Can someone from outside my subdivision come in and put an overlay on his subdivision? Also, Mr. Prewett asked if there is an HOA will an overlay take over the HOA?

CONSENT AGENDA

2a. Presentation, possible action, and discussion of minutes for:

- **July 26, 2018 Workshop Meeting**
- **July 26, 2018 Regular Meeting**

2b. Presentation, possible action, and discussion on Ordinance No. 2018-4031 ordering a General and Special Election to be held on November 6, 2018 for the purpose of electing a City Council Member, Place 4, a City Council Member, Place 6, and to submit proposed amendments to the City Charter to the voters; establishing early voting locations and polling places for this election; and making provisions for conducting the election. (Presentación, posible acción y discusión acerca de una ordenanza (Ordinance No. 2018-4031) que ordene Elecciones Generales y Especiales a celebrarse el 6 de noviembre de 2018 con el propósito de elegir un Miembro del Consejo de la Ciudad, Puesto Número 4, un Miembro del Consejo de la Ciudad, Puesto Número 6, y para presentarles a los votantes las enmiendas propuestas a los Estatutos de la Ciudad; estableciendo los sitios de votaciones anticipadas y los centros de votaciones para estas elecciones; y elaborando las provisiones para llevar a cabo las elecciones.)

2c. Presentation, possible action, and discussion on approving an interlocal government agreement with Brazos County for the conduct and management of the City of College Station General and Special Election that will be held on Tuesday, November 6, 2018. (Presentación, posible acción y discusión acerca de una resolución que apruebe un acuerdo interlocal de gobierno con el Condado de Brazos para llevar a cabo y administrar las Elecciones Generales y Especiales de la Ciudad de College Station y para aprobar la Notificación de Elecciones Generales y Especiales que se celebrarán el martes 6 de noviembre de 2018.)

2d. Presentation, possible action, and discussion regarding approval of Resolution No. 08-09-18-2d of the interlocal agreement with the City of Bryan, City of Brenham, Brazos County, Washington County, Texas A&M University, Grimes County and Brazos Valley Council of Governments; designating the Brazos Valley Council of Governments as the Managing Entity for the Brazos Valley Wide Area Communications System (BVWACS).

2e. Presentation, possible action, and discussion on a construction contract 18300500 with Kieschnick General Contractors, in the amount of \$830,078 for the construction of the State Highway 6 waterline phases I and II.

2f. Presentation, possible action, and discussion on calling a public hearing on the City of College Station FY 2018-2019 Proposed Budget for Thursday, September 13, 2018 at 6:00 PM in the City Hall Council Chambers.

2g. Presentation, possible action, and discussion on a bid award for the annual purchase of single phase pad-mounted transformers, which will be maintained in electrical inventory and expended as needed. The total recommended award is \$224,500 to Priester-Mell & Nicholson, Inc.

2h. Presentation, possible action, and discussion on an Amendment to the lease agreement with CEO, Etc., Inc. for lease of City Fiber Optic Cable Facilities.

2i. Presentation, possible action, and discussion on approval of the construction contract with DKing Express, LLC. in the amount of \$141,399 for repairs to the two existing sand volleyball courts at the Barracks Park.

2j. Presentation, possible action and discussion on a bid award for the annual blanket order for electric meters and sockets, to be stored in inventory, as follows: Anixter: \$37,952; Priester-Mell & Nicholson: \$164,363; Texas Electric Cooperatives: \$33,500. Total estimated annual expenditure is \$235,815.

2k. Presentation, possible action, and discussion regarding approval of Resolution No. 08-09-18-2k adopting the proposed FY 2019 Community Development Budget and PY 2018 Annual Action Plan.

2l. Presentation, possible action, and discussion on the second reading of Ordinance No. 2018-4032 a franchise agreement with Organix Recycling, LLC; for the collection of recyclables from commercial businesses and multi-family locations.

2m. Presentation, possible action, and discussion regarding the approval of contract 18300622 with Brazos Paving, Inc. for base failure repairs and Type D HMA installation in an amount not to exceed \$5,000,000.

2n. Presentation, possible action, and discussion on Resolution No. 08-09-18-2n amending Chapter 2, "Administration," Article V, "Finance," Division 2 "Fees, Rates, and Charges" Section 2-120 of the Code of Ordinances and presentation, possible action, and discussion on amending Resolution No. 08-10-17-2Q that established the fees, rates, and charges as authorized in Chapter 2 "Administration", Art. V. "Finance", Div. 2 "Fees, Rates, and Charges" of The Code of Ordinances, both regarding establishing fees for the regulation of dockless bike share programs permitted to operate in the City.

2o. Presentation, possible action, and discussion on a letter agreement for year 1 of the Professional Auditing Services engagement with BKD, LLP for the fiscal year ending September 30, 2018 with expenditures totaling \$84,000 from the City of College Station.

2p. Presentation, possible action, and discussion regarding the renewal of the Interlocal Agreement with the City of Bryan for Management of the Larry J. Ringer Library.

2q. Presentation, possible action, and discussion on a bid award for the annual purchase of sodium hypochlorite, the liquid-chlorine disinfection product used to treat the potable water supply at the Sandy Point Pump Station. The total recommended award is \$115,847 to DXI Industries.

Consent Item 2b was pulled for a separate vote.

(2b): *Carla Robinson*, City Attorney, provided benchmark information on the proposed proposition on even-numbered years with the Mayor and City Council serving four year term lengths for consecutive terms of no more than eight years.

MOTION: Upon a motion made by Councilmember Rektorik and a second by Councilmember Harvell, the City Council voted seven (7) for and none (0) opposed, to approve the Consent Agenda, with the exception of 2b. The motion carried unanimously.

(2b) MOTION: Upon a motion made by Councilmember Benham and a second by Councilmember Rektorik, the City Council voted six (6) for and none (0) opposed, with Councilmember Nichols abstaining, to ordinance ordering a General and Special Election to be held on November 6, 2018 for the purpose of electing a City Council Member, Place 4, a City Council Member, Place 6, and to submit proposed amendments to the City Charter to the voters; establishing early voting locations and polling places for this election; and making provisions for conducting the election. The motion carried unanimously.

REGULAR AGENDA

1. Public Hearing, presentation, possible action, and discussion regarding Ordinance No. 2018-4033 amending Appendix A, "Unified Development Ordinance," Section 12-4.2, "Official Zoning Map," of the Code of Ordinances of the City of College Station, Texas, by changing the zoning district boundaries from PDD Planned Development District to WRS Wellborn Restricted Suburban for approximately 21 acres of land located approximately 0.18 miles south from the intersection of Greens Prairie Road West and Royder Road.

Aliana Helton, Planning and Development, stated that this request is amending the zoning district boundaries on the property to rezone approximately 21 acres from PDD Planned Development District to WRS Wellborn Restricted Suburban. At the time the PDD Planned Development District was adopted, the City of College Station had not adopted the Wellborn Zoning Districts. Additionally, a portion of this tract, approximately 2 acres, was recently rezoned to WC Wellborn Restricted Suburban on May 24, 2018. Ms. Helton also stated that the site is approximately 21 acres and is proposed to be rezoned WRS Wellborn Restricted Suburban, which would allow for a maximum density of two (2) dwelling units per acre. The existing zoning district would allow for a similar density. The intent of the rezoning is allow the property owner to develop the subject 21 acres cohesively with the adjacent 34 acres that are zoned WRS Wellborn Restricted Suburban.

The Planning and Zoning Commission considered this item on July 19, 2018 and voted 6-0 to recommend approval.

At approximately 7:18 p.m., Mayor Mooney opened the Public Hearing.

Joe Guerra, Castle Gate, stated he applauds the developer for putting this plan together.

There being no further comments, the Public Hearing was closed at 7:19 p.m.

MOTION: Upon a motion made by Councilmember Brick and a second by Councilmember Moore, the City Council voted seven (7) for and none (0) opposed, to adopt Ordinance No. 2018-4033 amending Appendix A, “Unified Development Ordinance,” Section 12-4.2, “Official Zoning Map,” of the Code of Ordinances of the City of College Station, Texas, by changing the zoning district boundaries from PDD Planned Development District to WRS Wellborn Restricted Suburban for approximately 21 acres of land located approximately 0.18 miles south from the intersection of Greens Prairie Road West and Royder Road. The motion carried unanimously.

2. Presentation, possible action, and discussion regarding appointments to the Zoning Board of Adjustments.

A majority of Council appointed Zoning Board of Adjustments, Alternate James Sharp as a regular member for an unexpired term.

4. Presentation, possible action, and discussion on future agenda items and review of standing list of Council generated agenda items: A Council Member may inquire about a subject for which notice has not been given. A statement of specific factual information or the recitation of existing policy may be given. Any deliberation shall be limited to a proposal to place the subject on an agenda for a subsequent meeting.

No future agenda items were discussed.

5. Adjournment.

There being no further business, Mayor Mooney adjourned the Regular Meeting of the City Council at 7:23 p.m. on Thursday, August 9, 2018.

Karl Mooney, Mayor

ATTEST:

Tanya Smith, City Secretary



Legislation Details (With Text)

File #:	18-0516	Version:	2	Name:	Interlocal Agreement for 2018 Justice Assistance Grant (JAG) Funds.
Type:	Agreement	Status:			Consent Agenda
File created:	7/27/2018	In control:			City Council Regular
On agenda:	8/23/2018	Final action:			
Title:	Presentation, possible action, and discussion on an Interlocal Agreement (ILA) with Brazos County and the City of Bryan to apply and accept a U.S. Department of Justice 2018 Justice Assistance Grant (JAG).				
Sponsors:	Brandy Norris				
Indexes:					
Code sections:					
Attachments:	2018 JAG Interlocal Agreement 7-31-18				

Date	Ver.	Action By	Action	Result
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Presentation, possible action, and discussion on an Interlocal Agreement (ILA) with Brazos County and the City of Bryan to apply and accept a U.S. Department of Justice 2018 Justice Assistance Grant (JAG).

Relationship to Strategic Goals:

- Financially Sustainable City

Recommendation(s): Staff Recommends Council Approval

Summary:

The Edward Byrne Memorial Justice Assistance Grant (JAG) Program is the primary provider of federal criminal justice funding to state and local jurisdictions and funds all components of the criminal justice system. JAG funded projects may address crime even through the provision of services directly to individuals and/or communities by improving the effectiveness and efficiency of criminal justice systems, processes and procedures.

College Station Police Department intends to utilize this funding for the purpose of supporting local initiatives, technical assistance, training, equipment, supplies, or information technology projects in support of our community-oriented mission.

Budget & Financial Summary:

The 2018 JAG allocation for Brazos County is \$45,115. This amount is based upon a statutory JAG formula that considers the jurisdiction's share of state population and reported Part 1 violent crime statistics. The grant has no match requirement.

Individual recommended allocations designated by the Department of Justice are: Brazos County: \$0.00, Bryan: \$28,238.00 and College Station: \$16,877.00 for a total of \$45,115. Brazos County has been certified as a disparate jurisdiction. As such, all jurisdictions must enter into an Interlocal Agreement to specify an award distribution to each unit of local government in a manner that will address disparity and furthermore, must apply for funding jointly.

College Station and Bryan Police Departments have agreed to provide 15% of their recommended funding to Brazos County Sheriff's Office in an effort to address the disparity. After providing 15% to the Brazos County Sheriff's Office, the allocations are as follows: Brazos County: \$6,767.25, Bryan: \$24,002.30, College Station: \$14,345.45 for a total of \$45,115.

College Station Police Department will serve as the administering agency.

Attachments:

ILA with Brazos County and the City of Bryan

**INTERLOCAL AGREEMENT BETWEEN BRAZOS COUNTY, THE CITY OF
COLLEGE STATION, AND THE CITY OF BRYAN FOR THE 2018 BYRNE JUSTICE
ASSISTANCE GRANT (JAG) PROGRAM AWARD**

This Agreement is made and entered into by and between Brazos County, Texas (hereinafter referred to as the “County”), acting through its Commissioners’ Court; the City of College Station (hereinafter referred to as “College Station”), a Texas Home Rule Municipal Corporation, acting through its City Council; and the City of Bryan, Texas (hereinafter referred to as “Bryan”), a Texas Home Rule Municipal Corporation, acting through its City Council.

WHEREAS, the County, College Station, and Bryan wish to submit a joint application for grant funds under the U.S. Department of Justice’s 2018 Edward Byrne Memorial Justice Assistance Grant (JAG) Program; and

WHEREAS, as a condition precedent to receiving a JAG award, the County, College Station, and Bryan are required to enter into an inter-local agreement designating one joint applicant to serve as the applicant/fiscal agent for the joint funds; and

WHEREAS, College Station will serve as the applicant/fiscal agent; and

WHEREAS, Chapter 791 of the Texas Government Code, also known as the Interlocal Cooperation Act, authorizes all local governments to contract with each other to perform governmental functions or services; and

WHEREAS, the parties represent that each is independently authorized to perform the functions or services contemplated by this Agreement; and

WHEREAS, each governing body, in performing governmental functions or in paying for the performance of governmental functions hereunder, shall make that performance or those payments from current revenues legally available to that party; and

WHEREAS, each governing body finds that the performance of this Agreement is in the best interests of all parties, that the undertaking will benefit the public, and that the division of costs fairly compensates the performing party for the services or functions under this Agreement; and

WHEREAS, College Station agrees to provide the County \$6,767.25 from the JAG award for the purpose of supporting local initiatives, technical assistance, training, personnel, equipment, supplies, contractual support, information technology, research and evaluation activities that will improve or enhance law enforcement programs; and

WHEREAS, College Station agrees to provide Bryan \$24,002.30 from the JAG award for the purpose of supporting local initiatives, technical assistance, training, personnel, equipment, supplies, contractual support, information technology, research and evaluation activities that will improve or enhance law enforcement programs; and

WHEREAS, College Station shall use their \$14,345.45 from the JAG award for the purpose of supporting local initiatives, technical assistance, training, personnel, equipment, supplies, contractual support, information technology, research and evaluation activities that will improve or enhance law enforcement programs; and

WHEREAS, Bryan, College Station and the County believe it to be in their best interest to reallocate the JAG funds as described above,

NOW, THEREFORE, the parties hereto, in consideration of the mutual covenants and conditions contained herein, promise and agree as follows:

1. College Station agrees to pay the County a total of \$6,767.25 of JAG funds.
2. The County agrees to use the \$6,767.25 for the purpose of supporting local initiatives, technical assistance, training, personnel, equipment, supplies, contractual support, information technology, research and evaluation activities that will improve or enhance law enforcement programs.
3. College Station agrees to pay Bryan a total of \$24,002.30 of JAG funds.
4. Bryan agrees to use \$24,002.30 for the purpose of supporting local initiatives, technical assistance, training, personnel, equipment, supplies, contractual support, information technology, research and evaluation activities that will improve or enhance law enforcement programs.
5. College Station agrees to retain a total of \$14,345.45 of the JAG funds.
6. College Station agrees to use \$14,345.45 for the purpose of supporting local initiatives, technical assistance, training, personnel, equipment, supplies, contractual support, information technology, research and evaluation activities that will improve or enhance law enforcement programs.
7. The parties to this Agreement do not intend for any third party to obtain a right by virtue of this Agreement.
8. By entering into this Agreement, the parties do not intend to create any obligations express or implied other than those set out herein; further, this Agreement shall not create any rights in any party not a signatory hereto.
9. No party shall have the right to direct or control the conduct of the other parties with respect to the duties and obligations of each party under the terms of this Agreement.
10. Each entity shall ensure that all applicable laws and ordinances have been satisfied.

- 11. Effective Date and Term.** This Agreement shall be effective when signed by the last party who's signing makes the Agreement fully executed and will remain in full force and effect until September 30, 2021.
- 12. Indemnification.** Subject to the limitations as to damages and liability under the Texas Tort Claims Act, and without waiving its governmental immunity, each party to this Agreement agrees to hold harmless each other, its governing board, officers, agents and employees for any liability, loss, damages, claims or causes of action caused, or asserted to be caused, directly or indirectly by any other party to this Agreement, or any of its officers, agents or employees as a result of its performance under this Agreement.
- 13. Consent to Suit.** Nothing in this Agreement will be construed as a waiver or relinquishment by any party of its right to claim such exemptions, privileges and immunities as may be provided by law.
- 14. Invalidity:** If any provision of this Agreement shall be held to be invalid, illegal, or unenforceable by a court or other tribunal of competent jurisdiction, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby. The parties shall use their best efforts to replace the respective provision or provisions of this Agreement with legal terms and conditions approximating the original intent of the parties.
- 15. Written Notice.** Unless otherwise specified, written notice shall be deemed to have been duly served if delivered in person or sent by certified mail to the business address as listed herein.

BRYAN:

City Manager
City of Bryan
300 South Texas Avenue
Bryan, Texas 77803

COLLEGE STATION:

City Manager
City of College Station
P. O. Box 9960
College Station, Texas 77842

BRAZOS COUNTY:

County Judge
Brazos County
300 East 29th Street, Suite 114
Bryan, Texas 77803

- 16. Entire Agreement.** It is understood that this Agreement contains the entire agreement between the parties and supersedes any and all prior agreements, arrangements, or understandings between the parties relating to the subject matter. Nor oral understandings, statements, promises, or inducements contrary to the terms of this Agreement exist. This Agreement cannot be changed or terminated verbally. No oral agreement or conversation with any officer, agent, or employee of any party before or after the execution of this Agreement shall affect or modify any of the terms or obligations hereunder.
- 17. Amendment.** No Amendment to this Agreement shall be effective and binding unless and until it is reduced to writing and signed by duly authorized representatives of all parties.
- 18. Texas Law.** This Agreement has been made under and shall be governed by the laws of the State of Texas.

- 19. Place of Performance.** Performance and all matters related thereto shall be in Brazos County, Texas, United States of America.
- 20. Authority to Enter Contract.** Each party has the full power and authority to enter into and perform this Agreement and the person signing this Agreement on behalf of each party has been properly authorized and empowered to enter into this Agreement. The persons executing this Agreement hereby represent that they have authorization to sign on behalf of their respective corporations.
- 21. Waiver.** Failure of any party, at any time, to enforce a provision of this Agreement, shall in no way constitute a waiver of that provision, nor in anyway affect the validity of this Agreement, any part hereof, or the right of either party thereafter to enforce each and every provision hereof. No term of this Agreement shall be deemed waived or breach excused unless the waiver shall be in writing and signed by the party claimed to have waived. Furthermore, any consent to or waiver of a breach will not constitute consent to or waiver of or excuse any other different or subsequent breach.
- 22. Agreement Read.** The parties acknowledge that they have read, understand and intend to be bound by the terms and conditions of this Agreement.
- 23. Assignment.** This Agreement and the rights and obligations contained herein may not be assigned by any party without the prior written approval of the other parties to this Agreement.
- 24. Multiple Originals.** It is understood and agreed that this Agreement may be executed in a number of identical counterparts, each of which shall be deemed an original for all purposes.

EXECUTED this the _____ day of _____, 2018 by CITY OF BRYAN.

CITY OF BRYAN

By: _____
Mayor

ATTEST:

APPROVED AS TO FORM:

City Secretary

City Attorney

EXECUTED this the ____ day of _____, 2018 by CITY OF COLLEGE STATION.

CITY OF COLLEGE STATION

By: _____
Mayor

ATTEST:

City Secretary

APPROVED:

City Manager

City Attorney

Assistant City Manager/ CFO

EXECUTED this the _____ day of _____, 2018 by BRAZOS COUNTY.

BRAZOS COUNTY

By:

County Judge

ATTEST:

County Clerk

APPROVED AS TO FORM:

County Attorney

Legislation Details (With Text)

File #:	18-0526	Version:	1	Name:	PCCC Water Sales agreement
Type:	Agreement	Status:		Status:	Consent Agenda
File created:	8/4/2018	In control:		In control:	City Council Regular
On agenda:	8/23/2018	Final action:		Final action:	
Title:	Presentation, possible action, and discussion to approve a revised agreement for the City to sell reclaimed water to the Pebble Creek Country Club.				
Sponsors:	Alan Gibbs				
Indexes:					
Code sections:					
Attachments:					

Date	Ver.	Action By	Action	Result
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Presentation, possible action, and discussion to approve a revised agreement for the City to sell reclaimed water to the Pebble Creek Country Club.

Relationship to Strategic Goals: Financially Sustainable City Providing Response to Core Services and Infrastructure.

Recommendation: Staff recommends Council approval.

Summary: The Pebble Creek Country Club (PCCC) has a permit from the Texas Commission on Environmental Quality (TCEQ) to withdraw water from Carters Creek to irrigate their golf course, issued in 1991. But because that permit can be suspended during a drought (under what's called a Priority Call), the City signed an agreement with PCCC in 2011 that allows PCCC to purchase reclaimed water from Carters Creek under the City's Bed & Banks Permit, during a Priority Call. However, the TCEQ stipulated that under no circumstances is PCCC's total withdrawal to exceed 325 acre-feet per year.

The PCCC owners approached the City and requested the agreement be amended, to allow the Club to withdraw more water, because during a hot, dry year, and because they share reclaimed water with the Pebble Creek Owner's Association (PCOA), their needs sometimes exceed 325 af/yr. Staff and PCCC representatives met with TCEQ, and learned that TCEQ would approve this request, the City would simply need to send the signed agreement to TCEQ Staff, with a request to modify the City's Bed & Banks permit. TCEQ Staff advised that the Club's total withdrawal should not exceed 450 af/yr, regardless which permit is used, and both Club and City agree that this is reasonable. (Please note, the City discharges 8,000 af/yr into the two creeks.)

Basic contract terms remain the same, except that the Club is required to use all reasonable efforts to continue sharing water with the PCOA. When the Club uses the City permit, the water is priced at the standard rate for raw river water that is established by the Brazos River Authority, of \$72.00 per acre-foot, which is approximately \$0.22 per thousand gallons. This is an appropriate price, because PCCC will own and operate the equipment that withdraws the water from the creek and transmits it to the golf course. In addition, the agreement stipulates methods to measure the water quantity, and various other protections for the City.

Staff recommends approval of this agreement.

Budget & Financial Summary: None, this agreement will be a minor revenue source.

Attachment:

Agreement available in City Secretary's office

Legislation Details (With Text)

File #:	18-0546	Version:	1	Name:	Annual purchase of EMS supplies
Type:	Presentation	Status:		Status:	Agenda Ready
File created:	8/14/2018	In control:		In control:	City Council Regular
On agenda:	8/23/2018	Final action:		Final action:	
Title:	Presentation, possible action, and discussion for an annual purchase contract with Bound Tree Medical, L.L.C for EMS supplies not to exceed \$120,000.				
Sponsors:	Jonathan McMahan				
Indexes:					
Code sections:					
Attachments:	18300694.pdf				

Date	Ver.	Action By	Action	Result
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Presentation, possible action, and discussion for an annual purchase contract with Bound Tree Medical, L.L.C for EMS supplies not to exceed \$120,000.

Relationship to Strategic Goals: To provide advanced medical care to our community.

Recommendation(s): Staff recommends the approval of the Bound Tree Medical Purchase Contract - Contract #18300694

Summary: On June 14, 2018 Council approved an Interlocal Purchasing Agreement between the City of College Station and the City of Cedar Hill. The Cedar Hill ILA satisfied competitive purchasing requirements. The ILA allows the Fire Department with other Cities to obtain the best prices available and could see a potential savings of up to \$10,000 yearly on EMS supply purchases. Bound Tree Medical LLC has satisfactorily supplied the City of College Station with EMS supplies for more than seven years.

Budget & Financial Summary: Funds are budgeted in the fire department budget for this expenditure. This blanket purchase contract should provide for adequate purchasing of supplies for Fire Department's current and future needs.

Attachments: Bound Tree Medical Purchase Contract



BILL TO

City of College Station
Accounting Division
PO Box 9973
College Station, TX 77842-9973
(979) 764-3569 Fax: (979) 764-3899
VendorInvoiceEntry@cstx.gov

CONTRACT

Fiscal Year 2018

Page 1 of 2

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BOUND TREE MEDICAL LLC
23537 NETWORK PLACE
CHICAGO, IL 60673-1235
USA

THIS NUMBER MUST APPEAR ON ALL INVOICES, PACKAGES AND SHIPPING PAPERS.	
Contract #	18300694
Department	Fire Department
Type	Price Agreement
Sub Type	

Vendor Information			
Vendor Number	Vendor Contact	Vendor Email	Vendor Phone Number
1548	ACCOUNT RECEIVABLE		800-533-0523

Policy	
Start	08/23/2018
Award	
Expire	08/23/2019
Renewal	
Extended	

Notes	
Fiscal Year	2018
Project	
Percent Complete	0.00
By Date	
Encumbered	N

Year	Contract Description	Original Amount	Revised Amount	Liquidated Amount	Remaining Amount
2018	Annual EMS Supplies	\$120,000.00	\$120,000.00	\$0.00	\$120,000.00

Item#	Description/PartNo	QTY	UOM	Unit Price	Extended Price
1	This purchase contract is between the City of College Station, a Texas Home-Rule Municipal Corporation and Bound Tree Medical, LLC (Bound Tree) according to the Interlocal Purchasing Agreement between Cedar Hill and College Station (Contract No. 18300515) and the Emergency Medical Service Supplies Agreement Contract ("Cedar Hill Agreement"), between the City of Cedar Hill and Bound Tree bid number 19-0-2013, effective on February 28, 2017 and terminating on February 28, 2019.	0	EACH	\$1.00	\$120,000.00
2	College Station is responsible for issuing its own purchase orders made pursuant to the Cedar Hill Agreement and shall pay all undisputed invoices within thirty (30) days of receipt.	0	EACH	\$0.00	\$0.00
3	Products sold by Bound Tree carry only those warranties provided by their manufacturers. This warranty shall apply to both products and equipment, if any, purchased pursuant to the Cedar Hill Agreement	0	EACH	\$0.00	\$0.00

**CONTINUED ON
NEXT PAGE**

By Brandi Whittenton
Buyer

Item#	Description/PartNo	QTY	UOM	Unit Price	Extended Price
4	THERE ARE NO OTHER EXPRESSED OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. BOUND TREE'S SOLE OBLIGATION AND COLLEGE STATION'S EXCLUSIVE REMEDY FOR BREACH OF ANY WARRANTY SHALL BE, AT BOUND TREE'S OPTION, TO REPAIR OR REPLACE THE PRODUCT, OR TO ISSUE A REFUND OR CREDIT.	0	EACH	\$0.00	\$0.00
5	The parties may terminate this purchase contract with thirty (30) days' notice to the non-terminating party. If College Station breaches any terms and conditions of the Cedar Hill Agreement, Bound Tree may, at its sole discretion, immediately terminate this agreement and purchasing under this contract.	0	EACH	\$0.00	\$0.00
6	Any changes or amendments to this purchase contract must be made in writing by the parties.	0	EACH	\$0.00	\$0.00
7	This purchase contract shall continue for the duration of the Cedar Hill Agreement. If the Cedar Hill Agreement is terminated before the end of its term, this purchase contract will terminate after thirty (30) days' written notice to College Station.	0	EACH	\$0.00	\$0.00
8	Council Approval August 23, 2018	0	EACH	\$0.00	\$0.00

By Brandi Whittenton
Buyer

Total Revised	\$120,000.00
Total Original	\$120,000.00

Legislation Details (With Text)

File #: 18-0535 **Version:** 1 **Name:** UDO Amendment/Housekeeping Items

Type: Unified Development Ordinance **Status:** Agenda Ready

File created: 8/8/2018 **In control:** City Council Regular

On agenda: 8/23/2018 **Final action:**

Title: Public Hearing, presentation, possible action, and discussion regarding an ordinance amendment to Appendix A, "Unified Development Ordinance," Article 2, "Development Review Bodies", Section 2.8 "Administrator"; Article 3, "Development Review Procedures", Section 3.12 "Building Permit" and Section 3.13 "Certificate of Occupancy"; Article 5, "District Purpose Statements and Supplemental Standards", Section 5.2 "Residential Dimensional Standards"; Article 7, "General Development Standards", Section 7.3 "Off-Street Parking Standards", Section 7.6 "Landscaping and Tree Protection", and Section 7.10 "Non-Residential Architectural Standards"; and Article 8, "Subdivision Design and Improvements", Section 8.3. "General Requirements and Minimum Standards of Design for Subdivisions within the City Limits", of the Code of Ordinances of the City of College Station, Texas, to correct text omissions, references, and other clerical errors.

Sponsors: Laura Gray

Indexes:

Code sections:

Attachments: [Redlines](#)
[Ordinance](#)

Date	Ver.	Action By	Action	Result
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Public Hearing, presentation, possible action, and discussion regarding an ordinance amendment to Appendix A, "Unified Development Ordinance," Article 2, "Development Review Bodies", Section 2.8 "Administrator"; Article 3, "Development Review Procedures", Section 3.12 "Building Permit" and Section 3.13 "Certificate of Occupancy"; Article 5, "District Purpose Statements and Supplemental Standards", Section 5.2 "Residential Dimensional Standards"; Article 7, "General Development Standards", Section 7.3 "Off-Street Parking Standards", Section 7.6 "Landscaping and Tree Protection", and Section 7.10 "Non-Residential Architectural Standards"; and Article 8, "Subdivision Design and Improvements", Section 8.3. "General Requirements and Minimum Standards of Design for Subdivisions within the City Limits", of the Code of Ordinances of the City of College Station, Texas, to correct text omissions, references, and other clerical errors.

Relationship to Strategic Goals:

- Good Governance

Recommendation(s): The Planning & Zoning Commission considered this item at their August 2, 2018 meeting and voted 6-0 to recommend approval.

Summary: Case# ORDA2018-000007. The purpose of this proposed ordinance is to correct several known outstanding clerical errors, outdated references, and text omissions in the Unified Development Ordinance (UDO). These minor items were identified and compiled by the City's planning staff to put forward in this ordinance. The proposed ordinance would:

- Reestablish the Administrator's 'Final Action' list, found at UDO Sec. 2.8.B.4, by reinstating two items that were erroneously removed from the list on February 22, 2018 when City Ordinance 2018-3991 "Standards as Related to Screening, Architectural Features, and Color Palette" was enacted. The two items had been previously approved by Council. The preliminary plan authority was authorized in Ordinance 2017-3967 and the site plan authority was included with the first Unified Development Ordinance in 2003.
- Reinstate the percentage of change that would trigger the necessity to bring the building materials on an existing building's facade into compliance with the UDO. This item was modified on February 22, 2018 when City Ordinance 2018-3991 "Standards as Related to Screening, Architectural Features, and Color Palette" was enacted. The percentage had been previously approved by Council when Ordinance 2018-3970 was enacted on January 11, 2018.
- Clarify the 'Average Lot Area per Dwelling Unit', found in the Residential Dimensional Standard Table of UDO Sec. 5.2, by adding the text 'Min.' to the average lot area per dwelling unit text. Planning staff have administered this standard as a minimum since its inception in 2013.
- Remove a typographical error (double comma) from UDO Sec. 7.3 and remove outdated International Building Code references from Sec.3.12 (A.) Sec. 3.13 (A), (C.), and (D.).
- Remove an outdated landscape point calculation example and replace it with an updated example.
- Complete the list of zoning districts where cluster subdivisions are allowed. The WE Wellborn Estate and WRS Wellborn Restricted Suburban zoning districts were not included in the UDO Sec 8.3 H.4.c "Where Allowed" list when Ordinance 2016-3792 was enacted on July 28, 2016. Although these districts were missing from the "Where Allowed" list, the ordinance clearly allowed for cluster subdivisions in these districts as evidenced by the permitted use table in UDO Sec 6.3.C and the Specific District Standards discussion in UDO Sec 8.3.H.4.e.

Budget & Financial Summary: N/A

Attachments:

1. Section 2.8.Administrator Ordinance Redline
2. Section 3.12. Building Permit Ordinance Redline
3. Section 3.13 Certificate of Occupancy Ordinance Redline
4. Section 5.2 Residential Dimensional Standards Ordinance Redline
5. Section 7.3 Off-Street Parking Standards Ordinance Redline
6. Section 7.6 Landscaping and Tree Protection Ordinance Redline
7. Section 7.10 Non-Residential Architectural Standards Ordinance Redline
8. Section 8.3 General Requirements and Minimum Standards of Design for Subdivisions within

the City Limits Ordinance Redline
9. Ordinance

Sec. 2.8. - Administrator.

B. Powers and Duties.

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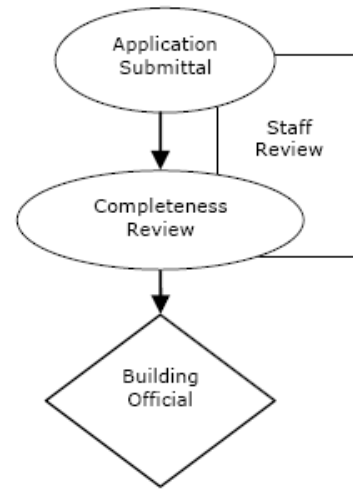
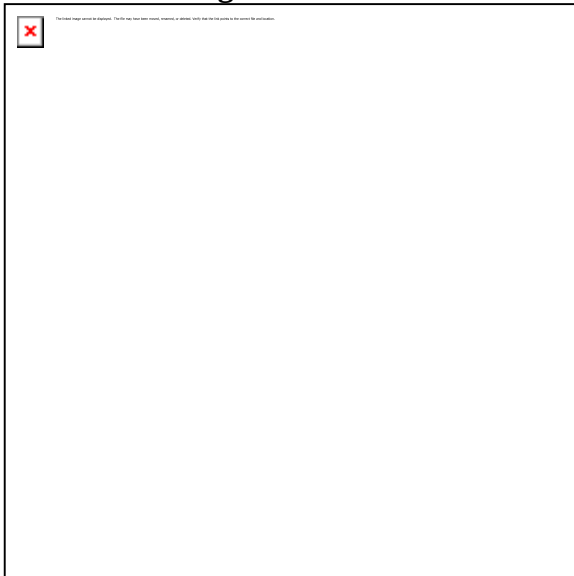
4. Final Action.

The Administrator shall review and take final action on the following:

- a. Sign permits;
- ~~b.~~ b. Site plans;
- ~~b.~~ c. Architectural reviews;
- ~~c.~~ d. Administrative adjustments;
- e. Preliminary Plans as set forth in Section 3.4, Plat Review, of this UDO;
- ~~d.~~ f. Minor and amending plats;
- ~~e.~~ g. Determination of building plot (Section 7.2, General Provisions);
- ~~f.~~ h. Certificate of Appropriateness Routine Maintenance Work reviews;
- ~~g.~~ i. Determination regarding applicability of plat requirements; and
- ~~h.~~ j. Alternative parking plans (Section 7.3, Off-Street Parking).

Sec. 3.12. - Building Permit.

A. Building Permit Required.



No building or other structure shall hereafter be erected, moved, added to, structurally altered, repaired, demolished, or occupancy changed without a permit issued by the Building Official except in conformity with the provisions of this Section and the ~~2006~~ International Building Code as adopted and amended by the City, unless otherwise provided for in the City of College Station Code of Ordinances. No Building Permit issued under the provisions of this Article for land use or construction in the City shall be considered valid unless signed by the Building Official.

Sec. 3.13. - Certificate of Occupancy.

A. Applicability.

A Certificate of Occupancy shall be required for any of the following:

1. Occupancy and use of a building hereafter erected or enlarged;
2. Change in use of an existing building to a different Use Category;
3. Any change in a nonconforming use or structure; or
4. As required by the 2006 International Building Code as adopted and amended, Section 110.

B. Application.

Once all required building inspections have been reviewed by the Building Official and he finds no violation of the provisions of the Code, the Building Official shall issue a Certificate of Occupancy for the structure or use.

C. Review and Action by Building Official.

Upon the request for a Certificate of Occupancy, the Building Official shall inspect the use or structure. If the Building Official determines that the use or structure complies with all applicable provisions of the 2006 International Building Code as adopted and amended and this UDO, a Certificate of Occupancy shall be issued.

D. Temporary Certificate of Occupancy.

Pending the issuance of a Certificate of Occupancy, a Temporary Certificate of Occupancy may be issued by the Building Official. The Temporary Certificate of Occupancy shall be valid for a period established by the Building Official, pending completion of an addition or during partial occupancy of a structure and as provided in Section 110 of the 2006 International Building Code as adopted and amended.

Sec. 5.2. - Residential Dimensional Standards.

The following table establishes dimensional standards that shall be applied within the Residential Zoning Districts, unless otherwise identified in this UDO.

Residential Zoning Districts												
	R	WE	E(N)(P)	WRS	RS(J)	GS(J)(P)	T	D	MHP	MF	MU	Accessory Structures
Non-Clustered Residential Zoning Districts												
Min. Average Lot Area per Dwelling Unit (DU)	3 acres Average	2 acres	1 Acre	20,000 SF	10,000 SF Average	5,000 SF	2,000 SF	3,500 SF	>(L)	None	None	Refer to Section 6.5, Accessory Uses(L)
Absolute Min. Lot Area per Dwelling Unit (DU)	2 Acres	2 acres	1 Acre	20,000SF	6,500 SF	5,000 SF	2,000 SF	3,500 SF		None	None	
Min. Lot Width	None	100 (M)	100'(M)	70'	70'	50'	None	35'/DU(E)		None	None	
Min. Lot Depth	None	None	None	None	None	100'	None	100'		None	None	
Min. Front Setback(H)	50'	30'	30'	25'	25'	25'(D)	25'(D)	25'(D)		15'	None	
Max. Front Setback	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	15'(O)	
Min. Side Setback	20'	10'	10'	7.5'	7.5'	7.5'	(A)	7.5'(C)		(A)(B)	None	
Min. Side Street Setback	15'	15'	15'	15'	15'	15'	15'	15'		15'	None	
Max. Side Street Setback	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	15'(O)	
Min. Side Setback between Structures(B)	N/A	15'	15'	15'	15'	15'	7.5'	15'		7.5'	None	
Min. Rear Setback(L)	50'	20'	20'	20'	20'	20'	20'	20'(F)		20'	20'	
Max. Height	35'(G)(K)(L)	35'(G)(K)	35'(G)(K)(L)	35'(G)(K)	35'(G)(K)(L)	2.5 Stories/35'(G)(K)(L)	35'(G)(K)(L)	2.5 Stories/35'(G)(K)(L)		(G)(L)	(G)(L)	
Minimum Number of Stories	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	2 Stories	
Max. Dwelling Units/Acre (Subdivision Gross)	0.33	0.5	1.0	2.0	4.00	8.0	14.0	12.0	10.0	30.0	N/A	N/A

Min. Dwelling Units/Acre	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A	
Clustered Residential Zoning Districts												
<u>Min.</u> Average Lot Area per Dwelling Unit (DU)	N/A	1 Acre	20,000 SF Average	8,000 SF	8,000 SF Average	3,750 SF (P)	N/A	N/A	N/A	N/A	N/A	N/A
Absolute Min. Lot Area per Dwelling Unit (DU)		1 Acre	10,000 SF	8,000 SF	6,500 SF	3,750 SF						
Min. Lot Width		100' (M)	100'(M)	None	None	None						
Min. Lot Depth		None	None	None	None	None						
Min. Front Setback(H)		Refer to Section 8.3.H.4, Cluster Development, Specific District Standards										
Min. Side Setback												
Min. Street Side Setback												
Min. Side Setback between Structures(B)												
Min. Rear Setback(L)												
Max. Height		35'(G)(K)	35'(G)(K)	35'(G)(K)	35'(G)(K)	2.5 Stories/35'(G)(K)(L)						
Max. Dwelling Units/Acre (Subdivision Gross)		0.5	1.0	2.0	4.00	8.0						

Notes :

(A) A minimum side setback of seven and one-half (7.5) feet is required for each building or group of contiguous buildings.

(B) Lot line construction on interior lots with no side yard or setback is allowed only where the building is covered by fire protection on the site or by dedicated right-of-way or easement.

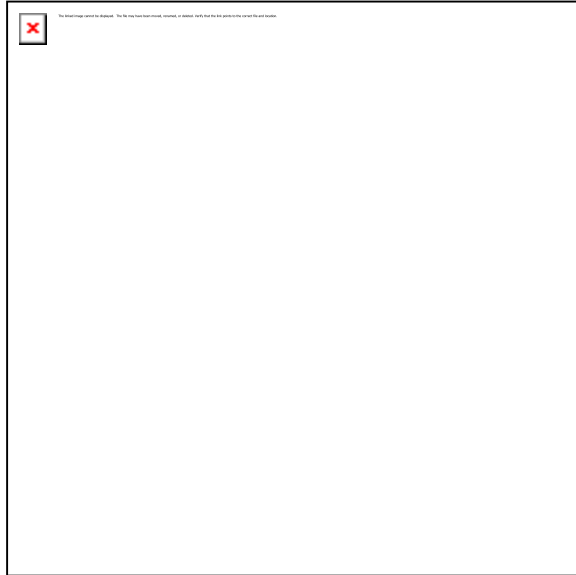
(C) Zero lot line construction of a residence is allowed where property on both sides of a lot line is owned and/or developed simultaneously by single party. Development under lot line construction requires prior approval by the Zoning Official. In no case shall a single-family residence or duplex be built within fifteen (15) feet of another primary structure. See Article 8, Subdivision Design and Improvements, for more information.

(D) Minimum front setback may be reduced to fifteen (15) feet when approved rear access is provided, or when side yard or rear yard parking is provided.

- (E) The minimum lot width for a duplex dwelling may be reduced to thirty (30) feet per dwelling unit when all required off-street parking is provided in the rear or side yard.
- (F) Minimum rear setback may be reduced to fifteen (15) feet when parking is provided in the front yard or side yard.
- (G) Shall abide by Section 7.2.H, Height.
- (H) Reference Section 7.4.2.D.1.e for lots created by plat prior to July 15, 1970 and designated as Neighborhood Conservation in the Comprehensive Plan Future Land Use and Character Map.
- (I) Reference Section 7.2.D.1.b for lots with approved rear access.
- (J) For areas within a Single-Family Overlay District, reference the Neighborhood Prevailing Standards Overlay Districts Section in Article 5 or the Ordinance authorizing the rezoning for Neighborhood Conservation Overlay Districts.
- (K) Public, civic, and institutional structures shall have a maximum building height of fifty (50) feet in these districts.
- (L) Reference Easterwood Field Airport Zoning Ordinance regarding height limitations.
- (M) In subdivisions built to rural street standards, lots shall be a minimum of one hundred (100) feet in width. There is no minimum lot width in cluster subdivisions built to urban street standards.
- (N) Estate lots that are part of a subdivision existing on or before September 12, 2013 are not permitted to use Cluster Development Standards without rezoning approval, which incorporates the entire subdivision.
- (O) For MU zoned properties, maximum side street and front setbacks may be measured from the edge of a public easement when it is in excess of the maximum setback. Maximum setbacks may be increased to up to eighty-five (85) feet to accommodate a parking lot between the structure and the street. Maximum setback requirements may be fulfilled through the use of plazas, outdoor dining, and bicycle parking.
- (P) Reference Section 8.3.H.4.e when using the cluster option in the Wellborn Community Plan area.

Section 7.3 Off-Street Parking Standards.

C. Dimensions, Access, and Location.



-
3. For all detached single-family uses other than as set forth in subsection 2 above, at the time of construction, reconstruction, or addition to the number of existing bedrooms, parking shall be located in the areas described below:

Section 7.6 Landscaping and Tree Protection

.....

E. Landscape/Streetscape Plan Requirements

9. Landscape Information.

- Landscape points required for site and calculations shown in the landscape legend.
- A legend showing the size, type (canopy, non-canopy, shrub) and points claimed for proposed landscaping.
- Location of landscape plants on plan identified by a symbol defined in a landscape legend (see sample legend below).

City of College Station SAMPLE LEGEND LANDSCAPING POINT CALCULATIONS					
<u>SYMBOL</u>	<u>SIZE</u>	<u>NAME & TYPE</u>	<u>QUANTITY</u>	<u>POINT VALUE</u>	<u>POINT</u>
	8" AND LARGER EXISTING W/BARRICADE	LIVE OAK TREE (Quercus Virginiana) Canopy tree	2	300	600
	4" TO 8" AND LARGER EXISTING W/BARRICADE	LIVE OAK TREE (Quercus Virginiana) Canopy tree	13	200	2,600
	2" TO 14.5" CALIPER EXISTING W/O BARRICADE	LIVE OAK TREE (Quercus Virginiana) Canopy tree	8	35	280
	1.25 " CALIPER AND LARGER	TREE CREPE MYRTLE (Lagerstroemia indica) Non-canopy tree	6 (NEW)	40	240
	5 GAL	WAX LEAF LIGUSTRUM (Ligustrum texanum) Shrub	46 (NEW)	10	460
NOTE: Symbols are for reference. Any symbols used must be distinguishable at any scale.					
BARRICADE FOR INDICATED TREES TO BE CONSTRUCTED WITH 48" HIGH ORANGE PLASTIC CONSTRUCTION NETTING AND SECURED TO STEEL T-POSTS. BARRICADE TO BE PLACED IN A CIRCLE AROUND INDICATED TREES A RADIAL DISTANCE OF 1' FOR EVERY 1" CALIPER OF TREE. BARRICADE MUST BE IN PLACE PRIOR TO ANY DEVELOPMENT ACTIVITY AS WELL AS THROUGHOUT THE CONSTRUCTION PROCESS.					
STREETSCAPE: $(136.57' / 50) \times 300 \text{ PTS} = 820 \text{ PTS}$ $136.57\text{-LINEAR FEET} \times 6 = 819.42 = 820 \text{ POINTS}$ $(136.57' / 25) = 6 \text{ CANOPY TREES}$ $136.57\text{-LINEAR FEET} / 25 = 5.46 = 6 \text{ CANOPY TREES}$					
POINTS PER PROJECT AREA:					

26,416.3 SQUARE FEET OF SITE AREA

$26,416.3 / 1,000 = 26.42$

$26.42 \times 30 = 792.6 = 793$ POINTS

TOTAL POINTS REQUIRED: 1,613

Section 7.10 Non-Residential Architectural Standards.

C. Standards for Non-Residential Structures.

.....

3. Building Mass and Design.

.....

e. Roof and Roofline Design.

.....

4. Building Materials.

.....

- e. Existing buildings may continue to utilize materials other than those listed provided that any material replacement is for maintenance purposes only and the existing material is continued. Any material change or replacement of more than ~~ten (10)~~ fifty (50) percent of the total area of a façade, including on a cumulative basis, shall require that all building materials be brought into compliance on that façade.

Section 8.3 General Requirements and Minimum Standards of design for Subdivisions within the City Limits.

H. Lots.

.....

4. Cluster Development.

.....

c. Where Allowed.

Cluster developments are allowed in residential WE Wellborn Estate, E Estate, RS Restricted Suburban, WRS Wellborn Restricted Suburban, and GS General Suburban zoning districts.

ORDINANCE NO. _____

AN ORDINANCE AMENDING APPENDIX A, “UNIFIED DEVELOPMENT ORDINANCE”, ARTICLE 2, “DEVELOPMENT REVIEW BODIES”, SECTION 2.8, “ADMINISTRATOR”, ARTICLE 3, “DEVELOPMENT REVIEW PROCEDURES,” SECTION 3.12 “BUILDING PERMIT,” AND SECTION 3.13 “CERTIFICATE OF OCCUPANCY”; ARTICLE 5, “DISTRICT PURPOSE STATEMENTS AND SUPPLEMENTAL STANDARDS”, SECTION 5.2 “RESIDENTIAL DIMENSIONAL STANDARDS”; ARTICLE 7, “GENERAL DEVELOPMENT STANDARDS”, SECTION 7.3 “OFF-STREET PARKING STANDARDS”, SECTION 7.6 LANDSCAPING AND TREE PROTECTION, AND SECTION 7.10 NON-RESIDENTIAL ARCHITECTURAL STANDARDS; AND ARTICLE 8, “SUBDIVISION DESIGN AND IMPROVEMENTS,” SECTION 8.3. “GENERAL REQUIREMENTS AND MINIMUM STANDARDS OF DESIGN FOR SUBDIVISIONS WITHIN THE CITY LIMITS” OF THE CODE OF ORDINANCES OF THE CITY OF COLLEGE STATION, TEXAS, BY AMENDING CERTAIN SECTIONS TO CORRECT MINOR TEXT OMISSIONS, OUTDATED REFERENCES, AND CLERICAL ERRORS; PROVIDING A SEVERABILITY CLAUSE; DECLARING A PENALTY; AND PROVIDING AN EFFECTIVE DATE.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF COLLEGE STATION, TEXAS:

PART 1: That Appendix A, “Unified Development Ordinance,” Article 2, “Development Review Bodies”, Section 2.8 “Administrator”; Article 3, “Development Review Procedures”, Section 3.12 “Building Permit” and Section 3.13 “Certificate of Occupancy”; Article 5, “District Purpose Statements and Supplemental Standards”, Section 5.2 “Residential Dimensional Standards”; Article 7, “General Development Standards”, Section 7.3 “Off-Street Parking Standards”, Section 7.6 “Landscaping and Tree Protection”, and Section 7.10 “Non-Residential Architectural Standards”; and Article 8, “Subdivision Design and Improvements”, Section 8.3. “General Requirements and Minimum Standards of Design for Subdivisions within the City Limits”, of the Code of Ordinances of the City of College Station, Texas, be amended as set out in **Exhibits “A” through “H”** and attached hereto and made a part of this Ordinance for all purposes.

PART 2: If any provision of this Ordinance or its application to any person or circumstances is held invalid or unconstitutional, the invalidity or unconstitutionality does not affect other provisions or application of this Ordinance or the Code of Ordinances of the City of College Station, Texas, that can be given effect without the invalid or unconstitutional provision or application, and to this end the provisions of this Ordinance are severable.

PART 3: That any person, corporation, organization, government, governmental subdivision or agency, business trust, estate, trust, partnership, association and any other legal entity violating any of the provisions of this Ordinance shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punishable by a fine of not less

than twenty five dollars (\$25.00) and not more than five hundred dollars (\$500.00) or more than two thousand dollars (\$2,000) for a violation of fire safety, zoning, or public health and sanitation ordinances, other than the dumping of refuse. Each day such violation shall continue or be permitted to continue, shall be deemed a separate offense.

PART 4: This Ordinance is a penal ordinance and becomes effective ten (10) days after its date of passage by the City Council, as provided by City of College Station Charter Section 35.

PASSED, ADOPTED and APPROVED this _____ day of _____, 20__.

ATTEST:

APPROVED:

City Secretary

Mayor

APPROVED:

City Attorney

Exhibit A

That Appendix A, “Unified Development Ordinance,” Article 2, “Development Review Bodies,” Section 2.8, “Administrator,” Subsection 2.8.4. “Final Action” of the Code of Ordinances of the City of College Station, Texas, is hereby amended to read as follows:

4. Final Action.

The Administrator shall review and take final action on the following:

- a.** Sign permits;
- b.** Site plans;
- c.** Architectural reviews;
- d.** Administrative adjustments;
- e.** Preliminary Plans as set forth in Section 3.4, Plat Review, of this UDO;
- f.** Minor and amending plats;
- g.** Determination of building plot (Section 12-7.2, General Provisions);
- h.** Certificate of Appropriateness Routine Maintenance Work reviews;
- i.** Determination regarding applicability of plat requirements; and
- j.** Alternative parking plans (Section 12-7.3, Off-Street Parking).

Exhibit B

That Appendix A, “Unified Development Ordinance,” Article 3, “Development Review Procedures,” Section 3.12, “Building Permit”, Subsection 3.12 A. “Building Permit Required” of the Code of Ordinances of the City of College Station, Texas, is hereby amended to read as follows:

A. Building Permit Required.

No building or other structure shall hereafter be erected, moved, added to, structurally altered, repaired, demolished, or occupancy changed without a permit issued by the Building Official except in conformity with the provisions of this Section and the International Building Code as adopted and amended by the City, unless otherwise provided for in the City of College Station Code of Ordinances. No Building Permit issued under the provisions of this Article for land use or construction in the City shall be considered valid unless signed by the Building Official.

Exhibit C

That Appendix A, “Unified Development Ordinance,” Article 3, “Development Review Procedures,” Section 3.13, “Certificate of Occupancy”, Subsection 3.13. A. “Applicability” of the Code of Ordinances of the City of College Station, Texas, is hereby amended to read as follows:

A. Applicability.

A Certificate of Occupancy shall be required for any of the following:

1. Occupancy and use of a building hereafter erected or enlarged;
2. Change in use of an existing building to a different Use Category;
3. Any change in a nonconforming use or structure; or
4. As required by the International Building Code as adopted and amended, Section 110.

That Appendix A, “Unified Development Ordinance,” Article 3, “Development Review Procedures,” Section 3.13, “Certificate of Occupancy”, Subsection 3.13. C. “Review and Action by Building Official” of the Code of Ordinances of the City of College Station, Texas, is hereby amended to read as follows:

C. Review and Action by Building Official.

Upon the request for a Certificate of Occupancy, the Building Official shall inspect the use or structure. If the Building Official determines that the use or structure complies with all applicable provisions of the International Building Code as adopted and amended and this UDO, a Certificate of Occupancy shall be issued.

That Appendix A, “Unified Development Ordinance,” Article 3, “Development Review Procedures,” Section 3.13, “Certificate of Occupancy”, Subsection 3.13. D. “Temporary Certificate of Occupancy” of the Code of Ordinances of the City of College Station, Texas, is hereby amended to read as follows:

D. Temporary Certificate of Occupancy.

Pending the issuance of a Certificate of Occupancy, a Temporary Certificate of Occupancy may be issued by the Building Official. The Temporary Certificate of Occupancy shall be valid for a period established by the Building Official, pending completion of an addition or during partial occupancy of a structure and as provided in Section 110 of the International Building Code as adopted and amended.

Exhibit D

That Appendix A, “Unified Development Ordinance,” Article 5, “District Purpose Statements and Supplemental Standards,” Section 5.2 “Residential Dimensional Standards” Dimensional Standard Table of the Code of Ordinances of the City of College Station, Texas, is hereby amended to read as follows:

Sec. 5.2 Residential Dimensional Standards.

The following table establishes dimensional standards that shall be applied within the Residential Zoning Districts, unless otherwise identified in this UDO.

Residential Zoning Districts												
	R	WE	E(N)(P)	WRS	RS(J)	GS(J)(P)	T	D	MHP	MF	MU	Accessory Structures
Non-Clustered Residential Zoning Districts												
Min. Average Lot Area per Dwelling Unit (DU)	3 acres Average	2 acres	1 Acre	20,000 SF	10,000 SF Average	5,000 SF	2,000 SF	3,500 SF	>(L)	None	None	Refer to Section 6.5, Accessory Uses(L)
Absolute Min. Lot Area per Dwelling Unit (DU)	2 Acres	2 acres	1 Acre	20,000SF	6,500 SF	5,000 SF	2,000 SF	3,500 SF		None	None	
Min. Lot Width	None	100 (M)	100'(M)	70'	70'	50'	None	35'/DU(E)		None	None	
Min. Lot Depth	None	None	None	None	None	100'	None	100'		None	None	
Min. Front Setback(H)	50'	30'	30'	25'	25'	25'(D)	25'(D)	25'(D)		15'	None	
Max. Front Setback	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	15'(O)	
Min. Side Setback	20'	10'	10'	7.5'	7.5'	7.5'	(A)	7.5'(C)		(A)(B)	None	
Min. Side Street Setback	15'	15'	15'	15'	15'	15'	15'	15'		15'	None	
Max. Side Street Setback	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	15'(O)	
Min. Side Setback between Structures(B)	N/A	15'	15'	15'	15'	15'	7.5'	15'		7.5'	None	
Min. Rear Setback(L)	50'	20'	20'	20'	20'	20'	20'	20'(F)		20'	20'	

Max. Height	35'(G)(K)(L)	35'(G)(K)	35'(G)(K)(L)	35'(G)(K)	35'(G)(K)(L)	2.5 Stories/35'(G)(K)(L)	35'(G)(K)(L)	2.5 Stories/35'(G)(K)(L)		(G)(L)	(G)(L)	N/A	
Minimum Number of Stories	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	2 Stories		
Max. Dwelling Units/Acre (Subdivision Gross)	0.33	0.5	1.0	2.0	4.00	8.0	14.0	12.0	10.0	30.0	N/A		
Min. Dwelling Units/Acre	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A		
Clustered Residential Zoning Districts													
Min. Average Lot Area per Dwelling Unit (DU)	N/A	1 Acre	20,000 SF Average	8,000 SF	8,000 SF Average	3,750 SF (P)	N/A	N/A	N/A	N/A	N/A	N/A	
Absolute Min. Lot Area per Dwelling Unit (DU)		1 Acre	10,000 SF	8,000 SF	6,500 SF	3,750 SF							
Min. Lot Width		100' (M)	100'(M)	None	None	None							
Min. Lot Depth		None	None	None	None	None							
Min. Front Setback(H)		Refer to Section 8.3.H.4, Cluster Development, Specific District Standards											
Min. Side Setback													
Min. Street Side Setback													
Min. Side Setback between Structures(B)													
Min. Rear Setback(L)													
Max. Height		35'(G)(K)	35'(G)(K)	35'(G)(K)	35'(G)(K)	2.5 Stories/35'(G)(K)(L)							
Max. Dwelling Units/Acre (Subdivision Gross)	0.5	1.0	2.0	4.00	8.0								

Notes :

- (A) A minimum side setback of seven and one-half (7.5) feet is required for each building or group of contiguous buildings.
- (B) Lot line construction on interior lots with no side yard or setback is allowed only where the building is covered by fire protection on the site or by dedicated right-of-way or easement.
- (C) Zero lot line construction of a residence is allowed where property on both sides of a lot line is owned and/or developed simultaneously by single party. Development under lot line construction requires prior approval by the Zoning Official. In no case shall a single-family residence or duplex be built within fifteen (15) feet of another primary structure. See Article 8, Subdivision Design and Improvements, for more information.
- (D) Minimum front setback may be reduced to fifteen (15) feet when approved rear access is provided, or when side yard or rear yard parking is provided.
- (E) The minimum lot width for a duplex dwelling may be reduced to thirty (30) feet per dwelling unit when all required off-street parking is provided in the rear or side yard.
- (F) Minimum rear setback may be reduced to fifteen (15) feet when parking is provided in the front yard or side yard.
- (G) Shall abide by Section 7.2.H, Height.
- (H) Reference Section 7.2.D.1.e for lots created by plat prior to July 15, 1970 and designated as Neighborhood Conservation in the Comprehensive Plan Future Land Use and Character Map.
- (I) Reference Section 7.2.D.1.b for lots with approved rear access.
- (J) For areas within a Single-Family Overlay District, reference the Neighborhood Prevailing Standards Overlay Districts Section in Article 5 or the Ordinance authorizing the rezoning for Neighborhood Conservation Overlay Districts.
- (K) Public, civic, and institutional structures shall have a maximum building height of fifty (50) feet in these districts.
- (L) Reference Easterwood Field Airport Zoning Ordinance regarding height limitations.
- (M) In subdivisions built to rural street standards, lots shall be a minimum of one hundred (100) feet in width. There is no minimum lot width in cluster subdivisions built to urban street standards.
- (N) Estate lots that are part of a subdivision existing on or before September 12, 2013 are not permitted to use Cluster Development Standards without rezoning approval, which incorporates the entire subdivision.
- (O) For MU zoned properties, maximum side street and front setbacks may be measured from the edge of a public easement when it is in excess of the maximum setback. Maximum setbacks may be increased to up to eighty-five (85) feet to accommodate a parking lot between the structure and the street. Maximum setback requirements may be fulfilled through the use of plazas, outdoor dining, and bicycle parking.
- (P) Reference Section 8.3.H.4.e when using the cluster option in the Wellborn Community Plan area.

Exhibit E

That Appendix A, “Unified Development Ordinance,” Article 7, “General Development Standards,” Section 7.3 “Off-Street Parking Standards,” Subpart C.3. of the Code of Ordinances of the City of College Station, Texas, is hereby amended to read as follows:

3. For all detached single-family uses other than as set forth in subsection 2 above, at the time of construction, reconstruction, or addition to the number of existing bedrooms, parking shall be located in the areas described below:
 - a. Anywhere on the lot behind the structure with no limit on the size of the area. Parking located behind the structure shall be screened by a solid hedge wall, fence, or wall, at least six (6) feet in height. All solid hedge walls shall be one-hundred (100) percent opaque. All shrubs planted for a hedge wall shall be a minimum of 15 gallons each and evergreen;
 - b. Anywhere in the side yards of the lot with no limit on the size of the area; and,
 - c. Any area located in front of the primary structure not to exceed a size equivalent to fifty (50) percent of the front area. The front area is defined as the area of the lot within the side lot lines, the front plane of the primary structure and the public right-of-way (see graphic below). The driveway area shall be included in this calculation.

Exhibit F

That Appendix A, “Unified Development Ordinance,” Article 7, “General Development Standards,” Section 7.6 “Landscaping and Tree Protection,” Subpart E.9. of the Code of Ordinances of the City of College Station, Texas, is hereby amended to read as follows:

9. Landscape Information.

- a.** Landscape points required for site and calculations shown in the landscape legend.
- b.** A legend showing the size, type (canopy, non-canopy, shrub) and points claimed for proposed landscaping.
- c.** Location of landscape plants on plan identified by a symbol defined in a landscape legend (see sample legend below).

City of College Station SAMPLE LEGEND LANDSCAPING POINT CALCULATIONS					
<u>SYMBOL</u>	<u>SIZE</u>	<u>NAME & TYPE</u>	<u>QUANTITY</u>	<u>POINT VALUE</u>	<u>POINT</u>
	8" AND LARGER EXISTING W/BARRICADE	LIVE OAK TREE (Quercus Virginiana) Canopy tree	2	300	600
	4" TO 8" AND LARGER EXISTING W/BARRICADE	LIVE OAK TREE (Quercus Virginiana) Canopy tree	13	200	2,600
	2" TO 14.5" CALIPER EXISTING W/O BARRICADE	LIVE OAK TREE (Quercus Virginiana) Canopy tree	8	35	280
	1.25 " CALIPER AND LARGER	TREE CREPE MYRTLE (Lagerstroemia indica) Non-canopy tree	6 (NEW)	40	240
	5 GAL	WAX LEAF LIGUSTRUM (Ligustrum texanum) Shrub	46 (NEW)	10	460
NOTE: Symbols are for reference. Any symbols used must be distinguishable at any scale.					
BARRICADE FOR INDICATED TREES TO BE CONSTRUCTED WITH 48" HIGH ORANGE PLASTIC CONSTRUCTION NETTING AND SECURED TO STEEL T-POSTS. BARRICADE TO BE PLACED IN A CIRCLE AROUND INDICATED TREES A RADIAL DISTANCE OF 1' FOR EVERY 1" CALIPER OF TREE. BARRICADE MUST BE IN PLACE PRIOR TO ANY DEVELOPMENT ACTIVITY AS WELL AS THROUGHOUT THE CONSTRUCTION PROCESS.					

STREETSCAPE:

136.57-LINEAR FEET x 6 = 819.42 = 820 POINTS

136.57-LINEAR FEET / 25 = 5.46 = 6 CANOPY TREES

POINTS PER PROJECT AREA:

26,416.3 SQUARE FEET OF SITE AREA

26,416.3 / 1,000 = 26.42

26.42 x 30 = 792.6 = 793 POINTS

TOTAL POINTS REQUIRED: 1,613

Exhibit G

That Appendix A, “Unified Development Ordinance,” Article 7, “General Development Standards,” Section 7.10. “Non-Residential Architectural Standards” Subpart 7.10 C.3.e.4. “Building Materials” of the Code of Ordinances of the City of College Station, Texas, is hereby amended to read as follows:

- e. Existing buildings may continue to utilize materials other than those listed provided that any material replacement is for maintenance purposes only and the existing material is continued. Any material change or replacement of more than fifty (50) percent of the total area of a façade, including on a cumulative basis, shall require that all building materials be brought into compliance on that façade.

Exhibit H

That Appendix A, “Unified Development Ordinance,” Article 8, “Subdivision Design and Improvements,” Section 8.3. “General Requirements and Minimum Standards of Design for Subdivisions within the City Limits” Subpart 8.3 H. 4. C. “Where Allowed” of the Code of Ordinances of the City of College Station, Texas, is hereby amended to read as follows:

c. Where Allowed.

Cluster developments are allowed in residential WE Wellborn Estate, E Estate, RS Restricted Suburban, WRS Wellborn Restricted Suburban, and GS General Suburban zoning districts.

Legislation Details (With Text)

File #:	18-0538	Version:	2	Name:	Butler Tract Rezoning
Type:	Rezoning	Status:		Status:	Agenda Ready
File created:	8/9/2018	In control:		In control:	City Council Regular
On agenda:	8/23/2018	Final action:		Final action:	
Title:	Public Hearing, presentation, possible action, and discussion regarding an ordinance amending Appendix A, "Unified Development Ordinance," Article 4, "Zoning Districts," Section 4.2 "Official Zoning Map," of the Code of Ordinances of the City of College Station, Texas by changing the zoning district boundaries from R Rural and GS General Suburban to GC General Commercial on approximately 16.9 acres of land generally located at the southeast intersection of General Parkway and Holleman Drive South, along Old Wellborn Road.				
Sponsors:	Rachel Lazo				
Indexes:					
Code sections:					
Attachments:	Background Information Vicinity Aerial SAM Rezoning Exhibit Zoning Map Application TIA 2 Ordinance with Condition Ordinance without Condition				

Date	Ver.	Action By	Action	Result
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Public Hearing, presentation, possible action, and discussion regarding an ordinance amending Appendix A, "Unified Development Ordinance," Article 4, "Zoning Districts," Section 4.2 "Official Zoning Map," of the Code of Ordinances of the City of College Station, Texas by changing the zoning district boundaries from R Rural and GS General Suburban to GC General Commercial on approximately 16.9 acres of land generally located at the southeast intersection of General Parkway and Holleman Drive South, along Old Wellborn Road.

Relationship to Strategic Goals:

- Good Governance
- Financially Sustainable City
- Core Services and Infrastructure
- Diverse Growing Economy

Recommendation(s): The Planning and Zoning Commission considered this item on August 2, 2018 and voted 5-0 to recommend approval with the condition that the development does not exceed 198 trips in the PM peak hour, as identified by scenario 3 in the TIA until a second point of access is provided. Case #REZ2018-000011

Summary: The applicant has requested a rezoning for approximately 16.9 acres of land from R Rural and GS General Suburban to GC General Commercial.

REZONING REVIEW CRITERIA

1. **Whether the proposal is consistent with the Comprehensive Plan:** The subject area is designated on the Comprehensive Plan Future Land Use and Character Map as Urban and in Growth Area V. The Urban land use designation is generally for areas that should have a very intense level of development activities. These areas will tend to consist of townhomes, duplexes, and high-density apartments. General commercial and office uses, business parks, and vertical mixed-use may also be permitted within growth and redevelopment areas. For the Urban area located within Growth Area V, the Comprehensive Plan specifically states that intense land use activities including general commercial, office uses, townhomes, high-density apartments, and vertical mixed-use are appropriate. The property is currently zoned R Rural, a zoning district for low-density acreage home sites, with a small amount of GS General Suburban, a zoning district for medium-density single family use. The proposed zoning of General Commercial would better suit the current designation on the Comprehensive Plan for more intense uses.
2. **Whether the uses permitted by the proposed zoning district will be appropriate in the context of the surrounding area:** The properties to the south and east of the subject property are zoned R Rural and currently undeveloped. They were designated R Rural upon annexation, but the Comprehensive Plan's Future Land Use and Character Map shows this area as Urban and Growth Area V, which allows for very dense development. The property to the west is currently developed with multi-family structures. The property to the north, across FM 2154, is zoned GC General Commercial and currently under construction for various commercial uses. This proposed zoning change would be compatible with the adjacent properties.
3. **Whether the property to be rezoned is physically suitable for the proposed zoning district:** The property is currently zoned R Rural and GS General Suburban. Rural uses would not be ideal here due to the size, location, and close proximity of high-classification roads and commercial uses. The size of the tract would allow for approximately 8 rural, single-family homes, which is significantly less dense than projected in the City's Comprehensive Plan, and would not be compatible with the adjacent multi-family development. However, the proposed zoning district would allow for higher-density residential and commercial uses, which would be more appropriate for a tract immediately abutting a 6-lane major arterial and railroad.
4. **Whether there is available water, wastewater, stormwater, and transportation facilities generally suitable and adequate for uses permitted by the proposed zoning district:**

Water service will be provided by Wellborn Special Utility District (SUD). It has been verified that the existing 12-inch Wellborn SUD waterline on the west side of Holleman Drive South may be extended to the subject tract to provide required domestic and fire flow service. There is also an existing 10-inch sanitary sewer line along the northwestern property boundary available to serve the site. Based on estimated sewer demands, existing infrastructure appears to have sufficient capacity to support the proposed use.

Currently, there is no FEMA Special Flood Hazard area located on this tract. The property generally drains to the east within a tributary of the Bee Creek Drainage Basin. Detention will be required with site development. Drainage and other required public infrastructure shall be

designed and constructed in accordance with the B/CS Unified Design Guidelines. The subject tract is located at the temporary end of General Parkway which is designated as a Minor Collector on the Thoroughfare Plan. General Parkway will be extended further to the south and eventually to Cain Road as the remainder of the Butler tract and other tracts in the area are developed. Additional connections between General Parkway and Holleman Drive South will also occur as future development occurs.

A traffic impact analysis (TIA) was performed for the rezoning request. The TIA included the completion of the Holleman Drive South widening to a 4-lane Minor Arterial, which is underway as a City capital project. As the subject tract currently only has one roadway connection and that is shared with the adjacent Aspen Heights multi-family development, the TIA provided three different scenarios of commercial development intensity to assess the availability of roadway capacity in the area. In order to maintain an acceptable level of service of General Parkway at Holleman Drive South and North Dowling Road at Holleman Drive South, the TIA recommends limiting the number of development trips to up to 198 trips in the PM peak hour. The applicant offered to limit development on the tract to 198 trips in the PM peak hour until a second street or Public Way access point is provided that further distributes traffic.

5. **The marketability of the property:** The subject property is adjacent to an existing multi-family development and surrounded by property also slated for dense urban-style development. This site does not have a high potential to be marketed as a rural/single-family residential development as it is located along a major arterial, adjacent to a railroad right-of-way, and will have frontage to a future minor collector. Due to these characteristics, it has limited potential with an R Rural zoning designation. Overall, the proposed GC General Commercial rezoning is anticipated to increase the marketability of the property.

Budget & Financial Summary: N/A

Attachments:

1. Background Information
2. Vicinity Map, Aerial, and Small Area Map
3. Rezoning Exhibit
4. Zoning Map
5. Application
6. Traffic Impact Analysis
7. Ordinance (with condition)
8. Ordinance (without condition)

NOTIFICATIONS

Advertised Commission Hearing Date: August 2, 2018
Advertised Council Hearing Dates: August 23, 2018

The following neighborhood organizations that are registered with the City of College Station's Neighborhood Services have received a courtesy letter of notification of this public hearing:

The Barracks and Great Oaks

Property owner notices mailed: Ten (10)
Contacts in support: None
Contacts in opposition: None
Inquiry contacts: None

ADJACENT LAND USES

Direction	Comprehensive Plan	Zoning	Land Use
North (across FM 2154)	Urban	GC General Commercial	Commercial
South	Urban	R Rural	Undeveloped
East	Urban	R Rural	Undeveloped
West	Urban	PDD Planned Development District	Multi-Family

DEVELOPMENT HISTORY

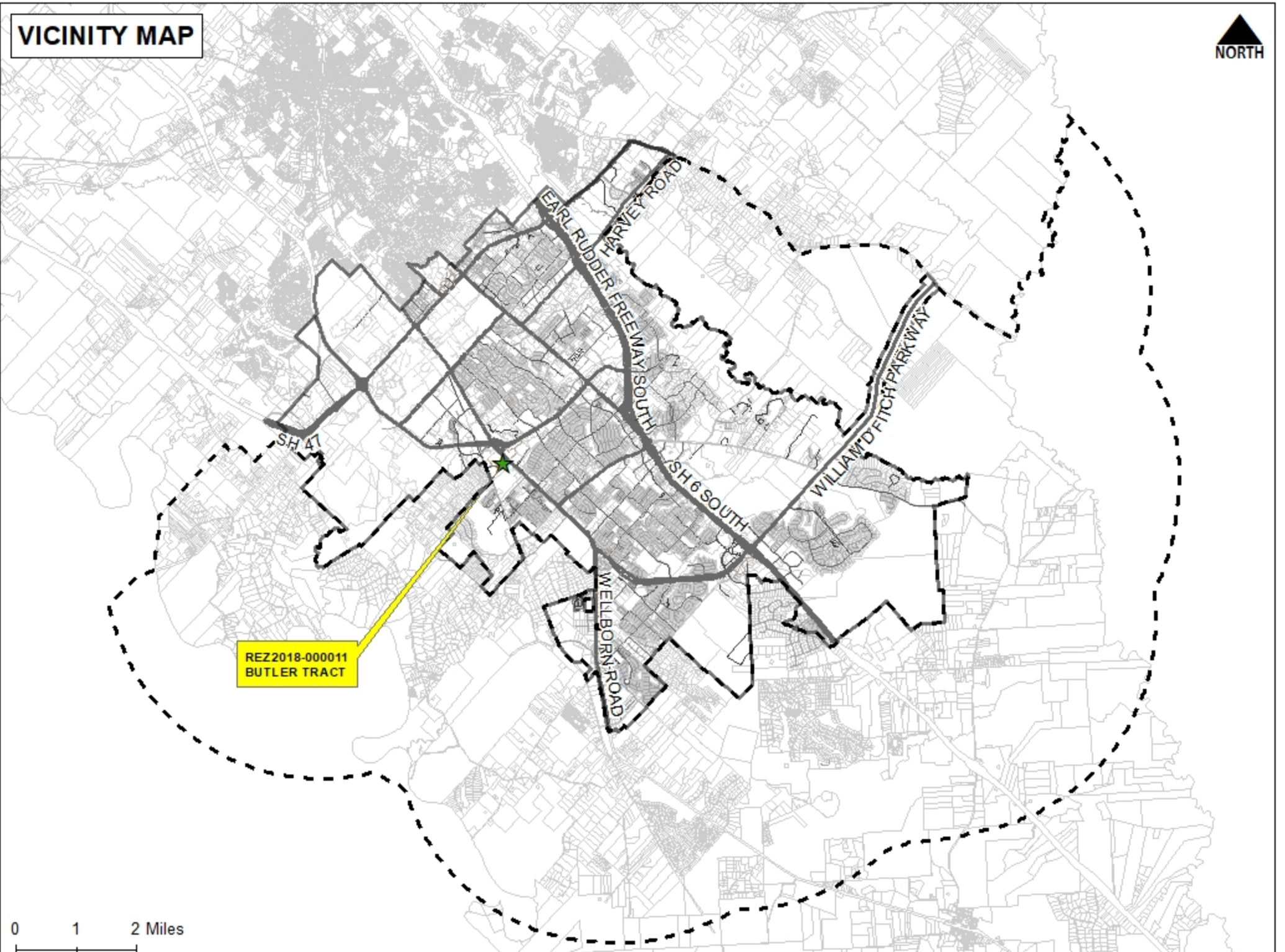
Annexation: Tract 1 - Annexed February 1970
Tract 2 - Annexed November 2002

Zoning: Tract 1 - Zoned R-1 Single-Family Residential upon Annexation
Tract 2 - Zoned A-O Agricultural Open upon Annexation
A-O Agricultural Open Renamed R Rural (2013)
R-1 Single-Family Residential Renamed GS General Suburban (2013)

Final Plat: N/A – Property is currently unplatted

Site development: Vacant

VICINITY MAP



REZ2018-000011
BUTLER TRACT

0 1 2 Miles

This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. No warranty is made by the City of College Station regarding specific accuracy or completeness.



City of College Station

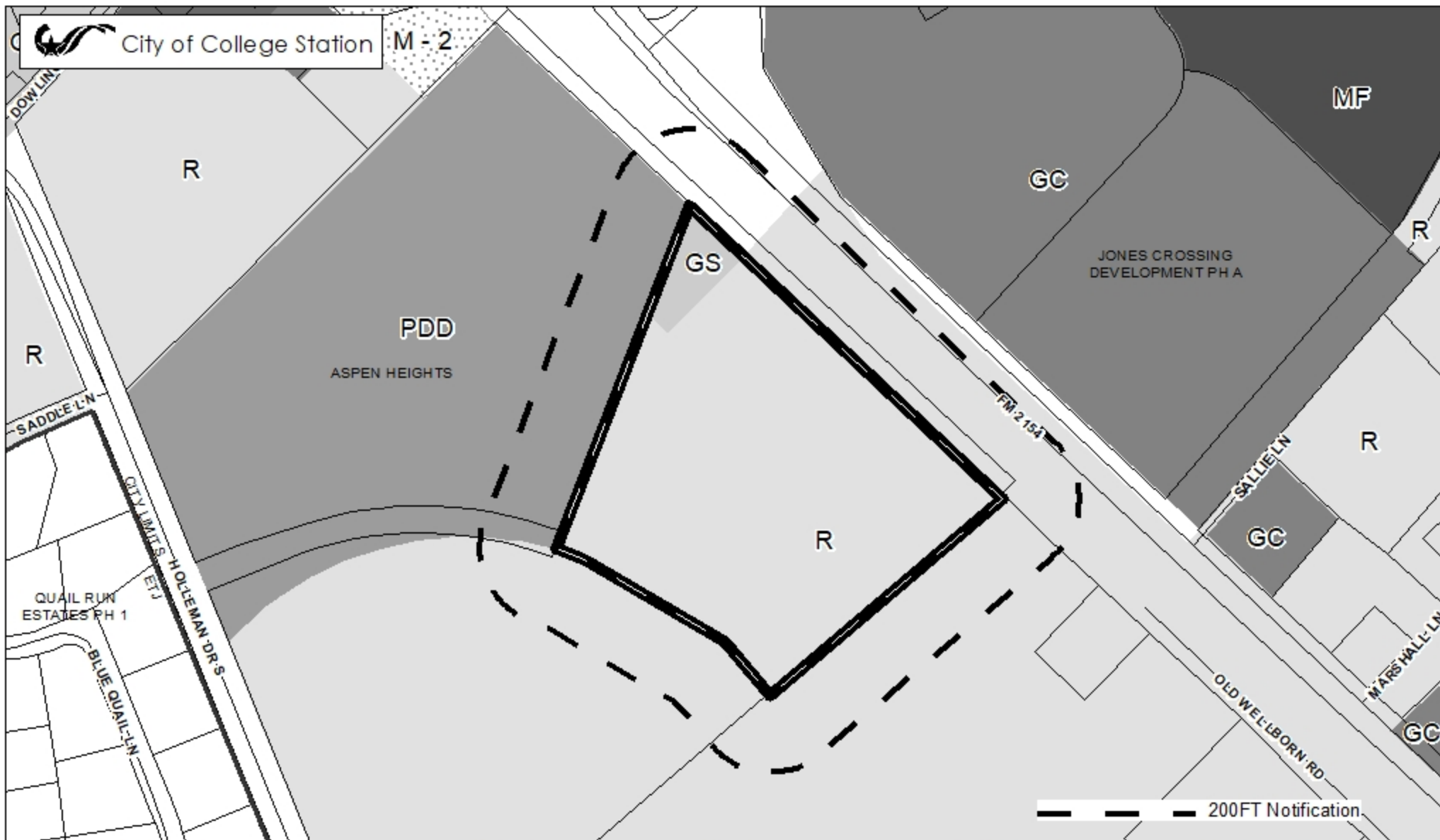


0 300 600 Feet

BUTLER TRACT

Case:
REZ2018-000011

REZONING

**ZONING DISTRICTS (In Grayscale)**

<u>Residential</u>		
R	Rural	MF Multi-Family
WE	Wellborn Estate	MU Mixed-Use
E	Estate	MHP Manufactured Home Pk.
WRS	Wellborn Restricted Suburban	
RS	Restricted Suburban	
GS	General Suburban	
D	Duplex	
T	Townhome	

Non-Residential

NAP	Natural Area Protected
O	Office
SC	Suburban Commercial
WC	Wellborn Commercial
GC	General Commercial
CI	Commercial Industrial
BP	Business Park
BPI	Business Park Industrial
C-U	College and University

Planned Districts

P-MUD	Planned Mixed-Use Dist.
PDD	Planned Develop. Dist.

Design Districts

WPC	Wolf Pen Creek Dev. Cor.
NG-1	Core Northgate
NG-2	Transitional Northgate
NG-3	Residential Northgate

Overlay Districts

OV	Corridor Ovr.
RDD	Redevelopment District
KO	Krenak Tap Ovr.
NPO	Nbrhd. Prevailing Ovr.
NCO	Nbrhd. Conservation Ovr.
HP	Historic Preservation Ovr.

Retired Districts

R-1B	Single Family Residential
R-4	Multi-Family
R-6	High Density Multi-Family
C-3	Light Commercial
RD	Research and Dev.
M-1	Light Industrial
M-2	Heavy Industrial

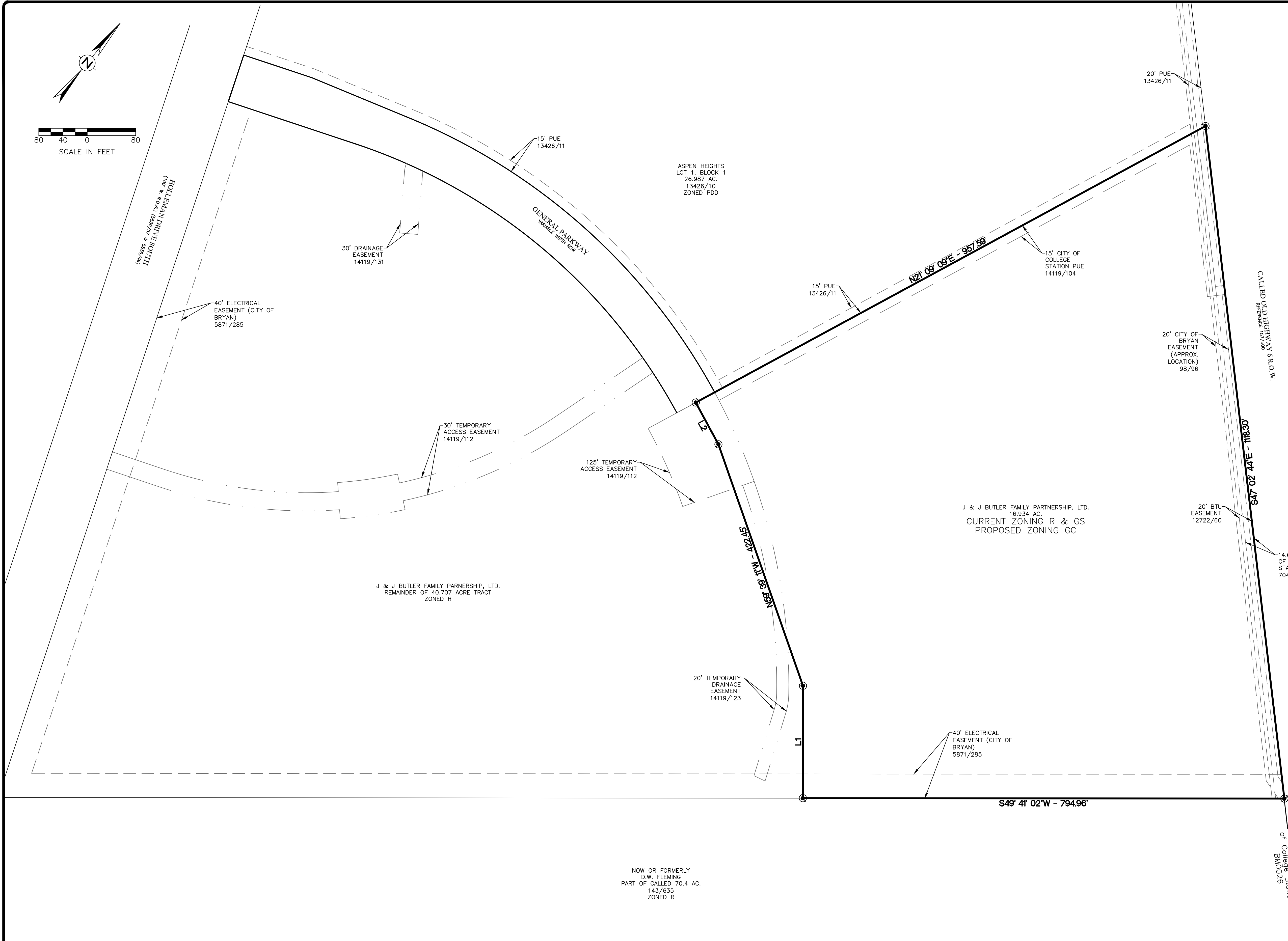
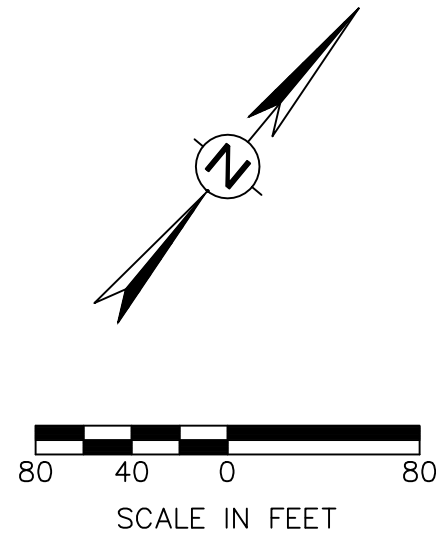


0 362.5 725 Feet

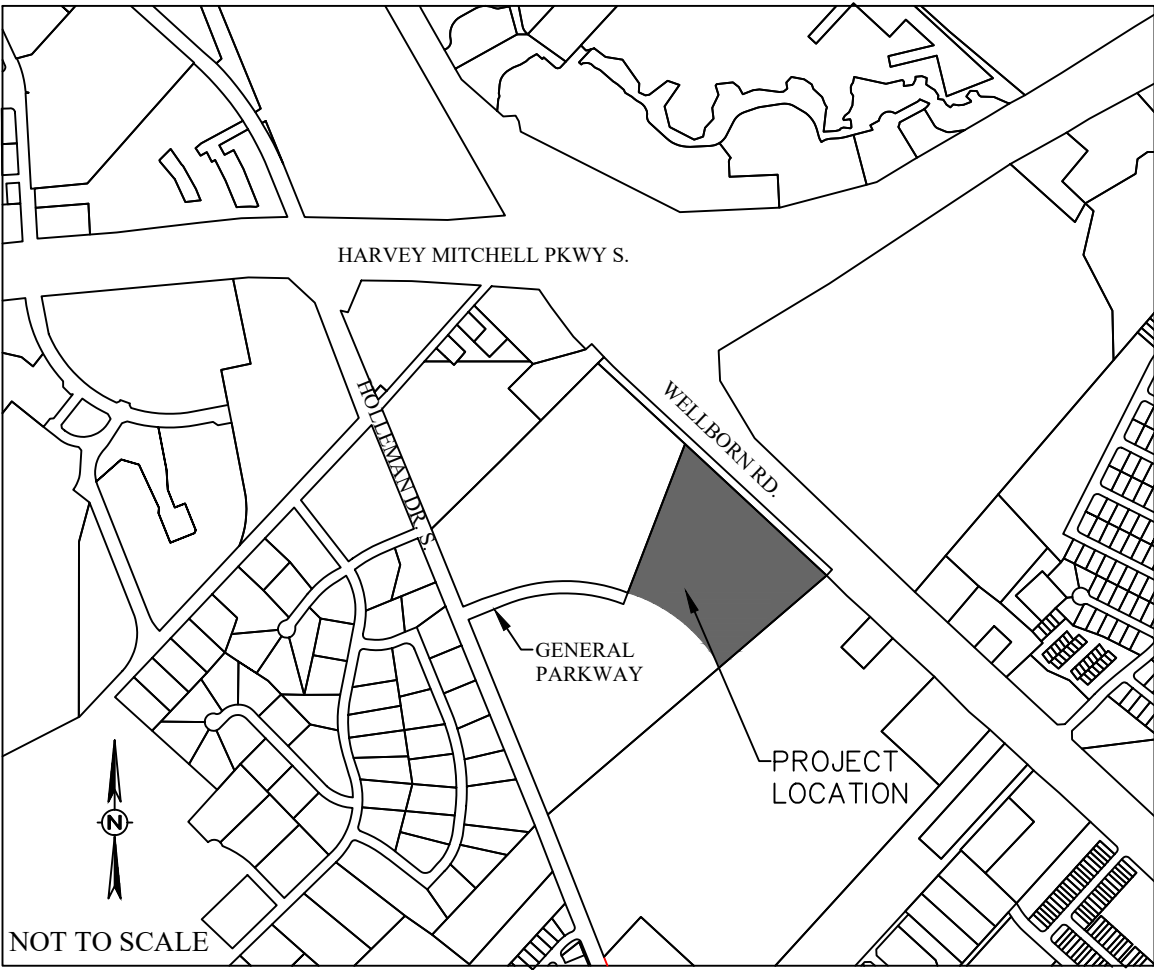
BUTLER TRACT

Case:
REZ2018-000011

REZONING



VICINITY MAP



- NOTES:
1. NORTH ORIENTATION IS BASED ON ROTATING THE NORTHEAST LINE OF SAID CALLED 69.37 ACRE TRACT TO GRID NORTH NAD83 (CORS 2011) EPOCH 2010.00, STATE PLANE CENTRAL ZONE.
 2. NO PORTION OF THIS TRACT IS WITHIN THE 100-YEAR FLOODPLAIN ACCORDING TO THE FEMA FLOOD INSURANCE RATE MAP FOR BRAZOS COUNTY AND INCORPORATED AREAS, MAP # 4841C0305F, EFFECTIVE DATE: APRIL 2, 2014.
 3. THE MAXIMUM NUMBER OF PM PEAK HOUR TRIPS FOR THIS AREA IS LIMITED TO THE TRIPS SHOWN IN TABLE 3 OF THE TRAFFIC IMPACT ANALYSIS, PREPARED BY BINKLEY AND BARFIELD, INC. AND DATED JUNE 25, 2018. THIS PROVISION ON THE DEVELOPMENT OF THIS TRACT WILL GO AWAY WHEN A SECOND POINT OF ACCESS IS PROVIDED BY THE EXTENSION OF GENERAL PARKWAY OR THE ADDITION OF ANOTHER ROAD TO HOLLEMAN DRIVE SOUTH.

LINE TABLE		
LINE #	LENGTH	DIRECTION
L1	185.63'	N40° 18' 58"W
L2	78.49'	N68° 50' 51"W

ZONING MAP
BUTLER TRACT COMMERCIAL
16.934 ACRES
CRAWFORD BURNETT LEAGUE, A-7
COLLEGE STATION, BRAZOS COUNTY, TEXAS

SCALE: AS SHOWN

JUNE 2018

OWNER/DEVELOPER:

J&J BUTLER FAMILY
PARTNERSHIP, LTD
6010 Thoroughbred RDG
College Station, TX 77845

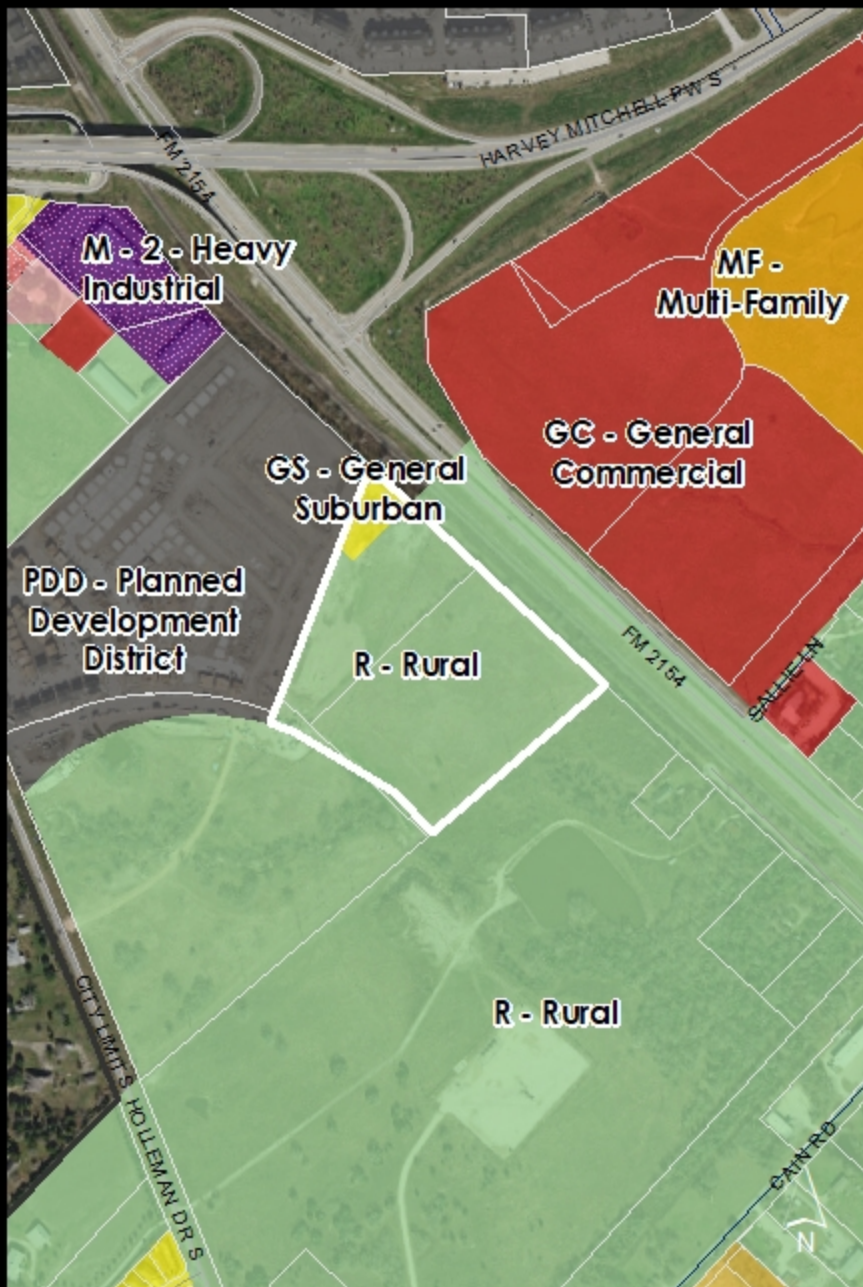
SURVEYOR:

H. Curtis Strong, RPLS No. 4961
Strong Surveying, LLC
1722 Broadmoor Dr, Ste 105
Bryan, TX 77802
(979) 776-9836

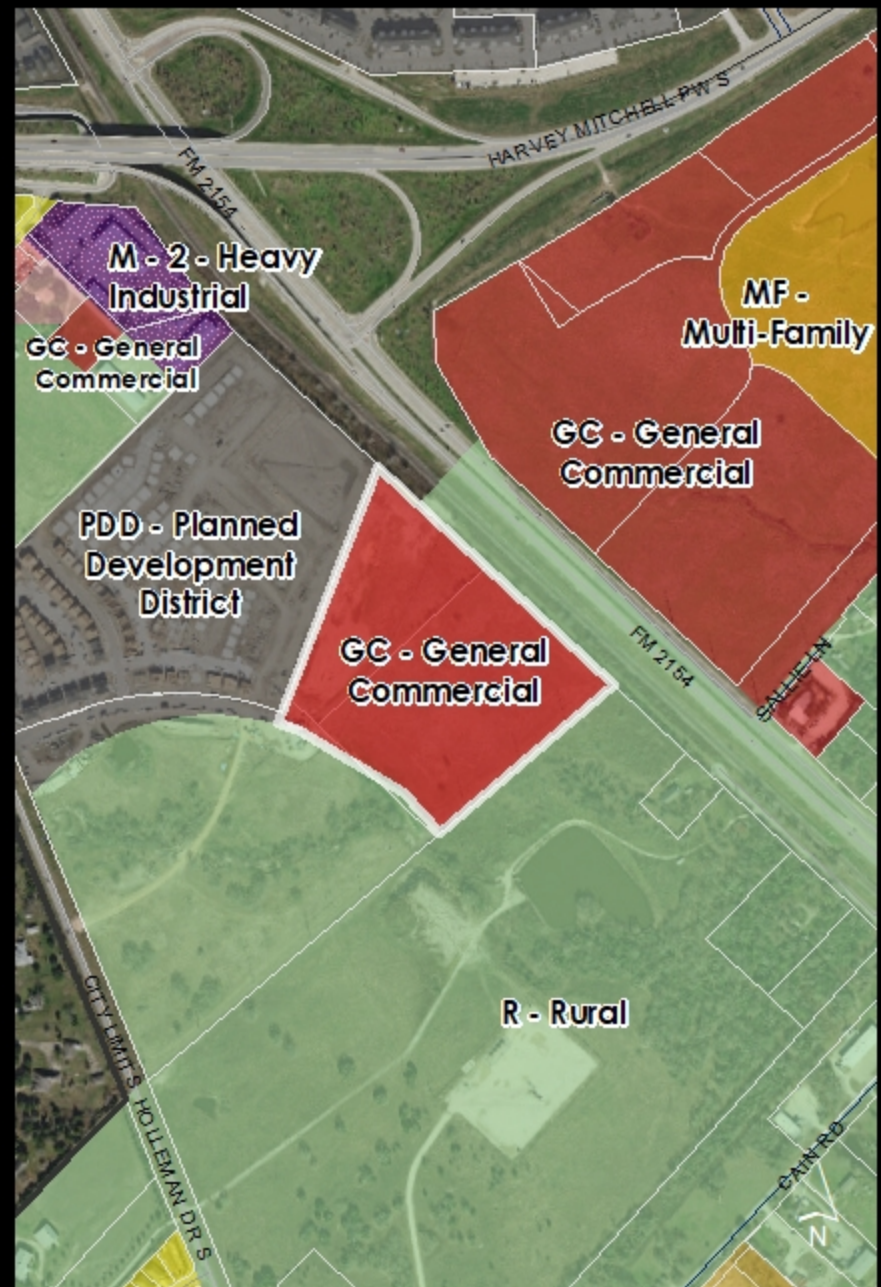
ENGINEER:

Schultz Engineering, LLC
TBPE NO. 12327
911 SOUTHWEST PKWY E.
College Station, Texas 77840
(979) 764-3900

EXISTING Zoning



PROPOSED Zoning



THIS APPLICATION NOT REQUIRED IF APPLYING ELECTRONICALLY



FOR OFFICE USE ONLY

CASE NO.: _____
DATE SUBMITTED: _____
TIME: _____
STAFF: _____

**ZONING MAP AMENDMENT (REZONING) APPLICATION
GENERAL**

MINIMUM SUBMITTAL REQUIREMENTS:

- ☒ Rezoning Application Fee. (Refer to the Planning and Development Fee Schedule for all applicable fees)
- ☒ Application completed in full. This application form provided by the City of College Station must be used and may not be adjusted or altered. Please attach pages if additional information is provided.
- ☒ Traffic Impact Analysis or calculations of projected vehicle trips showing that a TIA is not necessary for the proposed request.
- ☒ Copy of a fully dimensioned map
 - a. Land affected
 - b. Legal description of area of proposed change;
 - c. Present zoning
 - d. Zoning classification of all abutting land
 - e. All public and private rights-of-way and easements bounding and intersecting subject land.
- ☒ Written legal description of subject property (metes & bounds or lot & block of subdivision, whichever is applicable).

NOTE: If a petition for rezoning is denied by the City Council, another application for rezoning shall not be filed within a period of 180 days from the date of denial, except with permission of the Planning & Zoning Commission.

Date of Optional Preapplication Conference 1/31/2018

NAME OF PROJECT Butler Tract Rezoning

ADDRESS Holleman Drive South

LEGAL DESCRIPTION (Lot, Block, Subdivision) Crawford Burnett (ICL), Tract 135, 42.738 Acres

GENERAL LOCATION OF PROPERTY, IF NOT PLATTED:
South of the Aspen Heights Subdivision at the end of General Parkway

TOTAL ACREAGE 40.707

APPLICANT/PROJECT MANAGER'S INFORMATION (Primary contact for the project):

Name Jim Butler E-mail igb9611@aol.com

Street Address 6010 Thoroughbred Ridge

City College Station State TX Zip Code 77845

Phone Number (979) 229-5471 Fax Number _____

PROPERTY OWNER'S INFORMATION:

Name J & J Butler Family Partnership, LTD E-mail igb9611@aol.com

Street Address 6010 Thoroughbred Ridge

City College Station State TX Zip Code 77845

Phone Number (979) 229-5471 Fax Number _____

OTHER CONTACTS (Please specify type of contact, i.e. project manager, potential buyer, local contact, etc.):

Name Schultz Engineering, LLC - Joe Schultz P.E. E-mail eng@scultzeng.com

Street Address 911 Southwest Parkway East

City College Station State TX Zip Code 77840

Phone Number (979) 764-3900 Fax Number (979) 764-3910

This property was conveyed to owner by deed dated 06/30/2006 and recorded in Volume 7551, Page 041 of the Brazos County Official Records.

Existing Zoning R-Rural & GS-General Suburban Proposed Zoning GC-General Commercial

Present Use of Property Rural

Proposed Use of Property General Commercial

REZONING SUPPORTING INFORMATION

1. List the changed or changing conditions in the area or in the City which make this zone change necessary.

This area of the city has numerous student living developments but very little commercial development to support this residential growth.

2. Indicate whether or not this zone change is in accordance with the Comprehensive Plan. If it is not, explain why the Plan is incorrect.

This zoning change is in accordance with the Comprehensive Plan.

3. How will this zone change be compatible with the present zoning and conforming uses of nearby property and with the character of the neighborhood?

The adjacent tract to the northwest is multi-family use and the undeveloped property in this area is Urban Land Use on the comprehensive plan and in Growth Area 5 which is for intense land uses. The zone change will be compatible with the existing and proposed uses of nearby property.

4. Explain the suitability of the property for uses permitted by the rezoning district requested.

The property has access via General Parkway, all utilities are available and there are no topographical features that present any problems for development so the property is very suitable for General Commercial uses. The maximum number of PM peak hours trips for this area is limited to the trips shown in Table 3 of the Traffic Impact Analysis, prepared by Binkley and Barfield, INC. and dated June 25, 2018. This provision on the development of this tract will go away when a second point of access is provided by the extension of General Parkway or the addition of another road to Holleman Drive South.

5. Explain the suitability of the property for uses permitted by the current zoning district.

The current zoning districts of Rural and a small area of General Suburban would allow only low density residential development, which is not in compliance with the Comprehensive Plan therefore is not suitable for development with its current zoning.

6. Explain the marketability of the property for uses permitted by the current zoning district.

There is very little marketability for the property as a large lot residential subdivision in this location.

7. List any other reasons to support this zone change.

Commercial uses are needed in this area so that nearby residents do not have to leave the area in order to find goods and services they need. Development of this tract will significantly increase the property and sales tax generated by the property.

The applicant has prepared this application and certifies that the facts stated herein and exhibits attached hereto are true, correct, and complete. IF THIS APPLICATION IS FILED BY ANYONE OTHER THAN THE OWNER OF THE PROPERTY, this application must be accompanied by a power of attorney statement from the owner. If there is more than one owner, all owners must sign the application or the power of attorney. If the owner is a company, the application must be accompanied by proof of authority for the company's representative to sign the application on its behalf.

James M Butler, President

Signature and title

5/18/18

Date

TRAFFIC IMPACT ANALYSIS

for

Butler Tract

on General Parkway

in

College Station, Texas

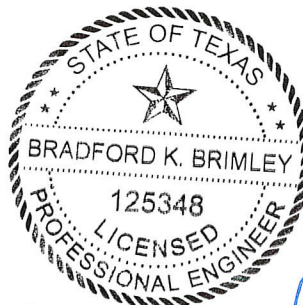
Prepared

for

J&J Butler Family Partnership, Ltd. and Schultz Engineering, LLC

June 25, 2018

By



Brad K. Brimley
6/25/18

Bradford K. Brimley, Ph.D., P.E.

TRAFFIC IMPACT ANALYSIS
for
Butler Tract
College Station, Texas

EXECUTIVE SUMMARY

The Butler Tract in College Station contains approximately 43 acres of land located along Holleman Drive South near General Parkway. It is proposed that 16.9 acres be rezoned for development. The original zoning is Rural; the proposed zoning is General Commercial. This traffic impact analysis (TIA) evaluates the traffic impacts of three development scenarios. The first scenario is a full development using retail assumptions consistent with General Commercial uses in the City ordinance. The second scenario allocates most of the developed area to a Big Shots golf facility, with the remaining area still designated and used as general commercial. The third scenario includes the Big Shots golf facility and applies a reduced intensity of development for the remaining land. The impacts of these three scenarios are evaluated at key intersections along the Holleman Drive South Corridor. The following conditions are included:

- Existing (2018)
- Background (2021)
- Full Build Scenario 1 (2021)
- Full Build Scenario 2 (2021)
- Full Build Scenario 3 (2021)

STUDY APPROACH

The Existing (2018) conditions analysis is an evaluation of the existing traffic on the Holleman Drive South corridor in its future configuration as a four-lane road because it is currently under construction to widen to four-lanes. The Background (2021) analysis includes additional traffic generated from developments in the area to model the future conditions without additional impacts from development of the Butler tract. Three Full Build scenarios are examined: One for an intensity of development that includes 100% commercial (retail) use, one scenario that factors in the development of a Big Shots golf facility on most of the 16.9 acres, and a third scenario that includes the Big Shots and restricts the number of trips generated by the remaining land. Traffic from these three scenarios are added to the Background traffic to identify their impact on intersection operations.

FINDINGS

The capacity analyses forecasted poor or failing operations at Deacon Drive during the Background (2021) period that occur regardless of the development of the Butler Tract. With Scenario 1, representing full development with General Commercial retail assumptions, there are significant operational failings at Dowling Road and at General Parkway. Mitigation with traffic signals was not pursued at these locations, but with less intense trip generation assumptions of Scenario 2. Scenario 2 evaluated the impact of a Big Shots golf facility with some commercial (retail) development. The impacts under Scenario 2 are much smaller than the impacts for Scenario 1, though there are still some undesirable levels of service. In Scenario 3, these issues are mitigated with the further reductions in trips generated.

RECOMMENDATIONS

Unless further mitigations are pursued, such as signalization at General Parkway or at Dowling Road, and until General Parkway extends to Deacon Drive, it is recommended that development be limited to generating no more trips than what are shown in Scenario 3.

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INTRODUCTION

The Butler Tract in College Station contains approximately 43 acres of land located along Holleman Drive South near General Parkway. It is proposed that 16.9 acres be rezoned for development. The original zoning is Rural; the proposed zoning is General Commercial. An aerial map with the location of the development is shown in **Figure 1**. A survey of the specific location is provided in the Appendix. This traffic impact analysis (TIA) evaluates the traffic impacts of three development scenarios. The first scenario is a full development using retail assumptions consistent with General Commercial uses in the City ordinance. The second scenario allocates most of the developed area to a Big Shots golf facility, with the remaining area still designated and used as general commercial. The third scenario includes the Big Shots golf facility and applies a reduced intensity of development for the remaining land. The impacts of these three scenarios are evaluated at key intersections along the Holleman Drive South Corridor. The following conditions are included:

- Existing (2018)
- Background (2021)
- Full Build Scenario 1 (2021)
- Full Build Scenario 2 (2021)
- Full Build Scenario 3 (2021)

STUDY AREA

Provided below are a summary of the existing land uses near the site and descriptions of developments in the area.

AREA DEVELOPMENT

Aspen Heights is a recently-completed complex at the General Parkway intersection and has a total of 233 units, with each unit having 2-5 bedrooms. Along Deacon Drive is The Barracks, a development nearing completion that includes detached houses and townhouses. Mission Ranch is a planned subdivision located west of Holleman Drive with approximately 540 single-family homes. Adjacent to Mission Ranch and at the corner of Rock Prairie Road at Holleman Drive is a planned elementary school. Pershing Pointe is a development near the intersection of Deacon Drive at Holleman Drive that will have 175 townhomes after two phases of construction. A gas station and convenience store (Aggieland Xpress) is planned for the northeast corner of the Deacon Drive intersection. Finally, future phases of University Heights may add some commercial development, such as a convenience store and fast food. The locations of these developments are shown in **Figure 2**.

STREETS AND INTERSECTIONS

Holleman Drive is an existing two-lane roadway with a posted speed limit of 60 mph. Holleman Drive is classified as a four-lane Minor Arterial on the city's Master Thoroughfare Plan (MTP). The City is in the process of widening Holleman Drive from Dowling Road to Rock Prairie Road, to a cross-section that has four lanes (two in each direction). There will be a two-way left-turn lane from Deacon Drive to General Parkway. After the road is widened, the speed limit is expected to be 40 mph.

Market Street is listed as a proposed two-lane Major Collector on the MTP. The road intersects Holleman Drive in a T-intersection controlled by a traffic signal.

Dowling Road is a two-lane rural street with a speed limit of 45 mph. The intersection of Dowling Road at Holleman Drive is controlled by Stop signs for all directions. A northbound channelized right-turn lane has been recently added to reduce delay at the intersection.

General Parkway is a two-lane Minor Collector that has not been fully constructed. On the north end, General Parkway intersects Holleman Drive in a T-intersection and terminates just after the Aspen Heights development, at the Butler Tract.

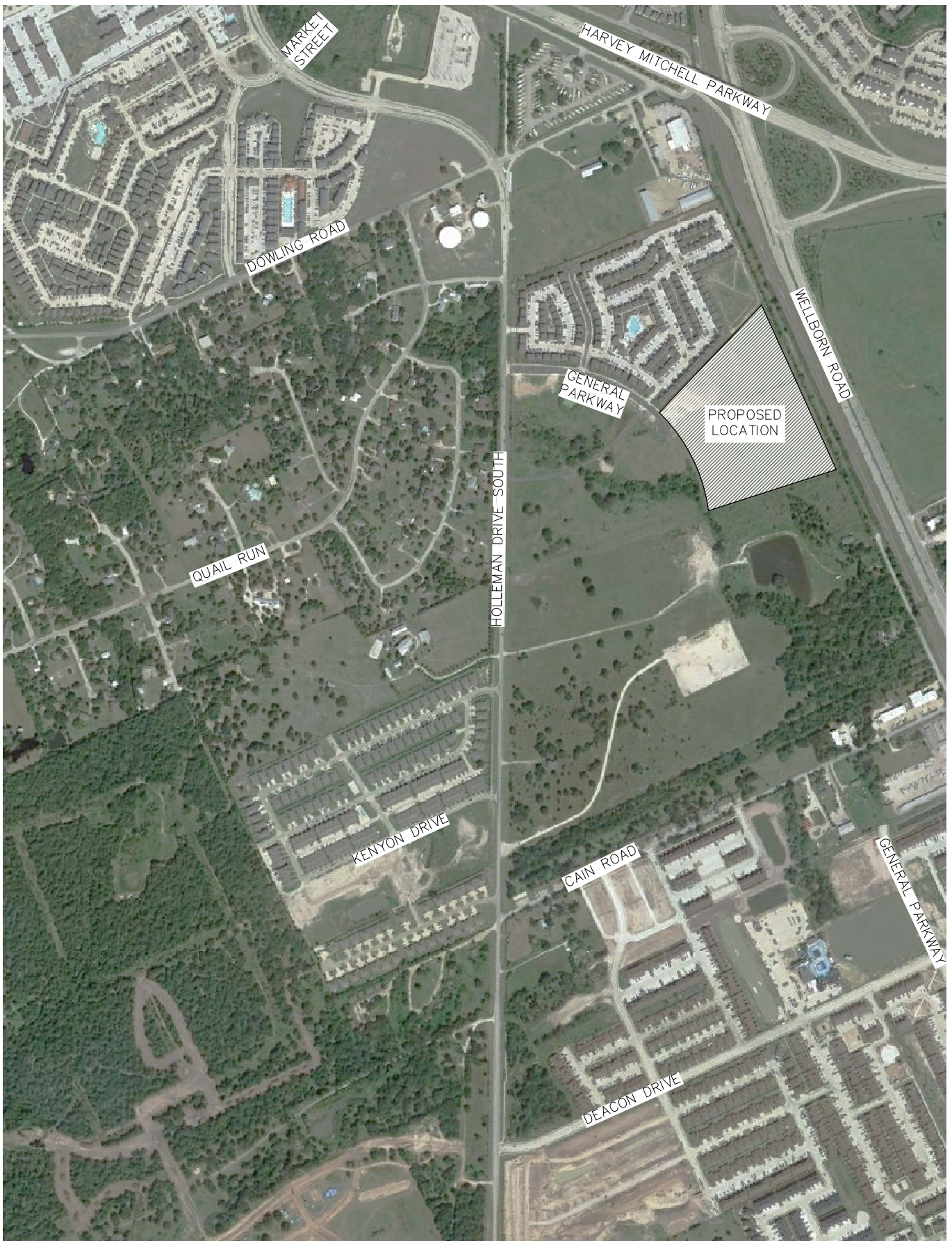
Cain Road is a two-lane undivided roadway with a 40 mph speed limit. Cain Road currently extends from Holleman Drive South to Wellborn Road. Cain Road is currently classified as a two-lane Minor Collector from General Parkway to Holleman Drive. The eastbound approach of Cain Road at Wellborn Road is in the process of being removed as part of a project to eliminate the at-grade railroad crossing.

Deacon Drive is a two-lane Major Collector extending from Holleman Drive South to Old Wellborn Road. The speed limit is 30 mph. The City is in the process of connecting Deacon Drive over the Union Pacific Railroad to Wellborn Road. With the Mission Ranch development, Deacon Drive will also extend west of Holleman Drive as a Minor Collector.

The existing and proposed intersections evaluated in this study are as follows:

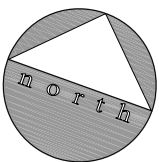
- Holleman Drive at Market Street
- Holleman Drive at Dowling Road
- Holleman Drive at General Parkway
- Holleman Drive at Cain Road
- Holleman Drive at Deacon Drive

AM and PM Peak Hour turning movement traffic counts were collected on Holleman Drive at each intersection in March 2018. The raw traffic count volume printouts are provided in the Appendix. The AM and PM Peak Hour volumes for the Existing (2018) conditions are illustrated in **Figure 3**.



Imagery ©2018 Google, Map data ©2018 Google

1000 ft 

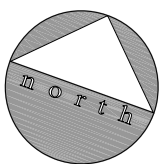
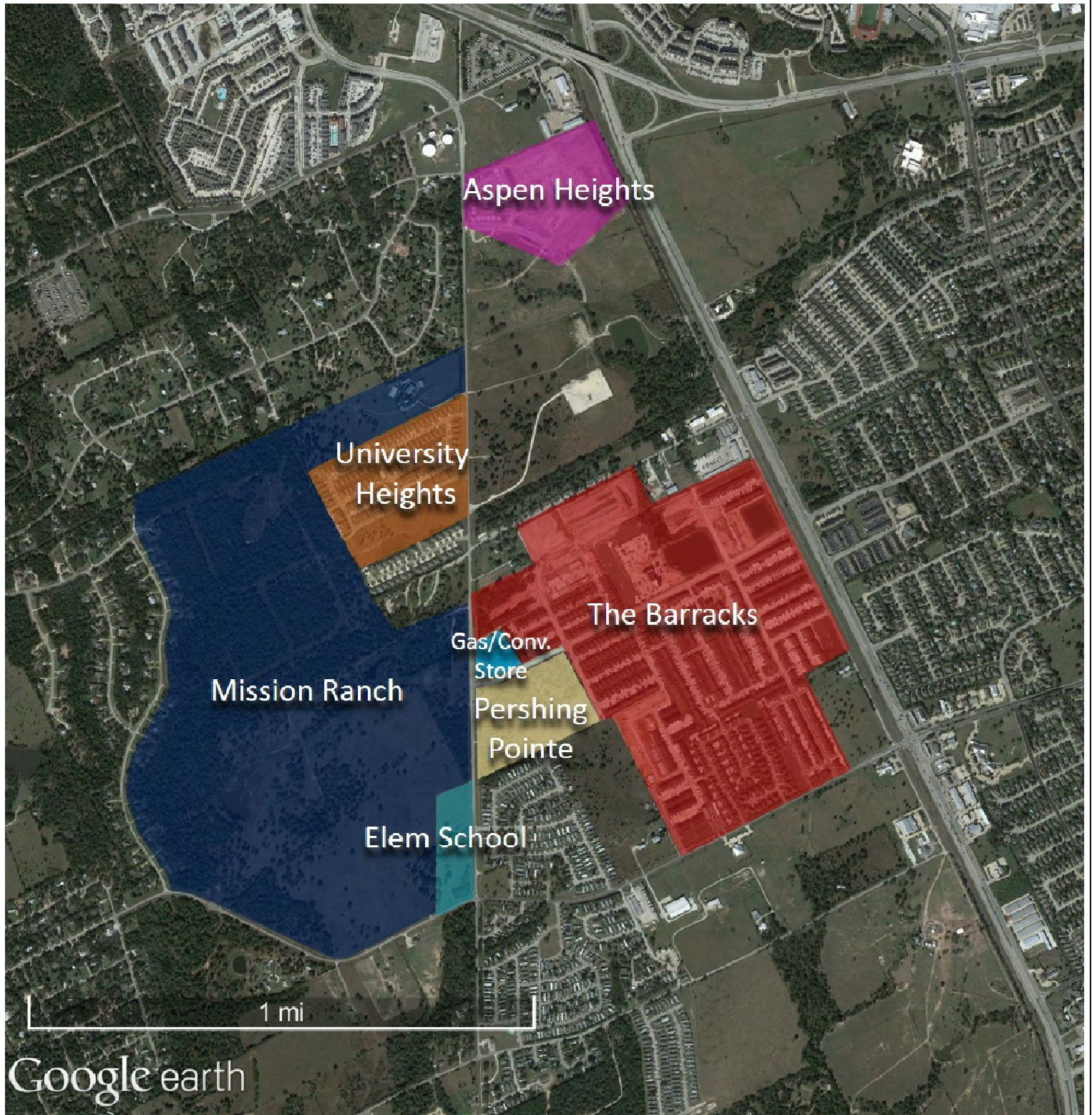


BUTLER TRACT SITE LOCATION			
SCALE:	N/A	DATE:	May 2018
JOB NO.:	BB18038	DWG. FILE:	FIGURE #1



3452 Rock Prairie Road West
College Station, Texas 77845

979.703.1809
www.binkleybarfield.com



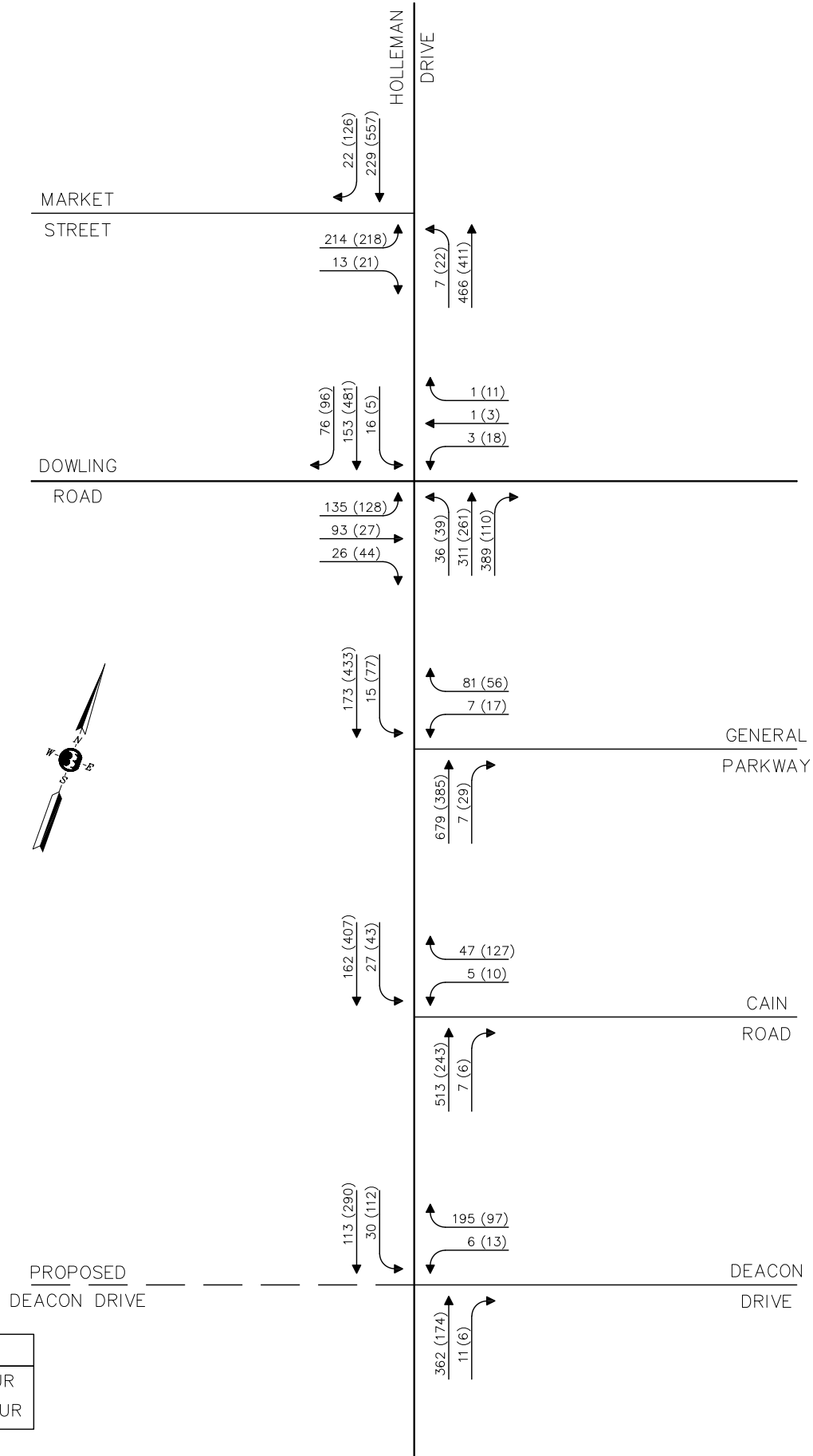
BUTLER TRACT BACKGROUND DEVELOPMENTS			
SCALE:	N/A	DATE:	May 2018
JOB NO.:	BB18038	DWG. FILE:	FIGURE #2



3452 Rock Prairie Road West
College Station, Texas 77845

979.703.1809
www.binkleybarfield.com

\\pza\meta\bbi\BCH\JOBS\BB18038 Butler Tract TIA\CADD\05 CAD Files\FIGURES.dwg-FIGURE #3 Plotted May 07, 2018 at 12:56pm by bbrimley | Last Saved by: bbrimley



LEGEND	
XXX	A.M. PEAK HOUR
(XXX)	P.M. PEAK HOUR

BUTLER TRACT	
PEAK HOUR VOLUMES - EXISTING (2018)	
SCALE: N/A	DATE: May 2018
JOB NO.: BB18038	DWG. FILE: FIGURE #3



PROPOSED DEVELOPMENT

This report addresses the development of 16.9 acres of the Butler Tract. For the rezoning of the land from Rural (R) to General Commercial (GC), the City of College Station requires that specific development assumptions be used in the analysis. Because the ultimate use of the land at this location will likely be much less intense than the required assumptions, the Full Build condition was analyzed with three different scenarios:

- Scenario 1 includes development of the 16.9 acres as General Commercial use with trip generation assumptions consistent with City of College Station guidelines. This includes the ratio of 13,500 square feet of building space per acre of land and trip generation assumptions for ITE Land Use 820 (Shopping Center). **Table 1** identifies the relevant land use data consulted in determining the number of trips generated for Scenario 1.
- Scenario 2 includes a Big Shots golf facility on most of the available land, as shown in the Appendix. The remaining land would be developed with General Commercial use. A Big Shots facility contains a driving range with indoor tees. It was assumed the building would be sized at 32,000 sq ft, consistent with a mid-sized Big Shots development. A 32,000 sq ft Big Shots facility has 42 tee boxes. **Table 2** identifies the land use data for determining the number of trips generated under Scenario 2.
- Scenario 3 presents a more likely example of the intensity of commercial development that may happen with the available land next to Big Shots. The retail assumptions for ITE land use 820 (Shopping Center) are conservative and represent trip generation rates for shopping centers and malls, including regional centers with multiple uses. Such facilities are located on major and minor arterials. It is unknown how the remaining 3.2 acres on General Parkway will actually develop, but an intense retail use is not likely because there is no direct access to a major arterial (there will be no access to Wellborn Road over the railroad). Scenario 3 therefore incorporates the Big Shots design and applies a 30% reduction to the number of other General Commercial trips for a more-realistic forecast. **Table 3** shows the land use data for Scenario 3.

Table 1. Scenario 1 Land Use Data

Land Use	ITE Code	Acres	Units/ Acre	Number of Units	AM Peak Hour		PM Peak Hour	
					Rate/Unit	Trips	Rate/Unit	Trips
Commercial	820	16.9	13.5 KSF	228	0.94	214	3.81	869

Table 2. Scenario 2 Land Use Data

Land Use	ITE Code	Acres	Units/ Acre	Number of Units	AM Peak Hour		PM Peak Hour	
					Rate/Unit	Trips	Rate/Unit	Trips
Big Shots Golf ¹	435	13.7	—	32 KSF	0.60	19	3.58	115
Commercial	820	3.2	13.5 KSF	43.2 KSF	0.94	41	3.81	165

¹ ITE Land Use 435 does not include AM trip generation data. The AM assumptions for this study are based on information from similar recreational land uses.

Table 3. Scenario 3 Land Use Data

Land Use	ITE Code	Acres	Units/ Acre	Number of Units	AM Peak Hour		PM Peak Hour	
					Rate/Unit	Trips	Rate/Unit	Trips
Big Shots Golf ¹	435	13.7	—	32 KSF	0.60	19	3.58	115
Commercial ²	820	3.2	13.5 KSF	43.2 KSF	0.47	20	1.91	83

¹ ITE Land Use 435 does not include AM trip generation data. The AM assumptions for this study are based on information from similar recreational land uses.

² The trip generation rates for this scenario have been reduced by 50% from the original rates shown in the ITE Trip Generation manual.

TRIP DISTRIBUTION

Trips generated by the proposed development addressed in this study were distributed to and from the site based on its location with respect to area development, nearby roadways, and existing traffic patterns. **Figure 4** illustrates the trip distribution utilized in the study.

TRIP GENERATION

For the three development scenarios, the AM and PM Peak Hour trips are determined from the Institute of Transportation Engineers' (ITE) 10th edition *Trip Generation Manual*. **Tables 4** through **6** summarize the calculated trips that are anticipated to be generated by the different uses. The Appendix contains information about the ITE data used to develop these tables.

A Big Shots facility would occupy most of the 16.9 acres of the rezoned land. The location of the land, the dedication of right-of-way to the extension of General Parkway, and the need for storm water detention, the remaining land that can be developed other than the Big Shots facility is approximately 3.2 acres. Because the retail assumption of Land Use 820 is extremely conservative compared to what would likely develop at that location, Scenario 3 reduces the commercial-based trips of Scenario 2 by 30%. **Table 6** has trip generation data for Scenario 3.

Table 4. Scenario 1 Trip Generation Data

Land Use	AM Peak (vph)					PM Peak (vph)				
	Total	% Enter	Enter	% Exit	Exit	Total	% Enter	Enter	% Exit	Exit
Commercial	214	62%	133	38%	81	869	48%	417	52%	452

Table 5. Scenario 2 Trip Generation Data

Land Use	AM Peak (vph)					PM Peak (vph)				
	Total	% Enter	Enter	% Exit	Exit	Total	% Enter	Enter	% Exit	Exit
Big Shots Golf ¹	19	70%	13	30%	6	115	55%	63	45%	52
Commercial	41	62%	25	38%	16	165	48%	79	52%	86
Total	60	—	38	—	22	280	—	142	—	138

¹ ITE Land Use 435 does not include AM trip generation data. The AM assumptions for this study are based on information from similar recreational land uses.

Table 6. Scenario 3 Trip Generation Data

Land Use	AM Peak (vph)					PM Peak (vph)				
	Total	% Enter	Enter	% Exit	Exit	Total	% Enter	Enter	% Exit	Exit
Big Shots Golf ¹	19	70%	13	30%	6	115	55%	63	45%	52
Commercial ²	20	62%	12	38%	8	83	48%	40	52%	43
Total	39	—	25	—	14	198	—	103	—	95

¹ ITE Land Use 435 does not include AM trip generation data. The AM assumptions for this study are based on information from similar recreational land uses.

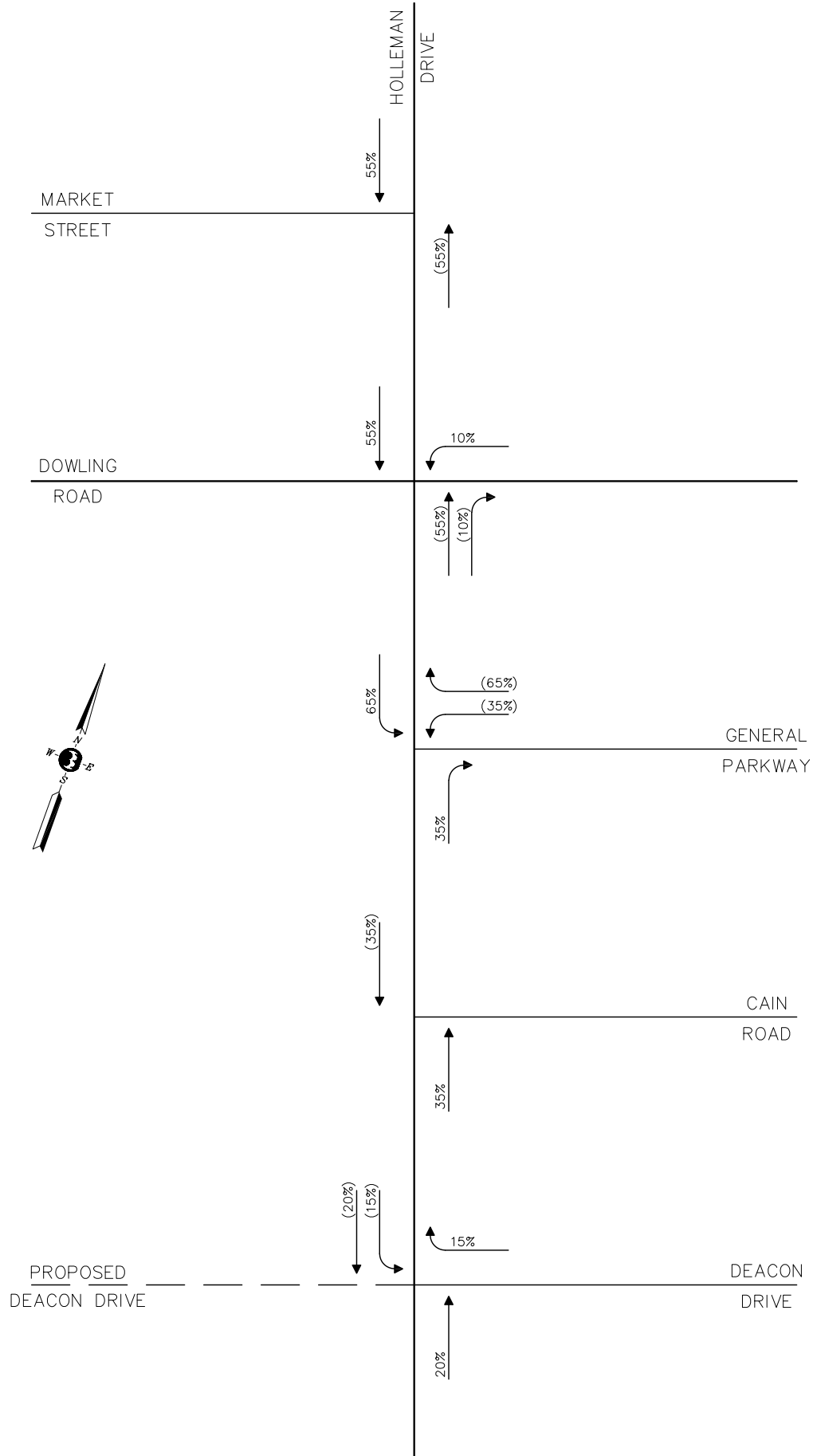
² The intensity of the Commercial development (Land Use 820) has been reduced by 50%.

PROJECTED TRAFFIC VOLUMES

SITE TRAFFIC VOLUMES

For this study, "site volumes" represent the traffic expected to be generated by the proposed site. **Figure 5** shows the assignment of the generated trips for Scenario 1 based on the trip distribution shown in **Figure 4**. **Figure 6** shows the generated trips for Scenario 2. **Figure 7** shows the generated trips for Scenario 3.

\\pza\data\bbi\BCH\JOBS\BB18038 Butler Tract TIA\CADD\05 CAD Files\FIGURES.dwg-FIGURE #4 Plotted Jun 23, 2018 at 7:13am by bbrimley | Last Saved by: bbrimley

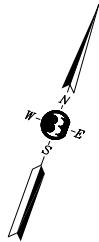
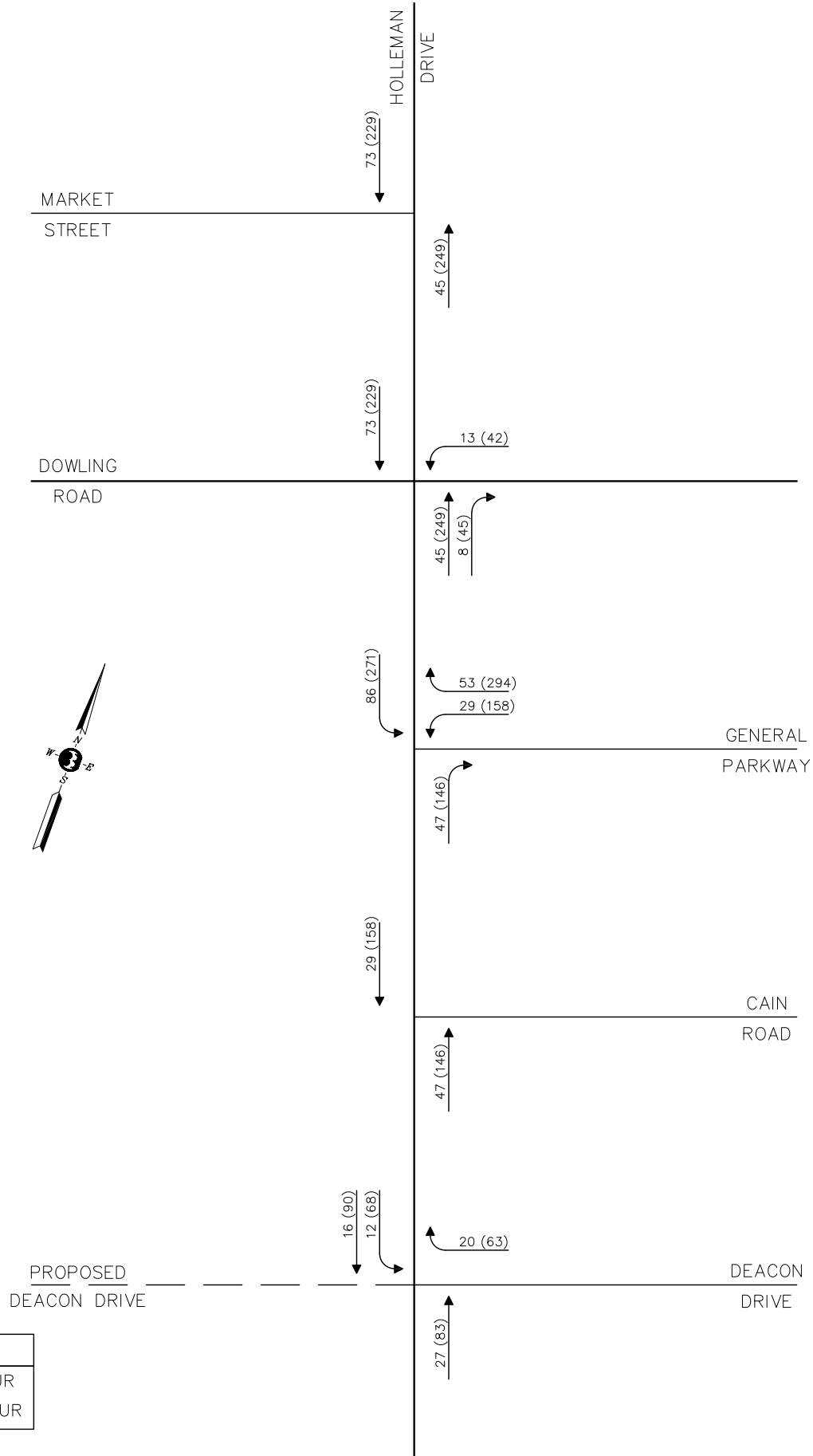


LEGEND
XX% INBOUND
(XX%) OUTBOUND

BUTLER TRACT TRIP DISTRIBUTION - SITE	
SCALE: N/A	DATE: May 2018
JOB NO.: BB18038	DWG. FILE: FIGURE #4



\\pza\data\bbi\BCH\JOBS\BB18038 Butler Tract TIA\CADD\05 CAD Files\FIGURES.dwg-FIGURE #5 Plotted Jun 23, 2018 at 7:10am by bbrimley | Last Saved by: bbrimley



LEGEND	
XXX	A.M. PEAK HOUR
(XXX)	P.M. PEAK HOUR

BUTLER TRACT	
PEAK HOUR VOLUMES - SITE GENERATED, SCENARIO 1 (100% COMMERCIAL)	
SCALE: N/A	DATE: May 2018
JOB NO.: BB18038	DWG. FILE: FIGURE #5

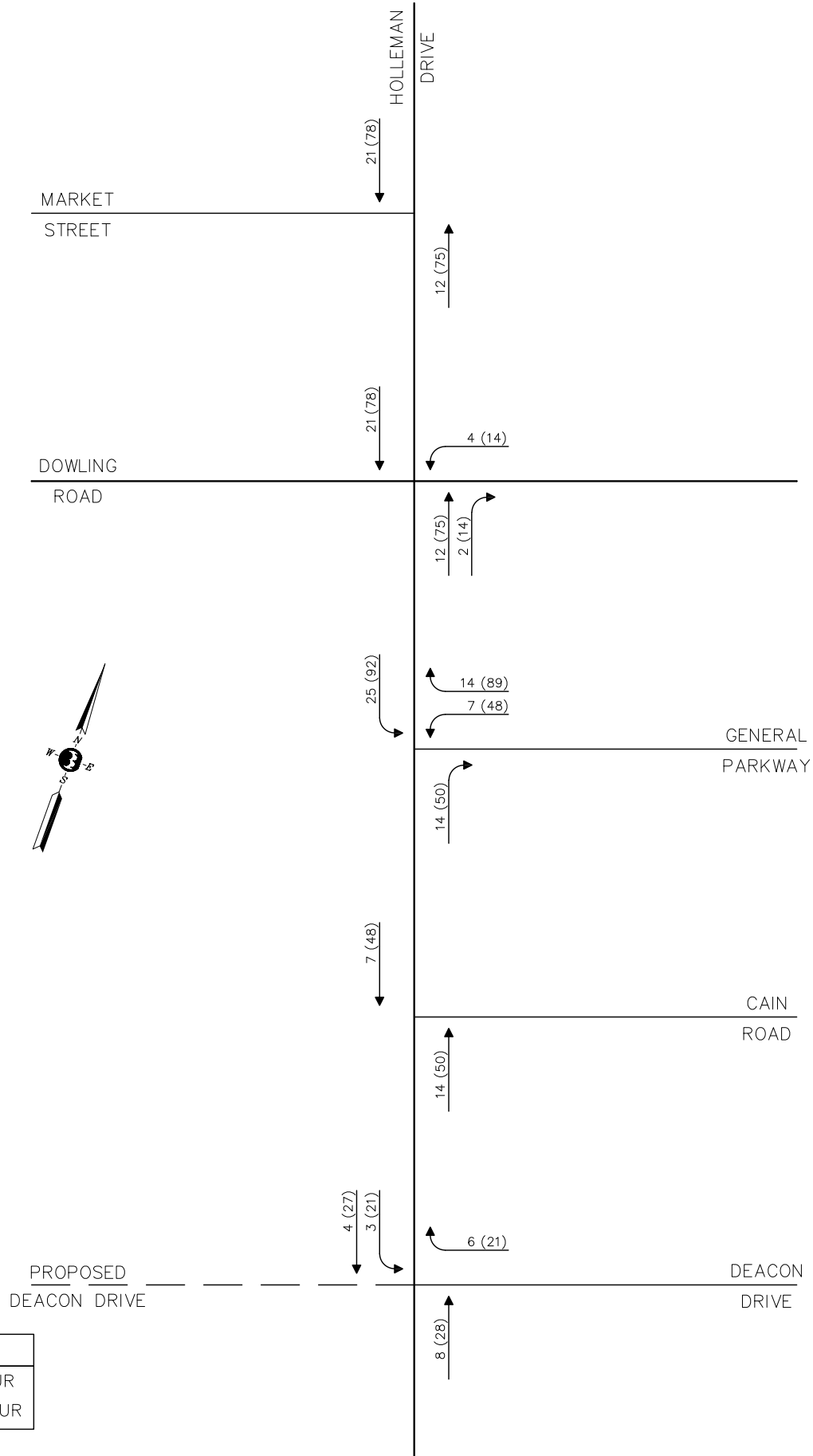


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LEGEND

XXX A.M. PEAK HOUR
(XXX) P.M. PEAK HOUR

BUTLER TRACT

PEAK HOUR VOLUMES - SITE GENERATED, SCENARIO 2

SCALE: N/A

DATE: May 2018

JOB NO.: BB18038

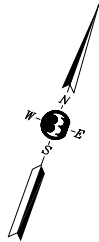
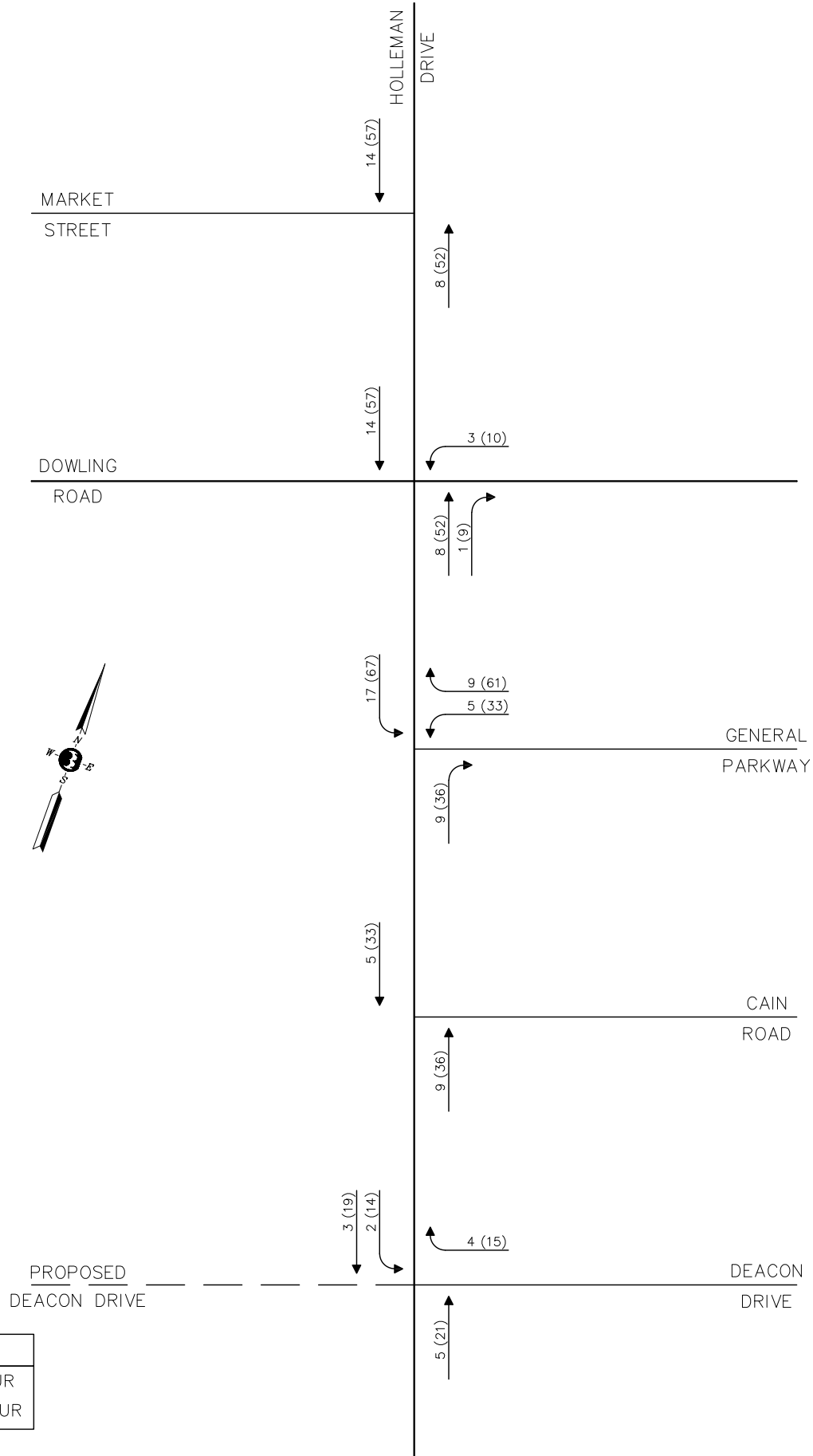
DWG. FILE: FIGURE #6



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LEGEND
XXX A.M. PEAK HOUR
(XXX) P.M. PEAK HOUR

BUTLER TRACT		 Binkley & Barfield, Inc consulting engineers Texas Registration Number F-257
PEAK HOUR VOLUMES – SITE GENERATED, SCENARIO 3		
SCALE: N/A	DATE: May 2018	
JOB NO.: BB18038	DWG. FILE: FIGURE #7	
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BACKGROUND TRAFFIC VOLUMES

For this study, “background volumes” represent the traffic expected to occur along the area streets and roadways from the increase in traffic volumes due to normal traffic growth in the area. This study applied an annual growth factor of 2%. **Figure 8** shows the background Peak Hour volumes after applying the 2% annual growth of the Existing (2018) volumes through 2021.

As mentioned previously, there are some developments that are nearing completion or are under construction. These include: The Barracks, Mission Ranch, Pershing Pointe townhomes, Aggieland Xpress gas station, University Heights, and River Bend Elementary School. Because the Barracks development is nearing completion, the additional traffic from the final units will be covered by the annual 2% growth factor. The generation and distribution of trips for the other developments added to the background volumes are discussed in this section. Trip generation rates are based on information in the ITE Trip Generation Manual or from TIAs specific to the development.

Mission Ranch

The size of the Mission Ranch development is approximately 270 acres. It is anticipated to have approximately 540 single family units after the last phase of development. In 2021, the target year for the Background and Full Build scenarios of this study, it is estimated that Mission Ranch will be developed to 25% completion (135 units). **Table 7** provides a summary of the estimated trips generated by 135 completed homes in Mission Ranch. These trips were added to the study intersections with the distribution illustrated in the Appendix.

Table 7. Site Generated Trips – Mission Ranch Development

Development	AM Peak Hour (vph)			PM Peak Hour (vph)		
	Total	Enter	Exit	Total	Enter	Exit
Mission Ranch	101	25	76	135	85	50

Note: Represents 25% of full build conditions

Pershing Pointe Townhomes

The Pershing Pointe Townhomes, located near the southeast corner of Deacon Drive at Holleman Drive, is a complex that will have 175 units. The calculated number of trips generated by the townhome development for the AM and PM Peak Hours are summarized in **Table 8**. A raised median on Holleman Drive will limit access for Pershing Pointe to right-in, right-out on Holleman Drive. Full access to the development will be provided through Towers Parkway at Deacon Drive. The trip distribution assumptions for Pershing Pointe are shown in the Appendix.

Table 8. Site Generated Trips – Pershing Pointe Development

Development	AM Peak Hour (vph)			PM Peak Hour (vph)		
	Total	Enter	Exit	Total	Enter	Exit
Pershing Pointe	77	13	64	91	61	30

Aggieland Xpress

The Aggieland Xpress convenience store and gas station will be located on the northeast corner of Deacon Drive at Holleman Drive. The gas station will have 10 pumps, and there will be a 7,500-square foot building for a convenience store and adjacent retail space. Trips generated by the Aggieland Xpress development are summarized in **Table 9**. Both accesses for the convenience store and gas station on Deacon Drive and on Holleman Drive are limited to right-in, right-out, impacting the trip distribution shown in the Appendix.

Table 9. Site Generated Trips – Aggieland Xpress

Development	Intensity	AM Peak Hour (vph)			PM Peak Hour (vph)		
		Total	Enter	Exit	Total	Enter	Exit
Aggieland Xpress	10 Gas Pumps ¹	102	51	51	135	68	67
	2,200 SF Retail	15	9	6	46	22	24

Note: ¹4,800 SF Convenience store included as part of ITE Land Use 945 (Gasoline/Service Station w/Convenience Market)

University Heights

University Heights has recently been rezoned to allow for some commercial development, with one potential use being a convenience store and fast food restaurant. The calculated trip ends generated by the development are summarized in **Table 10**. The trip distribution is shown in the Appendix.

Table 10. Site Generated Trips – University Heights Phase 4

Development	AM Peak Hour (vph)			PM Peak Hour (vph)		
	Total	Enter	Exit	Total	Enter	Exit
University Heights	65	40	25	264	127	137

River Bend Elementary School

A traffic study completed by Kimley-Horn & Associates, Inc. (KHA) provided the trip generation and distribution assumptions for the elementary school (River Bend Elementary) located at the intersection of Rock Prairie Road at Holleman Drive. **Table 11** summarizes the estimated trips generated by River Bend Elementary School. The trips added to the study intersections by the school in accordance with the TIA for the school are shown in the Appendix.

Table 11. Site Generated Trips – River Bend Elementary School

Development	Intensity	AM Peak Hour (vph)			PM Peak Hour (vph)		
		Total	Enter	Exit	Total	Enter	Exit
River Bend Elementary	700 Students	630	347	283	420	197	223
	80 Staff	80	80	0	80	0	80

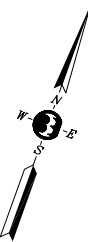
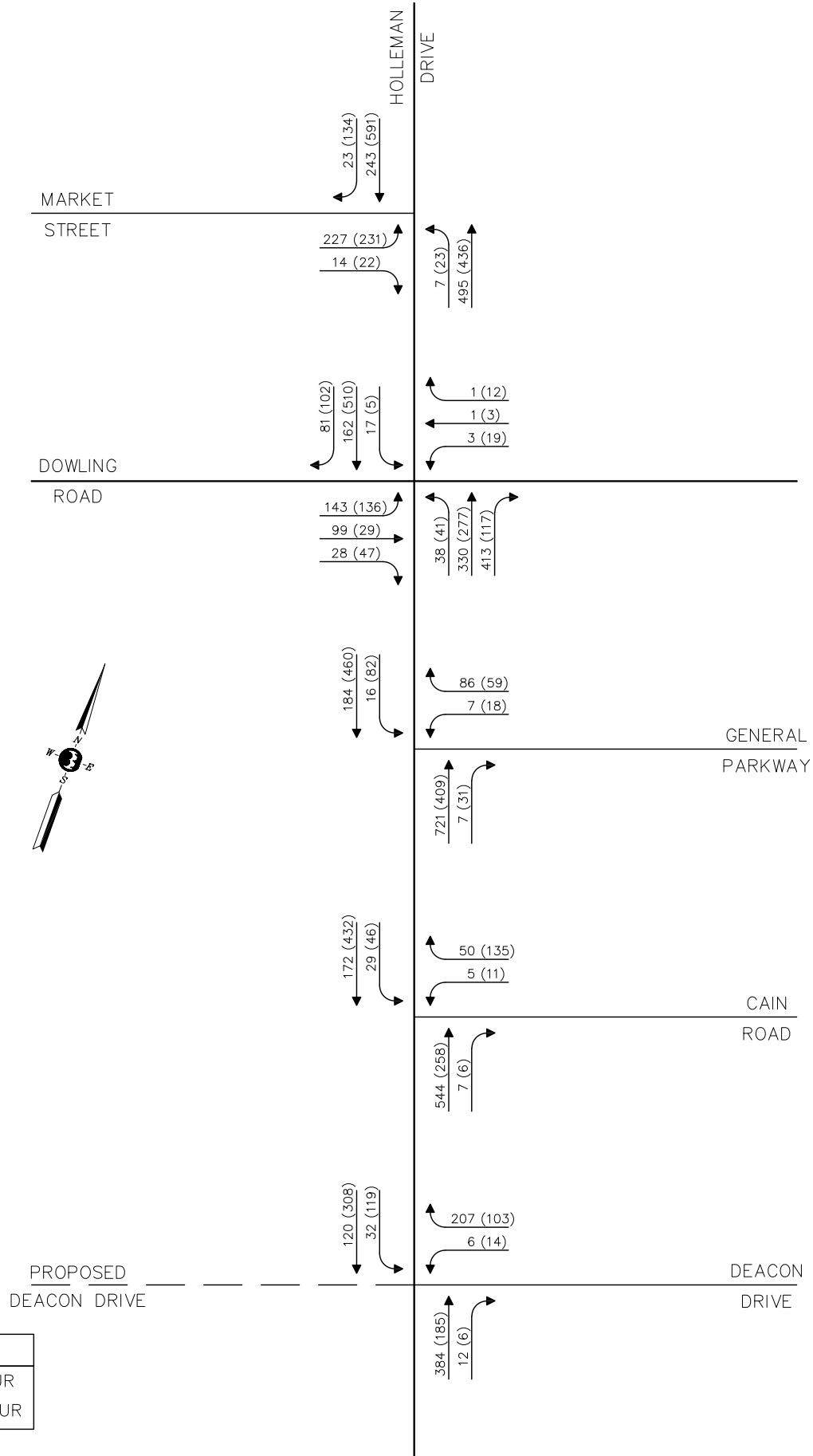
Source: Kimley-Horn & Associates TIA for River Bend Elementary

Figure 9 depicts the trips added to the network from the combined local developments listed in this section. **Figure 10** shows the combined Peak Hour volumes for the Background (2021) conditions, which extrapolate the Existing (2018) traffic to the year 2021 with a 2% growth factor (shown in **Figure 8**) and adding the site traffic of the specific local developments (shown in **Figure 9**).

TOTAL TRAFFIC VOLUMES.

The Peak Hour volumes for the Full Build (2021) scenario are determined by adding the site generated volumes of the proposed site (**Figure 5** for Scenario 1, **Figure 6** for Scenario 2, and **Figure 7** for Scenario 3) to the total Background (2021) volumes (shown in **Figure 10**). The total Full Build volumes for Scenario 1 are shown in **Figure 11**. For Scenario 2 and Scenario 3, the total volumes are shown in **Figures 12** and **13**, respectively. There are no reductions for internal trip capture or pass-by trips, despite the possibility for there to be some with commercial uses.

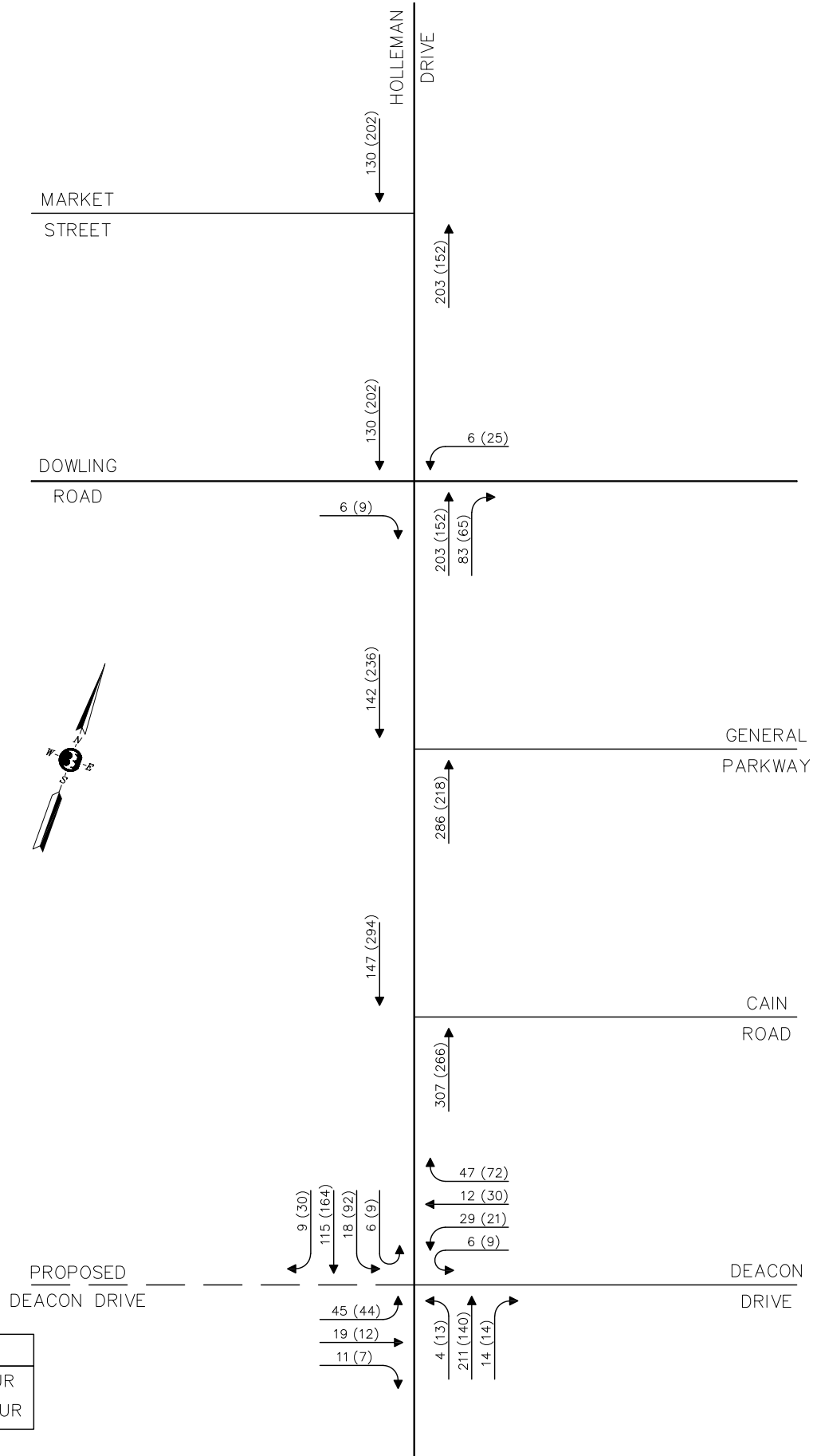
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LEGEND	
XXX	A.M. PEAK HOUR
(XXX)	P.M. PEAK HOUR

BUTLER TRACT		 Binkley & Barfield, Inc consulting engineers Texas Registration Number F-257
PEAK HOUR VOLUMES – BACKGROUND (2021)		
SCALE: N/A	DATE: May 2018	
JOB NO.: BB18038	DWG. FILE: FIGURE #8	3452 Rock Prairie Road West College Station, Texas 77845 979.703.1809 www.binkleybarfield.com

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LEGEND

XXX A.M. PEAK HOUR
(XXX) P.M. PEAK HOUR

BUTLER TRACT PEAK HOUR VOLUMES - LOCAL AREA PROJECTS

SCALE: N/A

DATE: May 2018

JOB NO.: BB18038

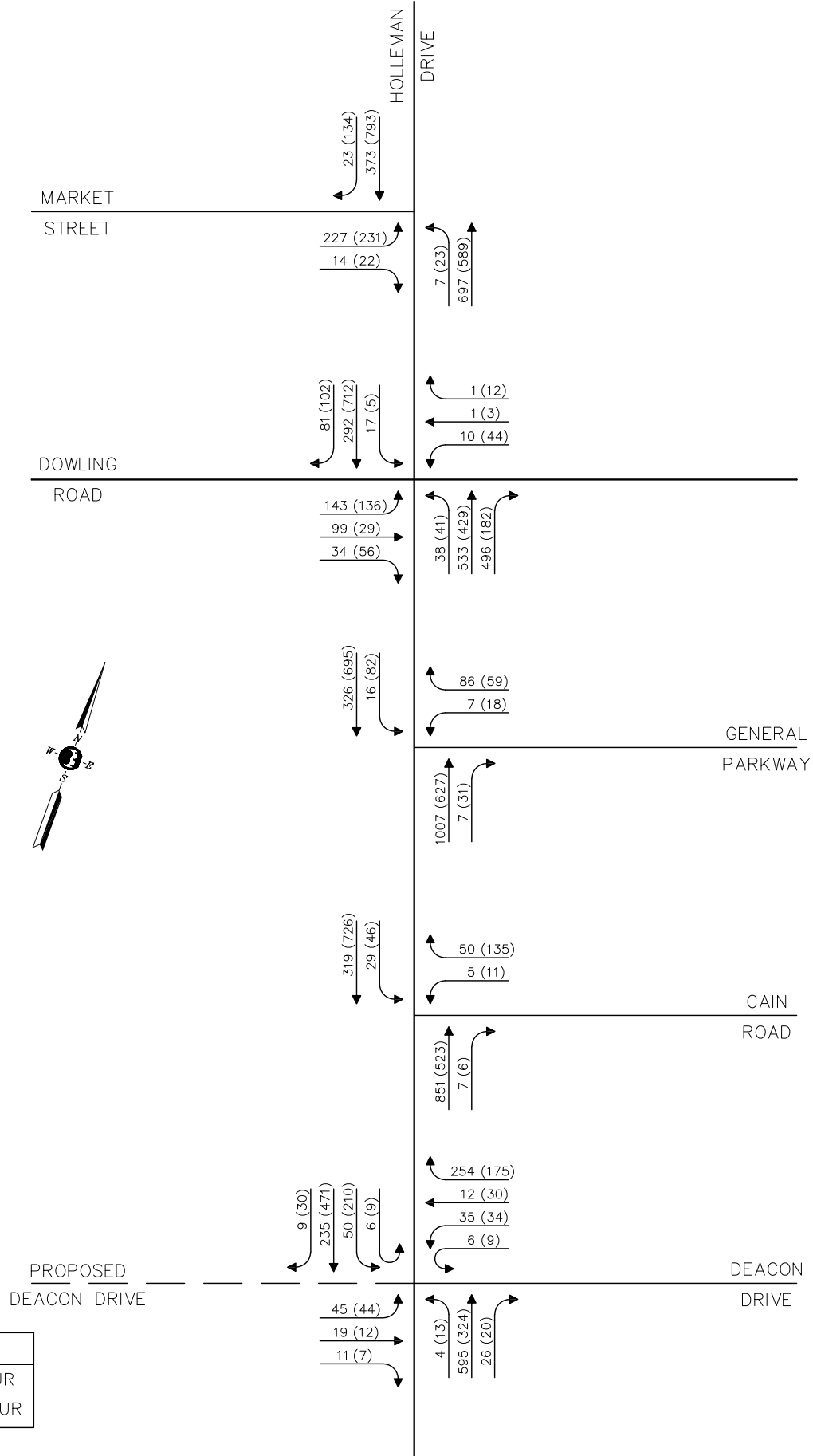
DWG. FILE: FIGURE #9



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LEGEND

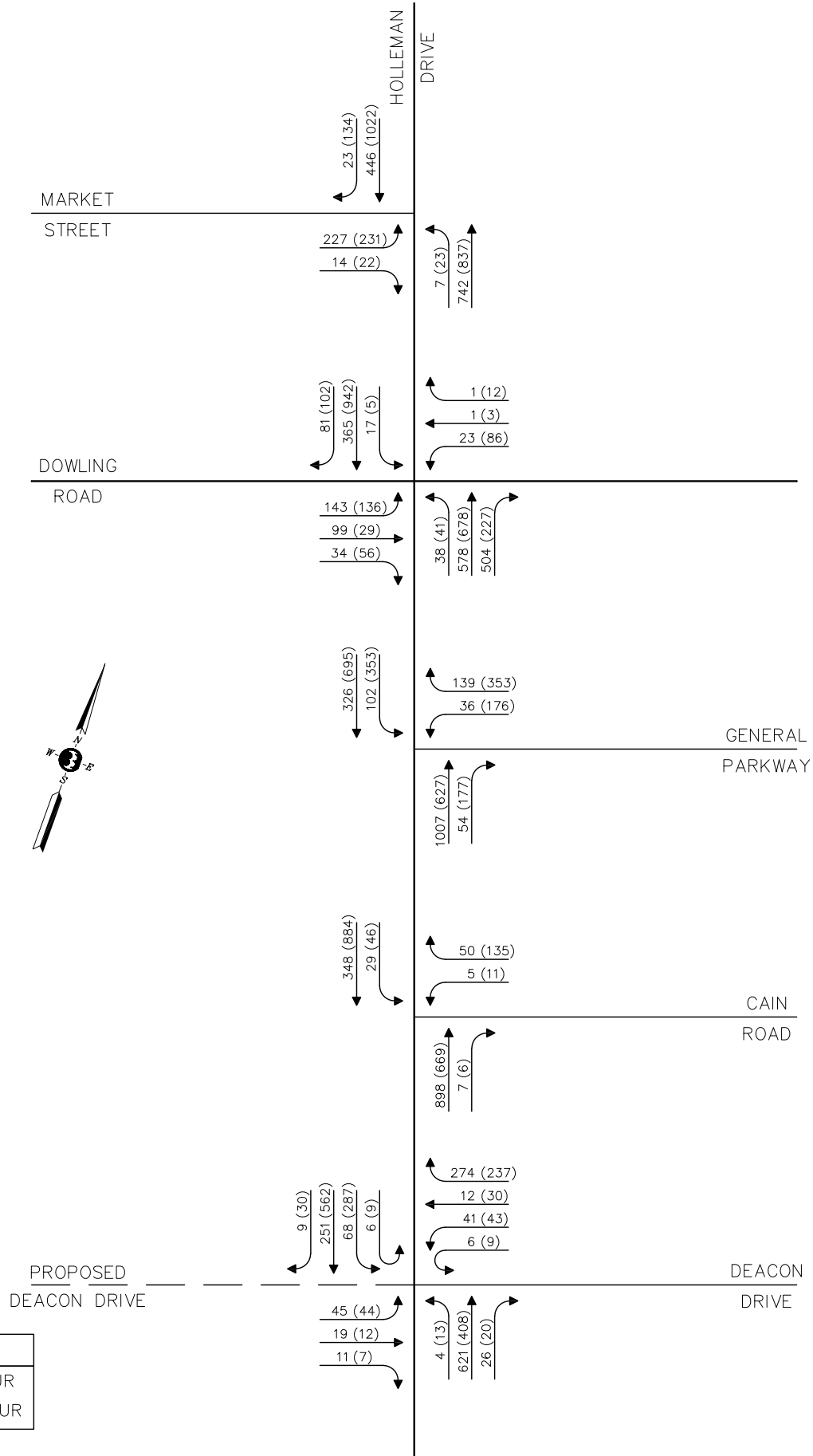
XXX A.M. PEAK HOUR
(XXX) P.M. PEAK HOUR

BUTLER TRACT	
PEAK HOUR VOLUMES - TOTAL BACKGROUND TRAFFIC (2021)	
SCALE: N/A	DATE: May 2018
JOB NO.: BB18038	DWG. FILE: FIGURE #10

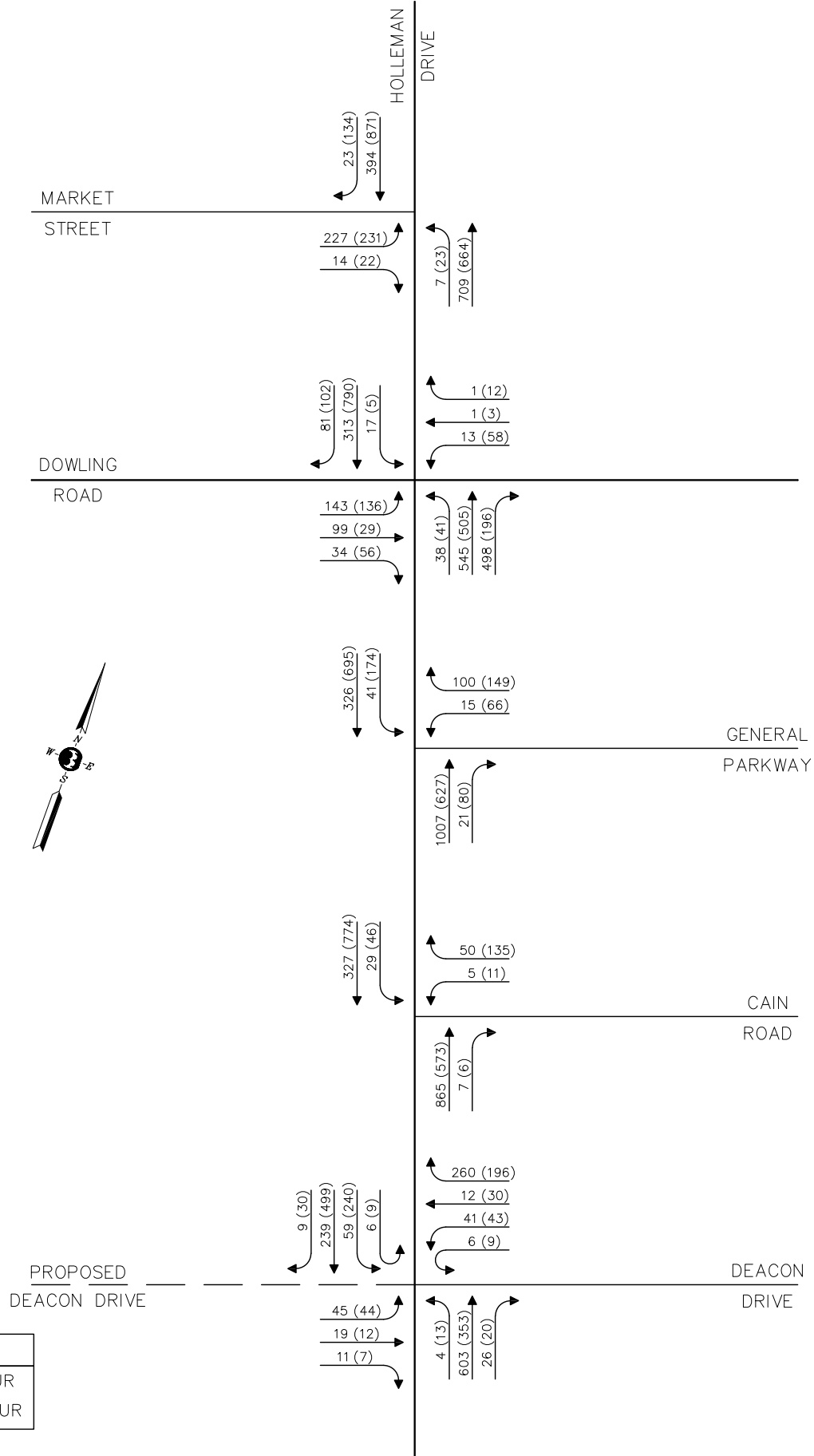


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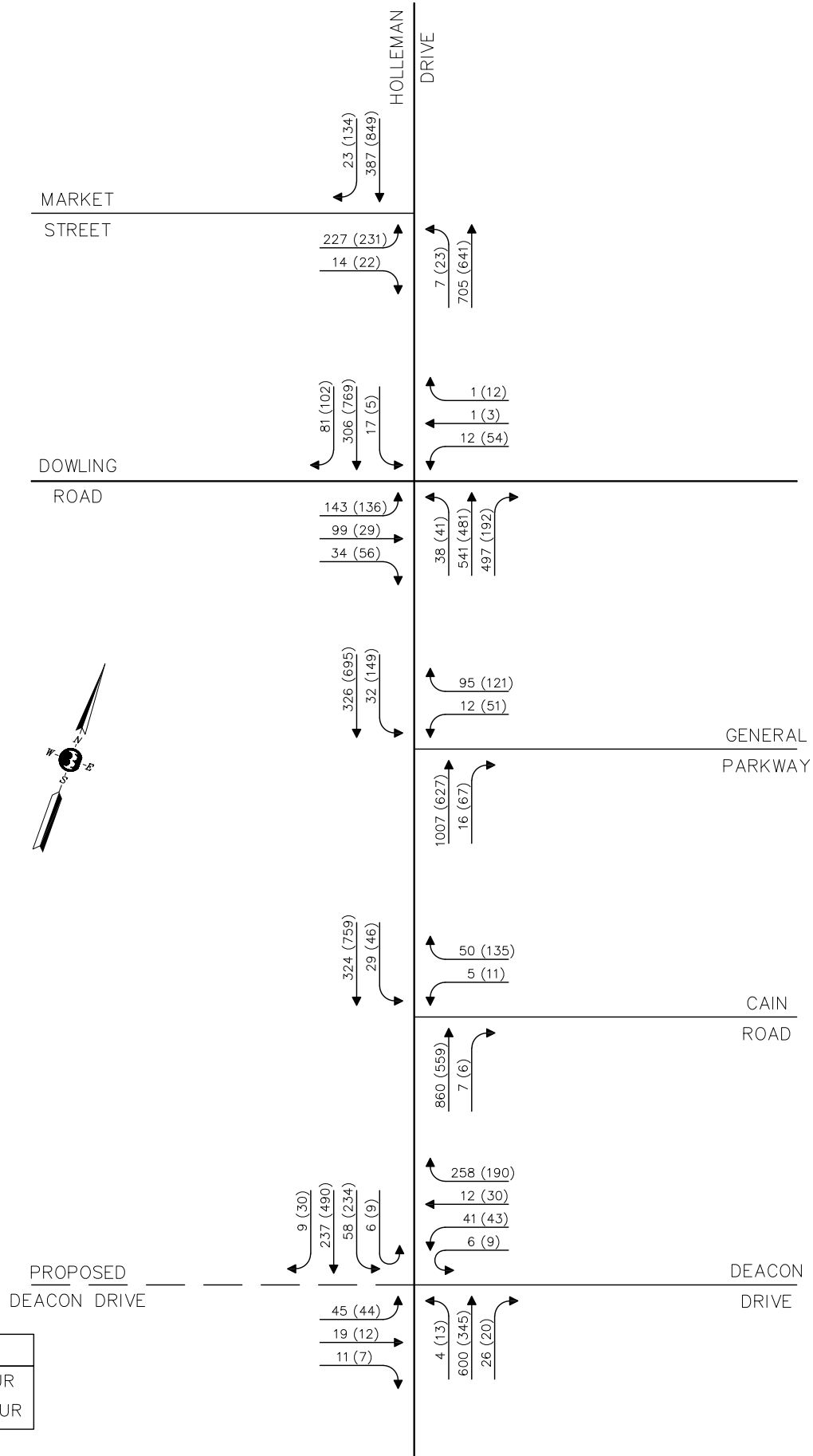
\\pcza\etaa\bbi\BCH\JOBS\BB18038 Butler Tract TIA\CADD\05 CAD Files\FIGURES.dwg-FIGURE #2 Plotted Jun 23, 2018 at 7:08am by bbrimley | Last Saved by bbrimley



BUTLER TRACT	
PEAK HOUR VOLUMES - FULL BUILD, SCENARIO 2	
SCALE: N/A	DATE: May 2018
JOB NO.: BB18038	DWG. FILE: FIGURE #12



\\pza\meta\bbi\BCH\JOBS\BB18038 Butler Tract TIA\CADD\05 CAD Files\FIGURES.dwg-FIGURE #3 Plotted Jun 23, 2018 at 7:09am by bbrimley | Last Saved by bbrimley



BUTLER TRACT	
PEAK HOUR VOLUMES - FULL BUILD, SCENARIO 3	
SCALE: N/A	DATE: May 2018
JOB NO.: BB18038	DWG. FILE: FIGURE #13



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INTERSECTION CAPACITY ANALYSIS

Level of Service (LOS) analyses of the traffic operations were performed at the study intersections. Each analysis was conducted utilizing Synchro software for the AM and PM Peak Hours. For each scenario, including the Existing (2018) conditions, it was assumed that the Holleman Drive corridor was built to its ultimate four-lane configuration from the current widening project. Mitigations for poor and failing levels of service were proposed as necessary. The findings of the analyses with the resulting delay and levels of service are summarized in the following tables:

- Table 12. AM Peak Hour Level of Service
- Table 13. PM Peak Hour Level of Service

Observations from the analyzed scenarios are described below.

EXISTING (2018)

The lane configurations for Holleman Drive matched the four-lane design of the road currently under construction. For the Existing (2018) scenario, all intersections operate at an acceptable level of service.

BACKGROUND (2021)

The Background (2021) analysis assumed a 2% annual growth in traffic and the addition of traffic generated from nearby developments. During the AM and PM Peak Hours, the eastbound and westbound left-turns from Deacon Drive are forecasted to operate at LOS E or LOS F. While the AM Peak Hour is not as severe, the average delay for the eastbound left-turn is 145 seconds per vehicle in the PM Peak Hour. The worst vehicle queues (95th percentile) are approximately 3 vehicles or less.

SCENARIO 1 FULL BUILD (2021)

Scenario 1 includes site traffic with an assumption for 100% commercial (retail) development. During the AM Peak Hour, there are some movements with unacceptable levels of service, including the westbound left turn from General Parkway and the westbound and eastbound left turns from Deacon Drive. The vehicle queues at these locations are generally short. During the PM Peak Hour there are operational concerns at Dowling Road, at General Parkway, and at Deacon Drive. The intersection at Dowling Road is forecasted to operate at LOS F, with failing levels of service in the northbound and southbound directions. At General Parkway, the westbound approach fails due to the high left-turning volume. Deacon Drive experiences significant failings in level of service for the eastbound and westbound approaches.

SCENARIO 2 FULL BUILD (2021)

Scenario 2 includes site traffic from the combination of the Big Shots golf facility and some commercial development (3.2 acres). There are significantly fewer trips generated with development of the Big Shots compared to the typical General Commercial assumptions. As expected, the analyses of Scenario 2 show that the intersections perform better than in Scenario 1. During the AM Peak Hour, all intersections operate at an acceptable level of service, except for left-turn concerns from Deacon Drive that exist in the Background conditions. During the PM Peak Hour, operations at Dowling Road improve to LOS E, and only the southbound approach operates with a failing level of service. At General Parkway, the westbound left-turn still operates with an unacceptable level of service (LOS E).

SCENARIO 3 FULL BUILD (2021)

In Scenario 2, the main operational concerns are during the PM Peak Hour at Dowling Road and at General Parkway. For Scenario 3, the intersection at Dowling Road improves to an acceptable level of service (LOS D) during the PM Peak Hour, although the southbound movement continues to operate at LOS E. At General Parkway, the westbound left-turn movement improves to LOS D, with 33 seconds of delay. Deacon Drive continues to experience operational concerns in the AM and PM Peak Hours with failing of unacceptable levels of service in the Eastbound and Westbound directions.

Table 12. AM Peak Hour Level of Service

Scenario	Eastbound			Westbound			Northbound			Southbound			INT
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Market Street at Holleman Drive													
Existing 2018	E			-			A			B			C
	61.9			-			5.7			14.7			21.5
Background 2021	E			-			A			B			C
	70.5			-			6.4			16.4			20.9
Scenario 1	E			-			A			B			C
	70.5			-			6.6			17.1			20.5
Scenario 2	E			-			A			B			C
	70.5			-			6.5			16.5			20.7
Scenario 3	E			-			A			B			C
	70.5			-			6.4			16.5			20.8
Dowling Road at Holleman Drive													
Existing 2018	B			A			B		B	B		B	
	13.9			9.5			12.0		12.0	10.5		12.1	
Background 2021	C			B			C		B	B		C	
	19.0			11.2			22.6		14.2	14.7		19.2	
Scenario 1	C			B			D		B	C		C	
	21.4			12.1			31.8		14.4	18.1		24.8	
Scenario 2	C			B			D		B	C		C	
	19.5			11.4			24.3		14.3	15.4		20.3	
Scenario 3	C			B			C		B	C		C	
	19.4			11.3			23.7		14.3	15.2		19.9	
General Parkway at Holleman Drive													
Existing 2018	-			C	-	B	-			A	-	-	
	-			16.3	-	12.3	-			9.6	-	-	
Background 2021	-			C	-	C	-			B	-	-	
	-			24.0	-	15.8	-			11.6	-	-	
Scenario 1	-			E	-	C	-			B	-	-	
	-			40.8	-	19.2	-			13.6	-	-	
Scenario 2	-			D	-	C	-			B	-	-	
	-			27.1	-	16.5	-			12.1	-	-	
Scenario 3	-			D	-	B	-			B	-	-	
	-			26.0	-	16.3	-			11.9	-	-	
Cain Road at Holleman Drive													
Existing 2018	-			B			-			A	-	-	
	-			11.1			-			8.9	-	-	
Background 2021	-			B			-			B	-	-	
	-			14.0			-			10.5	-	-	
Scenario 1	-			B			-			B	-	-	
	-			14.5			-			10.8	-	-	
Scenario 2	-			B			-			B	-	-	
	-			14.1			-			10.6	-	-	
Scenario 3	-			B			-			B	-	-	
	-			14.0			-			10.6	-	-	
Deacon Drive at Holleman Drive													
Existing 2018	-			B	-	B	-			A	-	-	
	-			13.7	-	11.7	-			8.4	-	-	
Background 2021	F	C		E	C		A	-		B	-	-	
	54.9	22.6		37.4	19.9		7.9	-		10.6	-	-	
Scenario 1	F	D		E	C		A	-		B	-	-	
	80.4	25.3		45.2	22.8		7.9	-		10.8	-	-	
Scenario 2	F	C		E	C		A	-		B	-	-	
	63.4	23.8		43.5	20.8		7.9	-		10.6	-	-	
Scenario 3	F	C		E	C		A	-		B	-	-	
	61.6	23.6		43.1	20.5		7.9	-		10.6	-	-	

Note: Letters are level of service, numbers are average seconds of delay per vehicle.

Table 13. PM Peak Hour Level of Service

Scenario	Eastbound			Westbound			Northbound			Southbound			INT
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Market Street at Holleman Drive													
Existing 2018	D			-			A			B			C
	53.6			-			5.4			18.0			20.3
Background 2021	E			-			A			C			C
	59.7			-			5.9			22.0			21.8
Scenario 1	E			-			A			C			C
	59.7			-			5.7			29.2			26.5
Scenario 2	E			-			A			C			C
	59.7			-			6.1			23.7			22.2
Scenario 3	E			-			A			C			C
	59.7			-			6.0			23.1			22.0
Dowling Road at Holleman Drive													
Existing 2018	B			B			B		A	B			B
	12.8			10.1			11.6		8.9	14.5			13.3
Background 2021	C			B			C		A	D			D
	16.1			12.2			18.0		9.3	33.9			25.8
Scenario 1	C			B			E		A	F			F
	18.6			14.6			55.5		9.6	122			82.7
Scenario 2	C			B			C		A	F			E
	17.2			13.0			23.9		9.4	53.3			37.8
Scenario 3	C			B			C		A	E			D
	17.0			12.8			21.5		9.4	45.9			33.2
General Parkway at Holleman Drive													
Existing 2018	-			C	-	B	-			A	-		-
	-			15.0	-	10.1	-			8.6	-		-
Background 2021	-			C	-	B	-			A	-		-
	-			20.3	-	11.4	-			9.6	-		-
Scenario 1	-			F	-	D	-			B	-		-
	-			>300	-	25.2	-			14.8	-		-
Scenario 2	-			E	-	B	-			B	-		-
	-			46.1	-	13.2	-			10.7	-		-
Scenario 3	-			D	-	B	-			B	-		-
	-			32.8	-	12.5	-			10.3	-		-
Cain Road at Holleman Drive													
Existing 2018	-			B			-			A	-		-
	-			10.2			-			7.9	-		-
Background 2021	-			B			-			A	-		-
	-			12.3			-			8.8	-		-
Scenario 1	-			B			-			A	-		-
	-			13.7			-			9.4	-		-
Scenario 2	-			B			-			A	-		-
	-			12.7			-			9.0	-		-
Scenario 3	-			B			-			A	-		-
	-			12.6			-			9.0	-		-
Deacon Drive at Holleman Drive													
Existing 2018	-			B	-	A	-			A	-		-
	-			14.4	-	9.3	-			7.9	-		-
Background 2021	F	D		E	C		A	-		A	-		-
	145	31.4		48.8	23.2		8.6	-		8.6	-		-
Scenario 1	F	F	F	F	F		A	-		A	-		-
	>300	57.3		130	61.7		8.9	-		9.8	-		-
Scenario 2	F	E	F	F	D		A	-		A	-		-
	244	37.0		72.6	28.4		8.7	-		9.1	-		-
Scenario 3	F	E	F	F	D		A	-		A	-		-
	235	37.0		71.5	28.2		8.6	-		9.2	-		-

Notes: Letters are level of service, numbers are average seconds of delay per vehicle.

SUMMARY OF FINDINGS

The capacity analyses forecasted poor or failing operations at Deacon Drive during the Background (2021) period that occur regardless of the development of the Butler Tract. These failings can be mitigated with a traffic signal; however, a signal is not currently planned at that location. A pseudo-analysis for a signal warrant is shown below in **Table 14**. The analysis is based on Peak Hour volumes only, identifying the scenarios for which the AM or PM Peak Hour volumes exceed the stated threshold of the volume warrants. The Warrant 1 and Warrant 2 volumes are exceeded starting in the Background 2021 scenario. This does not substitute for a full signal warrant analysis but suggests that there may be warranted in the future and the location should be monitored for signalization.

With Scenario 1, representing full development with General Commercial retail assumptions, there are significant operational failings at Dowling Road and at General Parkway. Mitigation with traffic signals was not pursued at these locations, but with less intense trip generation assumptions of Scenario 2. Scenario 2 evaluated the impact of a Big Shots golf facility with some commercial (retail) development. The impacts under Scenario 2 are much smaller than the impacts for Scenario 1, though there are still some undesirable levels of service. In Scenario 3, these issues are mitigated with the further reductions in trips generated.

Table 14. Signal Warrant Analysis Using Peak Hour Volumes

Summary	Warrant 1		Warrant 2		Warrant 3	
	AM	PM	AM	PM	AM	PM
Existing 2018	No	No	No	No	No	No
Background 2021	Yes	Yes	Yes	Yes	No	No
Scenario 1	Yes	Yes	Yes	Yes	No	Yes
Scenario 2	Yes	Yes	Yes	Yes	No	No
Scenario 3	Yes	Yes	Yes	Yes	No	No

Note: Warrant analysis based on Peak Hour volumes only, not the full 8-hour or 4-hour evaluations used for Warrant 1 and Warrant 2.

RECOMMENDATIONS

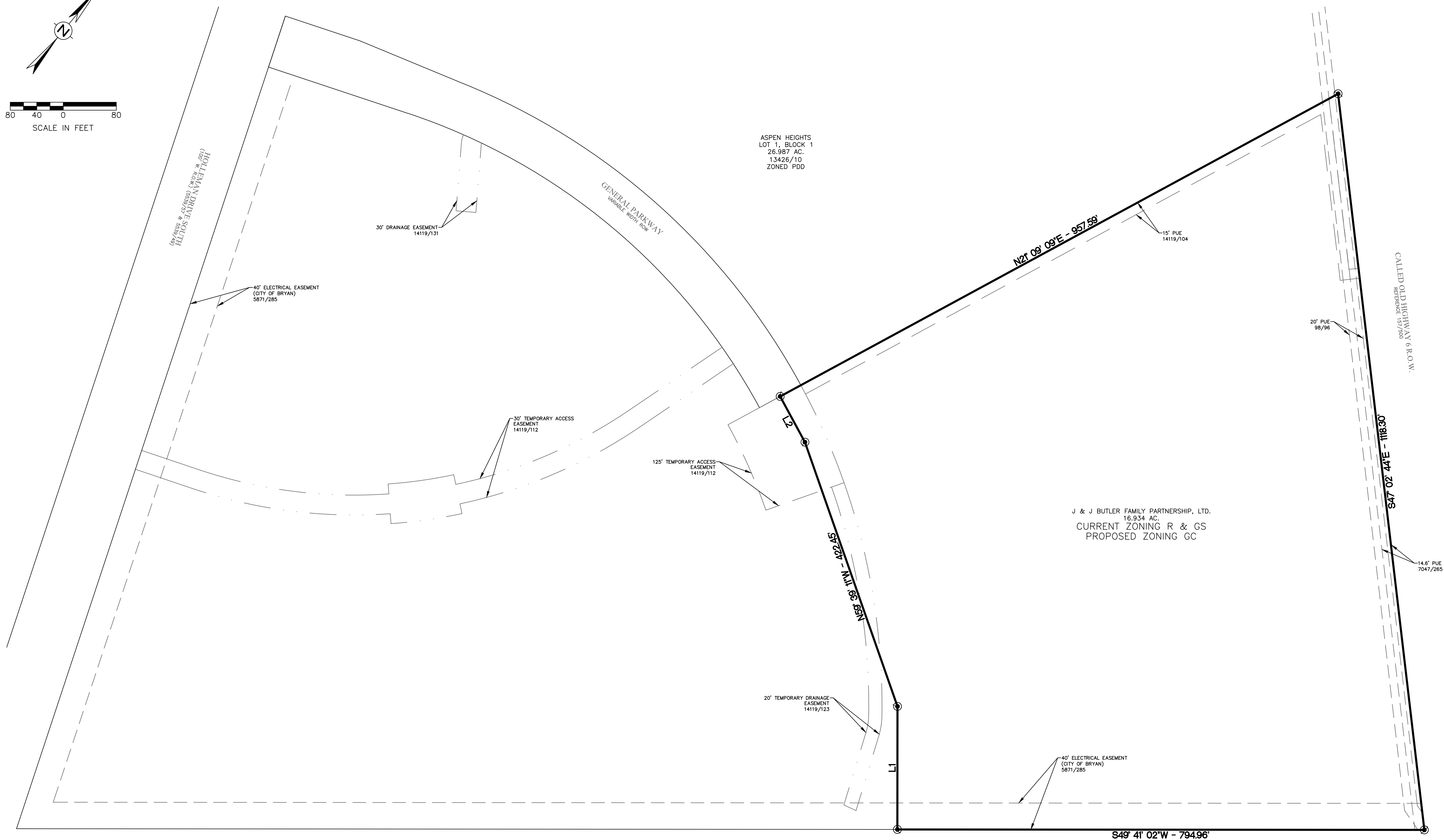
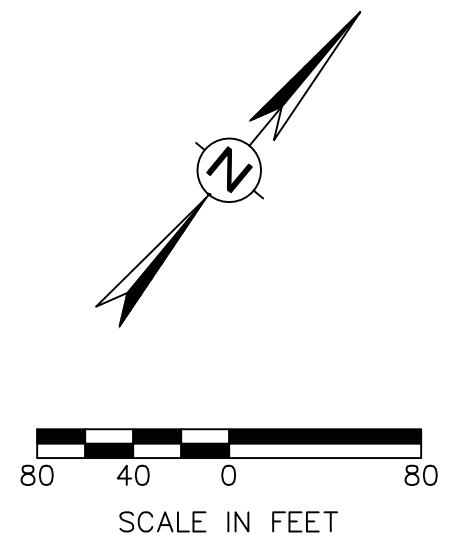
Unless further mitigations are pursued, such as signalization at General Parkway or at Dowling Road, and until General Parkway is extended to Deacon Drive, it is recommended that development be limited to generating no more trips than what are shown in Scenario 3.

CONCLUSION

The analyses conducted in this study were based upon assumptions for specific types and intensities of development to evaluate how intersections around the proposed development of the Butler Tract will operate under future conditions. It is likely that actual development along the Holleman Drive South corridor will differ from the assumptions of this TIA, causing the intersections to perform differently than shown in the report. If there are any questions concerning this report or its analyses, please contact our office.

APPENDIX

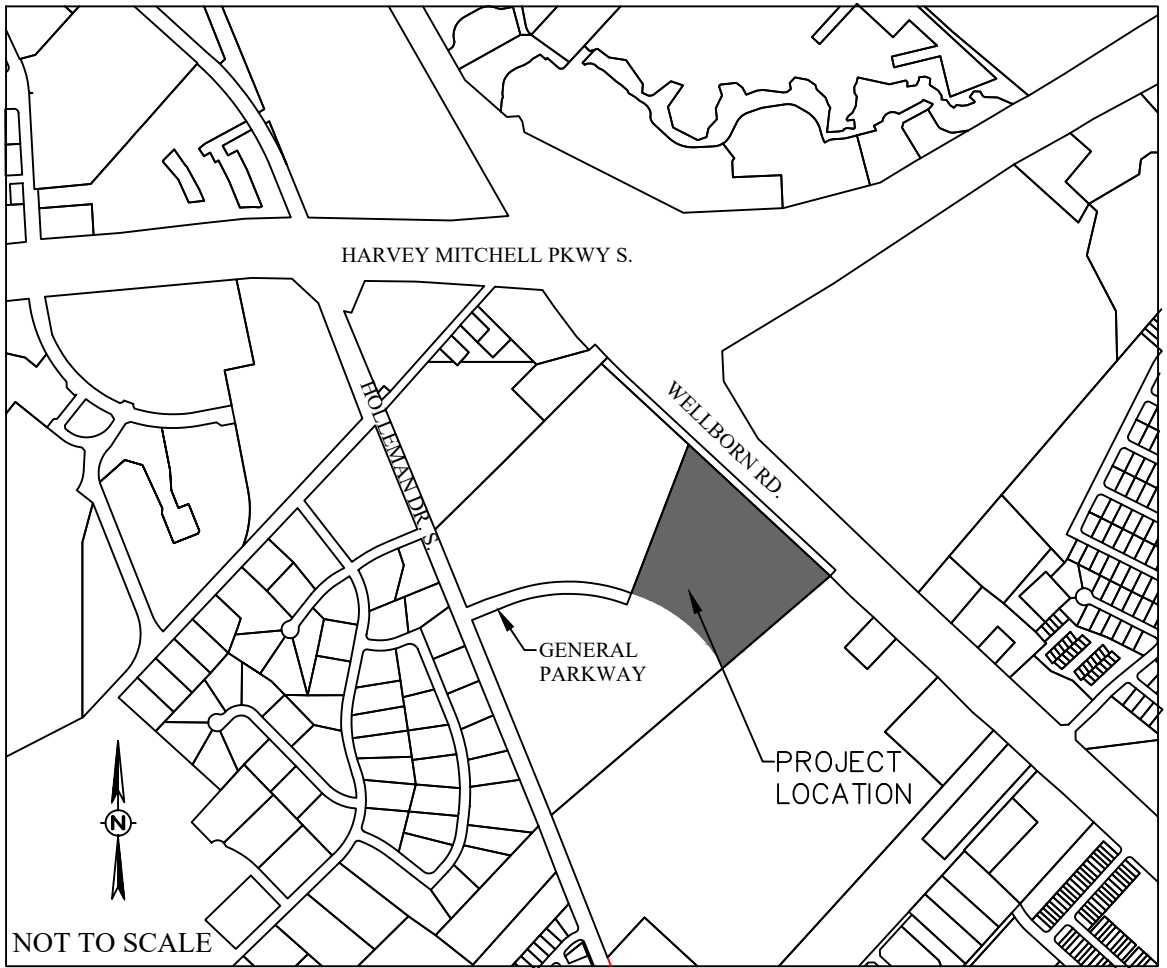
SITE SURVEY	1 PAGE
BIG SHOTS GOLF EXHIBIT	1 PAGE
TRAFFIC COUNT SUMMARY SHEETS	20 PAGES
DIAGRAMS OF TRIP DISTRIBUTIONS FOR LOCAL DEVELOPMENTS	5 PAGES
ITE TRIP GENERATION SUMMARY AND LAND USE DETAILS	5 PAGES
SYNCHRO ANALYSIS OUTPUT	
Existing (2018)	6 PAGES
Background (2021)	6 PAGES
Scenario 1 Full Build (2021)	6 PAGES
Scenario 2 Full Build (2021)	6 PAGES
Scenario 3 Full Build (2021)	6 PAGES
DESCRIPTIONS OF LEVELS OF SERVICE	1 PAGE



LINE TABLE		
LINE #	LENGTH	DIRECTION
L1	185.63'	N40° 18' 58\"W
L2	78.49'	N68° 50' 51\"W

NOW OR FORMERLY
D.W. FLEMING
PART OF CALLED 70.4 AC.
143/635
ZONED R

VICINITY MAP



ZONING MAP
BUTLER TRACT COMMERCIAL
16.934 ACRES
CRAWFORD BURNETT LEAGUE, A-7
COLLEGE STATION, BRAZOS COUNTY, TEXAS

OWNER/DEVELOPER:

J&J BUTLER FAMILY
PARTNERSHIP, LTD
6010 Thoroughbred RDG
College Station, TX 77845

SCALE: AS SHOWN
APRIL 2018

SURVEYOR:

H. Curtis Strong, RPLS No. 4961
Strong Surveying, LLC
1722 Broadmoor Dr, Ste 105
Bryan, TX 77802
(979) 776-9836

ENGINEER:

Schultz Engineering, LLC

TBPE NO. 12327
911 SOUTHWEST PKWY E.
College Station, Texas 77840

(979) 764-3900



MARK	REVISION	BY	DATE

SCHULTZ Engineering, LLC 911 So. West Pkwy E College Station, TX 77840 979.764.3900 TBPE NO. 12327					
SURVEYED	DESIGNED	DRAWN	APPROVED	JOB NO.	DATE
STRONG	DLD	DLD	JPS	18-598	JANUARY 2018

BUTLER TRACT DEVELOPMENT
HOLLEMAN DRIVE SOUTH
COLLEGE STATION, TX

SITE & ADJACENT
PROPERTY EXHIBIT W/
AERIAL

SCALE	
VERTICAL	N/A
HORIZONTAL	SEE PLAN
PLOTTING SCALE:	1:1
FILE NAME:	18-598

EXHIBIT
D

Market St & Holleman Dr - TMC

Thu Mar 1, 2018

AM Peak (7AM - 8AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 499661, Location: 30.58457, -96.336372



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Holleman Dr Southbound					Holleman Dr Northbound					Market St Eastbound					
Time	T	R	U	App	Ped*	L	T	U	App	Ped*	L	R	U	App	Ped*	Int
2018-03-01 7:00AM	52	4	0	56	6	2	100	0	102	2	48	2	0	50	0	208
7:15AM	49	7	0	56	1	2	118	0	120	5	74	6	0	80	0	256
7:30AM	51	5	0	56	7	2	150	0	152	1	68	3	0	71	0	279
7:45AM	77	6	0	83	0	1	98	0	99	0	24	2	0	26	0	208
Total	229	22	0	251	14	7	466	0	473	8	214	13	0	227	0	951
% Approach	91.2%	8.8%	0%	-	-	1.5%	98.5%	0%	-	-	94.3%	5.7%	0%	-	-	-
% Total	24.1%	2.3%	0%	26.4%	-	0.7%	49.0%	0%	49.7%	-	22.5%	1.4%	0%	23.9%	-	-
PHF	0.744	0.786	-	0.756	-	0.875	0.777	-	0.778	-	0.723	0.542	-	0.709	-	0.852
Lights	209	22	0	231	-	7	455	0	462	-	214	13	0	227	-	920
% Lights	91.3%	100%	0%	92.0%	-	100%	97.6%	0%	97.7%	-	100%	100%	0%	100%	-	96.7%
Articulated Trucks	1	0	0	1	-	0	1	0	1	-	0	0	0	0	-	2
% Articulated Trucks	0.4%	0%	0%	0.4%	-	0%	0.2%	0%	0.2%	-	0%	0%	0%	0%	-	0.2%
Buses and Single-Unit Trucks	19	0	0	19	-	0	10	0	10	-	0	0	0	0	-	29
% Buses and Single-Unit Trucks	8.3%	0%	0%	7.6%	-	0%	2.1%	0%	2.1%	-	0%	0%	0%	0%	-	3.0%
Pedestrians	-	-	-	-	14	-	-	-	-	8	-	-	-	-	0	-
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Market St & Holleman Dr - TMC

Thu Mar 1, 2018

AM Peak (7AM - 8AM)

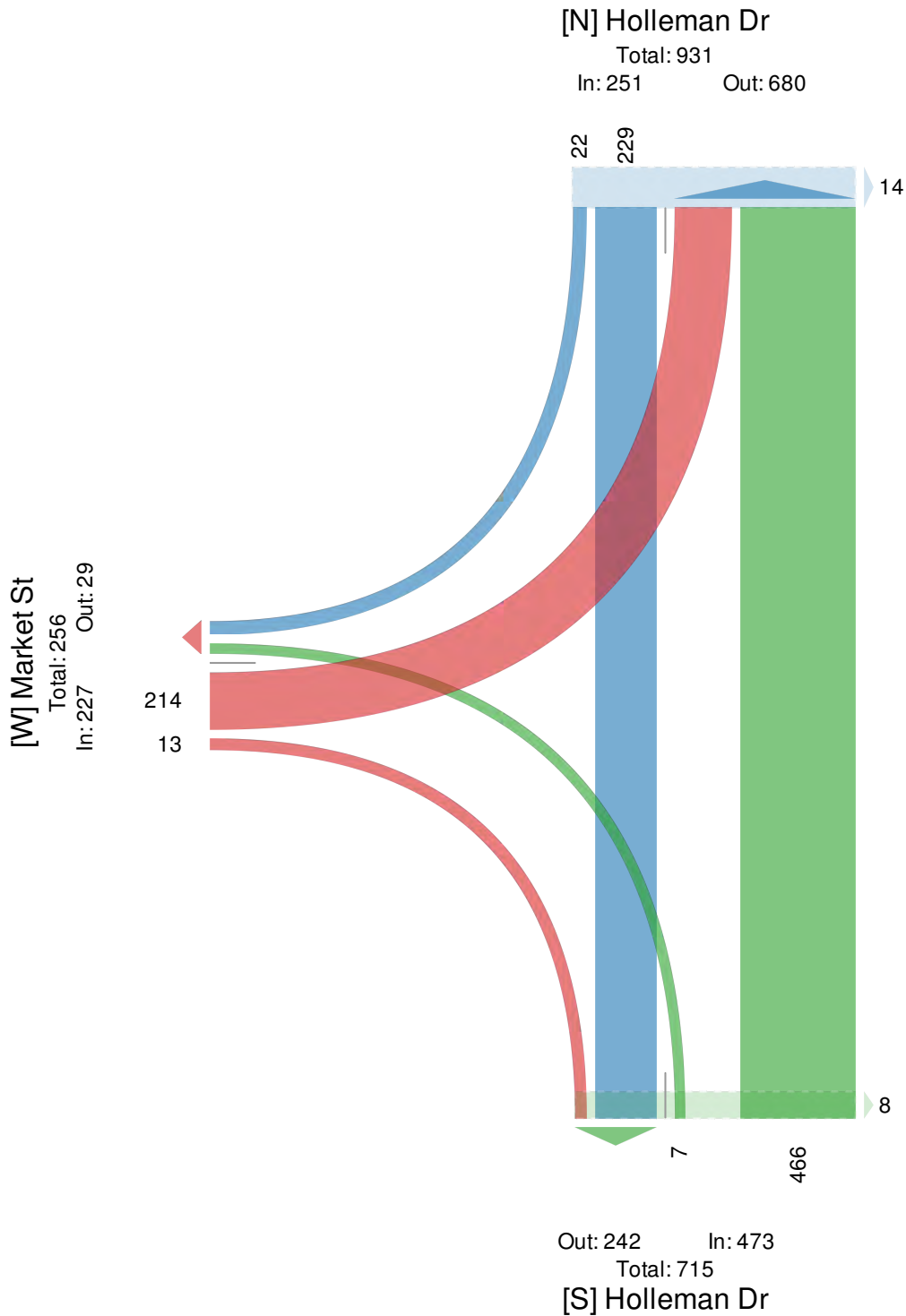
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 499661, Location: 30.58457, -96.336372



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



Market St & Holleman Dr - TMC

Thu Mar 1, 2018

PM Peak (5PM - 6PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 499661, Location: 30.58457, -96.336372



Provided by: C. J. Hensch & Associates Inc.

5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Holleman Dr Southbound					Holleman Dr Northbound					Market St Eastbound					
Time	T	R	U	App	Ped*	L	T	U	App	Ped*	L	R	U	App	Ped*	Int
2018-03-01 5:00PM	128	27	0	155	2	4	118	0	122	1	68	7	0	75	0	352
5:15PM	143	31	0	174	0	7	91	0	98	3	48	9	0	57	0	329
5:30PM	146	31	0	177	0	3	97	0	100	1	48	3	0	51	0	328
5:45PM	140	37	0	177	0	8	105	0	113	0	54	2	0	56	0	346
Total	557	126	0	683	2	22	411	0	433	5	218	21	0	239	0	1355
% Approach	81.6%	18.4%	0%	-	-	5.1%	94.9%	0%	-	-	91.2%	8.8%	0%	-	-	-
% Total	41.1%	9.3%	0%	50.4%	-	1.6%	30.3%	0%	32.0%	-	16.1%	1.5%	0%	17.6%	-	-
PHF	0.954	0.851	-	0.965	-	0.688	0.871	-	0.887	-	0.801	0.583	-	0.797	-	0.962
Lights	554	126	0	680	-	22	406	0	428	-	218	21	0	239	-	1347
% Lights	99.5%	100%	0%	99.6%	-	100%	98.8%	0%	98.8%	-	100%	100%	0%	100%	-	99.4%
Articulated Trucks	1	0	0	1	-	0	1	0	1	-	0	0	0	0	-	2
% Articulated Trucks	0.2%	0%	0%	0.1%	-	0%	0.2%	0%	0.2%	-	0%	0%	0%	0%	-	0.1%
Buses and Single-Unit Trucks	2	0	0	2	-	0	4	0	4	-	0	0	0	0	-	6
% Buses and Single-Unit Trucks	0.4%	0%	0%	0.3%	-	0%	1.0%	0%	0.9%	-	0%	0%	0%	0%	-	0.4%
Pedestrians	-	-	-	-	2	-	-	-	-	5	-	-	-	-	0	
% Pedestrians	-	-	-	-	100%	-	-	-	-	100%	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Market St & Holleman Dr - TMC

Thu Mar 1, 2018

PM Peak (5PM - 6PM) - Overall Peak Hour

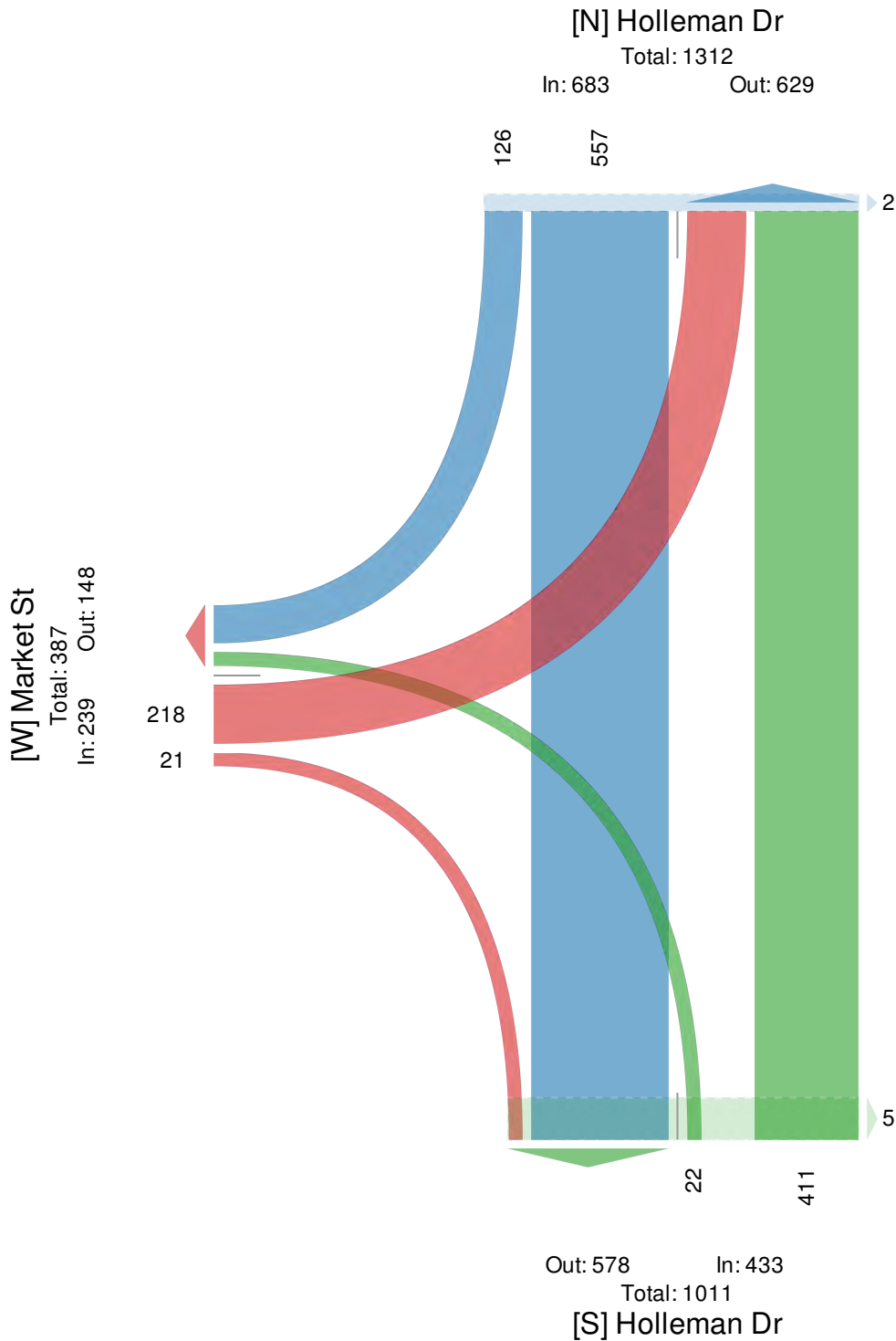
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 499661, Location: 30.58457, -96.336372



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



Holleman Dr & N Dowling Rd - TMC

Thu Mar 1, 2018

AM Peak (7AM - 8AM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 499660, Location: 30.584237, -96.331858



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Holleman Dr Southbound						N Dowling Rd Westbound						Holleman Dr Northbound						N Dowling Rd Eastbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2018-03-01 7:00AM	4	36	18	0	58	0	1	0	0	0	1	0	8	69	55	0	132	0	28	10	4	0	42	0	233
7:15AM	4	32	22	0	58	0	0	1	0	0	1	0	10	90	132	0	232	0	28	33	5	0	66	0	357
7:30AM	4	31	15	0	50	0	1	0	1	0	2	0	7	92	135	0	234	0	49	28	8	0	85	0	371
7:45AM	4	54	21	0	79	0	1	0	0	0	1	0	11	60	67	0	138	0	30	22	9	0	61	0	279
Total	16	153	76	0	245	0	3	1	1	0	5	0	36	311	389	0	736	0	135	93	26	0	254	0	1240
% Approach	6.5%	62.4%	31.0%	0%	-	-	60.0%	20.0%	20.0%	0%	-	-	4.9%	42.3%	52.9%	0%	-	-	53.1%	36.6%	10.2%	0%	-	-	-
% Total	1.3%	12.3%	6.1%	0%	19.8%	-	0.2%	0.1%	0.1%	0%	0.4%	-	2.9%	25.1%	31.4%	0%	59.4%	-	10.9%	7.5%	2.1%	0%	20.5%	-	-
PHF	1.000	0.708	0.864	-	0.775	-	0.750	0.250	0.250	-	0.625	-	0.818	0.845	0.720	-	0.786	-	0.689	0.705	0.722	-	0.747	-	0.836
Lights	16	139	69	0	224	-	3	1	1	0	5	-	36	301	389	0	726	-	134	93	22	0	249	-	1204
% Lights	100%	90.8%	90.8%	0%	91.4%	-	100%	100%	100%	0%	100%	-	100%	96.8%	100%	0%	98.6%	-	99.3%	100%	84.6%	0%	98.0%	-	97.1%
Articulated Trucks	0	1	0	0	1	-	0	0	0	0	0	-	0	1	0	0	1	-	0	0	0	0	0	-	2
% Articulated Trucks	0%	0.7%	0%	0%	0.4%	-	0%	0%	0%	0%	0%	-	0%	0.3%	0%	0%	0.1%	-	0%	0%	0%	0%	0%	-	0.2%
Buses and Single-Unit Trucks	0	13	7	0	20	-	0	0	0	0	0	-	0	9	0	0	9	-	1	0	4	0	5	-	34
% Buses and Single-Unit Trucks	0%	8.5%	9.2%	0%	8.2%	-	0%	0%	0%	0%	0%	-	0%	2.9%	0%	0%	1.2%	-	0.7%	0%	15.4%	0%	2.0%	-	2.7%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Holleman Dr & N Dowling Rd - TMC

Thu Mar 1, 2018

AM Peak (7AM - 8AM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 499660, Location: 30.584237, -96.331858



Provided by: C. J. Hensch & Associates
Inc.

5215 Sycamore Ave.,
Pasadena, TX, 77503, US

[N] Holleman Dr

Total: 692

In: 245 Out: 447

76 153 16

[W] N Dowling Rd

Total: 367
In: 254 Out: 113

135
93
26

1
1
3

Out: 498 In: 5
Total: 503

[E] N Dowling Rd

Out: 182

In: 736

Total: 918

[S] Holleman Dr

36

311

389

Holleman Dr & N Dowling Rd - TMC

Thu Mar 1, 2018

PM Peak (5PM - 6PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 499660, Location: 30.584237, -96.331858



Provided by: C. J. Hensch & Associates Inc.

5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Holleman Dr Southbound						N Dowling Rd Westbound						Holleman Dr Northbound						N Dowling Rd Eastbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2018-03-01 5:00PM	3	112	23	0	138	0	6	0	1	0	7	0	11	75	32	0	118	0	42	7	15	0	64	0	327
5:15PM	0	117	25	0	142	0	5	1	3	0	9	0	11	51	24	0	86	0	26	9	11	0	46	0	283
5:30PM	1	130	26	0	157	0	4	0	4	0	8	0	8	60	21	0	89	0	29	7	9	0	45	0	299
5:45PM	1	122	22	0	145	0	3	2	3	0	8	0	9	75	33	0	117	0	31	4	9	0	44	0	314
Total	5	481	96	0	582	0	18	3	11	0	32	0	39	261	110	0	410	0	128	27	44	0	199	0	1223
% Approach	0.9%	82.6%	16.5%	0%	-	-	56.3%	9.4%	34.4%	0%	-	-	9.5%	63.7%	26.8%	0%	-	-	64.3%	13.6%	22.1%	0%	-	-	-
% Total	0.4%	39.3%	7.8%	0%	47.6%	-	1.5%	0.2%	0.9%	0%	2.6%	-	3.2%	21.3%	9.0%	0%	33.5%	-	10.5%	2.2%	3.6%	0%	16.3%	-	-
PHF	0.417	0.925	0.923	-	0.927	-	0.750	0.375	0.688	-	0.889	-	0.886	0.870	0.833	-	0.869	-	0.762	0.750	0.733	-	0.777	-	0.935
Lights	5	480	95	0	580	-	18	3	11	0	32	-	39	256	110	0	405	-	127	27	39	0	193	-	1210
% Lights	100%	99.8%	99.0%	0%	99.7%	-	100%	100%	100%	0%	100%	-	100%	98.1%	100%	0%	98.8%	-	99.2%	100%	88.6%	0%	97.0%	-	98.9%
Articulated Trucks	0	0	1	0	1	-	0	0	0	0	0	-	0	0	0	0	0	-	1	0	0	0	1	-	2
% Articulated Trucks	0%	0%	1.0%	0%	0.2%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0.8%	0%	0%	0%	0.5%	-	0.2%
Buses and Single-Unit Trucks	0	1	0	0	1	-	0	0	0	0	0	-	0	5	0	0	5	-	0	0	5	0	5	-	11
% Buses and Single-Unit Trucks	0%	0.2%	0%	0%	0.2%	-	0%	0%	0%	0%	0%	-	0%	1.9%	0%	0%	1.2%	-	0%	0%	11.4%	0%	2.5%	-	0.9%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Holleman Dr & N Dowling Rd - TMC

Thu Mar 1, 2018

PM Peak (5PM - 6PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

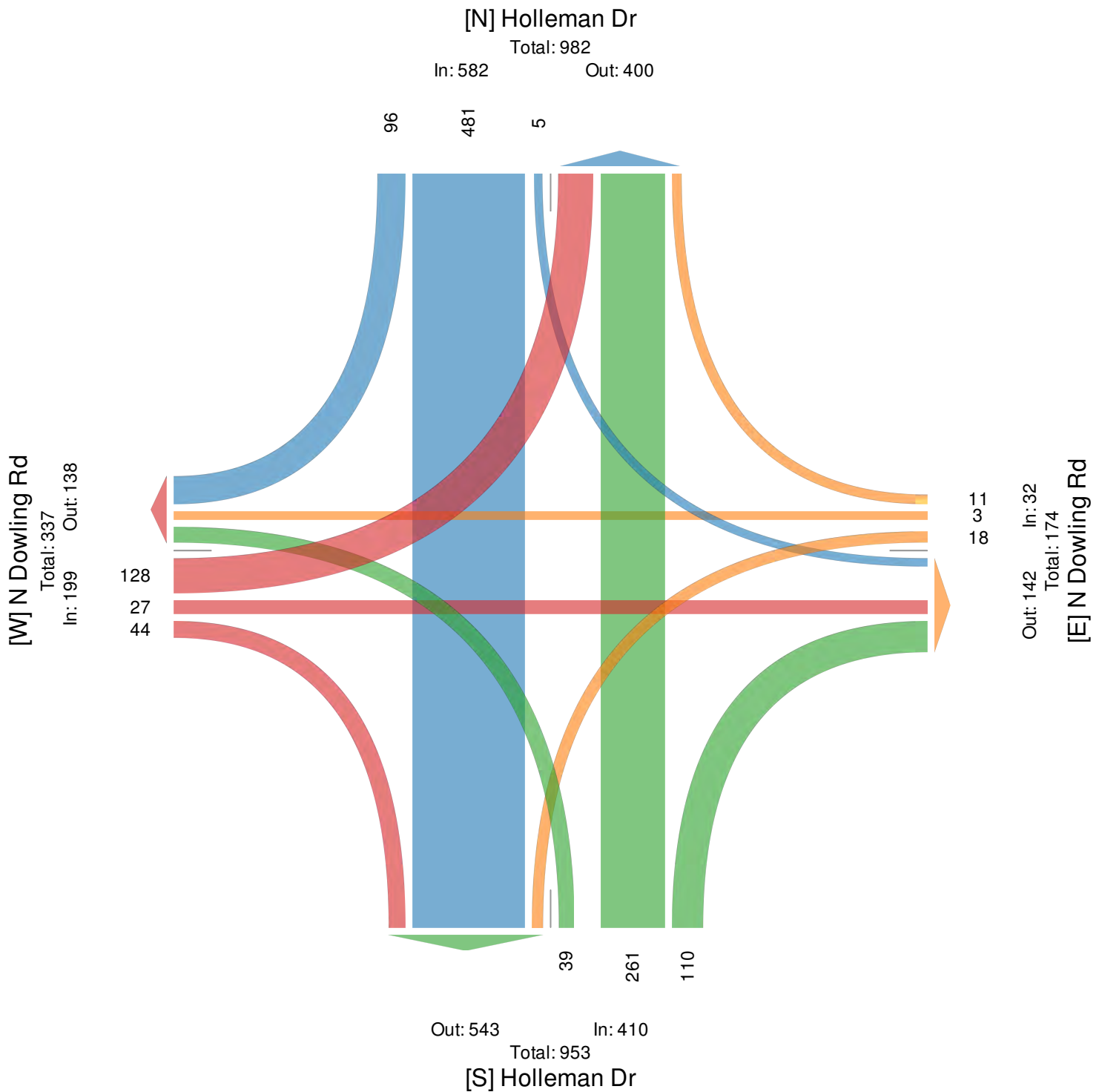
All Movements

ID: 499660, Location: 30.584237, -96.331858



Provided by: C. J. Hensch & Associates Inc.

5215 Sycamore Ave.,
Pasadena, TX, 77503, US



Holleman Dr at General Pkwy - TMC

Tue Mar 6, 2018

AM Peak (7AM - 8AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 500335, Location: 30.581067, -96.330254



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Holleman Dr Southbound						General Pkwy Westbound						Holleman Dr Northbound						
Time	L	T	U	App	Ped*		L	R	U	App	Ped*		T	R	U	App	Ped*	Int	
2018-03-06 7:00AM	2	39	0	41	0		1	13	0	14	0		99	2	0	101	0		156
7:15AM	4	41	0	45	0		2	25	0	27	0		214	1	0	215	0		287
7:30AM	1	39	0	40	0		2	22	0	24	0		224	3	0	227	0		291
7:45AM	8	54	0	62	0		2	21	0	23	0		142	1	0	143	0		228
Total	15	173	0	188	0		7	81	0	88	0		679	7	0	686	0		962
% Approach	8.0%	92.0%	0%	-	-		8.0%	92.0%	0%	-	-		99.0%	1.0%	0%	-	-		-
% Total	1.6%	18.0%	0%	19.5%	-		0.7%	8.4%	0%	9.1%	-		70.6%	0.7%	0%	71.3%	-		-
PHF	0.469	0.801	-	0.758	-		0.875	0.810	-	0.815	-		0.758	0.583	-	0.756	-		0.826
Lights	15	162	0	177	-		7	76	0	83	-		675	2	0	677	-		937
% Lights	100%	93.6%	0%	94.1%	-		100%	93.8%	0%	94.3%	-		99.4%	28.6%	0%	98.7%	-		97.4%
Articulated Trucks	0	1	0	1	-		0	0	0	0	-		1	0	0	1	-		2
% Articulated Trucks	0%	0.6%	0%	0.5%	-		0%	0%	0%	0%	-		0.1%	0%	0%	0.1%	-		0.2%
Buses and Single-Unit Trucks	0	10	0	10	-		0	5	0	5	-		3	5	0	8	-		23
% Buses and Single-Unit Trucks	0%	5.8%	0%	5.3%	-		0%	6.2%	0%	5.7%	-		0.4%	71.4%	0%	1.2%	-		2.4%
Pedestrians	-	-	-	-	0		-	-	-	-	0		-	-	-	-	0		
% Pedestrians	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Holleman Dr at General Pkwy - TMC

Tue Mar 6, 2018

AM Peak (7AM - 8AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 500335, Location: 30.581067, -96.330254



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

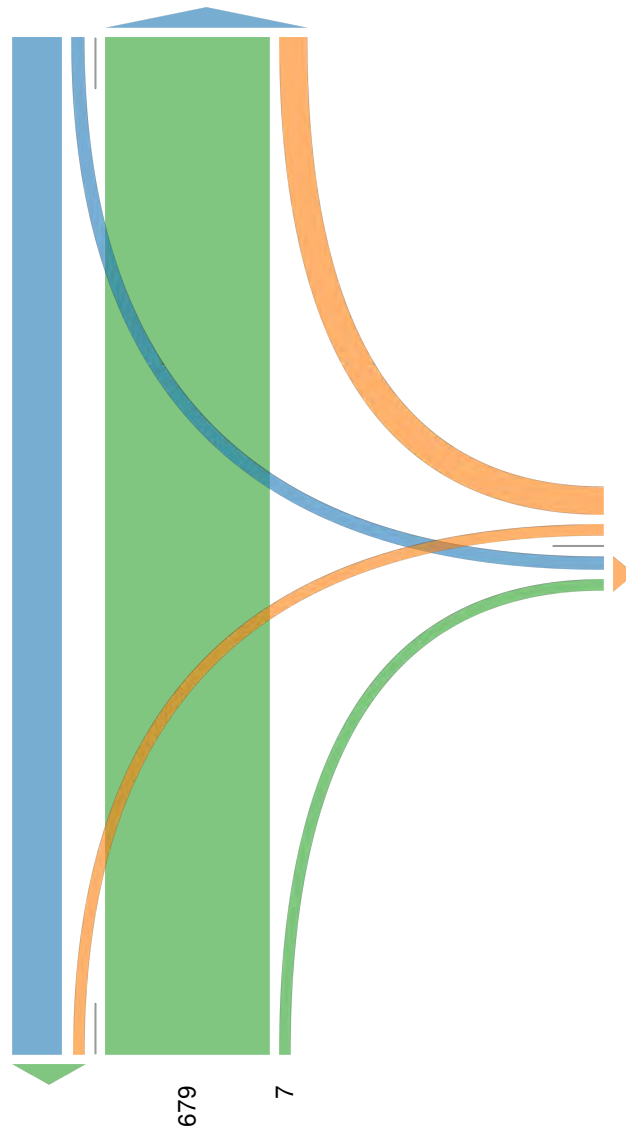
[N] Holleman Dr

Total: 948

In: 188

Out: 760

173
15



Out: 180

In: 686

Total: 866

[S] Holleman Dr

81
7

In: 88

Out: 22

Total: 110

[E] General Pkwy

Holleman Dr at General Pkwy - TMC

Tue Mar 6, 2018

PM Peak (5PM - 6PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 500335, Location: 30.581067, -96.330254



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Holleman Dr Southbound					General Pkwy Westbound					Holleman Dr Northbound					
Time	L	T	U	App	Ped*	L	R	U	App	Ped*	T	R	U	App	Ped*	Int
2018-03-06 5:00PM	13	102	0	115	0	5	16	0	21	0	103	6	0	109	0	245
5:15PM	14	102	0	116	0	3	14	0	17	0	86	6	0	92	0	225
5:30PM	23	117	0	140	0	3	12	0	15	0	116	6	0	122	0	277
5:45PM	27	112	0	139	0	6	14	0	20	0	80	11	0	91	0	250
Total	77	433	0	510	0	17	56	0	73	0	385	29	0	414	0	997
% Approach	15.1%	84.9%	0%	-	-	23.3%	76.7%	0%	-	-	93.0%	7.0%	0%	-	-	-
% Total	7.7%	43.4%	0%	51.2%	-	1.7%	5.6%	0%	7.3%	-	38.6%	2.9%	0%	41.5%	-	-
PHF	0.713	0.925	-	0.911	-	0.708	0.875	-	0.869	-	0.830	0.659	-	0.848	-	0.900
Lights	77	424	0	501	-	17	52	0	69	-	380	25	0	405	-	975
% Lights	100%	97.9%	0%	98.2%	-	100%	92.9%	0%	94.5%	-	98.7%	86.2%	0%	97.8%	-	97.8%
Articulated Trucks	0	1	0	1	-	0	0	0	0	-	2	0	0	2	-	3
% Articulated Trucks	0%	0.2%	0%	0.2%	-	0%	0%	0%	0%	-	0.5%	0%	0%	0.5%	-	0.3%
Buses and Single-Unit Trucks	0	8	0	8	-	0	4	0	4	-	3	4	0	7	-	19
% Buses and Single-Unit Trucks	0%	1.8%	0%	1.6%	-	0%	7.1%	0%	5.5%	-	0.8%	13.8%	0%	1.7%	-	1.9%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Holleman Dr at General Pkwy - TMC

Tue Mar 6, 2018

PM Peak (5PM - 6PM) - Overall Peak Hour

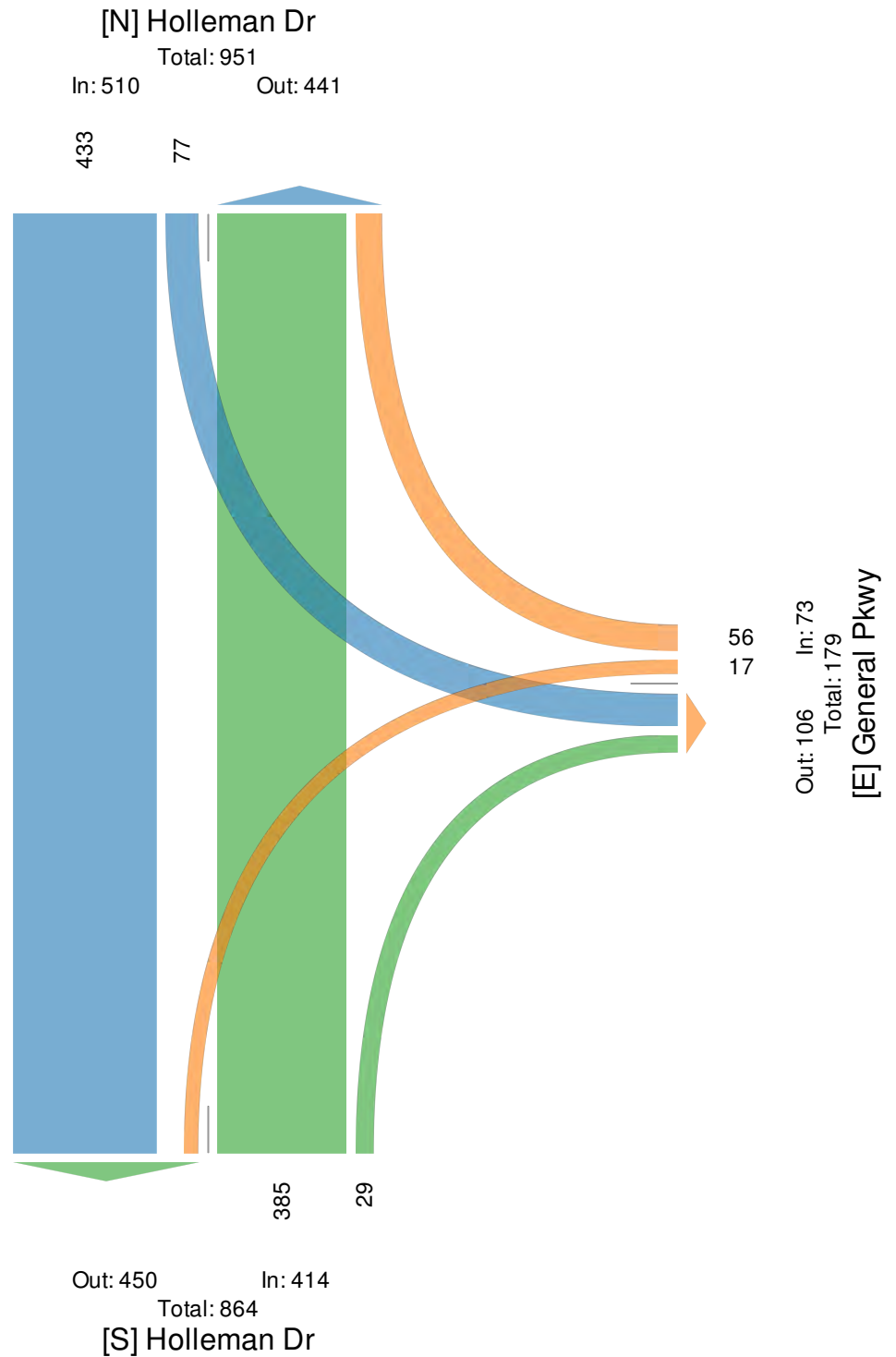
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 500335, Location: 30.581067, -96.330254



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Cain Rd & Holleman Dr - TMC

Thu Mar 1, 2018

AM Peak (7AM - 8AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 499659, Location: 30.572342, -96.32662



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Holleman Dr Southbound						Cain Rd Westbound						Holleman Dr Northbound						Cain Rd Eastbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2018-03-01																									
7:00AM	8	37	0	0	45	0	1	0	9	0	10	0	0	94	0	0	94	0	0	0	0	0	0	0	149
7:15AM	5	32	0	0	37	0	1	0	16	0	17	0	0	170	1	0	171	0	0	0	0	0	0	0	225
7:30AM	8	36	0	0	44	0	1	0	13	0	14	0	0	154	3	0	157	0	0	0	0	0	0	0	215
7:45AM	6	57	0	0	63	0	2	0	9	0	11	0	0	95	3	0	98	0	0	0	0	0	0	0	172
Total	27	162	0	0	189	0	5	0	47	0	52	0	0	513	7	0	520	0	0	0	0	0	0	0	761
% Approach	14.3%	85.7%	0%	0%	-	-	9.6%	0%	90.4%	0%	-	-	0%	98.7%	1.3%	0%	-	-	0%	0%	0%	0%	-	-	-
% Total	3.5%	21.3%	0%	0%	24.8%	-	0.7%	0%	6.2%	0%	6.8%	-	0%	67.4%	0.9%	0%	68.3%	-	0%	0%	0%	0%	0%	-	-
PHF	0.844	0.711	-	-	0.750	-	0.625	-	0.734	-	0.765	-	-	0.754	0.583	-	0.760	-	-	-	-	-	-	-	0.846
Lights	26	144	0	0	170	-	4	0	46	0	50	-	0	502	6	0	508	-	0	0	0	0	0	-	728
% Lights	96.3%	88.9%	0%	0%	89.9%	-	80.0%	0%	97.9%	0%	96.2%	-	0%	97.9%	85.7%	0%	97.7%	-	0%	0%	0%	0%	-	-	95.7%
Articulated Trucks	0	1	0	0	1	-	0	0	0	0	0	-	0	1	0	0	1	-	0	0	0	0	0	-	2
% Articulated Trucks	0%	0.6%	0%	0%	0.5%	-	0%	0%	0%	0%	0%	-	0%	0.2%	0%	0%	0.2%	-	0%	0%	0%	0%	-	-	0.3%
Buses and Single-Unit Trucks	1	17	0	0	18	-	1	0	1	0	2	-	0	10	1	0	11	-	0	0	0	0	0	-	31
% Buses and Single-Unit Trucks	3.7%	10.5%	0%	0%	9.5%	-	20.0%	0%	2.1%	0%	3.8%	-	0%	1.9%	14.3%	0%	2.1%	-	0%	0%	0%	0%	-	-	4.1%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Cain Rd & Holleman Dr - TMC

Thu Mar 1, 2018

AM Peak (7AM - 8AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 499659, Location: 30.572342, -96.32662



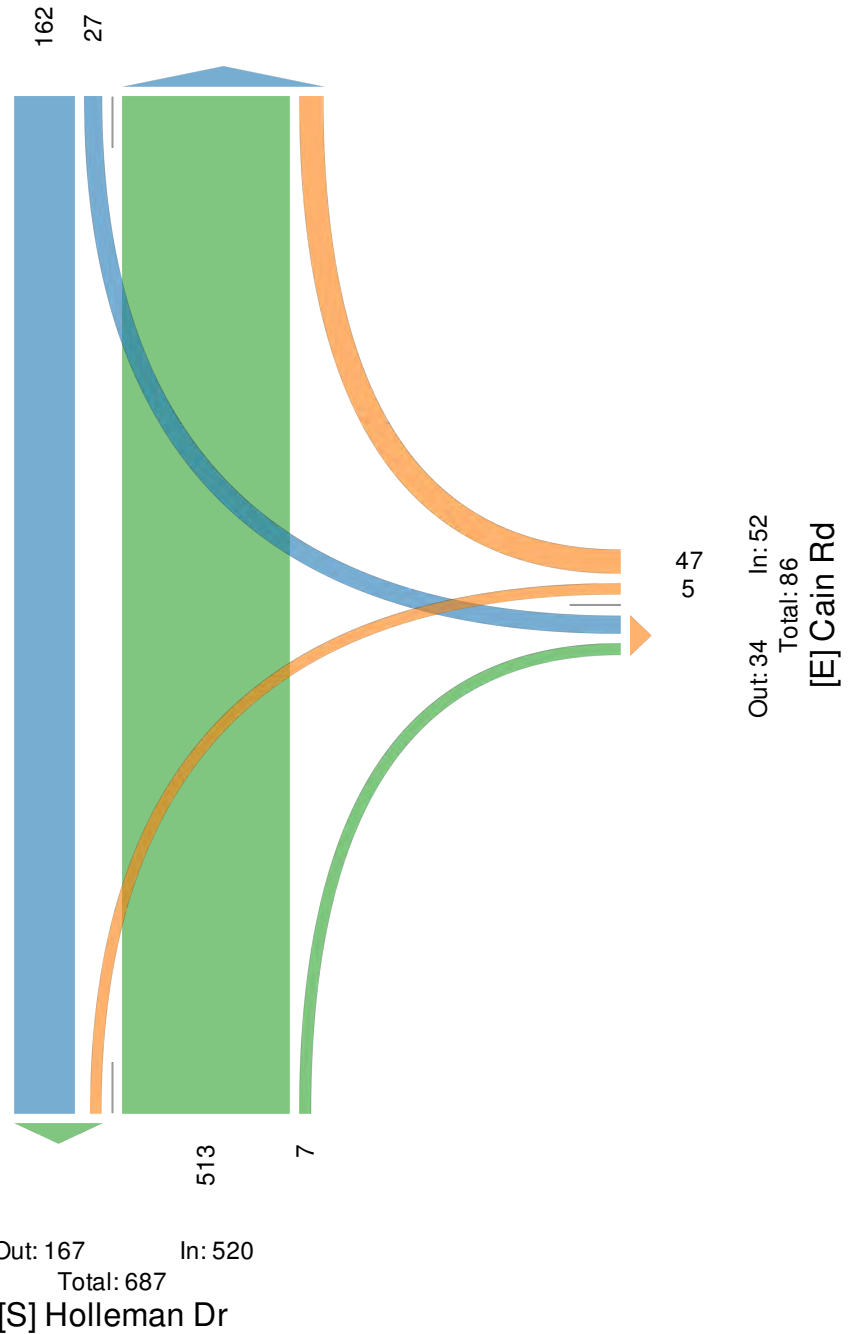
Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

[N] Holleman Dr

Total: 749

In: 189

Out: 560



Cain Rd & Holleman Dr - TMC

Thu Mar 1, 2018

PM Peak (5PM - 6PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 499659, Location: 30.572342, -96.32662



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Holleman Dr Southbound						Cain Rd Westbound						Holleman Dr Northbound						Cain Rd Eastbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2018-03-01																									
5:00PM	10	101	0	0	111	0	3	0	27	0	30	0	0	68	1	0	69	0	0	0	0	0	0	0	210
5:15PM	12	107	0	0	119	0	2	0	36	0	38	0	0	49	4	0	53	0	0	0	0	0	0	0	210
5:30PM	12	97	0	0	109	0	2	0	30	0	32	0	0	59	0	0	59	0	0	0	0	0	0	0	200
5:45PM	9	102	0	0	111	0	3	0	34	0	37	0	0	67	1	0	68	0	0	0	0	0	0	0	216
Total	43	407	0	0	450	0	10	0	127	0	137	0	0	243	6	0	249	0	0	0	0	0	0	0	836
% Approach	9.6%	90.4%	0%	0%	-	-	7.3%	0%	92.7%	0%	-	-	0%	97.6%	2.4%	0%	-	-	0%	0%	0%	0%	-	-	-
% Total	5.1%	48.7%	0%	0%	53.8%	-	1.2%	0%	15.2%	0%	16.4%	-	0%	29.1%	0.7%	0%	29.8%	-	0%	0%	0%	0%	0%	-	-
PHF	0.896	0.951	-	-	0.945	-	0.833	-	0.882	-	0.901	-	-	0.893	0.375	-	0.902	-	-	-	-	-	-	-	0.968
Lights	40	403	0	0	443	-	10	0	127	0	137	-	0	239	6	0	245	-	0	0	0	0	0	-	825
% Lights	93.0%	99.0%	0%	0%	98.4%	-	100%	0%	100%	0%	100%	-	0%	98.4%	100%	0%	98.4%	-	0%	0%	0%	0%	-	-	98.7%
Articulated Trucks	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Articulated Trucks	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	-	-	0%
Buses and Single-Unit Trucks	3	4	0	0	7	-	0	0	0	0	0	-	0	4	0	0	4	-	0	0	0	0	0	-	11
% Buses and Single-Unit Trucks	7.0%	1.0%	0%	0%	1.6%	-	0%	0%	0%	0%	0%	-	0%	1.6%	0%	0%	1.6%	-	0%	0%	0%	0%	-	-	1.3%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Cain Rd & Holleman Dr - TMC

Thu Mar 1, 2018

PM Peak (5PM - 6PM) - Overall Peak Hour

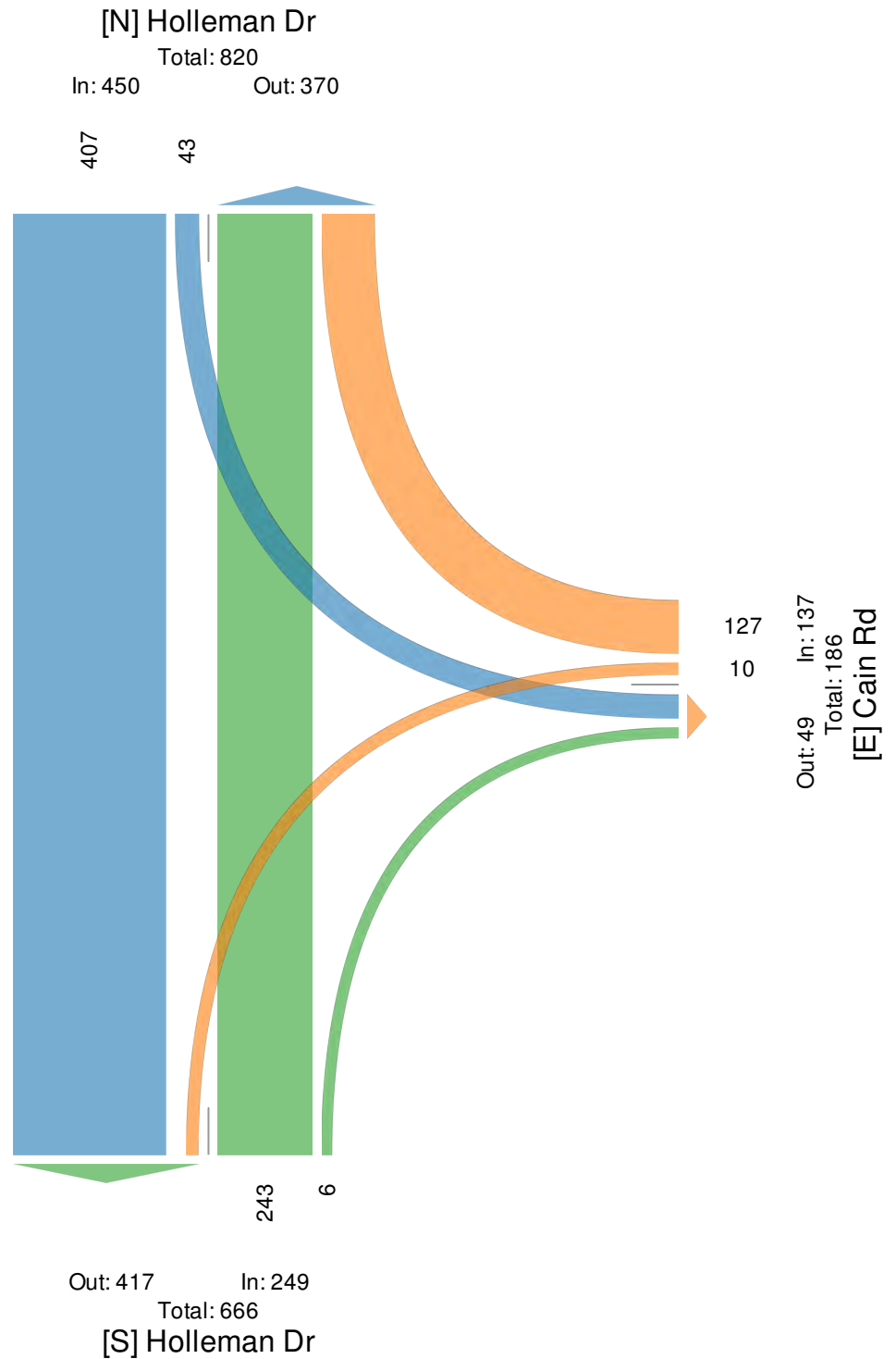
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 499659, Location: 30.572342, -96.32662



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



Deacon W Dr & Holleman Dr - TMC

Tue Mar 6, 2018

AM Peak (7AM - 8AM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 499658, Location: 30.56875, -96.325107



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Holleman Dr S Southbound						Deacon W Dr Westbound						Holleman Dr S Northbound						
Time	L	T	U	App	Ped*		L	R	U	App	Ped*		T	R	U	App	Ped*	Int	
2018-03-06 7:00AM	1	30	0	31	0		1	25	0	26	0		65	1	0	66	0	123	
7:15AM	8	23	1	32	0		1	66	0	67	0		117	2	0	119	0	218	
7:30AM	10	25	0	35	0		3	68	0	71	0		103	2	0	105	0	211	
7:45AM	11	35	0	46	0		1	36	0	37	0		77	6	0	83	0	166	
Total	30	113	1	144	0		6	195	0	201	0		362	11	0	373	0	718	
% Approach	20.8%	78.5%	0.7%	-	-		3.0%	97.0%	0%	-	-		97.1%	2.9%	0%	-	-	-	
% Total	4.2%	15.7%	0.1%	20.1%	-		0.8%	27.2%	0%	28.0%	-		50.4%	1.5%	0%	51.9%	-	-	
PHF	0.682	0.807	0.250	0.783	-		0.500	0.717	-	0.708	-		0.774	0.458	-	0.784	-	0.823	
Lights	23	108	1	132	-		4	189	0	193	-		358	11	0	369	-	694	
% Lights	76.7%	95.6%	100%	91.7%	-		66.7%	96.9%	0%	96.0%	-		98.9%	100%	0%	98.9%	-	96.7%	
Articulated Trucks	1	1	0	2	-		0	0	0	0	-		0	0	0	0	-	2	
% Articulated Trucks	3.3%	0.9%	0%	1.4%	-		0%	0%	0%	0%	-		0%	0%	0%	0%	-	0.3%	
Buses and Single-Unit Trucks	6	4	0	10	-		2	6	0	8	-		4	0	0	4	-	22	
% Buses and Single-Unit Trucks	20.0%	3.5%	0%	6.9%	-		33.3%	3.1%	0%	4.0%	-		1.1%	0%	0%	1.1%	-	3.1%	
Pedestrians	-	-	-	-	0		-	-	-	-	0		-	-	-	-	0		
% Pedestrians	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Deacon W Dr & Holleman Dr - TMC

Tue Mar 6, 2018

AM Peak (7AM - 8AM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 499658, Location: 30.56875, -96.325107



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

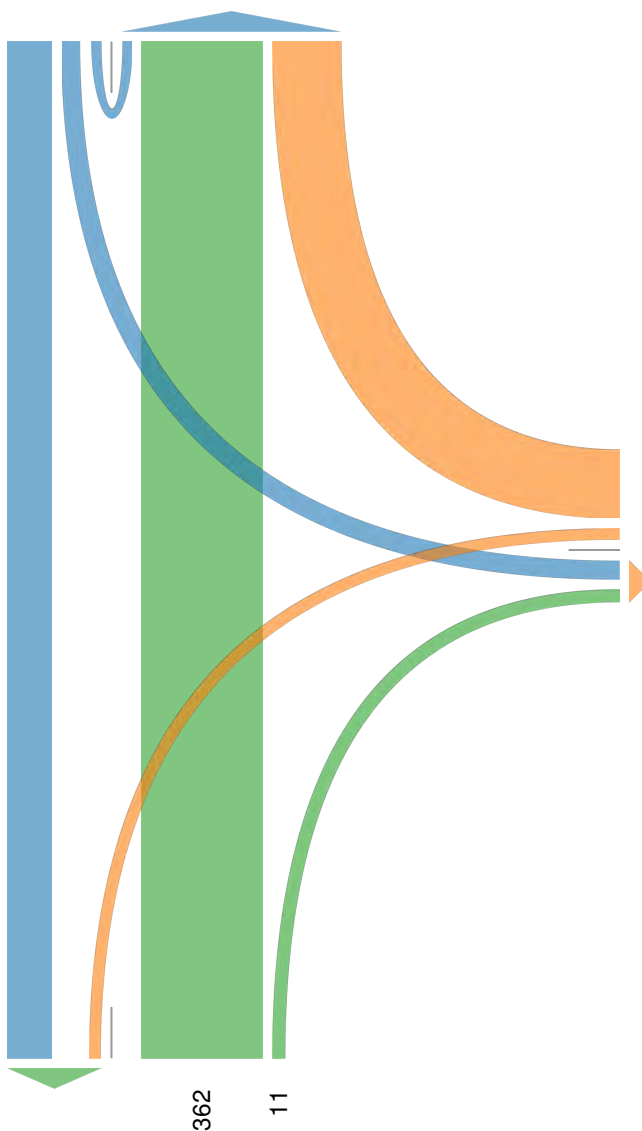
[N] Holleman Dr S

Total: 702

In: 144

Out: 558

113
30
1



195
6

Out: 41 In: 201

Total: 242

[E] Deacon W Dr

Out: 119

In: 373

Total: 492

[S] Holleman Dr S

Deacon W Dr & Holleman Dr - TMC

Tue Mar 6, 2018

PM Peak (5PM - 6PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

ID: 499658, Location: 30.56875, -96.325107



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US

Leg Direction	Holleman Dr S Southbound					Deacon W Dr Westbound					Holleman Dr S Northbound					
Time	L	T	U	App	Ped*	L	R	U	App	Ped*	T	R	U	App	Ped*	Int
2018-03-06 5:00PM	28	73	0	101	0	2	30	0	32	0	49	1	0	50	0	183
5:15PM	18	73	0	91	0	4	22	0	26	0	39	1	0	40	0	157
5:30PM	36	73	0	109	0	4	26	0	30	0	46	2	0	48	0	187
5:45PM	30	71	0	101	0	3	19	0	22	0	40	2	0	42	0	165
Total	112	290	0	402	0	13	97	0	110	0	174	6	0	180	0	692
% Approach	27.9%	72.1%	0%	-	-	11.8%	88.2%	0%	-	-	96.7%	3.3%	0%	-	-	-
% Total	16.2%	41.9%	0%	58.1%	-	1.9%	14.0%	0%	15.9%	-	25.1%	0.9%	0%	26.0%	-	-
PHF	0.778	0.993	-	0.922	-	0.813	0.808	-	0.859	-	0.888	0.750	-	0.900	-	0.925
Lights	107	284	0	391	-	13	92	0	105	-	170	6	0	176	-	672
% Lights	95.5%	97.9%	0%	97.3%	-	100%	94.8%	0%	95.5%	-	97.7%	100%	0%	97.8%	-	97.1%
Articulated Trucks	1	0	0	1	-	0	0	0	0	-	1	0	0	1	-	2
% Articulated Trucks	0.9%	0%	0%	0.2%	-	0%	0%	0%	0%	-	0.6%	0%	0%	0.6%	-	0.3%
Buses and Single-Unit Trucks	4	6	0	10	-	0	5	0	5	-	3	0	0	3	-	18
% Buses and Single-Unit Trucks	3.6%	2.1%	0%	2.5%	-	0%	5.2%	0%	4.5%	-	1.7%	0%	0%	1.7%	-	2.6%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

Deacon W Dr & Holleman Dr - TMC

Tue Mar 6, 2018

PM Peak (5PM - 6PM)

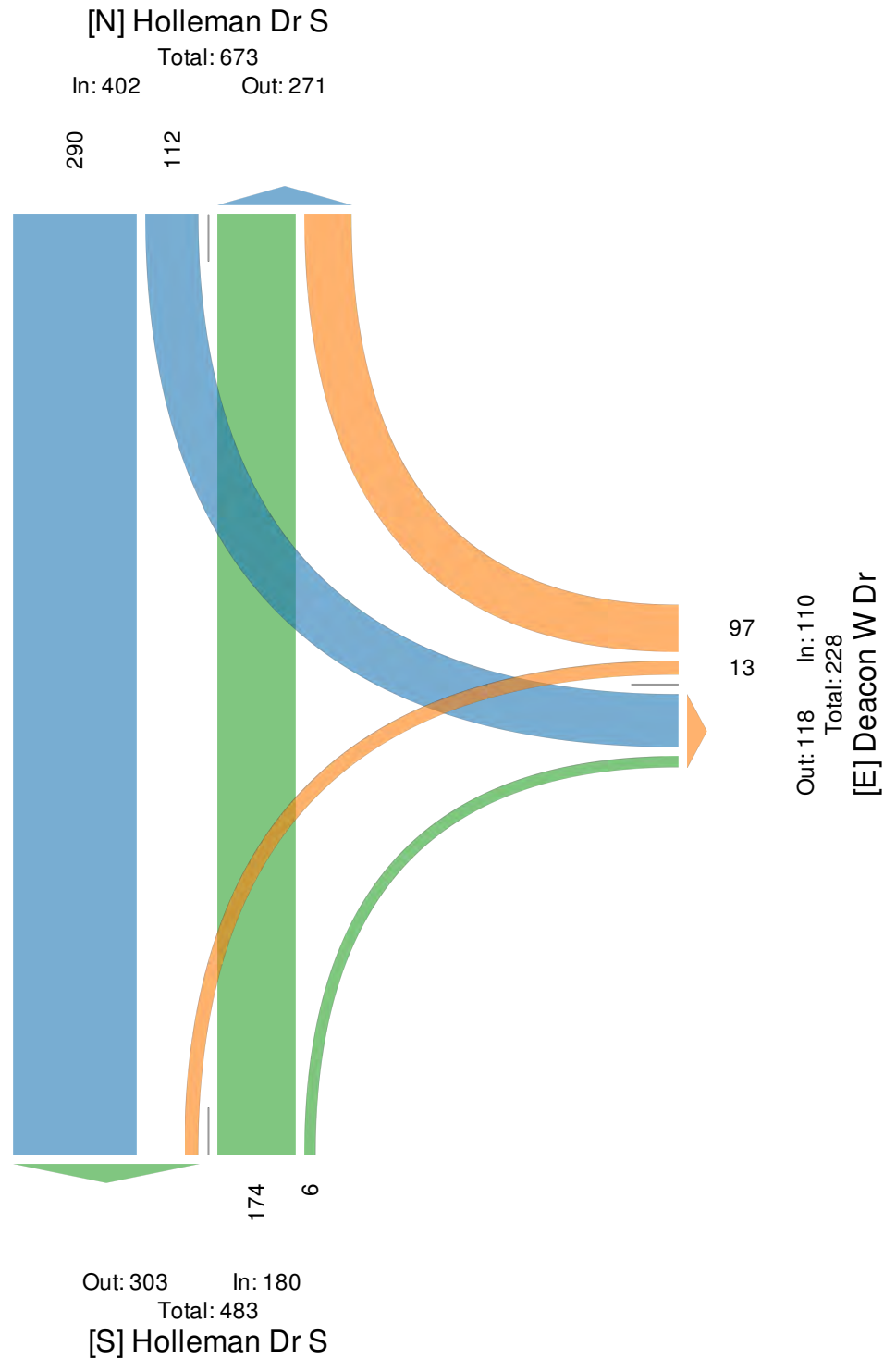
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians)

All Movements

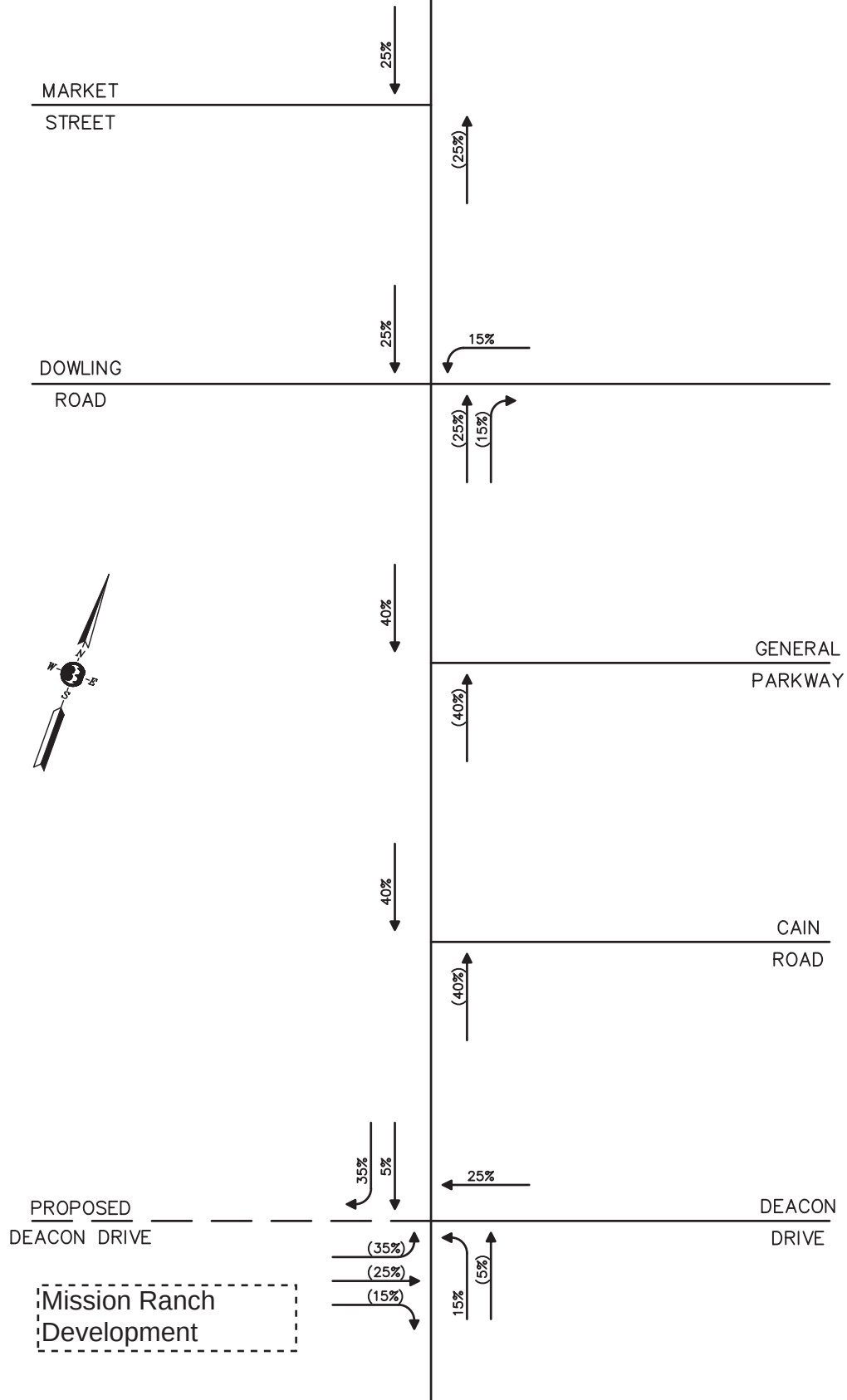
ID: 499658, Location: 30.56875, -96.325107



Provided by: C. J. Hensch & Associates Inc.
5215 Sycamore Ave.,
Pasadena, TX, 77503, US



N:\BB18038 Butler Tract TIA\CADD\05 CAD Files\FIGURES.dwg-FIGURE #14 Plotted May 03, 2018 at 11:21am by jmaxwell | Last Saved by: jmaxwell



LEGEND
XX% INBOUND
(XX%) OUTBOUND

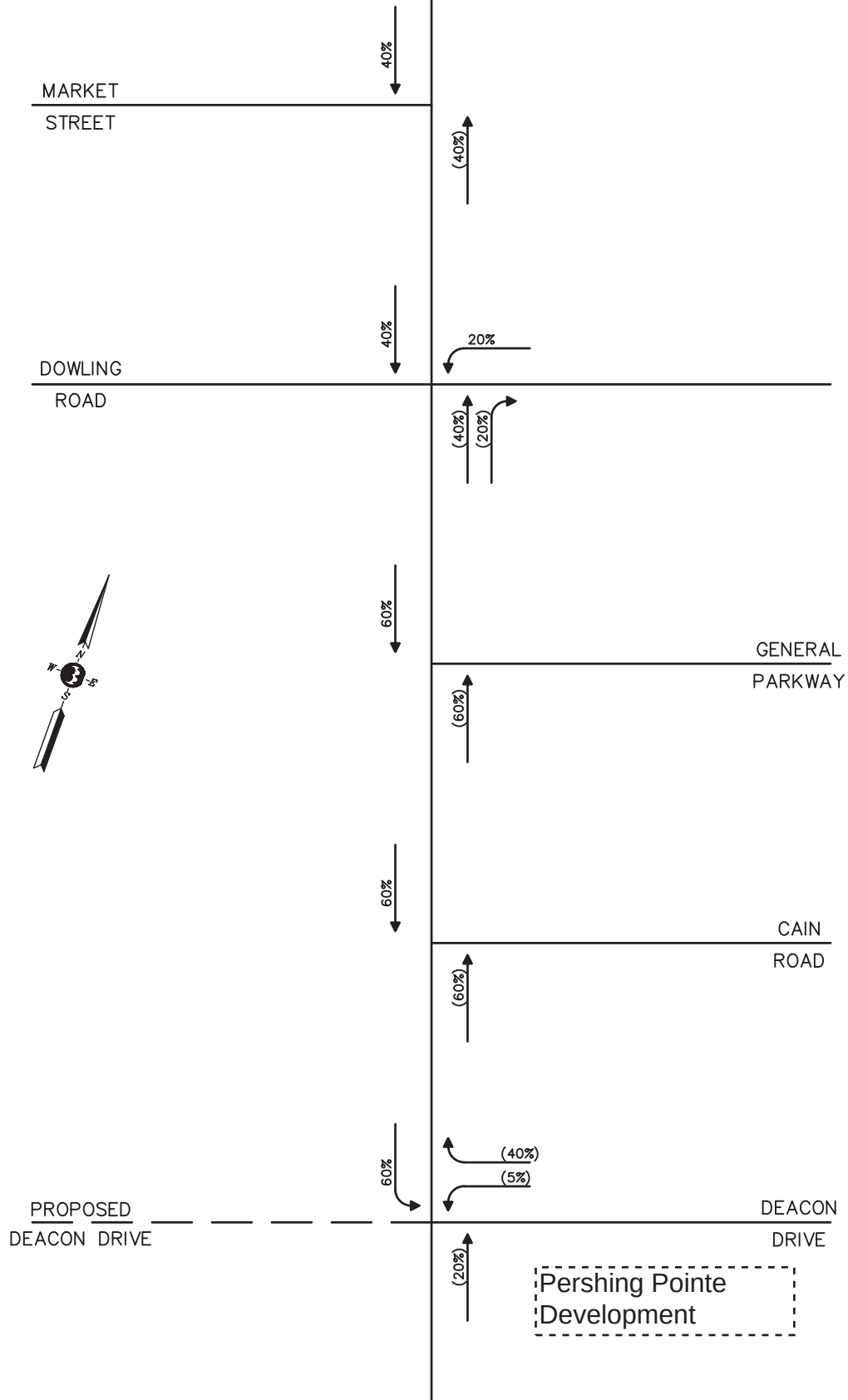
Mission Ranch
Development

BUTLER TRACT TRIP DISTRIBUTION - MISSION RANCH	
SCALE: N/A	DATE: May 2018
JOB NO.: BB18038	DWG. FILE: FIGURE #14



3452 Rock Prairie Road West
College Station, Texas 77845
979.703.1809
www.binkleybarfield.com

N:\BB18038 Butler Tract TIA\CADD\05 CAD Files\FIGURES.dwg-FIGURE #15 Plotted May 03, 2018 at 11:21am by jmaxwell | Last Saved by: jmaxwell



LEGEND
XX% INBOUND
(XX%) OUTBOUND

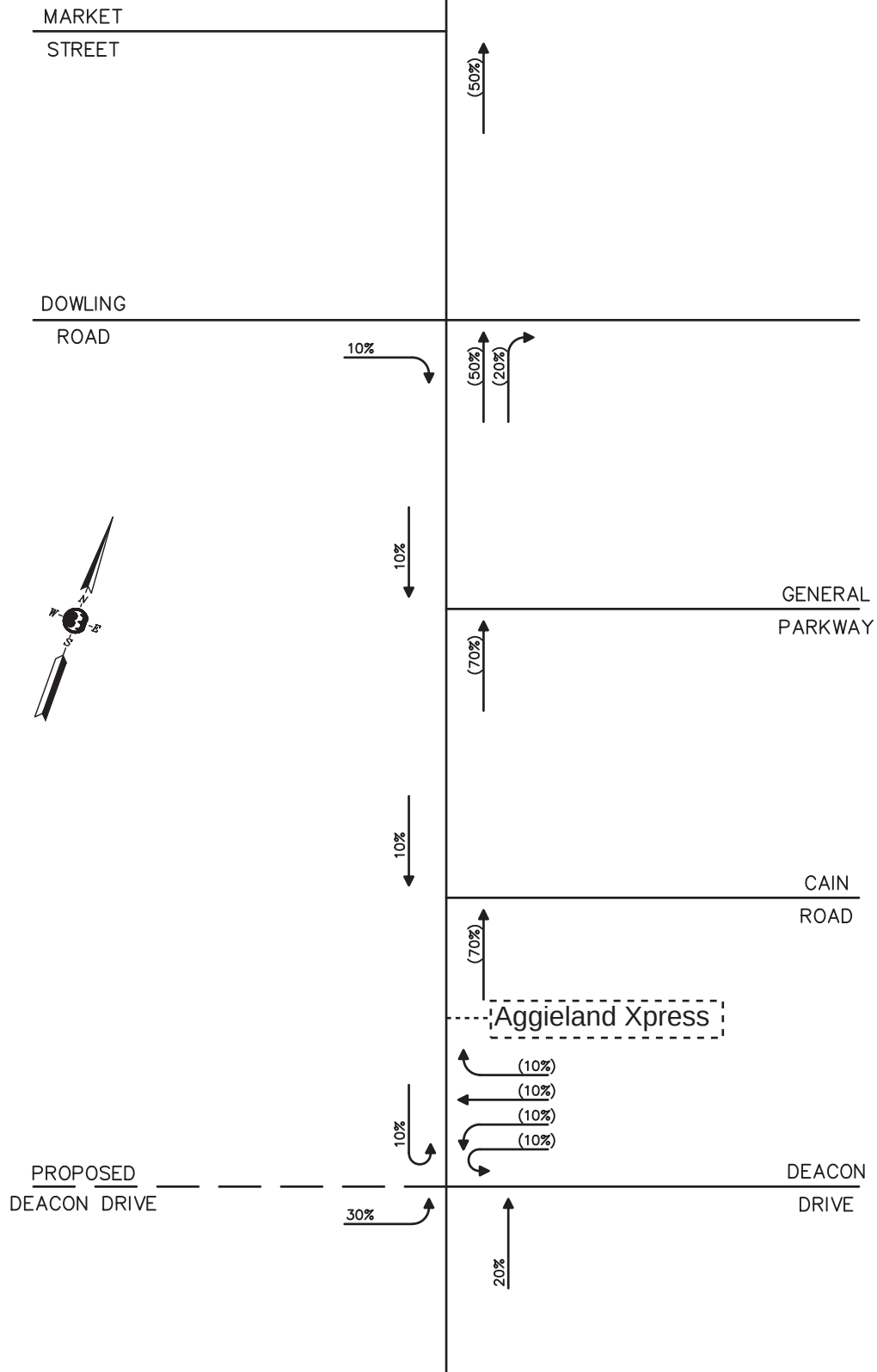
BUTLER TRACT TRIP DISTRIBUTION - PERSHING POINTE	
SCALE: N/A	DATE: May 2018
JOB NO.: BB18038	DWG. FILE: FIGURE #15



3452 Rock Prairie Road West
College Station, Texas 77845

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N:\BB18038 Butler Tract TIA\CADD\05 CAD Files\FIGURES.dwg-FIGURE #16 Plotted May 03, 2018 at 11:21am by jmaxwell | Last Saved by: jmaxwell

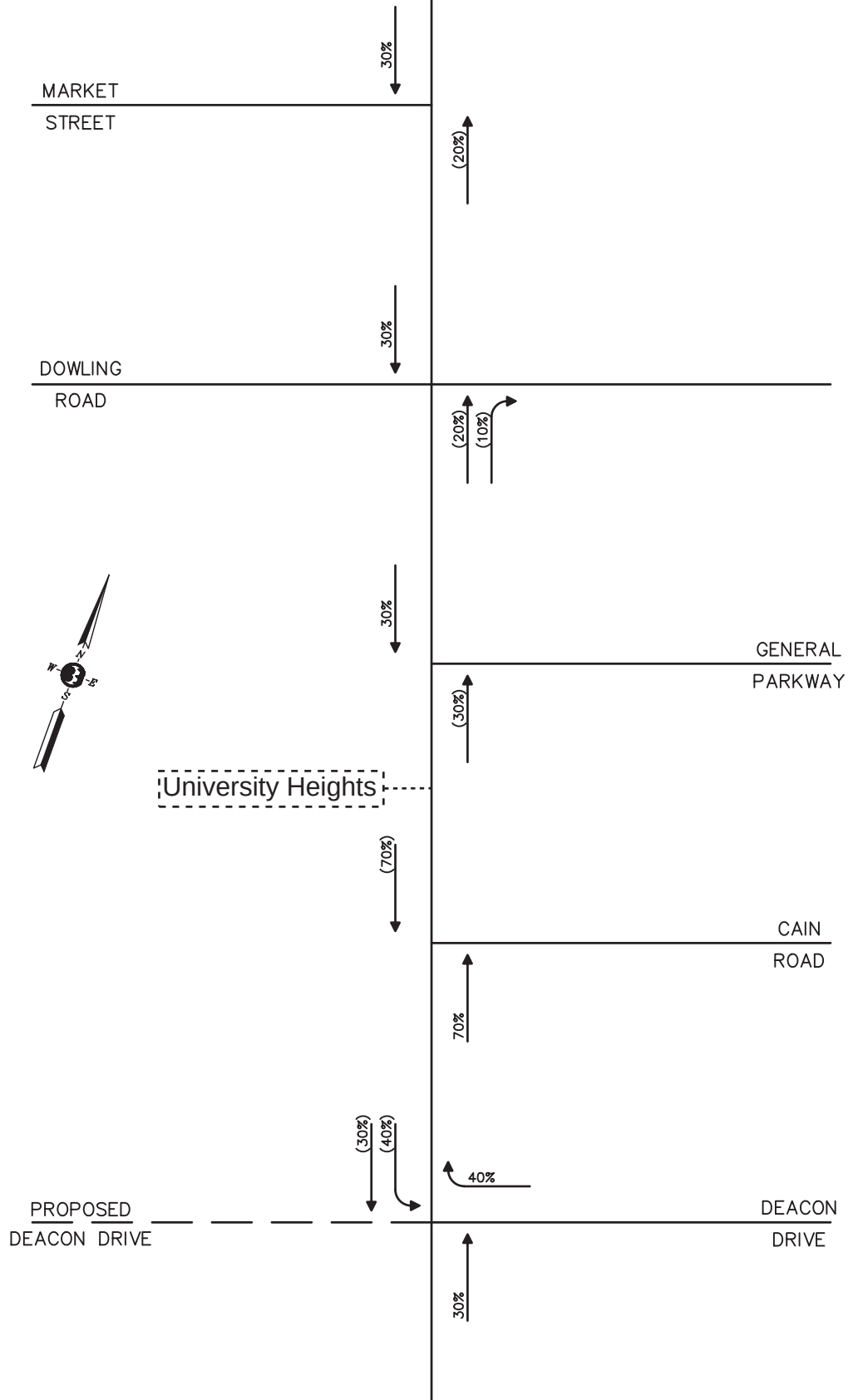


LEGEND
XX% INBOUND
(XX%) OUTBOUND

BUTLER TRACT	
TRIP DISTRIBUTION - AGGIELAND XPRESS	
SCALE: N/A	DATE: May 2018
JOB NO.: BB18038	DWG. FILE: FIGURE #16



N:\BB18038 Butler Tract TIA\CADD\05 CAD Files\FIGURES.dwg-FIGURE #17 Plotted May 03, 2018 at 11:22am by jmaxwell | Last Saved by jmaxwell

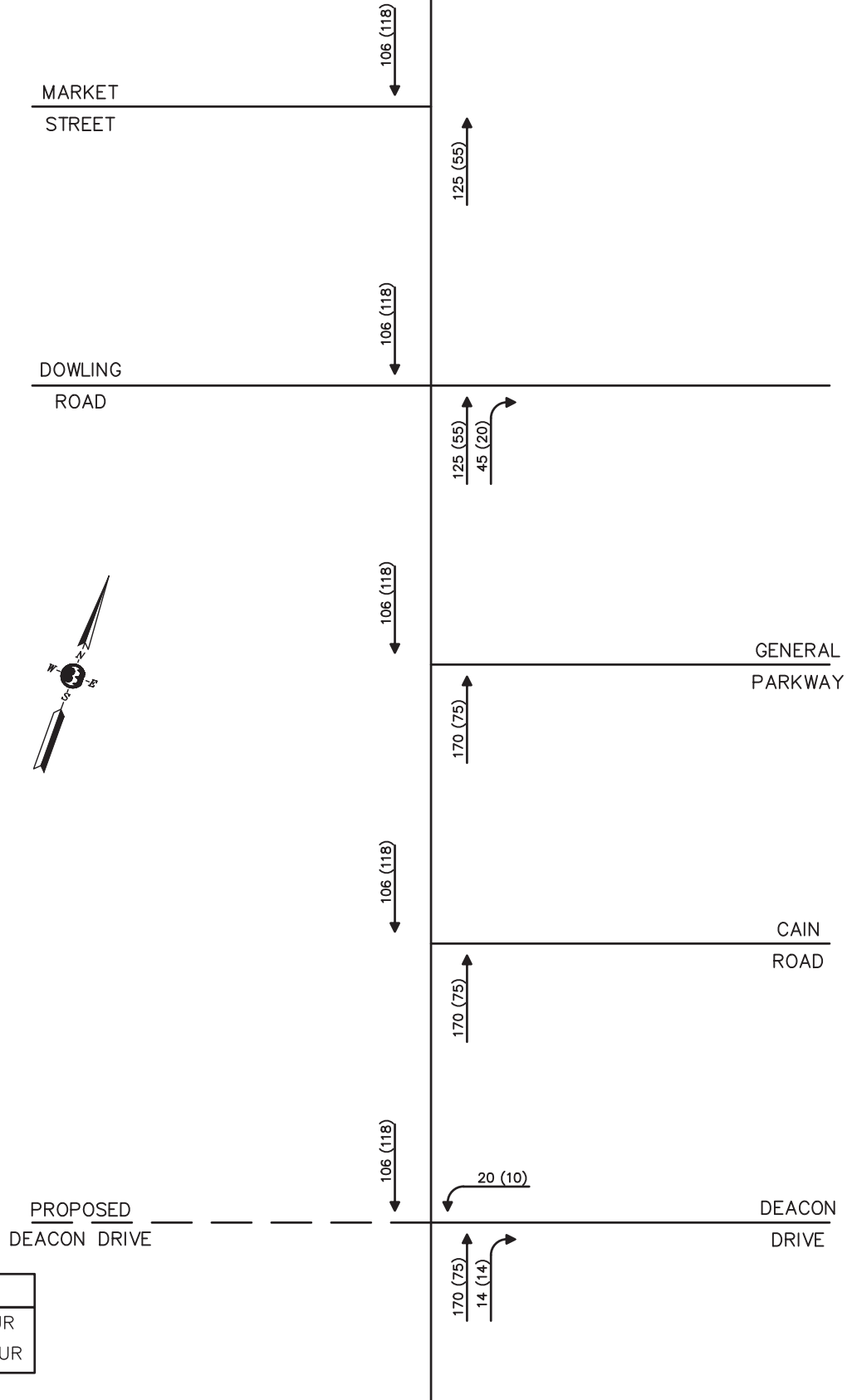


LEGEND
XX% INBOUND
(XX%) OUTBOUND

BUTLER TRACT	
TRIP DISTRIBUTION - UNIVERSITY HEIGHTS	
SCALE: N/A	DATE: May 2018
JOB NO.: BB18038	DWG. FILE: FIGURE #17



N:\BB18038 Butler Tract TIA\CADD\05 CAD Files\FIGURES.dwg-FIGURE #18 Plotted May 03, 2018 at 11:22am by jnoxwell | Last Saved by jnoxwell



LEGEND

XXX A.M. PEAK HOUR
(XXX) P.M. PEAK HOUR

BUTLER TRACT SITE GENERATED TRIPS - ELEMENTARY SCHOOL	
SCALE: N/A	DATE: May 2018
JOB NO.: BB18038	DWG. FILE: FIGURE #18



3452 Rock Prairie Road West
College Station, Texas 77845

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Land Use: 820

Shopping Center

Description

A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands. Factory outlet center (Land Use 823) is a related use.

Additional Data

Shopping centers, including neighborhood centers, community centers, regional centers, and super regional centers, were surveyed for this land use. Some of these centers contained non-merchandising facilities, such as office buildings, movie theaters, restaurants, post offices, banks, health clubs, and recreational facilities (for example, ice skating rinks or indoor miniature golf courses).

Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices. Although the data herein do not indicate which of the centers studied included peripheral buildings, it can be assumed that some of the data show their effect.

The vehicle trips generated at a shopping center are based upon the total GLA of the center. In cases of smaller centers without an enclosed mall or peripheral buildings, the GLA could be the same as the gross floor area of the building.

Time-of-day distribution data for this land use are presented in Appendix A. For the 10 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:15 and 1:15 p.m., respectively.

The average numbers of person trips per vehicle trip at the 27 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.31 during Weekday, AM Peak Hour of Generator
- 1.43 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.46 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

Source Numbers

105, 110, 154, 156, 159, 186, 190, 198, 199, 202, 204, 211, 213, 239, 251, 259, 260, 269, 294, 295, 299, 300, 301, 304, 305, 307, 308, 309, 310, 311, 314, 315, 316, 317, 319, 358, 365, 376, 385, 390, 400, 404, 414, 420, 423, 428, 437, 440, 442, 444, 446, 507, 562, 580, 598, 629, 658, 702, 715, 728, 868, 870, 871, 880, 899, 908, 912, 915, 926, 936, 944, 946, 960, 961, 962, 973, 974, 978

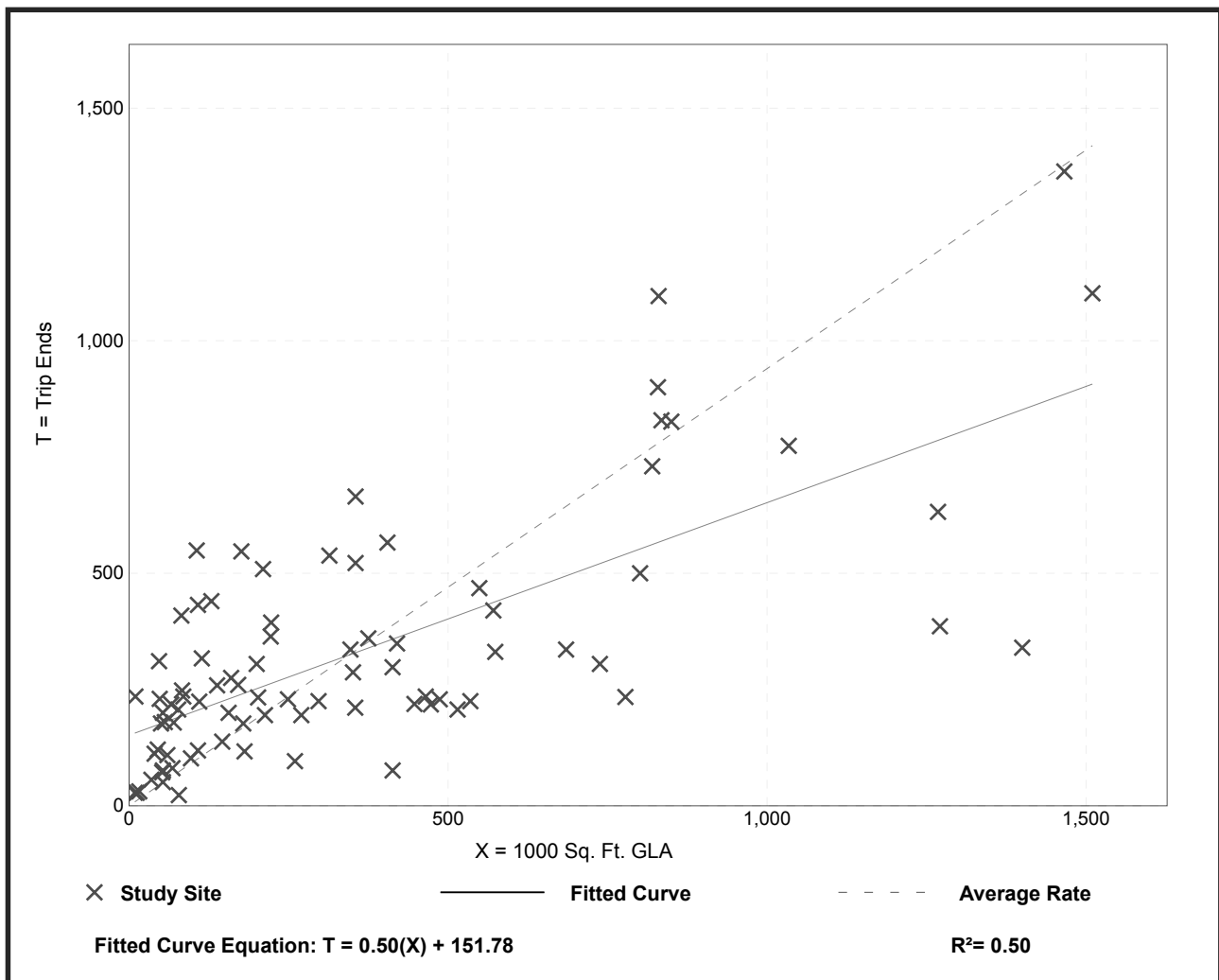
Shopping Center (820)

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: 84
 Avg. 1000 Sq. Ft. GLA: 351
 Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.94	0.18 - 23.74	0.87

Data Plot and Equation



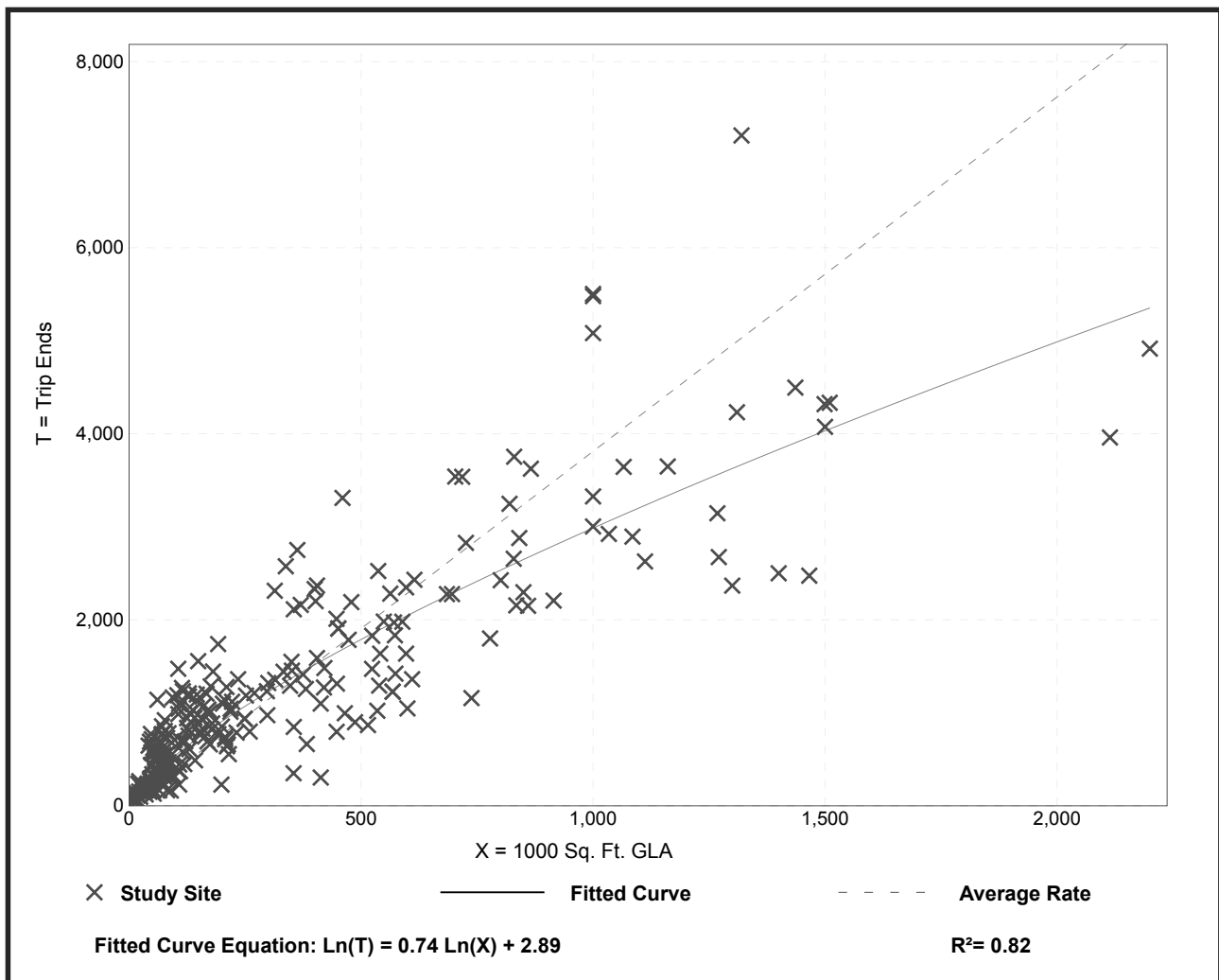
Shopping Center (820)

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: 261
 Avg. 1000 Sq. Ft. GLA: 327
 Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.81	0.74 - 18.69	2.04

Data Plot and Equation



Land Use: 435

Multipurpose Recreational Facility

Description

A multipurpose recreational facility contains two or more of the following land uses combined at one site: miniature golf, batting cages, video arcade, bumper boats, go-carts, and golf driving range. Refreshment areas may also be provided. Golf course (Land Use 430), miniature golf course (Land Use 431), golf driving range (Land Use 432), batting cages (Land Use 433), rock climbing gym (Land Use 434), and trampoline park (Land Use 436) are related uses.

Additional Data

The sites were surveyed in the 1990s and the 2000s in Oregon.

Specialized Land Use Data

A survey conducted in Pennsylvania in 1998 was submitted for an indoor race track facility containing a go-cart racing track, arcade, laser tag, restaurant, and party function rooms. The trip generation rates for this facility differ considerably from those contained in this land use. The site gross floor area was 118,000 square feet. The counted vehicle trips were as follows:

- 235 on a weekday
- 28 during the weekday, AM peak hour of the generator
- 29 during the weekday, PM peak hour of the generator
- 20 during the weekday, PM peak hour of adjacent street traffic
- 277 on a Saturday
- 34 during the Saturday peak hour of the generator

Source Numbers

583, 611, 618

Multipurpose Recreational Facility (435)

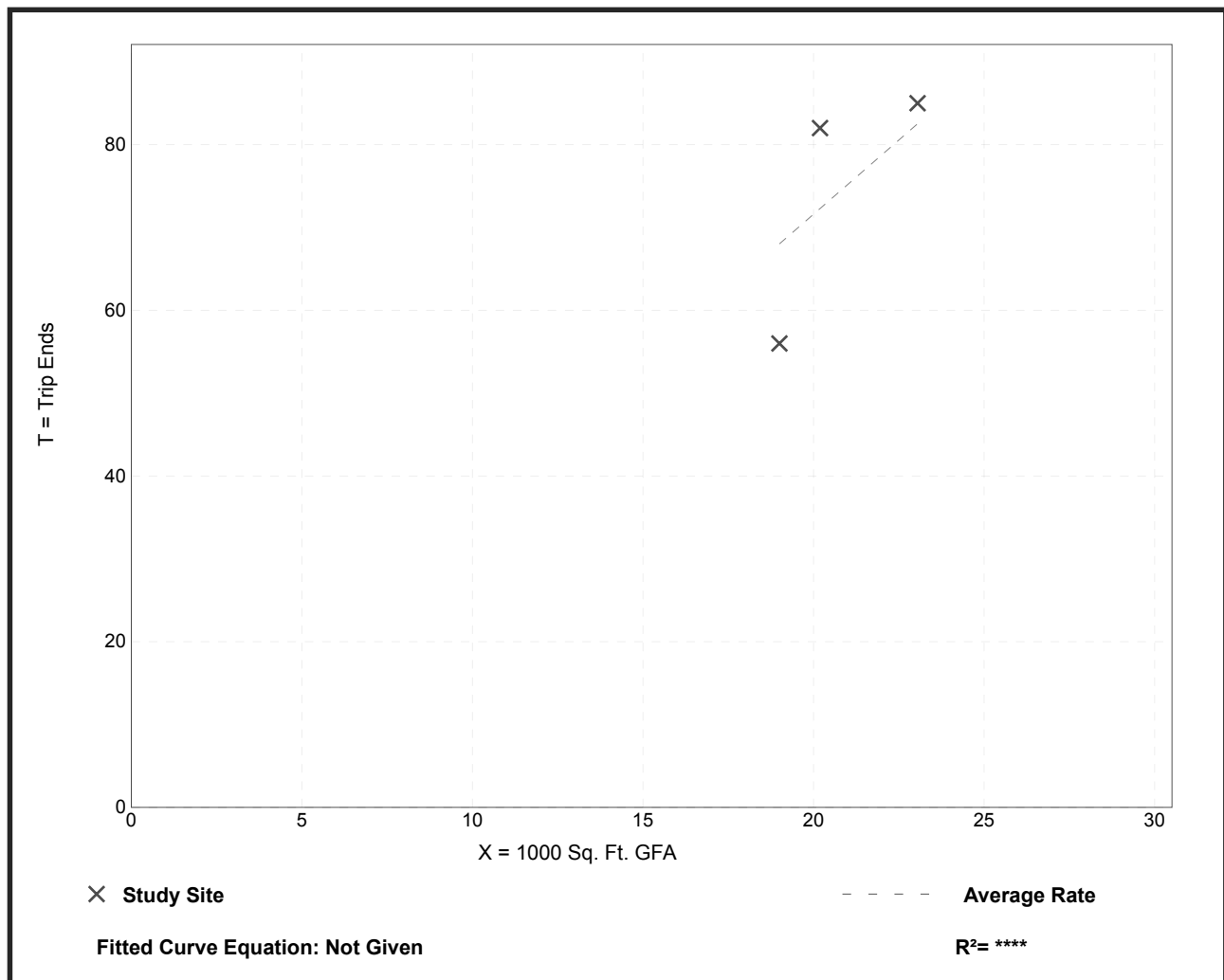
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. 1000 Sq. Ft. GFA: 21
Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.58	2.95 - 4.06	0.55

Data Plot and Equation

Caution – Small Sample Size



Butler Tract TIA
Existing (2018)

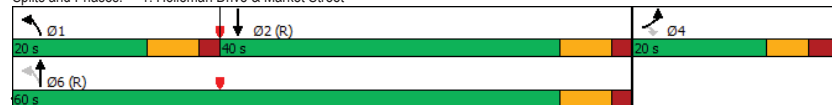
1: Holleman Drive & Market Street
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	214	13	7	466	229	22
Future Volume (vph)	214	13	7	466	229	22
Satd. Flow (prot)	1770	1583	1770	3539	3493	0
Flt Permitted	0.950		0.471			
Satd. Flow (perm)	1770	1583	877	3539	3493	0
Satd. Flow (RTOR)		15			15	
Lane Group Flow (vph)	252	15	8	548	295	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Total Split (s)	20.0	20.0	20.0	60.0	40.0	
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	
Act Effct Green (s)	13.0	13.0	53.0	53.0	33.0	
Actuated g/C Ratio	0.16	0.16	0.66	0.66	0.41	
v/c Ratio	0.88	0.06	0.01	0.23	0.20	
Control Delay	64.7	14.8	4.7	5.7	14.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	64.7	14.8	4.7	5.7	14.7	
LOS	E	B	A	A	B	
Approach Delay	61.9			5.7	14.7	
Approach LOS	E			A	B	
Queue Length 50th (ft)	125	0	1	50	45	
Queue Length 95th (ft)	#232	15	5	65	67	
Internal Link Dist (ft)	341			373	378	
Turn Bay Length (ft)			50			
Base Capacity (vph)	287	269	726	2344	1449	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.88	0.06	0.01	0.23	0.20	

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 20 (25%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 21.5
Intersection Capacity Utilization 36.4%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Holleman Drive & Market Street



BBI
05/02/2018

Synchro 10 Report

Butler Tract TIA
Existing (2018)

2: Holleman Drive & Dowling Road
AM Peak Hour

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection Delay, s/veh	12.1											
Intersection LOS	B											
Lane Configurations												
Traffic Vol, veh/h	135	93	26	3	1	1	36	311	0	16	153	76
Future Vol, veh/h	135	93	26	3	1	1	36	311	0	16	153	76
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	161	111	31	4	1	1	43	370	0	19	182	90
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			1			1		
HCM Control Delay	13.9			9.5			12			10.5		
HCM LOS	B			A			B			B		

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	26%	0%	53%	60%	17%	0%
Vol Thru, %	74%	100%	37%	20%	83%	50%
Vol Right, %	0%	0%	10%	20%	0%	50%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	140	207	254	5	93	153
LT Vol	36	0	135	3	16	0
Through Vol	104	207	93	1	77	77
RT Vol	0	0	26	1	0	76
Lane Flow Rate	166	247	302	6	110	182
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.278	0.403	0.479	0.011	0.188	0.288
Departure Headway (Hd)	6.015	5.885	5.708	6.351	6.143	5.701
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	597	612	632	562	584	630
Service Time	3.751	3.62	3.743	4.409	3.881	3.439
HCM Lane V/C Ratio	0.278	0.404	0.478	0.011	0.188	0.289
HCM Control Delay	11.1	12.6	13.9	9.5	10.3	10.7
HCM Lane LOS	B	B	B	A	B	B
HCM 95th-tile Q	1.1	1.9	2.6	0	0.7	1.2

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05/02/2018

Synchro 10 Report

Butler Tract TIA
Existing (2018)

3: Holleman Drive & General Parkway
AM Peak Hour

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	81	679	7	15	173
Future Vol, veh/h	7	81	679	7	15	173
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	98	818	8	18	208

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	962	413	0
Stage 1	822	-	-
Stage 2	140	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	254	588	-
Stage 1	392	-	-
Stage 2	872	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	248	588	-
Mov Cap-2 Maneuver	327	-	-
Stage 1	383	-	-
Stage 2	872	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	327	588	800
HCM Lane V/C Ratio	-	-	0.026	0.166	0.023
HCM Control Delay (s)	-	-	16.3	12.3	9.6
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0.6	0.1

Butler Tract TIA
Existing (2018)

4: Holleman Drive & Cain Road
AM Peak Hour

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	47	513	7	27	162
Future Vol, veh/h	5	47	513	7	27	162
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	55	604	8	32	191

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	768	306	0
Stage 1	608	-	-
Stage 2	160	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	338	690	-
Stage 1	506	-	-
Stage 2	852	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	327	690	-
Mov Cap-2 Maneuver	410	-	-
Stage 1	489	-	-
Stage 2	852	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	647	963	-
HCM Lane V/C Ratio	-	-	0.095	0.033	-
HCM Control Delay (s)	-	-	11.1	8.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Butler Tract TIA
Existing (2018)

5: Holleman Drive & Deacon Drive
AM Peak Hour

Intersection						
Int Delay, s/veh	3.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	195	362	11	30	113
Future Vol, veh/h	6	195	362	11	30	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	238	441	13	37	138

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	591	227	0
Stage 1	448	-	-
Stage 2	143	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	438	776	-
Stage 1	611	-	-
Stage 2	869	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	423	776	-
Mov Cap-2 Maneuver	423	-	-
Stage 1	590	-	-
Stage 2	869	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	1.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	423	776	1103	-
HCM Lane V/C Ratio	-	-	0.017	0.306	0.033	-
HCM Control Delay (s)	-	-	13.7	11.7	8.4	-
HCM Lane LOS	-	-	B	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	1.3	0.1	-

Butler Tract TIA
Existing (2018)

6: Holleman NB Channelized Right & Dowling Road
AM Peak Hour

Intersection						
Int Delay, s/veh	9.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	109	0	0	0	0	389
Future Vol, veh/h	109	0	0	0	0	389
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	118	0	0	0	0	423

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	-	0	0
Stage 1	-	0	0
Stage 2	-	0	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	934	-	-
HCM Lane V/C Ratio	0.453	-	-
HCM Control Delay (s)	12	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	2.4	-	-

Butler Tract TIA
Existing (2018)

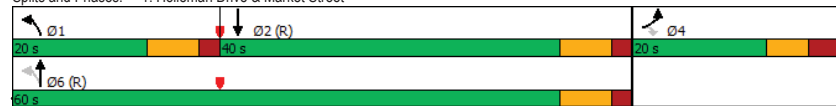
1: Holleman Drive & Market Street
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	218	21	22	411	557	126
Future Volume (vph)	218	21	22	411	557	126
Satd. Flow (prot)	1770	1583	1770	3539	3440	0
Flt Permitted	0.950		0.249			
Satd. Flow (perm)	1770	1583	464	3539	3440	0
Satd. Flow (RTOR)		23		41		
Lane Group Flow (vph)	237	23	24	447	742	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Total Split (s)	20.0	20.0	20.0	60.0	40.0	
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	
Act Effct Green (s)	13.0	13.0	53.0	53.0	33.0	
Actuated g/C Ratio	0.16	0.16	0.66	0.66	0.41	
v/c Ratio	0.83	0.08	0.05	0.19	0.51	
Control Delay	57.5	13.1	4.9	5.5	18.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	57.5	13.1	4.9	5.5	18.0	
LOS	E	B	A	A	B	
Approach Delay	53.6			5.4	18.0	
Approach LOS	D			A	B	
Queue Length 50th (ft)	116	0	4	39	133	
Queue Length 95th (ft)	#235	20	11	56	184	
Internal Link Dist (ft)	341			373	378	
Turn Bay Length (ft)			50			
Base Capacity (vph)	287	276	519	2344	1443	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.83	0.08	0.05	0.19	0.51	

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 20 (25%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Control Type: Pretimed
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 20.3
 Intersection Capacity Utilization 43.2%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Holleman Drive & Market Street



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Synchro 10 Report

Butler Tract TIA
Existing (2018)

2: Holleman Drive & Dowling Road
PM Peak Hour

Intersection												
Intersection Delay, s/veh	13.3											
Intersection LOS	B											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	128	27	44	18	3	11	39	261	0	5	481	96
Future Vol, veh/h	128	27	44	18	3	11	39	261	0	5	481	96
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	139	29	48	20	3	12	42	284	0	5	523	104
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Approach	EB	WB			NB			SB				
Opposing Approach	WB	EB			SB			NB				
Opposing Lanes	1	1			2			2				
Conflicting Approach Left	SB	NB			EB			WB				
Conflicting Lanes Left	2	2			1			1				
Conflicting Approach Right	NB	SB			WB			EB				
Conflicting Lanes Right	2	2			1			1				
HCM Control Delay	12.8	10.1			11.6			14.5				
HCM LOS	B	B			B			B				

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	31%	0%	64%	56%	2%	0%
Vol Thru, %	69%	100%	14%	9%	98%	71%
Vol Right, %	0%	0%	22%	34%	0%	29%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	126	174	199	32	246	337
LT Vol	39	0	128	18	5	0
Through Vol	87	174	27	3	241	241
RT Vol	0	0	44	11	0	96
Lane Flow Rate	137	189	216	35	267	366
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.241	0.324	0.369	0.064	0.432	0.57
Departure Headway (Hd)	6.326	6.169	6.147	6.573	5.826	5.613
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	567	583	584	543	616	644
Service Time	4.075	3.917	4.193	4.637	3.566	3.353
HCM Lane V/C Ratio	0.242	0.324	0.37	0.064	0.433	0.568
HCM Control Delay	11.1	11.9	12.8	10.1	13	15.6
HCM Lane LOS	B	B	B	B	B	C
HCM 95th-tile Q	0.9	1.4	1.7	0.2	2.2	3.6

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Synchro 10 Report

Butler Tract TIA
Existing (2018)

3: Holleman Drive & General Parkway
PM Peak Hour

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	56	385	29	77	433
Future Vol, veh/h	17	56	385	29	77	433
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	62	428	32	86	481

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	857	230	0
Stage 1	444	-	-
Stage 2	413	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	296	772	-
Stage 1	614	-	-
Stage 2	636	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	273	772	-
Mov Cap-2 Maneuver	379	-	-
Stage 1	566	-	-
Stage 2	636	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	1.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	379	772	1097
HCM Lane V/C Ratio	-	-	0.05	0.081	0.078
HCM Control Delay (s)	-	-	15	10.1	8.6
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.3	0.3

Butler Tract TIA
Existing (2018)

4: Holleman Drive & Cain Road
PM Peak Hour

Intersection						
Int Delay, s/veh	2.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	127	243	6	43	407
Future Vol, veh/h	10	127	243	6	43	407
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	138	264	7	47	442

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	583	136	0
Stage 1	268	-	-
Stage 2	315	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	443	888	-
Stage 1	753	-	-
Stage 2	713	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	427	888	-
Mov Cap-2 Maneuver	511	-	-
Stage 1	726	-	-
Stage 2	713	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	843	1289
HCM Lane V/C Ratio	-	-	0.177	0.036
HCM Control Delay (s)	-	-	10.2	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1

Butler Tract TIA
Existing (2018)

5: Holleman Drive & Deacon Drive
PM Peak Hour

Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	97	174	6	112	290
Future Vol, veh/h	13	97	174	6	112	290
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	105	189	7	122	315

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	595	98	0
Stage 1	193	-	-
Stage 2	402	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	436	939	-
Stage 1	821	-	-
Stage 2	644	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	397	939	-
Mov Cap-2 Maneuver	397	-	-
Stage 1	748	-	-
Stage 2	644	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	2.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	397	939	1374	-
HCM Lane V/C Ratio	-	-	0.036	0.112	0.089	-
HCM Control Delay (s)	-	-	14.4	9.3	7.9	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.4	0.3	-

Butler Tract TIA
Existing (2018)

6: Holleman NB Channelized Right & Dowling Road
PM Peak Hour

Intersection						
Int Delay, s/veh	6.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	32	0	0	0	0	110
Future Vol, veh/h	32	0	0	0	0	110
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	0	0	0	0	120

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	-	0	0
Stage 1	-	0	0
Stage 2	-	0	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	1038	-	-
HCM Lane V/C Ratio	0.115	-	-
HCM Control Delay (s)	8.9	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-

Butler Tract TIA
Background (2021)

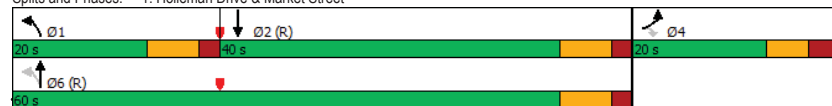
1: Holleman Drive & Market Street
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↰
Traffic Volume (vph)	227	14	7	697	373	23
Future Volume (vph)	227	14	7	697	373	23
Satd. Flow (prot)	1770	1583	1770	3539	3507	0
Flt Permitted	0.950		0.395			
Satd. Flow (perm)	1770	1583	736	3539	3507	0
Satd. Flow (RTOR)		16			9	
Lane Group Flow (vph)	267	16	8	820	466	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Total Split (s)	20.0	20.0	20.0	60.0	40.0	
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	
Act Effct Green (s)	13.0	13.0	53.0	53.0	33.0	
Actuated g/C Ratio	0.16	0.16	0.66	0.66	0.41	
v/c Ratio	0.93	0.06	0.01	0.35	0.32	
Control Delay	73.9	14.4	4.7	6.4	16.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	73.9	14.4	4.7	6.4	16.4	
LOS	E	B	A	A	B	
Approach Delay	70.5			6.4	16.4	
Approach LOS	E			A	B	
Queue Length 50th (ft)	133	0	1	82	78	
Queue Length 95th (ft)	#250	15	5	102	106	
Internal Link Dist (ft)	341			373	378	
Turn Bay Length (ft)			50			
Base Capacity (vph)	287	270	655	2344	1451	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.93	0.06	0.01	0.35	0.32	

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 20 (25%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 20.9
Intersection Capacity Utilization 43.5%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Holleman Drive & Market Street



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Synchro 10 Report

Butler Tract TIA
Background (2021)

2: Holleman Drive & Dowling Road
AM Peak Hour

Intersection

Intersection Delay, s/veh	19.2
Intersection LOS	C

Movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱			↱			↱			↱	
Traffic Vol, veh/h	143	99	34	10	1	1	38	533	0	17	292	81
Future Vol, veh/h	143	99	34	10	1	1	38	533	0	17	292	81
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	170	118	40	12	1	1	45	635	0	20	348	96
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Approach

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	19	11.2	22.6	14.7
HCM LOS	C	B	C	B

Lane

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	18%	0%	52%	83%	10%	0%
Vol Thru, %	82%	100%	36%	8%	90%	64%
Vol Right, %	0%	0%	12%	8%	0%	36%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	216	355	276	12	163	227
LT Vol	38	0	143	10	17	0
Through Vol	178	355	99	1	146	146
RT Vol	0	0	34	1	0	81
Lane Flow Rate	257	423	329	14	194	270
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.468	0.761	0.599	0.031	0.368	0.489
Departure Headway (Hd)	6.566	6.476	6.561	7.919	6.821	6.513
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	544	554	549	455	524	549
Service Time	4.348	4.258	4.632	5.919	4.611	4.302
HCM Lane V/C Ratio	0.472	0.764	0.599	0.031	0.37	0.492
HCM Control Delay	15.1	27.2	19	11.2	13.6	15.5
HCM Lane LOS	C	D	C	B	B	C
HCM 95th-tile Q	2.5	6.8	3.9	0.1	1.7	2.7

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Synchro 10 Report

Butler Tract TIA
Background (2021)

3: Holleman Drive & General Parkway
AM Peak Hour

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	86	1007	7	16	326
Future Vol, veh/h	7	86	1007	7	16	326
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	104	1213	8	19	393

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1452	611	0
Stage 1	1217	-	-
Stage 2	235	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	121	437	-
Stage 1	243	-	-
Stage 2	782	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	117	437	-
Mov Cap-2 Maneuver	198	-	-
Stage 1	235	-	-
Stage 2	782	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.4	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	198	437	567
HCM Lane V/C Ratio	-	-	0.043	0.237	0.034
HCM Control Delay (s)	-	-	24	15.8	11.6
HCM Lane LOS	-	-	C	C	B
HCM 95th %tile Q(veh)	-	-	0.1	0.9	0.1

Butler Tract TIA
Background (2021)

4: Holleman Drive & Cain Road
AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	50	851	7	29	319
Future Vol, veh/h	5	50	851	7	29	319
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	59	1001	8	34	375

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1261	505	0
Stage 1	1005	-	-
Stage 2	256	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	162	512	-
Stage 1	315	-	-
Stage 2	763	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	154	512	-
Mov Cap-2 Maneuver	246	-	-
Stage 1	299	-	-
Stage 2	763	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	0.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	466	683
HCM Lane V/C Ratio	-	-	0.139	0.05
HCM Control Delay (s)	-	-	14	10.5
HCM Lane LOS	-	-	B	B
HCM 95th %tile Q(veh)	-	-	0.5	0.2

Butler Tract TIA
Background (2021)

5: Holleman Drive & Deacon Drive
AM Peak Hour

Intersection														
Int Delay, s/veh	7.8													
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	45	19	11	6	35	12	254	4	595	26	6	50	235	9
Future Vol, veh/h	45	19	11	6	35	12	254	4	595	26	6	50	235	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	-	None	-	-	-	None
Storage Length	50	-	-	-	50	-	-	-	-	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	82	92	82	92	82	82	92	82	82	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	21	12	7	43	13	310	4	726	32	7	61	287	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	806	1194	149	0	1040	1183	379	297	0	0	757	758
Stage 1	428	428	-	0	750	750	-	-	-	-	-	-
Stage 2	378	766	-	0	290	433	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	-	7.54	6.54	6.94	4.14	-	-	6.44	4.14
Critical Hdwy Stg 1	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	-	3.52	4.02	3.32	2.22	-	-	2.52	2.22
Pot Cap-1 Maneuver	273	185	871	0	185	188	619	1261	-	-	475	849
Stage 1	575	583	-	0	369	417	-	-	-	-	-	-
Stage 2	616	410	-	0	694	580	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	119	167	871	0	153	169	619	1261	-	-	710	710
Mov Cap-2 Maneuver	119	167	-	0	153	169	-	-	-	-	-	-
Stage 1	572	528	-	0	367	414	-	-	-	-	-	-
Stage 2	296	408	-	0	596	525	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	42		21.9		0		2	
HCM LOS	E		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1261	-	-	119	237	153	559	710	-	-
HCM Lane V/C Ratio	0.003	-	-	0.411	0.138	0.279	0.577	0.095	-	-
HCM Control Delay (s)	7.9	0	-	54.9	22.6	37.4	19.9	10.6	-	-
HCM Lane LOS	A	A	-	F	C	E	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.7	0.5	1.1	3.6	0.3	-	-

Butler Tract TIA
Background (2021)

6: Holleman NB Channelized Right & Dowling Road
AM Peak Hour

Intersection						
Int Delay, s/veh	11.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	116	0	0	0	0	496
Future Vol, veh/h	116	0	0	0	0	496
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	126	0	0	0	0	539

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	-	0	0
Stage 1	-	0	0
Stage 2	-	0	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	924	-	-
HCM Lane V/C Ratio	0.583	-	-
HCM Control Delay (s)	14.2	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	3.9	-	-

Butler Tract TIA
Background (2021)

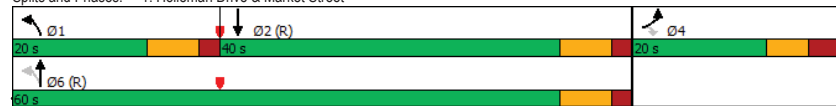
1: Holleman Drive & Market Street
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	231	22	23	589	793	134
Future Volume (vph)	231	22	23	589	793	134
Satd. Flow (prot)	1770	1583	1770	3539	3461	0
Flt Permitted	0.950		0.145			
Satd. Flow (perm)	1770	1583	270	3539	3461	0
Satd. Flow (RTOR)		24		29		
Lane Group Flow (vph)	251	24	25	640	1008	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Total Split (s)	20.0	20.0	20.0	60.0	40.0	
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	
Act Effct Green (s)	13.0	13.0	53.0	53.0	33.0	
Actuated g/C Ratio	0.16	0.16	0.66	0.66	0.41	
v/c Ratio	0.87	0.09	0.06	0.27	0.70	
Control Delay	64.1	12.9	5.0	5.9	22.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	64.1	12.9	5.0	5.9	22.0	
LOS	E	B	A	A	C	
Approach Delay	59.7			5.9	22.0	
Approach LOS	E			A	C	
Queue Length 50th (ft)	124	0	4	60	206	
Queue Length 95th (ft)	#253	20	11	83	275	
Internal Link Dist (ft)	341			373	378	
Turn Bay Length (ft)			50			
Base Capacity (vph)	287	277	422	2344	1444	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.87	0.09	0.06	0.27	0.70	

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 20 (25%), Referenced to phase 2:SBT and 6:NBT, Start of Green
 Control Type: Pretimed
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 21.8
 Intersection Capacity Utilization 50.7%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Holleman Drive & Market Street



BBI
05/02/2018

Synchro 10 Report

Butler Tract TIA
Background (2021)

2: Holleman Drive & Dowling Road
PM Peak Hour

Intersection												
Intersection Delay, s/veh	25.8											
Intersection LOS	D											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↰			↰			↰	
Traffic Vol, veh/h	136	29	56	44	3	12	41	429	0	5	712	102
Future Vol, veh/h	136	29	56	44	3	12	41	429	0	5	712	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	148	32	61	48	3	13	45	466	0	5	774	111
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			1			1		
HCM Control Delay	16.1			12.2			18			33.9		
HCM LOS	C			B			C			D		

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	22%	0%	62%	75%	1%	0%
Vol Thru, %	78%	100%	13%	5%	99%	78%
Vol Right, %	0%	0%	25%	20%	0%	22%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	184	286	221	59	361	458
LT Vol	41	0	136	44	5	0
Through Vol	143	286	29	3	356	356
RT Vol	0	0	56	12	0	102
Lane Flow Rate	200	311	240	64	392	498
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.398	0.609	0.466	0.14	0.721	0.892
Departure Headway (Hd)	7.161	7.047	7.094	7.886	6.615	6.449
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	504	513	512	456	549	568
Service Time	4.885	4.771	5.094	5.912	4.315	4.149
HCM Lane V/C Ratio	0.397	0.606	0.469	0.14	0.714	0.877
HCM Control Delay	14.6	20.2	16.1	12.2	24.6	41.2
HCM Lane LOS	B	C	C	B	C	E
HCM 95th-tile Q	1.9	4	2.4	0.5	5.9	10.4

BBI
05/02/2018

Synchro 10 Report

Butler Tract TIA
Background (2021)

3: Holleman Drive & General Parkway
PM Peak Hour

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	59	627	31	82	695
Future Vol, veh/h	18	59	627	31	82	695
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	66	697	34	91	772

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1282	366	0
Stage 1	714	-	-
Stage 2	568	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	157	631	-
Stage 1	446	-	-
Stage 2	530	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	141	631	-
Mov Cap-2 Maneuver	255	-	-
Stage 1	399	-	-
Stage 2	530	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.5	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	255	631	869	-
HCM Lane V/C Ratio	-	-	0.078	0.104	0.105	-
HCM Control Delay (s)	-	-	20.3	11.4	9.6	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.3	0.4	-

Butler Tract TIA
Background (2021)

4: Holleman Drive & Cain Road
PM Peak Hour

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	135	523	6	46	726
Future Vol, veh/h	11	135	523	6	46	726
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	147	568	7	50	789

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1067	288	0
Stage 1	572	-	-
Stage 2	495	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	217	709	-
Stage 1	528	-	-
Stage 2	578	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	206	709	-
Mov Cap-2 Maneuver	329	-	-
Stage 1	502	-	-
Stage 2	578	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	652	994	-
HCM Lane V/C Ratio	-	-	0.243	0.05	-
HCM Control Delay (s)	-	-	12.3	8.8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1	0.2	-

Butler Tract TIA
Background (2021)

5: Holleman Drive & Deacon Drive
PM Peak Hour

Intersection														
Int Delay, s/veh	11.3													
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	44	12	7	9	34	30	175	13	324	20	9	210	471	30
Future Vol, veh/h	44	12	7	9	34	30	175	13	324	20	9	210	471	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None	-
Storage Length	50	-	-	-	50	-	-	-	-	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	13	8	10	37	33	190	14	352	22	10	228	512	33

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1226	1407	273	0	1130	1412	187	545	0	0	374	374
Stage 1	1005	1005	-	0	391	391	-	-	-	-	-	-
Stage 2	221	402	-	0	739	1021	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	-	7.54	6.54	6.94	4.14	-	-	6.44	4.14
Critical Hdwy Stg 1	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	-	3.52	4.02	3.32	2.22	-	-	2.52	2.22
Pot Cap-1 Maneuver	135	138	725	0	158	137	823	1020	-	-	832	1181
Stage 1	259	317	-	0	605	606	-	-	-	-	-	-
Stage 2	761	599	-	0	375	312	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	66	108	725	0	118	107	823	1020	-	-	1143	1143
Mov Cap-2 Maneuver	66	108	-	0	118	107	-	-	-	-	-	-
Stage 1	255	251	-	0	595	596	-	-	-	-	-	-
Stage 2	544	589	-	0	279	247	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	110.5		26.8		0.4		2.7	
HCM LOS	F		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1020	-	-	66	157	118	416	1143	-	-
HCM Lane V/C Ratio	0.014	-	-	0.725	0.132	0.313	0.536	0.208	-	-
HCM Control Delay (s)	8.6	0.1	-	144.6	31.4	48.8	23.2	9	-	-
HCM Lane LOS	A	A	-	F	D	E	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	3.2	0.4	1.2	3.1	0.8	-	-

Butler Tract TIA
Background (2021)

6: Holleman NB Channelized Right & Dowling Road
PM Peak Hour

Intersection						
Int Delay, s/veh	7.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	34	0	0	0	0	182
Future Vol, veh/h	34	0	0	0	0	182
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	0	0	0	0	198

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	37
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	-	1035
Stage 1	-	0	0	-	-
Stage 2	-	0	0	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	1035
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	1035	-	-
HCM Lane V/C Ratio	0.191	-	-
HCM Control Delay (s)	9.3	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.7	-	-

Butler Tract TIA
Full Build - Option 1 - (2021)

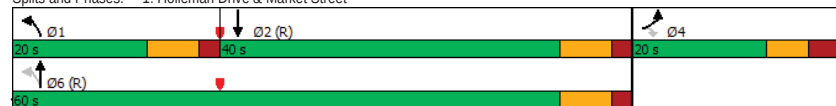
1: Holleman Drive & Market Street
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	227	14	7	742	446	23
Future Volume (vph)	227	14	7	742	446	23
Satd. Flow (prot)	1770	1583	1770	3539	3514	0
Flt Permitted	0.950		0.345			
Satd. Flow (perm)	1770	1583	643	3539	3514	0
Satd. Flow (RTOR)		16			8	
Lane Group Flow (vph)	267	16	8	873	552	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Total Split (s)	20.0	20.0	20.0	60.0	40.0	
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	
Act Effct Green (s)	13.0	13.0	53.0	53.0	33.0	
Actuated g/C Ratio	0.16	0.16	0.66	0.66	0.41	
v/c Ratio	0.93	0.06	0.01	0.37	0.38	
Control Delay	73.9	14.4	4.7	6.6	17.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	73.9	14.4	4.7	6.6	17.1	
LOS	E	B	A	A	B	
Approach Delay	70.5			6.6	17.1	
Approach LOS	E			A	B	
Queue Length 50th (ft)	133	0	1	88	96	
Queue Length 95th (ft)	#250	15	5	110	126	
Internal Link Dist (ft)	341			373	378	
Turn Bay Length (ft)			50			
Base Capacity (vph)	287	270	609	2344	1454	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.93	0.06	0.01	0.37	0.38	

Intersection Summary

Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 20 (25%), Referenced to phase 2:SBT and 6:NBT, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 20.5	Intersection LOS: C
Intersection Capacity Utilization 44.8%	ICU Level of Service A
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Holleman Drive & Market Street



BBI
06/23/2018

Synchro 10 Report

Butler Tract TIA
Full Build - Option 1 - (2021)

2: Holleman Drive & Dowling Road
AM Peak Hour

Intersection

Intersection Delay, s/veh	24.8
Intersection LOS	C

Movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	143	99	34	23	1	1	38	578	0	17	365	81
Future Vol, veh/h	143	99	34	23	1	1	38	578	0	17	365	81
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	170	118	40	27	1	1	45	688	0	20	435	96
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0

Approach

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	21.4	12.1	31.8	18.1
HCM LOS	C	B	D	C

Lane

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	16%	0%	52%	92%	9%	0%
Vol Thru, %	84%	100%	36%	4%	91%	69%
Vol Right, %	0%	0%	12%	4%	0%	31%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	231	385	276	25	200	264
LT Vol	38	0	143	23	17	0
Through Vol	193	385	99	1	183	183
RT Vol	0	0	34	1	0	81
Lane Flow Rate	275	459	329	30	238	314
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.53	0.874	0.637	0.069	0.472	0.601
Departure Headway (Hd)	6.943	6.859	6.98	8.383	7.158	6.893
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	519	528	519	427	504	524
Service Time	4.682	4.597	4.98	6.44	4.897	4.633
HCM Lane V/C Ratio	0.53	0.869	0.634	0.07	0.472	0.599
HCM Control Delay	17.3	40.5	21.4	12.1	16.2	19.5
HCM Lane LOS	C	E	C	B	C	C
HCM 95th-ile Q	3.1	9.6	4.4	0.2	2.5	3.9

BBI
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Synchro 10 Report

Butler Tract TIA
Full Build - Option 1 - (2021)

3: Holleman Drive & General Parkway
AM Peak Hour

Intersection						
Int Delay, s/veh	3.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	139	1007	54	102	326
Future Vol, veh/h	36	139	1007	54	102	326
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	167	1213	65	123	393

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1689	639	0	0	1278
Stage 1	1246	-	-	-	-
Stage 2	443	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22
Pot Cap-1 Maneuver	84	419	-	-	539
Stage 1	234	-	-	-	-
Stage 2	614	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	65	419	-	-	539
Mov Cap-2 Maneuver	143	-	-	-	-
Stage 1	181	-	-	-	-
Stage 2	614	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.6	0	3.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	143	419	539	-
HCM Lane V/C Ratio	-	-	0.303	0.4	0.228	-
HCM Control Delay (s)	-	-	40.8	19.2	13.6	-
HCM Lane LOS	-	-	E	C	B	-
HCM 95th %tile Q(veh)	-	-	1.2	1.9	0.9	-

Butler Tract TIA
Full Build - Option 1 - (2021)

4: Holleman Drive & Cain Road
AM Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	50	898	7	29	348
Future Vol, veh/h	5	50	898	7	29	348
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	59	1056	8	34	409

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1333	532	0	0	1064
Stage 1	1060	-	-	-	-
Stage 2	273	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22
Pot Cap-1 Maneuver	145	492	-	-	651
Stage 1	294	-	-	-	-
Stage 2	748	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	137	492	-	-	651
Mov Cap-2 Maneuver	229	-	-	-	-
Stage 1	279	-	-	-	-
Stage 2	748	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	445	651	-
HCM Lane V/C Ratio	-	-	0.145	0.052	-
HCM Control Delay (s)	-	-	14.5	10.8	-
HCM Lane LOS	-	-	B	B	-
HCM 95th %tile Q(veh)	-	-	0.5	0.2	-

Butler Tract TIA
Full Build - Option 1 - (2021)

5: Holleman Drive & Deacon Drive
AM Peak Hour

Intersection														
Int Delay, s/veh	9.4													
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	45	19	11	6	35	12	274	4	621	26	6	62	251	9
Future Vol, veh/h	45	19	11	6	35	12	274	4	621	26	6	62	251	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	-	None
Storage Length	50	-	-	-	50	-	-	250	-	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	82	92	82	92	82	82	92	82	82	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	21	12	7	43	13	334	4	757	32	7	76	306	10

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	870	1274	158	0	1111	1263	395	316	0	0	789	789
Stage 1	477	477	-	0	781	781	-	-	-	-	-	-
Stage 2	393	797	-	0	330	482	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	-	7.54	6.54	6.94	4.14	-	-	6.44	4.14
Critical Hdwy Stg 1	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	-	3.52	4.02	3.32	2.22	-	-	2.52	2.22
Pot Cap-1 Maneuver	246	166	859	0	164	168	604	1241	-	-	453	827
Stage 1	538	554	-	0	354	403	-	-	-	-	-	-
Stage 2	603	397	-	0	657	552	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	93	146	859	0	131	148	604	1241	-	-	698	698
Mov Cap-2 Maneuver	93	146	-	0	131	148	-	-	-	-	-	-
Stage 1	536	489	-	0	353	402	-	-	-	-	-	-
Stage 2	260	396	-	0	548	487	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	58.4		25.3		0		2.2	
HCM LOS	F		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1241	-	-	93	210	131	541	698	-	-
HCM Lane V/C Ratio	0.004	-	-	0.526	0.155	0.326	0.642	0.118	-	-
HCM Control Delay (s)	7.9	-	-	80.4	25.3	45.2	22.8	10.8	-	-
HCM Lane LOS	A	-	-	F	D	E	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	2.3	0.5	1.3	4.5	0.4	-	-

Butler Tract TIA
Full Build - Option 1 - (2021)

6: Holleman NB Channelized Right & Dowling Road
AM Peak Hour

Intersection						
Int Delay, s/veh	11.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	116	0	0	0	0	504
Future Vol, veh/h	116	0	0	0	0	504
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	126	0	0	0	0	548

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	126
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	-	924
Stage 1	-	0	0	-	-
Stage 2	-	0	0	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	924
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	924	-	-
HCM Lane V/C Ratio	0.593	-	-
HCM Control Delay (s)	14.4	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	4	-	-

Butler Tract TIA
Full Build - Option 1 - (2021)

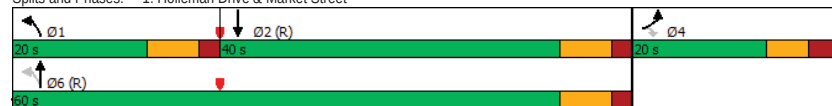
1: Holleman Drive & Market Street
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↰
Traffic Volume (vph)	231	22	23	537	1022	134
Future Volume (vph)	231	22	23	537	1022	134
Satd. Flow (prot)	1770	1583	1770	3539	3479	0
Flt Permitted	0.950		0.100			
Satd. Flow (perm)	1770	1583	186	3539	3479	0
Satd. Flow (RTOR)		24			22	
Lane Group Flow (vph)	251	24	25	584	1257	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Total Split (s)	20.0	20.0	20.0	60.0	40.0	
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	
Act Effct Green (s)	13.0	13.0	53.0	53.0	33.0	
Actuated g/C Ratio	0.16	0.16	0.66	0.66	0.41	
v/c Ratio	0.87	0.09	0.07	0.25	0.87	
Control Delay	64.1	12.9	5.0	5.8	29.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	64.1	12.9	5.0	5.8	29.2	
LOS	E	B	A	A	C	
Approach Delay	59.7			5.7	29.2	
Approach LOS	E			A	C	
Queue Length 50th (ft)	124	0	4	53	289	
Queue Length 95th (ft)	#253	20	11	75	#398	
Internal Link Dist (ft)	341			373	378	
Turn Bay Length (ft)			50			
Base Capacity (vph)	287	277	380	2344	1448	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.87	0.09	0.07	0.25	0.87	

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 20 (25%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 26.5
Intersection Capacity Utilization 57.0%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Holleman Drive & Market Street



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Synchro 10 Report

Butler Tract TIA
Full Build - Option 1 - (2021)

2: Holleman Drive & Dowling Road
PM Peak Hour

Intersection												
Intersection Delay, s/veh	82.7											
Intersection LOS	F											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕			↕			↕	
Traffic Vol, veh/h	136	29	56	86	3	12	41	678	0	5	942	102
Future Vol, veh/h	136	29	56	86	3	12	41	678	0	5	942	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	148	32	61	93	3	13	45	737	0	5	1024	111
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			1			1		
HCM Control Delay	18.6			14.6			55.5			121.5		
HCM LOS	C			B			F			F		
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2						
Vol Left, %	15%	0%	62%	85%	1%	0%						
Vol Thru, %	85%	100%	13%	3%	99%	82%						
Vol Right, %	0%	0%	25%	12%	0%	18%						
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop						
Traffic Vol by Lane	267	452	221	101	476	573						
LT Vol	41	0	136	86	5	0						
Through Vol	226	452	29	3	471	471						
RT Vol	0	0	56	12	0	102						
Lane Flow Rate	290	491	240	110	517	623						
Geometry Grp	7	7	2	2	7	7						
Degree of Util (X)	0.609	1.021	0.51	0.257	1.059	1.252						
Departure Headway (Hd)	7.866	7.788	7.799	8.612	7.37	7.237						
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes						
Cap	461	472	466	419	492	504						
Service Time	5.566	5.488	5.799	6.612	5.14	5.007						
HCM Lane V/C Ratio	0.629	1.04	0.515	0.263	1.051	1.236						
HCM Control Delay	22.1	75.2	18.6	14.6	84.4	152.3						
HCM Lane LOS	C	F	C	B	F	F						
HCM 95th-ile Q	4	13.9	2.8	1	15.8	24.8						

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Synchro 10 Report

Butler Tract TIA
Full Build - Option 1 - (2021)

3: Holleman Drive & General Parkway
PM Peak Hour

Intersection						
Int Delay, s/veh	6.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	176	353	627	177	353	695
Future Vol, veh/h	176	353	627	177	353	695
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	196	392	697	197	392	772

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1966	447	0
Stage 1	796	-	-
Stage 2	1170	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	~ 55	559	-
Stage 1	405	-	-
Stage 2	257	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	~ 26	559	-
Mov Cap-2 Maneuver	~ 3063	-	-
Stage 1	~ 195	-	-
Stage 2	257	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.1	0	5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	+	559	755	-
HCM Lane V/C Ratio	-	-	-	0.702	0.519	-
HCM Control Delay (s)	-	-	3.9	25.2	14.8	-
HCM Lane LOS	-	-	A	D	B	-
HCM 95th %tile Q(veh)	-	-	-	5.6	3	-

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

Butler Tract TIA
Full Build - Option 1 - (2021)

4: Holleman Drive & Cain Road
PM Peak Hour

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	135	669	6	46	884
Future Vol, veh/h	11	135	669	6	46	884
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	147	727	7	50	961

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1312	367	0
Stage 1	731	-	-
Stage 2	581	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	150	630	-
Stage 1	437	-	-
Stage 2	522	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	141	630	-
Mov Cap-2 Maneuver	265	-	-
Stage 1	412	-	-
Stage 2	522	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.7	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	571	867	-
HCM Lane V/C Ratio	-	-	0.278	0.058	-
HCM Control Delay (s)	-	-	13.7	9.4	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.1	0.2	-

Butler Tract TIA
Full Build - Option 1 - (2021)

5: Holleman Drive & Deacon Drive
PM Peak Hour

Intersection														
Int Delay, s/veh	36.1													
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	44	12	7	9	34	30	237	13	408	20	9	278	562	30
Future Vol, veh/h	44	12	7	9	34	30	237	13	408	20	9	278	562	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	-	None
Storage Length	50	-	-	-	50	-	-	250	-	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	13	8	10	37	33	258	14	443	22	10	302	611	33

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1518	1745	322	0	1418	1750	233	644	0	0	465	465
Stage 1	1252	1252	-	0	482	482	-	-	-	-	-	-
Stage 2	266	493	-	0	936	1268	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	-	7.54	6.54	6.94	4.14	-	-	6.44	4.14
Critical Hdwy Stg 1	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	-	3.52	4.02	3.32	2.22	-	-	2.52	2.22
Pot Cap-1 Maneuver	82	85	674	0	97	85	769	937	-	-	728	1093
Stage 1	182	242	-	0	534	552	-	-	-	-	-	-
Stage 2	716	545	-	0	285	238	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	~ 24	59	674	0	61	59	769	937	-	-	1054	1054
Mov Cap-2 Maneuver	~ 24	59	-	0	61	59	-	-	-	-	-	-
Stage 1	179	170	-	0	526	544	-	-	-	-	-	-
Stage 2	441	537	-	0	183	168	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	581.5		69.4		0.3		3.2	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	937	-	-	24	89	61	327	1054	-	-
HCM Lane V/C Ratio	0.015	-	-	1.993	0.232	0.606	0.888	0.296	-	-
HCM Control Delay (s)	8.9	-	-	\$ 807.8	57.3	130.1	61.7	9.8	-	-
HCM Lane LOS	A	-	-	F	F	F	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	6	0.8	2.5	8.4	1.2	-	-

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

Butler Tract TIA
Full Build - Option 1 - (2021)

6: Holleman NB Channelized Right & Dowling Road
PM Peak Hour

Intersection						
Int Delay, s/veh	8.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	34	0	0	0	0	227
Future Vol, veh/h	34	0	0	0	0	227
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	0	0	0	0	247

Major/Minor	Major1	Major2	Minor1	
Conflicting Flow All	0	-	-	37
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	1035
Stage 1	-	0	0	-
Stage 2	-	0	0	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	1035
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	1035	-	-
HCM Lane V/C Ratio	0.238	-	-
HCM Control Delay (s)	9.6	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.9	-	-

Butler Tract TIA
Full Build - Option 2 - (2021)

1: Holleman Drive & Market Street
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	227	14	7	709	394	23
Future Volume (vph)	227	14	7	709	394	23
Satd. Flow (prot)	1770	1583	1770	3539	3511	0
Flt Permitted	0.950		0.380			
Satd. Flow (perm)	1770	1583	708	3539	3511	0
Satd. Flow (RTOR)		16			9	
Lane Group Flow (vph)	267	16	8	834	491	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Total Split (s)	20.0	20.0	20.0	60.0	40.0	
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	
Act Effct Green (s)	13.0	13.0	53.0	53.0	33.0	
Actuated g/C Ratio	0.16	0.16	0.66	0.66	0.41	
v/c Ratio	0.93	0.06	0.01	0.36	0.34	
Control Delay	73.9	14.4	4.7	6.5	16.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	73.9	14.4	4.7	6.5	16.5	
LOS	E	B	A	A	B	
Approach Delay	70.5			6.5	16.5	
Approach LOS	E			A	B	
Queue Length 50th (ft)	133	0	1	84	83	
Queue Length 95th (ft)	#250	15	5	104	112	
Internal Link Dist (ft)	341			373	378	
Turn Bay Length (ft)			50			
Base Capacity (vph)	287	270	641	2344	1453	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.93	0.06	0.01	0.36	0.34	

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 20 (25%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 20.7
Intersection Capacity Utilization 43.8%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Holleman Drive & Market Street



Butler Tract TIA
Full Build - Option 2 - (2021)

2: Holleman Drive & Dowling Road
AM Peak Hour

Intersection												
Intersection Delay, s/veh	20.3											
Intersection LOS	C											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	143	99	34	13	1	1	38	545	0	17	313	81
Future Vol, veh/h	143	99	34	13	1	1	38	545	0	17	313	81
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	170	118	40	15	1	1	45	649	0	20	373	96
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			1			1		
HCM Control Delay	19.5			11.4			24.3			15.4		
HCM LOS	C			B			C			C		

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	17%	0%	52%	87%	10%	0%
Vol Thru, %	83%	100%	36%	7%	90%	66%
Vol Right, %	0%	0%	12%	7%	0%	34%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	220	363	276	15	174	238
LT Vol	38	0	143	13	17	0
Through Vol	182	363	99	1	157	157
RT Vol	0	0	34	1	0	81
Lane Flow Rate	262	433	329	18	207	283
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.482	0.787	0.606	0.04	0.395	0.517
Departure Headway (Hd)	6.637	6.548	6.645	8.053	6.877	6.583
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	539	549	542	447	518	543
Service Time	4.426	4.337	4.72	6.053	4.673	4.378
HCM Lane V/C Ratio	0.486	0.789	0.607	0.04	0.4	0.521
HCM Control Delay	15.5	29.6	19.5	11.4	14.2	16.3
HCM Lane LOS	C	D	C	B	B	C
HCM 95th-ile Q	2.6	7.3	4	0.1	1.9	2.9

Butler Tract TIA
Full Build - Option 2 - (2021)

3: Holleman Drive & General Parkway
AM Peak Hour

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	100	1007	21	41	326
Future Vol, veh/h	15	100	1007	21	41	326
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	120	1213	25	49	393
Major/Minor						
Minor1	Major1		Major2			
Conflicting Flow All	1521	619	0	0	1238	0
Stage 1	1226	-	-	-	-	-
Stage 2	295	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	109	432	-	-	558	-
Stage 1	240	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	99	432	-	-	558	-
Mov Cap-2 Maneuver	181	-	-	-	-	-
Stage 1	219	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Approach						
WB	NB		SB			
HCM Control Delay, s	17.9	0	1.3			
HCM LOS	C					
Minor Lane/Major Mvmt						
NBT	NBRWBLn1	WBLn2	SBL	SBT		
Capacity (veh/h)	-	-	181	432	558	-
HCM Lane V/C Ratio	-	-	0.1	0.279	0.089	-
HCM Control Delay (s)	-	-	27.1	16.5	12.1	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th %tile Q(veh)	-	-	0.3	1.1	0.3	-

Butler Tract TIA
Full Build - Option 2 - (2021)

4: Holleman Drive & Cain Road
AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	50	865	7	29	327
Future Vol, veh/h	5	50	865	7	29	327
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	59	1018	8	34	385
Major/Minor						
Minor1	Major1		Major2			
Conflicting Flow All	1283	513	0	0	1026	0
Stage 1	1022	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	157	506	-	-	673	-
Stage 1	308	-	-	-	-	-
Stage 2	759	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	149	506	-	-	673	-
Mov Cap-2 Maneuver	241	-	-	-	-	-
Stage 1	292	-	-	-	-	-
Stage 2	759	-	-	-	-	-
Approach						
WB	NB		SB			
HCM Control Delay, s	14.1	0	0.9			
HCM LOS	B					
Minor Lane/Major Mvmt						
NBT	NBRWBLn1	WBLn2	SBL	SBT		
Capacity (veh/h)	-	-	460	673	-	-
HCM Lane V/C Ratio	-	-	0.141	0.051	-	-
HCM Control Delay (s)	-	-	14.1	10.6	-	-
HCM Lane LOS	-	-	B	B	-	-
HCM 95th %tile Q(veh)	-	-	0.5	0.2	-	-

Butler Tract TIA
Full Build - Option 2 - (2021)

5: Holleman Drive & Deacon Drive
AM Peak Hour

Intersection														
Int Delay, s/veh	8.6													
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	45	19	11	6	41	12	260	4	603	26	6	59	239	9
Future Vol, veh/h	45	19	11	6	41	12	260	4	603	26	6	59	239	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	-	None
Storage Length	50	-	-	-	50	-	-	250	-	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	82	92	82	92	82	82	92	82	82	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	21	12	7	50	13	317	4	735	32	7	72	291	10

Major/Minor	Minor2		Minor1		Major1		Major2							
Conflicting Flow All	836	1229	151	0	1073	1218	384	301	0	0	767	767	0	0
Stage 1	454	454	-	0	759	759	-	-	-	-	-	-	-	-
Stage 2	382	775	-	0	314	459	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	-	7.54	6.54	6.94	4.14	-	-	6.44	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	-	3.52	4.02	3.32	2.22	-	-	2.52	2.22	-	-
Pot Cap-1 Maneuver	260	177	868	0	175	179	614	1257	-	-	468	842	-	-
Stage 1	555	568	-	0	365	413	-	-	-	-	-	-	-	-
Stage 2	612	406	-	0	671	565	-	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	108	157	868	0	142	159	614	1257	-	-	716	716	-	-
Mov Cap-2 Maneuver	108	157	-	0	142	159	-	-	-	-	-	-	-	-
Stage 1	553	506	-	0	364	412	-	-	-	-	-	-	-	-
Stage 2	286	405	-	0	566	503	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	47.6		23.8		0		2.2	
HCM LOS	E		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1257	-	-	108	224	142	552	716	-	-
HCM Lane V/C Ratio	0.003	-	-	0.453	0.146	0.352	0.598	0.11	-	-
HCM Control Delay (s)	7.9	-	-	63.4	23.8	43.5	20.8	10.6	-	-
HCM Lane LOS	A	-	-	F	C	E	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	2	0.5	1.4	3.9	0.4	-	-

Butler Tract TIA
Full Build - Option 2 - (2021)

6: Holleman NB Channelized Right & Dowling Road
AM Peak Hour

Intersection						
Int Delay, s/veh	11.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	116	0	0	0	0	498
Future Vol, veh/h	116	0	0	0	0	498
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	126	0	0	0	0	541

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	126
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	-	924
Stage 1	-	0	0	-	-
Stage 2	-	0	0	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	924
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	924	-	-
HCM Lane V/C Ratio	0.586	-	-
HCM Control Delay (s)	14.3	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	3.9	-	-

Butler Tract TIA
Full Build - Option 2 - (2021)

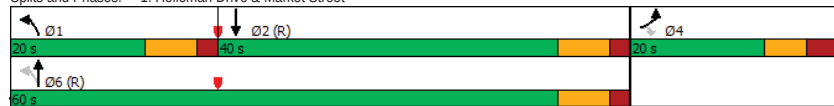
1: Holleman Drive & Market Street
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	231	22	23	664	871	134
Future Volume (vph)	231	22	23	664	871	134
Satd. Flow (prot)	1770	1583	1770	3539	3468	0
Flt Permitted	0.950		0.117			
Satd. Flow (perm)	1770	1583	218	3539	3468	0
Satd. Flow (RTOR)		24			26	
Lane Group Flow (vph)	251	24	25	722	1093	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Total Split (s)	20.0	20.0	20.0	60.0	40.0	
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	
Act Effct Green (s)	13.0	13.0	53.0	53.0	33.0	
Actuated g/C Ratio	0.16	0.16	0.66	0.66	0.41	
v/c Ratio	0.87	0.09	0.06	0.31	0.76	
Control Delay	64.1	12.9	5.0	6.1	23.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	64.1	12.9	5.0	6.1	23.7	
LOS	E	B	A	A	C	
Approach Delay	59.7			6.1	23.7	
Approach LOS	E			A	C	
Queue Length 50th (ft)	124	0	4	70	233	
Queue Length 95th (ft)	#253	20	11	95	309	
Internal Link Dist (ft)	341			373	378	
Turn Bay Length (ft)			50			
Base Capacity (vph)	287	277	396	2344	1445	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.87	0.09	0.06	0.31	0.76	

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 20 (25%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 22.2 Intersection LOS: C
Intersection Capacity Utilization 52.8% ICU Level of Service A
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Holleman Drive & Market Street



BBI
06/23/2018

Synchro 10 Report

Butler Tract TIA
Full Build - Option 2 - (2021)

2: Holleman Drive & Dowling Road
PM Peak Hour

Intersection												
Intersection Delay, s/veh		37.8										
Intersection LOS		E										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↕			↕	
Traffic Vol, veh/h	136	29	56	58	3	12	41	505	0	5	790	102
Future Vol, veh/h	136	29	56	58	3	12	41	505	0	5	790	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	148	32	61	63	3	13	45	549	0	5	859	111
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			1			1		
HCM Control Delay	17.2			13			23.9			53.3		
HCM LOS	C			B			C			F		
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2						
Vol Left, %	20%	0%	62%	79%	1%	0%						
Vol Thru, %	80%	100%	13%	4%	99%	79%						
Vol Right, %	0%	0%	25%	16%	0%	21%						
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop						
Traffic Vol by Lane	209	337	221	73	400	497						
LT Vol	41	0	136	58	5	0						
Through Vol	168	337	29	3	395	395						
RT Vol	0	0	56	12	0	102						
Lane Flow Rate	228	366	240	79	435	540						
Geometry Grp	7	7	2	2	7	7						
Degree of Util (X)	0.463	0.745	0.486	0.178	0.833	1.012						
Departure Headway (Hd)	7.445	7.327	7.388	8.253	6.896	6.742						
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes						
Cap	487	494	490	437	526	540						
Service Time	5.145	5.045	5.388	6.253	4.605	4.452						
HCM Lane V/C Ratio	0.468	0.741	0.49	0.181	0.827	1						
HCM Control Delay	16.4	28.5	17.2	13	35.3	67.7						
HCM Lane LOS	C	D	C	B	E	F						
HCM 95th-ile Q	2.4	6.3	2.6	0.6	8.4	14.6						

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Synchro 10 Report

Butler Tract TIA
Full Build - Option 2 - (2021)

3: Holleman Drive & General Parkway
PM Peak Hour

Intersection						
Int Delay, s/veh	3.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	66	149	627	80	174	695
Future Vol, veh/h	66	149	627	80	174	695
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	166	697	89	193	772

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1514	393	0
Stage 1	742	-	-
Stage 2	772	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	110	606	-
Stage 1	432	-	-
Stage 2	416	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	84	606	-
Mov Cap-2 Maneuver	158	-	-
Stage 1	331	-	-
Stage 2	416	-	-

Approach	WB	NB	SB
HCM Control Delay, s	23.3	0	2.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	158	606	829
HCM Lane V/C Ratio	-	-	0.464	0.273	0.233
HCM Control Delay (s)	-	-	46.1	13.2	10.7
HCM Lane LOS	-	-	E	B	B
HCM 95th %tile Q(veh)	-	-	2.2	1.1	0.9

Butler Tract TIA
Full Build - Option 2 - (2021)

4: Holleman Drive & Cain Road
PM Peak Hour

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	135	573	6	46	774
Future Vol, veh/h	11	135	573	6	46	774
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	147	623	7	50	841

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1148	315	0
Stage 1	627	-	-
Stage 2	521	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	192	681	-
Stage 1	495	-	-
Stage 2	561	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	182	681	-
Mov Cap-2 Maneuver	306	-	-
Stage 1	469	-	-
Stage 2	561	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	623	948
HCM Lane V/C Ratio	-	-	0.255	0.053
HCM Control Delay (s)	-	-	12.7	9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1	0.2

Butler Tract TIA
Full Build - Option 2 - (2021)

5: Holleman Drive & Deacon Drive
PM Peak Hour

Intersection												
Int Delay, s/veh	15.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	12	7	43	30	196	13	353	20	240	499	30
Future Vol, veh/h	44	12	7	43	30	196	13	353	20	240	499	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	250	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	13	8	47	33	213	14	384	22	261	542	33

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1318	1515	288	1223	1520	203	575	0	0	406	0	0
Stage 1	1081	1081	-	423	423	-	-	-	-	-	-	-
Stage 2	237	434	-	800	1097	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	115	118	709	135	118	804	994	-	-	1149	-	-
Stage 1	232	292	-	579	586	-	-	-	-	-	-	-
Stage 2	745	579	-	345	287	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	50	90	709	97	90	804	994	-	-	1149	-	-
Mov Cap-2 Maneuver	50	90	-	97	90	-	-	-	-	-	-	-
Stage 1	229	226	-	571	578	-	-	-	-	-	-	-
Stage 2	509	571	-	249	222	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	181.2	-	-	35.5	-	-	0.3	-	-	2.8	-	-
HCM LOS	F	-	-	E	-	-	-	-	-	-	-	-

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	994	-	-	50	133	97	392	1149	-	-
HCM Lane V/C Ratio	0.014	-	-	0.957	0.155	0.482	0.627	0.227	-	-
HCM Control Delay (s)	8.7	-	-	243.5	37	72.6	28.4	9.1	-	-
HCM Lane LOS	A	-	-	F	E	F	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	4.1	0.5	2.1	4.1	0.9	-	-

Butler Tract TIA
Full Build - Option 2 - (2021)

15: Holleman NB Channelized Right & Dowling Road
PM Peak Hour

Intersection						
Int Delay, s/veh	8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	34	0	0	0	0	196
Future Vol, veh/h	34	0	0	0	0	196
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	0	0	0	0	213

Major/Minor	Major1	Major2	Minor1	
Conflicting Flow All	0	-	-	37
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	1035
Stage 1	-	0	0	-
Stage 2	-	0	0	-
Platoon blocked, %	-			
Mov Cap-1 Maneuver	-	-	-	1035
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS	-	-	A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	1035	-	-
HCM Lane V/C Ratio	0.206	-	-
HCM Control Delay (s)	9.4	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.8	-	-

Butler Tract TIA
Full Build - Option 3 - (2021)

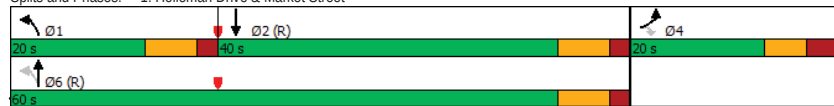
1: Holleman Drive & Market Street
AM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↱	↱	↰
Traffic Volume (vph)	227	14	7	705	387	23
Future Volume (vph)	227	14	7	705	387	23
Satd. Flow (prot)	1770	1583	1770	3539	3511	0
Flt Permitted	0.950		0.385			
Satd. Flow (perm)	1770	1583	717	3539	3511	0
Satd. Flow (RTOR)		16			9	
Lane Group Flow (vph)	267	16	8	829	482	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Total Split (s)	20.0	20.0	20.0	60.0	40.0	
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	
Act Effct Green (s)	13.0	13.0	53.0	53.0	33.0	
Actuated g/C Ratio	0.16	0.16	0.66	0.66	0.41	
v/c Ratio	0.93	0.06	0.01	0.35	0.33	
Control Delay	73.9	14.4	4.7	6.5	16.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	73.9	14.4	4.7	6.5	16.5	
LOS	E	B	A	A	B	
Approach Delay	70.5			6.4	16.5	
Approach LOS	E			A	B	
Queue Length 50th (ft)	133	0	1	83	82	
Queue Length 95th (ft)	#250	15	5	103	110	
Internal Link Dist (ft)	341			373	378	
Turn Bay Length (ft)			50			
Base Capacity (vph)	287	270	646	2344	1453	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.93	0.06	0.01	0.35	0.33	

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 20 (25%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 20.8
Intersection Capacity Utilization 43.7%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Holleman Drive & Market Street



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Butler Tract TIA
Full Build - Option 3 - (2021)

2: Holleman Drive & Dowling Road
AM Peak Hour

Intersection												
Intersection Delay, s/veh	19.9											
Intersection LOS	C											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↱			↱			↱	
Traffic Vol, veh/h	143	99	34	12	1	1	38	541	0	17	306	81
Future Vol, veh/h	143	99	34	12	1	1	38	541	0	17	306	81
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	170	118	40	14	1	1	45	644	0	20	364	96
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			1			1		
HCM Control Delay	19.4			11.3			23.7			15.2		
HCM LOS	C			B			C			C		

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	17%	0%	52%	86%	10%	0%
Vol Thru, %	83%	100%	36%	7%	90%	65%
Vol Right, %	0%	0%	12%	7%	0%	35%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	218	361	276	14	170	234
LT Vol	38	0	143	12	17	0
Through Vol	180	361	99	1	153	153
RT Vol	0	0	34	1	0	81
Lane Flow Rate	260	429	329	17	202	279
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.477	0.778	0.604	0.037	0.386	0.508
Departure Headway (Hd)	6.613	6.524	6.618	8.01	6.858	6.559
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	541	550	542	450	520	546
Service Time	4.401	4.312	4.691	6.01	4.653	4.353
HCM Lane V/C Ratio	0.481	0.78	0.607	0.038	0.388	0.511
HCM Control Delay	15.4	28.7	19.4	11.3	14	16
HCM Lane LOS	C	D	C	B	B	C
HCM 95th-ile Q	2.6	7.1	4	0.1	1.8	2.9

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Synchro 10 Report

Butler Tract TIA
Full Build - Option 3 - (2021)

3: Holleman Drive & General Parkway
AM Peak Hour

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	95	1007	16	32	326
Future Vol, veh/h	12	95	1007	16	32	326
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	114	1213	19	39	393
Major/Minor						
Minor1	Major1		Major2			
Conflicting Flow All	1498	616	0	0	1232	0
Stage 1	1223	-	-	-	-	-
Stage 2	275	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	113	433	-	-	561	-
Stage 1	241	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	105	433	-	-	561	-
Mov Cap-2 Maneuver	186	-	-	-	-	-
Stage 1	224	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Approach						
WB	NB		SB			
HCM Control Delay, s	17.4	0	1.1			
HCM LOS	C					
Minor Lane/Major Mvmt						
NBT	NBRWBLn1	WBLn2	SBL	SBT		
Capacity (veh/h)	-	-	186	433	561	-
HCM Lane V/C Ratio	-	-	0.078	0.264	0.069	-
HCM Control Delay (s)	-	-	26	16.3	11.9	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th %tile Q(veh)	-	-	0.2	1.1	0.2	-

Butler Tract TIA
Full Build - Option 3 - (2021)

4: Holleman Drive & Cain Road
AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	50	860	7	29	324
Future Vol, veh/h	5	50	860	7	29	324
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	59	1012	8	34	381
Major/Minor						
Minor1	Major1		Major2			
Conflicting Flow All	1275	510	0	0	1020	0
Stage 1	1016	-	-	-	-	-
Stage 2	259	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	159	509	-	-	676	-
Stage 1	310	-	-	-	-	-
Stage 2	761	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	151	509	-	-	676	-
Mov Cap-2 Maneuver	243	-	-	-	-	-
Stage 1	295	-	-	-	-	-
Stage 2	761	-	-	-	-	-
Approach						
WB	NB		SB			
HCM Control Delay, s	14	0	0.9			
HCM LOS	B					
Minor Lane/Major Mvmt						
NBT	NBRWBLn1	WBLn2	SBL	SBT		
Capacity (veh/h)	-	-	463	676	-	-
HCM Lane V/C Ratio	-	-	0.14	0.05	-	-
HCM Control Delay (s)	-	-	14	10.6	-	-
HCM Lane LOS	-	-	B	B	-	-
HCM 95th %tile Q(veh)	-	-	0.5	0.2	-	-

Butler Tract TIA
Full Build - Option 3 - (2021)

5: Holleman Drive & Deacon Drive
AM Peak Hour

Intersection														
Int Delay, s/veh	8.5													
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	45	19	11	6	41	12	258	4	600	26	6	58	237	9
Future Vol, veh/h	45	19	11	6	41	12	258	4	600	26	6	58	237	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	-	None
Storage Length	50	-	-	-	50	-	-	250	-	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	82	92	82	92	82	82	92	82	82	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	21	12	7	50	13	315	4	732	32	7	71	289	10

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	831	1222	150	0	1067	1211	382	299	0	0	763	764
Stage 1	450	450	-	0	756	756	-	-	-	-	-	-
Stage 2	381	772	-	0	311	455	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	-	7.54	6.54	6.94	4.14	-	-	6.44	4.14
Critical Hdwy Stg 1	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	-	3.52	4.02	3.32	2.22	-	-	2.52	2.22
Pot Cap-1 Maneuver	262	178	870	0	176	181	616	1259	-	-	471	845
Stage 1	558	570	-	0	366	414	-	-	-	-	-	-
Stage 2	613	407	-	0	674	567	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	110	158	870	0	143	161	616	1259	-	-	719	719
Mov Cap-2 Maneuver	110	158	-	0	143	161	-	-	-	-	-	-
Stage 1	556	509	-	0	365	413	-	-	-	-	-	-
Stage 2	290	406	-	0	569	506	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	46.4		23.5		0		2.2	
HCM LOS	E		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1259	-	-	110	226	143	554	719	-	-
HCM Lane V/C Ratio	0.003	-	-	0.445	0.144	0.35	0.591	0.107	-	-
HCM Control Delay (s)	7.9	-	-	61.6	23.6	43.1	20.5	10.6	-	-
HCM Lane LOS	A	-	-	F	C	E	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.9	0.5	1.4	3.8	0.4	-	-

Butler Tract TIA
Full Build - Option 3 - (2021)

6: Holleman NB Channelized Right & Dowling Road
AM Peak Hour

Intersection						
Int Delay, s/veh	11.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	116	0	0	0	0	497
Future Vol, veh/h	116	0	0	0	0	497
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	126	0	0	0	0	540

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	-	-	-	126
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	-	924
Stage 1	-	0	0	-	-
Stage 2	-	0	0	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	924
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	924	-	-
HCM Lane V/C Ratio	0.585	-	-
HCM Control Delay (s)	14.2	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	3.9	-	-

Butler Tract TIA
Full Build - Option 3 - (2021)

1: Holleman Drive & Market Street
PM Peak Hour

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	231	22	23	641	849	134
Future Volume (vph)	231	22	23	641	849	134
Satd. Flow (prot)	1770	1583	1770	3539	3468	0
Flt Permitted	0.950		0.125			
Satd. Flow (perm)	1770	1583	233	3539	3468	0
Satd. Flow (RTOR)		24			27	
Lane Group Flow (vph)	251	24	25	697	1069	0
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		1	6	2	
Permitted Phases		4	6			
Total Split (s)	20.0	20.0	20.0	60.0	40.0	
Total Lost Time (s)	7.0	7.0	7.0	7.0	7.0	
Act Effct Green (s)	13.0	13.0	53.0	53.0	33.0	
Actuated g/C Ratio	0.16	0.16	0.66	0.66	0.41	
v/c Ratio	0.87	0.09	0.06	0.30	0.74	
Control Delay	64.1	12.9	5.0	6.1	23.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	64.1	12.9	5.0	6.1	23.1	
LOS	E	B	A	A	C	
Approach Delay	59.7			6.0	23.1	
Approach LOS	E			A	C	
Queue Length 50th (ft)	124	0	4	66	224	
Queue Length 95th (ft)	#253	20	11	91	299	
Internal Link Dist (ft)	341			373	378	
Turn Bay Length (ft)			50			
Base Capacity (vph)	287	277	404	2344	1446	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.87	0.09	0.06	0.30	0.74	

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 20 (25%), Referenced to phase 2:SBT and 6:NBT, Start of Green
Control Type: Pretimed
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 22.0
Intersection Capacity Utilization 52.2%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Holleman Drive & Market Street



BBI
06/23/2018

Synchro 10 Report

Butler Tract TIA
Full Build - Option 3 - (2021)

2: Holleman Drive & Dowling Road
PM Peak Hour

Intersection												
Intersection Delay, s/veh	33.2											
Intersection LOS	D											
Movement												
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	136	29	56	54	3	12	41	481	0	5	769	102
Future Vol, veh/h	136	29	56	54	3	12	41	481	0	5	769	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	148	32	61	59	3	13	45	523	0	5	836	111
Number of Lanes	0	1	0	0	1	0	0	2	0	0	2	0
Approach												
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			2			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	2			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			2			1			1		
HCM Control Delay	17			12.8			21.5			45.9		
HCM LOS	C			B			C			E		
Lane												
Vol Left, %	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2						
Vol Thru, %	20%	0%	62%	78%	1%	0%						
Vol Right, %	80%	100%	13%	4%	99%	79%						
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop						
Traffic Vol by Lane	201	321	221	69	390	487						
LT Vol	41	0	136	54	5	0						
Through Vol	160	321	29	3	385	385						
RT Vol	0	0	56	12	0	102						
Lane Flow Rate	219	349	240	75	423	529						
Geometry Grp	7	7	2	2	7	7						
Degree of Util (X)	0.445	0.699	0.486	0.169	0.797	0.973						
Departure Headway (Hd)	7.327	7.222	7.29	8.111	6.78	6.624						
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes						
Cap	492	502	497	443	533	550						
Service Time	5.065	4.961	5.29	6.152	4.517	4.36						
HCM Lane V/C Ratio	0.445	0.695	0.483	0.169	0.794	0.962						
HCM Control Delay	15.8	25.1	17	12.8	31.2	57.6						
HCM Lane LOS	C	D	C	B	D	F						
HCM 95th-ile Q	2.3	5.4	2.6	0.6	7.5	13.2						

BBI
06/23/2018

Synchro 10 Report

Butler Tract TIA
Full Build - Option 3 - (2021)

3: Holleman Drive & General Parkway
PM Peak Hour

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	51	121	627	67	149	695
Future Vol, veh/h	51	121	627	67	149	695
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	134	697	74	166	772
Major/Minor						
	Minor1		Major1		Major2	
Conflicting Flow All	1452	386	0	0	771	0
Stage 1	734	-	-	-	-	-
Stage 2	718	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	121	612	-	-	840	-
Stage 1	436	-	-	-	-	-
Stage 2	444	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	97	612	-	-	840	-
Mov Cap-2 Maneuver	185	-	-	-	-	-
Stage 1	350	-	-	-	-	-
Stage 2	444	-	-	-	-	-
Approach						
	WB		NB		SB	
HCM Control Delay, s	18.5		0		1.8	
HCM LOS	C					
Minor Lane/Major Mvmt						
	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	185	612	840	-
HCM Lane V/C Ratio	-	-	0.306	0.22	0.197	-
HCM Control Delay (s)	-	-	32.8	12.5	10.3	-
HCM Lane LOS	-	-	D	B	B	-
HCM 95th %tile Q(veh)	-	-	1.2	0.8	0.7	-

Butler Tract TIA
Full Build - Option 3 - (2021)

4: Holleman Drive & Cain Road
PM Peak Hour

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	135	559	6	46	759
Future Vol, veh/h	11	135	559	6	46	759
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	147	608	7	50	825
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1125	308	0	0	615	0
Stage 1	612	-	-	-	-	-
Stage 2	513	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	199	688	-	-	961	-
Stage 1	504	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	189	688	-	-	961	-
Mov Cap-2 Maneuver	313	-	-	-	-	-
Stage 1	478	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.6	0		0.5		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	631	961	-	
HCM Lane V/C Ratio	-	-	0.251	0.052	-	
HCM Control Delay (s)	-	-	12.6	9	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	1	0.2	-	

Butler Tract TIA
Full Build - Option 3 - (2021)

5: Holleman Drive & Deacon Drive
PM Peak Hour

Intersection														
Int Delay, s/veh	15.6													
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations														
Traffic Vol, veh/h	44	12	7	9	43	30	190	13	345	20	9	234	490	30
Future Vol, veh/h	44	12	7	9	43	30	190	13	345	20	9	234	490	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	-	None
Storage Length	50	-	-	-	50	-	-	250	-	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	13	8	10	47	33	207	14	375	22	10	254	533	33

Major/Minor	Minor2		Minor1		Major1		Major2							
Conflicting Flow All	1310	1503	283	0	1215	1508	199	566	0	0	397	397	0	0
Stage 1	1078	1078	-	0	414	414	-	-	-	-	-	-	-	-
Stage 2	232	425	-	0	801	1094	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	-	7.54	6.54	6.94	4.14	-	-	6.44	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	-	6.54	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	-	3.52	4.02	3.32	2.22	-	-	2.52	2.22	-	-
Pot Cap-1 Maneuver	117	120	714	0	137	120	809	1002	-	-	804	1158	-	-
Stage 1	233	293	-	0	586	591	-	-	-	-	-	-	-	-
Stage 2	750	585	-	0	344	288	-	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	51	90	714	0	98	90	809	1002	-	-	1121	1121	-	-
Mov Cap-2 Maneuver	51	90	-	0	98	90	-	-	-	-	-	-	-	-
Stage 1	230	224	-	0	578	583	-	-	-	-	-	-	-	-
Stage 2	520	577	-	0	245	220	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	175.1		35.3		0.3		2.9	
HCM LOS	F		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1002	-	-	51	133	98	387	1121	-	-
HCM Lane V/C Ratio	0.014	-	-	0.938	0.155	0.477	0.618	0.236	-	-
HCM Control Delay (s)	8.6	-	-	234.7	37	71.5	28.2	9.2	-	-
HCM Lane LOS	A	-	-	F	E	F	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	4	0.5	2.1	4	0.9	-	-

Butler Tract TIA
Full Build - Option 3 - (2021)

15: Holleman NB Channelized Right & Dowling Road
PM Peak Hour

Intersection						
Int Delay, s/veh	8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	34	0	0	0	0	192
Future Vol, veh/h	34	0	0	0	0	192
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	0	0	0	0	209

Major/Minor	Major1	Major2	Minor1	
Conflicting Flow All	0	-	-	37
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	1035
Stage 1	-	0	0	-
Stage 2	-	0	0	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	1035
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	1035	-	-
HCM Lane V/C Ratio	0.202	-	-
HCM Control Delay (s)	9.4	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.8	-	-

HIGHWAY CAPACITY MANUAL LEVEL OF SERVICE DESCRIPTIONS

Level of Service Criteria for Signalized Intersections

Level-of-Service (LOS)	Average Control Delay (seconds per vehicle)	Description
A	≤ 10.0	Very low vehicle delays, free flow, signal progression extremely favorable, most vehicles arrive during given signal phase.
B	10.1 - 20.0	Good signal progression, more vehicles stop and experience higher delays than for LOS A.
C	20.1 - 35.0	Stable flow, fair signal progression, significant number of vehicles stop at signals.
D	35.1 - 55.0	Congestion noticeable, longer delays and unfavorable signal progression, many vehicles stop at signals.
E	55.1 - 80.0	Limit of acceptable delay, unstable flow, poor signal progression, traffic near roadway capacity, frequent cycle failures.
F	> 80.0	Unacceptable delays, extremely unstable flow and congestion, traffic exceeds roadway capacity, stop-and-go conditions.

SOURCE: Highway Capacity Manual, HCM 2010, Transportation Research Board, 2010.

Level of Service Criteria for Unsignalized Intersections

Level-of-Service (LOS)	Average Control Delay (seconds per vehicle)	Description
A	≤ 10.0	No delays at intersections with continuous flow of traffic. Uncongested operations: high frequency of long gaps available for all left and right turning traffic. No observable queues.
B	10.1 - 15.0	No delays at intersections with continuous flow of traffic. Uncongested operations: high frequency of long gaps available for all left and right turning traffic. No observable queues.
C	15.1 - 25.0	Moderate delays at intersections with satisfactory to good traffic flow. Light congestion; infrequent backups on critical approaches.
D	25.1 - 35.0	Increased probability of delays along every approach. Significant congestion on critical approaches, but intersection functional. No standing long lines formed.
E	35.1 - 50.0	Heavy traffic flow condition. Heavy delays probable. No available gaps for cross-street traffic or main street turning traffic. Limit of stable flow.
F	> 50.0	Unstable traffic flow. Heavy congestion. Traffic moves in forced flow condition. Average delays greater than one minute highly probable. Total breakdown.

SOURCE: Highway Capacity Manual, HCM 2010, Transportation Research Board, 2010.

ORDINANCE NO. _____

AN ORDINANCE AMENDING APPENDIX A “UNIFIED DEVELOPMENT ORDINANCE,” ARTICLE 4 “ZONING DISTRICTS,” SECTION 4.2, “OFFICIAL ZONING MAP” OF THE CODE OF ORDINANCES OF THE CITY OF COLLEGE STATION, TEXAS, BY CHANGING THE ZONING DISTRICT BOUNDARIES FROM R RURAL AND GS GENERAL SUBURBAN TO GC GENERAL COMMERCIAL AFFECTING APPROXIMATELY 16.9 ACRES BEING ALL THAT CERTAIN TRACT OF LAND LYING AND BEING SITUATED IN THE CRAWFORD BURNETT LEAGUE, ABSTRACT NO. 7, BRAZOS COUNTY, TEXAS. SAID TRACT BEING THE REMAINDER OF A CALLED 69.37 ACRE TRACT AS DESCRIBED BY A DEED TO J & J BUTLER FAMILY PARTNERSHIP, LTD. RECORDED IN VOLUME 7551, PAGE 41 OF THE OFFICIAL PUBLIC RECORDS OF BRAZOS COUNTY, TEXAS; PROVIDING A SEVERABILITY CLAUSE; DECLARING A PENALTY; AND PROVIDING AN EFFECTIVE DATE.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF COLLEGE STATION, TEXAS:

- PART 1:** That Appendix A “Unified Development Ordinance,” Article 4 “Zoning Districts,” Section 4.2 “Official Zoning Map” of the Code of Ordinances of the City of College Station, Texas, be amended as set out in **Exhibit “A”** and **Exhibit “B”** and **“Exhibit C”** attached hereto and made a part of this Ordinance for all purposes.
- PART 2:** If any provision of this Ordinance or its application to any person or circumstances is held invalid or unconstitutional, the invalidity or unconstitutionality does not affect other provisions or application of this Ordinance or the Code of Ordinances of the City of College Station, Texas, that can be given effect without the invalid or unconstitutional provision or application, and to this end the provisions of this Ordinance are severable.
- PART 3:** That any person, corporation, organization, government, governmental subdivision or agency, business trust, estate, trust, partnership, association and any other legal entity violating any of the provisions of this Ordinance shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punishable by a fine of not less than twenty five dollars (\$25.00) and not more than five hundred dollars (\$500.00) or more than two thousand dollars (\$2,000) for a violation of fire safety, zoning, or public health and sanitation ordinances, other than the dumping of refuse. Each day such violation shall continue or be permitted to continue, shall be deemed a separate offense.
- PART 4:** This Ordinance is a penal ordinance and becomes effective ten (10) days after its date of passage by the City Council, as provided by City of College Station Charter Section 35.

PASSED, ADOPTED, and APPROVED this 23rd day of August, 2018.

ATTEST:

APPROVED:

City Secretary

Mayor

APPROVED:

City Attorney

Exhibit A

That Appendix A "Unified Development Ordinance," Article 4 "Zoning Districts," Section 4.2, "Official Zoning Map" of the Code of Ordinances of the City of College Station, Texas, is hereby amended to read as follows:

The following property is rezoned from R Rural and GS General Suburban to GC General Commercial:

**FIELD NOTES
16.934 ACRES
OUT OF THE
J & J BUTLER FAMILY PARTNERSHIP, LTD.
CALLED 69.37 ACRES
VOLUME 12534, PAGE 84
CRAWFORD BURNETT LEAGUE, A - 7
CITY OF COLLEGE STATION
BRAZOS COUNTY, TEXAS
MAY 7, 2015**

All that certain lot, tract or parcel of land being 16.934 acres situated in the CRAWFORD BURNETT LEAGUE, Abstract No. 7, Brazos County, Texas and being a part of that certain Called 69.37 acre tract as described in deed from James G. Butler to J & J Butler Family Partnership, Ltd. of record in Volume 7551, Page 41, Official Records of Brazos County, Texas, and corrected in deed of record in Volume 12534, Page 84, said 16.934 acre tract being more particularly described by metes and bounds as follows:

BEGINNING at a 3/8" Iron Rod found for the most easterly corner, said corner being the most easterly corner of said Called 69.37 acre tract, said point being located in the southwest line of Old Highway 6 as referenced in Volume 157, Page 500, said point being the most northerly corner of the D. W. Fleming Called 70.4 acre tract as described in Volume 143, page 635;

THENCE S 49° 41' 02" W, along the common line between said Called 69.37 acre tract and said Called 70.4 acre tract a distance of 794.96 feet to a point for the most southerly corner, a 1/2" Iron Rod found in the northeast line of said Holleman Drive South as described in Volume 5539, Page 47 bears S 49° 41' 02" W a distance of 1328.76 feet;

THENCE N 40° 18' 58" W, a distance of 185.63 feet to a point for angle point;

THENCE N 59° 39' 11" W, a distance of 422.45 feet to a point for angle point;

THENCE N 68° 50' 51" W, a distance of 78.49 feet to a point in the southeast right-of-way line of General Parkway as described in Volume 13426, Page 10;

THENCE N 21° 09' 09" E, along the southeast right-of-way line of said General Parkway at a distance of 35.50 feet passing a 1/2" Iron Rod with Cap found for the northeast corner of said General Parkway and also being the southeast corner of Aspen Heights Lot 1, Block 1 as described in Volume 13426, Page 10, and continuing along the southeast line of said Lot 1, Block 1 for a total distance of 957.59 feet to a 1/2" Iron Rod with Cap found for the most northerly corner, said point being the most easterly corner of said Lot 1, Block 1, said point also being located in the southwest line of said Old Highway 6, said point also being located in the northeast line of said Called 69.37 acre tract;

THENCE S 47° 02' 44" E, along the northeast line of said Called 69.37 acre tract and the southwest line of said Old Highway 6 a distance of 1118.30 feet to the PLACE OF BEGINNING AND CONTAINING AN AREA OF 16.934 ACRES OF LAND MORE OR LESS, according to a survey performed during the month of April, 2018 under the supervision of H. Curtis Strong, Registered Professional Land Surveyor No. 4961. North Orientation is based on rotating the northeast line of said Called 69.37 acre tract to Grid North NAD83 (CORS 2011) epoch 2010.00 STATE PLANE CENTRAL ZONE.

**Exhibit B**

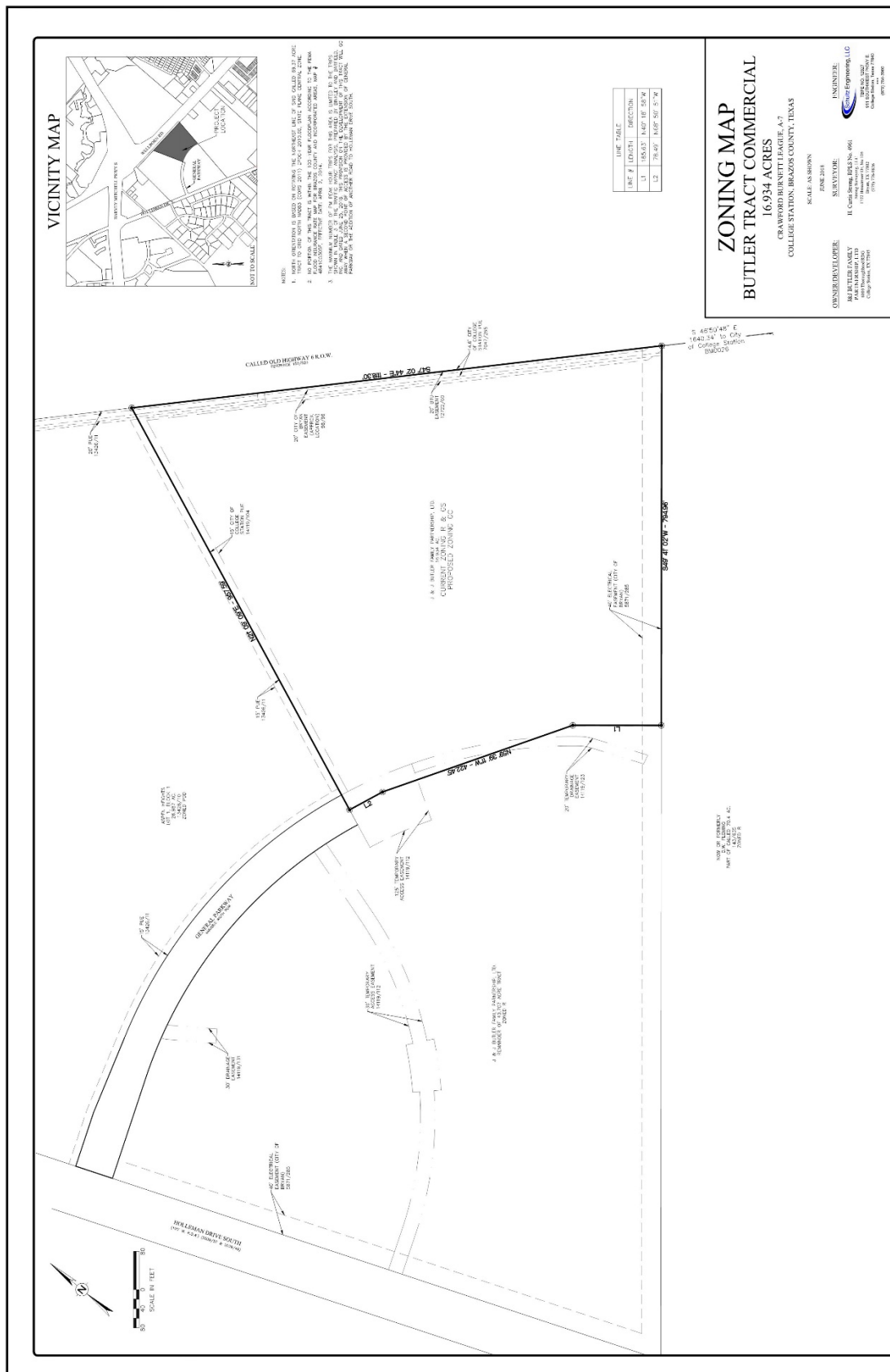


Exhibit C

PROPOSED Zoning



EXISTING Zoning



ORDINANCE NO. _____

AN ORDINANCE AMENDING APPENDIX A “UNIFIED DEVELOPMENT ORDINANCE,” ARTICLE 4 “ZONING DISTRICTS,” SECTION 4.2, “OFFICIAL ZONING MAP” OF THE CODE OF ORDINANCES OF THE CITY OF COLLEGE STATION, TEXAS, BY CHANGING THE ZONING DISTRICT BOUNDARIES FROM R RURAL AND GS GENERAL SUBURBAN TO GC GENERAL COMMERCIAL AFFECTING APPROXIMATELY 16.9 ACRES BEING ALL THAT CERTAIN TRACT OF LAND LYING AND BEING SITUATED IN THE CRAWFORD BURNETT LEAGUE, ABSTRACT NO. 7, BRAZOS COUNTY, TEXAS. SAID TRACT BEING THE REMAINDER OF A CALLED 69.37 ACRE TRACT AS DESCRIBED BY A DEED TO J & J BUTLER FAMILY PARTNERSHIP, LTD. RECORDED IN VOLUME 7551, PAGE 41 OF THE OFFICIAL PUBLIC RECORDS OF BRAZOS COUNTY, TEXAS; PROVIDING A SEVERABILITY CLAUSE; DECLARING A PENALTY; AND PROVIDING AN EFFECTIVE DATE.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF COLLEGE STATION, TEXAS:

- PART 1:** That Appendix A “Unified Development Ordinance,” Article 4 “Zoning Districts,” Section 4.2 “Official Zoning Map” of the Code of Ordinances of the City of College Station, Texas, be amended as set out in **Exhibit “A”** and **Exhibit “B”** and **“Exhibit C”** attached hereto and made a part of this Ordinance for all purposes.
- PART 2:** If any provision of this Ordinance or its application to any person or circumstances is held invalid or unconstitutional, the invalidity or unconstitutionality does not affect other provisions or application of this Ordinance or the Code of Ordinances of the City of College Station, Texas, that can be given effect without the invalid or unconstitutional provision or application, and to this end the provisions of this Ordinance are severable.
- PART 3:** That any person, corporation, organization, government, governmental subdivision or agency, business trust, estate, trust, partnership, association and any other legal entity violating any of the provisions of this Ordinance shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punishable by a fine of not less than twenty five dollars (\$25.00) and not more than five hundred dollars (\$500.00) or more than two thousand dollars (\$2,000) for a violation of fire safety, zoning, or public health and sanitation ordinances, other than the dumping of refuse. Each day such violation shall continue or be permitted to continue, shall be deemed a separate offense.
- PART 4:** This Ordinance is a penal ordinance and becomes effective ten (10) days after its date of passage by the City Council, as provided by City of College Station Charter Section 35.

PASSED, ADOPTED, and APPROVED this 23rd day of August, 2018.

ATTEST:

APPROVED:

City Secretary

Mayor

APPROVED:

City Attorney

Exhibit A

That Appendix A "Unified Development Ordinance," Article 4 "Zoning Districts," Section 4.2, "Official Zoning Map" of the Code of Ordinances of the City of College Station, Texas, is hereby amended to read as follows:

The following property is rezoned from R Rural and GS General Suburban to GC General Commercial:

FIELD NOTES
16.934 ACRES
OUT OF THE
J & J BUTLER FAMILY PARTNERSHIP, LTD.
CALLED 69.37 ACRES
VOLUME 12534, PAGE 84
CRAWFORD BURNETT LEAGUE, A - 7
CITY OF COLLEGE STATION
BRAZOS COUNTY, TEXAS
MAY 7, 2015

All that certain lot, tract or parcel of land being 16.934 acres situated in the CRAWFORD BURNETT LEAGUE, Abstract No. 7, Brazos County, Texas and being a part of that certain Called 69.37 acre tract as described in deed from James G. Butler to J & J Butler Family Partnership, Ltd. of record in Volume 7551, Page 41, Official Records of Brazos County, Texas, and corrected in deed of record in Volume 12534, Page 84, said 16.934 acre tract being more particularly described by metes and bounds as follows:

BEGINNING at a 3/8" Iron Rod found for the most easterly corner, said corner being the most easterly corner of said Called 69.37 acre tract, said point being located in the southwest line of Old Highway 6 as referenced in Volume 157, Page 500, said point being the most northerly corner of the D. W. Fleming Called 70.4 acre tract as described in Volume 143, page 635;

THENCE S 49° 41' 02" W, along the common line between said Called 69.37 acre tract and said Called 70.4 acre tract a distance of 794.96 feet to a point for the most southerly corner, a 1/2" Iron Rod found in the northeast line of said Holleman Drive South as described in Volume 5539, Page 47 bears S 49° 41' 02" W a distance of 1328.76 feet;

THENCE N 40° 18' 58" W, a distance of 185.63 feet to a point for angle point;

THENCE N 59° 39' 11" W, a distance of 422.45 feet to a point for angle point;

THENCE N 68° 50' 51" W, a distance of 78.49 feet to a point in the southeast right-of-way line of General Parkway as described in Volume 13426, Page 10;

THENCE N 21° 09' 09" E, along the southeast right-of-way line of said General Parkway at a distance of 35.50 feet passing a 1/2" Iron Rod with Cap found for the northeast corner of said General Parkway and also being the southeast corner of Aspen Heights Lot 1, Block 1 as described in Volume 13426, Page 10, and continuing along the southeast line of said Lot 1, Block 1 for a total distance of 957.59 feet to a 1/2" Iron Rod with Cap found for the most northerly corner, said point being the most easterly corner of said Lot 1, Block 1, said point also being located in the southwest line of said Old Highway 6, said point also being located in the northeast line of said Called 69.37 acre tract;

THENCE S 47° 02' 44" E, along the northeast line of said Called 69.37 acre tract and the southwest line of said Old Highway 6 a distance of 1118.30 feet to the PLACE OF BEGINNING AND CONTAINING AN AREA OF 16.934 ACRES OF LAND MORE OR LESS, according to a survey performed during the month of April, 2018 under the supervision of H. Curtis Strong, Registered Professional Land Surveyor No. 4961. North Orientation is based on rotating the northeast line of said Called 69.37 acre tract to Grid North NAD83 (CORS 2011) epoch 2010.00 STATE PLANE CENTRAL ZONE.



Exhibit B

Exhibit C

PROPOSED Zoning



EXISTING Zoning



Legislation Details (With Text)

File #:	18-0540	Version:	1	Name:	Loveless Tract CPA
Type:	Comprehensive Plan	Status:		Status:	Agenda Ready
File created:	8/9/2018	In control:		In control:	City Council Regular
On agenda:	8/23/2018	Final action:		Final action:	
Title:	Public Hearing, presentation, possible action, and discussion regarding an ordinance amending the Comprehensive Plan - Future Land Use & Character Map from Suburban Commercial to Urban for approximately 11.1 acres generally located in the City on the west side of Turkey Creek Road, approximately 500-feet south of HSC Parkway.				
Sponsors:	Alaina Helton				
Indexes:					
Code sections:					
Attachments:	Loveless background Vicinity & Aerial Map Future Land Use and Character Map Ordinance				

Date	Ver.	Action By	Action	Result
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Public Hearing, presentation, possible action, and discussion regarding an ordinance amending the Comprehensive Plan - Future Land Use & Character Map from Suburban Commercial to Urban for approximately 11.1 acres generally located in the City on the west side of Turkey Creek Road, approximately 500-feet south of HSC Parkway.

Relationship to Strategic Goals:

- Good Governance
- Core Services and Infrastructure
- Neighborhood Integrity
- Diverse Growing Economy

Recommendation(s): The Planning and Zoning Commission considered this item on August 2, 2018 and voted 7-0 to recommend approval.

Summary: The applicant is requesting the proposed future land use amendment from Suburban Commercial to Urban. This development is intended to serve the nearby BioCorridor Planned Development District and to provide supplemental uses that add to the efforts made in that area. The subject property and properties to the south are designated as Suburban Commercial. Properties to the north, east and west are designated Business Park on the Comprehensive Plan Future Land Use and Character Map.

REVIEW CRITERIA

1. **Changed or changing conditions in the subject area or the City:** The City of College

Station's Comprehensive Plan was adopted in 2009. In 2010, through the coordination of the Research Valley Partnership, the Research Valley BioCorridor Concept Master Plan was developed, consisting of a conceptual area of approximately 3,500 acres, spanning the jurisdictions of College Station and Bryan and including property owned by the Texas A&M University System. In 2012, approximately 200 acres west of Turkey Creek Road were zoned BioCorridor Planned Development District (PDD) to encourage research and development, manufacturing, and warehousing for biomedical and other emerging technology industries in the area. The area surrounding this PDD is anticipated to serve as a secondary or supplementary region that would provide supportive land uses enhancing the development occurring within the BioCorridor District. The BioCorridor Concept Master Plan envisioned a mix of uses in the subject area; thus prompting the request to amend the Future Land Use map to Urban.

Development pressure in this area has increased since the conception of the BioCorridor Master Plan, and the City of College Station has made significant agreements and infrastructure investments in the nearby area (e.g., roadway and electric improvements and changes in sewer certificated areas) to support the success of business development in the region. In addition, three properties in the vicinity of the BioCorridor PDD have had their land use designations changed to Urban in the past couple of years to accommodate the development of supporting uses to the BioCorridor and in anticipation of land use demands related to the RELLIS campus in Bryan.

2. Compatibility with the existing uses, development patterns, and character of the immediate area concerned, the general area, and the City as a whole: Currently, the Comprehensive Plan Future Land Use and Character Map designates the area west of Turkey Creek Road and north of Raymond Stotzer Parkway to be approximately 37 acres of Suburban Commercial, 11 acres of Urban and 198 acre of Business Park, the majority of which is zoned BioCorridor Planned Development District.

The Comprehensive Plan Future Land Use and Character Map designates the area to the east of Turkey Creek Road and west of Harvey Mitchell Parkway to be approximately 23 acres of Suburban Commercial (property already zoned for commercial uses along Harvey Mitchell), 17 acres of Urban, 6 acres of General Commercial, 39 acres to be Texas A&M University (property owned by Texas A&M), 29 acres of Public/Institutional (the City's cemetery), and the largest designation to be 54 acres of Business Park.

The proposal is to convert approximately 11 acres from Suburban Commercial to Urban on the west side of Turkey Creek Road, approximately 500-feet south of HSC Parkway. The proposed amendment would allow for a very intense level of residential development activities being townhouse, duplexes, and high-density apartments.

The existing adjacent land uses to the east and south are large lot single-family and unimproved rural tracts varying in size from four to seven acres. The property to the north and west is currently undeveloped and is located within the BioCorridor Planned Development District. These existing rural developments are less dense than the Business Park designation prescribes. An Urban development will provide a different character than these existing properties currently provide.

Land located north, east and west of the subject property is anticipated for future Business Park, and property to the south, Suburban Commercial land uses. The proposed amendment, while not

consistent with the planned future development pattern in the area, is compatible as a supporting land use for the Business Park uses that have begun to develop in the BioCorridor PDD.

3. Impact on environmentally sensitive and natural areas: A small pond is located on the property, but this area is not recognized as environmentally sensitive, nor is there any FEMA regulated floodplain onsite.

4. Impacts on infrastructure, including water, wastewater, drainage, and the transportation network: The Urban designation allows for future development of high-density residential uses such as townhomes, duplexes and multi-family. Water service is provided to properties in this area by the City of College Station and Wellborn Special Utility District (SUD), but additional infrastructure improvements may be needed with further site development to meet minimum fire flow requirements. With future development of the site there will be an offsite extension of waterline required to connect to the existing 18-inch water main on the south side of HSC Pkwy. The extension will be a 12-inch water line constructed with the extension of Atlas Pear Drive that will serve the tract for the portion of the property served by the City of College Station.

Sanitary sewer for the property will be provided by the City of Bryan, and extensions to provide service to the property may be needed with further site development. Sanitary sewer lines will be required to be extended to serve this property at the time of site development.

Drainage is generally to the south within the Whites Creek Drainage Basin. Currently, there is no FEMA regulated flood plain on site, however, detention will be required with site development. Drainage and other public infrastructure required with the site shall be designed and constructed in accordance with the B/CS Unified Design Guidelines.

The subject tract has frontage to Turkey Creek Road which is designated as a future Major Collector on the Thoroughfare Plan. Turkey Creek Road is currently constructed as two-lane rural section roadway and is under TxDOT jurisdiction as FM 2513. The applicant also anticipates driveway access to Atlas Pear Drive which would be extended with development south from HSC Parkway and be designed as Minor Collector.

5. Consistency with the goals and strategies set forth in the Comprehensive Plan: The existing Future Land Use and Character designation on the property is Suburban Commercial, which is defined as a land use designation “generally for concentrations of commercial activities that cater primarily to nearby residents versus the larger community or region. Generally, these areas tend to be small in size and located adjacent to major roads (arterials and collectors). Design of these structures is compatible in size, roof type and pitch, architecture, and lot coverage with the surrounding single-family residential uses”.

While the land use designation is still valid and could support the growth of a research and development and manufacturing district, none of the surrounding properties are zoned or designated for single-family development, except for the adjacent properties that are zoned Rural, which are also designated as Suburban Commercial and Business Park on the Future Land Use and Character Map, and are anticipated to develop as such in the future. The proposed Urban land use also encourages growth, by providing workforce housing needed to support commercial uses in the area.

Urban is described as:

Generally for areas that should have a very intense level of development activities. These areas will tend to consist of townhomes, duplexes, and high-density apartments. General commercial and office uses, business parks, and vertical mixed-use may also be permitted within growth and redevelopment areas.

The Urban land use designation, when not in a Growth Area, is typically characterized by more dense residential developments in the form of duplexes, townhomes or apartments.

The subject tract has frontage to Turkey Creek Road which is designated as a future Major Collector on the Thoroughfare Plan. Turkey Creek Road is currently constructed as two-lane rural section roadway. The applicant anticipates driveway access to Atlas Pear Drive which would be extended with development south from HSC Parkway and be designed as Minor Collector.

The proposal is consistent with the goals and strategies of the Comprehensive Plan. The goal for College Station's Future Land Use and Character is to create a community with strong, unique neighborhoods, protected rural areas, special districts, distinct corridors, and a protected and enhanced natural environment. The subject property and surrounding area are identified in the Comprehensive Plan Concept Map as one of the City's distinct districts-the Presidential Corridor Gateway District-which seeks to attract business (research and development, office, and light industrial) and preserve and build upon the existing assets in the area enhancing this important gateway into the city. The proposed amendment from Suburban Commercial to Urban on just over 11 acres does not limit the general goals of the Comprehensive Plan. The Urban land use encourages growth, by providing workforce housing needed to support business uses in the area.

Budget & Financial Summary: N/A

Legal Review: Yes

Attachments:

1. Background Information
2. Vicinity & Aerial Map
3. Comprehensive Plan Future Land Use and Character Map
4. Ordinance

NOTIFICATIONS

Advertised Commission Hearing Date: August 2, 2018
Advertised Council Hearing Dates: August 23, 2018

The following neighborhood organizations that are registered with the City of College Station's Neighborhood Services have received a courtesy letter of notification of this public hearing:
None

Contacts in support: None
Contacts in opposition: None
Inquiry contacts: One at the time of staff report.

ADJACENT LAND USES

Direction	Comprehensive Plan	Zoning	Land Use
North	Business Park	Planned Development District (BioCorridor)	Rural
South	Suburban Commercial	Rural	Rural
East (across Turkey Creek Road)	Business Park	Rural	Single-Family Residential
West	Business Park	Planned Development District (BioCorridor)	Rural

DEVELOPMENT HISTORY

Annexation: June 21, 1995
Zoning: A-O Agricultural Open upon annexation
A-O Agricultural Open renamed to R Rural in 2013
Final Plat: Property is not platted
Site development: Property is generally undeveloped. It is the site of a former horse stable.

VICINITY MAP



CPA2018-000002
LOVELESS TRACT

SH 47

EARL RUDDER FREEWAY SOUTH

HARVEY ROAD

SH 6 SOUTH

WILLIAM DITCH PARKWAY

WELLBORN ROAD

0 1 2 Miles

This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. No warranty is made by the City of College Station regarding specific accuracy or completeness.



City of College Station

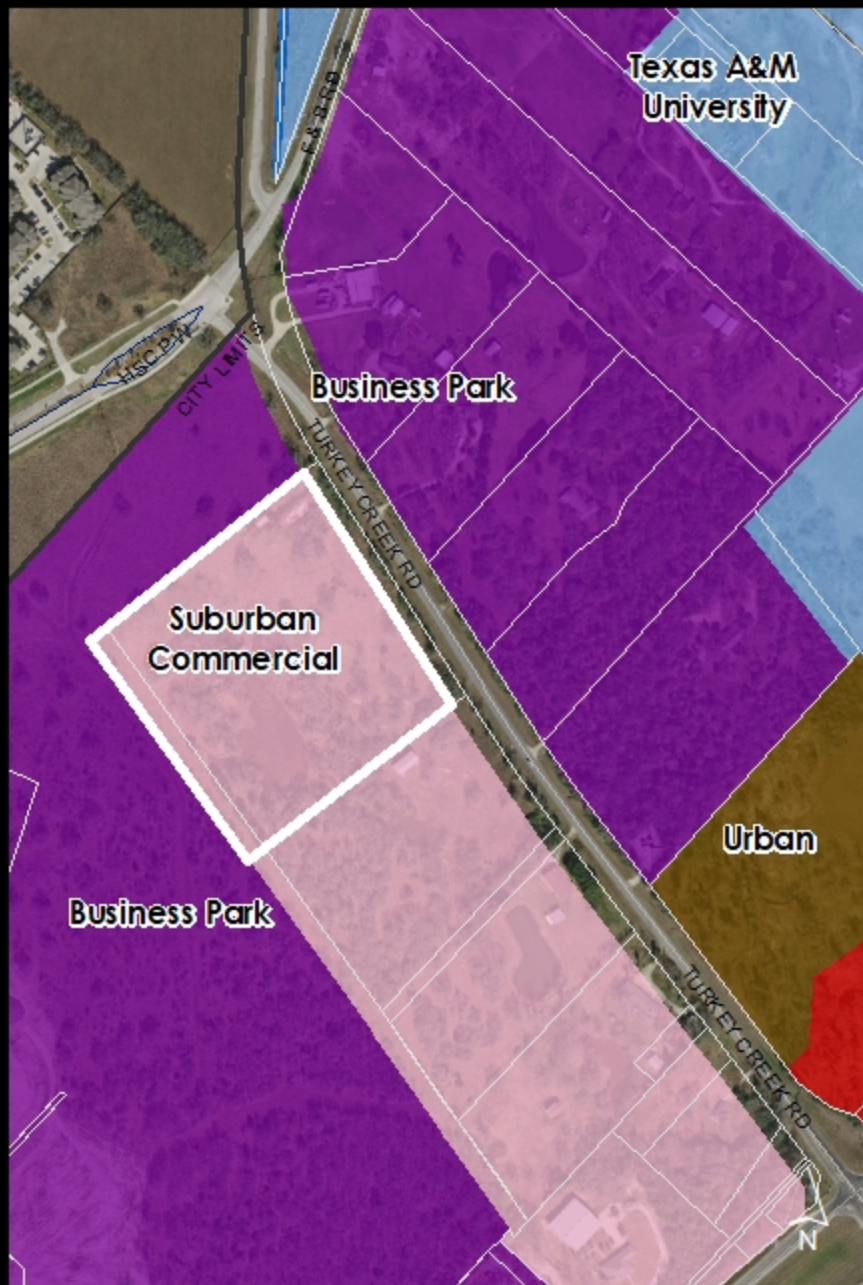


0 600 1,200 Feet

LOVELESS TRACT

Case: COMP PLAN AMENDMENT
CPA2018-000002

EXISTING Future Land Use



PROPOSED Future Land Use



ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF COLLEGE STATION, TEXAS, AMENDING THE COLLEGE STATION COMPREHENSIVE PLAN BY AMENDING THE COMPREHENSIVE PLAN – FUTURE LAND USE & CHARACTER MAP FROM SUBURBAN COMMERCIAL TO URBAN FOR APPROXIMATELY 11.1 ACRES GENERALLY LOCATED IN THE CITY ON THE WEST SIDE OF TURKEY CREEK ROAD, APPROXIMATELY 500-FEET SOUTH OF HSC PARKWAY; PROVIDING A SEVERABILITY CLAUSE; PROVIDING AN EFFECTIVE DATE; AND CONTAINING OTHER PROVISIONS RELATED THERETO.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF COLLEGE STATION, TEXAS:

PART 1: That the “Comprehensive Plan of the City of College Station” is hereby amended by adding new Subsections C.2.ii of Exhibit “A” thereto as set out in Exhibit “A” attached hereto and made a part hereof; and by amending the “Comprehensive Plan Future Land Use and Character Map,” as set out in Exhibit “B” attached hereto and made a part hereof for the identified area.

PART 2: That if any provisions of any section of this Ordinance shall be held to be void or unconstitutional, such holding shall in no way affect the validity of the remaining provisions or sections of this Ordinance, which shall remain in full force and effect.

PART 3: That this Ordinance shall take effect immediately from and after its passage.

PASSED, ADOPTED and APPROVED this 23rd day of August, 2018.

ATTEST:

APPROVED:

City Secretary

Mayor

APPROVED:

City Attorney

EXHIBIT A

That ordinance no. 3186 adopting the “Comprehensive Plan of the City of College Station” as amended, is hereby amended by adding new subsections C.2.ii. to Exhibit “A” of said plan for Exhibit “A” to read in its entirety as follows:

“EXHIBIT ‘A’**A. Comprehensive Plan**

The College Station Comprehensive Plan (Ordinance 3186) is hereby adopted and consists of the following:

1. Introduction;
2. Community Character;
3. Neighborhood Integrity;
4. Economic Development;
5. Parks, Greenways & the Arts;
6. Transportation;
7. Municipal Services & Community Facilities;
8. Growth Management and Capacity; and
9. Implementation and Administration.

B. Master Plans

The following Master Plans are hereby adopted and made a part of the College Station Comprehensive Plan:

1. The Northgate Redevelopment Plan dated November 1996;
2. The Revised Wolf Pen Creek Master Plan dated 1998;
3. Northgate Redevelopment Implementation Plan dated July 2003;
4. East College Station Transportation Study dated May 2005;
5. Bicycle, Pedestrian, and Greenways Master Plan dated January 2010;
6. Central College Station Neighborhood Plan dated June 2010;
7. Eastgate Neighborhood Plan dated June 2011;
8. Parks, Recreation and Open Spaces Master Plan dated July 2011;
9. Southside Area Neighborhood Plan dated August 2012;
10. Medical District Master Plan dated October 2012;
11. Wellborn Community Plan dated April 2013;
12. Economic Development Master Plan dated September 2013;
13. South Knoll Area Neighborhood Plan dated September 2013;
14. The Water System Master Plan dated April 2017; and
15. The Wastewater System Master Plan dated April 2017.

C. Miscellaneous Amendments

The following miscellaneous amendments to the College Station Comprehensive Plan are as follows:

1. Text Amendments:

- a. Chapter 2 “Community Character,” “Growth Areas” by amending the text regarding Growth Area IV and Growth Area V – Ordinance 3376, dated October 2011.
 - b. Chapter 6 “Transportation” by amending the text regarding Complete Streets, Context Sensitive Solutions, Minimum Length and Additional Right-of-Way for Turn Lanes at Intersections, and Right-of-Way for Utilities – Ordinance 3729, dated December 10, 2015.
 - c. Chapter 2 “Community Character,” Chapter 3 “Neighborhood Integrity,” Chapter 4 “Economic Development,” Chapter 5 “Parks, Greenways, and the Arts,” and Chapter 7 “Municipal Services and Community Facilities” by amending the text based on the recommendation of the Comprehensive Plan Five-Year Evaluation & Appraisal Report – Ordinance 3730 dated December 10, 2015.
 - d. Chapter 8 “Growth Management & Capacity” by amending the text based on recommendations from the Annexation Task Force – Ordinance 3766, dated April 28, 2016.
 - e. Chapter 1, Section 10; Chapter 5, Section 1; Chapter 5, Section 4; Chapter 8, Section 17; and Chapter 9, Section 3; by amending the text – Ordinance 3951, dated October 12, 2017.
2. Future Land Use and Character Map Amendment:
- a. 301 Southwest Parkway – Ordinance 3255, dated July 2010.
 - b. Richards Subdivision – Ordinance 3376, dated October 2011.
 - c. Earl Rudder Freeway at University Oaks – Ordinance 3465, dated November 19, 2012
 - d. 1600 University Drive East – Ordinance 3535, dated November 14, 2013.
 - e. 2560 Earl Rudder Freeway S. – Ordinance 3541, dated December 12, 2013.
 - f. 13913 FM 2154. – Ordinance 3546, dated January 9, 2014.
 - g. 2021 Harvey Mitchell Parkway – Ordinance 3549, dated January 23, 2014.
 - h. 1201 Norton Lane – Ordinance 3555, dated February 27, 2014.
 - i. 3715 Rock Prairie Road West – Ordinance 3596, dated August 25, 2014.
 - j. 4201 Rock Prairie Road – Ordinance 3670, dated July 9, 2015.
 - k. The approximately 40 acres of land generally located east of FM 2154 (aka Wellborn Road), south of the Southern Trace Subdivision, west of State Highway 40 (aka William D. Fitch Parkway), and north of Westminster Subdivision – Ordinance 3731, dated December 10, 2015.
 - l. The approximately 120 acres of land generally located south of Barron Cut-Off Road, west of WS Phillips Parkway, north of the Castlegate II Subdivision, and east of the Wellborn Community – Ordinance 3732, dated December 10, 2015.
 - m. The approximately 900 acres of land generally located south of Greens Prairie Road West, east of the Sweetwater Subdivision, and north of Arrington Road – Ordinance 3733, dated December 10, 2015.
 - n. The approximately 17.788 acres of land generally located at the corner of Turkey Creek Road and Raymond Stotzer Parkway frontage road.– Ordinance 3752, dated March 10, 2016.

- o. The approximately 9 acres of land generally located north of the Crossroad Woods Subdivision near the intersection of Wellborn Road (FM 2154) and Greens Prairie Trail – Ordinance 3779, dated June 9, 2016
- p. The approximately 16 acres located at 8607 Rock Prairie Road, generally located at the north of Rock Prairie Road and west of William D. Fitch Parkway – Ordinance 3794, dated August 11, 2016.
- q. The approximately 14.25 acres of land located at 2501 Earl Rudder Freeway South, generally located north of North Forest Parkway and south of Raintree Drive, along the east side of Earl Rudder Freeway South – Ordinance 3799, dated August 25, 2016.
- r. The approximately 7 acres of land located along the south side of State Highway 30, south of Veterans Memorial Park – Ordinance 3828, dated October 27, 2016.
- s. The approximately 58 acres of land generally located along the east side of State Highway 6 South, north of W.D. Fitch parkway and south of the future Pebble Creek Parkway extension – Ordinance 3830, dated October 27, 2016.
- t. The approximately 2 acres of land generally located on Corsair Circle north of Pavilion Avenue – Ordinance 3846, dated December 8, 2016.
- u. The approximately 18 acres of land generally located at the southeast corner of Sebesta Road and Earl Rudder Freeway frontage road – Ordinance 3848, dated December 8, 2016.
- v. The approximately 6 acres of land being situated in the Pooh's Park Subdivision, Block 1, Lots 6-14 recorded in Volume 314, Page 618 of the deed records of Brazos County, Texas, located at 204, 206, 208, 210, 212, 214, 216, 218, and 220 Holleman Drive east, more generally southwest of the intersection of Holleman Drive East and Lassie Lane by – Ordinance 3850, dated January 12, 2017.
- w. The approximately 6.3 acres of land generally located northeast intersection of Copperfield Parkway and Crescent Pointe Parkway - Ordinance 3859, dated February 9, 2017.
- x. The approximately 11.3 acres of land generally located at the southeast intersection of Earl Rudder Freeway South and Emerald Parkway – Ordinance 3875, dated April 27, 2017.
- y. The approximately 232 acres of land generally located south of Rock Prairie Road - Ordinance 3877, dated April 27, 2017.
- z. The approximately 5.96 acres of land generally located in the northeast corner of Associates Avenue and Harvey Road intersection. – Ordinance 3879, dated April 27, 2017.
- aa. The approximately 4.74 acres of land generally located at the corner of Harvey Mitchell Parkway South and Raymond Stotzer Parkway – Ordinance 3882, dated May 11, 2017.
- bb. The approximately 3.2 acres of land generally located east of Copperfield Parkway and south of Harvey Road. – Ordinance 3884, dated May 11, 2017.
- cc. The approximately 3.34 acres of land generally located north of Raintree Drive along Earl Rudder Freeway South – Ordinance 3901, dated July 27, 2017.

- dd. The approximately 12.5 acres generally located west of Earl Rudder Freeway South along Harvey Mitchell Parkway – Ordinance 3903, dated July 27, 2017.
 - ee. Approximately 100 acres located along the east side of State Highway 6, south of The Business Park at College Station and north of the Texas World Speedway property- Ordinance 3906, dated July 27, 2017.
 - ff. Approximately 1.7 acres of land being generally located at 12055 FM 2154 - Ordinance 3921, dated August 24, 2017.
 - gg. Approximately 11 acres of land being generally located at 8822 Burgess Lane and near the east intersection of State Highway 47 and Raymond Stotzer Parkway – Ordinance 3965, dated December 14, 2017.
 - hh. Approximately 35 acres of land being generally located at the west intersection of William D Fitch Parkway and Rock Prairie Road – Ordinance 3989, dated January 25, 2018.
 - ii. Approximately 11.1 acres of land being generally located on the west side of Turkey Creek Road, approximately 500 feet south of HSC Parkway- by this Ordinance, dated August 23, 2018.
3. Concept Map Amendment:
- a. Growth Area IV – Ordinance 3376, dated October 2011.
 - b. Growth Area V – Ordinance 3376, dated October 2011.
4. Thoroughfare Map Amendment:
- a. Raintree Drive – Ordinance 3375, dated October 2011.
 - b. Birkdale Drive – Ordinance 3375, dated October 2011.
 - c. Corsair Circle – Ordinance 3375, dated October 2011.
 - d. Deacon Drive – Ordinance 3375, dated October 2011.
 - e. Dartmouth Drive – Ordinance 3375, dated October 2011.
 - f. Farm to Market 60 – Ordinance 3375, dated October 2011.
 - g. Southwest Parkway – Ordinance 3375, dated October 2011.
 - h. Cain Road extension – Ordinance 3639, dated February 26, 2015.
 - i. Update to Chapter 6 Maps- Ordinance 3729, dated December 10, 2015.
 - j. South College Station Mobility Study – Ordinance 3827, dated October 27, 2016.
 - k. Pavilion Avenue extension -- Ordinance 3885, dated May 11, 2017.
 - l. Future Minor Collector realigned to Harpers Ferry Road along Arrington Road – Ordinance 3949, dated October 12, 2017.
 - m. 2017 Thoroughfare Plan update to Map 6.6 – Ordinance 3962, dated November 20, 2017.
5. Bicycle, Pedestrian and Greenways Master Plan Amendment:
- a. Cain Road extension – Ordinance 3639, dated February 26, 2015
 - b. Update to Maps 5.4 and 5.5-- Ordinance 3729, dated December 10, 2015.
 - c. South College Station Mobility Study – Ordinance 3827, dated October 27, 2016.
 - d. Update to Maps 5.4 and 5.5 – Ordinance 3877, dated April 27, 2017.
 - e. 2017 Thoroughfare Plan update to Maps 5.4 and 5.5 – Ordinance 3962, dated November 20, 2017.

- f. 2018 Bicycle, Pedestrian, and Greenways Master Plan Update to Maps 5.4, 5.5, 7.1, 7.2, 7.3, and 7.4 – Ordinance 4009, dated May 14, 2018.
 6. Parks and Recreation Master Plan Amendment:
 - a. Update to Map B/College Station Neighborhood Park Zone, to Map C/College Station Community Park Zone Map and to the text of Section 2 “Current Conditions and Trends,” subsection “Park Land,” paragraph five relating to said maps- Ordinance 3951, dated October 12, 2017.
 7. Community and Neighborhood Plan Amendment:
 - a. Eastgate Neighborhood Plan, Chapter 1 - Community Character, “Site Development Area 1 – Lincoln Avenue” – Ordinance 3956, dated November 9, 2017.
- D. General
 1. Conflict. All parts of the College Station Comprehensive Plan and any amendments thereto shall be harmonized where possible to give effect to all. Only in the event of an irreconcilable conflict shall the later adopted ordinance prevail and then only to the extent necessary to avoid such conflict. Ordinances adopted at the same city council meeting without reference to another such ordinance shall be harmonized, if possible, so that effect may be given to each.
 2. Purpose. The Comprehensive Plan is to be used as a guide for growth and development for the entire City and its extra-territorial jurisdiction (“ETJ”). The College Station Comprehensive Plan depicts generalized locations of proposed future land-uses, including thoroughfares, bikeways, pedestrian ways, parks, greenways, and waterlines that are subject to modification by the City to fit local conditions and budget constraints.
 3. General nature of Future Land Use and Character. The College Station Comprehensive Plan, in particular the Future Land Use and Character Map found in A.3 above and any adopted amendments thereto, shall not be nor considered a zoning map, shall not constitute zoning regulations or establish zoning boundaries and shall not be site or parcel specific but shall be used to illustrate generalized locations.
 4. General nature of College Station Comprehensive Plan. The College Station Comprehensive Plan, including the Thoroughfare Plan, Bicycle, Pedestrian, and Greenways Master Plan, Central College Station Neighborhood Plan, Water System Master Plan and any additions, amendments, master plans and subcategories thereto depict same in generalized terms including future locations; and are subject to modifications by the City to fit local conditions, budget constraints, cost participation, and right-of-way availability that warrant further refinement as development occurs. Linear routes such as bikeways, greenways, thoroughfares, pedestrian ways, waterlines and sewer lines that are a part of the College Station Comprehensive Plan may be relocated by the City 1,000 feet from the locations shown in the Plan without being considered an amendment thereto.
 5. Reference. The term College Station Comprehensive Plan includes all of the above in its entirety as if presented in full herein, and as same may from time to time be amended.”

EXHIBIT B

That the “Comprehensive Plan of the City of College Station” is hereby amended by amending a portion of the map titled “Map 2.2-Future Land Use & Character” of Chapter 2 –Community Character” from Suburban Commercial to Urban shown as follows:

EXISTING
Future Land Use



PROPOSED
Future Land Use





Legislation Details (With Text)

File #:	18-0542	Version:	2	Name:	Loveless Tract REZ
Type:	Rezoning	Status:		Status:	Agenda Ready
File created:	8/9/2018	In control:		In control:	City Council Regular
On agenda:	8/23/2018	Final action:		Final action:	
Title:	Public Hearing, presentation, possible action, and discussion regarding an ordinance amending Appendix "A", "Unified Development Ordinance," Section 4.2, "Official Zoning Map," of the Code of Ordinances of the City of College Station, Texas by changing the zoning district boundaries from Rural to Multi-Family on approximately 11.1 acres located on the west side of Turkey Creek Road, approximately 500-feet south of HSC Parkway.				
Sponsors:	Alaina Helton				
Indexes:					
Code sections:					
Attachments:	Loveless background Vicinity, Aerial & Small Area Map Rezoning Map TIA Loveless Rezoning Ordinance				

Date	Ver.	Action By	Action	Result
------	------	-----------	--------	--------

Public Hearing, presentation, possible action, and discussion regarding an ordinance amending Appendix "A", "Unified Development Ordinance," Section 4.2, "Official Zoning Map," of the Code of Ordinances of the City of College Station, Texas by changing the zoning district boundaries from Rural to Multi-Family on approximately 11.1 acres located on the west side of Turkey Creek Road, approximately 500-feet south of HSC Parkway.

Relationship to Strategic Goals:

- Good Governance
- Financially Sustainable City
- Core Services and Infrastructure
- Diverse Growing Economy

Recommendation: The Planning and Zoning Commission considered this item on August 2, 2018 and voted 5-2 to recommend approval. Dissenting votes were based on the lack of adequate road infrastructure to support the rezoning at this time.

Summary: This request is to rezone approximately 11.1 acres from R Rural to MF Multi-Family. This rezoning is in conjunction with a request to amend the Comprehensive Plan Future Land Use and Character Map by changing the designation of this property from Suburban Commercial to Urban.

NOTIFICATIONS

Advertised Commission Hearing Date: August 2, 2018
Advertised Council Hearing Dates: August 23, 2018

The following neighborhood organizations that are registered with the City of College Station's Neighborhood Services have received a courtesy letter of notification of this public hearing:

None

Contacts in support: None
Contacts in opposition: None
Inquiry contacts: One at the time of staff report.

ADJACENT LAND USES

Direction	Comprehensive Plan	Zoning	Land Use
North	Business Park	Planned Development District (BioCorridor)	Rural
South	Suburban Commercial	Rural	Rural
East (across Turkey Creek Road)	Business Park	Rural	Single-Family Residential
West	Business Park	Planned Development District (BioCorridor)	Rural

DEVELOPMENT HISTORY

Annexation: June 21, 1995
Zoning: A-O Agricultural Open upon annexation
A-O Agricultural Open renamed to R Rural in 2013
Final Plat: Property is not platted
Site development: Property is generally undeveloped. It is the site of a former horse stable.

REZONING REVIEW CRITERIA

1. Whether the proposal is consistent with the Comprehensive Plan: This request is in conjunction with a request to amend the Comprehensive Plan Future Land Use and Character Map by changing the designation of this property from Suburban Commercial to Urban.

The City of College Station's Comprehensive Plan was adopted in 2009. In 2010, through the coordination of the Research Valley Partnership, the Research Valley BioCorridor Concept Master Plan was developed, consisting of a conceptual area of approximately 3,500 acres, spanning the jurisdictions of College Station and Bryan and including property owned by the Texas A&M University System. In 2012, approximately 200 acres west of Turkey Creek Road were zoned BioCorridor Planned Development District (PDD) to encourage research and development, manufacturing, and warehousing for biomedical and other emerging technology industries in the area. The area surrounding this PDD is anticipated to serve as a secondary or supplementary region that would provide supportive land uses enhancing the development occurring within the BioCorridor District. The BioCorridor Concept Master Plan envisioned a mix of uses in the subject area; thus prompting the request to amend the Future Land Use map to Urban and the zoning to Multi-Family.

Currently, the Comprehensive Plan Future Land Use and Character Map designates the area west of Turkey Creek Road and north of Raymond Stotzer Parkway to be approximately 37 acres of Suburban Commercial, 11 acres of Urban and 198 acre of Business Park, the majority of which is zoned BioCorridor Planned Development District.

The Comprehensive Plan Future Land Use and Character Map designates the area to the east of Turkey Creek Road and west of Harvey Mitchell Parkway to be approximately 23 acres of Suburban Commercial (property already zoned for commercial uses along Harvey Mitchell), 17 acres of Urban, 6 acres of General Commercial, 39 acres to be Texas A&M University (property owned by Texas A&M), 29 acres of Public/Institutional (the City's cemetery), and the largest designation to be 54 acres of Business Park.

The proposed zoning complements and is consistent with the allowable land uses for the Presidential Corridor Gateway District and with the surrounding future land use designations.

2. Whether the uses permitted by the proposed zoning district will be appropriate in the context of the surrounding area: The existing R Rural zoning allows for large lot residential and/or agricultural uses, which is not compatible or supportive of more intense development that is anticipated for the area. Given the property's close proximity to the BioCorridor Planned Development District, this area is expected to contain uses that support the investment plan that has been set in this District. An R Rural designation does not support the planned growth.

The adjacent land uses to the east and south are large lot single- family and unimproved rural tracts varying in size from four to seven acres. The property to the north and west is currently undeveloped and is located within the BioCorridor Planned Development District. The existing rural developments are less dense than the Multi-Family designation prescribes. A Multi-Family development will provide a different character than these existing properties currently provide. However, this is the third rezoning for more intense land uses requested in the area outside of the BioCorridor PDD. The proposed zoning change, while not compatible with the land uses located immediately to the east and south, is compatible as supporting land uses for the Business Park

uses that are anticipated to develop.

3. Whether the property to be rezoned is physically suitable for the proposed zoning district: The proposed land uses permitted through this request are those allowed in MF Multi-Family. The uses are appropriate as they support the uses planned in the BioCorridor PDD and because of the property's proximity to HSC Parkway and Raymond Stotzer Parkway. The property is relatively flat, naturally vegetated, with a small pond. There is no FEMA regulated floodplain onsite.

4. Whether there is available water, wastewater, stormwater, and transportation facilities generally suitable and adequate for uses permitted by the proposed zoning district: Water service is provided to properties in this area by the City of College Station and Wellborn Special Utility District (SUD), but additional infrastructure improvements may be needed with further site development to meet minimum fire flow requirements. With future development of the site there will be an offsite extension of waterline required to connect to the existing 18-inch water main on the south side of HSC Pkwy. The extension will be a 12-inch water line constructed with the extension of Atlas Pear Drive that will serve the tract for the portion of the property served by the City of College Station.

Drainage is generally to the south within the Whites Creek Drainage Basin. Currently, there is no FEMA regulated flood plain on site, however, detention will be required with site development. Drainage and other public infrastructure required with the site shall be designed and constructed in accordance with the B/CS Unified Design Guidelines.

The subject tract has frontage to Turkey Creek Road which is designated as a future Major Collector on the Thoroughfare Plan. Turkey Creek Road is currently constructed as two-lane rural section roadway and is under TxDOT jurisdiction as FM 2513. The applicant also anticipates driveway access to Atlas Pear Drive which would be extended with development south from HSC Parkway and be designed as Minor Collector.

A traffic impact analysis (TIA) was performed for the rezoning request and assumed the maximum multi-family density which would allow up to 334 units. The applicant intends to develop over 300 units with construction to be complete in 2021. All intersections studied in the TIA performed at an acceptable level of service except F&B Road at FM 2818 (Harvey Mitchell Parkway) which becomes a failing intersection in the background condition. The intersection of F&B Road at FM 2818 is built out except for the eastbound approach of F&B Road which constrains the capacity of the intersection by having only a single lane. As FM 2818 is a major roadway, the proposed development contributes less than 2% of the traffic to the overall intersection though would provide roughly 20% of the traffic on single-lane eastbound approach in the AM peak hour and about 5% of the eastbound traffic in the PM peak hour. Funding to improve the intersection or widen F&B Road to a future Minor Arterial has not yet been identified.

5. The marketability of the property: The property can currently be marketed under the existing R Rural zoning district. However, the applicant has stated that the use is not appropriate or feasible for this property knowing the current development happening on nearby property and the anticipated change in the development pattern for the area.

Legal Review: Yes

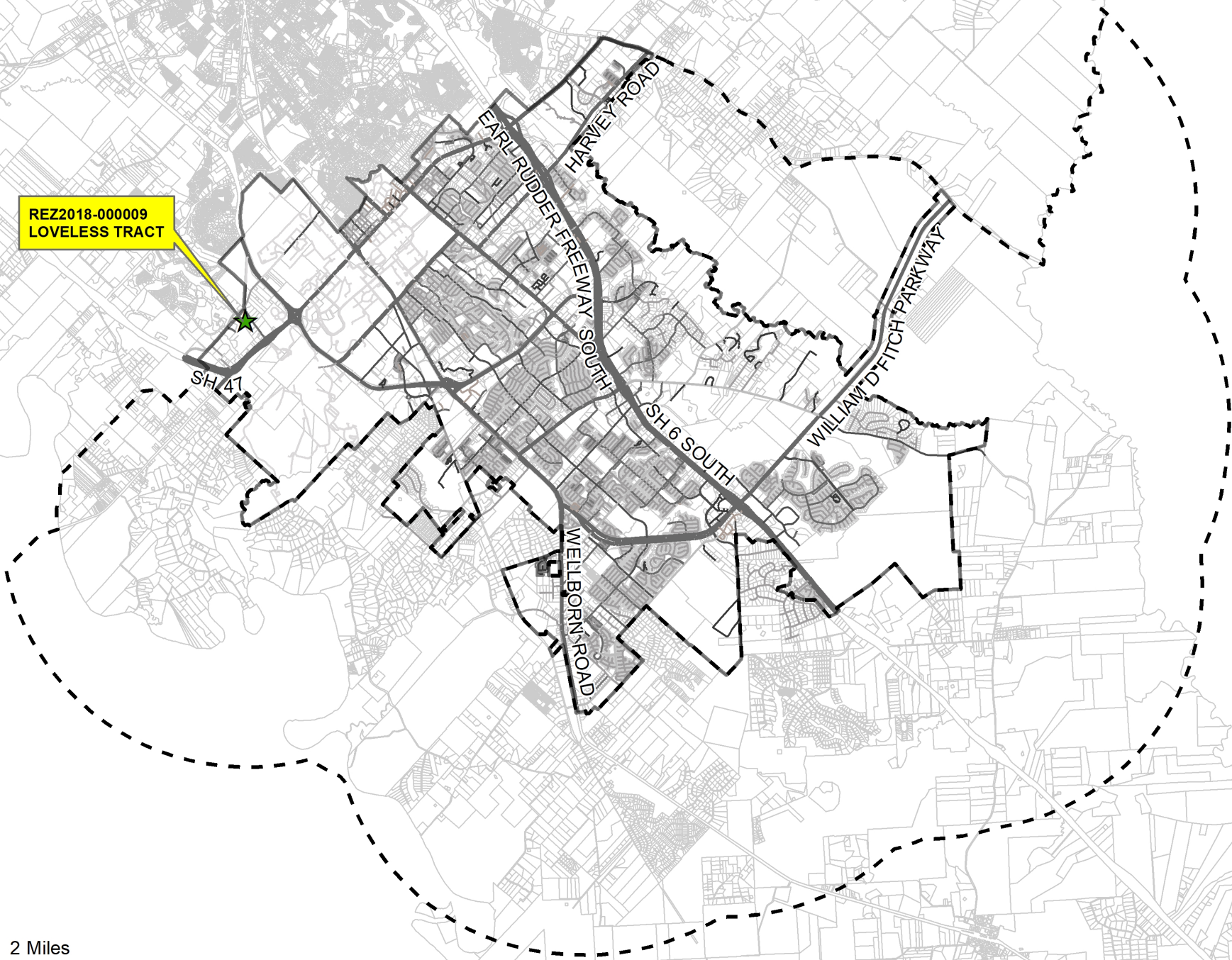
SUPPORTING MATERIALS

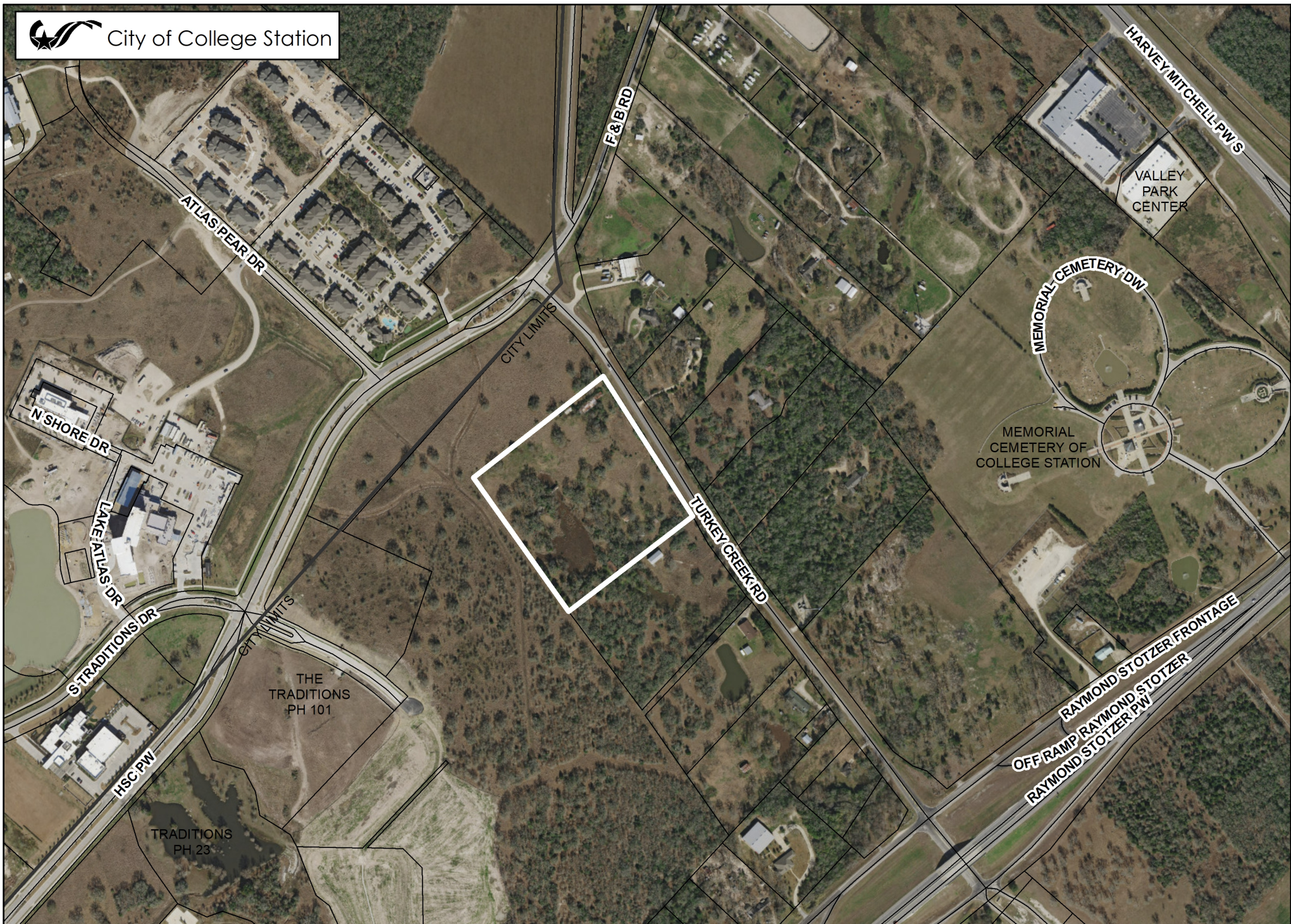
1. Background Information
2. Vicinity Map, Aerial, and Small Area Map
3. Rezoning Map
4. Ordinance

VICINITY MAP



REZ2018-000009
LOVELESS TRACT



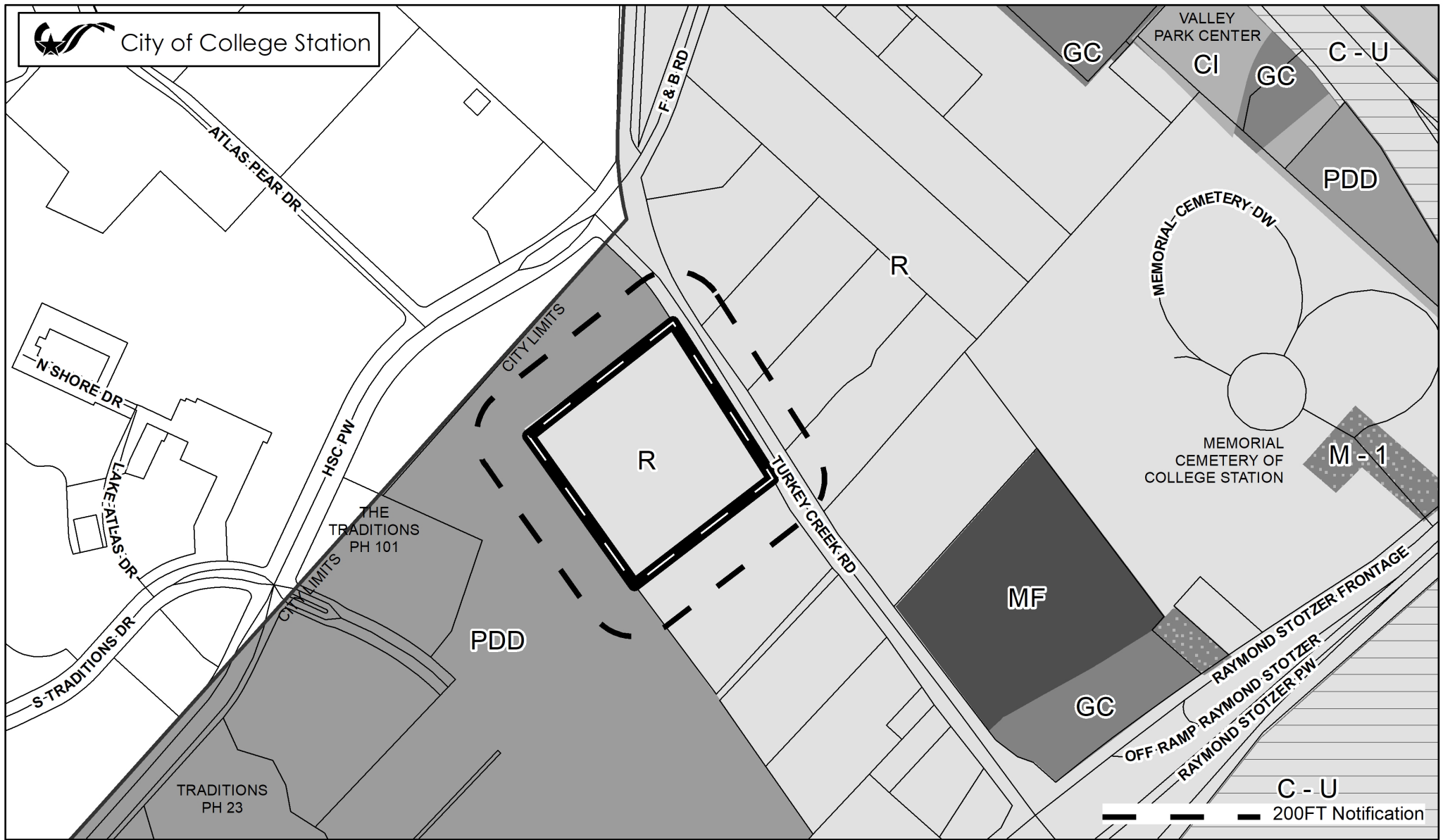


0 500 1,000 Feet

LOVELESS TRACT

Case:
REZ2018-000009

REZONING



ZONING DISTRICTS (In Grayscale)

Residential		
R	Rural	MF Multi-Family
WE	Wellborn Estate	MU Mixed-Use
E	Estate	MHP Manufactured Home Pk.
WRS	Wellborn Restricted Suburban	
RS	Restricted Suburban	
GS	General Suburban	
D	Duplex	
T	Townhome	

Non-Residential

NAP	Natural Area Protected
O	Office
SC	Suburban Commercial
WC	Wellborn Commercial
GC	General Commercial
CI	Commercial Industrial
BP	Business Park
BPI	Business Park Industrial
C-U	College and University

Planned Districts

P-MUD	Planned Mixed-Use Dist.
PDD	Planned Develop. Dist.

Design Districts

WPC	Wolf Pen Creek Dev. Cor.
NG-1	Core Northgate
NG-2	Transitional Northgate
NG-3	Residential Northgate

Overlay Districts

OV	Corridor Ovr.
RDD	Redevelopment District
KO	Krenak Tap Ovr.
NPO	Nbrhd. Prevailing Ovr.
NCO	Nbrhd. Conservation Ovr.
HP	Historic Preservation Ovr.

Retired Districts

R-1B	Single Family Residential
R-4	Multi-Family
R-6	High Density Multi-Family
RD	Research and Dev.
M-1	Light Industrial
M-2	Heavy Industrial



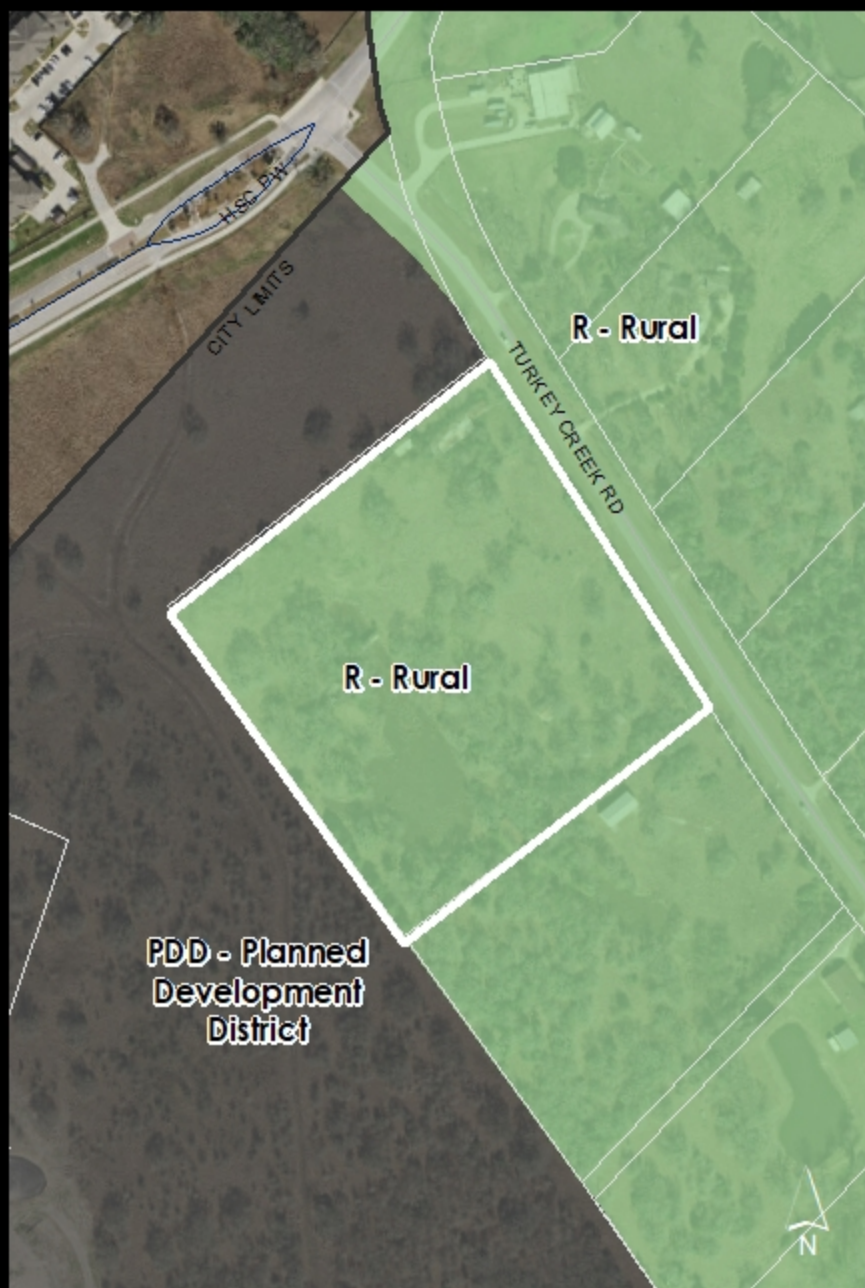
0 500 1,000 Feet

LOVELESS TRACT

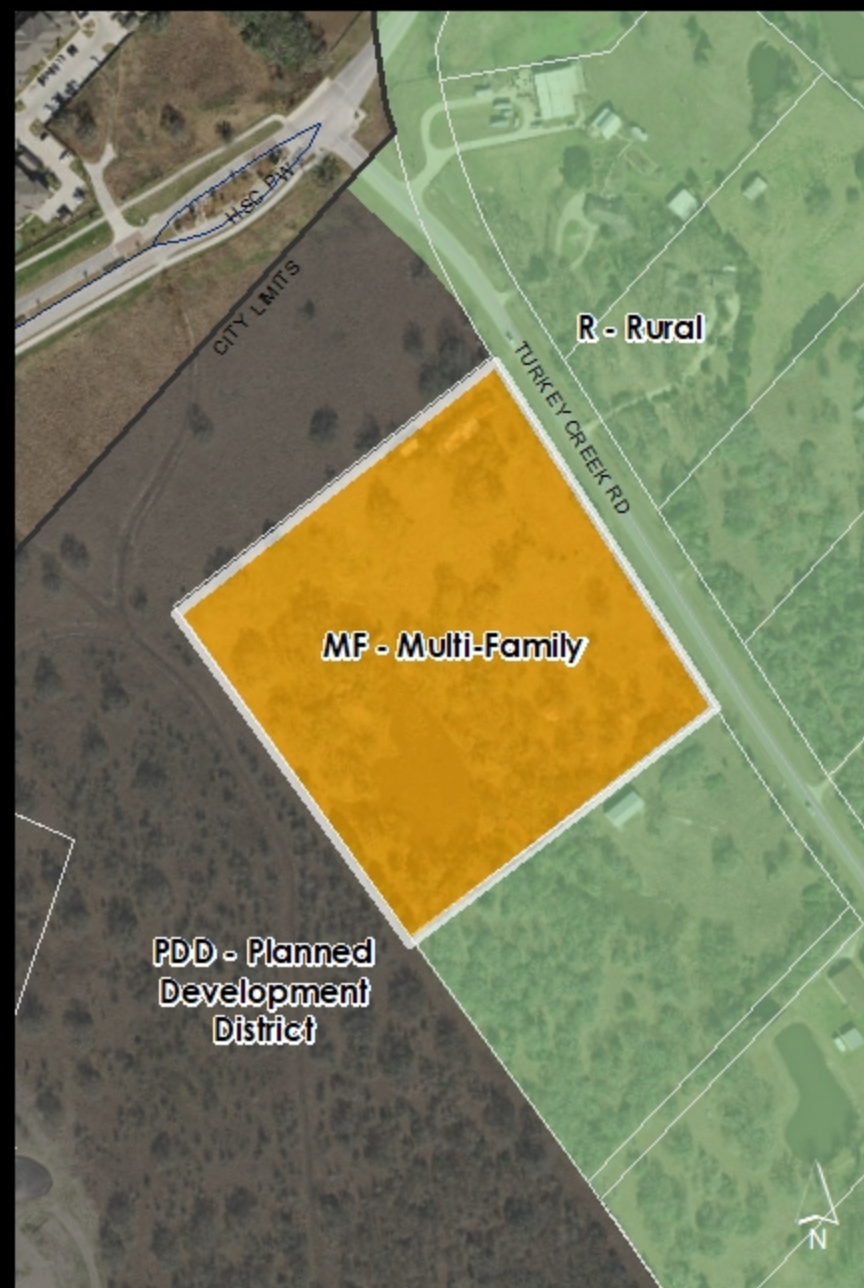
Case:
REZ2018-000009

REZONING

EXISTING Zoning



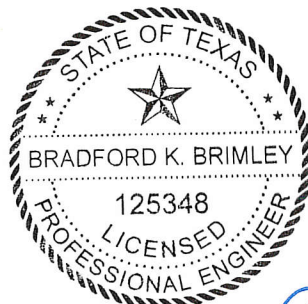
PROPOSED Zoning



TRAFFIC IMPACT ANALYSIS
for
Rezoning of Loveless Tract on Turkey Creek Road
in College Station, Texas

Prepared
for
Traditions Acquisition Partnership and Schultz Engineering, LLC
June 7, 2018

By



Bradford K. Brimley
6/7/18

Bradford K. Brimley, Ph.D., P.E.

TRAFFIC IMPACT ANALYSIS
for
Rezoning of Loveless Tract on Turkey Creek Road
In College Station, Texas

EXECUTIVE SUMMARY

This Traffic Impact Analysis (TIA) evaluates the vehicular impact of the development of 11.14 acres of land (the Loveless Tract) located on Turkey Creek Road in College Station, Texas. The land is currently zoned Rural. The proposed zoning is Multi-family (MF). This report analyzed the expected access points to the site and the surrounding intersections under the following conditions:

- Existing (2018)
- Background (2021)
- Full Build Proposed (2021)
- Full Build Alternative (2021)

PROPOSED DEVELOPMENT

The development is expected to have two access points. The primary access will be from an extension of Atlas Pear Drive south of Health Science Center Parkway. A secondary access is expected to provide exit-only access to Turkey Creek Road.

A background growth rate of 5.0% was used to forecast traffic volumes to future years. The existing traffic volumes and regional development were utilized to determine trip distributions to and from the site.

CAPACITY ANALYSIS

The analyses for the existing conditions indicate that all intersections currently operate at an acceptable level of service. The analyses for the Background 2021 conditions identified some capacity deficiencies at the intersection of F&B Road at FM 2818. These continue with the Full Build scenarios. All other intersections in the Full Build conditions operate at an acceptable level of service.

RIGHT-TURN LANE ANALYSIS

Based on conditions in the City's General Development Standards, a right-turn deceleration lane is not required at either access as the projected turn volumes do not exceed the City's thresholds.

RECOMMENDATIONS

It is recommended that a left-turn lane from HSC Parkway to Atlas Pear Drive be constructed with the proposed development that mirrors the existing eastbound left-turn lane.

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INTRODUCTION

This Traffic Impact Analysis (TIA) evaluates the vehicular impact of the development of 11.14 acres of land (the Loveless Tract) located on Turkey Creek Road in College Station, Texas. The land is currently zoned Rural. The proposed zoning is Multi-family (MF). This report analyzed the expected access points to the site and the surrounding intersections under the following conditions:

- Existing (2018)
- Background (2021)
- Full Build Proposed (2021)
- Full Build Alternative (2021)

EXISTING STUDY AREA

A summary of the existing streets and intersections which encompass the study area and the nearby developments are described below.

STREETS AND INTERSECTIONS

The following streets and the intersections they form are included in the analyses of this report.

Health Science Center Parkway (HSC Parkway) and F&B Road connects SH 47 with FM 2818. To the west of Turkey Creek Road, HSC Parkway is a four-lane divided road with a 35-mph speed limit. To the east of Turkey Creek Road, F&B Road is a two-lane undivided road with a 40-mph speed limit. HSC Parkway and F&B Road are identified as a proposed Minor Arterial in the City's Thoroughfare Plan.

FM 60 (Raymond Stotzer Parkway) is a four-lane divided roadway with a two-lane two-way frontage road on the north side and a one-way frontage road on the south side (near the airport). FM 60 is classified in the City's Thoroughfare Plan as a Freeway/Expressway.

Turkey Creek Road is a two-lane undivided road, identified as a Major Collector in the City's Thoroughfare Plan.

Atlas Pear Drive extends north of HSC Parkway, providing access to some of the Traditions development, and specifically to the Hawthorn at Traditions apartments. With the proposed multi-family development, Atlas Pear Drive is to be extended south of HSC Parkway.

Figure 1 provides an aerial photograph of the area, highlighting the subject roads, the location of the proposed development, and the location of ViaSat, a recently completed office complex.

The existing and proposed intersections evaluated in this study are as follows:

- FM 2818 at F&B Road
- Turkey Creek Road at HSC Parkway/F&B Road
- Turkey Creek Road at FM 60 WB
- Turkey Creek Road at FM 60 EB
- HSC Parkway at Traditions Drive
- HSC Parkway at Atlas Pear Drive

Traffic volumes were counted at each study intersection in March 2018 on a weekday from 7-9 AM and 4-6 PM. The raw traffic count data are provided in the Appendix. The resultant AM and PM Peak Hour volumes for existing weekday traffic are illustrated in **Figure 2**.

AREA DEVELOPMENT

Regionally, the oldest developments in the area include the Easterwood Airport to the south of the area of interest and the Traditions Club to the north. There are multiple existing and planned developments along the Bryan/College Station Biomedical Corridor. Recently completed developments include the Stella Hotel, the MatureWell Lifestyle Center, the Fujifilm/Diosynth laboratories, the iBio complex, and ViaSat.

The ViaSat development opened in April 2018, which occurred after existing traffic counts were obtained for this report. Traffic generated by ViaSat is added to the Existing (2018) traffic as the complex is now open. Trips generated by ViaSat were determined from appropriate land uses and rates in the Trip Generation manual shown in **Table 1** and **Table 2**, respectively.

Table 1. Land Use Data: Recent Developments

Development	ITE Code	Number of Units	AM Peak Hour		PM Peak Hour	
			Rate/Unit	Trips	Rate/Unit	Trips
ViaSat	710	200 Employees	0.48	96	0.46	92

Table 2. Trip Generation Data: Recent Developments

Development	AM Peak (vph)					PM Peak (vph)				
	Total	% Enter	Enter	% Exit	Exit	Total	% Enter	Enter	% Exit	Exit
ViaSat	96	88%	84	12%	12	92	17%	16	83%	76

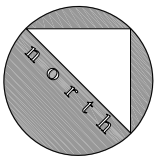
The trips generated by ViaSat were distributed to and from the complex to be added to the Existing 2018 traffic and used in the capacity analyses. **Figure 3** depicts the trip distribution for ViaSat. **Figure 4** shows the site-generated trips for ViaSat, combining the trip generation and distribution assumptions.

Figure 5 shows the resultant Existing 2018 Peak Hour volumes after the addition of the Viasat traffic.



Imagery ©2018 Google, Map data ©2018 Google

1000 ft



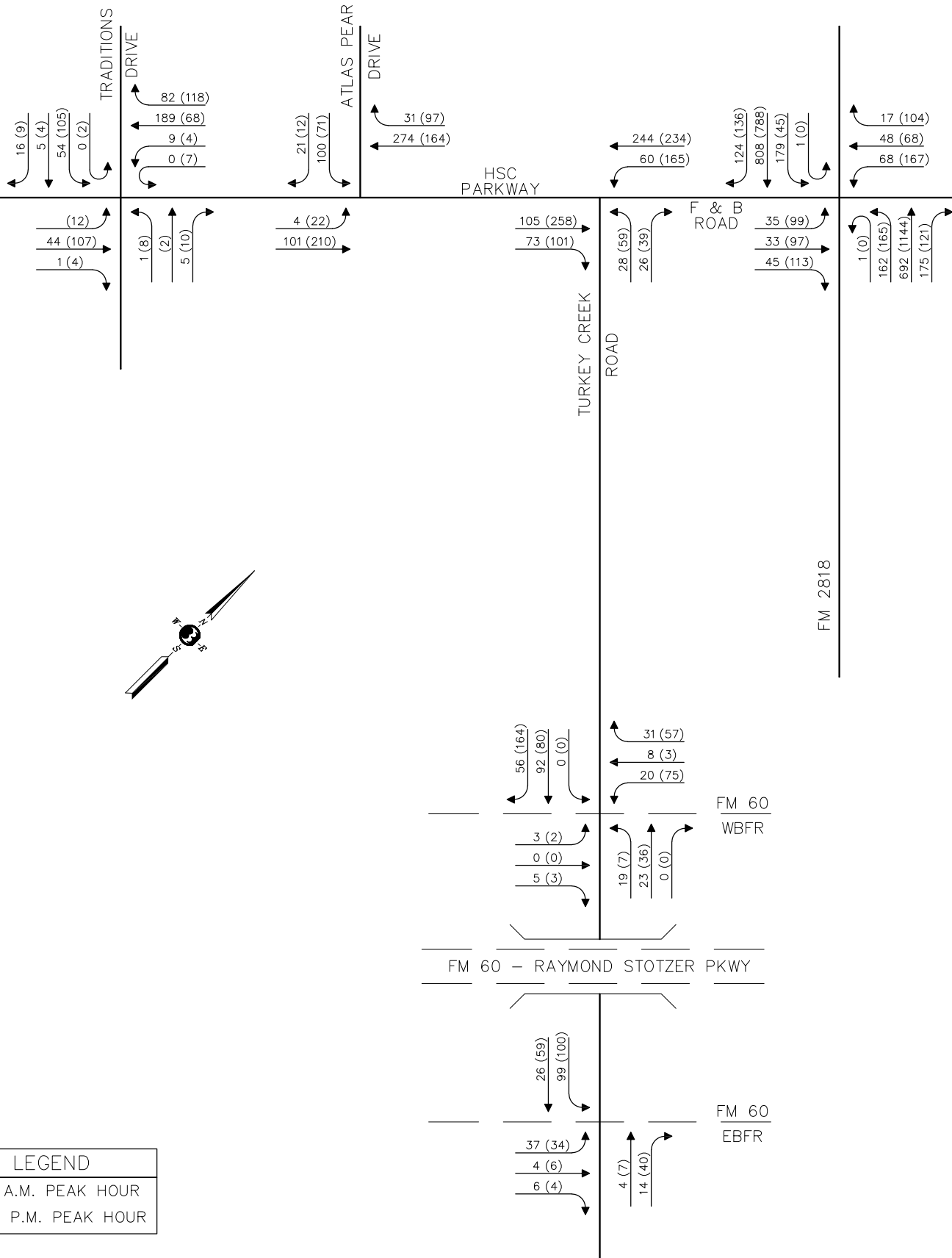
LOVELESS TRACT AERIAL MAP	
SCALE: N/A	DATE: April 2018
JOB NO.: BB18044	DWG. FILE: FIGURE #1



3452 Rock Prairie Road West
College Station, Texas 77845

979.703.1809
www.binkleybarfield.com

\\c:\data\bb\BOP\J085\BB18044 (Traditions) Loveless Tract TIA\CAD\FIGURES.dwg-FIGURE #2 Plotted Apr 24, 2018 at 2:49pm by bbrinney | Last Saved by: bbrinney



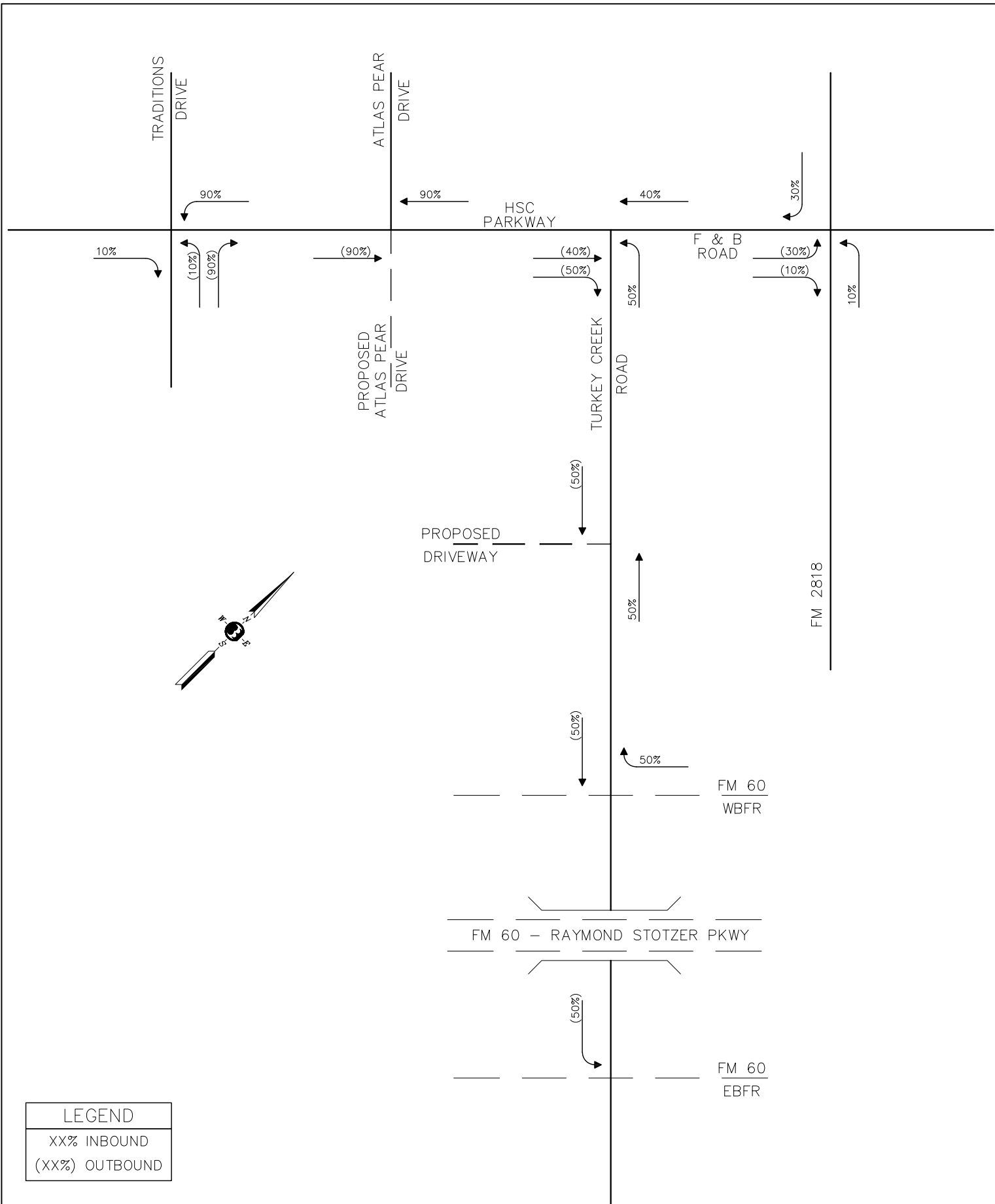
LOVELESS TRACT PEAK HOUR VOLUMES - EXISTING (2018)	
SCALE: N/A	DATE: April 2018
JOB NO.: BB18044	DWG. FILE: FIGURE #2



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College Station, Texas 77845

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\\pza\data\bbi\BCH\JOBS\BB18044 (Traditions) Loveless Tract TIA\CAD\NEW FIGURES.dwg-FIGURE #3 Plotted Jun 07, 2018 at 2:33pm by bbrimley | Last Saved by bbrimley

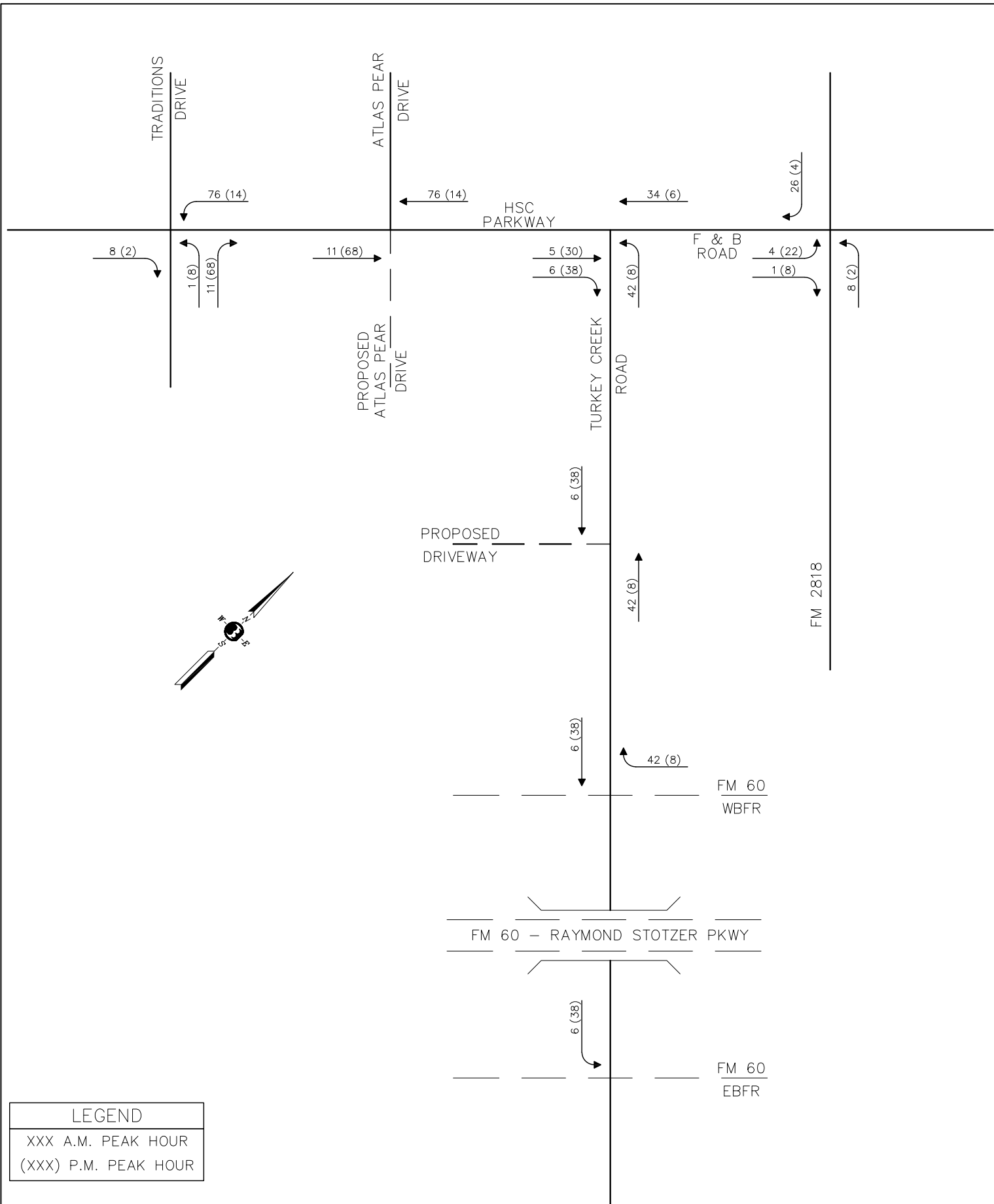


LEGEND
XX% INBOUND
(XX%) OUTBOUND

LOVELESS TRACT TRIP DISTRIBUTION - VIASAT	
SCALE: N/A	DATE: June 2018
JOB NO.: BB18044	DWG. FILE: FIGURE #3



\\pcc\data\bbi\BCH\JOBS\BB18044 (Traditions) Loveless Tract TIA\CAD\NEW FIGURES.dwg-FIGURE #4 Plotted Jun 07, 2018 at 2:34pm by bbrimley | Last Saved by bbrimley

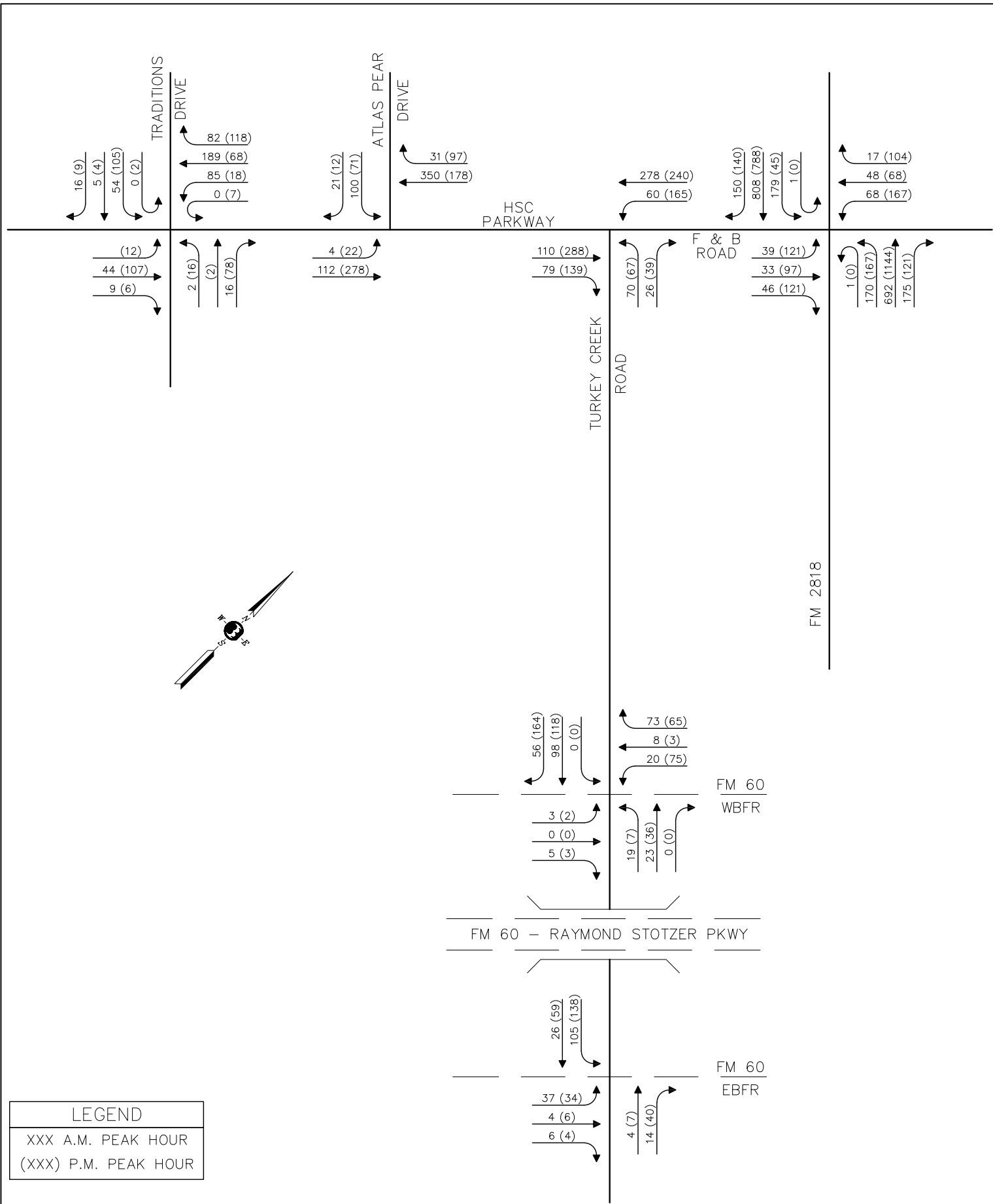


LEGEND	
XXX	A.M. PEAK HOUR
(XXX)	P.M. PEAK HOUR

LOVELESS TRACT PEAK HOUR VOLUMES - VIASAT	
SCALE: N/A	DATE: June 2018
JOB NO.: BB18044	DWG. FILE: FIGURE #4



\\pza\data\bbi\BCH\JOBS\BB18044 (Traditions) Loveless Tract TIA\CAD\NEW FIGURES.dwg-FIGURE #5 Plotted Jun 07, 2018 at 2:36pm by bbrimley | Last Saved by bbrimley



LOVELESS TRACT PEAK HOUR VOLUMES - TOTAL EXISTING (2018)		 Binkley & Barfield, Inc. consulting engineers Texas Registration Number F-257
SCALE: N/A	DATE: June 2018	
JOB NO.: BB18044	DWG. FILE: FIGURE #5	

3452 Rock Prairie Road West
 College Station, Texas 77845

979.703.1809
 www.binkleybarfield.com

PROPOSED DEVELOPMENT

This report addresses the rezoning of 11.14 acres for Multi-Family use. An exhibit showing the proposed accesses with an estimate for the number of units is provided in the Appendix. The development is expected to have two access points. The primary access will be from a proposed extension of Atlas Pear Drive south from HSC Parkway. The second access will be on Turkey Creek Road, which is intended to be restricted to exiting vehicles.

LAND USES

The Full Build conditions were analyzed for the year 2021. **Table 1** identifies the relevant Land Use data for the proposed use. The exhibit in the Appendix shows that the development is planned to have 307 apartment units, a density of 27.5 units per acre. The City ordinance permits a density of 30 units per acre for Multi-Family zoning. The analyses of this study will assume a density of 30 units per acre to provide a conservative finding.

Table 3. Land Use Data: Proposed Development

Land Use	ITE Code	Acres	Units/Acre	Number of Units	AM Peak Hour		PM Peak Hour	
					Rate/Unit	Trips	Rate/Unit	Trips
Multi-family	220	11.14	30 DU	334 DU	0.46	154	0.56	187

TRIP DISTRIBUTION

The trip ends generated by the proposed land use addressed in this study were distributed to and from the site based on its location with respect to area development, nearby roadways, and existing traffic patterns. Two trip distributions are shown. The first is consistent with the exhibit in the Appendix that shows the main access on Atlas Pear Drive and an exit-only access on Turkey Creek Road. **Figure 6** illustrates this proposed trip distribution. The second distribution shows full access to Turkey Creek Road in addition to the proposed access on Atlas Pear Drive. This alternative distribution is shown in **Figure 7**.

TRIP GENERATION

For this site, the AM and PM Peak Hour trips are determined from the Institute of Transportation Engineers' (ITE) 10th edition Trip Generation Manual. **Table 2** summarizes the associated trip generation data and the calculated trips that are anticipated to be generated by the proposed development. Information about the ITE data used to develop **Table 2** is included in the Appendix.

Table 4. Trip Generation Data: Proposed Development

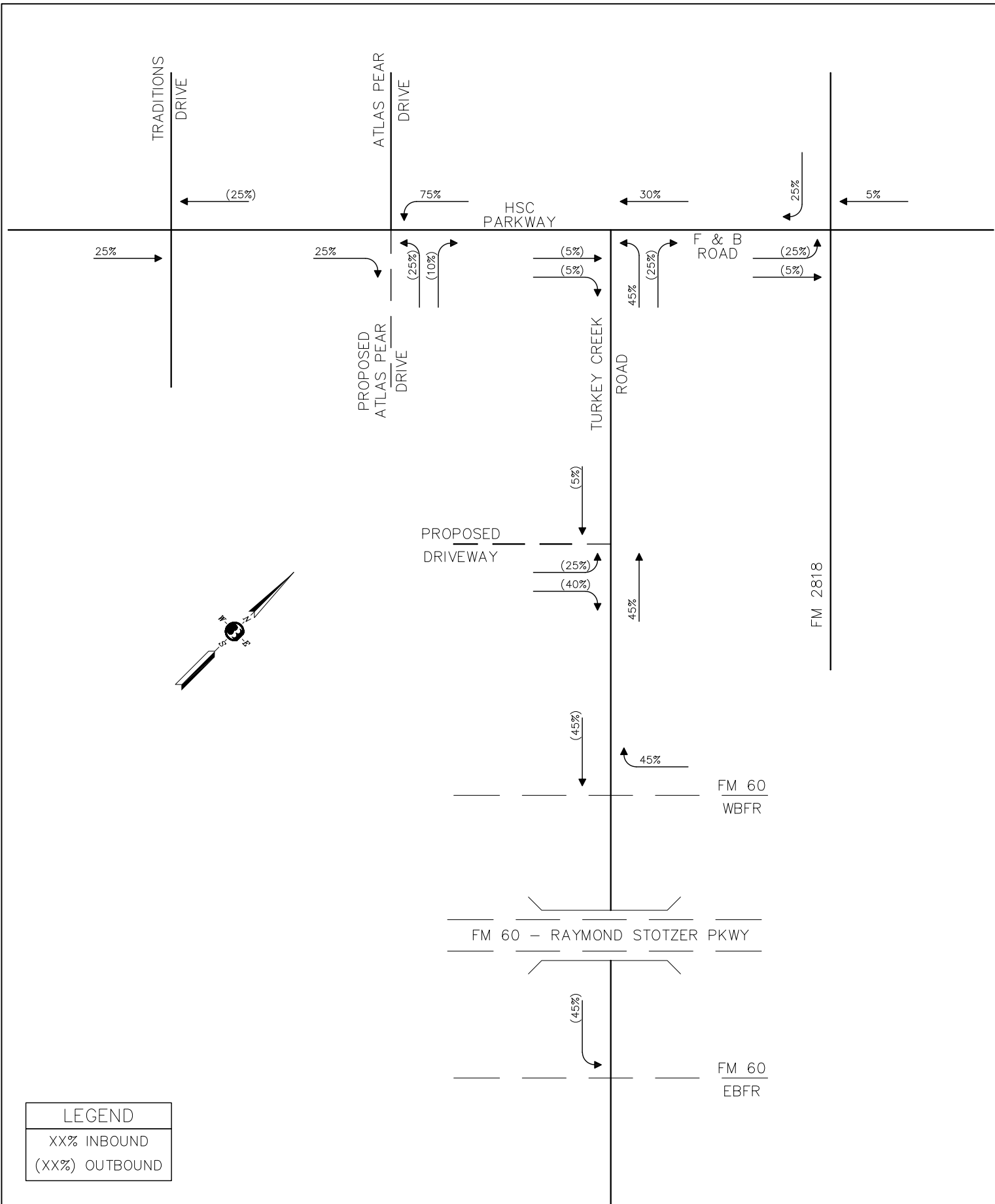
Land Use	AM Peak (vph)					PM Peak (vph)				
	Total	% Enter	Enter	% Exit	Exit	Total	% Enter	Enter	% Exit	Exit
Multi-family	154	23%	35	77%	118	187	63%	118	37%	69

PROJECTED TRAFFIC VOLUMES

SITE TRAFFIC VOLUMES

For this study, "site volumes" represent the traffic expected to be generated by the proposed site. **Figure 8** depicts the site volumes distributed to and from the site during the AM and PM Peak Hours of a typical weekday consistent with the **Figure 6** intended distribution. **Figure 9** depicts the site volumes for the alternative access scenario.

\\pza\data\bbi\BCH\JOBS\BB18044 (Traditions) Loveless Tract TIA\CAD\NEW FIGURES.dwg-FIGURE #6 Plotted Jun 07, 2018 at 2:37pm by bbrimley | Last Saved by bbrimley



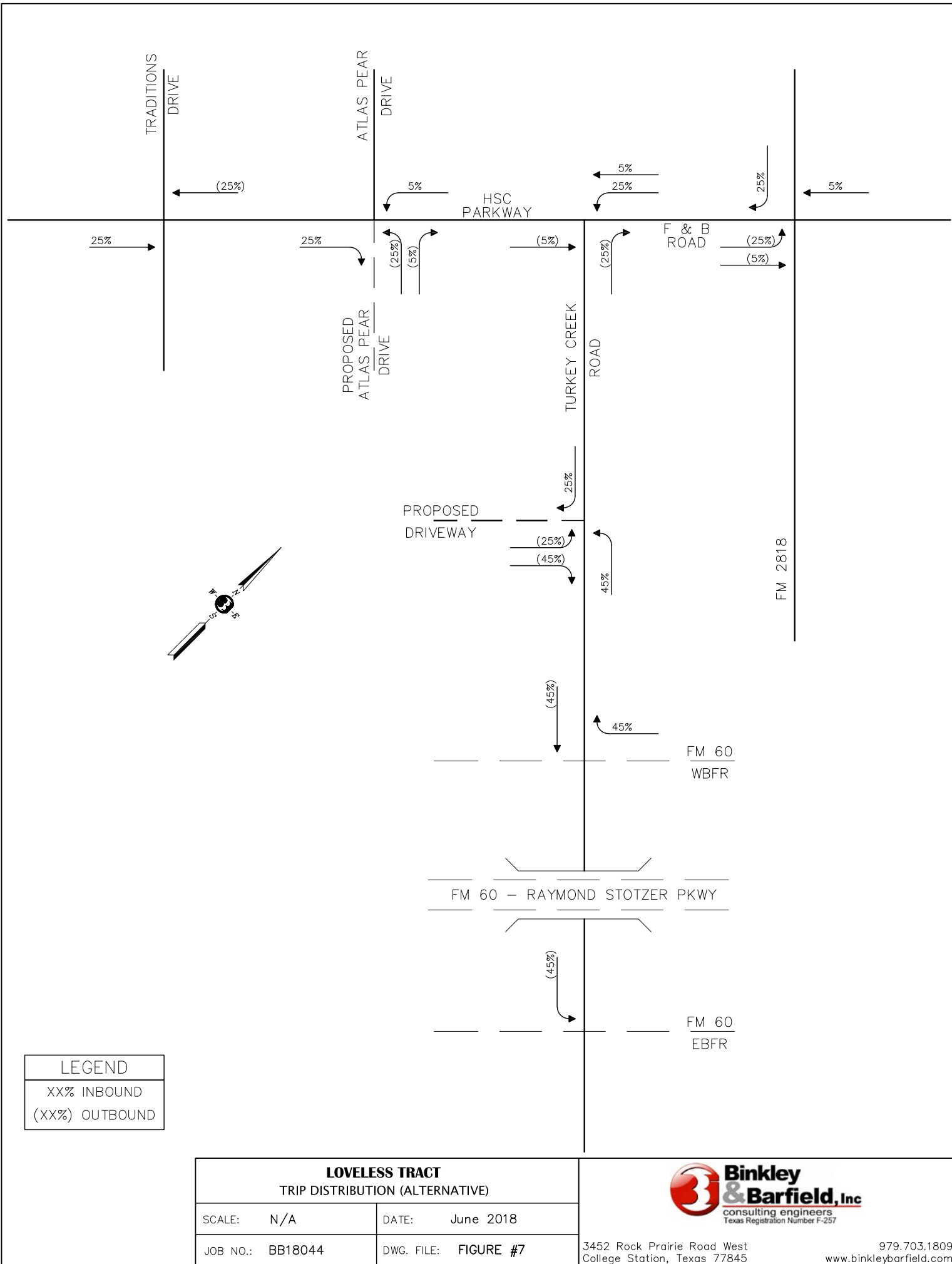
LOVELESS TRACT TRIP DISTRIBUTION (PROPOSED)	
SCALE: N/A	DATE: June 2018
JOB NO.: BB18044	DWG. FILE: FIGURE #6



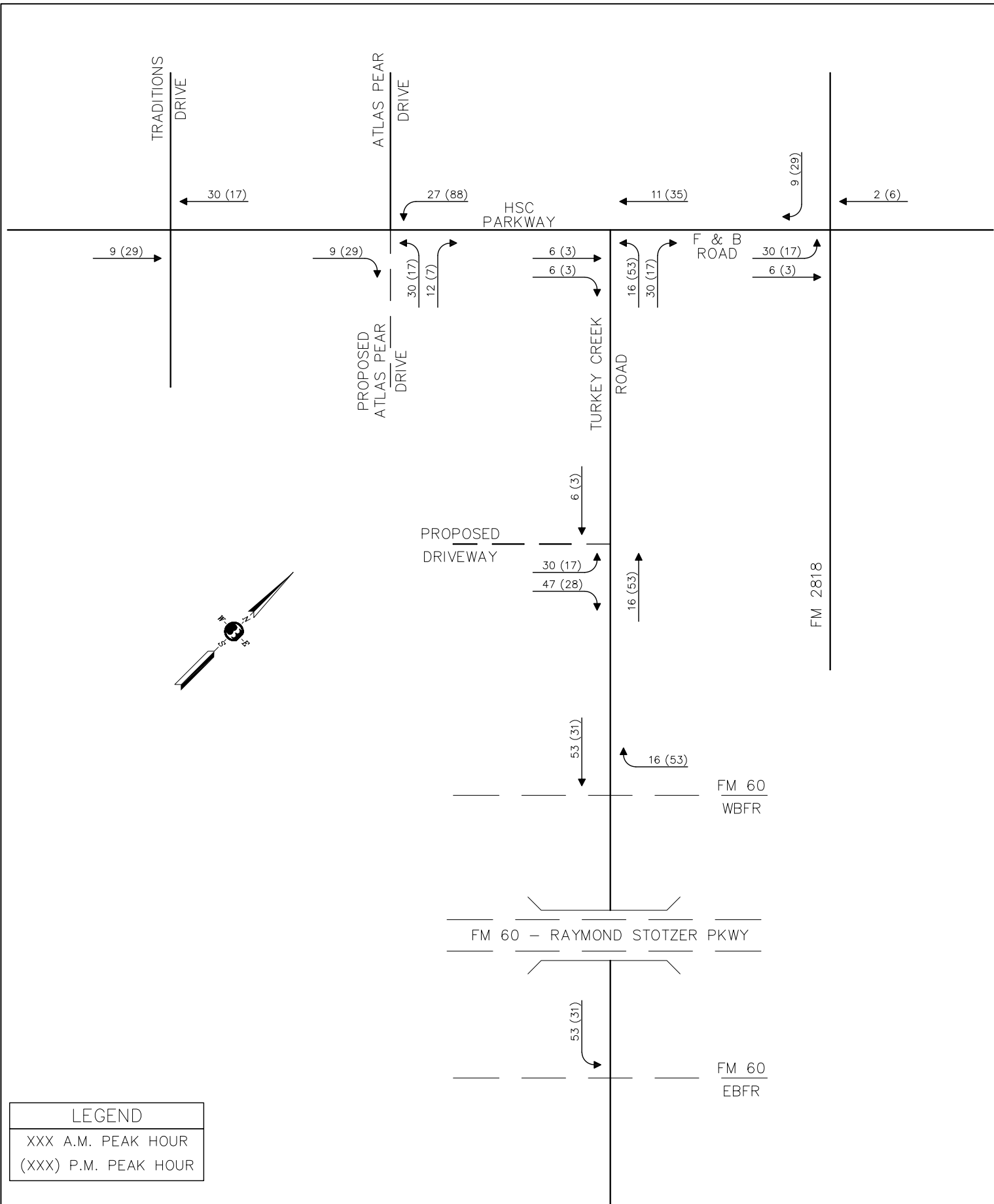
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\\pza\data\bbi\BCH\JOBS\BB18044 (Traditions) Loveless Tract TIA\CAD\NEW FIGURES.dwg-FIGURE #7 Plotted Jun 07, 2018 at 2:37pm by bbrimley | Last Saved by bbrimley



\\pcc\data\bbi\BCH\JOBS\BB18044 (Traditions) Loveless Tract TIA\CAD\NEW FIGURES.dwg-FIGURE #8 Plotted Jun 07, 2018 at 2:39pm by bbrimley | Last Saved by bbrimley



LEGEND
XXX A.M. PEAK HOUR
(XXX) P.M. PEAK HOUR

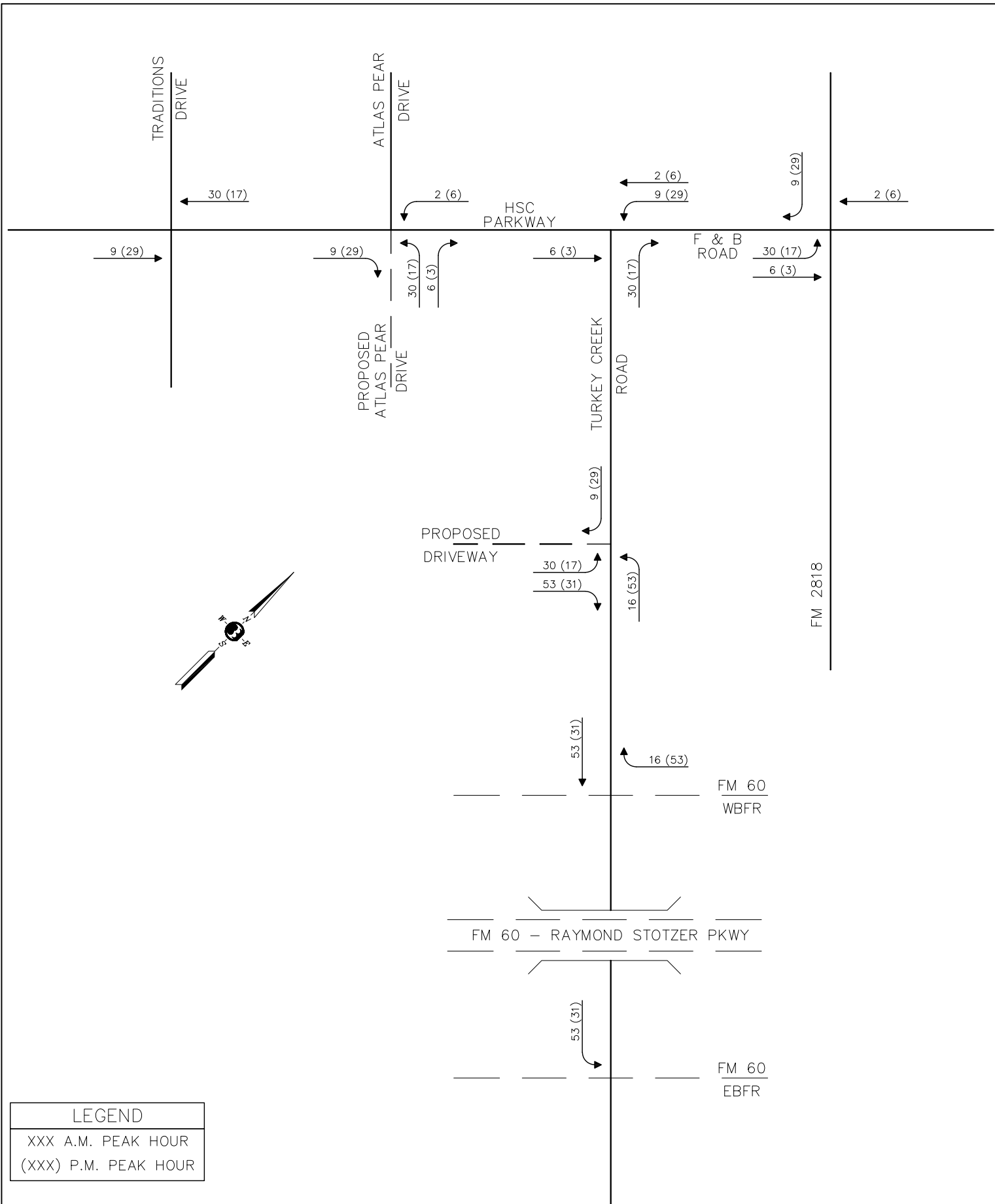
LOVELESS TRACT	
PEAK HOUR VOLUMES - SITE GENERATED (PROPOSED)	
SCALE: N/A	DATE: June 2018
JOB NO.: BB18044	DWG. FILE: FIGURE #8



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\\pcc\data\bbi\BCH\JOBS\BB18044 (Traditions) Loveless Tract TIA\CAD\NEW FIGURES.dwg-FIGURE #9 Plotted Jun 07, 2018 at 2:39pm by bbrimley | Last Saved by bbrimley



LEGEND

XXX A.M. PEAK HOUR
(XXX) P.M. PEAK HOUR

LOVELESS TRACT

PEAK HOUR VOLUMES - SITE GENERATED (ALTERNATIVE)

SCALE: N/A

DATE: June 2018

JOB NO.: BB18044

DWG. FILE: FIGURE #9



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BACKGROUND TRAFFIC VOLUMES

For this study, “background volumes” represent the traffic expected to occur along the area streets and roadways because of the increase in traffic volumes due to normal growth in the area. This study applied an annual growth factor of 5%, consistent with rates seen for similar locations with undeveloped land in the area and determined by evaluating historic traffic volumes from the Texas Department of Transportation’s (TxDOT) Statewide Planning Map.

Figure 10 depicts the background traffic determined by increasing the existing traffic at a 5% growth factor to the year 2021.

TOTAL TRAFFIC VOLUMES

Figure 11 displays the proposed “total volumes” anticipated to occur within the study area for the Full Build 2021 conditions. The total proposed volumes depicted combine the site generated volumes in **Figure 8** and the background volumes in **Figure 10**.

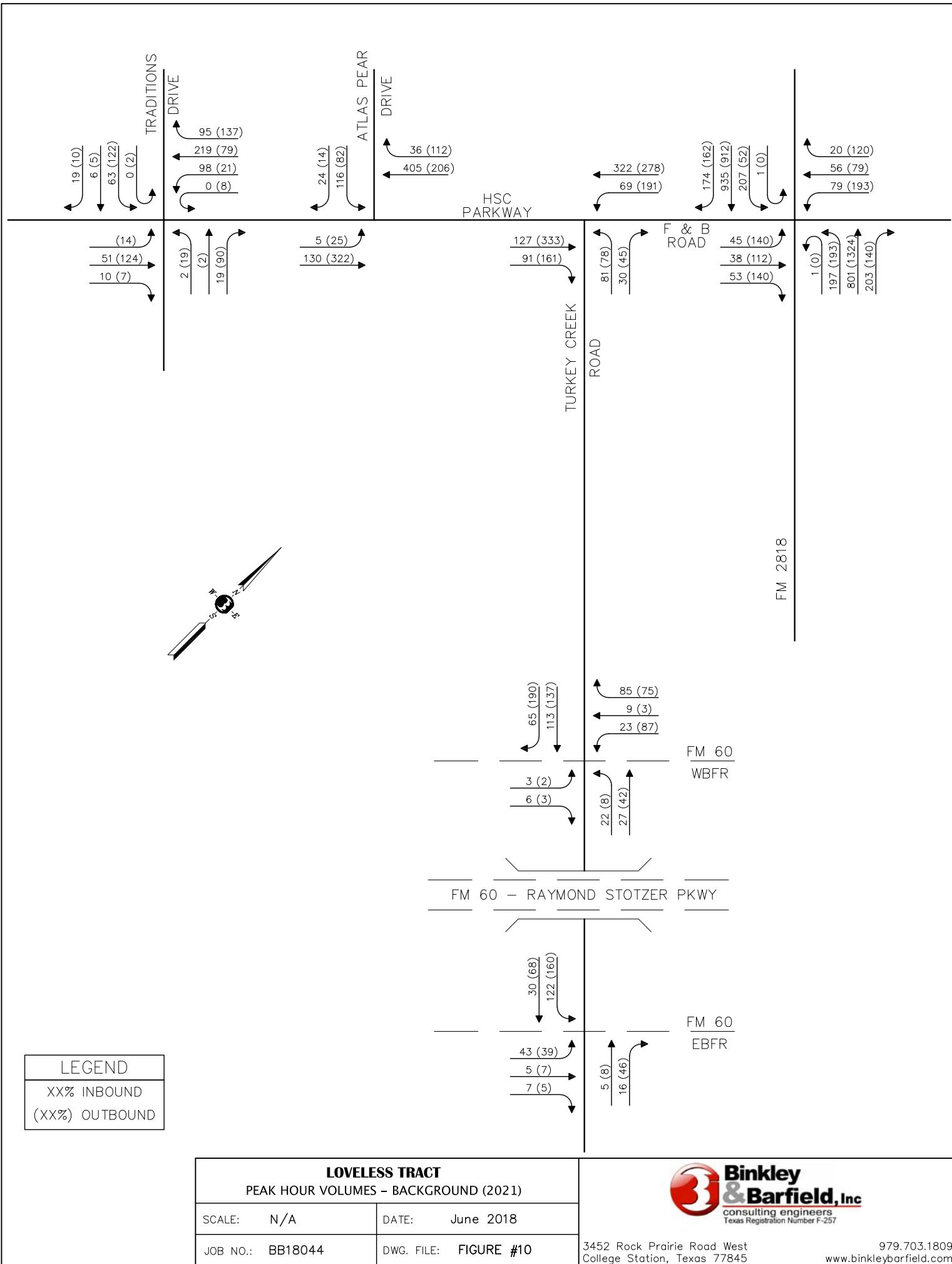
Figure 12 displays the total volumes for the alternative scenario, combining the alternative site-generated volumes of **Figure 9** with the background volumes in **Figure 10**.

The city’s Unified Development Ordinance (Section 7.13) states that developments that contribute 5% or more of the traffic at locations failing to meet level of service “D” should be mitigated by the applicant (developer). **Table 5** indicates the proportion of Peak Hour traffic in the full build conditions that is attributed to the proposed development. The information in **Table 5** is based on the traffic volumes shown in **Figure 8** and **Figure 11** for the Proposed condition and **Figure 9** and **Figure 12** for the Alternative scenario.

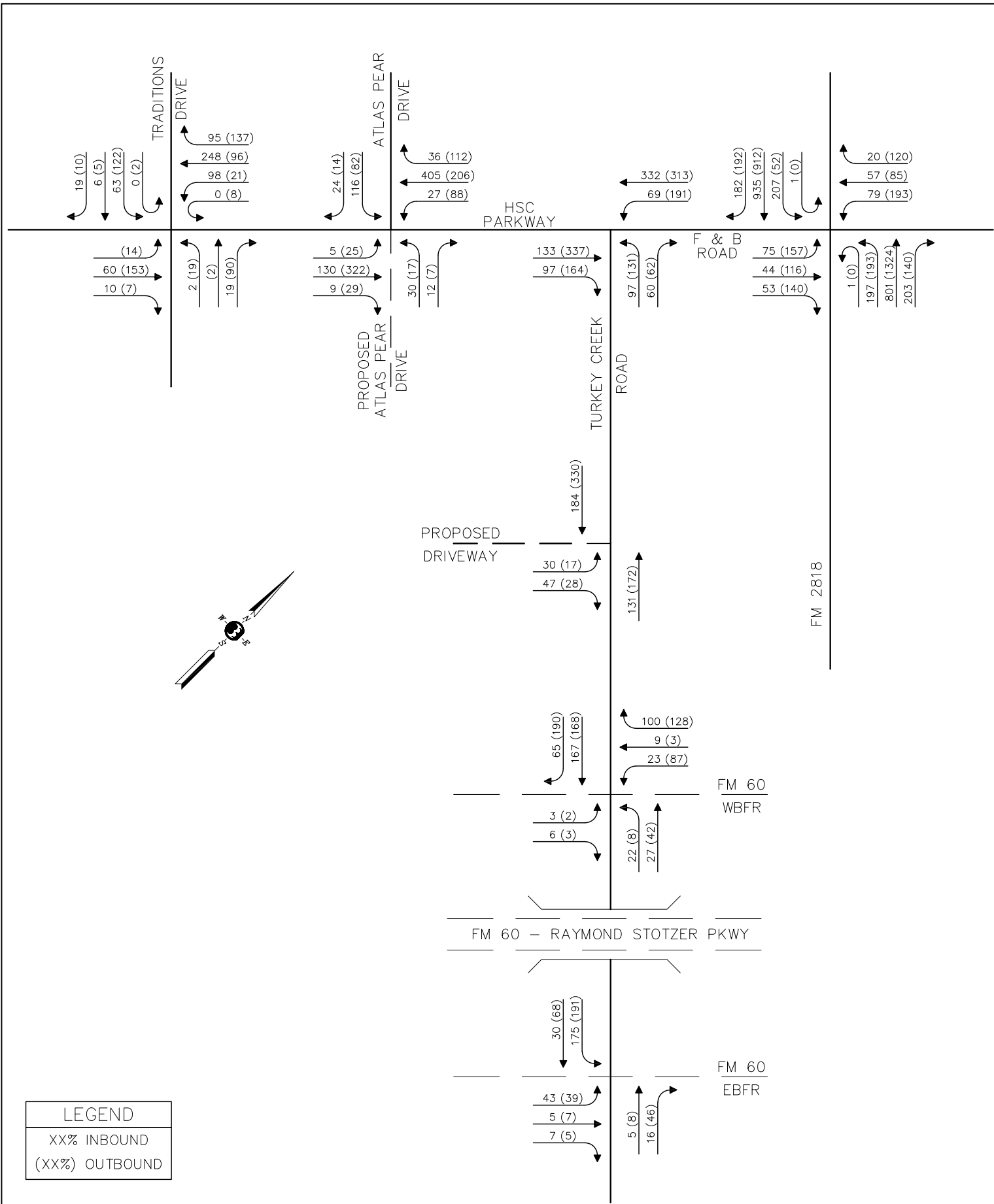
Table 5. Proportion of Peak Hour Traffic Generated by the Development

Location	Proposed		Alternative Access	
	AM	PM	AM	PM
FM 2818 at F&B Road	1.6%	1.5%	1.6%	1.5%
Turkey Creek Road at HSC Parkway/F&B Road	8.6%	9.4%	6.0%	4.9%
Turkey Creek Road at FM 60 WB	16.4%	13.3%	16.4%	13.3%
Turkey Creek Road at FM 60 EB	19.0%	8.5%	19.0%	8.5%
HSC Parkway at Traditions Drive	6.2%	6.8%	6.2%	6.8%
HSC Parkway at Atlas Pear Drive	9.7%	15.7%	6.1%	6.9%

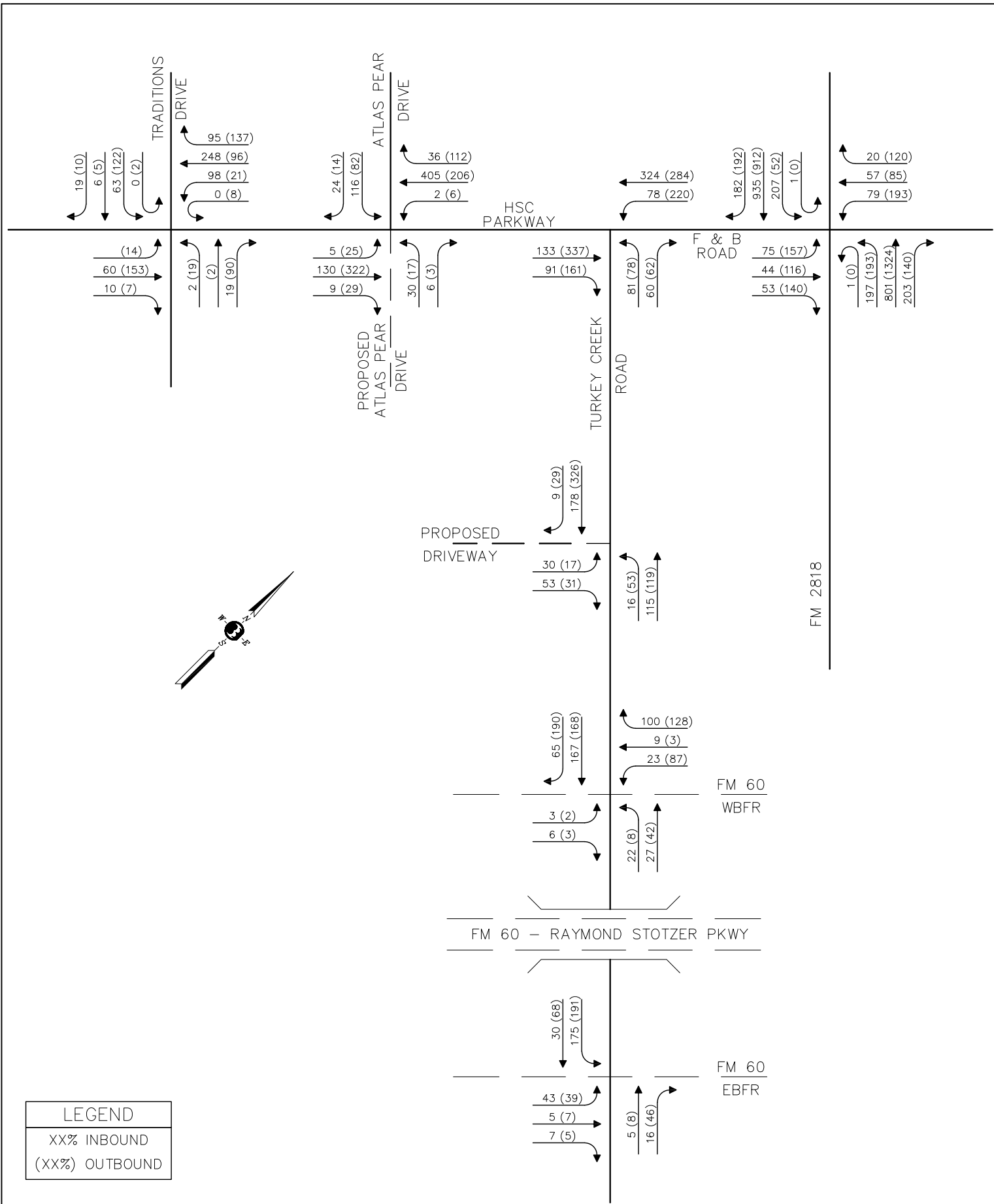
\\pcc\data\bb\BCH\JOBS\BB18044 (Traditions) Lovless Tract TIA\CAD\NEW FIGURES.dwg-FIGURE #10 Plotted Jun 07, 2018 at 2:40pm by bbrimley | Last Saved by: bbrimley



\\pcc\data\bb\BCH\JOBS\BB18044 (Traditions) Lovless Tract TIA\CAD\NEW FIGURES.dwg-FIGURE #11 Plotted Jun 07, 2018 at 2:40pm by bbrimley | Last Saved by: bbrimley



\\pcza\data\bbi\BCH\JOBS\BB18044 (Traditions) Loveless Tract TIA\CAD\NEW FIGURES.dwg-FIGURE #12 Plotted Jun 07, 2018 at 2:40pm by bbrimley | Last Saved by: bbrimley



LOVELESS TRACT PEAK HOUR VOLUMES – FULL BUILD ALTERNATIVE (2021)		 Binkley & Barfield, Inc. consulting engineers Texas Registration Number F-257
SCALE: N/A	DATE: June 2018	
JOB NO.: BB18044	DWG. FILE: FIGURE #12	
3452 Rock Prairie Road West College Station, Texas 77845		
		979.703.1809 www.binkleybarfield.com

INTERSECTION CAPACITY ANALYSIS

Level of Service (LOS) analyses of the traffic operations were performed at the existing intersections and the proposed access points. Analyses of the intersections were conducted utilizing Synchro software. The results of the capacity analyses for the intersections with the resulting delay and levels of service values are summarized by approach in the following tables:

- **Table 6.** AM Peak Hour Level of Service
- **Table 7.** PM Peak Hour Level of Service

Copies of the Synchro computer printouts and a description of the various levels of service have been included in the Appendix. Typically, the desirable levels of service are "A" through "D." Levels of Service "E" and "F" are undesirable.

In the analyses, it was assumed that a westbound left-turn lane from HSC Parkway onto Atlas Pear Drive is constructed to match the eastbound left-turn lane.

2018 EXISTING

With the current traffic on the existing lane configurations, all intersections operate at an acceptable level of service. The eastbound approach of F&B Road at FM 2818 operates at LOS E during the PM Peak Period. No mitigation is proposed as the intersection operates at LOS D with an average delay of 45 seconds per vehicle.

2021 BACKGROUND

The 2021 Background analysis assumed a 5.0% background growth per year and additional traffic from ViaSat. The only intersection with operational concerns is F&B Road at FM 2818, which is forecasted to operate at LOS E during the PM Peak Hour. It is apparent that the eastbound approach, with only one lane, is what limits capacity most at this intersection.

2021 FULL BUILD PROPOSED

The 2021 Full Build scenario analyzed traffic conditions with the 11.14-acre Multi-Family development added to the background traffic. During the PM Peak Hour, the intersection of F&B Road at FM 2818 continues to operate at LOS E. Additionally, the westbound approach of F&B Road/ HSC Parkway at Turkey Creek Road operates at LOS E; however, the intersection overall operates at LOS C. As this intersection is all-way stop controlled, the poor level of service on that one approach is not a safety concern. There is spare capacity at the intersection and the volume to capacity (v/c) ratio for the westbound approach is 0.88.

As shown in Table 5, the proposed development contributes less than 2% of the total Peak Hour traffic at the intersection of F&B Road at FM 2818. Mitigation for level of service lower than "D" is required by ordinance only when the development's traffic exceeds 5% of the total traffic. Therefore, mitigation at the intersection is not required. It is worth noting that, as a proposed Minor Arterial, the future eastbound lane configuration when F&B Road is widened will add capacity and significantly improve the intersection's performance. There is not a known time when F&B Road will be widened.

2021 FULL BUILD ALTERNATIVE

For the Alternative scenario, multiple intersections experience the same traffic volumes and therefore the same delay and level of service. The most notable difference is Turkey Creek Road at HSC Parkway, which improves in the Alternative scenario because the full-access driveway on Turkey Creek Road allows vehicles to bypass the all-way stop on HSC Parkway.

Table 6. AM Peak Hour Level of Service

Scenario	Eastbound			Westbound			Northbound			Southbound			INT
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
F&B Road at FM 2818													
Existing 2018	D			D			B			C			C
	50.4			47.4			14.3			20.0			20.5
Background 2021	E			E			C			C			C
	76.9			69.2			24.0			30.5			32.1
Full Build Proposed 2021	F			E			C			C			D
	81.6			69.8			27.6			34.1			36.1
Full Build Alternative 2021	F			E			C			C			D
	81.6			69.8			27.6			34.1			36.1
Turkey Creek Road at HSC Parkway													
Existing 2018	A			B		-	A			-			B
	8.5			12.2		-	9.4			-			10.6
Background 2021	A			B		-	A			-			B
	8.9			14.5		-	9.9			-			12.1
Full Build Proposed 2021	A			C		-	B			-			B
	9.3			16.0		-	10.7			-			13.0
Full Build Alternative 2021	A			C		-	B			-			B
	9.2			15.7		-	10.3			-			12.8
HSC Parkway at Atlas Pear Drive													
Existing 2018	A	-	-	-			-			B			-
	8.2	-	-	-			-			14.8			-
Background 2021	A	-	-	-			-			C			-
	8.4	-	-	-			-			17.5			-
Full Build Proposed 2021	A	-	-	A	-		B			C			-
	8.4	-	-	7.6	-		12.2			19.8			-
Full Build Alternative 2021	A	-	-	A	-		B			C			-
	8.4	-	-	7.5	-		11.9			17.8			-
Traditions Drive at HSC Parkway													
Existing 2018	A			A			A			A			A
	8.1			8.7			8.0			9.5			8.7
Background 2021	A			A			A			A			A
	8.3			9.1			8.2			9.9			9.1
Full Build Proposed 2021	A			A			A			B			A
	8.4			9.2			8.3			10.0			9.2
Full Build Alternative 2021	A			A			A			B			A
	8.4			9.2			8.3			10.0			9.2

Table 6. AM Peak Hour Level of Service (Continued)

Scenario	Eastbound			Westbound			Northbound			Southbound			INT
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Turkey Creek Road at FM 60 EBFR													
Existing 2018	A			-			A			A			A
	8.6			-			7.3			8.8			8.6
Background 2021	A			-			A			A			A
	8.8			-			7.4			9.0			8.8
Full Build Proposed 2021	A			-			A			B			A
	9.0			-			7.6			10.1			9.7
Full Build Alternative 2021	A			-			A			B			A
	9.0			-			7.6			10.1			9.7
Turkey Creek Road at FM 60 WBFR													
Existing 2018	A			A			A			A			A
	7.4			7.8			8.1			8.4			8.1
Background 2021	A			A			A			A			A
	7.5			8.1			8.2			8.8			8.5
Full Build Proposed 2021	A			A			A			A			A
	7.7			8.4			8.4			9.7			9.1
Full Build Alternative 2021	A			A			A			A			A
	7.7			8.4			8.4			9.7			9.1
Turkey Creek Road at Proposed Driveway													
Full Build Proposed 2021	B			-			-			-			-
	10.3			-			-			-			-
Full Build Alternative 2021	B			-			A	-		-			-
	10.4			-			7.7	-		-			-

Table 7. PM Peak Hour Level of Service

Scenario	Eastbound			Westbound			Northbound			Southbound			INT
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
F&B Road at FM 2818													
Existing 2018	F			D			D			D			D
	81.1			52.1			41.4			44.9			48.1
Background 2021	F			E			E			E			E
	115.5			77.6			56.5			58.6			66.0
Full Build Proposed 2021	F			E			E			E			E
	120.5			77.5			62.7			59.2			69.8
Full Build Alternative 2021	F			E			E			E			E
	120.5			77.5			62.7			59.2			69.8
Turkey Creek Road at HSC Parkway													
Existing 2018	B			C		-	A			-			B
	11.5			16.4		-	10.4			-			13.5
Background 2021	B			C		-	B			-			C
	13.6			23.9		-	11.4			-			17.8
Full Build Proposed 2021	C			E		-	B			-			C
	16.0			37.5		-	13.9			-			24.7
Full Build Alternative 2021	B			D		-	B			-			C
	14.4			30.6		-	11.9			-			21.2
HSC Parkway at Atlas Pear Drive													
Existing 2018	A	-	-	-			-			B			-
	8.0	-	-	-			-			14.4			-
Background 2021	A	-	-	-			-			C			-
	8.2	-	-	-			-			16.5			-
Full Build Proposed 2021	A	-	-	A	-	-	C			D			-
	8.2	-	-	8.5	-	-	17.9			26.1			-
Full Build Alternative 2021	A	-	-	A	-	-	B			C			-
	8.2	-	-	8.2	-	-	14.7			17.0			-
Traditions Drive at HSC Parkway													
Existing 2018	A			A			A			A			A
	8.7			8.7			8.7			10.2			9.0
Background 2021	A			A			A			B			A
	9.1			9.1			9.1			10.8			9.5
Full Build Proposed 2021	A			A			A			B			A
	9.4			9.3			9.4			11.1			9.7
Full Build Alternative 2021	A			A			A			B			A
	9.4			9.3			9.4			11.1			9.7

Table 7. PM Peak Hour Level of Service (Continued)

Scenario	Eastbound			Westbound			Northbound			Southbound			INT
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Turkey Creek Road at FM 60 EBFR													
Existing 2018	A			-			A			A			A
	8.7			-			7.6			8.7			8.5
Background 2021	A			-			A			A			A
	9.0			-			7.7			9.1			8.9
Full Build Proposed 2021	A			-			A			A			A
	9.1			-			7.8			9.7			9.3
Full Build Alternative 2021	A			-			A			A			A
	9.1			-			7.8			9.7			9.3
Turkey Creek Road at FM 60 WBFR													
Existing 2018	A			A			A			A			A
	7.7			8.7			8.2			9.5			9.1
Background 2021	A			A			A			B			A
	7.9			9.2			8.4			10.4			9.8
Full Build Proposed 2021	A			A			A			B			B
	8.1			9.9			8.7			11.5			10.7
Full Build Alternative 2021	A			A			A			B			B
	8.1			9.9			8.7			11.5			10.7
Turkey Creek Road at Proposed Driveway													
Full Build Proposed 2021	B			-			-			-			-
	11.5			-			-			-			-
Full Build Alternative 2021	B			-			A	-		-			-
	12.0			-			8.2	-		-			-

RIGHT-TURN LANE ANALYSIS

The City of College Station's General Development Standards states the following:

“A right-turn deceleration lane with storage length plus taper may be required for any access with a projected peak hour right-turn ingress turning volume greater than 50 vehicles per hour (vph). If the posted speed is greater than 40 mph, a right-turn deceleration lane and taper may be required for any access with a projected peak hour ingress turning volume greater than 25 vph.” – Article 7 Section 7.3.I

Based on the City's General Development Standards, a right-turn deceleration lane from HSC Parkway (or from Turkey Creek Road in the Alternative Scenario) is required as the projected right turn volumes are below the City's threshold.

SUMMARY OF FINDINGS

The traffic impact analysis results are summarized in the following paragraphs.

CAPACITY ANALYSIS

The capacity analyses for the existing conditions indicate that all intersections currently operate at an acceptable level of service. The analyses for the Background 2021 conditions identified some capacity deficiencies at the intersection of F&B Road at FM 2818. These continue to exist with the Full Build scenarios. Because the traffic added to the intersection in the Full Build scenarios is less than 2% of the total traffic at the intersection, no mitigation is required.

Given the current geometry of the F&B Road/FM 2818 intersection, with one eastbound lane that serves all three movements (left, through, and right), the most basic mitigation is an eastbound dedicated right-turn lane. Additional improvements can be achieved with a dedicated left-turn lane. Though the time when F&B Road will be widened is unknown at this time, it can be expected to occur in the future as the road is listed as a Minor Arterial. If these possible mitigations do not occur before then, they can be expected at least with the widening.

The analyses of the full build conditions indicate that all other intersections will operate at an acceptable level of service.

RIGHT-TURN ANALYSIS

Based on the City's General Development Standards, a right-turn deceleration lane is not necessary at either of the proposed access points, as the projected right turn volumes are below the City's right-turn lane thresholds.

RECOMMENDATIONS

It is recommended that a left-turn lane from HSC Parkway to Atlas Pear Drive be constructed with the proposed development to correspond with the existing eastbound left-turn lane.

Operations at the intersection of F&B Road at FM 2818 should be monitored to determine when future improvements will be necessary to bring the performance of the intersection to an acceptable level. The undeveloped land along the Biomedical Corridor will lead to high growth rates in the area. This will necessitate improvements at the F&B Road/FM 2818 intersection, and possibly along the existing two-lane portion of F&B Road.

CLOSING

The findings of this TIA are based on evaluations of information available about the potential development of the site and various assumptions as discussed in this study. If the actual future conditions are different than the forecasts of this study, the true performance of the intersections will be different and may justify further analysis. Should any questions arise concerning this report or its analyses, please do not hesitate to contact our office.

APPENDIX

SITE EXHIBIT 1 PAGE

TRAFFIC COUNT SHEETS 6 PAGES

TRIP GENERATION DATA SHEETS 4 PAGES

SYNCHRO OUTPUT SHEETS

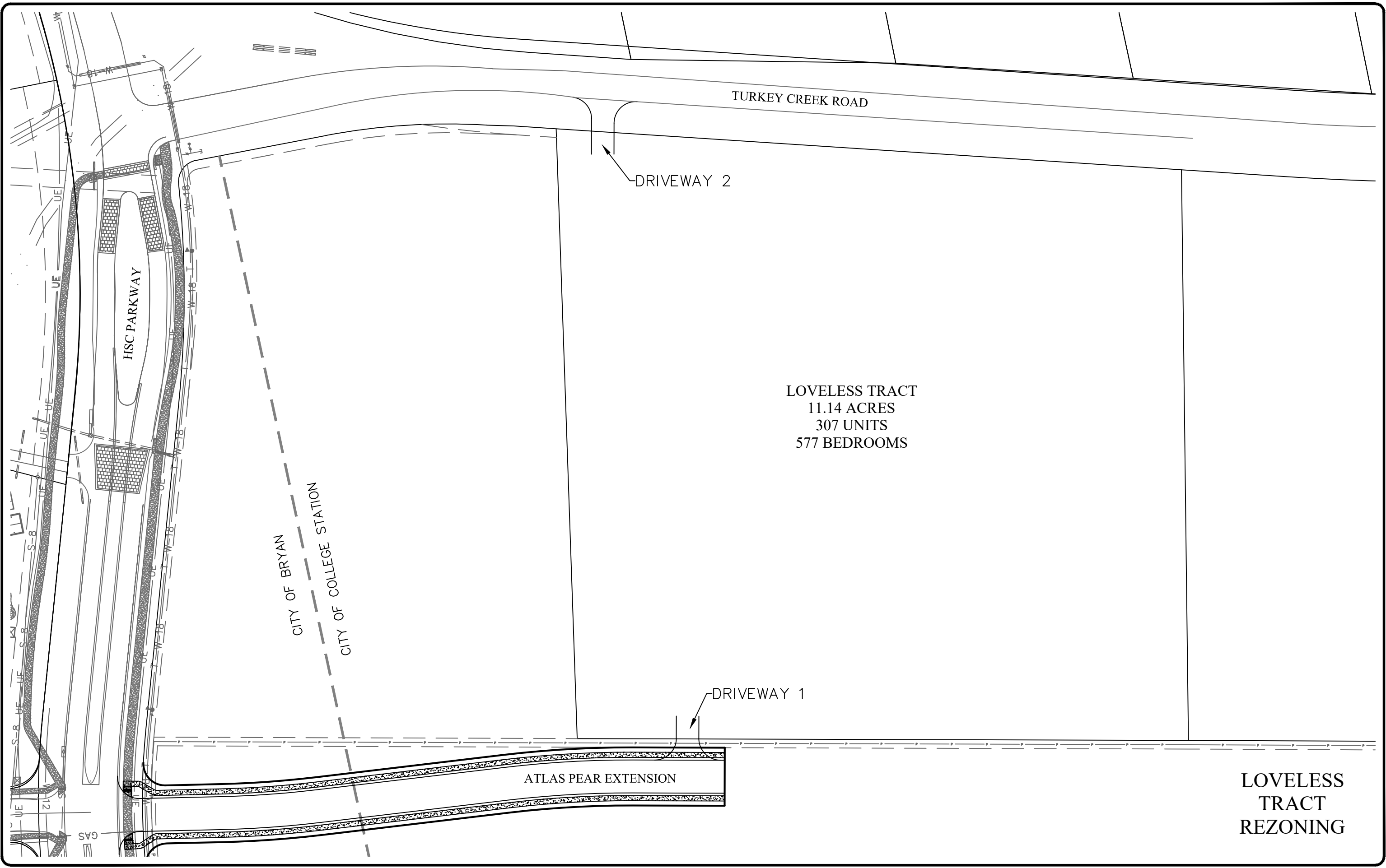
Existing – 2018 6 PAGES

Background – 2021 6 PAGES

Full Build Proposed – 2021 7 PAGES

Full Build Alternative – 2021 7 PAGES

DESCRIPTION OF LEVELS OF SERVICE 1 PAGE



TURKEY CREEK ROAD

DRIVEWAY 2

LOVELESS TRACT
11.14 ACRES
307 UNITS
577 BEDROOMS

CITY OF BRYAN
CITY OF COLLEGE STATION

DRIVEWAY 1

ATLAS PEAR EXTENSION

LOVELESS
TRACT
REZONING

FM 2818 at F&B Road
3/21/2018

Start Time	Eastbound				Westbound				Northbound				Southbound				15-min Total	Hourly Total	Hourly Rank	PHF
	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn				
7:00 AM	13	8	2	0	12	10	6	0	37	168	15	0	14	201	12	0	498			
7:15 AM	10	9	7	1	27	18	2	1	34	241	40	0	31	221	23	0	665			
7:30 AM	13	16	14	0	19	13	4	0	45	257	58	0	74	211	35	0	759			
7:45 AM	11	10	13	0	10	11	4	0	49	218	50	0	49	210	42	1	678	2600	1	0.85639
8:00 AM	6	2	9	0	19	15	2	0	41	80	34	1	33	185	21	0	448	2550	2	0.839921
8:15 AM	5	5	9	0	20	9	7	0	27	137	33	0	23	202	26	0	503	2388	3	0.786561
8:30 AM	5	7	9	1	13	18	9	0	32	130	12	3	22	164	30	0	455	2084	4	0.768437
8:45 AM	8	12	4	1	10	18	3	0	16	173	27	0	15	153	19	0	459	1865	5	0.926938
4:00 PM	13	11	24	0	42	17	12	0	29	215	11	0	11	203	18	0	606			
4:15 PM	18	11	22	0	27	14	16	0	34	195	12	0	14	204	25	0	592			
4:30 PM	15	10	23	0	46	16	17	0	43	198	30	0	9	196	32	0	635			
4:45 PM	21	13	16	0	33	14	12	0	50	214	17	0	8	167	35	0	600	2433	5	0.957874
5:00 PM	33	22	39	0	75	24	36	0	46	267	29	0	13	202	41	0	827	2654	4	0.802297
5:15 PM	29	23	34	0	35	12	28	0	48	312	29	0	12	228	36	0	826	2888	3	0.873035
5:30 PM	17	13	16	0	33	17	24	0	41	312	33	0	9	203	34	0	752	3005	2	0.908404
5:45 PM	20	39	24	0	24	15	16	0	30	253	30	0	11	155	25	0	642	3047	1	0.9211

Turkey Creek at FM 60 EB
3/22/2018

Start Time	Eastbound				Westbound				Northbound				Southbound				15-min Total	Hourly Total	Hourly Rank	PHF
	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn				
7:00 AM	9	1	0	0	0	0	0	0	0	1	2	0	14	4	0	0	31			
7:15 AM	9	0	0	0	0	0	0	0	0	1	1	0	11	5	0	0	27			
7:30 AM	10	1	0	0	0	0	0	0	0	0	4	0	18	7	0	0	40			
7:45 AM	18	3	0	0	0	0	0	0	0	1	2	0	35	4	0	0	63	161	5	0.638889
8:00 AM	6	0	2	0	0	0	0	0	0	1	2	0	19	9	0	0	39	169	3	0.670635
8:15 AM	3	0	4	0	0	0	0	0	0	2	6	0	27	6	0	0	48	190	1	0.753968
8:30 AM	6	0	1	0	0	0	0	0	0	2	6	0	11	10	0	0	36	186	2	0.738095
8:45 AM	1	1	0	0	0	0	0	0	0	3	8	0	12	14	0	0	39	162	4	0.84375
4:00 PM	8	3	9	0	0	0	0	0	0	1	14	0	21	10	0	0	66			
4:15 PM	2	2	0	0	0	0	0	0	0	1	8	0	24	7	0	0	44			
4:30 PM	9	0	0	0	0	0	0	0	0	2	11	0	9	7	0	0	38			
4:45 PM	8	2	1	0	0	0	0	0	0	1	7	0	22	12	0	0	53	201	5	0.761364
5:00 PM	13	0	0	0	0	0	0	0	0	1	11	0	35	16	0	0	76	211	4	0.694079
5:15 PM	4	2	1	0	0	0	0	0	0	3	12	0	23	14	0	0	59	226	3	0.743421
5:30 PM	9	2	2	0	0	0	0	0	0	2	10	0	20	17	0	0	62	250	1	0.822368
5:45 PM	6	1	3	0	0	0	0	0	0	1	9	0	16	16	0	0	52	249	2	0.819079

Turkey Creek at FM 60 WB
3/22/2018

Start Time	Eastbound				Westbound				Northbound				Southbound				15-min Total	Hourly Total	Hourly Rank	PHF
	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn				
7:00 AM	3	0	1	0	7	1	7	0	2	8	0	0	0	10	3	0	42			
7:15 AM	1	0	0	0	3	1	5	0	2	8	0	0	0	11	12	0	43			
7:30 AM	1	0	1	0	7	4	1	0	7	3	0	0	0	17	16	0	57			
7:45 AM	0	0	2	0	4	1	7	0	8	12	0	0	0	32	15	0	81	223	4	0.688272
8:00 AM	1	0	1	0	3	2	12	0	0	6	0	0	0	24	12	0	61	242	3	0.746914
8:15 AM	1	0	1	0	6	1	11	0	4	2	0	0	0	19	13	0	58	257	1	0.79321
8:30 AM	2	0	0	0	9	1	13	0	6	2	0	0	0	14	5	0	52	252	2	0.777778
8:45 AM	0	0	0	0	12	2	12	0	4	0	0	0	0	13	5	0	48	219	5	0.897541
4:00 PM	3	0	1	0	12	0	3	0	0	9	0	0	0	14	32	0	74			
4:15 PM	1	0	1	0	14	1	9	0	2	1	0	0	0	19	12	0	60			
4:30 PM	1	0	0	0	6	3	9	0	3	7	0	0	0	11	30	0	70			
4:45 PM	0	0	0	0	14	0	12	0	1	5	0	0	0	19	32	0	83	287	5	0.864458
5:00 PM	0	0	0	0	24	0	12	0	3	14	0	0	0	21	45	0	119	332	4	0.697479
5:15 PM	0	0	0	0	16	0	12	0	2	6	0	0	0	23	53	0	112	384	3	0.806723
5:30 PM	2	0	2	0	17	2	19	0	1	10	0	0	0	19	34	0	106	420	2	0.882353
5:45 PM	0	0	1	0	18	1	14	0	1	6	0	0	0	17	32	0	90	427	1	0.897059

HSC at Atlas Pear Drive
3/22/2018

Start Time	Eastbound				Westbound				Northbound				Southbound				15-min Total	Hourly Total	Hourly Rank	PHF
	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn				
7:00 AM	0	14	0		0	51	7		0	0	0		13	0	5		90			
7:15 AM	0	18	0		0	43	10		0	0	0		16	0	4		91			
7:30 AM	0	21	0		0	60	10		0	0	0		27	0	6		124			
7:45 AM	1	28	0		0	74	6		0	0	0		36	0	3		148	453	5	0.765203
8:00 AM	1	26	0		0	79	13		0	0	0		24	0	6		149	512	2	0.85906
8:15 AM	2	26	0		0	61	2		0	0	0		13	0	6		110	531	1	0.89094
8:30 AM	0	16	0		0	59	9		0	0	0		10	0	7		101	508	3	0.852349
8:45 AM	3	17	0		0	51	5		0	0	0		12	0	8		96	456	4	0.765101
4:00 PM	4	55	0		0	32	6		0	0	0		5	0	1		103			
4:15 PM	3	45	0		0	39	23		0	0	0		6	0	4		120			
4:30 PM	2	51	0		0	40	16		0	0	0		11	0	2		122			
4:45 PM	10	68	0		0	43	25		0	0	0		23	0	4		173	518	4	0.748555
5:00 PM	4	47	0		0	44	23		0	0	0		16	0	5		139	554	3	0.800578
5:15 PM	4	47	0		0	47	24		0	0	0		15	0	1		138	572	2	0.82659
5:30 PM	4	48	0		0	30	25		0	0	0		17	0	2		126	576	1	0.83237
5:45 PM	4	22	0		0	27	18		0	0	0		14	0	5		90	493	5	0.886691

HSC Parkway at South Traditions Drive
3/22/2018

Start Time	Eastbound				Westbound				Northbound				Southbound				15-min Total	Hourly Total	Hourly Rank	PHF
	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn				
7:00 AM	0	4	0	0	4	41	6	0	0	0	0	0	4	0	1	0	60			
7:15 AM	0	5	1	0	6	38	7	0	0	0	3	0	8	0	3	0	71			
7:30 AM	0	2	3	0	11	22	16	0	1	0	0	0	12	0	1	0	68			
7:45 AM	0	2	1	0	3	27	14	0	0	0	1	0	10	0	2	0	60	259	5	0.911972
8:00 AM	0	10	0	0	2	38	17	0	0	0	2	0	13	1	2	0	85	284	4	0.835294
8:15 AM	0	10	1	0	3	45	20	0	1	0	2	0	14	2	3	0	101	314	3	0.777228
8:30 AM	0	12	0	0	2	61	22	0	0	0	0	0	13	0	7	0	117	363	2	0.775641
8:45 AM	0	12	0	0	2	45	23	0	0	0	1	0	14	2	4	0	103	406	1	0.867521
4:00 PM	1	28	0	0	1	16	26	1	1	0	1	0	27	2	1	0	105			
4:15 PM	0	18	0	0	3	8	21	0	0	1	2	0	35	0	2	0	90			
4:30 PM	2	20	0	0	1	12	26	1	1	1	4	0	33	0	1	0	102			
4:45 PM	6	23	4	0	2	16	23	0	7	2	1	0	21	3	2	1	111	408	5	0.918919
5:00 PM	5	37	0	0	0	25	15	1	0	0	0	0	34	0	4	0	121	424	4	0.876033
5:15 PM	0	21	0	0	2	15	39	3	0	0	7	0	23	1	2	0	113	447	2	0.923554
5:30 PM	1	26	0	0	0	12	41	3	1	0	2	0	27	0	1	1	115	460	1	0.950413
5:45 PM	3	15	0	0	0	12	21	0	0	0	9	0	34	1	0	0	95	444	3	0.917355

Turkey Creek Road at HSC Parkway/F&B Road
3/21/2018

Start Time	Eastbound				Westbound				Northbound				Southbound				15-min Total	Hourly Total	Hourly Rank	PHF
	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn				
7:00 AM	0	16	9	0	6	41	0	0	11	0	12	0	0	0	0	0	95			
7:15 AM	0	16	16	0	17	48	0	0	7	0	8	0	0	0	0	0	112			
7:30 AM	0	29	26	0	10	54	0	0	8	0	5	0	0	0	0	0	132			
7:45 AM	0	37	22	0	20	64	0	0	7	0	6	0	0	0	0	0	156	495	3	0.793269
8:00 AM	0	23	9	0	13	78	0	0	6	0	7	0	0	0	0	0	136	536	1	0.858974
8:15 AM	0	19	6	1	14	45	0	0	13	0	2	0	0	0	0	0	100	524	2	0.839744
8:30 AM	0	17	13	0	9	48	0	0	10	0	5	0	0	0	0	0	102	494	4	0.791667
8:45 AM	0	15	19	0	7	58	0	0	10	0	1	0	0	0	0	0	110	448	5	0.823529
4:00 PM	0	29	8	0	5	39	0	0	6	0	6	0	0	0	0	0	93			
4:15 PM	0	46	9	0	14	42	0	0	10	0	9	0	0	0	0	0	130			
4:30 PM	0	39	12	0	24	67	0	0	14	0	5	0	0	0	0	0	161			
4:45 PM	0	39	20	0	40	44	0	0	10	0	7	0	0	0	0	0	160	544	5	0.84472
5:00 PM	0	71	23	0	47	64	0	0	15	0	23	0	0	0	0	0	243	694	4	0.713992
5:15 PM	0	66	28	0	69	42	0	0	13	0	6	0	0	0	0	0	224	788	3	0.8107
5:30 PM	0	48	23	0	27	63	0	0	13	0	7	0	0	0	0	0	181	808	2	0.831276
5:45 PM	0	73	27	0	22	65	0	0	18	0	3	0	0	0	0	0	208	856	1	0.880658

Land Use: 220

Multifamily Housing (Low-Rise)

Description

Low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have one or two levels (floors). Multifamily housing (mid-rise) (Land Use 221), multifamily housing (high-rise) (Land Use 222), and off-campus student apartment (Land Use 225) are related land uses.

Additional Data

In prior editions of *Trip Generation Manual*, the low-rise multifamily housing sites were further divided into rental and condominium categories. An investigation of vehicle trip data found no clear differences in trip making patterns between the rental and condominium sites within the ITE database. As more data are compiled for future editions, this land use classification can be reinvestigated.

For the three sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.72 residents per occupied dwelling unit.

For the two sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 96.2 percent of the total dwelling units were occupied.

This land use included data from a wide variety of units with different sizes, price ranges, locations, and ages. Consequently, there was a wide variation in trips generated within this category. Other factors, such as geographic location and type of adjacent and nearby development, may also have had an effect on the site trip generation.

Time-of-day distribution data for this land use are presented in Appendix A. For the 10 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:15 and 8:15 a.m. and 4:45 and 5:45 p.m., respectively. For the one site with Saturday data, the overall highest vehicle volume was counted between 9:45 and 10:45 a.m. For the one site with Sunday data, the overall highest vehicle volume was counted between 11:45 a.m. and 12:45 p.m.

For the one dense multi-use urban site with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:00 and 8:00 a.m. and 6:15 and 7:15 p.m., respectively.

For the three sites for which data were provided for both occupied dwelling units and residents, there was an average of 2.72 residents per occupied dwelling unit.

The average numbers of person trips per vehicle trip at the five general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.13 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.21 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in British Columbia (CAN), California, District of Columbia, Florida, Georgia, Illinois, Indiana, Maine, Maryland, Minnesota, New Jersey, New York, Ontario, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, and Washington.

It is expected that the number of bedrooms and number of residents are likely correlated to the number of trips generated by a residential site. Many of the studies included in this land use did not indicate the total number of bedrooms. To assist in the future analysis of this land use, it is important that this information be collected and included in trip generation data submissions.

Source Numbers

168, 187, 188, 204, 211, 300, 305, 306, 319, 320, 321, 357, 390, 412, 418, 525, 530, 571, 579, 583, 864, 868, 869, 870, 896, 903, 918, 946, 947, 948, 951

Multifamily Housing (Low-Rise) (220)

Vehicle Trip Ends vs: Dwelling Units

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: 42

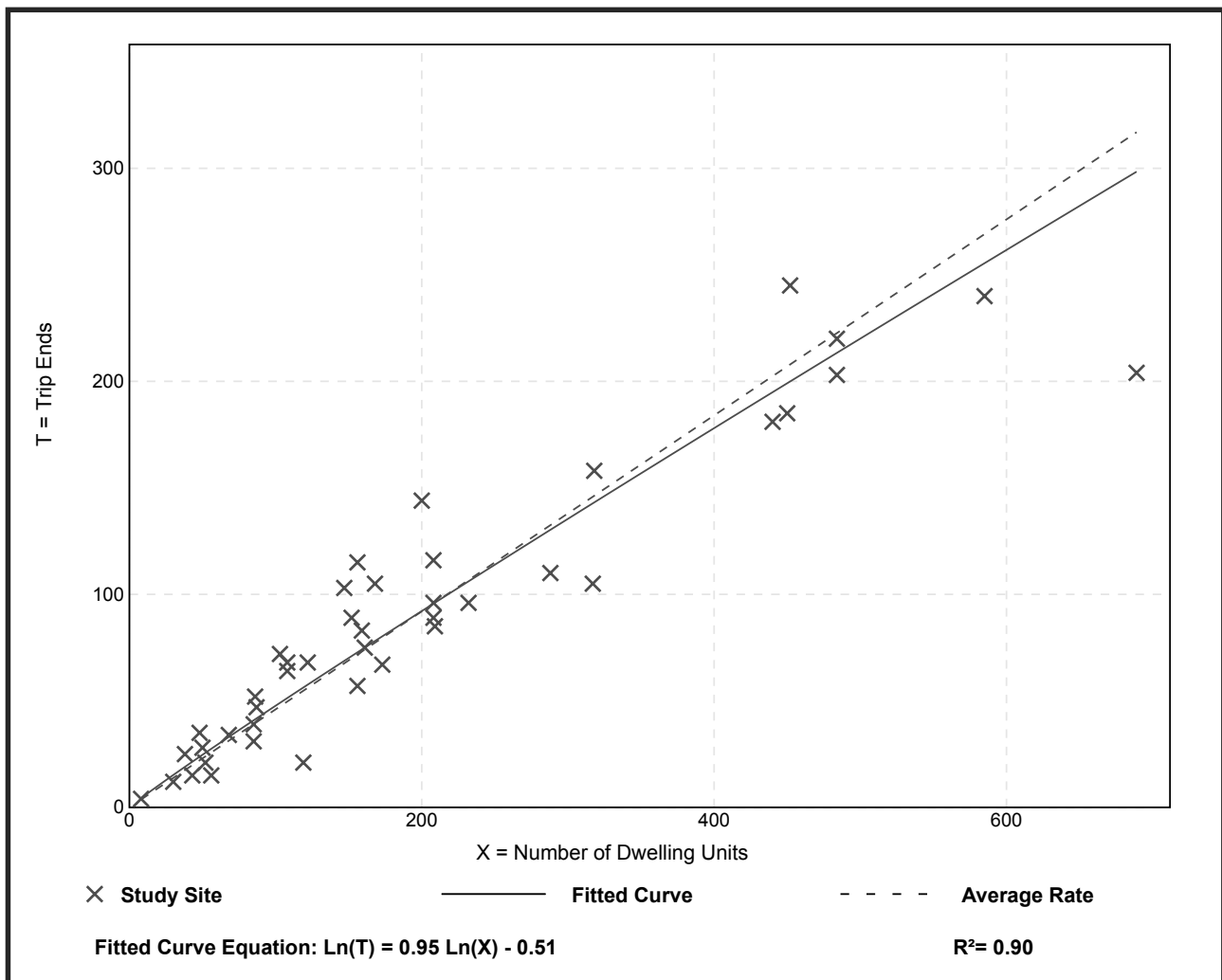
Avg. Num. of Dwelling Units: 199

Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

Data Plot and Equation



Multifamily Housing (Low-Rise) (220)

Vehicle Trip Ends vs: Dwelling Units

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: 50

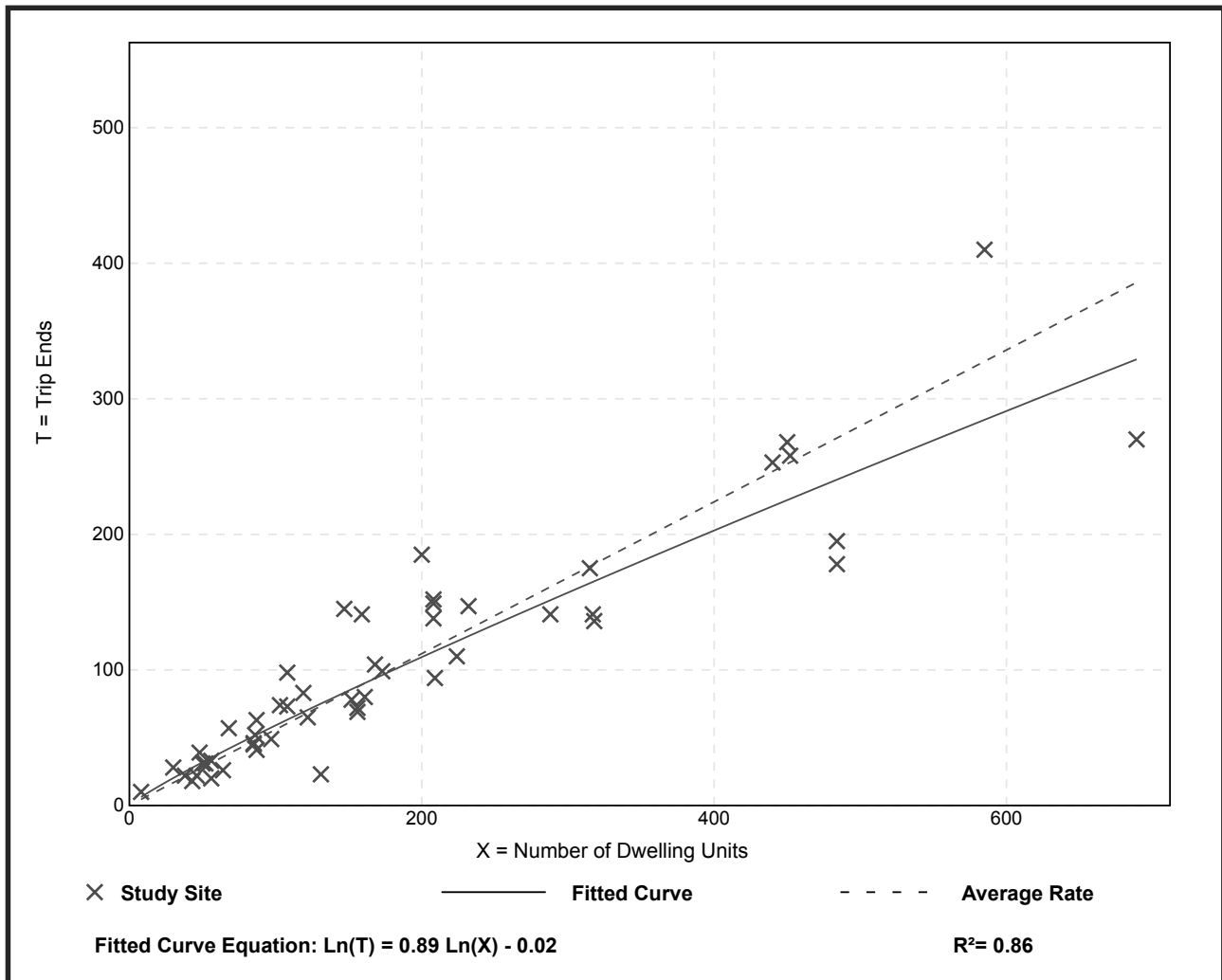
Avg. Num. of Dwelling Units: 187

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

Data Plot and Equation



Loveless Tract TIA
Existing (2018)

1: FM 2818 & F and B Road/HSC Parkway
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	39	33	46	68	48	17	170	692	175	179	808	150
Future Volume (vph)	39	33	46	68	48	17	170	692	175	179	808	150
Satd. Flow (prot)	0	1736	0	1770	1863	1583	1770	3539	1583	1770	3458	0
Flt Permitted		0.984		0.950			0.160			0.284		
Satd. Flow (perm)	0	1736	0	1770	1863	1583	298	3539	1583	529	3458	0
Satd. Flow (RTOR)		22				131			203		21	
Lane Group Flow (vph)	0	136	0	79	56	20	198	805	203	208	1114	0
Turn Type	Split	NA		Split	NA	Free	pm+pt	NA	Free	pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases						Free	6		Free	2		
Total Split (s)	22.6	22.6		22.6	22.6		23.2	59.3		20.5	56.6	
Total Lost Time (s)		4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Act Effct Green (s)		12.3		10.2	10.2	104.8	67.6	55.8	104.8	66.0	55.0	
Actuated g/C Ratio		0.12		0.10	0.10	1.00	0.65	0.53	1.00	0.63	0.52	
v/c Ratio		0.61		0.46	0.31	0.01	0.55	0.43	0.13	0.45	0.61	
Control Delay		50.4		56.4	51.5	0.0	14.2	17.8	0.2	11.3	21.7	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		50.4		56.4	51.5	0.0	14.2	17.8	0.2	11.3	21.7	
LOS		D		E	D	A	B	B	A	B	C	
Approach Delay		50.4			47.4			14.3			20.0	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)		74		52	36	0	47	173	0	49	270	
Queue Length 95th (ft)		140		104	79	0	93	270	0	97	427	
Internal Link Dist (ft)		2234			595			1612			403	
Turn Bay Length (ft)				125		300	200		500	200		
Base Capacity (vph)		322		310	327	1583	469	1884	1583	543	1825	
Starvation Cap Reductn		0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0		0	0	0	0	0	0	0	0	
Storage Cap Reductn		0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.42		0.25	0.17	0.01	0.42	0.43	0.13	0.38	0.61	

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 104.8

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 20.5

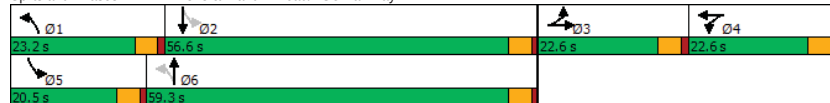
Intersection LOS: C

Intersection Capacity Utilization 61.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: FM 2818 & F and B Road/HSC Parkway



Loveless Tract TIA
Existing (2018)

2: Turkey Creek Road & HSC Parkway/F and B Road
AM Peak Hour

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔		↔	↔	
Traffic Vol, veh/h	110	79	60	278	70	26
Future Vol, veh/h	110	79	60	278	70	26
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	128	92	70	323	81	30
Number of Lanes	1	1	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	8.5	12.2	9.4
HCM LOS	A	B	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	73%	0%	0%	18%
Vol Thru, %	0%	100%	0%	82%
Vol Right, %	27%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	96	110	79	338
LT Vol	70	0	0	60
Through Vol	0	110	0	278
RT Vol	26	0	79	0
Lane Flow Rate	112	128	92	393
Geometry Grp	2	7	7	5
Degree of Util (X)	0.164	0.183	0.113	0.503
Departure Headway (Hd)	5.279	5.149	4.444	4.607
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	676	696	804	782
Service Time	3.331	2.89	2.185	2.642
HCM Lane V/C Ratio	0.166	0.184	0.114	0.503
HCM Control Delay	9.4	9	7.8	12.2
HCM Lane LOS	A	A	A	B
HCM 95th-ile Q	0.6	0.7	0.4	2.9

Loveless Tract TIA
Existing (2018)

3: Atlas Pear Drive & HSC Parkway
AM Peak Hour

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	112	0	0	350	31	0	0	0	100	0	21
Future Vol, veh/h	4	112	0	0	350	31	0	0	0	100	0	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	126	0	0	393	35	0	0	0	112	0	24

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	428	0	0	126
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1128	-	-	1458
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1128	-	-	1458
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	0	14.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1128	-	-	1458	-	-	502
HCM Lane V/C Ratio	-	0.004	-	-	-	-	-	0.271
HCM Control Delay (s)	0	8.2	-	-	0	-	-	14.8
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	1.1

Loveless Tract TIA
Existing (2018)

4: South Traditions Drive & HSC Parkway
AM Peak Hour

Intersection												
Intersection Delay, s/veh	8.7											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	44	9	85	189	82	2	0	16	54	5	16
Future Vol, veh/h	0	44	9	85	189	82	2	0	16	54	5	16
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	51	10	98	217	94	2	0	18	62	6	18
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	8.1	8.7	8	9.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	11%	0%	0%	0%	100%	0%	0%	72%
Vol Thru, %	0%	100%	100%	62%	0%	100%	43%	7%
Vol Right, %	89%	0%	0%	38%	0%	0%	57%	21%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	18	0	29	24	85	126	145	75
LT Vol	2	0	0	0	85	0	0	54
Through Vol	0	0	29	15	0	126	63	5
RT Vol	16	0	0	9	0	0	82	16
Lane Flow Rate	21	0	34	27	98	145	167	86
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.029	0	0.049	0.037	0.147	0.197	0.208	0.139
Departure Headway (Hd)	5.107	5.214	5.214	4.946	5.4	4.898	4.501	5.791
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	700	0	686	723	665	734	798	620
Service Time	2.847	2.949	2.949	2.681	3.124	2.622	2.224	3.524
HCM Lane V/C Ratio	0.03	0	0.05	0.037	0.147	0.198	0.209	0.139
HCM Control Delay	8	7.9	8.2	7.9	9.1	8.8	8.4	9.5
HCM Lane LOS	A	N	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0.2	0.1	0.5	0.7	0.8	0.5

Loveless Tract TIA
Existing (2018)

5: Turkey Creek Road & FM 60 EBF
AM Peak Hour

Intersection												
Intersection Delay, s/veh	8.6											
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔						↑	↗	↘	↕	
Traffic Vol, veh/h	37	4	6	0	0	0	0	4	14	105	26	0
Future Vol, veh/h	37	4	6	0	0	0	0	4	14	105	26	0
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	5	8	0	0	0	0	5	19	140	35	0
Number of Lanes	0	1	0	0	0	0	0	1	1	1	2	0
Approach	EB						NB			SB		
Opposing Approach							SB			NB		
Opposing Lanes	0						3			2		
Conflicting Approach Left	SB						EB					
Conflicting Lanes Left	3						1			0		
Conflicting Approach Right	NB									EB		
Conflicting Lanes Right	2						0			1		
HCM Control Delay	8.6						7.3			8.8		
HCM LOS	A						A			A		

Lane	NBLn1	NBLn2	EBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	0%	0%	79%	100%	0%	0%
Vol Thru, %	100%	0%	9%	0%	100%	100%
Vol Right, %	0%	100%	13%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	14	47	105	13	13
LT Vol	0	0	37	105	0	0
Through Vol	4	0	4	0	13	13
RT Vol	0	14	6	0	0	0
Lane Flow Rate	5	19	63	140	17	17
Geometry Grp	8	8	7	7	7	7
Degree of Util (X)	0.008	0.023	0.093	0.201	0.022	0.014
Departure Headway (Hd)	5.084	4.382	5.317	5.159	4.658	2.922
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	707	821	677	689	760	1200
Service Time	2.791	2.089	3.021	2.94	2.438	0.701
HCM Lane V/C Ratio	0.007	0.023	0.093	0.203	0.022	0.014
HCM Control Delay	7.8	7.2	8.6	9.3	7.5	5.7
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0	0.1	0.3	0.7	0.1	0

Loveless Tract TIA
Existing (2018)

6: Turkey Creek Road & FM 60 WBF
AM Peak Hour

Intersection												
Intersection Delay, s/veh	8.1											
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕		↗	↑			↕	
Traffic Vol, veh/h	3	0	5	20	8	73	19	23	0	0	98	56
Future Vol, veh/h	3	0	5	20	8	73	19	23	0	0	98	56
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	6	25	10	92	24	29	0	0	124	71
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			1			1			1		
HCM Control Delay	7.4			7.8			8.1			8.4		
HCM LOS	A			A			A			A		

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	38%	20%	0%
Vol Thru, %	0%	100%	0%	8%	64%
Vol Right, %	0%	0%	62%	72%	36%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	19	23	8	101	154
LT Vol	19	0	3	20	0
Through Vol	0	23	0	8	98
RT Vol	0	0	5	73	56
Lane Flow Rate	24	29	10	128	195
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.037	0.04	0.012	0.146	0.222
Departure Headway (Hd)	5.492	4.99	4.334	4.113	4.098
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	656	722	829	877	862
Service Time	3.192	2.69	2.341	2.115	2.193
HCM Lane V/C Ratio	0.037	0.04	0.012	0.146	0.226
HCM Control Delay	8.4	7.9	7.4	7.8	8.4
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0	0.5	0.8

Loveless Tract TIA
Existing (2018)

1: FM 2818 & F and B Road/HSC Parkway
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	121	97	121	167	68	104	167	1144	121	45	788	140
Future Volume (vph)	121	97	121	167	68	104	167	1144	121	45	788	140
Satd. Flow (prot)	0	1741	0	1770	1863	1583	1770	3539	1583	1770	3458	0
Flt Permitted		0.982		0.950			0.100			0.092		
Satd. Flow (perm)	0	1741	0	1770	1863	1583	186	3539	1583	171	3458	0
Satd. Flow (RTOR)		20				236			236		17	
Lane Group Flow (vph)	0	369	0	182	74	113	182	1243	132	49	1009	0
Turn Type	Split	NA		Split	NA	Free	pm+pt	NA	Free	pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases						Free	6		Free	2		
Total Split (s)	34.0	34.0		23.0	23.0		18.0	55.0		13.0	50.0	
Total Lost Time (s)		7.0		7.0	7.0		8.0	8.0		8.0	8.0	
Act Effct Green (s)		26.5		15.2	15.2	123.7	57.6	49.7	123.7	47.0	42.0	
Actuated g/C Ratio		0.21		0.12	0.12	1.00	0.47	0.40	1.00	0.38	0.34	
v/c Ratio		0.95		0.84	0.32	0.07	0.85	0.87	0.08	0.38	0.85	
Control Delay		81.1		83.7	53.8	0.1	57.9	43.4	0.1	27.1	45.7	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		81.1		83.7	53.8	0.1	57.9	43.4	0.1	27.1	45.7	
LOS		F		F	D	A	E	D	A	C	D	
Approach Delay		81.1			52.1			41.4			44.9	
Approach LOS		F			D			D			D	
Queue Length 50th (ft)		282		145	55	0	86	504	0	21	394	
Queue Length 95th (ft)		#475		#265	104	0	#219	#649	0	43	483	
Internal Link Dist (ft)		2234			595			1612			403	
Turn Bay Length (ft)				125		300	200		500	200		
Base Capacity (vph)		395		228	241	1583	214	1422	1583	129	1185	
Starvation Cap Reductn		0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0		0	0	0	0	0	0	0	0	
Storage Cap Reductn		0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.93		0.80	0.31	0.07	0.85	0.87	0.08	0.38	0.85	

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 123.7

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 48.1

Intersection LOS: D

Intersection Capacity Utilization 80.8%

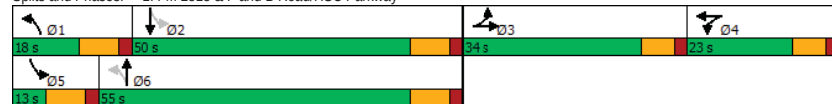
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: FM 2818 & F and B Road/HSC Parkway



Loveless Tract TIA
Existing (2018)

2: Turkey Creek Road & HSC Parkway/F and B Road
PM Peak Hour

Intersection						
Intersection Delay, s/veh	13.5					
Intersection LOS	B					
Movement						
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	288	139	165	240	67	39
Future Vol, veh/h	288	139	165	240	67	39
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	327	158	188	273	76	44
Number of Lanes	1	1	0	1	1	0
Approach						
EB						
WB						
NB						
Opposing Approach	WB		EB			
Opposing Lanes	1		2		0	
Conflicting Approach Left			NB		EB	
Conflicting Lanes Left	0		1		2	
Conflicting Approach Right	NB				WB	
Conflicting Lanes Right	1		0		1	
HCM Control Delay	11.5		16.4		10.4	
HCM LOS	B		C		B	

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	63%	0%	0%	41%
Vol Thru, %	0%	100%	0%	59%
Vol Right, %	37%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	106	288	139	405
LT Vol	67	0	0	165
Through Vol	0	288	0	240
RT Vol	39	0	139	0
Lane Flow Rate	120	327	158	460
Geometry Grp	2	7	7	5
Degree of Util (X)	0.199	0.48	0.201	0.635
Departure Headway (Hd)	5.956	5.284	4.577	4.969
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	606	677	776	723
Service Time	3.956	3.063	2.356	3.043
HCM Lane V/C Ratio	0.198	0.483	0.204	0.636
HCM Control Delay	10.4	12.9	8.5	16.4
HCM Lane LOS	B	B	A	C
HCM 95th-ile Q	0.7	2.6	0.7	4.6

Loveless Tract TIA
Existing (2018)

3: Atlas Pear Drive & HSC Parkway
PM Peak Hour

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	278	0	0	178	97	0	0	0	71	0	12
Future Vol, veh/h	22	278	0	0	178	97	0	0	0	71	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	335	0	0	214	117	0	0	0	86	0	14

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	331	0	0	335	0	0	496	720	168	495	662	166
Stage 1	-	-	-	-	-	-	389	389	-	273	273	-
Stage 2	-	-	-	-	-	-	107	331	-	222	389	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1225	-	-	1221	-	-	457	352	847	457	381	849
Stage 1	-	-	-	-	-	-	606	607	-	710	683	-
Stage 2	-	-	-	-	-	-	887	644	-	760	607	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1225	-	-	1221	-	-	441	344	847	449	373	849
Mov Cap-2 Maneuver	-	-	-	-	-	-	441	344	-	449	373	-
Stage 1	-	-	-	-	-	-	593	594	-	694	683	-
Stage 2	-	-	-	-	-	-	872	644	-	743	594	-

Approach	EB		WB		NB		SB
HCM Control Delay, s	0.6		0		0		14.4
HCM LOS					A		B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1225	-	-	1221	-	-	482
HCM Lane V/C Ratio	-	0.022	-	-	-	-	-	0.207
HCM Control Delay (s)	0	8	-	-	0	-	-	14.4
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	0.8

Loveless Tract TIA
Existing (2018)

4: South Traditions Drive & HSC Parkway
PM Peak Hour

Intersection												
Intersection Delay, s/veh	9											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	107	6	18	68	118	16	2	78	105	4	9
Future Vol, veh/h	12	107	6	18	68	118	16	2	78	105	4	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	116	7	20	74	128	17	2	85	114	4	10
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB		WB		NB		SB
Opposing Approach	WB		EB		SB		NB
Opposing Lanes	3		3		1		1
Conflicting Approach Left	SB		NB		EB		WB
Conflicting Lanes Left	1		1		3		3
Conflicting Approach Right	NB		SB		WB		EB
Conflicting Lanes Right	1		1		3		3
HCM Control Delay	8.7		8.7		8.7		10.2
HCM LOS	A		A		A		B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	17%	100%	0%	0%	100%	0%	0%	89%
Vol Thru, %	2%	0%	100%	86%	0%	100%	16%	3%
Vol Right, %	81%	0%	0%	14%	0%	0%	84%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	96	12	71	42	18	45	141	118
LT Vol	16	12	0	0	18	0	0	105
Through Vol	2	0	71	36	0	45	23	4
RT Vol	78	0	0	6	0	0	118	9
Lane Flow Rate	104	13	78	45	20	49	153	128
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.146	0.021	0.116	0.067	0.032	0.073	0.201	0.208
Departure Headway (Hd)	5.023	5.913	5.408	5.306	5.839	5.334	4.742	5.846
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	710	603	660	672	611	669	754	612
Service Time	2.785	3.672	3.167	3.065	3.592	3.087	2.493	3.606
HCM Lane V/C Ratio	0.146	0.022	0.118	0.067	0.033	0.073	0.203	0.209
HCM Control Delay	8.7	8.8	8.9	8.4	8.8	8.5	8.7	10.2
HCM Lane LOS	A	A	A	A	A	A	A	B
HCM 95th-tile Q	0.5	0.1	0.4	0.2	0.1	0.2	0.7	0.8

Loveless Tract TIA
Existing (2018)

5: Turkey Creek Road & FM 60 EBFR
PM Peak Hour

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔						↑	↗	↘	↗	↗
Traffic Vol, veh/h	34	6	4	0	0	0	0	7	40	138	59	0
Future Vol, veh/h	34	6	4	0	0	0	0	7	40	138	59	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	41	7	5	0	0	0	0	9	49	168	72	0
Number of Lanes	0	1	0	0	0	0	0	1	1	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	3	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	3	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	1
HCM Control Delay	8.7	7.6	8.7
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	0%	0%	77%	100%	0%	0%
Vol Thru, %	100%	0%	14%	0%	100%	100%
Vol Right, %	0%	100%	9%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	40	44	138	30	30
LT Vol	0	0	34	138	0	0
Through Vol	7	0	6	0	30	30
RT Vol	0	40	4	0	0	0
Lane Flow Rate	9	49	54	168	36	36
Geometry Grp	8	8	7	7	7	7
Degree of Util (X)	0.012	0.061	0.083	0.241	0.047	0.029
Departure Headway (Hd)	5.17	4.468	5.539	5.159	4.659	2.922
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	695	805	650	688	759	1199
Service Time	2.879	2.177	3.244	2.944	2.443	0.705
HCM Lane V/C Ratio	0.013	0.061	0.083	0.244	0.047	0.03
HCM Control Delay	7.9	7.5	8.7	9.6	7.7	5.8
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0	0.2	0.3	0.9	0.1	0.1

Loveless Tract TIA
Existing (2018)

6: Turkey Creek Road & FM 60 WBFR
PM Peak Hour

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↑			↗	↗
Traffic Vol, veh/h	2	0	3	75	3	65	7	36	0	0	118	164
Future Vol, veh/h	2	0	3	75	3	65	7	36	0	0	118	164
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	3	83	3	72	8	40	0	0	131	182
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.7	8.7	8.2	9.5
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	40%	52%	0%
Vol Thru, %	0%	100%	0%	2%	42%
Vol Right, %	0%	0%	60%	45%	58%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	36	5	143	282
LT Vol	7	0	2	75	0
Through Vol	0	36	0	3	118
RT Vol	0	0	3	65	164
Lane Flow Rate	8	40	6	159	313
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.012	0.057	0.007	0.201	0.36
Departure Headway (Hd)	5.672	5.169	4.645	4.563	4.141
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	632	694	770	788	871
Service Time	3.396	2.892	2.676	2.586	2.156
HCM Lane V/C Ratio	0.013	0.058	0.008	0.202	0.359
HCM Control Delay	8.5	8.2	7.7	8.7	9.5
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0	0.2	0	0.7	1.6

Loveless Tract TIA
Background (2021)

1: FM 2818 & F and B Road/HSC Parkway
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	45	38	53	79	56	20	197	801	203	207	935	174
Future Volume (vph)	45	38	53	79	56	20	197	801	203	207	935	174
Satd. Flow (prot)	0	1736	0	1770	1863	1583	1770	3539	1583	1770	3454	0
Flt Permitted		0.984		0.950			0.092			0.229		
Satd. Flow (perm)	0	1736	0	1770	1863	1583	171	3539	1583	427	3454	0
Satd. Flow (RTOR)		21				236			236		22	
Lane Group Flow (vph)	0	158	0	92	65	23	229	931	236	241	1289	0
Turn Type	Split	NA		Split	NA	Free	pm+pt	NA	Free	pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases						Free	6		Free	2		
Total Split (s)	20.0	20.0		16.0	16.0		25.0	63.0		26.0	64.0	
Total Lost Time (s)		7.0		7.0	7.0		8.0	8.0		8.0	8.0	
Act Effct Green (s)		12.3		8.7	8.7	121.4	71.9	57.7	121.4	68.7	56.1	
Actuated g/C Ratio		0.10		0.07	0.07	1.00	0.59	0.48	1.00	0.57	0.46	
v/c Ratio		0.81		0.73	0.49	0.01	0.79	0.55	0.15	0.63	0.80	
Control Delay		76.9		87.2	68.2	0.0	45.4	24.8	0.2	17.9	32.8	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		76.9		87.2	68.2	0.0	45.4	24.8	0.2	17.9	32.8	
LOS		E		F	E	A	D	C	A	B	C	
Approach Delay		76.9			69.2			24.0			30.5	
Approach LOS		E			E			C			C	
Queue Length 50th (ft)		109		74	51	0	105	270	0	74	457	
Queue Length 95th (ft)		#205		#148	95	0	188	338	0	105	520	
Internal Link Dist (ft)		2234			595			1612			403	
Turn Bay Length (ft)				125		300	200		500	200		
Base Capacity (vph)		204		131	138	1583	329	1681	1583	459	1607	
Starvation Cap Reductn		0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0		0	0	0	0	0	0	0	0	
Storage Cap Reductn		0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.77		0.70	0.47	0.01	0.70	0.55	0.15	0.53	0.80	

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 121.4

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 32.1

Intersection LOS: C

Intersection Capacity Utilization 75.9%

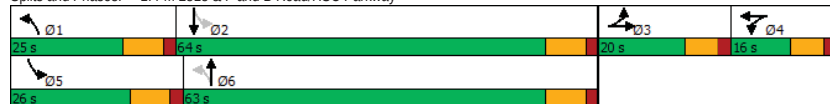
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: FM 2818 & F and B Road/HSC Parkway



Loveless Tract TIA
Background (2021)

2: Turkey Creek Road & HSC Parkway/F and B Road
AM Peak Hour

Intersection						
Intersection Delay, s/veh	12.1					
Intersection LOS	B					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	127	91	69	322	81	30
Future Vol, veh/h	127	91	69	322	81	30
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	148	106	80	374	94	35
Number of Lanes	1	1	0	1	1	0
Approach	EB		WB		NB	
Opposing Approach	WB		EB			
Opposing Lanes	1		2		0	
Conflicting Approach Left			NB		EB	
Conflicting Lanes Left	0		1		2	
Conflicting Approach Right	NB				WB	
Conflicting Lanes Right	1		0		1	
HCM Control Delay	8.9		14.5		9.9	
HCM LOS	A		B		A	

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	73%	0%	0%	18%
Vol Thru, %	0%	100%	0%	82%
Vol Right, %	27%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	111	127	91	391
LT Vol	81	0	0	69
Through Vol	0	127	0	322
RT Vol	30	0	91	0
Lane Flow Rate	129	148	106	455
Geometry Grp	2	7	7	5
Degree of Util (X)	0.197	0.216	0.134	0.594
Departure Headway (Hd)	5.491	5.272	4.566	4.706
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	649	678	780	764
Service Time	3.562	3.03	2.323	2.753
HCM Lane V/C Ratio	0.199	0.218	0.136	0.596
HCM Control Delay	9.9	9.5	8	14.5
HCM Lane LOS	A	A	A	B
HCM 95th-ile Q	0.7	0.8	0.5	4

Loveless Tract TIA
Background (2021)

3: Atlas Pear Drive & HSC Parkway
AM Peak Hour

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	130	0	0	405	36	0	0	0	116	0	24
Future Vol, veh/h	5	130	0	0	405	36	0	0	0	116	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	146	0	0	455	40	0	0	0	130	0	27

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	495	0	0	146
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1065	-	-	1434
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1065	-	-	1434
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	0	17.5
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1065	-	-	1434	-	-	444
HCM Lane V/C Ratio	-	0.005	-	-	-	-	-	0.354
HCM Control Delay (s)	0	8.4	-	-	0	-	-	17.5
HCM Lane LOS	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	1.6

Loveless Tract TIA
Background (2021)

4: South Traditions Drive & HSC Parkway
AM Peak Hour

Intersection												
Intersection Delay, s/veh	9.1											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	51	10	98	219	95	2	0	19	63	6	19
Future Vol, veh/h	0	51	10	98	219	95	2	0	19	63	6	19
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	59	11	113	252	109	2	0	22	72	7	22
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	8.3	9.1	8.2	9.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	10%	0%	0%	0%	100%	0%	0%	72%
Vol Thru, %	0%	100%	100%	63%	0%	100%	43%	7%
Vol Right, %	90%	0%	0%	37%	0%	0%	57%	22%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	0	34	27	98	146	168	88
LT Vol	2	0	0	0	98	0	0	63
Through Vol	0	0	34	17	0	146	73	6
RT Vol	19	0	0	10	0	0	95	19
Lane Flow Rate	24	0	39	31	113	168	193	101
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.035	0	0.058	0.044	0.171	0.232	0.245	0.167
Departure Headway (Hd)	5.268	5.351	5.351	5.09	5.473	4.971	4.573	5.942
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	677	0	667	701	656	722	786	603
Service Time	3.02	3.098	3.098	2.836	3.203	2.701	2.303	3.686
HCM Lane V/C Ratio	0.035	0	0.058	0.044	0.172	0.233	0.246	0.167
HCM Control Delay	8.2	8.1	8.4	8.1	9.3	9.2	8.8	9.9
HCM Lane LOS	A	N	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0.2	0.1	0.6	0.9	1	0.6

Loveless Tract TIA
Background (2021)

5: Turkey Creek Road & FM 60 EBF
AM Peak Hour

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔						↑	↗	↘	↗	↗
Traffic Vol, veh/h	43	5	7	0	0	0	0	5	16	122	30	0
Future Vol, veh/h	43	5	7	0	0	0	0	5	16	122	30	0
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	57	7	9	0	0	0	0	7	21	163	40	0
Number of Lanes	0	1	0	0	0	0	0	1	1	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	3	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	3	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	1
HCM Control Delay	8.8	7.4	9
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	0%	0%	78%	100%	0%	0%
Vol Thru, %	100%	0%	9%	0%	100%	100%
Vol Right, %	0%	100%	13%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	16	55	122	15	15
LT Vol	0	0	43	122	0	0
Through Vol	5	0	5	0	15	15
RT Vol	0	16	7	0	0	0
Lane Flow Rate	7	21	73	163	20	20
Geometry Grp	8	8	7	7	7	7
Degree of Util (X)	0.01	0.027	0.11	0.234	0.026	0.016
Departure Headway (Hd)	5.176	4.474	5.392	5.179	4.678	2.942
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	694	803	668	685	754	1185
Service Time	2.886	2.183	3.097	2.978	2.477	0.738
HCM Lane V/C Ratio	0.01	0.026	0.109	0.238	0.027	0.017
HCM Control Delay	7.9	7.3	8.8	9.6	7.6	5.8
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0	0.1	0.4	0.9	0.1	0

Loveless Tract TIA
Background (2021)

6: Turkey Creek Road & FM 60 WBF
AM Peak Hour

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↑			↗	↗
Traffic Vol, veh/h	3	0	6	23	9	85	22	27	0	0	113	65
Future Vol, veh/h	3	0	6	23	9	85	22	27	0	0	113	65
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	8	29	11	108	28	34	0	0	143	82
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.5	8.1	8.2	8.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	33%	20%	0%
Vol Thru, %	0%	100%	0%	8%	63%
Vol Right, %	0%	0%	67%	73%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	22	27	9	117	178
LT Vol	22	0	3	23	0
Through Vol	0	27	0	9	113
RT Vol	0	0	6	85	65
Lane Flow Rate	28	34	11	148	225
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.043	0.048	0.014	0.173	0.266
Departure Headway (Hd)	5.562	5.059	4.422	4.204	4.245
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	645	709	810	855	847
Service Time	3.284	2.781	2.446	2.221	2.262
HCM Lane V/C Ratio	0.043	0.048	0.014	0.173	0.266
HCM Control Delay	8.5	8	7.5	8.1	8.8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0	0.6	1.1

Loveless Tract TIA
Background (2021)

1: FM 2818 & F and B Road/F&B Road
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	140	112	140	193	79	120	193	1324	140	52	912	162
Future Volume (vph)	140	112	140	193	79	120	193	1324	140	52	912	162
Satd. Flow (prot)	0	1741	0	1770	1863	1583	1770	3539	1583	1770	3458	0
Flt Permitted		0.982		0.950			0.078			0.090		
Satd. Flow (perm)	0	1741	0	1770	1863	1583	145	3539	1583	168	3458	0
Satd. Flow (RTOR)		20				236			236		18	
Lane Group Flow (vph)	0	426	0	210	86	130	210	1439	152	57	1167	0
Turn Type	Split	NA		Split	NA	Free	pm+pt	NA	Free	pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases						Free	6		Free	2		
Total Split (s)	34.0	34.0		21.0	21.0		19.0	57.0		13.0	51.0	
Total Lost Time (s)		7.0		7.0	7.0		8.0	8.0		8.0	8.0	
Act Effct Green (s)		27.0		14.0	14.0	125.0	60.4	51.6	125.0	48.0	43.0	
Actuated g/C Ratio		0.22		0.11	0.11	1.00	0.48	0.41	1.00	0.38	0.34	
v/c Ratio		1.09		1.06	0.41	0.08	0.99	0.98	0.10	0.45	0.97	
Control Delay		115.5		133.5	58.3	0.1	91.8	57.4	0.1	29.1	60.0	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		115.5		133.5	58.3	0.1	91.8	57.4	0.1	29.1	60.0	
LOS		F		F	E	A	F	E	A	C	E	
Approach Delay		115.5			77.6			56.5			58.6	
Approach LOS		F			E			E			E	
Queue Length 50th (ft)		~374		~186	66	0	123	~659	0	23	481	
Queue Length 95th (ft)		#581		#345	120	0	#286	#799	0	47	#634	
Internal Link Dist (ft)		2234			595			1612			403	
Turn Bay Length (ft)				125		300	200		500	200		
Base Capacity (vph)		391		198	208	1583	212	1461	1583	128	1201	
Starvation Cap Reductn		0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0		0	0	0	0	0	0	0	0	
Storage Cap Reductn		0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio		1.09		1.06	0.41	0.08	0.99	0.98	0.10	0.45	0.97	

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 125

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 66.0

Intersection LOS: E

Intersection Capacity Utilization 89.1%

ICU Level of Service E

Analysis Period (min) 15

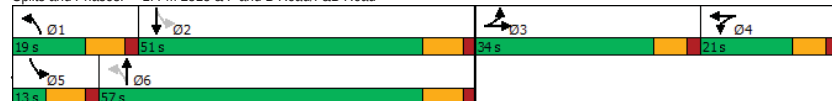
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: FM 2818 & F and B Road/F&B Road



06/06/2018

Loveless Tract TIA
Background (2021)

2: Turkey Creek Road & HSC Parkway/F and B Road
PM Peak Hour

Intersection

Intersection Delay, s/veh 17.8

Intersection LOS C

Movement

	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔		↔	↔	
Traffic Vol, veh/h	333	161	191	278	78	45
Future Vol, veh/h	333	161	191	278	78	45
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	378	183	217	316	89	51
Number of Lanes	1	1	0	1	1	0

Approach

	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	13.6	23.9	11.4
HCM LOS	B	C	B

Lane

	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	63%	0%	0%	41%
Vol Thru, %	0%	100%	0%	59%
Vol Right, %	37%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	123	333	161	469
LT Vol	78	0	0	191
Through Vol	0	333	0	278
RT Vol	45	0	161	0
Lane Flow Rate	140	378	183	533
Geometry Grp	2	7	7	5
Degree of Util (X)	0.244	0.583	0.247	0.775
Departure Headway (Hd)	6.28	5.546	4.852	5.237
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	572	651	743	693
Service Time	4.322	3.273	2.565	3.239
HCM Lane V/C Ratio	0.245	0.581	0.246	0.769
HCM Control Delay	11.4	15.8	9.2	23.9
HCM Lane LOS	B	C	A	C
HCM 95th-tile Q	1	3.8	1	7.5

BBI

06/06/2018

Synchro 10 Report

Loveless Tract TIA
Background (2021)

3: Atlas Pear Drive & HSC Parkway
PM Peak Hour

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰ ↱	↰ ↱		↰ ↱	↰ ↱			↰ ↱		↰ ↱	↰ ↱	
Traffic Vol, veh/h	25	322	0	0	206	112	0	0	0	82	0	14
Future Vol, veh/h	25	322	0	0	206	112	0	0	0	82	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	388	0	0	248	135	0	0	0	99	0	17

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	383	0	0	388
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.14	-	-	4.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22
Pot Cap-1 Maneuver	1172	-	-	1167
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1172	-	-	1167
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	0	16.5
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1172	-	-	1167	-	-	428
HCM Lane V/C Ratio	-	0.026	-	-	-	-	-	0.27
HCM Control Delay (s)	0	8.2	-	-	0	-	-	16.5
HCM Lane LOS	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	1.1

Loveless Tract TIA
Background (2021)

4: South Traditions Drive & HSC Parkway
PM Peak Hour

Intersection												
Intersection Delay, s/veh	9.5											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰ ↱	↰ ↱		↰ ↱	↰ ↱			↰ ↱		↰ ↱	↰ ↱	
Traffic Vol, veh/h	14	124	7	21	79	137	19	2	90	122	5	10
Future Vol, veh/h	14	124	7	21	79	137	19	2	90	122	5	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	135	8	23	86	149	21	2	98	133	5	11
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	9.1	9.1	9.1	10.8
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	17%	100%	0%	0%	100%	0%	0%	89%
Vol Thru, %	2%	0%	100%	86%	0%	100%	16%	4%
Vol Right, %	81%	0%	0%	14%	0%	0%	84%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	111	14	83	48	21	53	163	137
LT Vol	19	14	0	0	21	0	0	122
Through Vol	2	0	83	41	0	53	26	5
RT Vol	90	0	0	7	0	0	137	10
Lane Flow Rate	121	15	90	53	23	57	178	149
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.174	0.026	0.139	0.08	0.038	0.087	0.241	0.249
Departure Headway (Hd)	5.206	6.085	5.579	5.476	5.993	5.487	4.893	6.016
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	682	584	637	648	594	648	728	593
Service Time	2.994	3.868	3.361	3.259	3.767	3.261	2.667	3.799
HCM Lane V/C Ratio	0.177	0.026	0.141	0.082	0.039	0.088	0.245	0.251
HCM Control Delay	9.1	9	9.3	8.7	9	8.8	9.2	10.8
HCM Lane LOS	A	A	A	A	A	A	A	B
HCM 95th-tile Q	0.6	0.1	0.5	0.3	0.1	0.3	0.9	1

Loveless Tract TIA
Background (2021)

5: Turkey Creek Road & FM 60 EBF
PM Peak Hour

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔						↑	↗	↘	↑↑	
Traffic Vol, veh/h	39	7	5	0	0	0	0	8	46	160	68	0
Future Vol, veh/h	39	7	5	0	0	0	0	8	46	160	68	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	9	6	0	0	0	0	10	56	195	83	0
Number of Lanes	0	1	0	0	0	0	0	1	1	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	3	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	3	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	1
HCM Control Delay	9	7.7	9.1
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	0%	0%	76%	100%	0%	0%
Vol Thru, %	100%	0%	14%	0%	100%	100%
Vol Right, %	0%	100%	10%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	46	51	160	34	34
LT Vol	0	0	39	160	0	0
Through Vol	8	0	7	0	34	34
RT Vol	0	46	5	0	0	0
Lane Flow Rate	10	56	62	195	41	41
Geometry Grp	8	8	7	7	7	7
Degree of Util (X)	0.014	0.071	0.097	0.286	0.055	0.034
Departure Headway (Hd)	5.274	4.572	5.635	5.28	4.779	2.941
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	680	785	638	685	754	1185
Service Time	2.992	2.289	3.351	2.98	2.479	0.74
HCM Lane V/C Ratio	0.015	0.071	0.097	0.285	0.054	0.035
HCM Control Delay	8.1	7.6	9	10.1	7.8	5.8
HCM Lane LOS	A	A	A	B	A	A
HCM 95th-tile Q	0	0.2	0.3	1.2	0.2	0.1

Loveless Tract TIA
Background (2021)

6: Turkey Creek Road & FM 60 WBF
PM Peak Hour

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕		↗	↑			↘	
Traffic Vol, veh/h	2	0	3	87	3	75	8	42	0	0	137	190
Future Vol, veh/h	2	0	3	87	3	75	8	42	0	0	137	190
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	3	97	3	83	9	47	0	0	152	211
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.9	9.2	8.4	10.4
HCM LOS	A	A	A	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	40%	53%	0%
Vol Thru, %	0%	100%	0%	2%	42%
Vol Right, %	0%	0%	60%	45%	58%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	42	5	165	327
LT Vol	8	0	2	87	0
Through Vol	0	42	0	3	137
RT Vol	0	0	3	75	190
Lane Flow Rate	9	47	6	183	363
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.014	0.069	0.007	0.239	0.426
Departure Headway (Hd)	5.792	5.288	4.825	4.699	4.22
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	618	677	739	763	854
Service Time	3.529	3.025	2.875	2.734	2.245
HCM Lane V/C Ratio	0.015	0.069	0.008	0.24	0.425
HCM Control Delay	8.6	8.4	7.9	9.2	10.4
HCM Lane LOS	A	A	A	A	B
HCM 95th-tile Q	0	0.2	0	0.9	2.2

Loveless Tract TIA
Full Build (2021)

1: FM 2818 & F and B Road/HSC Parkway
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	74	44	53	78	57	19	196	801	202	207	935	182
Future Volume (vph)	74	44	53	78	57	19	196	801	202	207	935	182
Satd. Flow (prot)	0	1747	0	1770	1863	1583	1770	3539	1583	1770	3454	0
Flt Permitted		0.979		0.950			0.078			0.217		
Satd. Flow (perm)	0	1747	0	1770	1863	1583	145	3539	1583	404	3454	0
Satd. Flow (RTOR)		15				236			236		23	
Lane Group Flow (vph)	0	199	0	91	66	22	228	931	235	241	1299	0
Turn Type	Split	NA		Split	NA	Free	pm+pt	NA	Free	pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases						Free	6		Free	2		
Total Split (s)	23.0	23.0		16.0	16.0		24.0	60.0		26.0	62.0	
Total Lost Time (s)		7.0		7.0	7.0		8.0	8.0		8.0	8.0	
Act Effct Green (s)		15.3		8.7	8.7	122.4	69.5	55.2	122.4	67.2	54.1	
Actuated g/C Ratio		0.12		0.07	0.07	1.00	0.57	0.45	1.00	0.55	0.44	
v/c Ratio		0.86		0.72	0.50	0.01	0.84	0.58	0.15	0.65	0.84	
Control Delay		81.6		87.2	69.1	0.0	56.3	27.5	0.2	20.2	36.7	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		81.6		87.2	69.1	0.0	56.3	27.5	0.2	20.2	36.7	
LOS		F		F	E	A	E	C	A	C	D	
Approach Delay		81.6			69.8			27.6			34.1	
Approach LOS		F			E			C			C	
Queue Length 50th (ft)		148		73	52	0	121	285	0	80	485	
Queue Length 95th (ft)		#260		#147	97	0	#228	356	0	113	543	
Internal Link Dist (ft)		2234			595			1612			403	
Turn Bay Length (ft)				125		300	200		500	200		
Base Capacity (vph)		241		130	137	1583	296	1597	1583	438	1538	
Starvation Cap Reductn		0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0		0	0	0	0	0	0	0	0	
Storage Cap Reductn		0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.83		0.70	0.48	0.01	0.77	0.58	0.15	0.55	0.84	

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 122.4

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 36.1

Intersection LOS: D

Intersection Capacity Utilization 78.0%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: FM 2818 & F and B Road/HSC Parkway

↖ Ø1	↘ Ø2	↗ Ø3	↙ Ø4
24 s	52 s	23 s	16 s
↖ Ø5	↘ Ø6		
26 s	50 s		

Loveless Tract TIA
Full Build (2021)

2: Turkey Creek Road & HSC Parkway/F and B Road
AM Peak Hour

Intersection

Intersection Delay, s/veh 13

Intersection LOS B

Movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔		↔	↔	
Traffic Vol, veh/h	133	97	69	332	96	59
Future Vol, veh/h	133	97	69	332	96	59
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	155	113	80	386	112	69
Number of Lanes	1	1	0	1	1	0

Approach

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	9.3	16	10.7
HCM LOS	A	C	B

Lane

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	62%	0%	0%	17%
Vol Thru, %	0%	100%	0%	83%
Vol Right, %	38%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	155	133	97	401
LT Vol	96	0	0	69
Through Vol	0	133	0	332
RT Vol	59	0	97	0
Lane Flow Rate	180	155	113	466
Geometry Grp	2	7	7	5
Degree of Util (X)	0.275	0.234	0.149	0.631
Departure Headway (Hd)	5.483	5.458	4.751	4.871
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	649	651	746	737
Service Time	3.578	3.246	2.538	2.944
HCM Lane V/C Ratio	0.277	0.238	0.151	0.632
HCM Control Delay	10.7	9.9	8.4	16
HCM Lane LOS	B	A	A	C
HCM 95th-ile Q	1.1	0.9	0.5	4.5

Loveless Tract TIA
Full Build (2021)

3: Atlas Pear Drive & HSC Parkway
AM Peak Hour

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↱	↱↱			↱↱			↱			↱	
Traffic Vol, veh/h	4	129	8	26	405	35	29	0	11	115	0	24
Future Vol, veh/h	4	129	8	26	405	35	29	0	11	115	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	145	9	29	455	39	33	0	12	129	0	27

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	494	0	0	154	0	0	444	710	77	614	695	247
Stage 1	-	-	-	-	-	-	158	158	-	533	533	-
Stage 2	-	-	-	-	-	-	286	552	-	81	162	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1066	-	-	1424	-	-	497	357	968	376	364	753
Stage 1	-	-	-	-	-	-	828	766	-	498	523	-
Stage 2	-	-	-	-	-	-	697	513	-	918	763	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1066	-	-	1424	-	-	468	346	968	362	352	753
Mov Cap-2 Maneuver	-	-	-	-	-	-	468	346	-	362	352	-
Stage 1	-	-	-	-	-	-	825	763	-	496	508	-
Stage 2	-	-	-	-	-	-	653	499	-	903	760	-

Approach	EB		WB		NB		SB
HCM Control Delay, s	0.2		0.5		12.2		19.8
HCM LOS					B		C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	545	1066	-	-	1424	-	-	398
HCM Lane V/C Ratio	0.082	0.004	-	-	0.021	-	-	0.392
HCM Control Delay (s)	12.2	8.4	-	-	7.6	0.1	-	19.8
HCM Lane LOS	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	1.8

Loveless Tract TIA
Full Build (2021)

4: South Traditions Drive & HSC Parkway
AM Peak Hour

Intersection												
Intersection Delay, s/veh	9.2											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↱	↱↱		↱	↱↱			↱			↱	
Traffic Vol, veh/h	0	59	10	98	248	94	2	0	18	62	5	18
Future Vol, veh/h	0	59	10	98	248	94	2	0	18	62	5	18
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	68	11	113	285	108	2	0	21	71	6	21
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB		WB		NB		SB
Opposing Approach	WB		EB		SB		NB
Opposing Lanes	3		3		1		1
Conflicting Approach Left	SB		NB		EB		WB
Conflicting Lanes Left	1		1		3		3
Conflicting Approach Right	NB		SB		WB		EB
Conflicting Lanes Right	1		1		3		3
HCM Control Delay	8.4		9.2		8.3		10
HCM LOS	A		A		A		A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	10%	0%	0%	0%	100%	0%	0%	73%
Vol Thru, %	0%	100%	100%	66%	0%	100%	47%	6%
Vol Right, %	90%	0%	0%	34%	0%	0%	53%	21%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	0	39	30	98	165	177	85
LT Vol	2	0	0	0	98	0	0	62
Through Vol	0	0	39	20	0	165	83	5
RT Vol	18	0	0	10	0	0	94	18
Lane Flow Rate	23	0	45	34	113	190	203	98
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.034	0	0.067	0.049	0.171	0.262	0.259	0.164
Departure Headway (Hd)	5.35	5.37	5.37	5.133	5.471	4.969	4.595	6.028
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	666	0	665	695	656	722	782	594
Service Time	3.108	3.121	3.121	2.884	3.205	2.703	2.328	3.777
HCM Lane V/C Ratio	0.035	0	0.068	0.049	0.172	0.263	0.26	0.165
HCM Control Delay	8.3	8.1	8.5	8.2	9.3	9.5	8.9	10
HCM Lane LOS	A	N	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0.2	0.2	0.6	1	1	0.6

Loveless Tract TIA
Full Build (2021)

5: Turkey Creek Road & FM 60 EBF
AM Peak Hour

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔						↑	↗	↘	↗	↗
Traffic Vol, veh/h	42	4	6	0	0	0	0	4	16	174	30	0
Future Vol, veh/h	42	4	6	0	0	0	0	4	16	174	30	0
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	5	8	0	0	0	0	5	21	232	40	0
Number of Lanes	0	1	0	0	0	0	0	1	1	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	3	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	3	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	1
HCM Control Delay	9	7.6	10.1
HCM LOS	A	A	B

Lane	NBLn1	NBLn2	EBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	0%	0%	81%	100%	0%	0%
Vol Thru, %	100%	0%	8%	0%	100%	100%
Vol Right, %	0%	100%	12%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	16	52	174	15	15
LT Vol	0	0	42	174	0	0
Through Vol	4	0	4	0	15	15
RT Vol	0	16	6	0	0	0
Lane Flow Rate	5	21	69	232	20	20
Geometry Grp	8	8	7	7	7	7
Degree of Util (X)	0.008	0.027	0.108	0.34	0.026	0.016
Departure Headway (Hd)	5.314	4.612	5.588	5.273	4.672	2.935
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	675	777	643	687	755	1187
Service Time	3.036	2.333	3.304	2.973	2.471	0.733
HCM Lane V/C Ratio	0.007	0.027	0.107	0.338	0.026	0.017
HCM Control Delay	8.1	7.5	9	10.7	7.6	5.8
HCM Lane LOS	A	A	A	B	A	A
HCM 95th-tile Q	0	0.1	0.4	1.5	0.1	0

Loveless Tract TIA
Full Build (2021)

6: Turkey Creek Road & FM 60 WBF
AM Peak Hour

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕		↗	↑			↗	↗
Traffic Vol, veh/h	3	0	5	23	9	100	21	26	0	0	166	64
Future Vol, veh/h	3	0	5	23	9	100	21	26	0	0	166	64
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	6	29	11	127	27	33	0	0	210	81
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	1
HCM Control Delay	7.7	8.4	8.4	9.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	38%	17%	0%
Vol Thru, %	0%	100%	0%	7%	72%
Vol Right, %	0%	0%	62%	76%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	26	8	132	230
LT Vol	21	0	3	23	0
Through Vol	0	26	0	9	166
RT Vol	0	0	5	100	64
Lane Flow Rate	27	33	10	167	291
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.042	0.047	0.013	0.201	0.351
Departure Headway (Hd)	5.672	5.168	4.641	4.332	4.344
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	632	693	771	829	830
Service Time	3.402	2.899	2.673	2.354	2.367
HCM Lane V/C Ratio	0.043	0.048	0.013	0.201	0.351
HCM Control Delay	8.7	8.2	7.7	8.4	9.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0	0.7	1.6

Loveless Tract TIA
Full Build (2021)

7: Turkey Creek Road & Proposed Driveway
AM Peak Hour

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↑	↑	
Traffic Vol, veh/h	29	47	0	130	184	0
Future Vol, veh/h	29	47	0	130	184	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	51	0	141	200	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	341	200	- 0 - 0
Stage 1	200	-	- - -
Stage 2	141	-	- - -
Critical Hdwy	6.42	6.22	- - -
Critical Hdwy Stg 1	5.42	-	- - -
Critical Hdwy Stg 2	5.42	-	- - -
Follow-up Hdwy	3.518	3.318	- - -
Pot Cap-1 Maneuver	655	841	0 - - 0
Stage 1	834	-	0 - - 0
Stage 2	886	-	0 - - 0
Platoon blocked, %			- - -
Mov Cap-1 Maneuver	655	841	- - - -
Mov Cap-2 Maneuver	655	-	- - - -
Stage 1	834	-	- - - -
Stage 2	886	-	- - - -

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT EBLn1	SBT
Capacity (veh/h)	- 759	-
HCM Lane V/C Ratio	- 0.109	-
HCM Control Delay (s)	- 10.3	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 0.4	-

BBI
06/06/2018

Synchro 10 Report

Loveless Tract TIA
Full Build (2021)

1: FM 2818 & F&B Road
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	157	116	140	193	85	120	193	1324	140	52	912	192
Future Volume (vph)	157	116	140	193	85	120	193	1324	140	52	912	192
Satd. Flow (prot)	0	1743	0	1770	1863	1583	1770	3539	1583	1770	3447	0
Flt Permitted		0.981		0.950			0.078			0.088		
Satd. Flow (perm)	0	1743	0	1770	1863	1583	145	3539	1583	164	3447	0
Satd. Flow (RTOR)		19				236			236		22	
Lane Group Flow (vph)	0	449	0	210	92	130	210	1439	152	57	1200	0
Turn Type	Split	NA		Split	NA	Free	pm+pt	NA	Free	pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases						Free	6		Free	2		
Total Split (s)	35.0	35.0		21.0	21.0		17.0	57.0		12.0	52.0	
Total Lost Time (s)		7.0		7.0	7.0		8.0	8.0		8.0	8.0	
Act Effct Green (s)		28.0		14.0	14.0	125.0	58.6	51.4	125.0	48.0	44.0	
Actuated g/C Ratio		0.22		0.11	0.11	1.00	0.47	0.41	1.00	0.38	0.35	
v/c Ratio		1.11		1.06	0.44	0.08	1.14	0.99	0.10	0.50	0.98	
Control Delay		120.5		133.5	59.2	0.1	137.9	58.3	0.1	33.8	60.4	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		120.5		133.5	59.2	0.1	137.9	58.3	0.1	33.8	60.4	
LOS		F		F	E	A	F	E	A	C	E	
Approach Delay		120.5			77.5			62.7			59.2	
Approach LOS		F			E			E			E	
Queue Length 50th (ft)		~403		~186	71	0	~150	~659	0	24	494	
Queue Length 95th (ft)		#613		#345	127	0	#310	#799	0	48	#651	
Internal Link Dist (ft)		2234			595			1612			403	
Turn Bay Length (ft)				125		300	200		500	200		
Base Capacity (vph)		405		198	208	1583	185	1455	1583	114	1227	
Starvation Cap Reductn		0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0		0	0	0	0	0	0	0	0	
Storage Cap Reductn		0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio		1.11		1.06	0.44	0.08	1.14	0.99	0.10	0.50	0.98	

Intersection Summary	
Cycle Length: 125	
Actuated Cycle Length: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.14	
Intersection Signal Delay: 69.8	Intersection LOS: E
Intersection Capacity Utilization 91.2%	ICU Level of Service F
Analysis Period (min) 15	
Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: FM 2818 & F&B Road



06/07/2018

Loveless Tract TIA
Full Build (2021)

2: Turkey Creek Road & HSC Parkway/F&B Road
PM Peak Hour

Intersection						
Intersection Delay, s/veh	24.7					
Intersection LOS	C					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	337	164	191	313	131	62
Future Vol, veh/h	337	164	191	313	131	62
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	383	186	217	356	149	70
Number of Lanes	1	1	0	1	1	0
Approach	EB	WB		NB		
Opposing Approach	WB	EB				
Opposing Lanes	1	2		0		
Conflicting Approach Left		NB		EB		
Conflicting Lanes Left	0	1		2		
Conflicting Approach Right	NB			WB		
Conflicting Lanes Right	1	0		1		
HCM Control Delay	16	37.5		13.9		
HCM LOS	C	E		B		
Lane	NBLn1	EBLn1	EBLn2	WBLn1		
Vol Left, %	68%	0%	0%	38%		
Vol Thru, %	0%	100%	0%	62%		
Vol Right, %	32%	0%	100%	0%		
Sign Control	Stop	Stop	Stop	Stop		
Traffic Vol by Lane	193	337	164	504		
LT Vol	131	0	0	191		
Through Vol	0	337	0	313		
RT Vol	62	0	164	0		
Lane Flow Rate	219	383	186	573		
Geometry Grp	2	7	7	5		
Degree of Util (X)	0.398	0.639	0.274	0.89		
Departure Headway (Hd)	6.538	6.008	5.297	5.594		
Convergence, Y/N	Yes	Yes	Yes	Yes		
Cap	548	601	677	647		
Service Time	4.601	3.761	3.049	3.639		
HCM Lane V/C Ratio	0.4	0.637	0.275	0.886		
HCM Control Delay	13.9	18.9	10.1	37.5		
HCM Lane LOS	B	C	B	E		
HCM 95th-tile Q	1.9	4.5	1.1	10.9		

Loveless Tract TIA
Full Build (2021)

3: Atlas Pear Drive & HSC Parkway
PM Peak Hour

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	322	29	88	206	112	17	0	7	82	0	14
Future Vol, veh/h	25	322	29	88	206	112	17	0	7	82	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	388	35	106	248	135	20	0	8	99	0	17
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	383	0	0	423	0	0	802	1061	212	782	1011	192
Stage 1	-	-	-	-	-	-	466	466	-	528	528	-
Stage 2	-	-	-	-	-	-	336	595	-	254	483	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1172	-	-	1133	-	-	275	222	793	284	238	817
Stage 1	-	-	-	-	-	-	546	561	-	502	526	-
Stage 2	-	-	-	-	-	-	652	491	-	728	551	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1172	-	-	1133	-	-	245	196	793	256	210	817
Mov Cap-2 Maneuver	-	-	-	-	-	-	245	196	-	256	210	-
Stage 1	-	-	-	-	-	-	532	546	-	489	477	-
Stage 2	-	-	-	-	-	-	579	445	-	702	537	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			1.8			17.9			26.1		
HCM LOS							C			D		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	307	1172	-	-	1133	-	-	284				
HCM Lane V/C Ratio	0.094	0.026	-	-	0.094	-	-	0.407				
HCM Control Delay (s)	17.9	8.2	-	-	8.5	-	-	26.1				
HCM Lane LOS	C	A	-	-	A	-	-	D				
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.3	-	-	1.9				

Loveless Tract TIA
Full Build (2021)

4: South Traditions Drive & HSC Parkway
PM Peak Hour

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰↱		↰	↰↱			↱			↱	
Traffic Vol, veh/h	14	153	7	21	96	137	19	2	90	122	5	10
Future Vol, veh/h	14	153	7	21	96	137	19	2	90	122	5	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	166	8	23	104	149	21	2	98	133	5	11
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	9.4	9.3	9.4	11.1
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	17%	100%	0%	0%	100%	0%	0%	89%
Vol Thru, %	2%	0%	100%	88%	0%	100%	19%	4%
Vol Right, %	81%	0%	0%	12%	0%	0%	81%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	111	14	102	58	21	64	169	137
LT Vol	19	14	0	0	21	0	0	122
Through Vol	2	0	102	51	0	64	32	5
RT Vol	90	0	0	7	0	0	137	10
Lane Flow Rate	121	15	111	63	23	70	184	149
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.182	0.026	0.176	0.099	0.039	0.109	0.258	0.258
Departure Headway (Hd)	5.433	6.231	5.724	5.638	6.145	5.639	5.064	6.234
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	661	577	630	639	586	639	713	578
Service Time	3.158	3.938	3.431	3.345	3.849	3.343	2.768	3.958
HCM Lane V/C Ratio	0.183	0.026	0.176	0.099	0.039	0.11	0.258	0.258
HCM Control Delay	9.4	9.1	9.7	9	9.1	9	9.5	11.1
HCM Lane LOS	A	A	A	A	A	A	A	B
HCM 95th-tile Q	0.7	0.1	0.6	0.3	0.1	0.4	1	1

Loveless Tract TIA
Full Build (2021)

5: Turkey Creek Road & FM 60 EBFR
PM Peak Hour

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↱						↱	↰	↰	↰↱	
Traffic Vol, veh/h	39	7	5	0	0	0	0	8	46	191	68	0
Future Vol, veh/h	39	7	5	0	0	0	0	8	46	191	68	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	9	6	0	0	0	0	10	56	233	83	0
Number of Lanes	0	1	0	0	0	0	0	1	1	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	3	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	3	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	1
HCM Control Delay	9.1	7.8	9.7
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	0%	0%	76%	100%	0%	0%
Vol Thru, %	100%	0%	14%	0%	100%	100%
Vol Right, %	0%	100%	10%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	46	51	191	34	34
LT Vol	0	0	39	191	0	0
Through Vol	8	0	7	0	34	34
RT Vol	0	46	5	0	0	0
Lane Flow Rate	10	56	62	233	41	41
Geometry Grp	8	8	7	7	7	7
Degree of Util (X)	0.015	0.072	0.099	0.342	0.055	0.035
Departure Headway (Hd)	5.354	4.651	5.729	5.286	4.784	3.046
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	670	771	627	685	753	1183
Service Time	3.078	2.375	3.452	2.986	2.484	0.746
HCM Lane V/C Ratio	0.015	0.073	0.099	0.34	0.054	0.035
HCM Control Delay	8.2	7.7	9.1	10.7	7.8	5.9
HCM Lane LOS	A	A	A	B	A	A
HCM 95th-tile Q	0	0.2	0.3	1.5	0.2	0.1

Loveless Tract TIA
Full Build (2021)

6: Turkey Creek Road & FM 60 WBFR
PM Peak Hour

Intersection												
Intersection Delay, s/veh	10.7											
Intersection LOS	B											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	3	87	3	128	8	42	0	0	168	190
Future Vol, veh/h	2	0	3	87	3	128	8	42	0	0	168	190
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	3	97	3	142	9	47	0	0	187	211
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			1			1			1		
HCM Control Delay	8.1			9.9			8.7			11.5		
HCM LOS	A			A			A			B		
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1							
Vol Left, %	100%	0%	40%	40%	0%							
Vol Thru, %	0%	100%	0%	1%	47%							
Vol Right, %	0%	0%	60%	59%	53%							
Sign Control	Stop	Stop	Stop	Stop	Stop							
Traffic Vol by Lane	8	42	5	218	358							
LT Vol	8	0	2	87	0							
Through Vol	0	42	0	3	168							
RT Vol	0	0	3	128	190							
Lane Flow Rate	9	47	6	242	398							
Geometry Grp	7	7	2	2	5							
Degree of Util (X)	0.015	0.071	0.008	0.316	0.485							
Departure Headway (Hd)	5.993	5.488	5.013	4.696	4.392							
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes							
Cap	595	650	708	763	819							
Service Time	3.754	3.248	3.085	2.745	2.434							
HCM Lane V/C Ratio	0.015	0.072	0.008	0.317	0.486							
HCM Control Delay	8.8	8.7	8.1	9.9	11.5							
HCM Lane LOS	A	A	A	A	B							
HCM 95th-tile Q	0	0.2	0	1.4	2.7							

Loveless Tract TIA
Full Build (2021)

7: Turkey Creek Road & Proposed Driveway
PM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	28	0	172	330	0
Future Vol, veh/h	17	28	0	172	330	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	30	0	187	359	0
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	546	359	-	0	-	0
Stage 1	359	-	-	-	-	-
Stage 2	187	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	499	685	0	-	-	0
Stage 1	707	-	0	-	-	0
Stage 2	845	-	0	-	-	0
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	499	685	-	-	-	-
Mov Cap-2 Maneuver	499	-	-	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	11.5	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT			
Capacity (veh/h)	-	600	-			
HCM Lane V/C Ratio	-	0.082	-			
HCM Control Delay (s)	-	11.5	-			
HCM Lane LOS	-	B	-			
HCM 95th %tile Q(veh)	-	0.3	-			

Loveless Tract TIA
Full Build Alternative (2021)

1: FM 2818 & F and B Road/HSC Parkway
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	74	44	53	78	57	19	196	801	202	207	935	182
Future Volume (vph)	74	44	53	78	57	19	196	801	202	207	935	182
Satd. Flow (prot)	0	1747	0	1770	1863	1583	1770	3539	1583	1770	3454	0
Flt Permitted		0.979		0.950			0.078			0.217		
Satd. Flow (perm)	0	1747	0	1770	1863	1583	145	3539	1583	404	3454	0
Satd. Flow (RTOR)		15				236			236		23	
Lane Group Flow (vph)	0	199	0	91	66	22	228	931	235	241	1299	0
Turn Type	Split	NA		Split	NA	Free	pm+pt	NA	Free	pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases						Free	6		Free	2		
Total Split (s)	23.0	23.0		16.0	16.0		24.0	60.0		26.0	62.0	
Total Lost Time (s)		7.0		7.0	7.0		8.0	8.0		8.0	8.0	
Act Effct Green (s)		15.3		8.7	8.7	122.4	69.5	55.2	122.4	67.2	54.1	
Actuated g/C Ratio		0.12		0.07	0.07	1.00	0.57	0.45	1.00	0.55	0.44	
v/c Ratio		0.86		0.72	0.50	0.01	0.84	0.58	0.15	0.65	0.84	
Control Delay		81.6		87.2	69.1	0.0	56.3	27.5	0.2	20.2	36.7	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		81.6		87.2	69.1	0.0	56.3	27.5	0.2	20.2	36.7	
LOS		F		F	E	A	E	C	A	C	D	
Approach Delay		81.6			69.8			27.6			34.1	
Approach LOS		F			E			C			C	
Queue Length 50th (ft)		148		73	52	0	121	285	0	80	485	
Queue Length 95th (ft)		#260		#147	97	0	#228	356	0	113	543	
Internal Link Dist (ft)		2234			595			1612			403	
Turn Bay Length (ft)				125		300	200		500	200		
Base Capacity (vph)		241		130	137	1583	296	1597	1583	438	1538	
Starvation Cap Reductn		0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0		0	0	0	0	0	0	0	0	
Storage Cap Reductn		0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio		0.83		0.70	0.48	0.01	0.77	0.58	0.15	0.55	0.84	

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 122.4

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 36.1

Intersection LOS: D

Intersection Capacity Utilization 78.0%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: FM 2818 & F and B Road/HSC Parkway

↖ Ø1	↘ Ø2	↗ Ø3	↙ Ø4
24 s	52 s	23 s	16 s
↖ Ø5	↘ Ø6		
26 s	50 s		

Loveless Tract TIA
Full Build Alternative (2021)

2: Turkey Creek Road & HSC Parkway/F and B Road
AM Peak Hour

Intersection												
Intersection Delay, s/veh	12.8											
Intersection LOS	B											
Movement												
Lane Configurations	↔	↔		↔	↔	↔						
Traffic Vol, veh/h	133	91		78	324	81						
Future Vol, veh/h	133	91		78	324	81						
Peak Hour Factor	0.86	0.86		0.86	0.86	0.86						
Heavy Vehicles, %	2	2		2	2	2						
Mvmt Flow	155	106		91	377	94						
Number of Lanes	1	1		0	1	1						
Approach												
Opposing Approach	WB			EB								
Opposing Lanes	1			2								
Conflicting Approach Left				NB		EB						
Conflicting Lanes Left	0			1		2						
Conflicting Approach Right	NB					WB						
Conflicting Lanes Right	1			0		1						
HCM Control Delay	9.2			15.7		10.3						
HCM LOS	A			C		B						

Lane	NBLn1	EBLn1	EBLn2	WBLn1
Vol Left, %	57%	0%	0%	19%
Vol Thru, %	0%	100%	0%	81%
Vol Right, %	43%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	141	133	91	402
LT Vol	81	0	0	78
Through Vol	0	133	0	324
RT Vol	60	0	91	0
Lane Flow Rate	164	155	106	467
Geometry Grp	2	7	7	5
Degree of Util (X)	0.247	0.232	0.138	0.625
Departure Headway (Hd)	5.431	5.399	4.692	4.817
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	656	660	757	743
Service Time	3.516	3.173	2.465	2.879
HCM Lane V/C Ratio	0.25	0.235	0.14	0.629
HCM Control Delay	10.3	9.8	8.2	15.7
HCM Lane LOS	B	A	A	C
HCM 95th-ile Q	1	0.9	0.5	4.4

Loveless Tract TIA
Full Build Alternative (2021)

3: Atlas Pear Drive & HSC Parkway
AM Peak Hour

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	130	9	2	405	36	30	0	6	116	0	24
Future Vol, veh/h	5	130	9	2	405	36	30	0	6	116	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	146	10	2	455	40	34	0	7	130	0	27

Major/Minor	Major1		Major2		Minor1		Minor2				
Conflicting Flow All	495	0	0	156	0	0	395	662	78	564	647
Stage 1	-	-	-	-	-	-	163	163	-	479	479
Stage 2	-	-	-	-	-	-	232	499	-	85	168
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02
Pot Cap-1 Maneuver	1065	-	-	1422	-	-	539	381	967	408	388
Stage 1	-	-	-	-	-	-	823	762	-	537	553
Stage 2	-	-	-	-	-	-	750	542	-	913	758
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1065	-	-	1422	-	-	517	378	967	403	385
Mov Cap-2 Maneuver	-	-	-	-	-	-	517	378	-	403	385
Stage 1	-	-	-	-	-	-	818	757	-	534	552
Stage 2	-	-	-	-	-	-	722	541	-	902	753

Approach	EB		WB		NB		SB
HCM Control Delay, s	0.3		0		11.9		17.8
HCM LOS					B		C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	560	1065	-	-	1422	-	-	438
HCM Lane V/C Ratio	0.072	0.005	-	-	0.002	-	-	0.359
HCM Control Delay (s)	11.9	8.4	-	-	7.5	0	-	17.8
HCM Lane LOS	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	1.6

Loveless Tract TIA
Full Build Alternative (2021)

4: South Traditions Drive & HSC Parkway
AM Peak Hour

Intersection												
Intersection Delay, s/veh	9.2											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	59	10	98	248	94	2	0	18	62	5	18
Future Vol, veh/h	0	59	10	98	248	94	2	0	18	62	5	18
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	68	11	113	285	108	2	0	21	71	6	21
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB		WB		NB		SB
Opposing Approach	WB		EB		SB		NB
Opposing Lanes	3		3		1		1
Conflicting Approach Left	SB		NB		EB		WB
Conflicting Lanes Left	1		1		3		3
Conflicting Approach Right	NB		SB		WB		EB
Conflicting Lanes Right	1		1		3		3
HCM Control Delay	8.4		9.2		8.3		10
HCM LOS	A		A		A		A

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	10%	0%	0%	0%	100%	0%	0%	73%
Vol Thru, %	0%	100%	100%	66%	0%	100%	47%	6%
Vol Right, %	90%	0%	0%	34%	0%	0%	53%	21%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	20	0	39	30	98	165	177	85
LT Vol	2	0	0	0	98	0	0	62
Through Vol	0	0	39	20	0	165	83	5
RT Vol	18	0	0	10	0	0	94	18
Lane Flow Rate	23	0	45	34	113	190	203	98
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.034	0	0.067	0.049	0.171	0.262	0.259	0.164
Departure Headway (Hd)	5.35	5.37	5.37	5.133	5.471	4.969	4.595	6.028
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	666	0	665	695	656	722	782	594
Service Time	3.108	3.121	3.121	2.884	3.205	2.703	2.328	3.777
HCM Lane V/C Ratio	0.035	0	0.068	0.049	0.172	0.263	0.26	0.165
HCM Control Delay	8.3	8.1	8.5	8.2	9.3	9.5	8.9	10
HCM Lane LOS	A	N	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0	0.2	0.2	0.6	1	1	0.6

Loveless Tract TIA
Full Build Alternative (2021)

5: Turkey Creek Road & FM 60 EBF
AM Peak Hour

Intersection												
Intersection Delay, s/veh	9.7											
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔						↑	↗	↘	↕	
Traffic Vol, veh/h	42	4	6	0	0	0	0	4	16	174	30	0
Future Vol, veh/h	42	4	6	0	0	0	0	4	16	174	30	0
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	5	8	0	0	0	0	5	21	232	40	0
Number of Lanes	0	1	0	0	0	0	0	1	1	1	2	0
Approach	EB						NB			SB		
Opposing Approach							SB			NB		
Opposing Lanes	0						3			2		
Conflicting Approach Left	SB						EB					
Conflicting Lanes Left	3						1			0		
Conflicting Approach Right	NB									EB		
Conflicting Lanes Right	2						0			1		
HCM Control Delay	9						7.6			10.1		
HCM LOS	A						A			B		

Lane	NBLn1	NBLn2	EBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	0%	0%	81%	100%	0%	0%
Vol Thru, %	100%	0%	8%	0%	100%	100%
Vol Right, %	0%	100%	12%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	16	52	174	15	15
LT Vol	0	0	42	174	0	0
Through Vol	4	0	4	0	15	15
RT Vol	0	16	6	0	0	0
Lane Flow Rate	5	21	69	232	20	20
Geometry Grp	8	8	7	7	7	7
Degree of Util (X)	0.008	0.027	0.108	0.34	0.026	0.016
Departure Headway (Hd)	5.314	4.612	5.588	5.273	4.672	2.935
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	675	777	643	687	755	1187
Service Time	3.036	2.333	3.304	2.973	2.471	0.733
HCM Lane V/C Ratio	0.007	0.027	0.107	0.338	0.026	0.017
HCM Control Delay	8.1	7.5	9	10.7	7.6	5.8
HCM Lane LOS	A	A	A	B	A	A
HCM 95th-tile Q	0	0.1	0.4	1.5	0.1	0

Loveless Tract TIA
Full Build Alternative (2021)

6: Turkey Creek Road & FM 60 WBF
AM Peak Hour

Intersection												
Intersection Delay, s/veh	9.1											
Intersection LOS	A											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↕		↗	↑			↕	
Traffic Vol, veh/h	3	0	6	23	9	100	21	26	0	0	166	64
Future Vol, veh/h	3	0	6	23	9	100	21	26	0	0	166	64
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	8	29	11	127	27	33	0	0	210	81
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Approach	EB				WB			NB			SB	
Opposing Approach	WB				EB			SB			NB	
Opposing Lanes	1				1			1			2	
Conflicting Approach Left	SB				NB			EB			WB	
Conflicting Lanes Left	1				2			1			1	
Conflicting Approach Right	NB				SB			WB			EB	
Conflicting Lanes Right	2				1			1			1	
HCM Control Delay	7.7				8.5			8.4			9.7	
HCM LOS	A				A			A			A	

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1
Vol Left, %	100%	0%	33%	17%	0%
Vol Thru, %	0%	100%	0%	7%	72%
Vol Right, %	0%	0%	67%	76%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	26	9	132	230
LT Vol	21	0	3	23	0
Through Vol	0	26	0	9	166
RT Vol	0	0	6	100	64
Lane Flow Rate	27	33	11	167	291
Geometry Grp	7	7	2	2	5
Degree of Util (X)	0.042	0.047	0.015	0.201	0.352
Departure Headway (Hd)	5.676	5.172	4.608	4.335	4.347
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	631	692	776	829	827
Service Time	3.407	2.903	2.641	2.358	2.371
HCM Lane V/C Ratio	0.043	0.048	0.014	0.201	0.352
HCM Control Delay	8.7	8.2	7.7	8.5	9.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0	0.7	1.6

Loveless Tract TIA
Full Build Alternative (2021)

7: Turkey Creek Road & Proposed Driveway
AM Peak Hour

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	30	53	16	115	178	9
Future Vol, veh/h	30	53	16	115	178	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	58	17	125	193	10

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	357	198	203
Stage 1	198	-	-
Stage 2	159	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	641	843	1369
Stage 1	835	-	-
Stage 2	870	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	633	843	1369
Mov Cap-2 Maneuver	633	-	-
Stage 1	824	-	-
Stage 2	870	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1369	-	753	-	-
HCM Lane V/C Ratio	0.013	-	0.12	-	-
HCM Control Delay (s)	7.7	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

BBI
06/07/2018

Synchro 10 Report

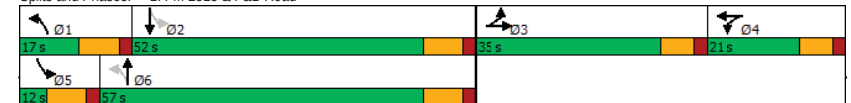
Loveless Tract TIA
Full Build Alternative (2021)

1: FM 2818 & F&B Road
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	157	116	140	193	85	120	193	1324	140	52	912	192
Future Volume (vph)	157	116	140	193	85	120	193	1324	140	52	912	192
Satd. Flow (prot)	0	1743	0	1770	1863	1583	1770	3539	1583	1770	3447	0
Fit Permitted		0.981		0.950			0.078			0.088		
Satd. Flow (perm)	0	1743	0	1770	1863	1583	145	3539	1583	164	3447	0
Satd. Flow (RTOR)		19				236			236		22	
Lane Group Flow (vph)	0	449	0	210	92	130	210	1439	152	57	1200	0
Turn Type	Split	NA		Split	NA	Free	pm+pt	NA	Free	pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases						Free	6		Free	2		
Total Split (s)	35.0	35.0		21.0	21.0		17.0	57.0		12.0	52.0	
Total Lost Time (s)		7.0		7.0	7.0		8.0	8.0		8.0	8.0	
Act Effct Green (s)		28.0		14.0	14.0	125.0	58.6	51.4	125.0	48.0	44.0	
Actuated g/C Ratio		0.22		0.11	0.11	1.00	0.47	0.41	1.00	0.38	0.35	
v/c Ratio		1.11		1.06	0.44	0.08	1.14	0.99	0.10	0.50	0.98	
Control Delay		120.5		133.5	59.2	0.1	137.9	58.3	0.1	33.8	60.4	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		120.5		133.5	59.2	0.1	137.9	58.3	0.1	33.8	60.4	
LOS		F		F	E	A	F	E	A	C	E	
Approach Delay		120.5			77.5			62.7			59.2	
Approach LOS		F			E			E			E	
Queue Length 50th (ft)		~403		~186	71	0	~150	~659	0	24	494	
Queue Length 95th (ft)		#613		#345	127	0	#310	#799	0	48	#651	
Internal Link Dist (ft)		2234			595			1612			403	
Turn Bay Length (ft)				125		300	200		500	200		
Base Capacity (vph)		405		198	208	1583	185	1455	1583	114	1227	
Starvation Cap Reductn		0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn		0		0	0	0	0	0	0	0	0	
Storage Cap Reductn		0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio		1.11		1.06	0.44	0.08	1.14	0.99	0.10	0.50	0.98	

Intersection Summary	
Cycle Length: 125	
Actuated Cycle Length: 125	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.14	
Intersection Signal Delay: 69.8	Intersection LOS: E
Intersection Capacity Utilization 91.2%	ICU Level of Service F
Analysis Period (min) 15	
Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: FM 2818 & F&B Road



06/07/2018

Loveless Tract TIA
Full Build Alternative (2021)

2: Turkey Creek Road & HSC Parkway/F&B Road
PM Peak Hour

Intersection						
Intersection Delay, s/veh	21.2					
Intersection LOS	C					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Vol, veh/h	337	161	220	284	78	62
Future Vol, veh/h	337	161	220	284	78	62
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	383	183	250	323	89	70
Number of Lanes	1	1	0	1	1	0
Approach	EB	WB	NB			
Opposing Approach	WB	EB				
Opposing Lanes	1	2	0			
Conflicting Approach Left		NB	EB			
Conflicting Lanes Left	0	1	2			
Conflicting Approach Right	NB		WB			
Conflicting Lanes Right	1	0	1			
HCM Control Delay	14.4	30.6	11.9			
HCM LOS	B	D	B			
Lane	NBLn1	EBLn1	EBLn2	WBLn1		
Vol Left, %	56%	0%	0%	44%		
Vol Thru, %	0%	100%	0%	56%		
Vol Right, %	44%	0%	100%	0%		
Sign Control	Stop	Stop	Stop	Stop		
Traffic Vol by Lane	140	337	161	504		
LT Vol	78	0	0	220		
Through Vol	0	337	0	284		
RT Vol	62	0	161	0		
Lane Flow Rate	159	383	183	573		
Geometry Grp	2	7	7	5		
Degree of Util (X)	0.28	0.605	0.253	0.846		
Departure Headway (Hd)	6.346	5.686	4.977	5.317		
Convergence, Y/N	Yes	Yes	Yes	Yes		
Cap	566	636	721	682		
Service Time	4.391	3.418	2.708	3.346		
HCM Lane V/C Ratio	0.281	0.602	0.254	0.84		
HCM Control Delay	11.9	16.8	9.4	30.6		
HCM Lane LOS	B	C	A	D		
HCM 95th-tile Q	1.1	4.1	1	9.5		

Loveless Tract TIA
Full Build Alternative (2021)

3: Atlas Pear Drive & HSC Parkway
PM Peak Hour

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑		↑	↑			↑			↑	
Traffic Vol, veh/h	25	322	29	6	206	112	17	0	3	82	0	14
Future Vol, veh/h	25	322	29	6	206	112	17	0	3	82	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	388	35	7	248	135	20	0	4	99	0	17
Major/Minor	Major1	Major2	Minor1	Minor2								
Conflicting Flow All	383	0	0	423	0	0	604	863	212	584	813	192
Stage 1	-	-	-	-	-	-	466	466	-	330	330	-
Stage 2	-	-	-	-	-	-	138	397	-	254	483	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1172	-	-	1133	-	-	382	291	793	395	311	817
Stage 1	-	-	-	-	-	-	546	561	-	657	644	-
Stage 2	-	-	-	-	-	-	851	602	-	728	551	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1172	-	-	1133	-	-	365	282	793	384	301	817
Mov Cap-2 Maneuver	-	-	-	-	-	-	365	282	-	384	301	-
Stage 1	-	-	-	-	-	-	532	546	-	640	640	-
Stage 2	-	-	-	-	-	-	828	598	-	706	537	-
Approach	EB	WB	NB	SB								
HCM Control Delay, s	0.5	0.2	14.7	17								
HCM LOS			B	C								
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	397	1172	-	-	1133	-	-	416				
HCM Lane V/C Ratio	0.061	0.026	-	-	0.006	-	-	0.278				
HCM Control Delay (s)	14.7	8.2	-	-	8.2	-	-	17				
HCM Lane LOS	B	A	-	-	A	-	-	C				
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	1.1				

Loveless Tract TIA
Full Build Alternative (2021)

4: South Traditions Drive & HSC Parkway
PM Peak Hour

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕			↕			↕	
Traffic Vol, veh/h	14	153	7	21	96	137	19	2	90	122	5	10
Future Vol, veh/h	14	153	7	21	96	137	19	2	90	122	5	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	166	8	23	104	149	21	2	98	133	5	11
Number of Lanes	1	2	0	1	2	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	3	3	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	3	3
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	3	3
HCM Control Delay	9.4	9.3	9.4	11.1
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBLn1
Vol Left, %	17%	100%	0%	0%	100%	0%	0%	89%
Vol Thru, %	2%	0%	100%	88%	0%	100%	19%	4%
Vol Right, %	81%	0%	0%	12%	0%	0%	81%	7%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	111	14	102	58	21	64	169	137
LT Vol	19	14	0	0	21	0	0	122
Through Vol	2	0	102	51	0	64	32	5
RT Vol	90	0	0	7	0	0	137	10
Lane Flow Rate	121	15	111	63	23	70	184	149
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.182	0.026	0.176	0.099	0.039	0.109	0.258	0.258
Departure Headway (Hd)	5.433	6.231	5.724	5.638	6.145	5.639	5.064	6.234
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	661	577	630	639	586	639	713	578
Service Time	3.158	3.938	3.431	3.345	3.849	3.343	2.768	3.958
HCM Lane V/C Ratio	0.183	0.026	0.176	0.099	0.039	0.11	0.258	0.258
HCM Control Delay	9.4	9.1	9.7	9	9.1	9	9.5	11.1
HCM Lane LOS	A	A	A	A	A	A	A	B
HCM 95th-tile Q	0.7	0.1	0.6	0.3	0.1	0.4	1	1

Loveless Tract TIA
Full Build Alternative (2021)

5: Turkey Creek Road & FM 60 EBFR
PM Peak Hour

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕	↕	↕	↕	
Traffic Vol, veh/h	39	7	5	0	0	0	0	8	46	191	68	0
Future Vol, veh/h	39	7	5	0	0	0	0	8	46	191	68	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	9	6	0	0	0	0	10	56	233	83	0
Number of Lanes	0	1	0	0	0	0	0	1	1	1	2	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	3	2
Conflicting Approach Left	SB	EB	
Conflicting Lanes Left	3	1	0
Conflicting Approach Right	NB		EB
Conflicting Lanes Right	2	0	1
HCM Control Delay	9.1	7.8	9.7
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	0%	0%	76%	100%	0%	0%
Vol Thru, %	100%	0%	14%	0%	100%	100%
Vol Right, %	0%	100%	10%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	46	51	191	34	34
LT Vol	0	0	39	191	0	0
Through Vol	8	0	7	0	34	34
RT Vol	0	46	5	0	0	0
Lane Flow Rate	10	56	62	233	41	41
Geometry Grp	8	8	7	7	7	7
Degree of Util (X)	0.015	0.072	0.099	0.342	0.055	0.035
Departure Headway (Hd)	5.354	4.651	5.729	5.286	4.784	3.046
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	670	771	627	685	753	1183
Service Time	3.078	2.375	3.452	2.986	2.484	0.746
HCM Lane V/C Ratio	0.015	0.073	0.099	0.34	0.054	0.035
HCM Control Delay	8.2	7.7	9.1	10.7	7.8	5.9
HCM Lane LOS	A	A	A	B	A	A
HCM 95th-tile Q	0	0.2	0.3	1.5	0.2	0.1

Loveless Tract TIA
Full Build Alternative (2021)

6: Turkey Creek Road & FM 60 WBFR
PM Peak Hour

Intersection												
Intersection Delay, s/veh	10.7											
Intersection LOS	B											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	3	87	3	128	8	42	0	0	168	190
Future Vol, veh/h	2	0	3	87	3	128	8	42	0	0	168	190
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	3	97	3	142	9	47	0	0	187	211
Number of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			2		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			2			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	2			1			1			1		
HCM Control Delay	8.1			9.9			8.7			11.5		
HCM LOS	A			A			A			B		
Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1							
Vol Left, %	100%	0%	40%	40%	0%							
Vol Thru, %	0%	100%	0%	1%	47%							
Vol Right, %	0%	0%	60%	59%	53%							
Sign Control	Stop	Stop	Stop	Stop	Stop							
Traffic Vol by Lane	8	42	5	218	358							
LT Vol	8	0	2	87	0							
Through Vol	0	42	0	3	168							
RT Vol	0	0	3	128	190							
Lane Flow Rate	9	47	6	242	398							
Geometry Grp	7	7	2	2	5							
Degree of Util (X)	0.015	0.071	0.008	0.316	0.485							
Departure Headway (Hd)	5.993	5.488	5.013	4.696	4.392							
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes							
Cap	595	650	708	763	819							
Service Time	3.754	3.248	3.085	2.745	2.434							
HCM Lane V/C Ratio	0.015	0.072	0.008	0.317	0.486							
HCM Control Delay	8.8	8.7	8.1	9.9	11.5							
HCM Lane LOS	A	A	A	A	B							
HCM 95th-tile Q	0	0.2	0	1.4	2.7							

Loveless Tract TIA
Full Build Alternative (2021)

7: Turkey Creek Road & Proposed Driveway
PM Peak Hour

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	31	53	119	326	29
Future Vol, veh/h	17	31	53	119	326	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	34	58	129	354	32
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	615	370	386	0	-	0
Stage 1	370	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	455	676	1172	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	431	676	1172	-	-	-
Mov Cap-2 Maneuver	431	-	-	-	-	-
Stage 1	662	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12	2.5		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1172	-	563	-	-	
HCM Lane V/C Ratio	0.049	-	0.093	-	-	
HCM Control Delay (s)	8.2	0	12	-	-	
HCM Lane LOS	A	A	B	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-	

HIGHWAY CAPACITY MANUAL LEVEL OF SERVICE DESCRIPTIONS

Level of Service Criteria for Signalized Intersections

Level-of-Service (LOS)	Average Control Delay (seconds per vehicle)	Description
A	≤ 10.0	Very low vehicle delays, free flow, signal progression extremely favorable, most vehicles arrive during given signal phase.
B	10.1 - 20.0	Good signal progression, more vehicles stop and experience higher delays than for LOS A.
C	20.1 - 35.0	Stable flow, fair signal progression, significant number of vehicles stop at signals.
D	35.1 - 55.0	Congestion noticeable, longer delays and unfavorable signal progression, many vehicles stop at signals.
E	55.1 - 80.0	Limit of acceptable delay, unstable flow, poor signal progression, traffic near roadway capacity, frequent cycle failures.
F	> 80.0	Unacceptable delays, extremely unstable flow and congestion, traffic exceeds roadway capacity, stop-and-go conditions.

SOURCE: Highway Capacity Manual, HCM 2010, Transportation Research Board, 2010.

Level of Service Criteria for Unsignalized Intersections

Level-of-Service (LOS)	Average Control Delay (seconds per vehicle)	Description
A	≤ 10.0	No delays at intersections with continuous flow of traffic. Uncongested operations: high frequency of long gaps available for all left and right turning traffic. No observable queues.
B	10.1 - 15.0	No delays at intersections with continuous flow of traffic. Uncongested operations: high frequency of long gaps available for all left and right turning traffic. No observable queues.
C	15.1 - 25.0	Moderate delays at intersections with satisfactory to good traffic flow. Light congestion; infrequent backups on critical approaches.
D	25.1 - 35.0	Increased probability of delays along every approach. Significant congestion on critical approaches, but intersection functional. No standing long lines formed.
E	35.1 - 50.0	Heavy traffic flow condition. Heavy delays probable. No available gaps for cross-street traffic or main street turning traffic. Limit of stable flow.
F	> 50.0	Unstable traffic flow. Heavy congestion. Traffic moves in forced flow condition. Average delays greater than one minute highly probable. Total breakdown.

SOURCE: Highway Capacity Manual, HCM 2010, Transportation Research Board, 2010.

ORDINANCE NO. _____

AN ORDINANCE AMENDING APPENDIX A “UNIFIED DEVELOPMENT ORDINANCE,” ARTICLE 4 “ZONING DISTRICTS,” SECTION 4.2, “OFFICIAL ZONING MAP” OF THE CODE OF ORDINANCES OF THE CITY OF COLLEGE STATION, TEXAS, BY CHANGING THE ZONING DISTRICT BOUNDARIES FROM R RURAL TO MF MULTI-FAMILY FOR APPROXIMATELY 11.1 ACRES GENERALLY LOCATED IN THE CITY ON THE WEST SIDE OF TURKEY CREEK ROAD, APPROXIMATELY 500-FEET SOUTH OF HSC PARKWAY; PROVIDING A SEVERABILITY CLAUSE; DECLARING A PENALTY; AND PROVIDING AN EFFECTIVE DATE.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF COLLEGE STATION, TEXAS:

- PART 1:** That Appendix A “Unified Development Ordinance,” Article 4 “Zoning Districts,” Section 4.2 “Official Zoning Map” of the Code of Ordinances of the City of College Station, Texas, be amended as set out in **Exhibit “A,” Exhibit “B” and Exhibit “C”** attached hereto and made a part of this Ordinance for all purposes.
- PART 2:** If any provision of this Ordinance or its application to any person or circumstances is held invalid or unconstitutional, the invalidity or unconstitutionality does not affect other provisions or application of this Ordinance or the Code of Ordinances of the City of College Station, Texas, that can be given effect without the invalid or unconstitutional provision or application, and to this end the provisions of this Ordinance are severable.
- PART 3:** That any person, corporation, organization, government, governmental subdivision or agency, business trust, estate, trust, partnership, association and any other legal entity violating any of the provisions of this Ordinance shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punishable by a fine of not less than twenty five dollars (\$25.00) and not more than five hundred dollars (\$500.00) or more than two thousand dollars (\$2,000) for a violation of fire safety, zoning, or public health and sanitation ordinances, other than the dumping of refuse. Each day such violation shall continue or be permitted to continue, shall be deemed a separate offense.
- PART 4:** This Ordinance is a penal ordinance and becomes effective ten (10) days after its date of passage by the City Council, as provided by City of College Station Charter Section 35.

PASSED, ADOPTED, and APPROVED this 23rd day of August, 2018.

ATTEST:

APPROVED:

City Secretary

Mayor

APPROVED:

City Attorney

Exhibit A

That Appendix A “Unified Development Ordinance,” Article 4 “Zoning Districts,” Section 4.2, “Official Zoning Map” of the Code of Ordinances of the City of College Station, Texas, is hereby amended to read as follows:

The following property is rezoned from R Rural to MF Multi-Family:

**METES AND BOUNDS DESCRIPTION
OF A
11.14 ACRE TRACT
J. H. JONES SURVEY, A-26
COLLEGE STATION, BRAZOS COUNTY, TEXAS**

METES AND BOUNDS DESCRIPTION OF ALL THAT CERTAIN TRACT OR PARCEL OF LAND LYING AND BEING SITUATED IN THE J. H. JONES SURVEY, ABSTRACT NO. 26, COLLEGE STATION, BRAZOS COUNTY, TEXAS. SAID TRACT BEING THE REMAINDER OF A CALLED 11.6 ACRE TRACT AS DESCRIBED BY A DEED TO LOVELESS ACRES, L.C. RECORDED IN VOLUME 7004, PAGE 104 OF THE OFFICIAL PUBLIC RECORDS OF BRAZOS COUNTY, TEXAS.

SAID TRACT BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING AT A 1/2 INCH IRON ROD FOUND IN A TREE ROOT ON THE SOUTHWEST LINE OF TURKEY CREEK ROAD (FM 2513 - 100' R.O.W.) MARKING THE NORTH CORNER OF SAID REMAINDER OF 11.6 ACRE TRACT AND AN EAST CORNER OF THE REMAINDER OF A CALLED 417.85 ACRE TRACT DESCRIBED AS EXHIBIT "A" BY A DEED TO BRYAN COMMERCE AND DEVELOPMENT, INC. RECORDED IN VOLUME 4023, PAGE 91 OF THE OFFICIAL PUBLIC RECORDS OF BRAZOS COUNTY, TEXAS;

THENCE: S 32° 14' 41" E ALONG THE SOUTHWEST LINE OF TURKEY CREEK ROAD FOR A DISTANCE OF 722.89 FEET TO A POINT WITHIN AN EXISTING ELM TREE MARKING THE NORTH CORNER OF A CALLED 7.02 ACRE TRACT AS DESCRIBED BY A DEED TO CASHION FAMILY LIMITED PARTNERSHIP RECORDED IN VOLUME 11415, PAGE 138 OF THE OFFICIAL PUBLIC RECORDS OF BRAZOS COUNTY, TEXAS, AND THE EAST CORNER OF THIS HEREIN DESCRIBED TRACT;

THENCE: S 53° 19' 32" W ALONG THE COMMON LINE OF SAID REMAINDER OF 11.6 ACRE TRACT AND SAID 7.02 ACRE TRACT FOR A DISTANCE OF 658.46 FEET TO A 1/2 INCH IRON ROD FOUND ON THE NORTHEAST LINE OF SAID REMAINDER OF 417.85 ACRE TRACT MARKING THE COMMON CORNER OF SAID 7.02 ACRE TRACT AND SAID REMAINDER OF 11.6 ACRE TRACT;

THENCE: N 35° 49' 44" W ALONG THE COMMON LINE OF SAID REMAINDER OF 11.6 ACRE TRACT AND SAID REMAINDER OF 417.85 ACRE TRACT FOR A DISTANCE OF 704.85 FEET TO A CONCRETE MONUMENT FOUND MARKING THE WEST CORNER OF THIS HEREIN DESCRIBED TRACT;

THENCE: N 52° 01' 36" E CONTINUING ALONG THE COMMON LINE OF SAID REMAINDER OF 11.6 ACRE TRACT AND SAID REMAINDER OF 417.85 ACRE TRACT FOR A DISTANCE OF 704.08 FEET TO THE **POINT OF BEGINNING** CONTAINING 11.14 ACRES OF LAND, MORE OR LESS, AS SURVEYED ON THE GROUND. BEARING SYSTEM SHOWN HEREIN IS BASED ON NAD 83 TEXAS STATE PLANE COORDINATES AS ESTABLISHED FROM GPS OBSERVATION. SEE PLAT PREPARED DECEMBER 2016 FOR MORE DESCRIPTIVE INFORMATION.

BRAD KERR
REGISTERED PROFESSIONAL
LAND SURVEYOR No. 4502

//JOBS/16-885/16-885.DOCX



Exhibit C

**PROPOSED
Zoning**



**EXISTING
Zoning**

