# Legislation Details (With Text)

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| **File #:** | 18-0540 **Version:** 1 | **Name:** | Loveless Tract CPA |
| **Type:** | Comprehensive Plan | **Status:** | Agenda Ready |
| **File created:** | 8/9/2018 | **In control:** | City Council Regular |
| **On agenda:** | 8/23/2018 | **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<br>Vicinity & Aerial Map<br>Future Land Use and Character Map<br>Ordinance | | |

| Date | Ver. | Action By | Action | Result |
|---|---|---|---|---|

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 |

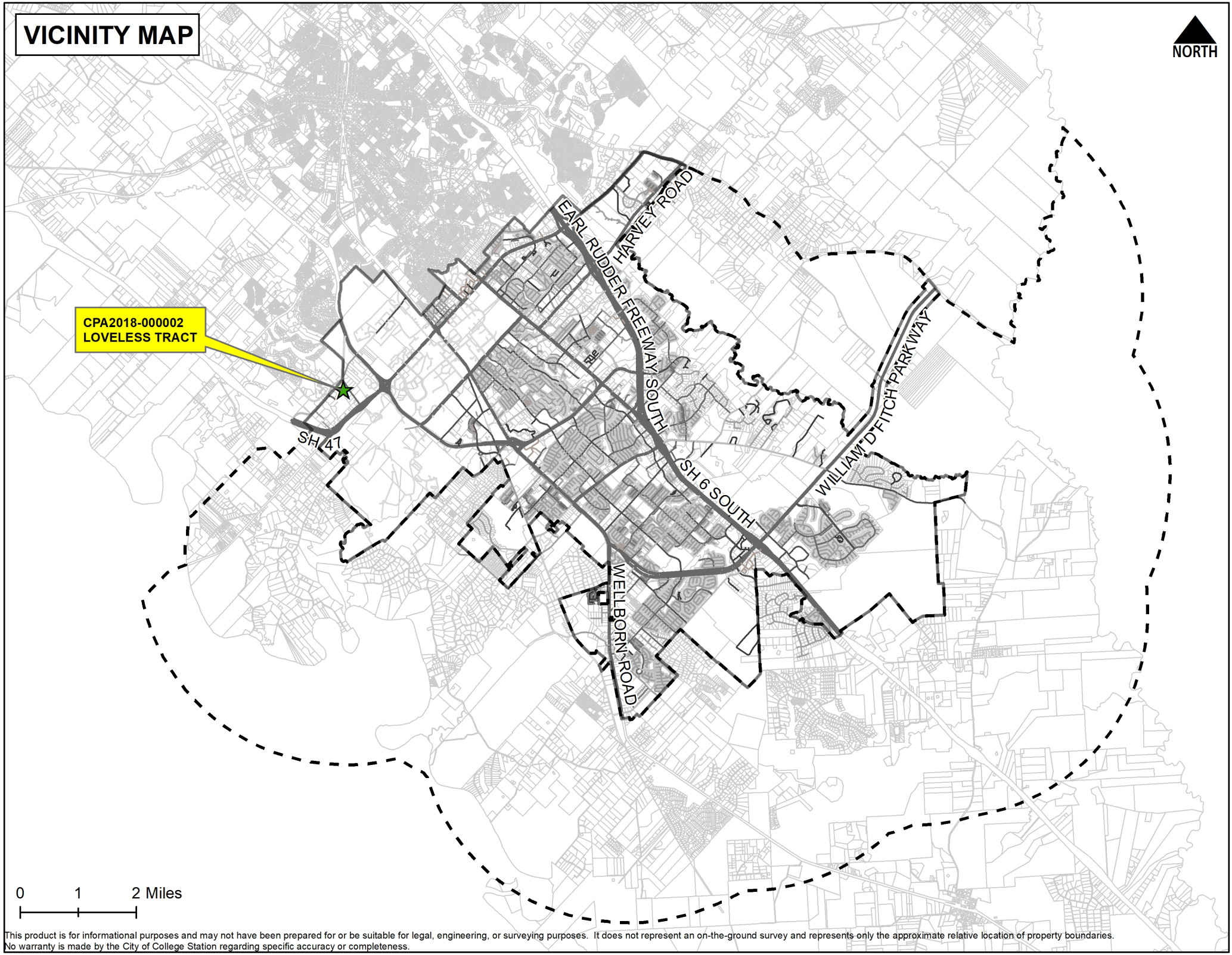
**DEVELOPMENT HISTORY**

**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.

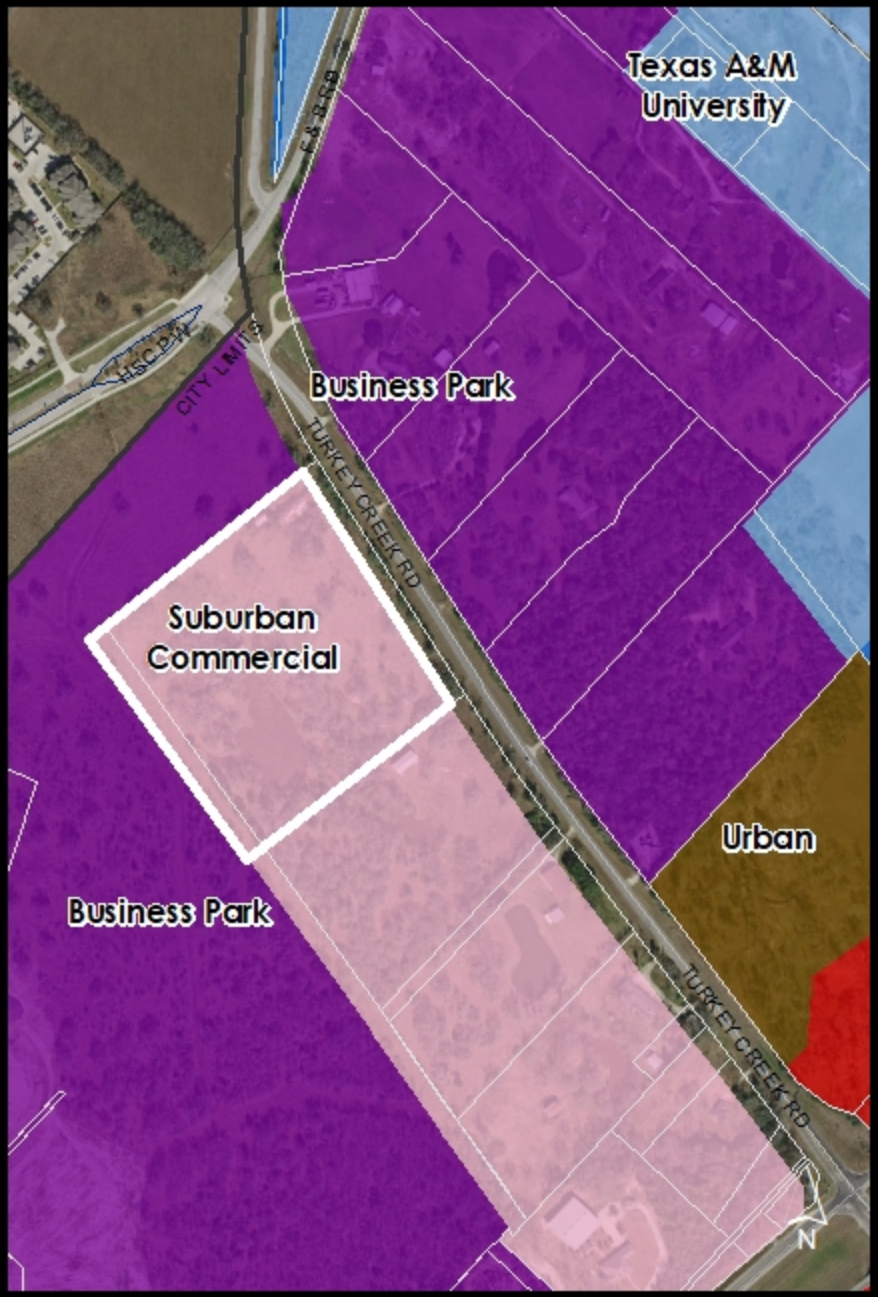



This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.
No warranty is made by the City of College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

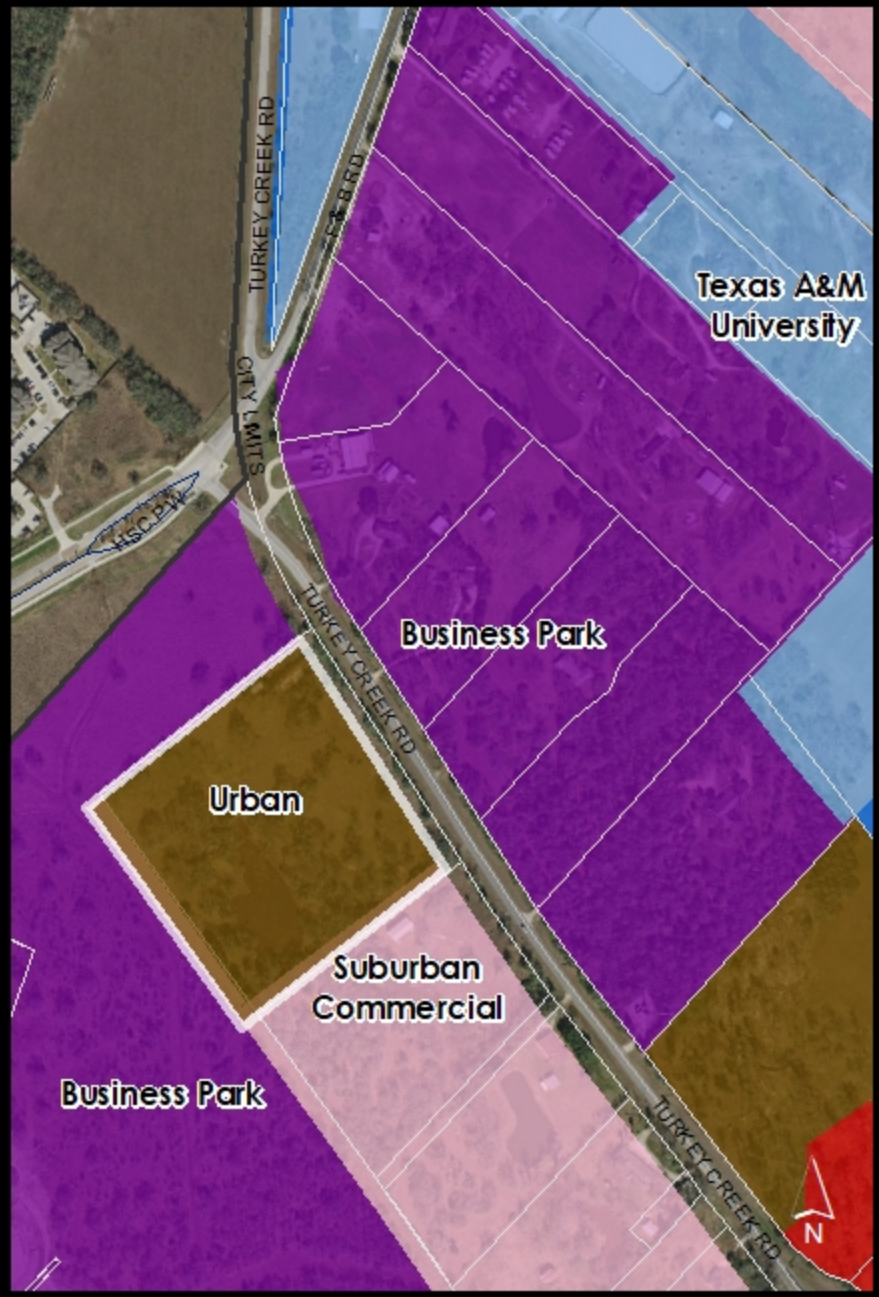

**LOVELESS TRACT**

Case: CPA2018-000002 COMP PLAN AMENDMENT

## 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 APPROXIMATLEY 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:

# Legislation Details (With Text)

| | | | | | |
|---|---|---|---|---|---|
| **File #:** | 18-0542 | **Version:** 2 | **Name:** | Loveless Tract REZ | |
| **Type:** | Rezoning | | **Status:** | Agenda Ready | |
| **File created:** | 8/9/2018 | | **In control:** | City Council Regular | |
| **On agenda:** | 8/23/2018 | | **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<br>Vicinity, Aerial & Small Area Map<br>Rezoning Map<br>TIA Loveless Rezoning<br>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.

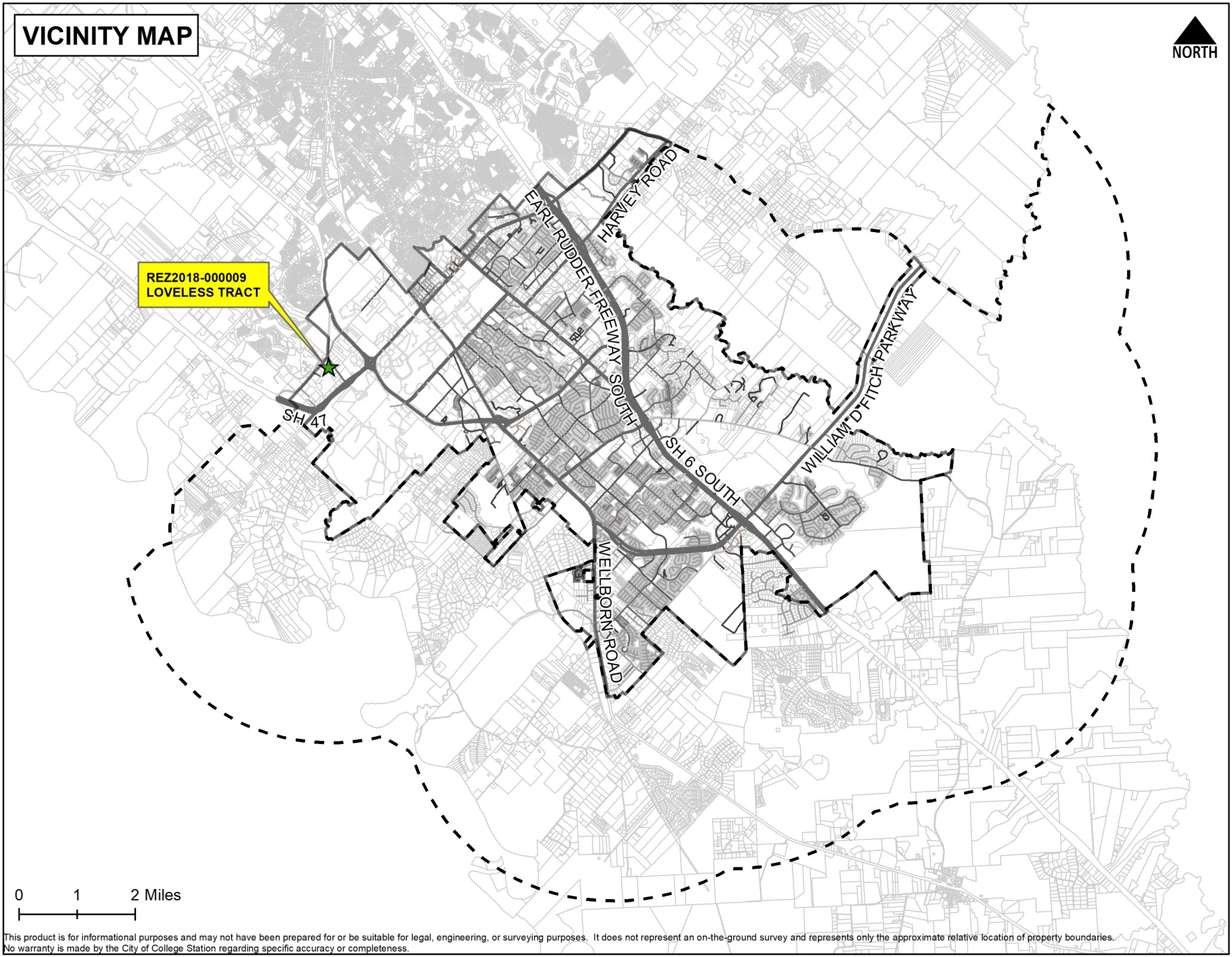
**5. The marketability of the property:** The property can currently be marketed under the existing R Rural zoning district. However, the applicant has stated that the use is not appropriate or feasible for this property knowing the current development happening on nearby property and the anticipated change in the development pattern for the area.

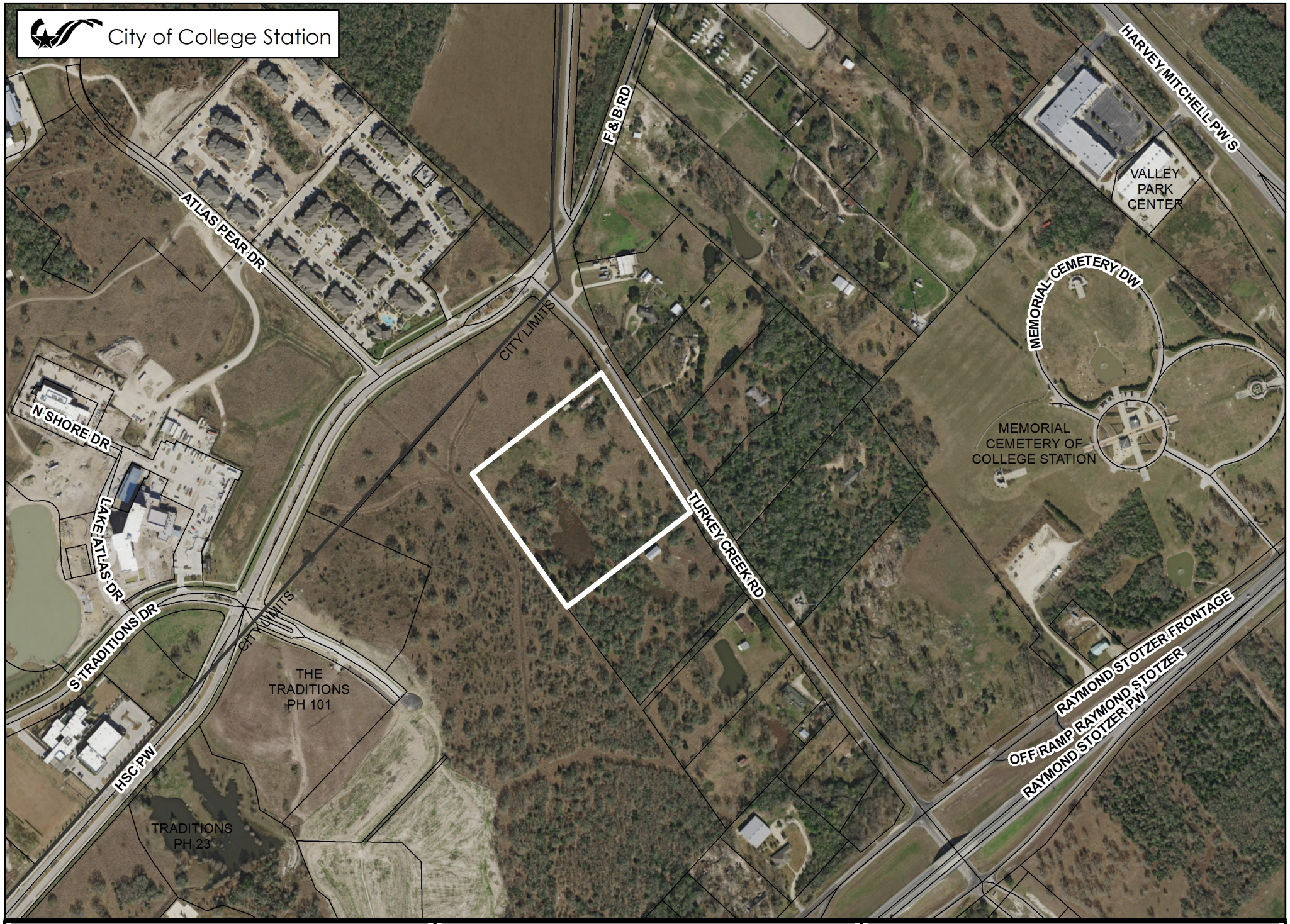
Legal Review: Yes

## SUPPORTING MATERIALS

1. Background Information
2. Vicinity Map, Aerial, and Small Area Map
3. Rezoning Map
4. Ordinance

# VICINITY MAP

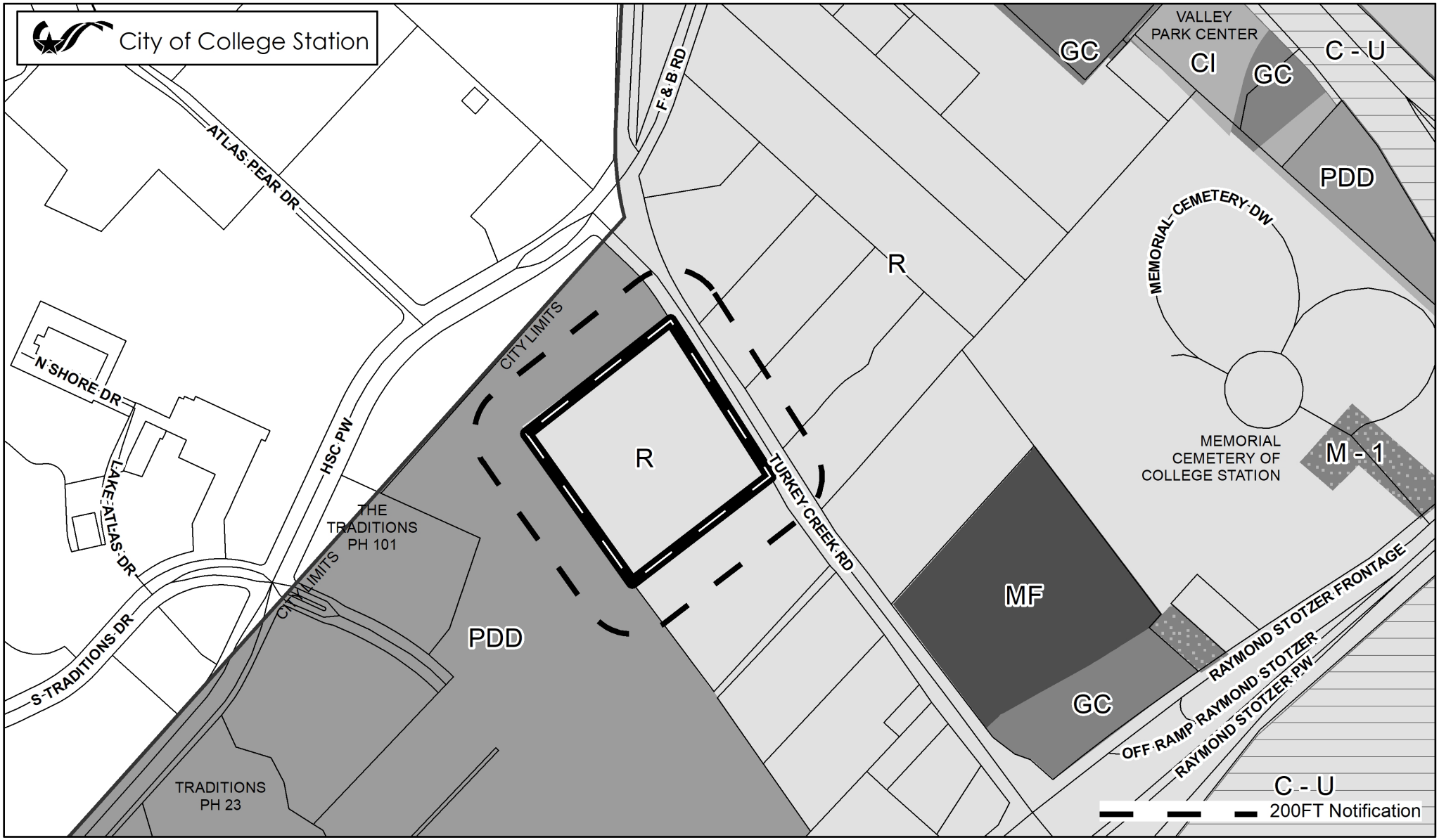





**LOVELESS TRACT**

Case: REZ2018-000009

REZONING




**ZONING DISTRICTS** (In Grayscale)

Residential

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

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 | Krenek 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 |

NORTH

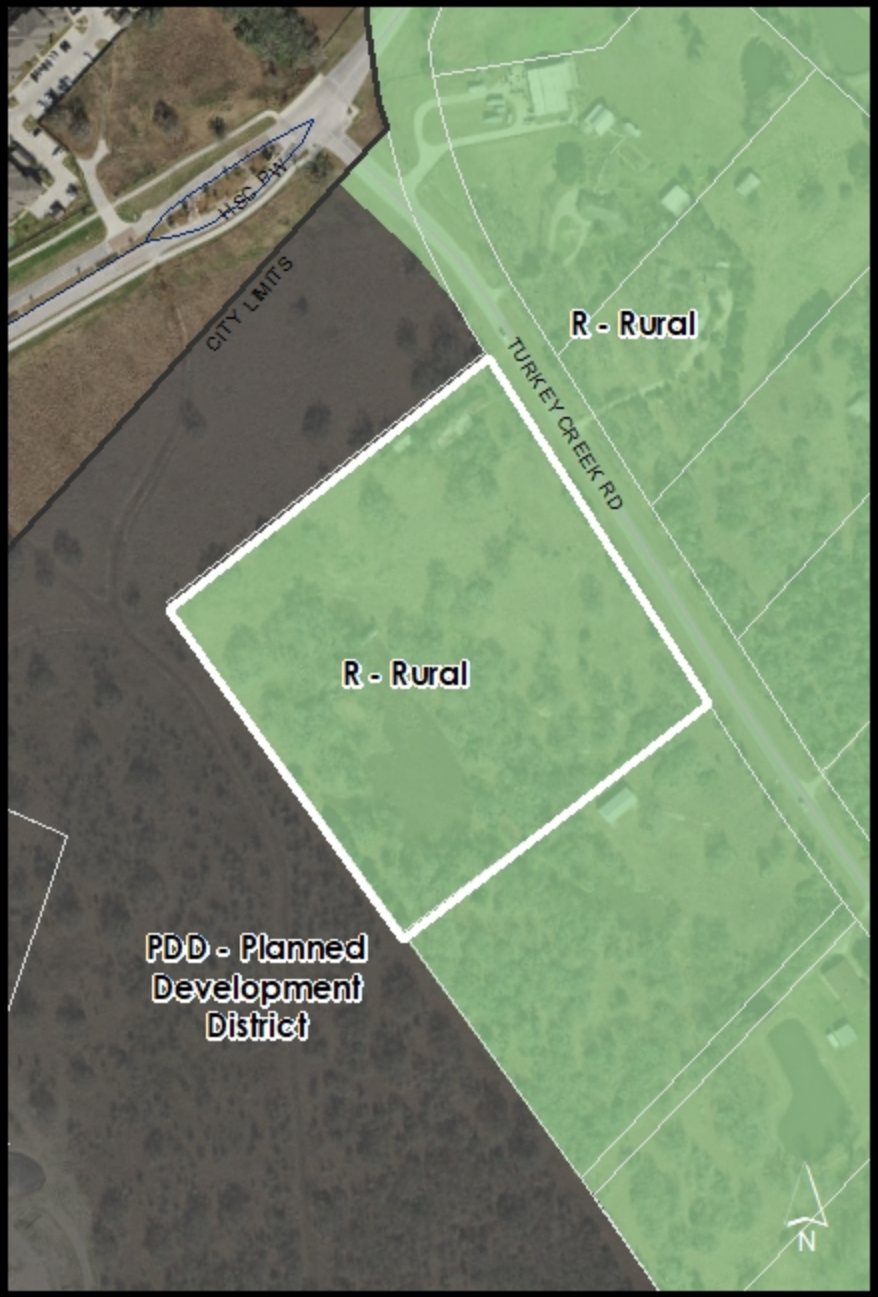
0 500 1,000 Feet

**LOVELESS TRACT**

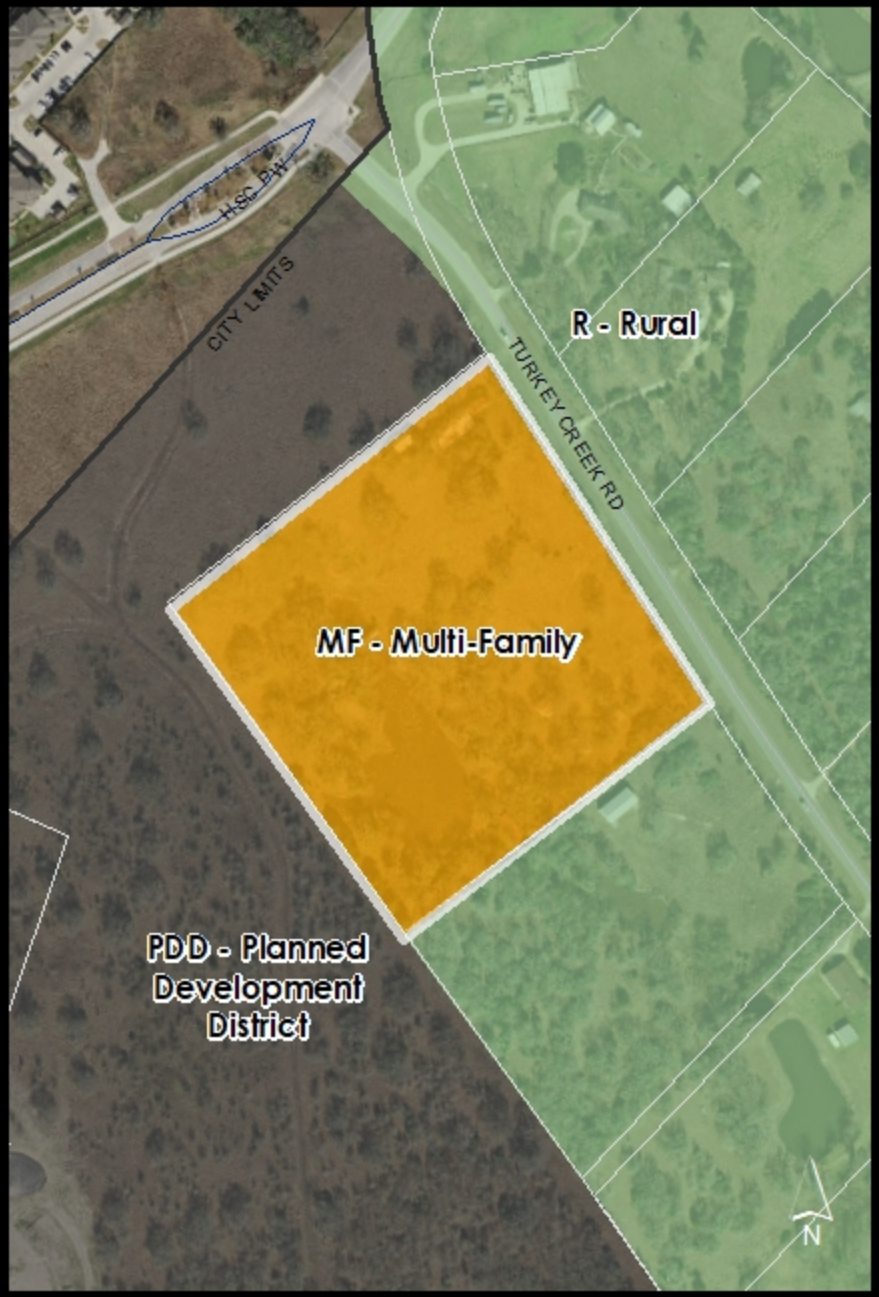
Case: REZ2018-000009

REZONING

**EXISTING**
Zoning




**PROPOSED**
Zoning



**TRAFFIC IMPACT ANALYSIS**

**for**

# Rezoning of Loveless Tract on Turkey Creek Road

**in College Station, Texas**

***Prepared***

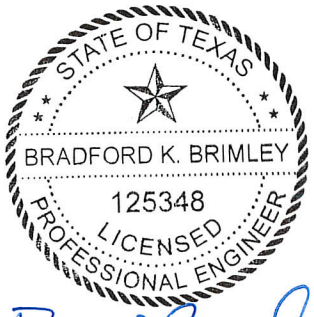
***for***

**Traditions Acquisition Partnership and Schultz Engineering, LLC**

**June 7, 2018**

***By***

**Binkley & Barfield, Inc.**
consulting engineers
Texas Registration Number F-257




6/7/18

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

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**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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## LIST OF FIGURES



## LIST OF TABLES

## 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

north

| LOVELESS TRACT<br>AERIAL MAP | |
|---|---|
| SCALE: N/A | DATE: April 2018 |
| JOB NO.: BB18044 | DWG. FILE: FIGURE #1 |

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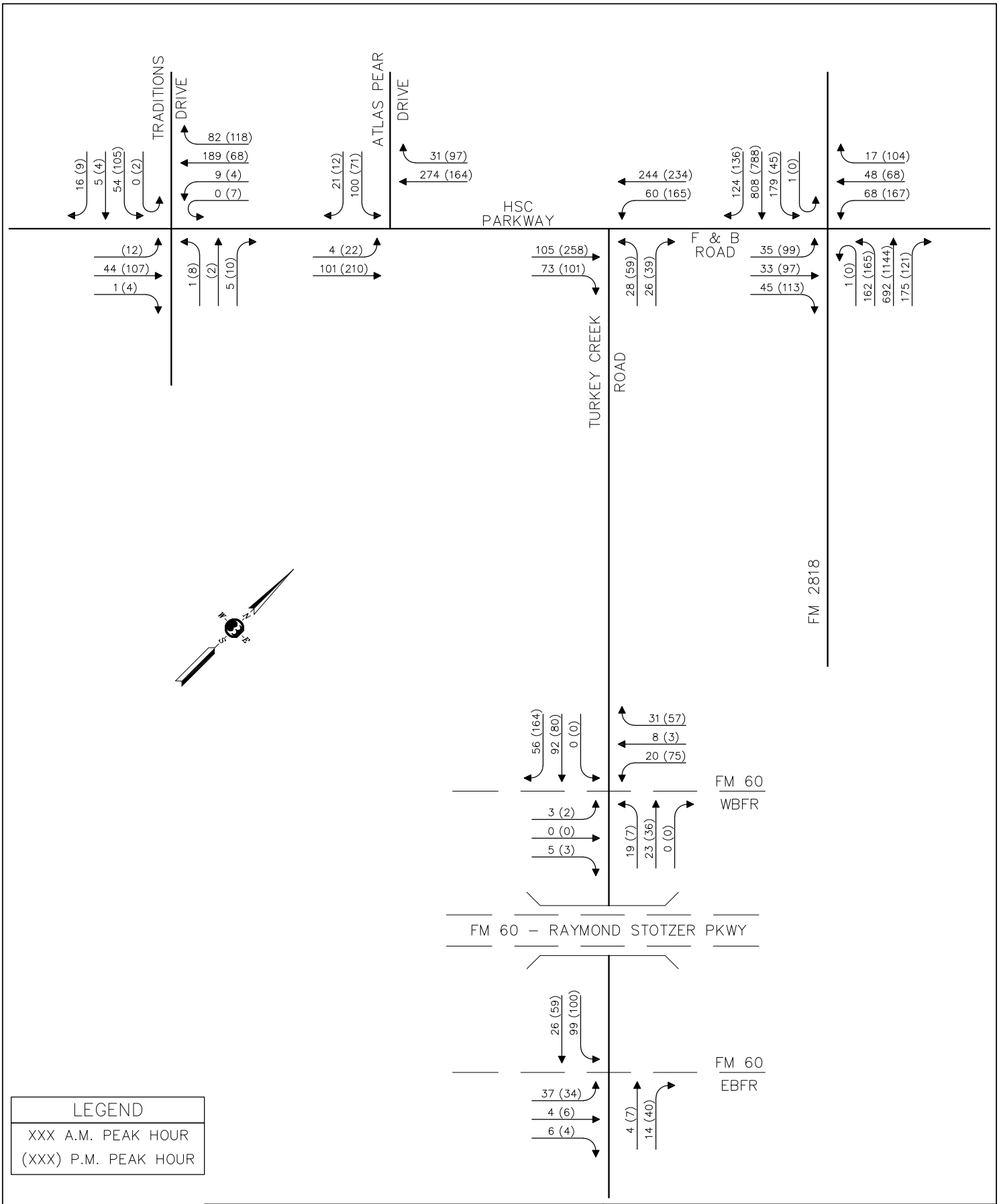


| LEGEND |
|---|
| XXX A.M. PEAK HOUR |
| (XXX) P.M. PEAK HOUR |

**LOVELESS TRACT**
PEAK HOUR VOLUMES – EXISTING (2018)

| | | | |
|---|---|---|---|
| SCALE: | N/A | DATE: | April 2018 |
| JOB NO.: | BB18044 | DWG. FILE: | FIGURE #2 |


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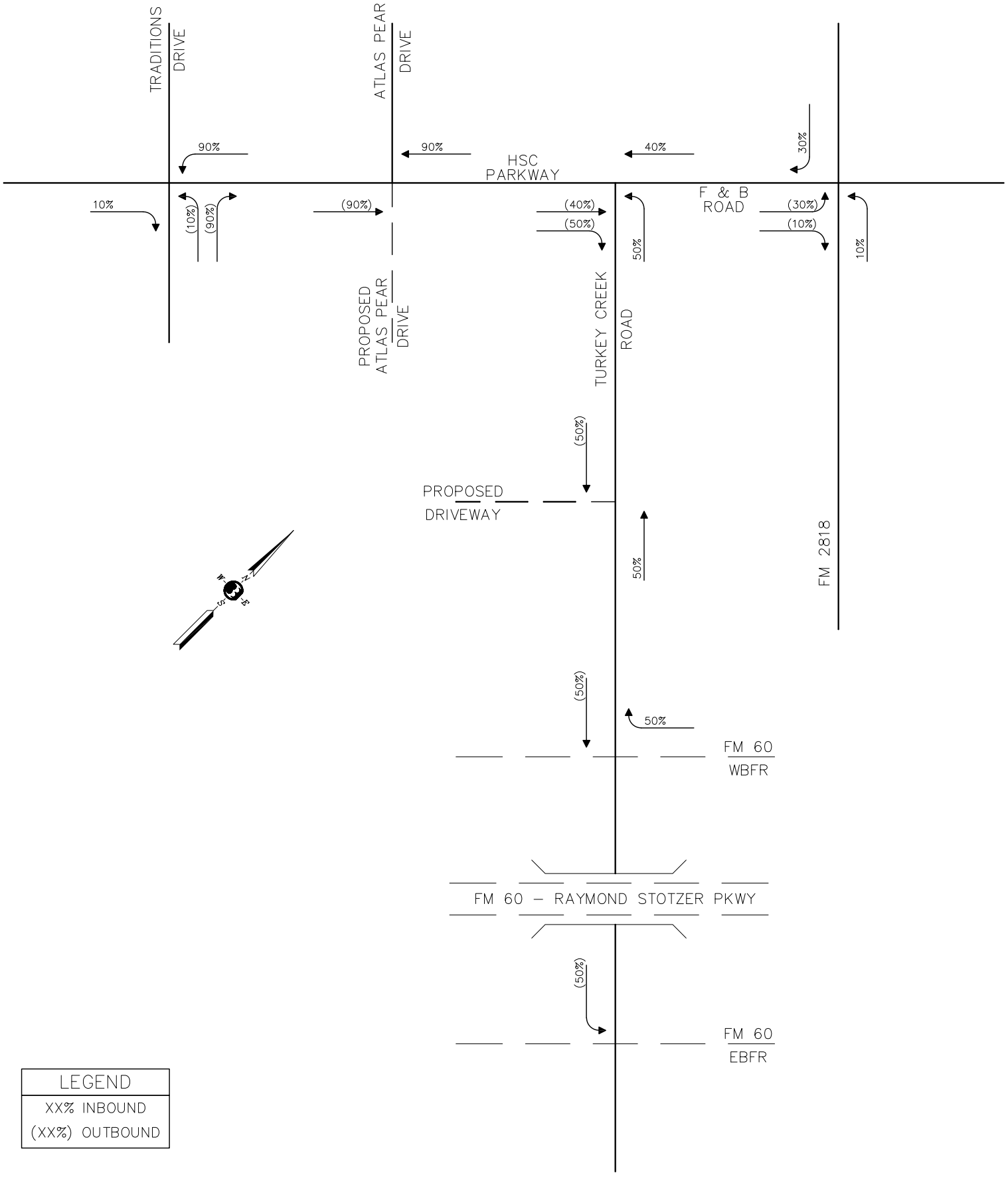


**LOVELESS TRACT**
TRIP DISTRIBUTION – VIASAT

| | | | |
|---|---|---|---|
| SCALE: | N/A | DATE: | June 2018 |
| JOB NO.: | BB18044 | DWG. FILE: | FIGURE #3 |

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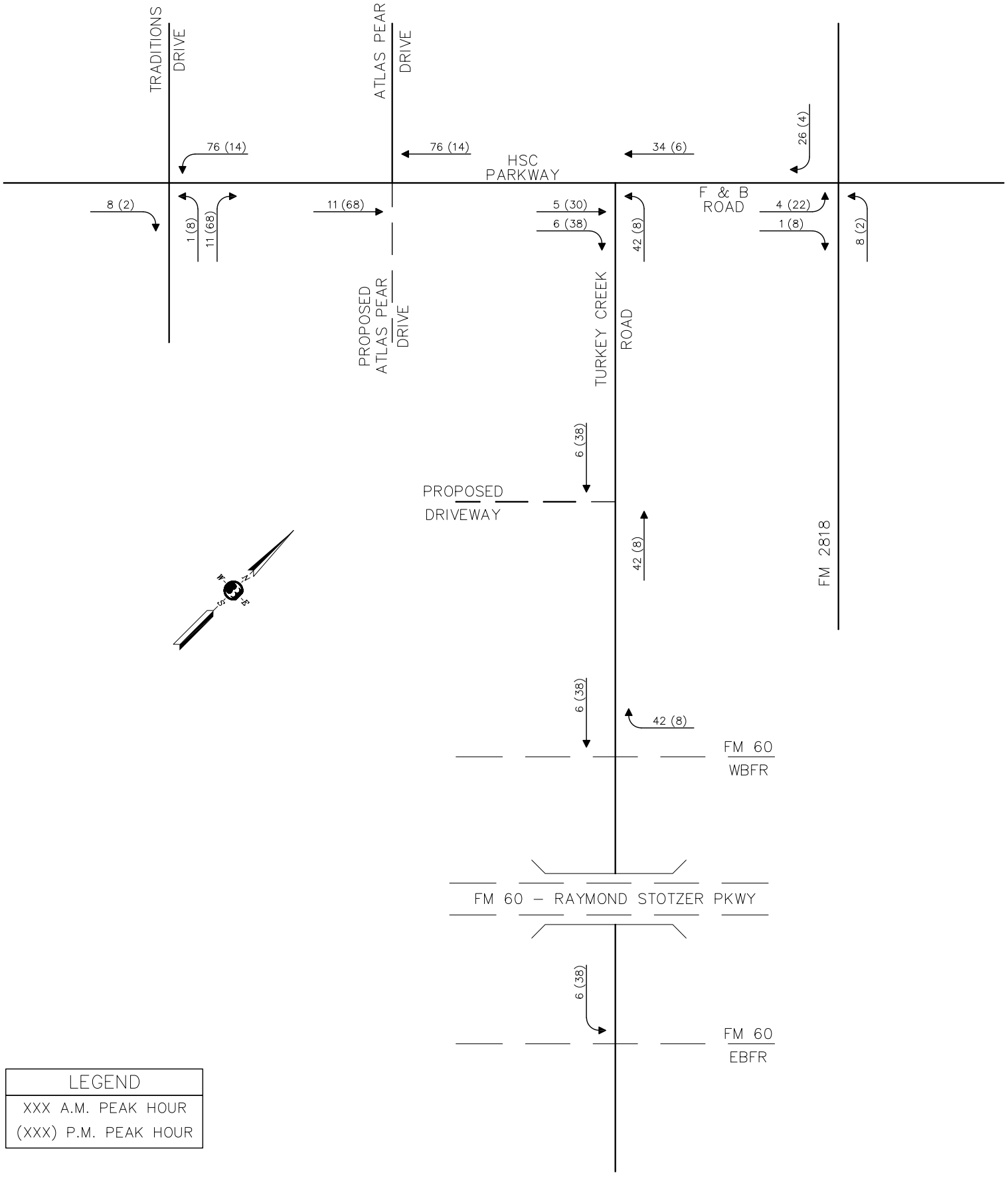


| LEGEND |
|---|
| XXX A.M. PEAK HOUR |
| (XXX) P.M. PEAK HOUR |

**LOVELESS TRACT**
PEAK HOUR VOLUMES – VIASAT

| | | | |
|---|---|---|---|
| SCALE: | N/A | DATE: | June 2018 |
| JOB NO.: | BB18044 | DWG. FILE: | FIGURE #4 |

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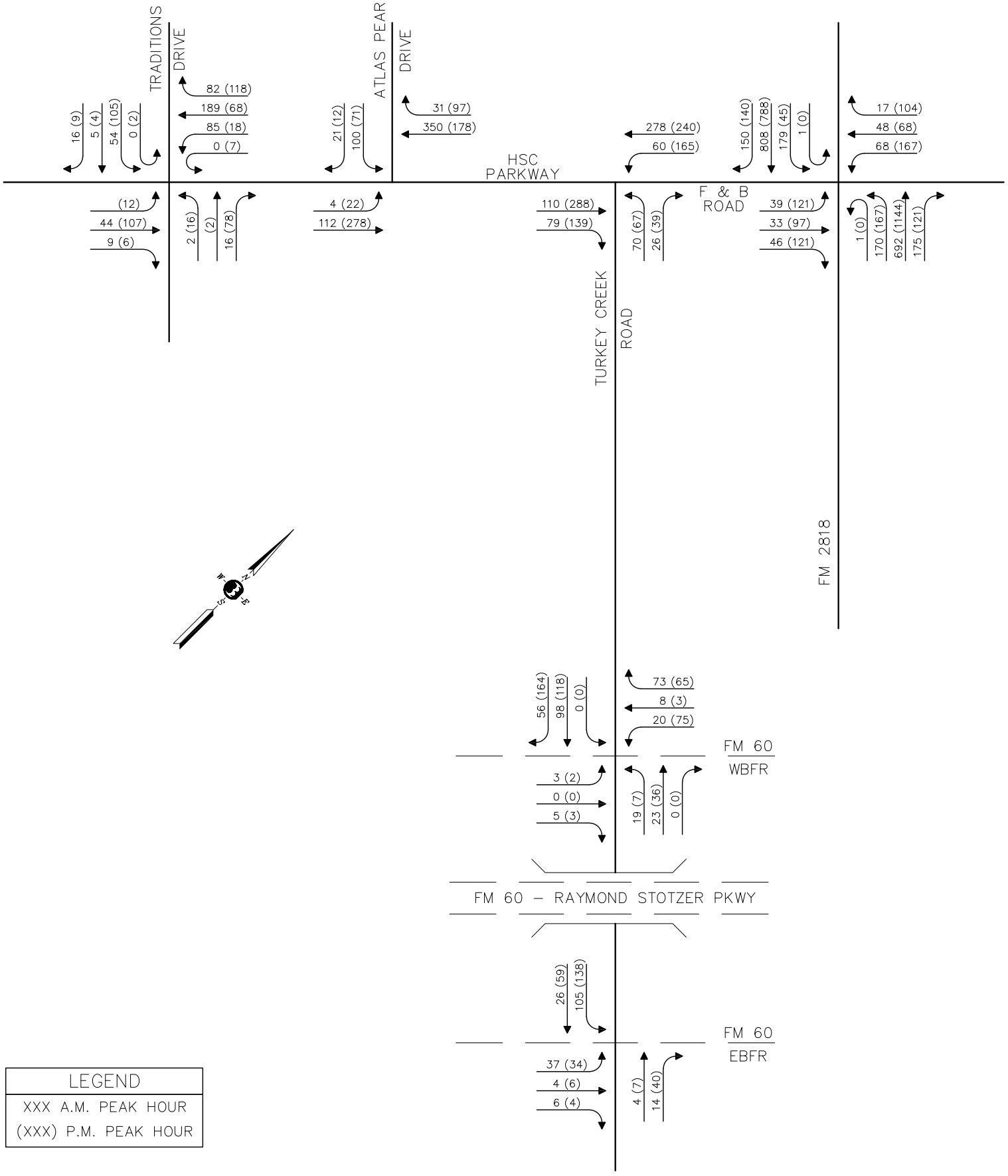


| LEGEND |
|---|
| XXX A.M. PEAK HOUR |
| (XXX) P.M. PEAK HOUR |

**LOVELESS TRACT**

PEAK HOUR VOLUMES – TOTAL EXISTING (2018)

| | | | |
|---|---|---|---|
| SCALE: | N/A | DATE: | June 2018 |
| JOB NO.: | BB18044 | DWG. FILE: | FIGURE #5 |


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## 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.

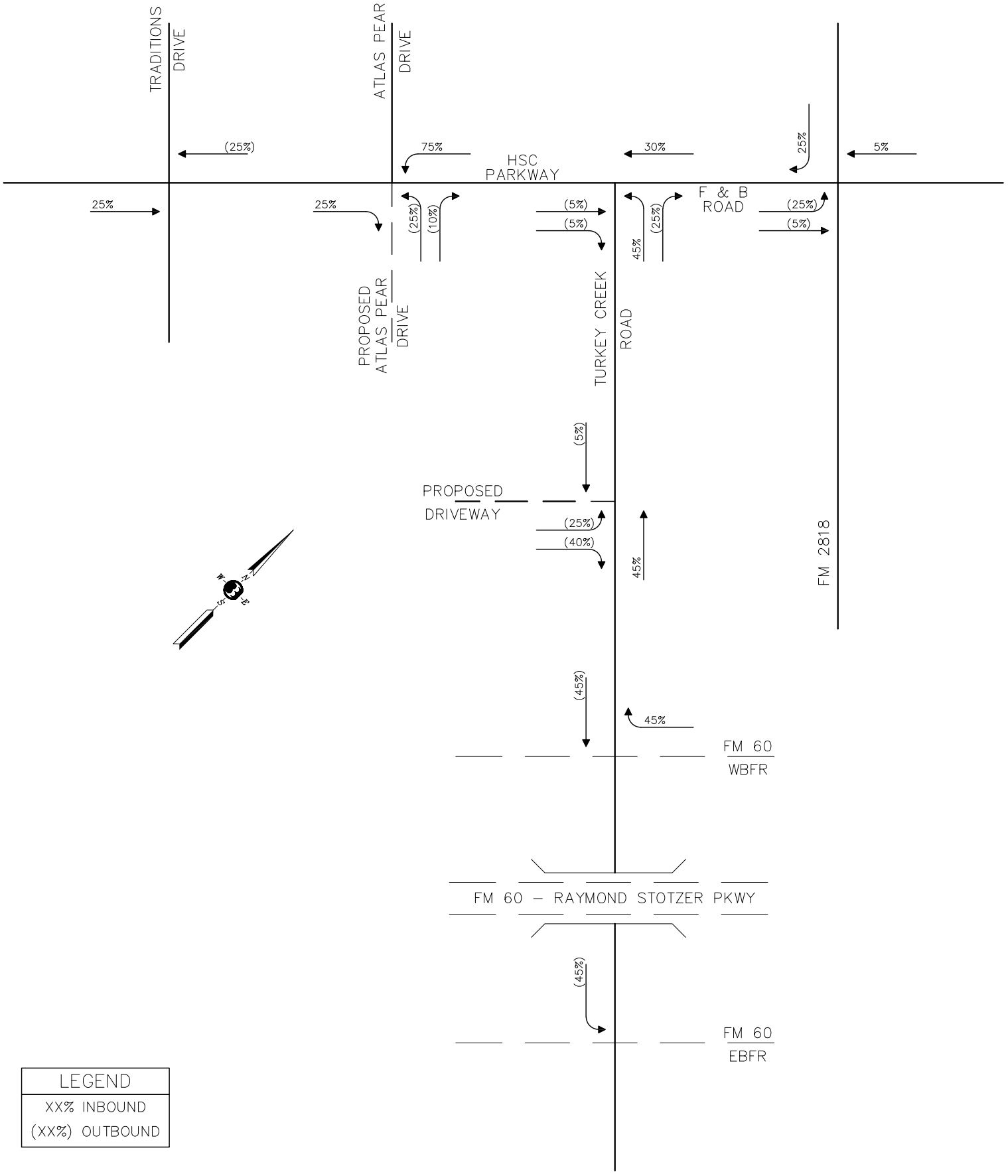
**Table 4. Trip Generation Data: Proposed Development**

| 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.




| LEGEND |
|---|
| XX% INBOUND |
| (XX%) OUTBOUND |

**LOVELESS TRACT**
TRIP DISTRIBUTION (PROPOSED)

| | | | |
|---|---|---|---|
| SCALE: | N/A | DATE: | June 2018 |
| JOB NO.: | BB18044 | DWG. FILE: | FIGURE #6 |

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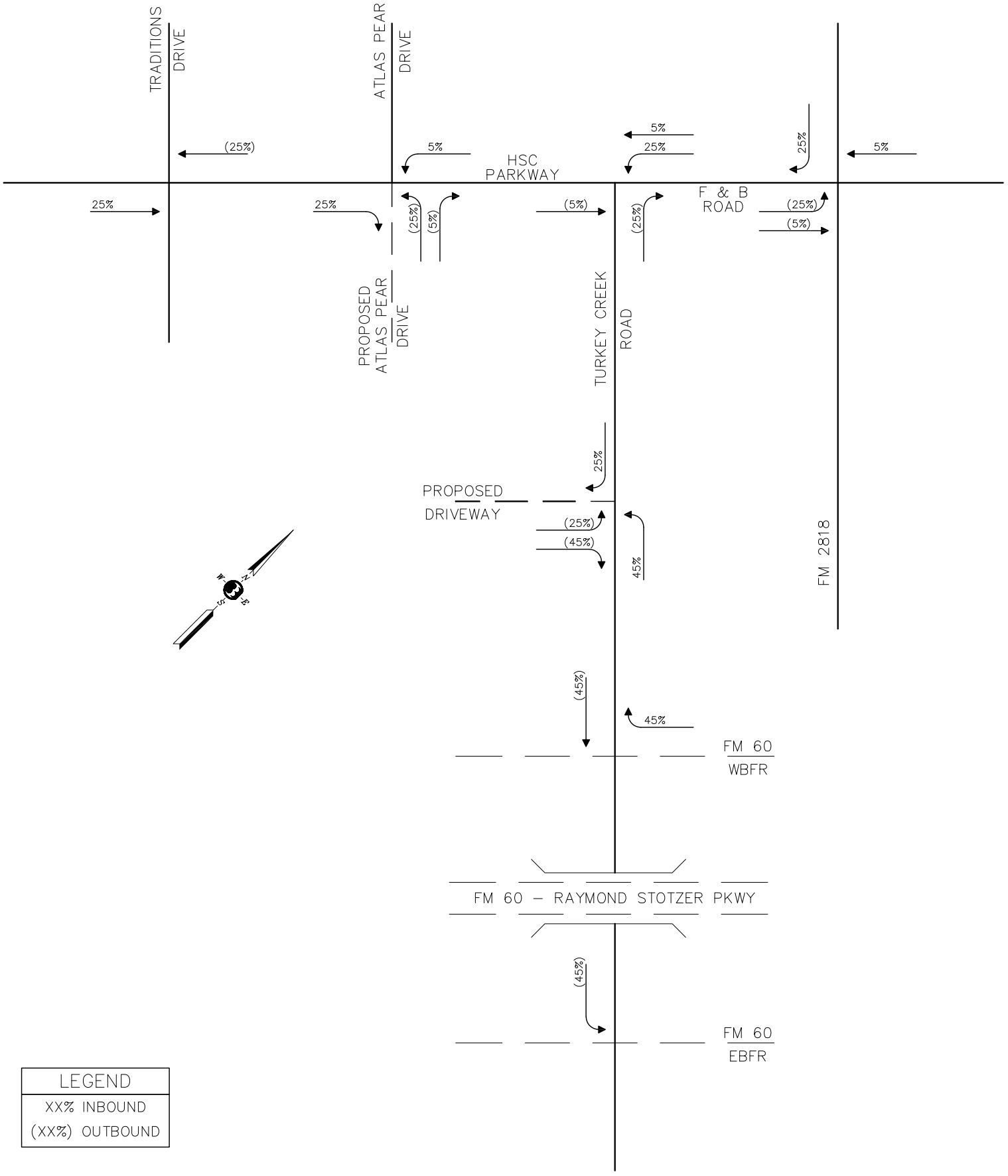


**LOVELESS TRACT**
TRIP DISTRIBUTION (ALTERNATIVE)

| | | | |
|---|---|---|---|
| SCALE: | N/A | DATE: | June 2018 |
| JOB NO.: | BB18044 | DWG. FILE: | FIGURE #7 |

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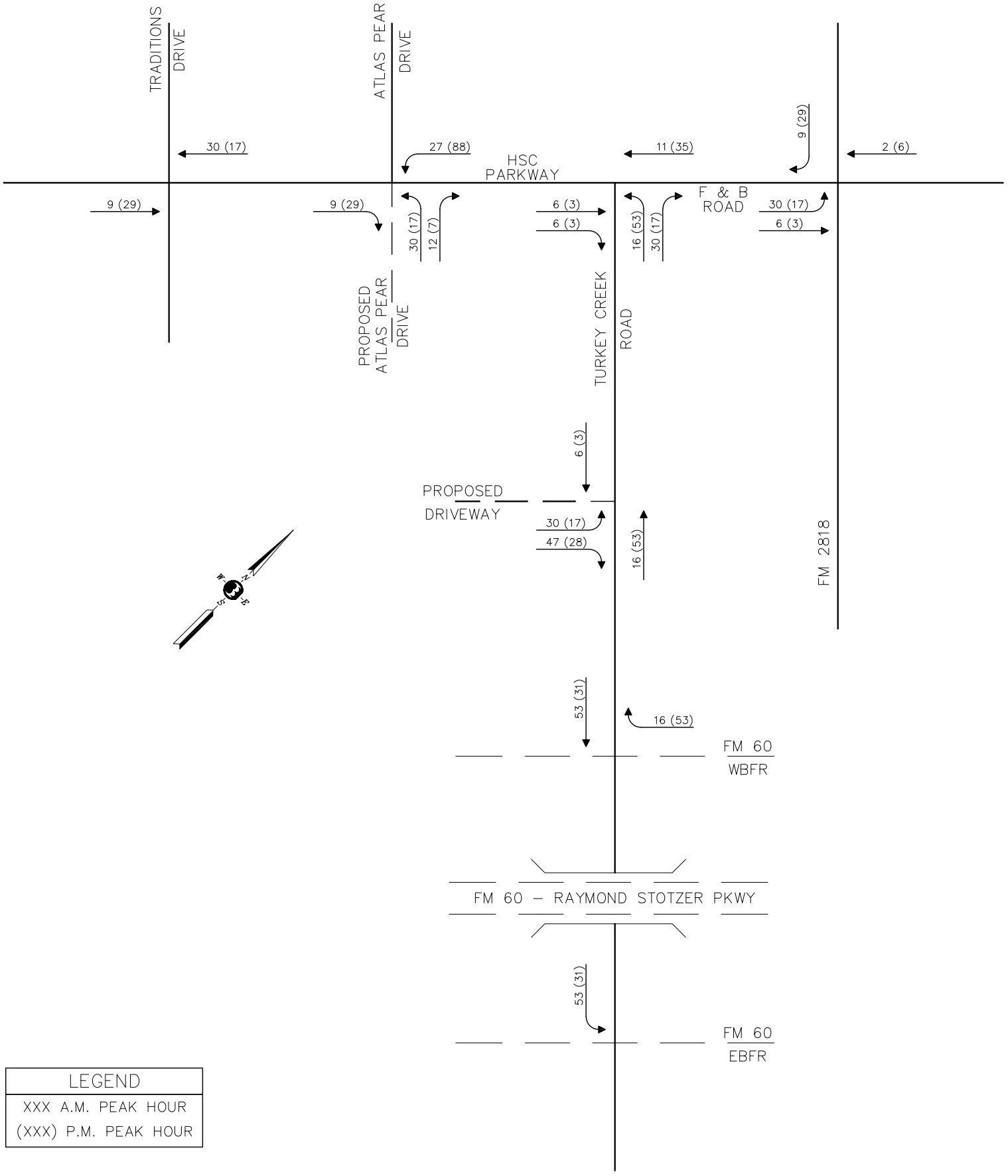


| LEGEND |
|---|
| XXX A.M. PEAK HOUR |
| (XXX) P.M. PEAK HOUR |

**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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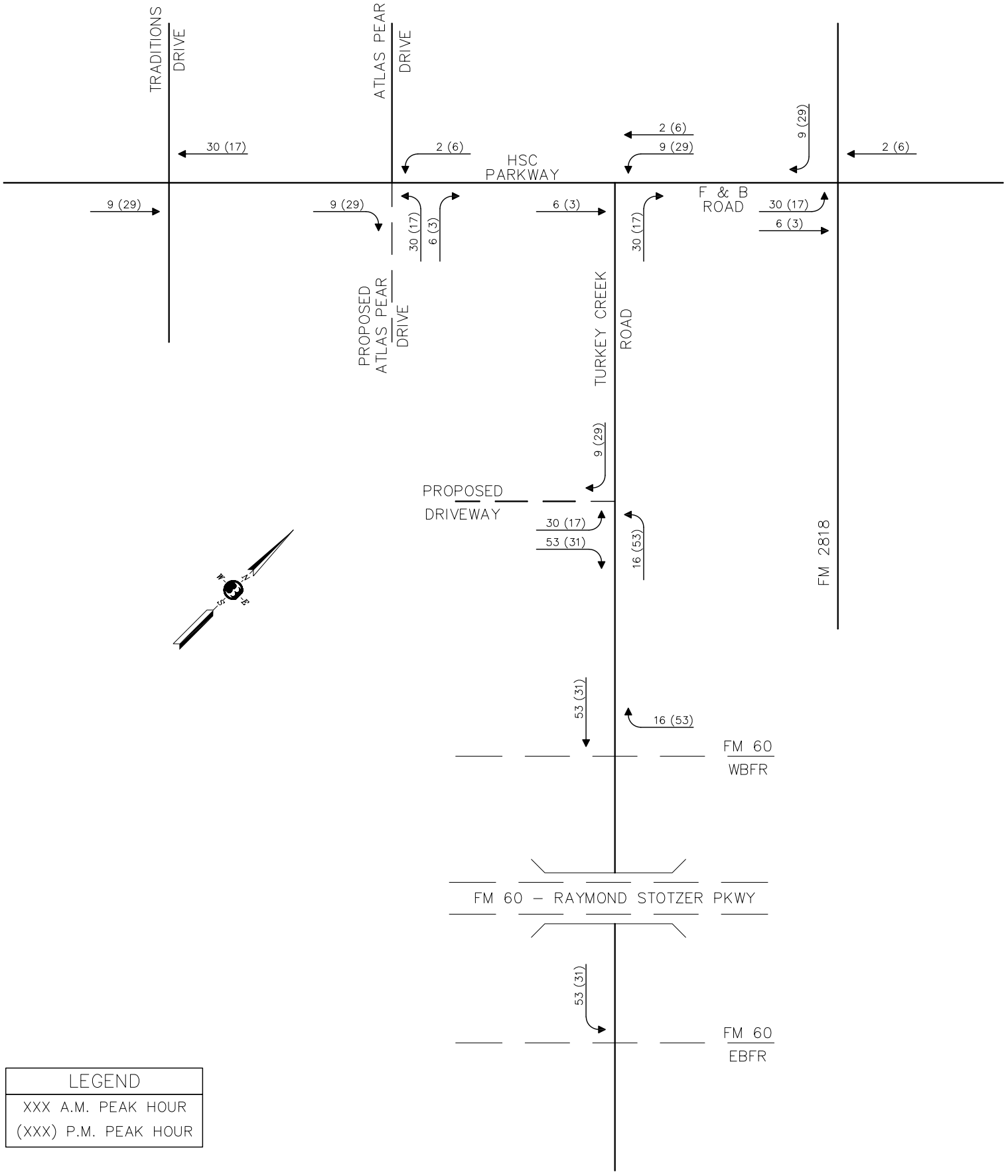


**LOVELESS TRACT**

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

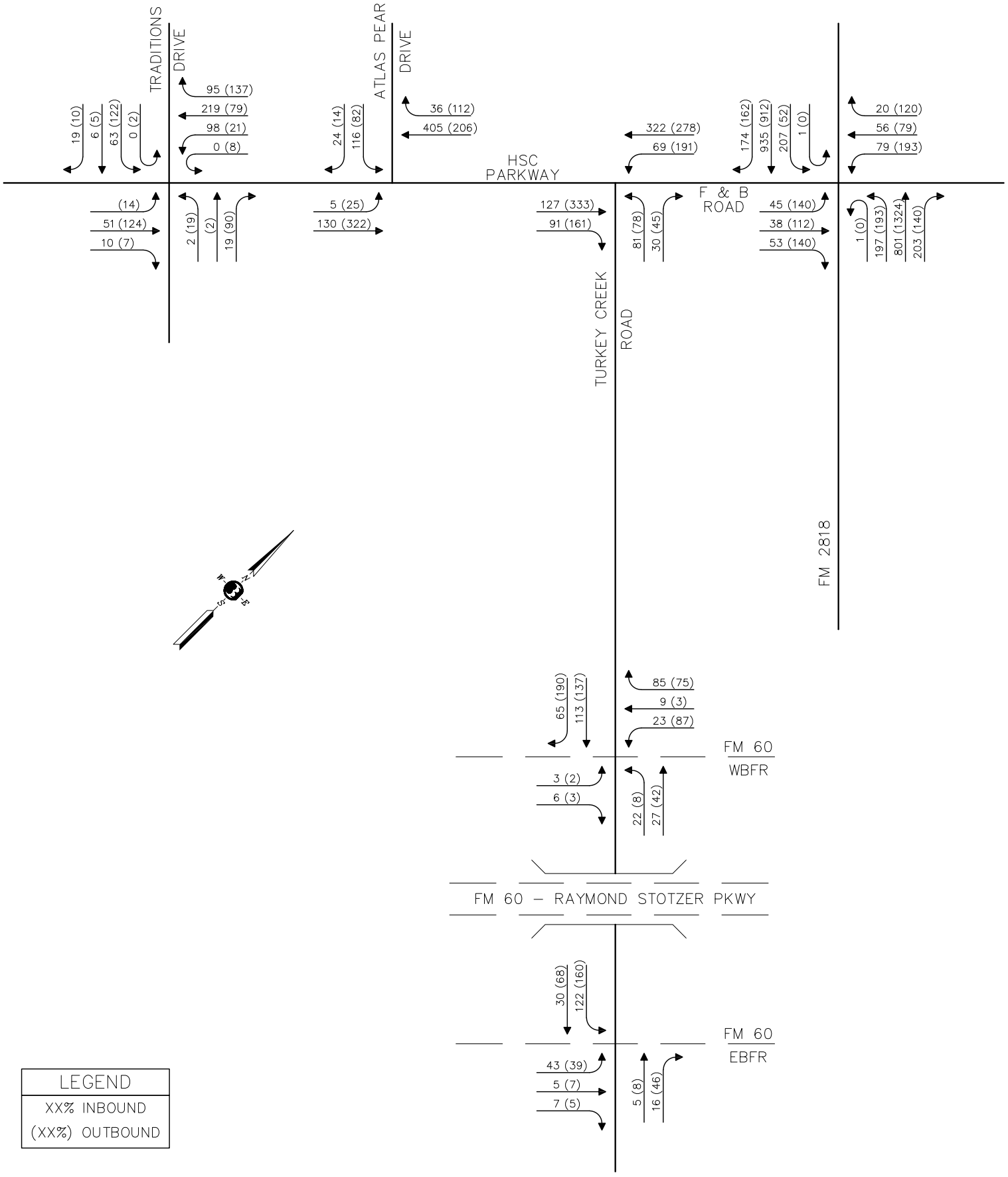
**Figure 11** displays the proposed "total volumes" anticipated to occur within the study area for the Full Build 2021 conditions. The total proposed volumes depicted combine the site generated volumes in **Figure 8** and the background volumes in **Figure 10**.

**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 the 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% |




| LEGEND |
|---|
| XX% INBOUND |
| (XX%) OUTBOUND |

**LOVELESS TRACT**
PEAK HOUR VOLUMES – BACKGROUND (2021)

| | | | |
|---|---|---|---|
| SCALE: | N/A | DATE: | June 2018 |
| JOB NO.: | BB18044 | DWG. FILE: | FIGURE #10 |


Binkley & Barfield, Inc
consulting engineers
Texas Registration Number F-257
3452 Rock Prairie Road West
College Station, Texas 77845
979.703.1809
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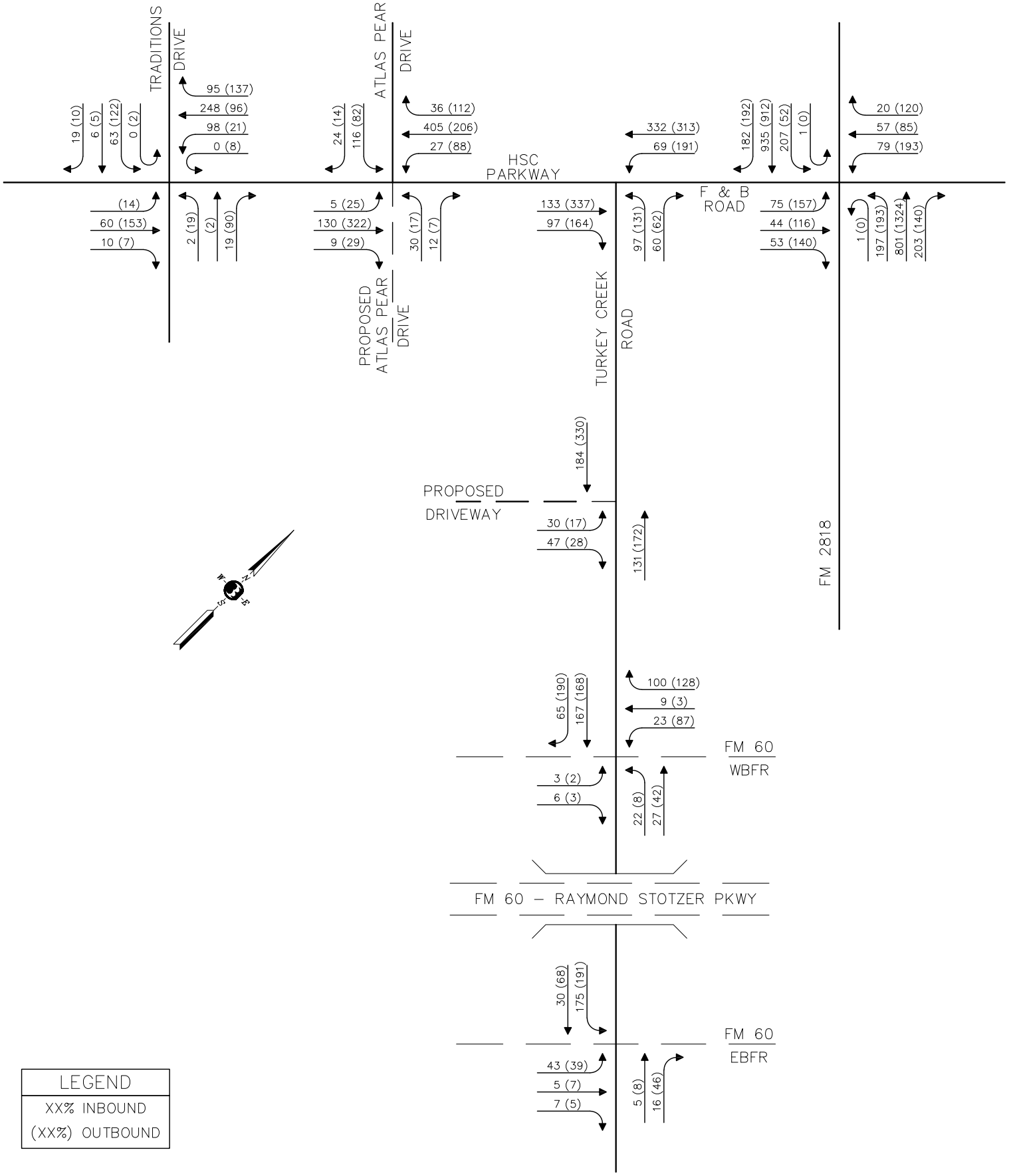


| LEGEND |
|---|
| XX% INBOUND |
| (XX%) OUTBOUND |

**LOVELESS TRACT**
PEAK HOUR VOLUMES – FULL BUILD PROPOSED (2021)

| | | | |
|---|---|---|---|
| SCALE: | N/A | DATE: | June 2018 |
| JOB NO.: | BB18044 | DWG. FILE: | FIGURE #11 |


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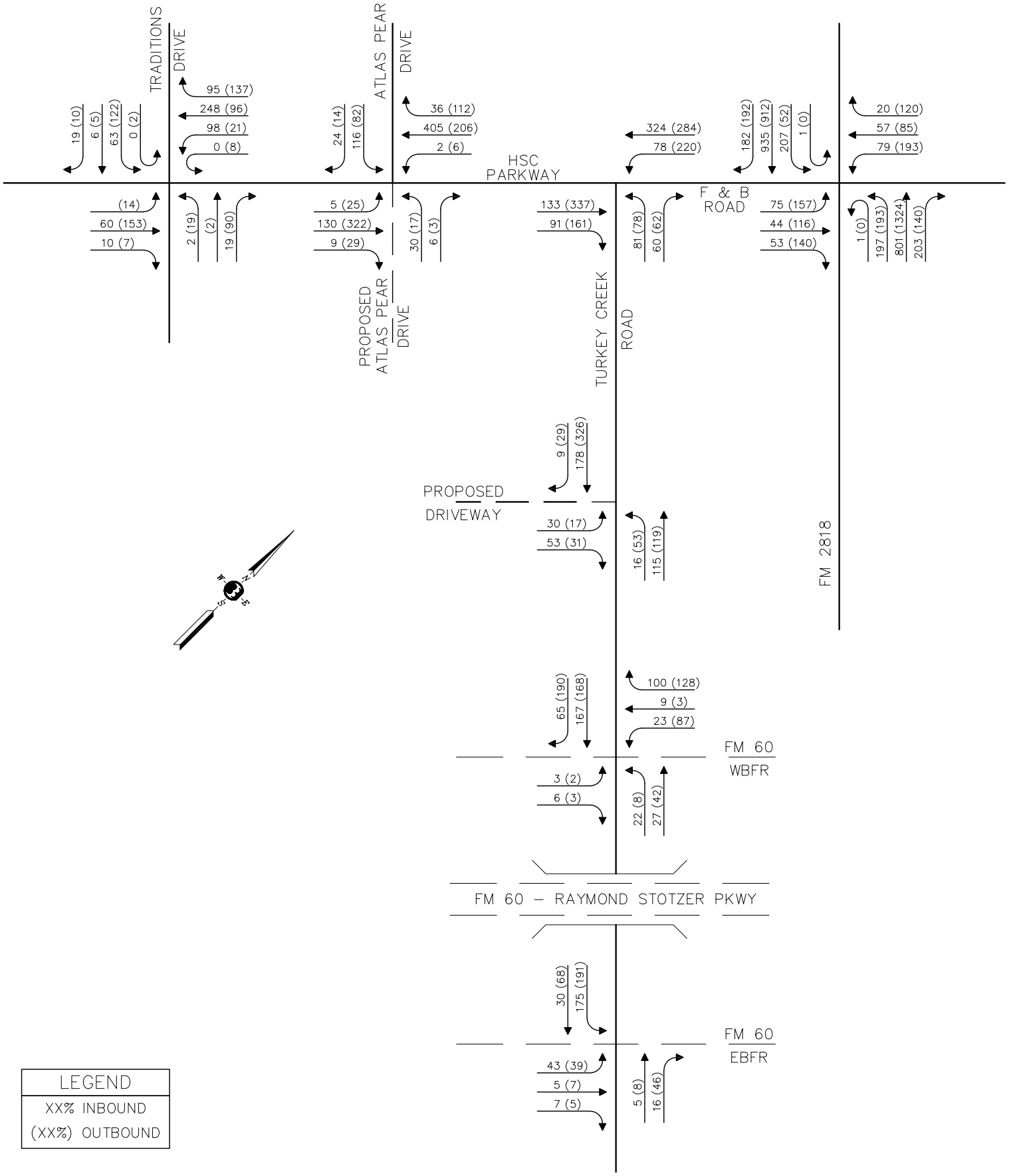


| LEGEND |
|---|
| XX% INBOUND |
| (XX%) OUTBOUND |

**LOVELESS TRACT**

PEAK HOUR VOLUMES – FULL BUILD ALTERNATIVE (2021)

| | | | |
|---|---|---|---|
| SCALE: | N/A | DATE: | June 2018 |
| JOB NO.: | BB18044 | DWG. FILE: | FIGURE #12 |


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## 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

TURKEY CREEK ROAD

DRIVEWAY 2

LOVELESS TRACT
11.14 ACRES
307 UNITS
577 BEDROOMS

HSC PARKWAY

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

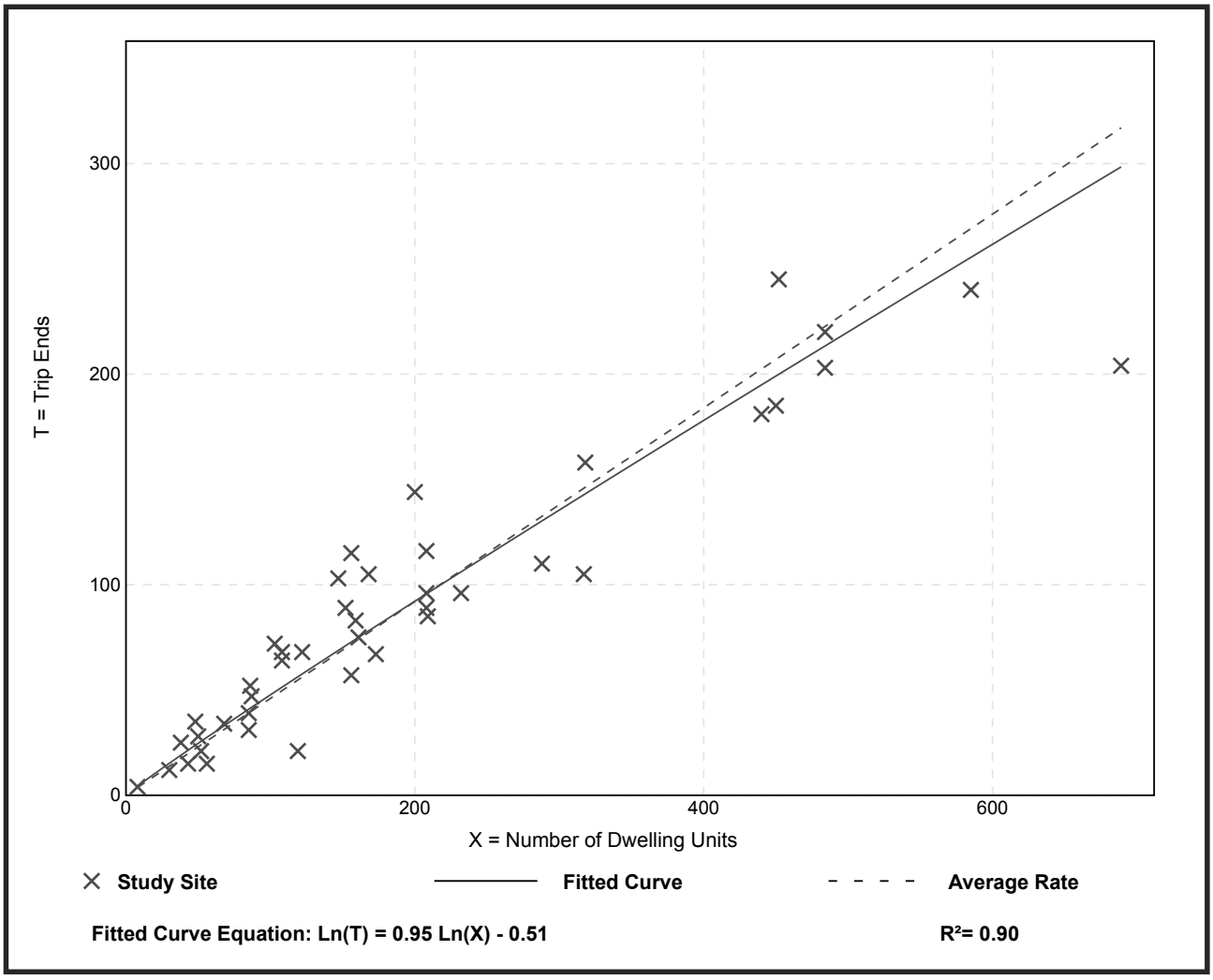
# Multifamily Housing (Low-Rise)
(220)

| | |
|---|---|
| **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



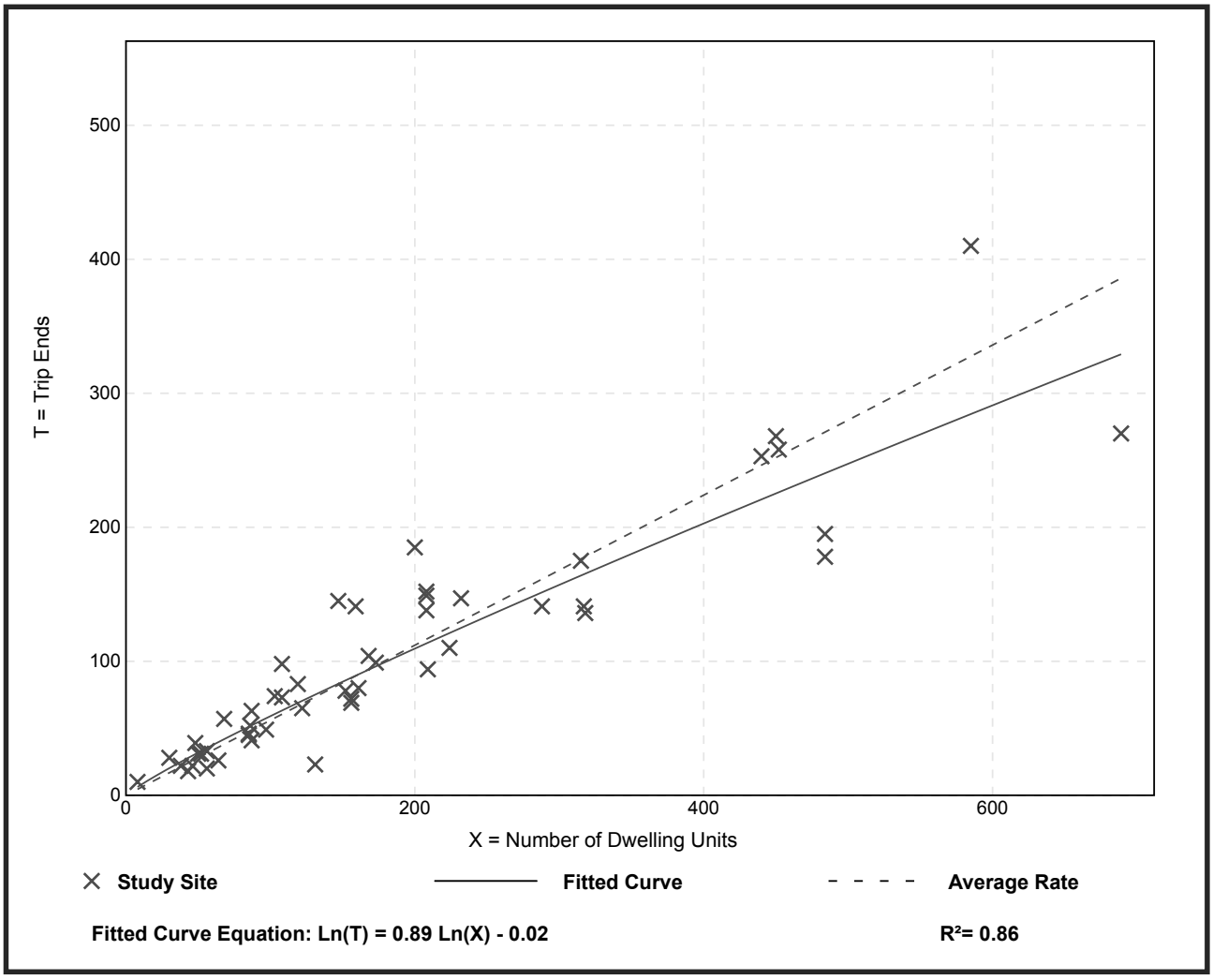
# Multifamily Housing (Low-Rise)
(220)

| | |
|---|---|
| **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 |

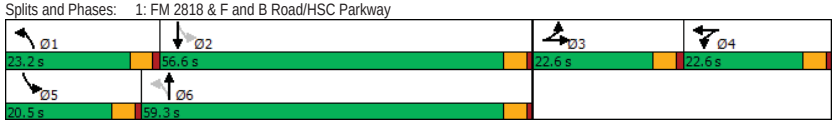
## Data Plot and Equation



| 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








| 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-tile Q | 0.6 | 0.7 | 0.4 | 2.9 |

| 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 | 0 | 0 | 331 | 562 | 63 | 482 | 545 | 214 |
| Stage 1 | - | - | - | - | - | - | 134 | 134 | - | 411 | 411 | - |
| Stage 2 | - | - | - | - | - | - | 197 | 428 | - | 71 | 134 | - |
| 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 | 1128 | - | - | 1458 | - | - | 599 | 434 | 988 | 467 | 444 | 791 |
| Stage 1 | - | - | - | - | - | - | 855 | 785 | - | 589 | 593 | - |
| Stage 2 | - | - | - | - | - | - | 786 | 583 | - | 931 | 785 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1128 | - | - | 1458 | - | - | 580 | 432 | 988 | 466 | 442 | 791 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 580 | 432 | - | 466 | 442 | - |
| Stage 1 | - | - | - | - | - | - | 852 | 782 | - | 587 | 593 | - |
| Stage 2 | - | - | - | - | - | - | 763 | 583 | - | 928 | 782 | - |

| 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 |





| 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 |

| 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 |





| 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 |

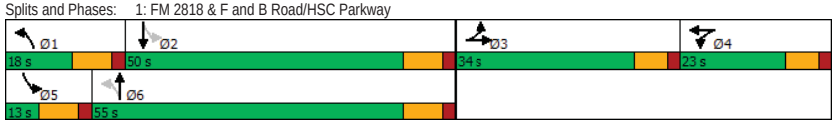
| Lane | NBLn1 | NBLn2 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 38% | 20% | 0% |
| Vol Thru, % | 0% | 100% | 0% | 8% | 64% |
| Vol Right, % | 0% | 0% | 62% | 72% | 36% |
| Sign Control | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 19 | 23 | 8 | 101 | 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 |

| 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








| Intersection | |
|---|---|
| Intersection Delay, s/veh | 13.5 |
| Intersection LOS | B |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| 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-tile Q | 0.7 | 2.6 | 0.7 | 4.6 |

| 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 |





| 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 |

| 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 |





| 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 |

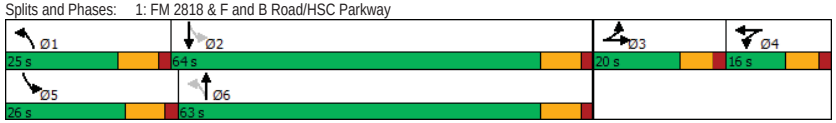
| Lane | NBLn1 | NBLn2 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 40% | 52% | 0% |
| Vol Thru, % | 0% | 100% | 0% | 2% | 42% |
| Vol Right, % | 0% | 0% | 60% | 45% | 58% |
| Sign Control | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 7 | 36 | 5 | 143 | 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 |

| 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








| 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-tile Q | 0.7 | 0.8 | 0.5 | 4 |

| 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 | 0 | 0 | 386 | 653 | 73 | 560 | 633 | 248 |
| Stage 1 | - | - | - | - | - | - | 158 | 158 | - | 475 | 475 | - |
| Stage 2 | - | - | - | - | - | - | 228 | 495 | - | 85 | 158 | - |
| 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 | 1065 | - | - | 1434 | - | - | 547 | 385 | 974 | 411 | 395 | 752 |
| Stage 1 | - | - | - | - | - | - | 828 | 766 | - | 539 | 556 | - |
| Stage 2 | - | - | - | - | - | - | 754 | 544 | - | 913 | 766 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1065 | - | - | 1434 | - | - | 525 | 383 | 974 | 409 | 393 | 752 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 525 | 383 | - | 409 | 393 | - |
| Stage 1 | - | - | - | - | - | - | 823 | 761 | - | 536 | 556 | - |
| Stage 2 | - | - | - | - | - | - | 727 | 544 | - | 908 | 761 | - |

| 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 |





| 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 |

| 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 |





| 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 |

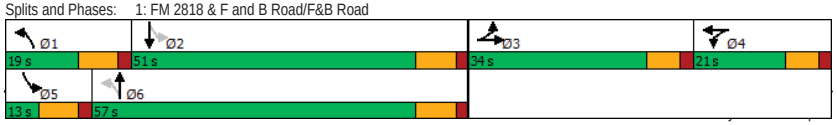
| Lane | NBLn1 | NBLn2 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 33% | 20% | 0% |
| Vol Thru, % | 0% | 100% | 0% | 8% | 63% |
| Vol Right, % | 0% | 0% | 67% | 73% | 37% |
| Sign Control | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 22 | 27 | 9 | 117 | 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 |

| 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








| 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 |

| 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 | 0 | 0 | 572 | 831 | 194 | 570 | 764 | 192 |
| Stage 1 | - | - | - | - | - | - | 448 | 448 | - | 316 | 316 | - |
| Stage 2 | - | - | - | - | - | - | 124 | 383 | - | 254 | 448 | - |
| 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 | - | - | 1167 | - | - | 403 | 304 | 815 | 404 | 332 | 817 |
| Stage 1 | - | - | - | - | - | - | 560 | 571 | - | 670 | 654 | - |
| Stage 2 | - | - | - | - | - | - | 867 | 610 | - | 728 | 571 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1172 | - | - | 1167 | - | - | 387 | 296 | 815 | 396 | 323 | 817 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 387 | 296 | - | 396 | 323 | - |
| Stage 1 | - | - | - | - | - | - | 545 | 556 | - | 653 | 654 | - |
| Stage 2 | - | - | - | - | - | - | 849 | 610 | - | 709 | 556 | - |

| 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 |





| 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 |

| 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 |





| 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 |

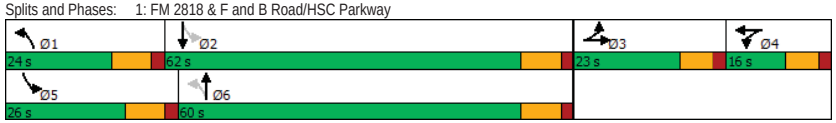
| Lane | NBLn1 | NBLn2 | EBLn1 | WBLn1 | SBLn1 |
|---|---|---|---|---|---|
| Vol Left, % | 100% | 0% | 40% | 53% | 0% |
| Vol Thru, % | 0% | 100% | 0% | 2% | 42% |
| Vol Right, % | 0% | 0% | 60% | 45% | 58% |
| Sign Control | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 8 | 42 | 5 | 165 | 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 |

| 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








| Intersection | |
|---|---|
| Intersection Delay, s/veh | 13 |
| Intersection LOS | B |

| 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 | 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 | 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-tile Q | 1.1 | 0.9 | 0.5 | 4.5 |

| 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 |





| 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 |

| 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 |





| 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 |

| 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 | - |

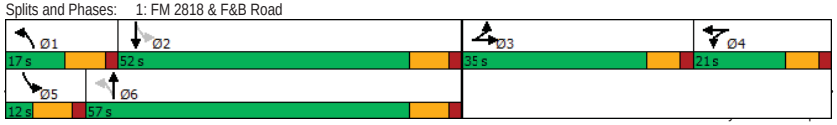




| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 157 | 116 | 140 | 193 | 85 | 120 | 193 | 1324 | 140 | 52 | 912 | 192 |
| Future Volume (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



| 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 |





| 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 |

| 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 |





| 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 |

| 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 |





| 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 | | |

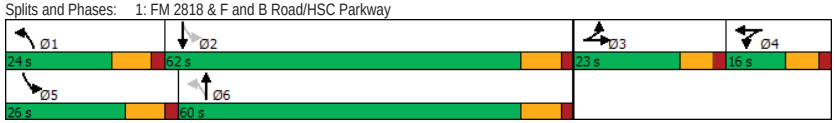
| Minor Lane/Major Mvmt | NBT | EBLn1 | SBT |
|---|---|---|---|
| Capacity (veh/h) | - | 600 | - |
| HCM Lane V/C Ratio | - | 0.082 | - |
| HCM Control Delay (s) | - | 11.5 | - |
| HCM Lane LOS | - | B | - |
| HCM 95th %tile Q(veh) | - | 0.3 | - |

| 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








| Intersection | |
|---|---|
| Intersection Delay, s/veh | 12.8 |
| Intersection LOS | B |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 133 | 91 | 78 | 324 | 81 | 60 |
| Future Vol, veh/h | 133 | 91 | 78 | 324 | 81 | 60 |
| 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 | 106 | 91 | 377 | 94 | 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 | 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-tile Q | 1 | 0.9 | 0.5 | 4.4 |

| 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 | 248 |
| 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 | 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 | 1065 | - | - | 1422 | - | - | 539 | 381 | 967 | 408 | 388 | 752 |
| 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 | 752 |
| 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 |





| 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 |

| 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 |





| 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 |

| 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 | 0 | - | 0 |
| 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 | - | - |

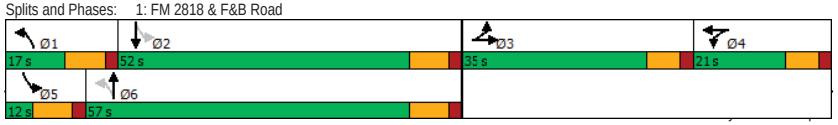




| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 157 | 116 | 140 | 193 | 85 | 120 | 193 | 1324 | 140 | 52 | 912 | 192 |
| Future Volume (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



| 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 |





| 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 |

| 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 |





| 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 |

| 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 |





| 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 APPROXIMATLEY 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 OF 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 B**

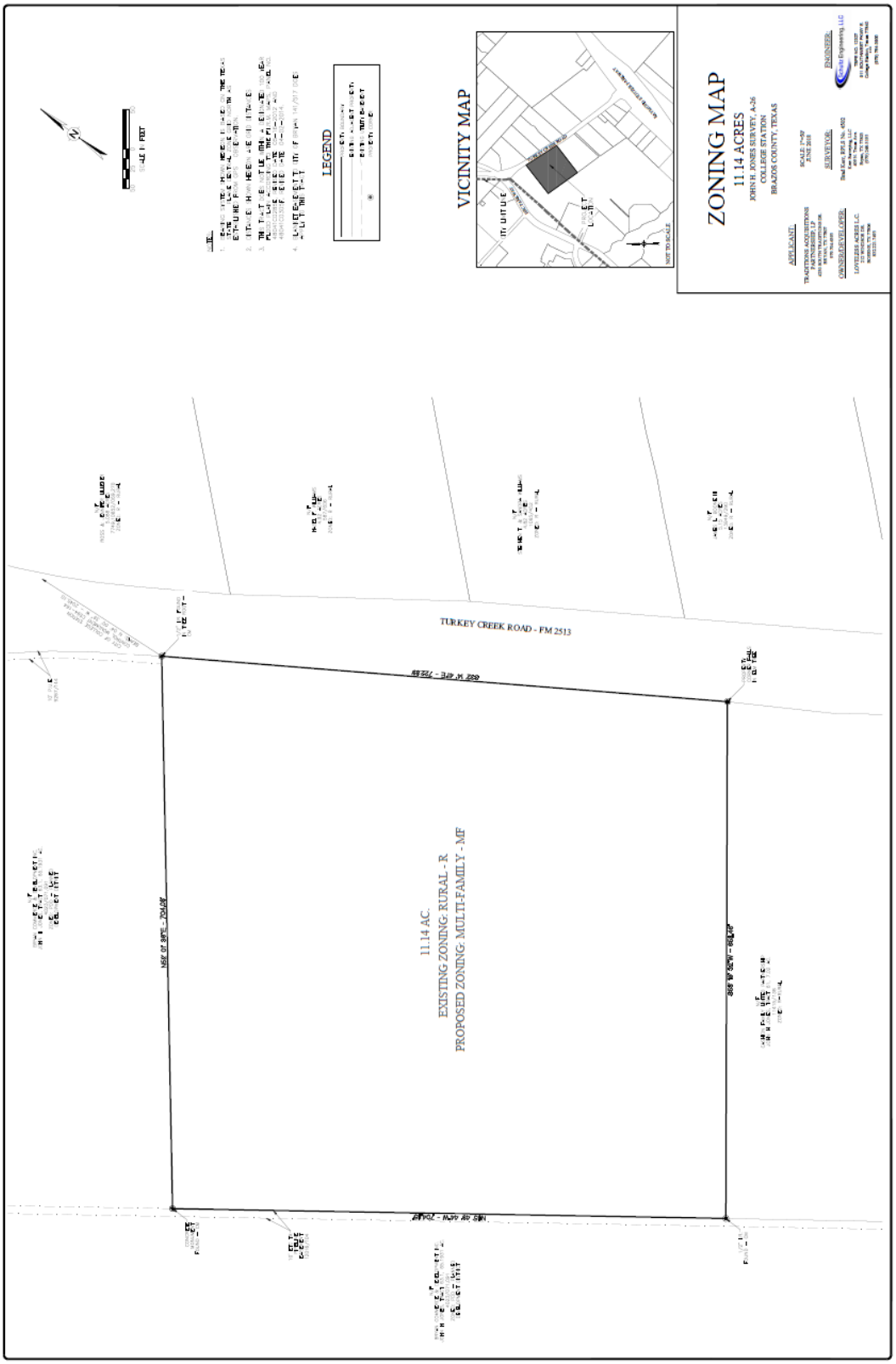
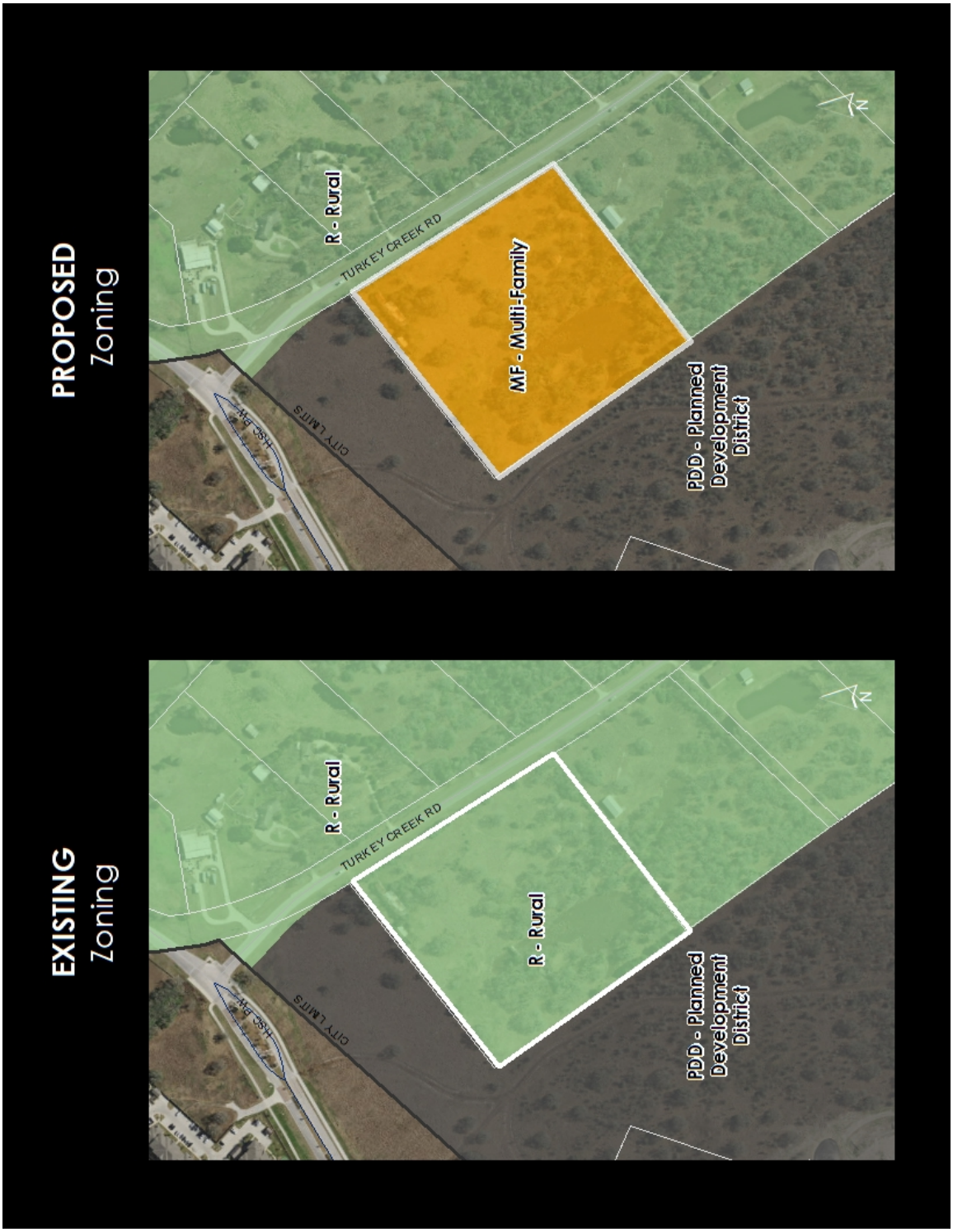

ZONING MAP
11.14 ACRES
JOHN H. JONES SURVEY, A-26
COLLEGE STATION
BRAZOS COUNTY, TEXAS
VICINITY MAP
LEGEND
TURKEY CREEK ROAD - FM 2513
11.14 AC.
EXISTING ZONING: RURAL - R
PROPOSED ZONING: MULTI-FAMILY - MF

**Exhibit C**


PROPOSED
Zoning
R - Rural
TURKEY CREEK RD
MF - Multi-Family
PDD - Planned Development District
CITY LIMITS
N
EXISTING
Zoning
R - Rural
TURKEY CREEK RD
R - Rural
PDD - Planned Development District
CITY LIMITS
N