



TOWN COUNCIL REGULAR MEETING AGENDA

December 19, 2023 at 6:30 PM

Town Hall - 1941 E. Jeter Road, Bartonville, TX 76226

A. CALL MEETING TO ORDER

B. PLEDGE OF ALLEGIANCE

C. PUBLIC PARTICIPATION

If you wish to address the Council, please fill out a "Public Meeting Appearance Card" and present it to the Town Secretary, preferably before the meeting begins. Pursuant to Section 551.007 of the Texas Government Code, citizens wishing to address the Council for items listed as public hearings will be recognized when the public hearing is opened. For citizens wishing to speak on a non-public hearing item, they may either address the Council during the Citizen Comments portion of the meeting or when the item is considered by the Town Council.

D. APPOINTED REPRESENTATIVE/LIAISON REPORTS

1. Upper Trinity Regional Water District Report.
2. Denton County Emergency Services District #1.
3. Police Department Statistics/Activities - November 2023.
4. Town Administrator – November 2023 Reports: Financial, Animal Control, Code Enforcement, Engineering, Municipal Court, Permits, and Board Member Attendance.

E. CONSENT AGENDA

This agenda consists of non-controversial or "housekeeping" items required by law. Items may be approved with a single motion. Items may be removed from the Consent Agenda by any Councilmember by making such request prior to a motion and vote on the Consent Agenda.

1. Consider approval of the November 21, 2023, Regular Meeting Minutes.

F. PUBLIC HEARINGS

1. Discuss and consider a Preliminary Plat for an 81.789-acre tract of land situated in the A.M. Feltus Survey, Abstract Number 1594, and the Daniel Cook Survey, Abstract No. 230, in the Town of Bartonville, Denton County, Texas. The tract of land is located on the north side of E Jeter Road, approximately 2,063 feet north of its intersection with Porter Road, in Bartonville, Texas. The applicant is Mycoskie Associates, Inc., on behalf of Rob Knight. ***(The Planning & Zoning Commission recommended approval by a vote of 5-0 at its December 6, 2023, meeting.)***

- 2.** Discuss and make a recommendation regarding a Preliminary Plat for a 99.744-acre tract of land situated in the A.R. Loving Survey, Abstract Number 0736A, Tracts 5, 5A, 6, and 7A in the Town of Bartonville, Denton County, Texas. The tract of land is located on the west side of FM 407, directly opposite the intersection of FM 407 and Rayzor Road, in Bartonville, Texas. The applicant is CCM Engineering, on behalf of the Education Leads to Success Foundation. ***(The Planning & Zoning Commission recommended approval by a vote of 5-0 at its December 6, 2023, meeting.)***
- 3.** Conduct a Public Hearing and consider a Resolution adopting and ratifying plat application submittal list posting requirements set forth by new legislation HB 3699.
- 4.** Discuss and consider approval of a Resolution accepting the Town's Investment Policy for Fiscal Year 2023-2024.
- 5.** Discuss and consider appointment(s) to the Bartonville Community Development Corporation, including the consideration of removing a member due to absenteeism.
- 6.** Discuss and consider approval of a Resolution appointing new member(s) to the Bartonville Community Development Corporation.
- 7.** Discuss and consider an agreement with MWH Group for external auditing services for the Fiscal Year ending September 30, 2023, and authorize the Town Administrator to execute same on behalf of the Town.
- 8.** Discuss and consider a Master Services and Purchasing Agreement with Axon Enterprise, Inc. for the purchase of tasers and associated equipment in an amount not to exceed \$17,526.00; and authorize the Town Administrator to execute same on behalf of the Town.

G. CLOSED SESSION

Pursuant to the Open Meetings Act, Chapter 551, the Town Council will meet in a Closed Executive Session in accordance with the Texas Government Code.

- 1.** Section 551.071 Consultation with Town Attorney to seek legal advice of its attorney regarding legal issues related to the Town's Extraterritorial Jurisdiction (ETJ), issues related to the Furst Ranch Development, and any and all legal issues related thereto.
- 2.** Section 551.071 Consultation with Town Attorney to seek legal advice of its attorney concerning pending or contemplated litigation regarding the sanitary sewer nuisance at 1287 Gibbons Road, Town of Bartonville, Texas v. Paula Harvey, Cause No. 23-11429-467 pending in the 467th District Court of Denton County, Texas.

H. RECONVENE OPEN MEETING

The Town Council to reconvene into an open meeting and consider action, if any, on items discussed in closed session.

I. FUTURE ITEMS

J. ADJOURNMENT

The Town Council reserves the right to adjourn into a closed meeting or executive session as authorized by Texas Government Code, Sections 551.001, et seq. (the Texas Open Meetings Act) on any item on its open meeting agenda in accordance with the Texas Open Meetings Act, including, without limitation Sections 551.071-551.088 of the Texas Open Meetings Act. Any final action, decision, or vote on a matter deliberated in a closed meeting will only be taken in an open meeting that is held in compliance with Texas Government Code, Chapter 551.

CERTIFICATION

I hereby certify that this Notice of Meeting was posted on the Town Website, and on the bulletin board, at Town Hall of the Town of Bartonville, Texas, a place convenient and readily accessible to the public at all times. Said Notice was posted on the following date and time; and remained posted continuously prior to the scheduled time of said meeting and shall remain posted until meeting is adjourned.

/s/ Shannon Montgomery, Town Secretary

Posted: Friday, December 15, 2023, prior to 5:00 pm.

Agenda Removed from Town of Bartonville Bulletin Board on: _____

By: _____, *Title:* _____



TOWN COUNCIL COMMUNICATION

DATE December 19, 2023

FROM: Ricky Vaughan, Fire Chief, Denton County ESD No. 1

AGENDA ITEM: Denton County Emergency Services District #1 Monthly Report

SUMMARY:

Department Statistics/Activities November 2023.

ATTACHMENTS:

- Monthly Report

Denton County

ESD No. 1

Monthly Report



Monthly Activity Report

NOVEMBER 2023

**Denton County ESD No. 1****NOVEMBER 2023****Table of Contents**

Basic Analytics	Page
DCESD 1 Personnel	3
Incident Counts	4-5
Municipality Volume	6
Response Times – 90 th Percentile and Average Response Times	7
Community Outreach Events & Fire Inspection Reports & Training Division	8-9

**Denton County ESD No. 1****NOVEMBER 2023****DCESD1 Personnel****Operations**

Captains	9
Apparatus Operators (Engineers)	9
Full-Time Firefighters (active)	20
Part-Time Employees (active)	16
Injuries/light duty/inactive	2
Total	56

Fire Administration

Fire Chief	1
Assistant Chief	1
Division Chief	1
Administrative Assistant	1
Director of Communications & Public Outreach	1
Total	5

Department Paid Total	61
Department Total	65

Sworn Staff	59
Civilians	2
Operational Volunteers	2

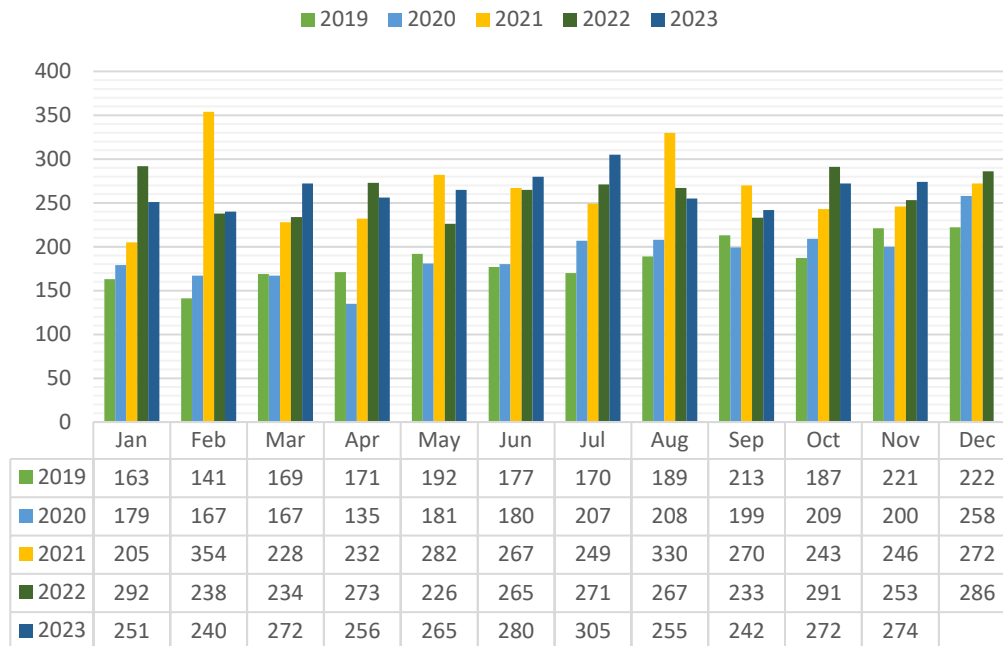


Denton County ESD No. 1

NOVEMBER 2023

DCESD Total Incident Count

Comparison of Incidents Over the past 5 years Month-by-Month



Year-to-Date Totals

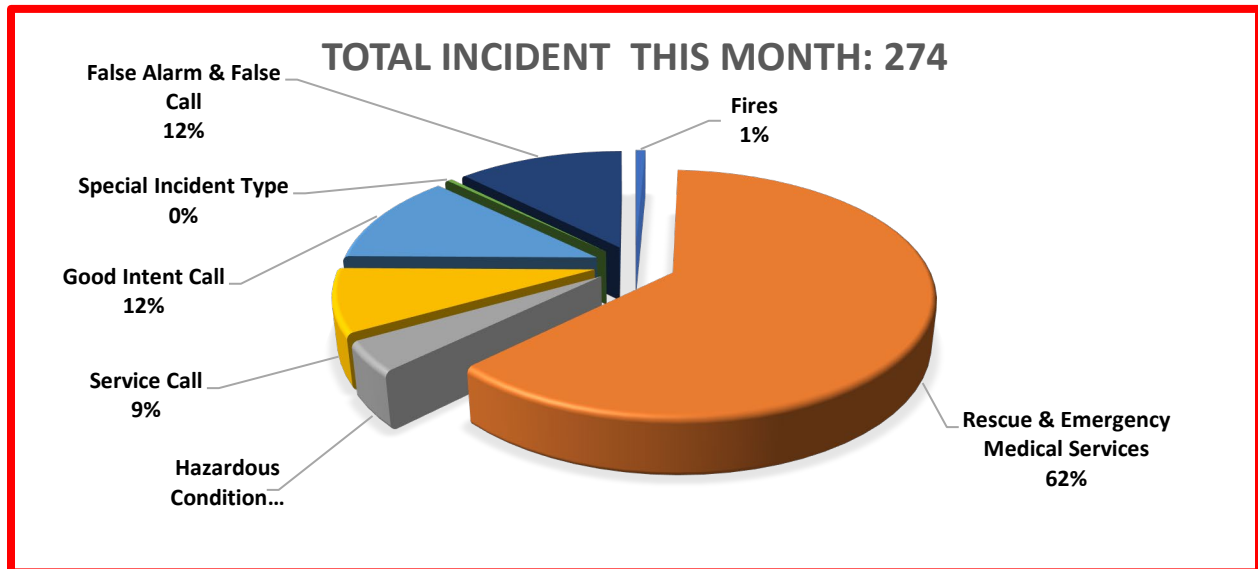
Year-To-Date Comparison of Incidents over 5 Years



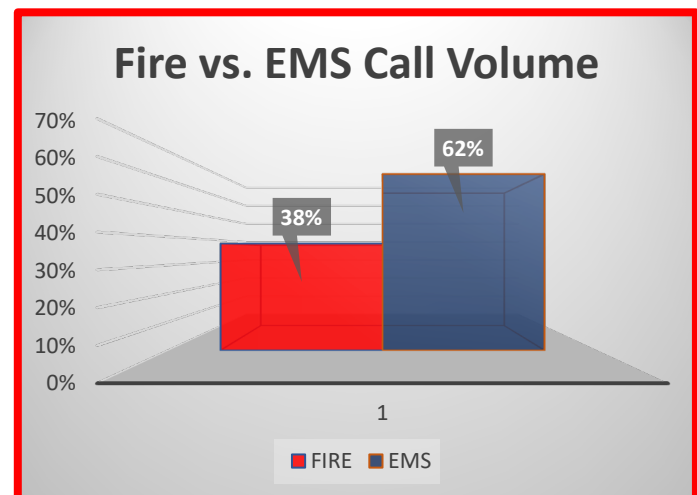
DCESD	YTD
2018	1487
2019	1993
2020	2032
2021	2906
2022	2843
2023	2912

**Denton County ESD No. 1**

NOVEMBER 2023

INCIDENT STATISTICS

Major Incident Types	
Fires	2
Rescue & Emergency Medical Services	170
Overpressure rupture, explosion – no fire	0
Hazardous Condition (No Fire)	11
Service Call	23
Good Intent Call	33
False Alarm & False Call	34
Severe Weather & Natural Disaster	0
Special Incident	1

**Percentage of Overlapping Calls**

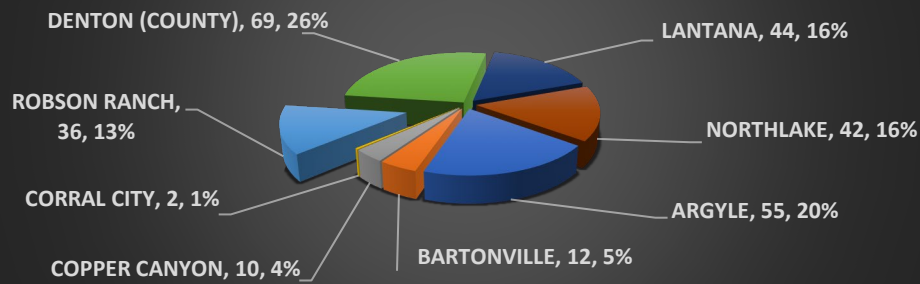
Overlapping Calls	
# OVERLAPPING	% OVERLAPPING
111	41%



Denton County ESD No. 1

NOVEMBER 2023

Volume by Municipality



INCIDENT TYPE	ARGYLE	BARTONVILLE	COPPER CANYON	CORRAL CITY	LANTANA	NORTHLAKE	UNINCORPORATED AREAS
111 - Building fire						1	
113 - Cooking fire, confined to container						1	
320 - Emergency medical service, other							1
321 - EMS call, excluding vehicle accident with injury	30	4	7		30	13	36
322 - Motor vehicle accident with injuries	7	1	2	1		2	1
324 - Motor vehicle accident with no injuries.	6	1		1	1	2	
331 - Lock-in (if lock out, use 511)							1
411 - Gasoline or other flammable liquid spill							1
412 - Gas leak (natural gas or LPG)					1	3	2
440 - Electrical wiring/equipment problem, other							1
442 - Overheated motor							1
445 - Arcing, shorted electrical equipment							1
480 - Attempted burning, illegal action, other		1					
500 - Service Call, other					1		
510 - Person in distress, other	1						
511 - Lock-out	1						1
520 - Water problem, other					1		
553 - Public service					1		1
531 - Smoke or odor removal		1					
541 - Animal problem	1						
542 - Animal rescue							1
553 - Public service	1	1					
554 - Assist invalid							1
571 - Cover assignment, standby, moveup	1						
611 - Dispatched & cancelled en route	2		1		4	7	7
622 - No incident found on arrival at dispatch address	1	1				1	
651 - Smoke scare, odor of smoke							
652 - Steam, vapor, fog or dust thought to be smoke	1					1	
653 - Smoke from barbecue, tar kettle						2	
700 - False alarm or false call, other					1	2	1
733 - Smoke detector activation due to malfunction					2	1	
735 - Alarm system sounded due to malfunction		1			1		1
743 - Smoke detector activation, no fire - unintentional	2					4	3
745 - Alarm system activation, no fire - unintentional	1	1			1	1	7
901 - Citizen complaint							1
TOTAL INCIDENTS	55	12	10	2	44	41	69



Denton County ESD No. 1

NOVEMBER 2023

Incident Response Times

90th Percentile Assessment

Lights and Sirens – 90 TH Percentile Time (Dispatch to Arrival)	
Overall	10:18
FIRE	9:54
EMS	10:18

Internal Compliance Goal: Less than 8-minute response time from dispatch to first unit on arrival time. Assessment is performed by taking the total number of incidents where lights and sirens were utilized while responding to the incident.

NFPA 1710 Response Recommendations: Key performance objectives for...

FIRE Response: (bunker gear required)

1. Turnout time: < 80 seconds
(1 minute: 20 seconds)
2. First Unit on scene: < 240 seconds
(4 minutes)

EMS Response: (no bunker gear required)

1. Turnout time: < 60 seconds
(1 minute)
2. First Unit on scene: < 240 seconds
(4 minutes)

90th Percentile with National Standard

47% of incidents meet the Total Response Time goal of 8 minutes.

INCIDENTS: PERCENTILE REPORT

Denton County Emergency Services District No. 1 | Last Refresh: 12/6/2023 8:00 PM

158

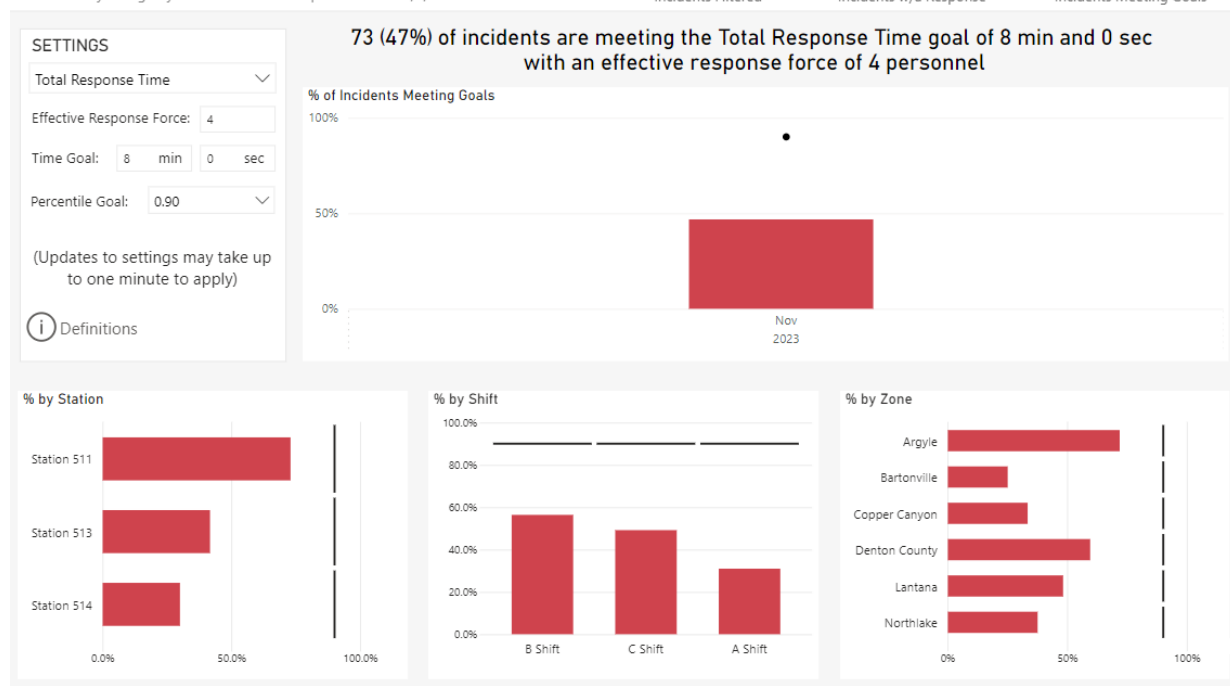
Incidents Filtered

156

Incidents w/a Response

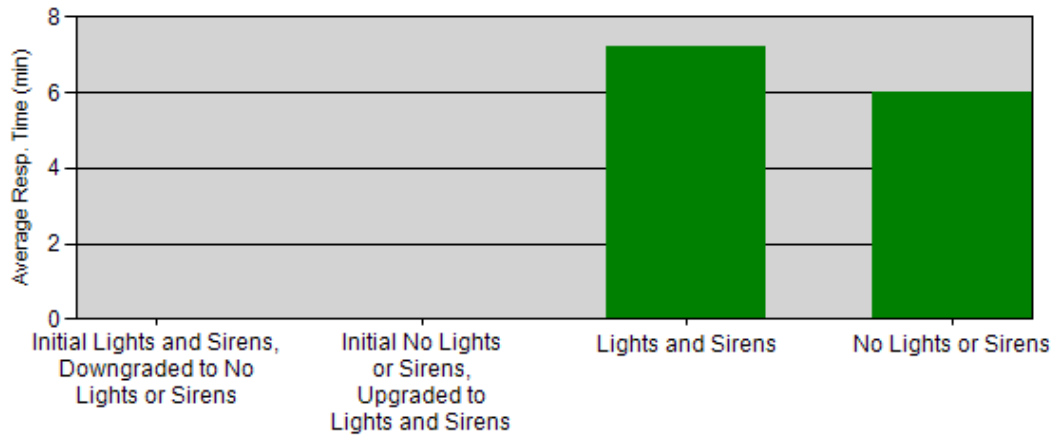
73 (47%)

Incidents Meeting Goals



**Denton County ESD No. 1**

NOVEMBER 2023

Average Response and Turnout Time Assessment

RESPONSE MODE	TOTAL RESPONDING UNITS	AVERAGE RESPONSE TIME (minutes)
Initial Lights and Sirens, Downgraded to No Lights or Sirens	0	0
Initial No Lights or Sirens, Upgraded to Lights and Sirens	0	0
Lights and Sirens	410	7.24
No Lights or Sirens	22	6.00

Public Education**Community Outreach Events**

Fire Station Tours	1
Public Education Events	10
Ride Along (EMS Students)	2
Community CPR Classes	1
- Total CPR Students	10
Total Events	24

Training Division

Total ISO Training Hours Logged / Month	1180
- EMS Training Hours Logged / Month	228
- FIRE Training Hours Logged / Month	918
- Administrative Training / Month	34

**Denton County ESD No. 1**

NOVEMBER 2023

Fire Inspection Report

OCCUPANCY	COUNT
INSPECTION TYPE: Certificate of Occupancy	
Assembly	2
Business Office	1
Day Care	1
Intermediate School	1
Medical, Surgical, Psychiatric	1
Mercantile	2
Multi-Family Residential	1
Salon	1
INSPECTION TYPE: Fire Protection System Inspection	
Assembly	1
Business Office	1
Multi-Family Residential	1
Single Family Residence	17
Total # of Inspections:	30

Year-To-Date Fire Inspection Report

	YTD 2023	YTD 2022
Total # of Inspections:	367	271



TOWN COUNCIL COMMUNICATION

DATE December 19, 2023

FROM: Wendell Mitchell, Interim Chief of Police

AGENDA ITEM: Police Chief– Department Statistics/Activities November 2023

SUMMARY:

Department Statistics/Activities November 2023.

ATTACHMENTS:

- Monthly Report

Town of Bartonville Police Department

November 2023 Monthly Report



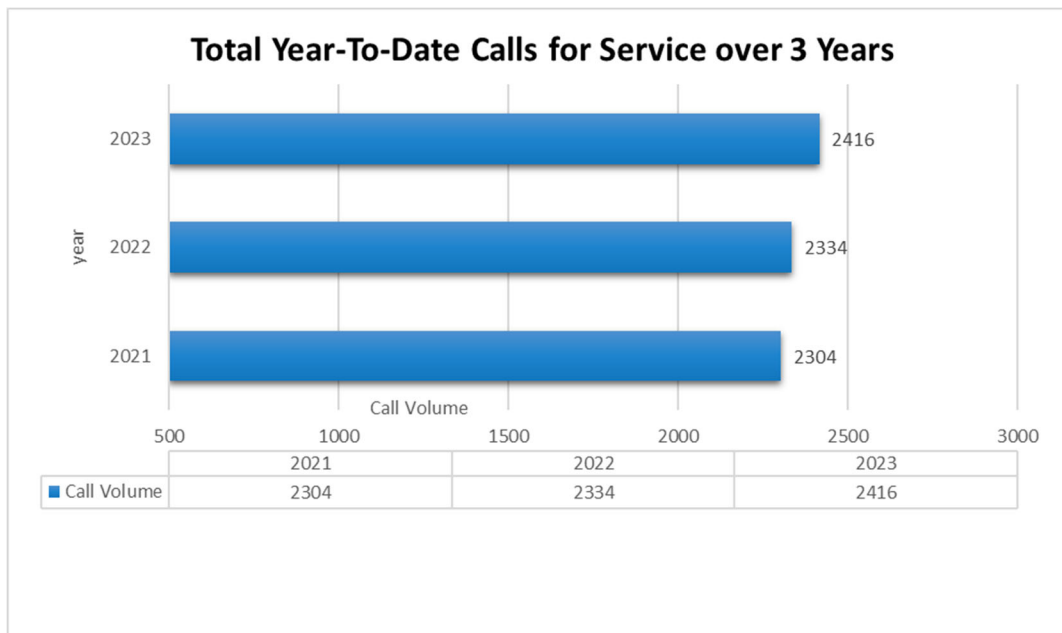
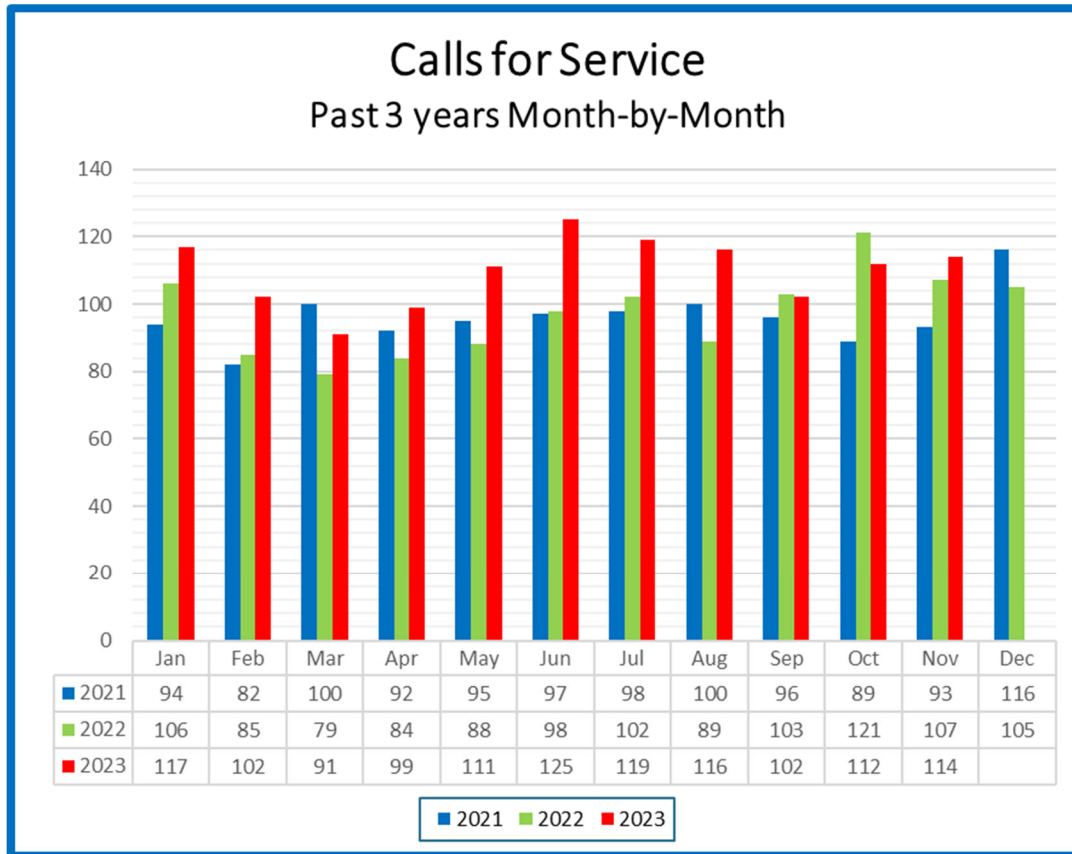
Bartonville Police Department**November 2023****Table of Contents**

	Page
Total yearly calls for service	3
Types of calls for service	4
Officer initiated activity	5
Misc Information/Upcoming events	6

Bartonville Police Department

November 2023

Total Calls for Service



Bartonville Police Department

November 2023

Abandoned Vehicle	
Agency Assist	19
Alarm	17
Animal Bite Report	1
Animal Complaint	5
Animal Cruelty	
Assault	
Auto Theft	
Burglary	
Citizen Assist	1
Criminal Mischief	1
Criminal Trespass	
Disturbance	1
Domestic Disturbance	1
Fireworks Complaint	
Follow-up Investigation	9
Forgery/Fraud	1
Gunshots Heard	2
Hang-up 911	1
Harassment	
Illegal Dumping	
Indecent Exposure	
Intoxicated Person	
Juvenile Complaint	
Loose Livestock	2
Meet Complainant	7
Motorist Assist	4
Narcotics	
Noise Complaint	1
Ordinance Violance	
Person with a Gun	1
Reckless Driver	5
Road Blockage/Hazard	4
Suspicious Person/Veh/Activity	9
Theft	3
Traffic Complaint	6
Traffic Transport Incident (Accidents)	6
Vehicle Complaint	2
Welfare Concern	5

Bartonville Police Department**November 2023****Officer Initiated Activity**

<u>Officer Activity by Type</u>	Total
Admin Duty (Reports, Court, Clerical)	19
Building Checks	23
Close Patrols (Special Patrols Included)	84
Investigations (Sus veh/activity)	14
Traffic Stops	136
Vacation Watch	7
Walk Thru	22
Total	305

Bartonville Police Department**November 2023****Misc. Information/Upcoming Events**

1. **Blue Santa-** supported 12 families/32 children with a huge supporting from the community.
2. **Departmental Recognition-** Recognizing the achievements, milestones and efforts the department has achieved recently.



TOWN COUNCIL COMMUNICATION

DATE December 19, 2023

FROM: Thad Chambers, Town Administrator

AGENDA ITEM: Town Administrator - Monthly Reports November 2023: Financial, Animal Control, Code Enforcement, Engineering, Municipal Court, and Permits.

SUMMARY:

Monthly Reports November 2023.

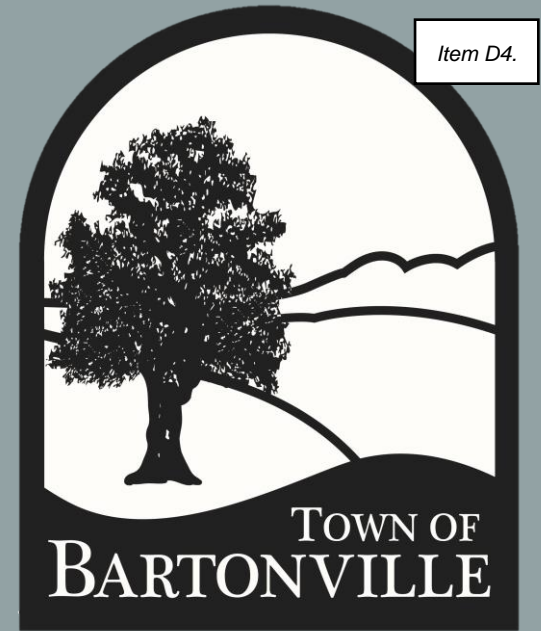
ATTACHMENTS:

- Monthly Financial Report
- Monthly Animal Control Report
- Monthly Code Enforcement Report
- Monthly Engineering Report
- Monthly Municipal Court Report
- Monthly Permits Report
- Monthly Board & Commission Attendance Report

Town of Bartonville

Monthly Financial Report

Month Ending
November 30, 2023

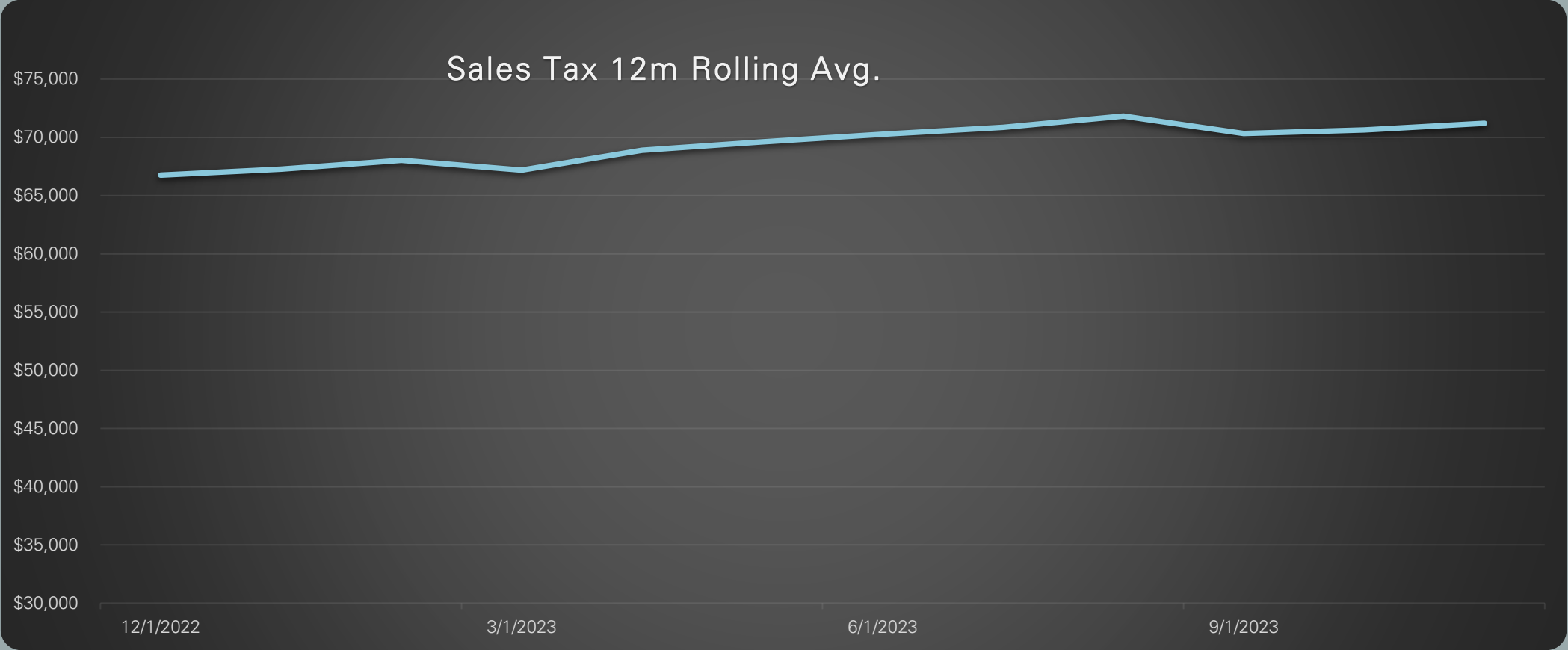


PRESENTED:
DECEMBER 19, 2023

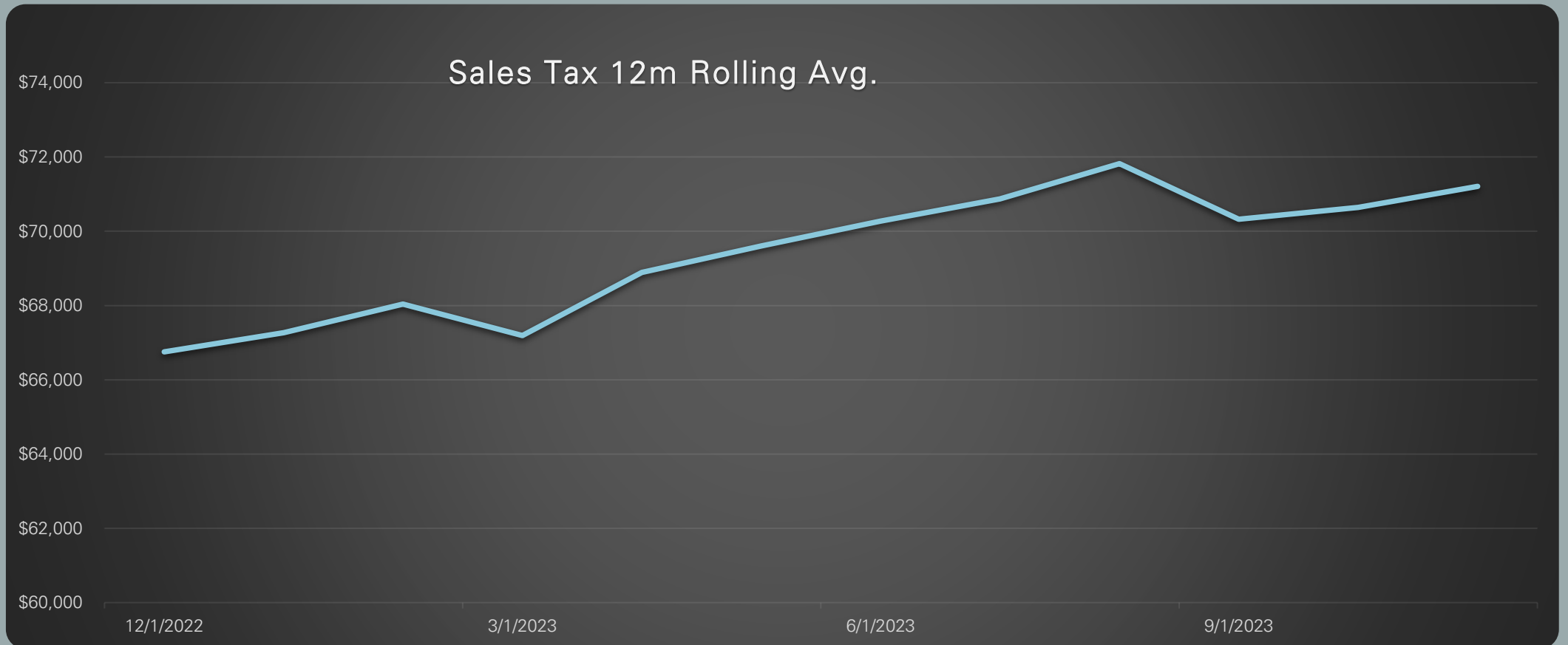
All General Fund Revenues

	November 2023 Revenue	Year to Date Revenue	Current Year Budget	Projected Revenue Remaining	% of Budgeted Revenue Remaining	Prior year YTD	Prior year ending balance
Property Tax	\$22,956.18	\$23,588.77	\$1,050,000.00	\$1,026,411.23	97.75%	\$37,090.04	\$986,183.68
Sales Tax	\$112,255.69	\$169,673.17	\$785,000.00	\$615,326.83	78.39%	\$159,059.87	\$843,911.57
Franchise Fees	\$6,155.05	\$68,291.89	\$200,000.00	\$131,708.11	65.85%	\$69,726.41	\$238,380.27
Other/Transfer	\$22,229.00	\$35,607.25	\$169,300.00	\$133,692.75	78.97%	\$22,742.17	\$187,497.39
Development Fees	\$0.00	\$0.00	\$30,000.00	\$30,000.00	100.00%	\$0.00	\$105,414.24
Permit Fees	\$10,172.75	\$28,718.00	\$150,000.00	\$121,282.00	80.85%	\$54,944.38	\$226,727.21
Municipal Court	\$9,127.62	\$24,604.29	\$85,000.00	\$60,395.71	71.05%	\$17,560.51	\$109,188.14
Total Revenue	\$182,896.29	\$350,483.37	\$2,469,300.00	\$2,188,816.63	85.81%	\$361,123.38	\$2,697,302.50

Sales Tax Collections



Sales Tax Collections (Narrow Range)



All General Fund Expenditures

	November 2023 Expenditures	Year to Date Expenditures	Current Year Budget	Budget Balance Remaining	% of Balance Remaining	Prior Year YTD Balance	Prior year FY Ending Balance
Administration	\$74,803.05	\$121,878.77	\$1,183,858.77	\$1,061,980.72	89.71%	\$116,625.04	\$1,226,739.03
Police	\$69,745.72	\$124,588.07	\$912,990.09	\$788,402.02	86.35%	\$122,787.81	\$730,121.30
Municipal Court	\$800.00	\$1,600.00	\$6,600.00	\$5,000.00	75.76%	\$900.00	\$4,700.00
Transfers	\$45,709.80	\$54,153.27	\$314,000.00	\$259,846.73	82.75%	\$83,421.04	\$303,165.29
Total Expenses	\$191,058.57	\$302,219.39	\$2,417,448.86	\$2,115,229.47	87.50%	\$323,733.89	\$2,264,855.17

Expenditures by Department

Administration

	November 2023 Expenditures	YTD Expenditures	Current Year Budget	Budget Balance Remaining	% Balance Remaining	Prior Year YTD Balance	Prior Year FY End Bal.
Salary & Benefits	\$40,772.70	\$81,438.38	\$517,668.77	\$436,230.39	84.27%	\$73,658.57	\$437,431.83
Other	\$6,796.33	\$9,958.35	\$112,800.00	\$102,841.65	91.17%	\$2,814.41	\$118,334.82
Contracted Service	\$17,362.85	\$7,679.85	\$368,290.00	\$360,610.15	97.91%	\$21,470.90	\$429,278.96
Fees & Service Charges	\$126.50	\$134.00	\$1,170.00	\$1,036.00	88.55%	\$110.00	\$1,180.42
Supplies	\$7,461.00	\$20,252.13	\$75,430.00	\$55,177.87	73.15%	\$11,360.17	\$48,073.96
Maintenance	\$2,283.67	\$2,415.34	\$58,500.00	\$56,084.66	95.87%	\$7,210.99	\$42,398.44
Capital Improvements	\$0.00	\$0.00	\$50,000.00	\$50,000.00	100.00%	\$0.00	\$150,040.60
Total Administration:	\$74,803.05	\$121,878.05	\$1,183,858.77	\$1,061,980.72	89.71%	\$116,625.04	\$1,226,739.03

Expenditures by Department

Police

	November 2023 Expenditures	YTD Expenditures	Current Year Budget	Budget Balance Remaining	% Balance Remaining	Prior Year YTD Balance	Prior Year FY End Bal.
Salary & Benefits	\$58,356.91	\$113,577.64	\$819,859.09	\$706,281.45	86.15%	\$102,023.82	\$660,506.81
Maintenance	\$7,065.88	\$8,016.18	\$26,131.00	\$18,114.82	69.32%	\$11,189.91	\$35,373.16
Contracted Service	\$1,776.50	\$1,776.50	\$10,000.00	\$8,223.50	82.24%	\$6,722.00	\$6,722.00
Other	\$30.00	\$30.00	\$4,500.00	\$4,470.00	99.33%	\$352.63	\$2,534.93
Supplies	\$2,516.43	\$1,187.75	\$52,500.00	\$51,312.25	97.74%	\$2,499.45	\$24,984.40
Total Police Department:	\$69,745.72	\$124,588.07	\$912,990.09	\$788,402.02	86.35%	\$122,787.81	\$730,121.30

Location	Notes	Code
Nov 28, 2023 10:32 AM 568 Seals RD	we picked up a contained stray dog from this address	Animal Control
Nov 27, 2023 4:34 PM 1941 JETER RD E	Patrolled city focusing on stray animals. spoke to shari at city hall	Animal Control
Nov 22, 2023 8:55 AM gibbons rd @ dove creek rd	we removed a dead coyote from the ditch at this intersection	Animal Control
Nov 21, 2023 9:41 AM 1941 JETER RD E	Patrolled city focusing on stray animals. spoke to thad at city hall	Animal Control
Nov 14, 2023 11:41 AM 1941 JETER RD E	Patrolled city focusing on stray animals. spoke to thad at city hall	Animal Control
Nov 9, 2023 10:33 AM 1500 blk gibbons rd	we removed a deceased skunk from the roadway	Animal Control
Nov 7, 2023 4:46 PM 1941 JETER RD E	Patrolled city focusing on stray animals. spoke to thad	Animal Control

Location	Notes	Code
Nov 28, 2023 10:33 AM 1287 gibbons	no citations issued more citations ordered.	Code Enforcement
Nov 28, 2023 10:30 AM	Patrolled city focusing on code issues. spoke to thad at city hall	Code Enforcement
Nov 21, 2023 9:44 AM 506 oakwood	no obvious change from previous patrol	Code Enforcement
Nov 21, 2023 9:43 AM 1287 gibbons	issued one citation for a septic leak	Code Enforcement
Nov 21, 2023 9:42 AM	Patrolled city focusing on code issues. spoke to thad at city hall	Code Enforcement
Nov 14, 2023 11:43 AM 1287 gibbons	issued two citations for a septic leaks	Code Enforcement
Nov 14, 2023 11:42 AM	Patrolled city focusing on code issues. spoke to thad at city hall	Code Enforcement
Nov 7, 2023 4:48 PM 506 oakwood	some work has been done since last patrol we will continue to monitor the property	Code Enforcement
Nov 7, 2023 4:47 PM 1287 gibbons	issued two citations for a septic leak	Code Enforcement
Nov 7, 2023 4:46 PM	Patrolled city focusing on code issues. spoke to thad	Code Enforcement



Westwood

Town of Bartonville Status Report

Date: December 13, 2023

Plat Review

- ELTS Preliminary Plat
- Knights Crest
- Swig
- Andy's Frozen Custard

ROW Permits

- N/A

Subdivision Construction

- N/A

Street Fund

- Street Rehabilitation – E. Jeter & Stonewood – Construction Completed – December 6, 2023
- Traffic Counts Completed Week of November 13-17

General Consultation

- Prepared Fall Work Order to begin after completion of Jeter and Stonewood

Town of Bartonville
Municipal Court Council Report
From 11/1/2023 to 11/30/2023

12/1/2023 3

Item D4.

Violations by Type

Traffic	Penal	City Ordinance	Parking	Other	Total
98	0	2	0	2	102

Financial

State Fees	Court Costs	Fines	Tech Fund	Building Security	Total
\$7,025.50	\$1,899.03	\$7,665.00	\$292.30	\$358.07	\$17,239.90

Warrants

Issued	Served	Closed	Total
0	0	0	0

FTAs/VPTAs

FTAs	VPTAs	Total
0	0	0

Dispositions

Paid	Non-Cash Credit	Dismissed	Driver Safety	Deferred	Total
27	0	18	30	53	128

Trials & Hearings

Jury	Bench	Appeal	Total
0	0	2	2

Omni/Scofflaw/Collection

Omni	Scofflaw	Collections	Total
0	0	0	0

PermitReport

12/1/2023 2:28

Item D4.

Permit #	Contact	Property	Permit Type	Issued Date	Estimated Value	Square Footage	Paid Amount
23-00329-01	Fourteen Construction, LLC		Contractor Registration - General	11/21/2023			\$125.00
23-00403-01	Allegheny Construction	370 Porter Rd	Electrical Permit	11/6/2023	\$32,000.00		\$130.00
23-00405-01	Illuminations by Greenlee	408 Country Ct	Electrical Permit	11/13/2023	\$4,781.25		\$130.00
23-00410-01	Ledford Services	1416 W Jeter Rd	OSSF Permit - Residential	11/7/2023			\$410.00
23-00411-01	On the Hook Fish & Chips	2201 E. FM 407	Temporary Food Permit	11/3/2023			\$35.00
23-00412-01	Lone Star Food Store #4479	1842 FM 407	Food Establishment Permit	11/20/2023			\$300.00
23-00413-01	Lone Star Food Store #4479	1842 FM 407	Commercial - Certificate of Occupancy	11/21/2023		3450.00	\$250.00
23-00414-01	Best Electric Service (dba JSR Electrical Services)		Contractor Registration - Electrical	11/3/2023			\$0.00
23-00415-01	White Electric, LLC		Contractor Registration - Electrical	11/3/2023			\$0.00
23-00416-01	Chapman Propane		Contractor Registration - Plumbing	11/7/2023			\$0.00
23-00417-01	Chapman Propane	1221 Glenview Ln	Propane Tank	11/7/2023	\$9,800.00		\$75.00
23-00419-01	Best Electric Service (dba JSR Electrical Services)	2650 FM Unit 407	Electrical Permit	11/7/2023	\$32,470.43		\$205.00
23-00420-01	Jose Jaimes	505 Mulberry Dr	Accessory Building	11/7/2023	\$4,000.00		\$75.00
23-00421-01	Barco Well Service		Contractor Registration - General	11/13/2023			\$125.00
23-00424-01	Rodrigo Villanueva	1202 Chestnut	Accessory Bldg (201 - 1000 sq ft)	11/9/2023	\$3,500.00	500.00	\$220.00
23-00425-01	Lone Star Food Store #4479	1842 FM 407	Food Establishment Plan Review	11/14/2023		3647.00	\$200.00
23-00427-01	Barco Well Service	408 Country Ct	Water Well	11/14/2023	\$11,314.00		\$250.00
23-00429-01	Fair Comfort Solutions LLC		Contractor Registration - Mechanical	11/13/2023			\$0.00
23-00430-01	Fair Comfort Solutions LLC	100 Burghley Ct	Mechanical Permit	11/15/2023	\$1,500.00	1500.00	\$130.00
23-00431-01	C&G Electric, Inc.		Contractor Registration - Electrical	11/14/2023			\$0.00
23-00432-01	All Around Texas Services LLC		Contractor Registration - Plumbing	11/15/2023			\$0.00
23-00433-01	Mike Glover Septic		Contractor Registration - Septic	11/15/2023			\$0.00
23-00436-01	Key Custom Homes		Contractor Registration - General	11/21/2023			\$125.00
23-00437-01	CWE Group Inc dba CW Service Pros	1540 Glenview Ln	Plumbing Permit	11/20/2023	\$5,500.00		\$260.00
23-00439-01	Parker Precision, Plumbing, Inc.		Contractor Registration - Plumbing	11/20/2023			\$0.00
23-00441-01	Key Custom Homes	950 E Jeter Rd	Demolition Permit	11/22/2023	\$20,000.00		\$125.00
23-00443-01	Platinum Stars HVAC Services		Contractor Registration - Mechanical	11/27/2023			\$0.00
23-00444-01	Platinum Stars HVAC Services	1135 Rockgate Rd	Mechanical Permit	11/28/2023	\$2,200.00	2000.00	\$130.00
23-00445-01	Reyes Brothers Trucking Co.		Truck Permit	11/29/2023			\$25.00
23-00446-01	Reyes Brothers Trucking Co.		Truck Permit	11/29/2023			\$25.00
23-00447-01	The Landscaping Wizard LLC	912 Hat Creek Court	Sprinkler/Irrigation Permit	11/29/2023	\$6,000.00		\$110.00
23-00449-01	Mollo Rather Custom Homes	824 Ginger's Way	Tree Removal Permit	11/30/2023			\$200.00

FY2024 Boards and Commission Attendance Report

Item D4.

Oct 23 Nov 23 Dec 23 Jan 24 Feb 24 Mar 24 Apr 24 May 24 Jun 24 Jul 24 Aug 24 Sep 24

Board of Adjustment (BOA)													
Position	Term	Current Member											
Chair	2022-2024	Donna Baumgarner (2014)	NO MEETING	NO MEETING	NO MEETING								
Board Member	2022-2024	Kathy Daum (2003)											
Alternate #1	2022-2024	Rebecca Jenkins (2022)											
Vice Chair	2023-2025	Jim Lieber (2016)											
Board Member	2023-2025	Del Knowler (2011)											
Board Member	2023-2025	Siobhan O'Brien (2022)											
Alternate #2	2023-2025	Heather Head (2023)											

All Terms are two (2) Years

P - Present

A - Absent

Oct 23 Nov 23 Dec 23 Jan 24 Feb 24 Mar 24 Apr 24 May 24 Jun 24 Jul 24 Aug 24 Sep 24

Planning & Zoning Commission (P&Z)													
Position	Term	Current Member											
Chair	2022-2024	Gloria McDonald (1998)	NO MEETING	P	P								
Vice Chair	2022-2024	Ralph Arment (1988)		P	P								
Commissioner	2022-2024	Brenda Hoyt-Stenovich (2014)		P	P								
Alternate #1	2022-2024	Pat Adams (2022)		P	P								
Commissioner	2023-2025	Don Abernathy (2000)		P	P								
Commissioner	2023-2025	Larry Hayes (2021)		P	P								
Alternate #2	2023-2025	Rick Lawrence (2023)		P	P								

All Terms are two (2) Years

P - Present

A - Absent

FY2024 Boards and Commission Attendance Report

Item D4.

Oct 23 Nov 23 Dec 23 Jan 24 Feb 24 Mar 24 Apr 24 May 24 Jun 24 Jul 24 Aug 24 Sep 24

Bartonville Community Development Corporation (BCDC)

Position	Term	Current Member												
Director	2022-2024	Jim Foringer (2006)	A	P	A									
Vice Chair	2022-2024	Terry Rock (2014)	P	P	P									
Director	2022-2024	Brenda Latham (2021)	P	P	P									
Director	2022-2024	James Kennemer (2022)	A	A	P									
Director	2023-2025	Jim Langford (2015)	P	P	P									
Chair	2023-2025	Randy Van Alstine (2014)	P	P	P									
Director	2023-2025	VACANT												

All Terms are two (2) Years

P - Present

A - Absent

Oct 23 Nov 23 Dec 23 Jan 24 Feb 24 Mar 24 Apr 24 May 24 Jun 24 Jul 24 Aug 24 Sep 24

Crime Control and Prevention District (CCPD)

Position	Term	Current Member												
Director	2022-2024	Lori Van Alstine (2014)	NO MEETING	NO MEETING	NO MEETING									
Director	2022-2024	Jennifer Buck (2022)												
Director	2022-2024	Johnny Jones (2012)												
Director	2022-2024	Kevin Oldham (2018)												
Director	2023-2025	Chris Colbert (2011)												
Director	2023-2025	Donald (Deke) Dunlap (2021)												
Chair	2023-2025	Jeff Grubb (2011)												

All Terms are two (2) Years

P - Present

A - Absent



TOWN COUNCIL COMMUNICATION

DATE December 19, 2023

FROM: Shannon Montgomery, Town Secretary

AGENDA ITEM: Consider approval of the November 21, 2023, Regular Meeting Minutes.

SUMMARY:

The Town Council held a Regular Meeting on November 21, 2023.

RECOMMENDED MOTION OR ACTION:

Approve the November 21, 2023, Regular Meeting Minutes as presented.

ATTACHMENT:

- November 21, 2023, Regular Meeting Minutes.

THE TOWN COUNCIL OF THE TOWN OF BARTONVILLE MET IN REGULAR SESSION ON THE 21ST DAY OF NOVEMBER 2023 AT THE TOWN OF BARTONVILLE TOWN HALL, LOCATED AT 1941 E JETER ROAD, BARTONVILLE, TEXAS WITH THE FOLLOWING COUNCIL MEMBERS PRESENT, CONSTITUTING A QUORUM:

Jaclyn Carrington, Mayor
 Matt Chapman, Mayor Pro Tem/Place 2
 Jim Roberts, Council Member Place 1
 Clay Sams, Council Member Place 3
 Keith Crandall, Council Member Place 4
 Margie Arens, Council Member Place 5

Town Staff Present:

Thad Chambers, Town Administrator
 Shannon Montgomery, Town Secretary
 Ed Voss, Town Attorney
 Wendell Mitchell, Interim Chief of Police

A. CALL MEETING TO ORDER

Mayor Carrington called the Regular Session to order at 6:30 pm.

B. PLEDGE OF ALLEGIANCE

Mayor Carrington led the Pledge of Allegiance.

C. PUBLIC PARTICIPATION

If you wish to address the Council, please fill out a "Public Meeting Appearance Card" and present it to the Town Secretary, preferably before the meeting begins. Pursuant to Section 551.007 of the Texas Government Code, citizens wishing to address the Council for items listed as public hearings will be recognized when the public hearing is opened. For citizens wishing to speak on a non-public hearing item, they may either address the Council during the Citizen Comments portion of the meeting or when the item is considered by the Town Council.

Jeff Lamb, 1204 Bridle Bit Road, Flower Mound, TX requested Council to consider removing the tree located in the middle of Bridle Bit Road.

D. APPOINTED REPRESENTATIVE/LIAISON REPORTS

1. Denton County Emergency Services District #1.

Chief Vaughn of Denton County Emergency Services District No. 1 provided an update and addressed questions from Council.

2. Police Chief – Department Statistics/Activities October 2023.

Interim Chief of Police Mitchell reviewed the monthly statistics and addressed questions from Council.

3. Town Administrator – Monthly Reports October 2023: Financial, Animal Control, Code Enforcement, Engineering, Municipal Court, Permits, and Board Member Attendance.

Town Administrator Chambers reviewed the October 2023 financials and addressed questions from Council.

Del Knowler provided an Upper Trinity Regional Water District Report and addressed questions from Council.

E. CONSENT AGENDA

This agenda consists of non-controversial, or “housekeeping” items required by law. Items may be approved with a single motion. Items may be removed from the Consent Agenda by any Councilmember by making such request prior to a motion and vote on the Consent Agenda.

- 1. Consider approval of the October 17, 2023, Regular Meeting Minutes.**
- 2. Consider approval of an Ordinance amending the Town of Bartonville Code of Ordinances, Chapter 12, “Traffic and Vehicles,” Article 12.03, “Operation of Vehicles” to provide a speed limit of 25 MPH for Deer Hollow Subdivision; and providing an effective date.**

Motion made by Council Member Sams, seconded by Council Member Arens, to approve Consent Agenda Items #1 and #2 as presented.

VOTE ON THE MOTION

AYES: Roberts, Chapman, Sams, Crandall, and Arens

NAYS: None

VOTE: 5/0

F. REGULAR ITEMS

Mayor Carrington and Council Member Sams recused themselves from the dais at 6:47 pm; Mayor Pro Tem Chapman provided over the meeting for the next agenda item:

- 1. Conduct a Public Hearing and consider an Ordinance amending the Town of Bartonville Code of Ordinances, Chapter 14, Exhibit “A,” Article 14.02, Ordinance 361-05, Zoning Regulations for the Town of Bartonville, to change the zoning designation on four tracts of land, totaling 101.467 acres, situated in the Daniel Cook Survey, Abstract Number 230, and A.M. Feltus Survey, Abstract Number 1594, in the Town of Bartonville, Denton County, Texas, from Agricultural (AG) to Residential Estates 5 (RE-5). Town File #ZC-2023-005. *(The Planning & Zoning Commission recommended approval by a vote of 5-0 at its November 1, 2023, meeting.)***

Town Administrator Chambers stated that the application meets the Future Land Use Plan and that he has not received any public input.

Mayor Pro Tem Chapman opened the Public Hearing at 6:50 pm. Recognizing that there was no one wishing to speak on this agenda item, closed the Public Hearing at 6:51 pm.

Motion made by Council Member Crandall, seconded by Council Member Roberts, to approve agenda item #1 as presented.

VOTE ON THE MOTION

AYES: Roberts, Chapman, Crandall, and Arens

NAYS: None

VOTE: 4/0

Mayor Carrington and Council Member Sams returned to the dais at 6:52 pm.

- 2. Conduct a Public Hearing and consider an Ordinance amending the Town of Bartonville Code of Ordinances, Chapter 14, Exhibit “A”, the Zoning Ordinance, by deleting Chapter 20, “Fencing, Walls and Screening Requirements,” and by amending Chapter 3, “Building Regulations” by adding Article 3.10, “Fences and Walls”; amending other Zoning Ordinance and Town Code Provisions accordingly. *(The Planning & Zoning Commission recommended approval by a vote of 4-1 at its November 1, 2023, meeting.)***

Town Administrator Chambers stated that this item has been discussed at length in previous DRC, Planning & Zoning, and Council meetings. Chambers continued by sharing that the proposed Ordinance provides an easy, drawn-out path for residents to request a variance.

Town Attorney Voss explained the legal ramifications of the Ordinance and addressed questions from Council.

Mayor Carrington opened the Public Hearing at 6:59 pm and closed the Public Hearing at 6:59 pm as no one wished to speak on this item.

Motion made by Council Member Crandall, seconded by Council Member Arens to approve agenda item #2 as presented.

VOTE ON THE MOTION

AYES: Roberts, Chapman, Sams, Crandall, and Arens

NAYS: None

VOTE: 5/0

- 3. Discuss and consider a Resolution finding that CoServ Gas, LTD’s Statement of Intent to increase rates within the Town should be denied; finding that the Town’s reasonable rate case expenses shall be reimbursed by the Company; and providing an effective date.**

Town Attorney Voss provided a summary of the Resolution and recommended approval.

Motion made by Council Member Roberts, seconded by Mayor Pro Tem Chapman, to approve agenda item #3 as presented.

VOTE ON THE MOTION

AYES: Roberts, Chapman, Sams, Crandall, and Arens

NAYS: None

VOTE: 5/0

- 4. Discuss and consider a Resolution amending the Personnel and Administrative Regulations Manual (PARM), Chapter 5, “Leave” by removing Subsection 5.01 E, Holiday Pay accumulation; approving the payout of Holiday Pay accumulation; and providing an effective date.**

Town Secretary Montgomery explained that the current Personnel and Administrative Regulations Manual allowed for the accumulation of Holiday Pay. Montgomery stated this is an additional liability to the Town, makes payroll more time consuming and difficult, and it is also difficult for the Staff to use the accumulated time and requested that Council remove this from the Policy and pay out the accumulated Holiday Pay.

Motion made by Council Member Crandall, seconded by Council Member Arens, to approve agenda item #4 as presented.

VOTE ON THE MOTION

AYES: Roberts, Chapman, Sams, Crandall, and Arens

NAYS: None

VOTE: 5/0

- 5. Discuss and consider an Agreement with Flock Safety for Public Safety hardware and software equipment in an amount not to exceed \$50,000 annually; and authorize the Town Administrator to execute same on behalf of the Town.**

Interim Chief of Police Mitchell stated the proposed agreement includes all twenty flock cameras. This agreement will provide a savings of \$500/camera as a price increase goes into effect on December 31, 2023.

Motion made by Council Member Arens, seconded by Council Member Crandall to approve agenda item #5 as presented.

VOTE ON THE MOTION

AYES: Roberts, Chapman, Sams, Crandall, and Arens

NAYS: None

VOTE: 5/0

- 6. Discuss and consider a TX Share Master Interlocal Purchasing Agreement with North Central Texas Council of Governments; and authorize the Town Administrator to execute same on behalf of the Town.**

Interim Chief of Police Mitchell stated this purchasing agreement will allow the Town to enter into agreements with more leverage to obtain greater cost savings.

Motion made by Mayor Pro Tem Chapman, seconded by Council Member Roberts, to approve agenda item #6 as presented.

VOTE ON THE MOTION

AYES: Roberts, Chapman, Sams, Crandall, and Arens

NAYS: None

VOTE: 5/0

7. Discuss and consider utilizing Court Technology Restricted Funds for the purchase of a court laptop and related equipment in an amount not to exceed \$3100.

Motion made by Council Member Sams, seconded by Mayor Pro Tem Chapman, to approve agenda item #7 as presented.

VOTE ON THE MOTION

AYES: Roberts, Chapman, Sams, Crandall, and Arens

NAYS: None

VOTE: 5/0

8. Discuss and consider rescheduling the February 20, 2024, Council Meeting to February 13, 2024, due to March 5, 2024, Primary Early Voting.

Town Secretary Montgomery stated that the March Primary Early Voting begins Tuesday, February 20, 2024, and runs through Friday, March 1, 2024. To allow Denton County to hold Early Voting in the Council Chambers, the Council either needs to move their meeting date or move to another location.

Motion made by Council Member Roberts, seconded by Mayor Pro Tem Chapman, to move the Council meeting to February 13, 2024, to allow Denton County to hold Early Voting in the Council Chambers.

VOTE ON THE MOTION

AYES: Roberts, Chapman, Sams, Crandall, and Arens

NAYS: None

VOTE: 5/0

G./H. CONVENE INTO CLOSED SESSION RECONVENE INTO OPEN MEETING

Pursuant to the Open Meetings Act, Chapter 551, the Town Council convened into a Closed Executive Session at 7:20 pm and reconvened into open session at 7:52 pm in accordance with the Texas Government Code regarding:

1. Section 551.071 Consultation with Town Attorney to seek legal advice of its attorney regarding legal issues related to the Town's Extraterritorial Jurisdiction (ETJ), issues related to the Furst Ranch Development, and any and all legal issues related thereto.

No action taken.

2. Section 551.071 Consultation with Town Attorney to seek legal advice of its attorney concerning pending or contemplated litigation regarding the sanitary sewer nuisance at 1287 Gibbons Road.

Motion made by Council Member Crandall, seconded by Mayor Pro Tem Chapman, to authorize the Town Attorney to take any and all legal action on behalf of the Town against the owner and property located at 1287 Gibbons Road to abate the sanitary sewer health and safety violations on the property.

VOTE ON THE MOTION

AYES: Roberts, Chapman, Sams, Crandall, and Arens

NAYS: None

VOTE: 5/0

I. FUTURE ITEMS

Discussion only; no action taken.

J. ADJOURNMENT

Mayor Carrington declared the meeting adjourned at 7:55 pm.

APPROVED this the 19th day of December 2023.

APPROVED:

Jaclyn Carrington, Mayor

ATTEST:

Shannon Montgomery, TRMC, Town Secretary



TOWN COUNCIL COMMUNICATION

DATE	December 19, 2023
FROM:	Thad Chambers, Town Administrator
AGENDA ITEM:	Discuss, consider, and take any necessary action on a Preliminary Plat for an 81.789-acre tract of land situated in the A.M. Feltus Survey, Abstract Number 1594, and the Daniel Cook Survey, Abstract No. 230, in the Town of Bartonville, Denton County, Texas. The tract of land is located on the north side of E Jeter Road, approximately 2,063 feet north of its intersection with Porter Road, in Bartonville, Texas. The applicant is Mycoskie Associates, Inc., on behalf of Rob Knight. <i>(The Planning & Zoning Commission recommended approval by a vote of 5-0 at its December 6, 2023, meeting.)</i>

Land Use and Zoning: Current land use category is Residential Estates – 5 Acre Lots (RE-5). Current zoning is Agricultural (AG).

Summary: The applicant is the owner of one tract of land, totaling 81.789 acres, located on the north side of E Jeter Road, approximately 2,063 feet north of its intersection with Porter Road. The legal description of the property is A1594A, A.M. Feltus, TR 1, 78.763 Acres, Old DCAD TR #2. The corresponding Denton CAD parcel number is 65110. The applicant has applied for a preliminary plat (see Exhibit A) in order to facilitate large lot residential development.

The subject property is part of a former agricultural tract. There are multiple agricultural buildings and outbuildings, residences, and cross-fencing on the property.

Preliminary Plat

Bartonville Development Ordinance (BDO) Section 2.5.g lists the criteria of approval for a preliminary plat:

1. The plat substantially conforms with the approved land study or other studies and plans, as applicable;
2. The preliminary layouts of required public improvements and Town utilities have been approved by the Town Engineer; and
3. The plat conforms to applicable zoning and other regulations.
4. The plat has been approved by the Permitting Authority, as defined in Chapter 285 of the Texas Administrative Code, in accordance with Title 30, Texas Administrative Code, Chapter 285, Section 285.4(c) relating to the review of subdivision plans prior to the application for a permit for an on-site sewage facility.

The submitted preliminary plat is designed to create four legal lots totaling 81.789 acres. The resulting lots will range from 11.180 to 38.476 acres. The subject property is located on East Jeter Road, which is designated as a “Minor Collector” on the Town of Bartonville’s Thoroughfare Plan. The applicant shows a proposed private road serving all four lots from East Jeter Road. There will also be a public water line easement that will be used to serve all four lots with a 6-inch public water line. The Town Engineer will review construction plans for all proposed improvements concurrent with the final plat submittal; see the proposed conditions of approval. The zoning district for the subject property is Agricultural (AG), which has a 10-acre minimum lot size. The proposed resulting lots will meet the zoning district standards.

Planning & Zoning Commission Recommendation: Approve with Conditions.

Planning & Zoning Commission Conditions of Approval:

1. Prior to recordation of the final plat, the two “Offsite Drainage Easements” depicted on the Preliminary Utility Plan shall be recorded as separate instruments.
2. Prior to recordation of the final plat, all easements to be established via the plat shall be labeled “by this plat.”
3. Prior to recordation of the final plat, the front, side, and rear yard setbacks (building lines) shall be set at 50 feet, as established by Chart 4.2 of the Bartonville Zoning Ordinance. These setbacks shall apply to all property lines of each lot, including both portions of Lot 3.
4. Prior to recordation of the final plat, any existing buildings located within a regulatory setback shall be removed or relocated such that no existing buildings are located within any new yard setbacks to be established by the plat.
5. The final plat shall include an approval block as depicted in Section 2.7.c. of the Bartonville Development Ordinance.
6. Prior to submittal of a final plat, the proposed location and design of the on-site septic facilities (OSSF) for each proposed lot shall be approved by the Town of Bartonville, in accordance with Bartonville Development Ordinance Section 2.6.c.
7. A complete engineering/construction plan set shall accompany the final plat application, in accordance with Bartonville Development Ordinance Section 2.7.d.
8. The final plat shall depict a 10-foot-wide utility easement along one side and along the entire length of the private road.

Financial Information: The establishment of four new estate residences will generate additional ad valorem property taxes for the Town of Bartonville, based on the future assessed value of the homes and properties and the Town’s property tax rate. The Town can anticipate some minor expenses associated with serving the future residences with public safety and general governance services. Given that the future road will be privately owned and maintained, the Town will not be responsible for the costs to maintain the road.

Exhibits:

1. Preliminary Plat Application Packet

Exhibit 1



NO SCALE

1 inch = 100 ft.

CIRS 5/8" CAPPED IRON ROD SET STAMPED
"MMA" (UNLESS OTHERWISE NOTED)

CIRF CAPPED IRON ROD FOUND
 IRF IRON ROD FOUND
 IPF IRON PIPE FOUND
 DRDCT DEED RECORDS
 DENTON COUNTY, TEXAS
 PRDCT PLAT RECORDS
 DENTON COUNTY, TEXAS
 VOL. VOLUME
 PG. PAGE
 CC# COUNTY CLERK'S INSTRUMENT NUMBER
 POB POINT OF BEGINNING
 MFF MINIMUM FINISHED FLOOR ELEVATION
 * FEMA ELEVATION CERTIFICATE
 NOT REQUIRED
 BL BUILDING SETBACK LINE
 CM CONTROLLING MONUMENT
 GY GUY ANCHOR
 PP POWER POLE
 PPD TELEPHONE PEDESTAL
 ————— BOUNDARY LINE
 ————— ADJOINER OR RIGHT-OF-WAY LINE
 - - - - - EASEMENT LINE
 ——— BUILDING LINE

APPROVED BY THE TOWN OF BARTONVILLE FOR FILING AT THE OFFICE OF THE COUNTY CLERK OF
DENTON COUNTY, TEXAS.
APPROVED BY: PLANNING AND ZONING COMMISSION TOWN OF BARTONVILLE, TEXAS

DATE _____
TOWN COUNCIL
TOWN OF BARTONVILLE, TEXAS

DATE _____

DATE _____

NOVEMBER 2023

PRELIMINARY PLAT
LOTS 1-4, BLOCK 1
**KNIGHT'S CREST
SUBDIVISION**

BEING 81.789 ACRES SITUATED IN THE A. M. FLETUS
SURVEY, ABSTRACT NO. 1594 AND THE DANIEL
COOK SURVEY, ABSTRACT NO. 230, BEING A
PORTION OF A CALLED 183.72 ACRE TRACT OF LAND
IN THE TOWN OF BARTONVILLE
DENTON COUNTY, TEXAS

SURVEYOR/ENGINEER



tbpls registration number: f - 2759
tbpls registration/license number: 1008800
519 east border
arlington, texas 76010
817-469-1671
fax: 817-274-8757
www.mmolexas.com

CONTACT: JACOB SUMPTER, AICP
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SHEET 1 OF 2

PRELIMINARY
THIS DOCUMENT SHALL NOT BE
RECORDED FOR ANY PURPOSE
AND SHALL NOT BE USED OR
VIEWED OR RELIED UPON AS A
FINAL SURVEY DOCUMENT

OWNER/DEVELOPER

**KNIGHT DEVELOPMENT
GROUP LLC**
4600 EDEN ROAD
ARLINGTON, TX 76001
TEL: 469-774-8172
email: rob@ibc.us
CONTACT: ROB KNIGHT

MMA PROJECT NO. 3733-00-01

GENERAL NOTES

- BEARINGS AND COORDINATES ARE GRID BASED ON THE "TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE" (2011) AS DETERMINED BY GPS OBSERVATIONS. THE CONVERGENCE ANGLE AT THE POINT OF BEGINNING IS 0°44'30.24". ALL DISTANCES HAVE BEEN ADJUSTED TO SURFACE USING A COMBINED SCALE FACTOR IS 1.000155862863.
- NOTICE: SELLING A PORTION OF THIS ADDITION BY METES AND BOUNDS IS A VIOLATION OF TOWN ORDINANCE AND STATE LAW, AND IS SUBJECT TO FINES AND/OR WITHHOLDING OF UTILITIES AND BUILDING PERMITS.
- BY SCALED MAP LOCATION, THE SUBJECT PROPERTY IS LOCATED IN ZONE "X", AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN, AND ZONE "X", AREAS OF 0.2% ANNUAL CHANCE FLOOD ACCORDING TO THE FLOOD INSURANCE RATE MAP NO. 48121C0510G, EFFECTIVE DATE APRIL 18, 2011.
- CORNER MONUMENTATION: UPON COMPLETION OF STREET AND UTILITY CONSTRUCTION AND GRADING WORK, 5/8" IRON RODS WITH CAPS STAMPED "MMA" SHALL BE SET AT ALL LOT CORNERS AND POINTS OF CURVATURE.
- ACCESS EASEMENTS: THE UNDERSIGNED DOES COVENANT AND AGREE THAT THE ACCESS EASEMENT MAY BE UTILIZED BY ANY PERSON OR THE GENERAL PUBLIC FOR INGRESS AND EGRESS TO OTHER REAL PROPERTY, AND FOR THE PURPOSE OF GENERAL PUBLIC VEHICULAR AND PEDESTRIAN USE AND ACCESS, AND FOR FIRE DEPARTMENT AND EMERGENCY USE IN, ALONG, UPON AND ACROSS SAID PREMISES, WITH THE RIGHT AND PRIVILEGE AT ALL TIMES OF THE TOWN OF BARTONVILLE, ITS AGENTS, EMPLOYEES, WORKMEN AND REPRESENTATIVES HAVING INGRESS, EGRESS, AND REGRESS IN, ALONG, UPON AND ACROSS SAID PREMISES.
- THE HOME OWNER'S ASSOCIATION SHALL BE RESPONSIBLE FOR MAINTAINING THE DRAINAGE EASEMENTS AS SHOWN ON THIS PLAT.

STATE OF TEXAS §
COUNTY OF DENTON §

WHEREAS, KNIGHT DEVELOPMENT GROUP LLC IS THE OWNER OF A TRACT OF LAND SITUATED IN THE A. M. FELTUS SURVEY, ABSTRACT NO. 1594 AND THE DANIEL COOK SURVEY, ABSTRACT NO. 230, DENTON COUNTY, TEXAS;

BEING AN 81.789 ACRE TRACT OF LAND SITUATED IN THE A. M. FELTUS SURVEY, ABSTRACT NO. 1594 AND THE DANIEL COOK SURVEY, ABSTRACT NO. 230, DENTON COUNTY, TEXAS, BEING PART OF A CALLED 183.72 ACRE TRACT OF LAND DESCRIBED IN THE DEED TO KNIGHT DEVELOPMENT GROUP LLC, INC, AS RECORDED IN COUNTY CLERK'S INSTRUMENT NO. 2023-50844, OFFICIAL RECORDS, DENTON COUNTY, TEXAS, (ORDCT), AND BEING MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS;

COMMENCING AT A 1/2" IRON ROD IN CONCRETE FOUND (DISTURBED) FOR THE NORTHEAST CORNER OF SAID 183.72 ACRE TRACT, THE SOUTHEAST CORNER OF HAT CREEK ESTATES (LOT 1), AN ADDITION TO THE TOWN OF BARTONVILLE, DENTON COUNTY, TEXAS, ACCORDING TO THE PLAT RECORDED IN INSTRUMENT NO. 2017-260, PLAT RECORDS, DENTON COUNTY, TEXAS (PRDCT) AND IN THE WEST LINE OF A CALLED 99.8173 ACRE TRACT OF LAND DESCRIBED IN THE DEED TO EDUCATION LEADS TO SUCCESS FOUNDATION, AS RECORDED IN INSTRUMENT NO. 2020-151501, ORDCT; THENCE SOUTH 00°30'01" EAST, WITH THE COMMON LINE OF SAID 183.72 ACRE TRACT AND SAID 99.8173 ACRE TRACT AND THE WEST LINE OF THE REMAINDER OF TRACT 2, A CALLED 202.506 ACRE TRACT OF LAND DESCRIBED IN THE DEED TO PONCA CITY INN, INC, AS RECORDED IN INSTRUMENT NO. 2021-115693, ORDCT, A DISTANCE OF 926.45 FEET, TO A 5/8" CAPPED IRON ROD STAMPED 'MMA' SET FOR THE POINT OF BEGINNING;

THENCE WITH THE COMMON LINE OF SAID 183.72 ACRE TRACT AND THE WEST LINE OF SAID TRACT 2, THE FOLLOWING COURSES AND DISTANCE:

SOUTH 00°30'01" EAST, A DISTANCE OF 73.02 FEET TO A 5/8" IRON ROD FOUND FOR CORNER;
SOUTH 00°08'16" EAST, A DISTANCE OF 1,578.94 FEET TO A 5/8" IRON ROD FOUND FOR THE SOUTHEAST CORNER OF SAID 183.72 ACRE TRACT, THE NORTHWEST CORNER OF LOT 20, GREEN OAKS ESTATES SECTION 1, AN ADDITION TO THE TOWN OF BARTONVILLE, DENTON COUNTY, TEXAS, ACCORDING TO THE PLAT RECORDED IN CABINET B, PAGE 151, PLAT RECORDS, DENTON COUNTY, TEXAS (PRDCT) AND THE NORTHEAST CORNER OF A CALLED 29.997 ACRE TRACT OF LAND DESCRIBED IN THE DEED TO STEALTH DEVELOPMENT, AS RECORDED IN INSTRUMENT NO. 2004-12198 ORDCT;

THENCE SOUTH 89°27'32" WEST, WITH THE SOUTH LINE OF SAID 183.72 ACRE TRACT, THE NORTH LINE OF SAID 29.997 ACRE TRACT, THE NORTH LINE OF A CALLED 10.00 ACRE TRACT DESCRIBED IN THE DEED TO CARRINGTON REVOCABLE TRUST, AS RECORDED IN INSTRUMENT 2004-57799, ORDCT, THE NORTH LINE OF LOT 2, ROSEBERRY FARM, AN ADDITION TO THE TOWN OF BARTONVILLE, DENTON COUNTY, TEXAS, AS RECORDED IN CABINET E, PAGE 69, PRDCT, THE NORTH LINE OF A CALLED 4.997 ACRE TRACT OF LAND DESCRIBED IN THE DEED TO JAMES & KATE WALSH LIVING TRUST, AS RECORDED IN INSTRUMENT NO. 2023-82712 ORDCT, A DISTANCE OF 2,168.74 FEET TO A 5/8" IRON ROD IN CONCRETE FOUND FOR THE NORTHWEST CORNER OF SAID 4.997 ACRE TRACT AND IN THE EAST RIGHT-OF-WAY LINE OF JETER ROAD EAST;

THENCE WITH THE SOUTH AND WEST LINE OF SAID 183.72 ACRE TRACT AND THE EAST AND NORTH RIGHT-OF-WAY LINE OF SAID JETER ROAD EAST, THE FOLLOWING COURSES AND DISTANCES:

NORTH 03°21'59" EAST, A DISTANCE OF 12.77 FEET TO A 1/2" IRON ROD FOUND FOR CORNER;
SOUTH 89°30'32" WEST, A DISTANCE OF 91.68 FEET TO A 5/8" CAPPED IRON ROD STAMPED "MMA" SET FOR THE SOUTHWEST CORNER OF THE HEREIN DESCRIBED TRACT;

THENCE OVER AND ACROSS SAID 183.72 ACRE TRACT, THE FOLLOWING COURSE AND DISTANCE AS FOLLOWS:

NORTH 00°29'28" WEST, A DISTANCE OF 1,045.07 FEET TO A 5/8" CAPPED IRON ROD STAMPED 'MMA' SET FOR CORNER;
NORTH 44°27'46" EAST, A DISTANCE OF 613.16 FEET TO A 5/8" CAPPED IRON ROD STAMPED 'MMA' SET FOR THE BEGINNING OF A CURVE TO THE RIGHT HAVING A RADIUS OF 570.00 FEET AND A CHORD WHICH BEARS NORTH 67°05'22" EAST, A DISTANCE OF 438.59 FEET;
IN A NORTHEASTERLY DIRECTION WITH SAID CURVE, TO THE RIGHT THROUGH A CENTRAL ANGLE OF 45°15'12", AN ARC LENGTH OF 450.20 FEET TO A 5/8" CAPPED IRON ROD STAMPED 'MMA' SET FOR THE END OF SAID CURVE TO THE RIGHT;
NORTH 89°42'58" EAST, A DISTANCE OF 1,430.64 FEET TO THE POINT OF BEGINNING AND CONTAINING 3,562,713 SQUARE FEET OR 81.789 ACRES OF LAND, MORE OR LESS.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

THAT KNIGHT DEVELOPMENT GROUP LLC, ACTING HEREIN BY AND THROUGH ITS DULY AUTHORIZED OFFICERS, DOES HEREBY ADOPT THIS PLAT DESIGNATING THE HEREINABOVE DESCRIBED PROPERTY AS LOTS 1-4, BLOCK 1, KNIGHT'S CREST SUBDIVISION, AN ADDITION TO THE TOWN OF BARTONVILLE, TEXAS, AND DOES HEREBY DEDICATE, IN FEE SIMPLE, TO THE PUBLIC USE FOREVER, THE STREETS AND EASEMENTS SHOWN THEREON. THE STREETS ARE DEDICATED FOR STREET PURPOSES. THE EASEMENTS AND PUBLIC USE AREAS, AS SHOWN, ARE DEDICATED, FOR THE PUBLIC USE FOREVER, FOR THE PURPOSES INDICATED ON THIS PLAT, NO BUILDINGS, FENCES, TREES, SHRUBS OR OTHER IMPROVEMENTS OR GROWTHS SHALL BE CONSTRUCTED OR PLACED UPON, OVER OR ACROSS THE EASEMENTS AS SHOWN, EXCEPT THAT LANDSCAPE IMPROVEMENTS MAY BE PLACED IN LANDSCAPE EASEMENTS, IF APPROVED BY THE TOWN OF BARTONVILLE. IN ADDITION, UTILITY EASEMENTS MAY ALSO BE USED FOR THE MUTUAL USE AND ACCOMMODATION OF ALL PUBLIC UTILITIES DESIRING TO USE OR USING THE SAME UNLESS THE EASEMENT LIMITS THE USE TO PARTICULAR UTILITIES, SAID USE BY PUBLIC UTILITIES BEING SUBORDINATE TO THE PUBLIC'S AND TOWN OF BARTONVILLE'S USE THEREOF. THE TOWN OF BARTONVILLE AND PUBLIC UTILITY ENTITIES SHALL HAVE THE RIGHT TO REMOVE AND KEEP REMOVED ALL OR PARTS OF ANY BUILDINGS, FENCES, TREES, SHRUBS OR OTHER IMPROVEMENTS OR GROWTHS WHICH MAY IN ANY WAY ENDANGER OR INTERFERE WITH THE CONSTRUCTION, MAINTENANCE, OR EFFICIENCY OF THEIR RESPECTIVE SYSTEMS IN SAID EASEMENTS. THE TOWN OF BARTONVILLE AND PUBLIC UTILITY ENTITIES SHALL AT ALL TIMES HAVE THE FULL RIGHT OF INGRESS AND EGRESS TO OR FROM THEIR RESPECTIVE EASEMENTS FOR THE PURPOSE OF CONSTRUCTING, RECONSTRUCTING, INSPECTING, PATROLLING, MAINTAINING, READING METERS, AND ADDING TO OR REMOVING ALL OR PARTS OF THEIR RESPECTIVE SYSTEMS WITHOUT THE NECESSITY AT ANY TIME PROCURING PERMISSION FROM ANYONE.

THIS PLAT APPROVED SUBJECT TO ALL PLATTING ORDINANCES, RULES, REGULATIONS AND RESOLUTIONS OF THE TOWN OF BARTONVILLE, TEXAS
WITNESS, MY HAND, THIS THE ____ DAY OF _____, 20____
BY:

AUTHORIZED SIGNATURE OF OWNER

PRINTED NAME AND TITLE

STATE OF TEXAS §
COUNTY OF _____ §

BEFORE ME, THE UNDERSIGNED AUTHORITY, A NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS, ON THIS DAY PERSONALLY APPEARED _____, OWNER, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSE AND CONSIDERATIONS THEREIN EXPRESSED.
GIVEN UNDER MY HAND AND SEAL OF OFFICE, THIS ____ DAY OF _____, 20____.

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

MY COMMISSION EXPIRES ON:

SURVEYOR'S CERTIFICATE

THAT I, LON E. WHITTEN, A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, DO HEREBY DECLARE THAT I PREPARED THIS PLAT FROM AN ACTUAL AND ACCURATE SURVEY OF THE LAND AND THAT THE CORNER MONUMENTS SHOWN HEREON AS SET WERE PROPERLY PLACED UNDER MY PERSONAL SUPERVISION IN ACCORDANCE WITH THE DEVELOPMENT ORDINANCE OF THE TOWN OF BARTONVILLE.

PRELIMINARY
This document shall not be recorded for any purpose and shall not be used or viewed or relied upon as a final survey document. Released for review by

LON E. WHITTEN DATE: NOVEMBER 13, 2023
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NO. 5893

STATE OF TEXAS §
COUNTY OF TARRANT §

BEFORE ME, THE UNDERSIGNED AUTHORITY ON THIS DAY PERSONALLY APPEARED LON E. WHITTEN, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATIONS THEREIN EXPRESSED IN THE CAPACITY THEREIN STATED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THIS ____ DAY OF _____, 2023.

NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

MY COMMISSION EXPIRES: _____

NOVEMBER 2023

PRELIMINARY PLAT
LOTS 1-4, BLOCK 1
**KNIGHT'S CREST
SUBDIVISION**

BEING 81.789 ACRES SITUATED IN THE A. M. FLETUS SURVEY, ABSTRACT NO. 1594 AND THE DANIEL COOK SURVEY, ABSTRACT NO. 230, BEING A PORTION OF A CALLED 183.72 ACRE TRACT OF LAND IN THE TOWN OF BARTONVILLE DENTON COUNTY, TEXAS

SURVEYOR/ENGINEER:



civil engineering surveying landscape architecture planning

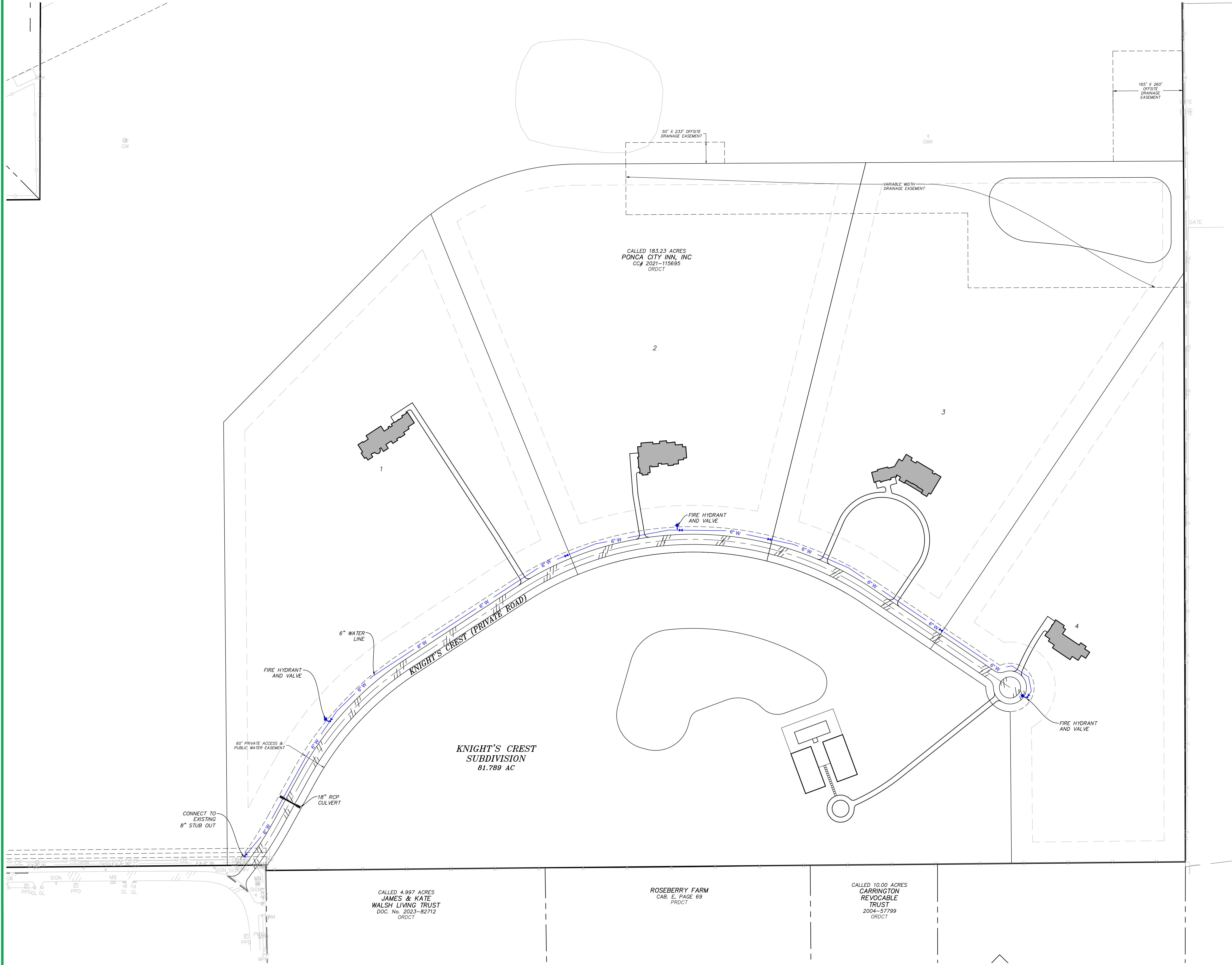
ltpels registration number: 1 - 2759
ltpels registration/license number: 10088000
519 east border
arlington, texas 76010
817-469-1671
fax: 817-274-8757
www.mma1exas.com

OWNER/DEVELOPER:

**KNIGHT DEVELOPMENT
GROUP LLC**
4600 EDEN ROAD
ARLINGTON, TX 76001
TEL: 469-774-8172
email: rob@dc.us
CONTACT: ROB KNIGHT

CONTACT: JACOB SUMPTER, AICP
COPYRIGHT © 2023 MMA, INC.
SHEET 2 OF 2

MMA PROJECT NO. 3733-00-01



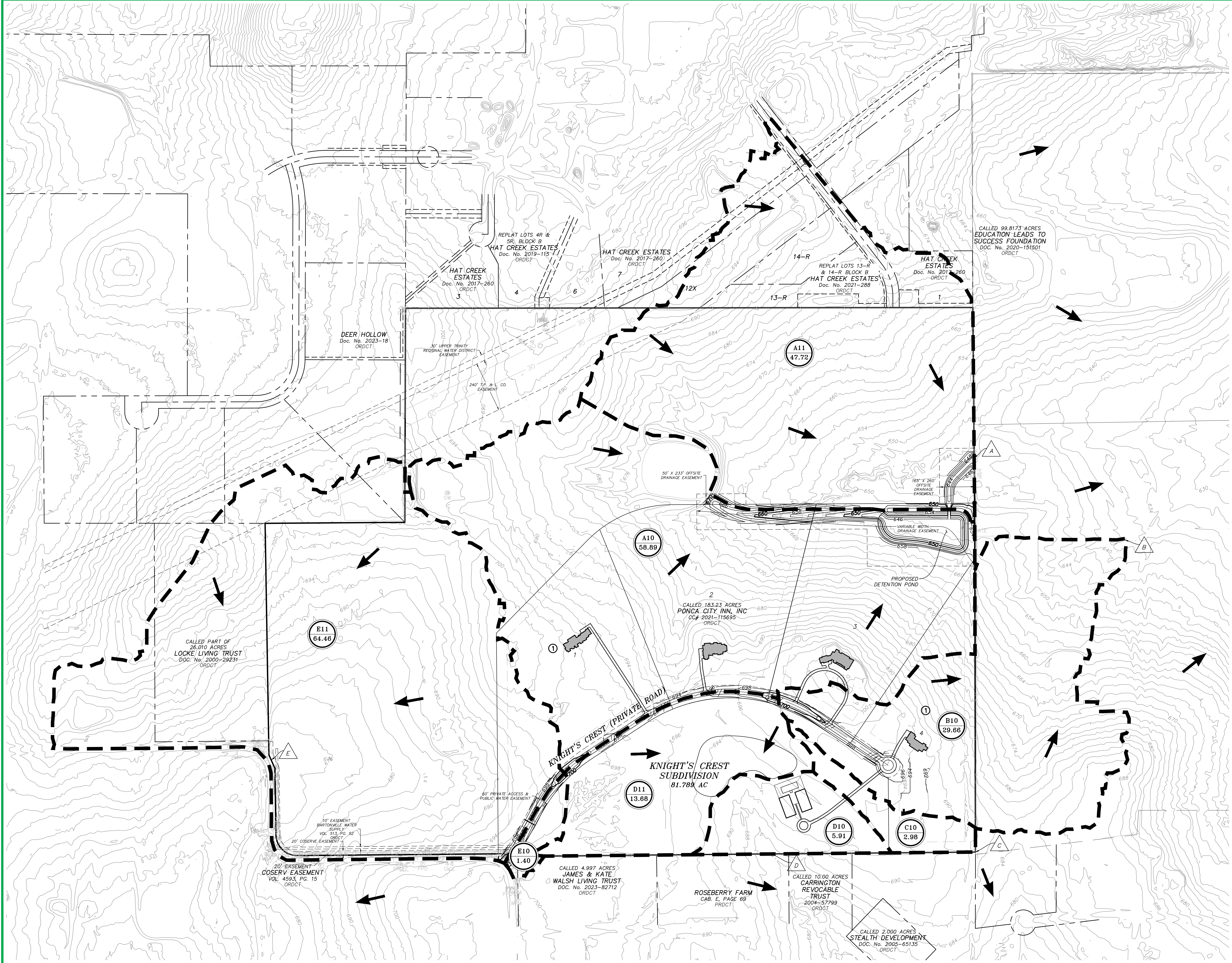
LEGEND:

EXISTING SANITARY SEWER	EX-SS
EXISTING SEWER MANHOLE	⊙
EXISTING WATER LINE	EX-W
EXISTING WATER VALVE	⊕
EXISTING FIRE HYDRANT	⊙
EXISTING OVERHEAD ELECTRIC	OHE
EXISTING UNDERGROUND ELECTRIC	UGE
EXISTING POWER POLE	⊙
EXISTING LIGHT POLE	⊕
PROPOSED STORM LINE	—
PROPOSED FIRE HYDRANT ASSEMBLY	⊕
PROPOSED GATE VALVE	⊕
PROPOSED WATER LINE	—

PRELIMINARY UTILITY PLAN
KNIGHTS FAMILY COMPOUND
BARTONVILLE, TEXAS



civil engineering surveying landscape architecture planning
tbpels registration number: 1 - 2759
tbpels registration/license number: 10088000
519 east border
arlington, texas 76010
817-469-1671
fax: 817-274-8757
www.mmatexas.com



LEGEND:

EXISTING MAJOR CONTOUR - - 640 - -

EXISTING MINOR CONTOUR - - 641 - -

PROPOSED MINOR CONTOUR **- 640 -**

PROPOSED MAJOR CONTOUR - 641 -

DRAINAGE AREA BOUNDARY - - - -

DRAINAGE AREA LABEL

NAME A1

AREA (ACRES) 2.6

FLOW AREA →

DESIGN POINT ▲

NOTES:

1. EXISTING AND PROPOSED CONTOURS SHOWN AT 2' INTERVALS.

**PRELIMINARY DRAINAGE
AREA MAP
KNIGHTS FAMILY COMPOUND
BARTONVILLE, TEXAS**



civil engineering surveying landscape architecture planning

tpsls registration number: 1 - 2759
tpsls registration/license number: 10088000
519 east border
arlington, texas 76010
817-469-1671
fax: 817-274-8757
www.mmatex.com



TOWN COUNCIL COMMUNICATION

DATE December 19, 2023

FROM: Thad Chambers, Town Administrator

AGENDA ITEM: Discuss, consider, and take any necessary action on a Preliminary Plat for a 99.744-acre tract of land situated in the A.R. Loving Survey, Abstract Number 0736A, Tracts 5, 5A, 6, and 7A in the Town of Bartonville, Denton County, Texas. The tract of land is located on the west side of FM 407, directly opposite the intersection of FM 407 and Rayzor Road, in Bartonville, Texas. The applicant is CCM Engineering, on behalf of the Education Leads to Success Foundation. *(The Planning & Zoning Commission recommended approval by a vote of 5-0 at its December 6, 2023, meeting.)*

Land Use and Zoning: Current land use category is Residential Estates – 2 Acre Lots (RE-2). Current zoning is Agricultural (AG).

Summary: The applicant is the owner of four tracts of land, totaling 99.754 acres, located on the west side of FM 407, immediately opposite the intersection with Rayzor Road. The legal description of the property is A0736A A. R. Loving, TR 5, 4.325 Acres, Old DCAD TR #4; TR 5A(1)(PT), 6(PT), 82.6397 Acres; and TR 7A, 12.8526 Acres. The corresponding Denton CAD parcel numbers are 38038, 6236125, and 236126. The applicant has applied for a preliminary plat (see Exhibit A) in order to facilitate development of a new Universal Academy charter school campus.

The subject property is the current site for CJ's Legacy Ranch. There are multiple stables and outbuildings, residences, agricultural ponds, and cross-fencing on the property.

Preliminary Plat

Bartonville Development Ordinance (BDO) Section 2.5.g lists the criteria of approval for a preliminary plat:

1. The plat substantially conforms with the approved land study or other studies and plans, as applicable;
2. The preliminary layouts of required public improvements and Town utilities have been approved by the Town Engineer; and
3. The plat conforms to applicable zoning and other regulations.
4. The plat has been approved by the Permitting Authority, as defined in Chapter 285 of the Texas Administrative Code, in accordance with Title 30, Texas Administrative Code, Chapter 285, Section 285.4(c) relating to the review of subdivision plans prior to the application for a permit for an on-site sewage facility.

The submitted preliminary plat is designed to create a single legal lot comprising 99.754 acres. The subject property is located on FM 407, which is identified on the Bartonville Thoroughfare Plan as a "Highway". All proposed driveway spacing for the site appears to meet TxDOT's driveway spacing standards for the

roadway, based on information provided in the August 10, 2023, Traffic Impact Analysis prepared by DeShazo Group. The preliminary plat does not identify any public improvements to be installed; however, the Traffic Impact Analysis does identify a left turn bay at Driveway #2 (not reflected in the preliminary plat). This turn bay will require permitting from TxDOT, as it is in their right-of-way – see Conditions of Approval. The zoning district for the subject property is Agricultural (AG), which has a 10-acre minimum lot size. The proposed resulting lot will meet the zoning district standards.

Planning & Zoning Commission Recommendation: Approve with Conditions.

Planning & Zoning Commission Recommended Conditions of Approval:

1. On the final plat, the fire lane easement shall be a minimum of 24 feet in width and all internal turn radii shall be a minimum of 30 feet.
2. The final plat shall show Driveway #2 and the associated drive aisle, as indicated in the August 10, 2023 Traffic Impact Analysis. The drive aisle may be labeled as “Private Access Road.” It is recommended that this also be identified as a fire lane since it will offer direct turning access from FM 407.
3. Driveway #2 shall be served by a left turn bay cut in the median. Prior to construction of any public improvements in the TxDOT right-of-way, a TxDOT construction permit shall be obtained by the applicant.
4. Prior to submittal of a final plat, the proposed location and design of an on-site septic facility (OSSF) shall be approved by the Town of Bartonville, in accordance with Bartonville Development Ordinance Section 2.6.c.
5. Prior to any construction on the site within the Zone AE floodplain or floodway, a Conditional Letter of Map Revision (CLOMR) shall be submitted to and approved by FEMA.
6. The final plat shall contain an additional note under General Notes that reads, “The Zone AE floodplain and floodway shall be maintained and shall remain free of obstructive debris by the property owner, in accordance with the Bartonville Code of Ordinances.
7. A complete engineering/construction plan set shall accompany the final plat application, in accordance with Bartonville Development Ordinance Section 2.7.d.
8. Include as part of the construction plan set a turning exhibit for a WB 50 vehicle.

Financial Information: Due to the property’s ownership by a non-profit organization, the Town of Bartonville does not receive any ad valorem property taxes from the property. The Town can anticipate some minor expenses associated with serving the future school site with public safety and general governance services.

Exhibits:

1. Preliminary Plat Application Packet
2. Traffic Impact Analysis, prepared by DeShazo Group and dated August 10, 2023
3. Flood Study, prepared by Cardinal Strategies and dated October 12, 2023

Exhibit 1



TOWN OF BARTONVILLE DEVELOPMENT APPLICATION

Item F2.

Application Type (check all applicable):

- ☐ Sketch Plat ☐ Land Study ☒ Preliminary ☐ Final
☐ Development ☐ Replat ☐ Amending Plat

Current Legal Description: A0736A A. R. LOVING, TR 5A(1)(PT),6(PT), 82.6397 ACRES

Proposed Subdivision Name: ELTS ADDITION LOT 1, BLOCK A ☒ In Town Limits ☐ In ETJ

Current Zoning: AG Concurrent Zoning Change Req.? ☐ Yes (zoning change request attached) ☒ No

Proposed Zoning (if applicable): _____ No. Proposed Lots: 1 Total Acres: 99.744

Seeking Waiver/Suspension: ☐ Yes ☒ No If yes, please submit required information pursuant to Sec. 1.11 of Ordinance No. 336-03

Owner: Education Leads to Success Foundation

Phone: _____

Address: 2104 Cavalier Way, Flower Mound, TX 75022

Fax: _____

Applicant: CCM Engineering

Phone: _____

Address: 2570 Justin Rd., Highland Village, TX 75077

Fax: _____

Please Note: If applicant is different from current owner a notarized statement, authorizing the applicant to act as owner's agent, must accompany this application along with submittal fees in accordance with the Town's adopted Fee Schedule.

I understand that it is unlawful for any person to knowingly or willfully misrepresent, or fail to include, any information required by the Development Ordinance on this application. I further understand that misrepresentation, or deliberate omission, of facts pertaining to the land study or plat shall constitute grounds for denial of the land study or plat.

Luke Spicer

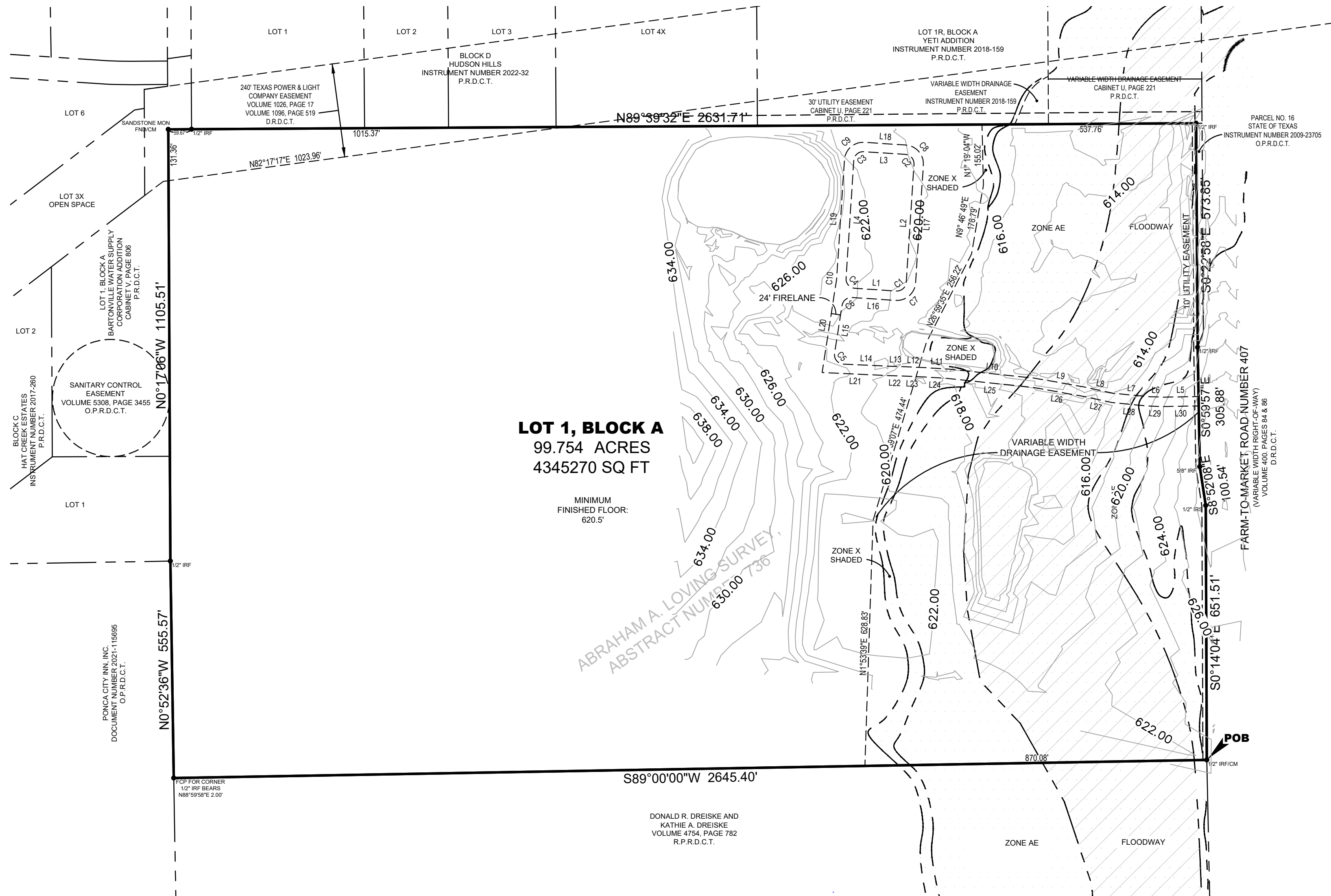
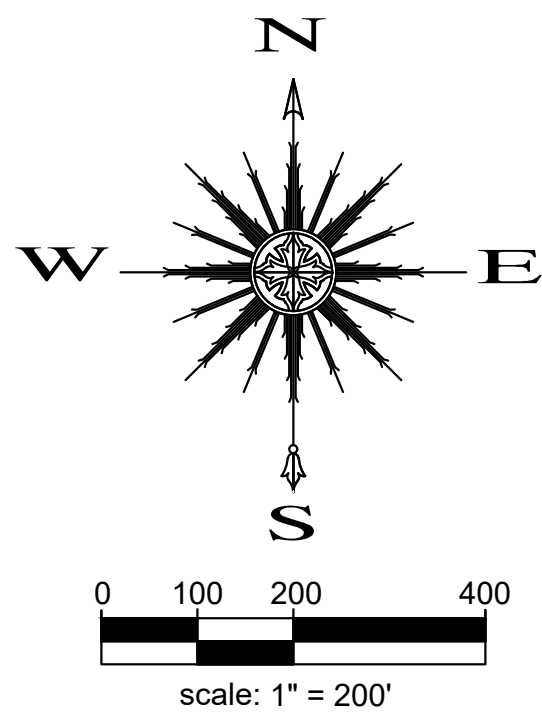
Digitally signed by Luke Spicer
DN: C=US, E=luke@ccm-eng.com, O=CCM Engineering, CN=Luke Spicer
Date: 2023.10.12 16:39:45-05'00'

10-12-23

Applicant Signature

Date

Office Use Only:	Fee Pd: _____	Check # _____	Date: _____
Schedule:	DRC: _____	P&Z: _____	TC: _____
Zoning Change? <input type="checkbox"/> Y <input type="checkbox"/> N	From _____ to _____	Publish Date: _____	Hearing Date: _____
<input type="checkbox"/> Street Construction	<input type="checkbox"/> Public Improvements	<input type="checkbox"/> Easements	<input type="checkbox"/> Simultaneous Submit
Hearing Req? <input type="checkbox"/> Y <input type="checkbox"/> N	Tax Certificate? <input type="checkbox"/> Y <input type="checkbox"/> N		
Disbursement: <input type="checkbox"/> Gas Co.	<input type="checkbox"/> Town Engineer/Planner	<input type="checkbox"/> Town Attorney	<input type="checkbox"/> DRC Members
<input type="checkbox"/> Elec Co.	<input type="checkbox"/> Cable Co.	<input type="checkbox"/> Fire Chief	<input type="checkbox"/> Water Supply



Parcel Line Table			Parcel Line Table		
Line #	Length	Direction	Line #	Length	Direction
L1	106.45	S86°14'56"E	L16	112.32	S86°14'56"E
L2	302.37	N3°45'04"E	L17	302.23	N3°45'04"E
L3	105.54	N86°14'56"W	L18	105.17	N86°14'56"W
L4	302.37	S3°45'04"W	L19	305.04	S3°45'04"W
L5	90.80	S89°00'03"W	L20	240.67	S8°50'31"W
L6	37.82	N87°58'56"W	L21	169.74	S87°21'42"E
L7	89.60	N84°28'30"W	L22	34.48	S88°07'36"E
L8	75.33	N77°48'28"W	L23	54.48	S87°38'21"E
L9	130.18	N79°55'12"W	L24	63.78	S86°26'00"E
L10	221.25	N83°57'45"W	L25	219.88	S83°57'45"E
L11	64.55	N86°26'00"W	L26	128.89	S79°55'12"E
L12	54.84	N87°38'21"W	L27	76.29	S77°48'28"E
L13	34.42	N88°07'36"W	L28	91.73	S84°28'30"E
L14	116.08	N87°21'42"W	L29	39.19	S87°58'56"E
L15	124.12	N8°50'31"E	L30	91.43	N89°00'03"E

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	37.70	24.00	90.0000	N48°45'04"E	33.94
C2	38.61	24.01	92.1241	N41°30'35"W	34.58
C3	38.38	24.01	91.6033	S48°45'04"W	34.42
C4	37.70	24.00	90.0000	S41°14'56"E	33.94
C5	40.30	24.00	96.2037	N39°15'35"W	35.73
C6	35.57	24.00	84.9091	N51°17'48"E	32.40
C7	75.40	48.00	90.0000	N48°45'04"E	67.88
C8	76.68	48.01	91.5021	N41°28'00"W	68.78
C9	76.36	48.01	91.1338	S48°45'04"W	68.56
C10	2.13	24.00	5.0999	S6°17'48"W	2.13

STATE OF TEXAS COUNTY OF DENTON

WHEREAS EDUCATION TO SUCCESS FOUNDATION is the rightful owner of all of that tract of land situated in the Abraham A. Loving Survey, Abstract Number 736, in the Town of Bartonville, Denton County, Texas, and being all of a that certain tract of land described in the deed to Education Leads to Success Foundation (ELTSF), as recorded in Instrument Number 2020-151501, of the Official Public Records of Denton County, Texas, and being more particularly described as follows:

BEGINNING at a 1/2-inch iron rod found for the southeast corner of said ELTSF tract and the northeast corner of that certain tract of land described in the deed to Donald R. Dreiske and Kathie A. Dreiske, as recorded in Volume 4754, Page 782 of the Real Property Records of Denton County, Texas, said point also being in the west right-of-way line of Farm to Market Road Number 407, having a variable width right-of-way;

THENCE South 89 degrees 00 minutes 00 seconds West, with the south line of said ELTSF tract and the north line of said Dreiske, a distance of 2,645.40 feet to a fence corner post found for the southeast corner of said ELTSF tract and the northwest corner of said Dreiske tract, said point also being in the east line of that certain of land described in the deed to Ponca City inn, Inc., as recorded under Instrument Number 2021-115695 of the Official Public Records, Denton County, Texas, from which a 1/2 inch iron rod found bears North 88°59'58" East, a distance of 2.00 feet;

THENCE North 00 degrees 52 minutes 36 seconds West, with the west line of said ELTSF tract and the east line of said Ponca City Inn tract, a distance of 555.57 feet to a 1/2 inch iron rod found for an angle point in the west line of said ELTSF tract, and the northeast corner of said Ponca City inn tract, said point also being the southeast corner of Lot 1, Block C, of Hat Creek Estates, an addition to the Town of Bartonville, Denton County, Texas, according to the plat thereof recorded under Instrument No. 2017-260, of the Plat Records of Denton County, Texas;

THENCE North 00 degrees 17 minutes 13 seconds West, with the west line of said ELTSF tract and with the east lines of Hat Creek Estates, and Bartonville Water Supply Corporation Addition, an addition to the Town of Bartonville, Denton County, Texas, according to the plat thereof recorded in Cabinet V, Page 806, of the Plat Records, Denton County, Texas, a distance of 1,105.51 feet to a sandstone monument found for the northwest corner of said ELTSF tract and an interior ell of said Bartonville Water Supply Corporation Addition;

THENCE North 89 degrees 39 minutes 36 seconds East, with the north line of said ELTSF tract and a south line of said Bartonville Water Supply Corporation Addition, passing at a distance of 59.67 feet a 1/2 inch iron rod found for the southeast corner of said Bartonville Water Supply Corporation Addition, and the southwest corner of Block D of Hudson Hills, an addition to the Town of Bartonville, Denton County, Texas, according to the plat thereof recorded under Instrument Number 2022-32, of the Plat Records, Denton County, Texas, continuing with the north line of said ELTSF tract, passing the southeast corner of said Block D and the southwest corner of Yeti Addition, an addition to the Town of Bartonville, Denton County, Texas, according to the plat thereof recorded under Instrument Number 2018-159, of the Plat Records, Denton County, Texas, a total distance of 2,631.71 feet to a 1/2 inch iron rod found for the northeast corner of said ELTSF tract and being in the west right-of-way line of said Farm to Market Road Number 407;

THENCE along the east line of said ELTSF tract and the west right-of-way line of said Farm to Market Road Number 407. The following four (4) courses:

- South 00 degrees 22 minutes 58 seconds East, a distance of 573.85 feet to a 1/2-inch iron rod found for corner;
- South 00 degrees 59 minutes 57 seconds East, a distance of 305.88 feet to a 5/8 inch iron rod found for corner;
- South 08 degrees 52 minutes 08 seconds East, a distance of 100.54 feet to a 1/2 inch iron rod with a cap stamped "CCM-ENG" set for corner;
- South 00 degrees 14 minutes 04 seconds East, a distance of 651.51 feet to the POINT OF BEGINNING and enclosing 99.754 acres of land.

SURVEYOR'S CERTIFICATE:

This is to certify that I, Crystal Robertson, do hereby certify that I prepared this plat from an actual and accurate survey of the land and that the corners monuments shown thereon as set were properly placed under my supervision in accordance with the Development Ordinance of the Town of Bartonville..

Crystal Robertson
Registered Professional Land Surveyor #5447

STATE OF TEXAS §
COUNTY OF DENTON §

BEFORE ME, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared Crystal Robertson, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, THIS _____ DAY OF _____, 2023.

Notary Public in and for the State of Texas

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS

THAT the EDUCATION LEADS TO SUCCESS FOUNDATION, acting herein by and through his (its) duly authorized officers, does hereby adopt this plat designating the hereinabove described property as ELTSF ADDITION, an addition to the Town of Bartonville, Texas, and does hereby dedicate, in fee simple, to the public use forever, the streets and easements shown thereof. The streets are dedicated for street purposes. The easements and public use areas, as shown, are dedicated, for the public use forever, for the purposes indicated on this plat. No buildings, fences, trees, shrubs or other improvements or growths shall be constructed or placed upon, over or across the easements as shown, except that landscape improvements may be placed in landscape easements, if approved by the Town of Bartonville. In addition, utility easements may also be used for the mutual use and accommodation of all public utilities desiring to use or using the same unless the easement limits the use to particular utilities, said use by public utilities being subordinate to the public's and Town of Bartonville's use thereof. The town of Bartonville and public utility entities shall have the right to remove and keep removed all or parts of any buildings, fences, trees, shrubs or other improvements or growths which may in any way endanger or interfere with the construction, maintenance, or efficiency of their respective systems in said easements. The Town of Bartonville and public utility entities shall at all times have the full right of ingress and egress to or from their respective easements for the purpose of constructing, reconstructing, inspecting, patrolling, maintaining, reading meters, and adding to or removing from all or parts of their respective systems without the necessity at any time of procuring permission from anyone. This plat approved subject to all platting ordinances, rules, regulations and resolutions of the Town of Bartonville, Texas.

That the undersigned does hereby covenant and agree that he (they) shall construct upon the fire lane easements, as dedicated and shown hereon, a hard surface in accordance with the Town of Bartonville's paving standards for fire lanes, and that he (they) shall maintain the same in a state of good repair at all times and keep the same free and clear of any structures, fences, trees, shrubs, or other improvements or obstruction, including but not limited to the parking of motor vehicles, trailers, boats or other impediments to the accessibility of fire apparatus. The maintenance of paving on the fire lane easements is the responsibility of the owner, and the owner shall post and maintain appropriate signs in conspicuous places along such fire lanes, stating "Fire Lane, No Parking." The local law enforcement agency(s) is hereby authorized to enforce parking regulations within the fire lanes, and to cause such fire lanes and utility easements to be maintained free and unobstructed at all times for fire department and emergency use.

WITNESS my hand this the _____ day of _____, 2023.

EDUCATION LEADS TO SUCCESS FOUNDATION

By: _____
Authorized Representative-Signature

Printed Name _____

Title _____

Date _____

STATE OF TEXAS §
COUNTY OF DENTON §

BEFORE ME, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared _____, Owner, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

Given under my hand and seal of office, this _____ day of _____, 2023.

Notary Public in and for the State of Texas

STATE OF TEXAS §
COUNTY OF DENTON §

PRELIMINARY PLAT
Approved for preparation of final plat for the subdivision shown on this plat.
APPROVED BY: Planning and Zoning Commission Town of Bartonville, Texas.

Signature of Chairman _____

Date _____

APPROVED BY: Town Council

Signature of Mayor _____

Date _____

Attest: _____

Town Secretary _____

Date _____

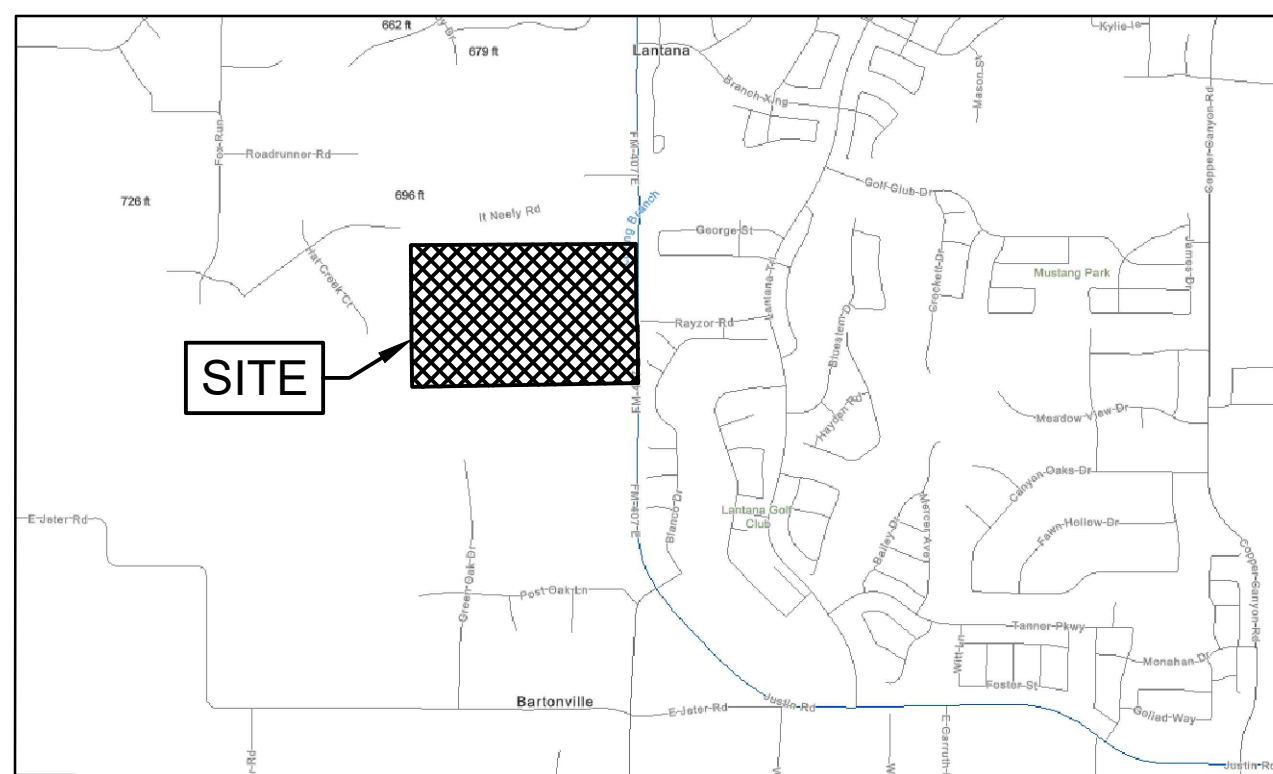
ELTSF ADDITION

BEING LOT 1, BLOCK A,

99.754 ACRES
SITUATED IN THE
ABRAHAM A. LOVING SURVEY,
ABSTRACT NO. 736
IN THE
TOWN OF BARTONVILLE
DENTON COUNTY, TEXAS

OCTOBER 2023

SHEET 1 OF 1



VICINITY-MAP
NOT TO SCALE

GENERAL NOTES

- The surveyor has not abstracted the site. Additional easements and/or other matters of record may or may not affect the subject tract.
- Bearings and Coordinates shown hereon are based on Texas State Plane Coordinates, North Central Zone 4202, NAD-83 Survey feet, derived from GPS observations and NGS Opus solutions. All dimensions shown are ground distances. Coordinates shown are grid coordinates.
- Selling a portion of this addition by metes and bounds is a violation of Town ordinance and State law and is subject to fines and/or withholding of utilities and building permits.
- Each lot corner is monumented by a 1/2" iron rod with red plastic cap stamped "CCM-ENG" unless denoted otherwise.
- The property shown hereon is legally owned by the applicant of this plat.

Cross Timbers Water

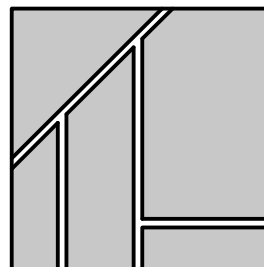
Declaration hereby reserves unto itself and the Cross Timbers Water Supply Corporation, and their respective agents, assignees, and employees, a perpetual non-exclusive easement under, over and across the Easement Property, or any areas conveyed and maintained by the Declarant and/or the Cross Timbers Water Supply Corporation, including but not limited to any service area or any areas reserved or held as Common Area for the installation, operation, maintenance, repair, relocation, removal and/or modification of any water line improvements, roadways or any other water public utility function on, beneath or above the surface of the grounds that serve as the Easement Property.

FLOOD STATEMENT

A portion of the surveyed property is situated in Shaded Zone "X", Zone AE, and Floodway in Denton County, Texas according to FEMA map number 48121C0510G dated April 18, 2011. Warning: This statement does not imply that the property and/or the structures thereon will be free from flooding or flood damage. This determination has been made by scaling the property on the referenced map and is not the result of an elevation survey. This flood statement shall not create liability on the part of the surveyor.

OWNER:

EDUCATION LEADS TO
SUCCESS FOUNDATION
2700 FM 407 E
BARTONVILLE, TX 76226
972-255-1800



CCM ENGINEERING

2570 JUSTIN ROAD #209
HIGHLAND VILLAGE, TX 75077
(972) 691-6633
TBPE FIRM # 605
TBLS FIRM # 10194794

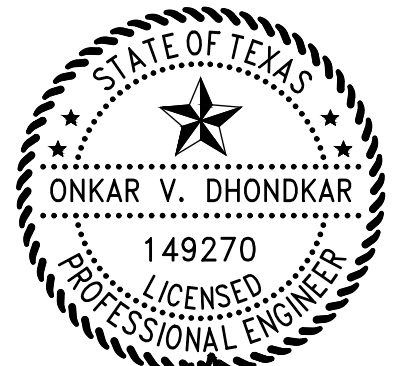
Exhibit 2

TRAFFIC IMPACT ANALYSIS UPDATE FOR
BARTONVILLE ELTS SCHOOL
IN BARTONVILLE, TEXAS

DeShazo Project No. 23031

Prepared for:

Mr. Luke Spicer. P.E.
CCM Engineering
2570 FM 407, Suite 209
Highland Village, TX 75077



Prepared by:

Mr. Onkar Dhondkar, P.E.
DeShazo Group, Inc.

A handwritten signature in black ink, appearing to read "Onkar Dhondkar", written over a horizontal line.

08/10/2023

Texas Registered Engineering Firm F-3199
400 S Houston St, Suite 330, Dallas, TX-75202
Office: 214-748-6740 | www.deshazogroup.com

REVISED

August 10, 2023



TRAFFIC . TRANSPORTATION PLANNING . PARKING . DESIGN

Traffic Impact Analysis Update for
Bartonville ELTS School in Bartonville, Texas
 ~ DeShazo Project No. 23031 ~

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Traffic Impact Analysis Update for
Bartonville ELTS School in Bartonville, Texas
 ~ DeShazo Project No. 23031 ~

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Exhibit 1.	Project Vicinity Map
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Traffic Impact Analysis Update for
Bartonville ELTS School in Bartonville, Texas
 ~ DeShazo Project No. 23031 ~

LIST OF ABBREVIATIONS:

DeShazo/DGI:	DeShazo Group, Inc.	Dr:	Drive
TIA:	Traffic Impact Analysis	St:	Street
LOS:	Level of Service	Pkwy:	Parkway
NB:	North Bound	Ave:	Avenue
SB:	South Bound	ITE:	Institute of Transportation Engineers
EB:	East Bound	TxDOT:	Texas Department of Transportation
WB:	West Bound	AASHTO:	American Association of State Highway and Transportation Officials
L:	Left	MUTCD:	Manual on Uniform Traffic Control Devices
R:	Right	HCM:	Highway Capacity Manual
T:	Through	HCS:	Highway Capacity Software
In:	Inbound/ Ingress	NCTCOG:	North Central Texas Council of Governments
Out:	Outbound/ Egress	AMM:	Access Management Manual
AM:	Ante Meridiem	DU:	Dwelling Unit
PM:	Post Meridiem	SF:	Square Feet
PHF:	Peak Hour Factor	Ft:	Feet
VPH:	Vehicle Per Hour	MUD:	Mixed-Use Development
MPH:	Mile Per Hour	CBD:	Central Business District
V/C:	Volume/Capacity	PD:	Planned Development
TWSC:	Two-Way Stop-Control		
AWSC:	All-Way Stop-Control		
ISD:	Intersection Sight Distance		
TX:	Texas		
Blvd:	Boulevard		
Rd:	Road		
City/Town:	Town of Bartonville		

EXECUTIVE SUMMARY

The services of **DeShazo Group, Inc.** (DeShazo) were retained by **CCM Engineering** (Client), to conduct Traffic Engineering Services for the proposed Bartonville ELTS School in Bartonville, Texas. The proposed development will be located in the northwest quadrant of FM 407 and CJ's Legacy Ranch Drive intersection in Bartonville, Texas.

Two-access drives will connect to FM 407 at the site, which are expected to be constructed by the year 2024. While the school will have a capacity of about 391 students, it is expected that all the students will be transported by bus and have a projected 5 bus operation per day.

DeShazo performed the analysis based on two scenarios. **Scenario 1** includes both the school bus and parent pick up and drop off together and **Scenario 2** includes only 5 buses/10 bus trips a day. Scenario 1 was considered and traffic analysis was performed considering; during a time of emergency, some of the parents may want to pick up or drop off their kids. It is generally understood that this scenario will not occur on a regular basis.

The analysis of the traffic generated by the proposed development resulted in a minimal impact on the local roadway system. Below is a summary of findings and suggested recommendations from the following TIA report.

INTERSECTION CAPACITY ANALYSIS

From the findings in our analysis, DeShazo has suggested improvements to the roadway geometry and traffic control devices to improve traffic operations for the local roadway network. These suggested recommendations are summarized below.

SUMMARY OF FINDINGS

FINDING: Based upon the existing 2023 analysis, all study intersections are currently operating at *LOS D* or better during the peak hour periods, except the following:

FM 407 and McMakin Rd:

The *EB* movement of this signalized intersection is operating at *LOS F* in 2023 Existing *AM as well as PM* condition.

FM 407 and I T Neely Dr: The *EBLR* movement of this unsignalized intersection is operating at *LOS F* in 2023 Existing *AM as well as PM* condition.

FM 407 and Rayzor Rd: The *WBL* movement of this unsignalized intersection is operating at *LOS E* in 2023 Existing *AM* and at *LOS F* in the existing *PM* condition.

FINDING: Based upon the 2024 Background and 2024 background-plus site buildout analysis, all study intersections are expected to operate at *LOS D* or better during the peak hour periods, except the following:

FM 407 and McMakin Rd:

The *EB* movement of this signalized intersection is expected to operate at *LOS F* during both the 2024 Background and Background Plus Site *AM* as well as *PM* conditions in both of the Scenarios.

FM 407 and I T Neely Dr:

The *EBLR* movement of this unsignalized intersection is expected to operate at *LOS F* during both the 2024 Background and Background Plus Site *AM* as well as *PM* conditions in both of the Scenarios.

FM 407 and Rayzor Rd:

The *WBL* movement of this unsignalized intersection is expected to operate at *LOS F* during both the Background Plus Site *AM* as well as *PM* conditions in Scenario 1. The intersection operates at *LOS E* during 2024 Background *AM* as well as Background Plus Site *AM* in Scenario 2.

FM 407 and Driveway 2:

The *EBLR* movement of this unsignalized intersection is expected to operate at *LOS F* during both the 2024 Background Plus Site *AM* as well as *PM* conditions in Scenario 1. And the intersection operates at *LOS E* during 2024 Background Plus Site *PM* Scenario 2.

FINDING: Based upon the 2029 horizon and 2029 horizon-plus site buildout analysis all the intersections are expected to operate at ***LOS D***, or better during the peak hour periods, with the exception of the following:

FM 407 and McMakin Rd :

The signalized intersection is expected to operate (overall) at *LOS C* and *LOS D* during 2029 Horizon and 2029 Horizon Plus Site *AM as well as PM* conditions, respectively for both scenarios. The *EB* movement is expected to operate at *LOS F* during both the 2029 Horizon and 2029 Horizon Plus Site *AM* and *PM* conditions for both scenarios.

FM 407 and I T Neely Dr:

The *EBLR* movement is expected to operate at *LOS F* during the 2029 Horizon and 2029 Horizon Plus Site *AM and PM* conditions for both scenarios.

FM 407 and Rayzor Rd:

The *WBL* movement is expected to operate at *LOS F* during both the 2029 Horizon and 2029 Horizon Plus Site *AM and PM* conditions for both scenarios.

FM 407 and Driveway 2:

The *EBLR* movement is expected to operate at *LOS F* during the 2029 Horizon Plus Site *AM and PM* conditions for scenario 1. And *LOS E* during 2029 Horizon Plus Site *PM* conditions for scenario 2.

SUMMARY OF THE DESHAZO RECOMMENDATIONS FOR INTERSECTIONS:

FM 407 and McMakin Rd:

Although, in general, this intersection is projected to function and remain at the overall LOS of LOS C and LOS D during the AM and PM horizon conditions. This signalized intersection's EB movement is already operating LOS F during both AM and PM conditions. Further, it is expected to worsen in the future scenarios. As the intersection is failing at current conditions and the proposed development is not contributing to any traffic at current conditions, DeShazo recommends that the Town should consider adding two exclusive left turns instead of one existing left turn, which will improve the level of service. This can be done by modifying the pavement markings, signage, and traffic signals.

This study has performed an intersection capacity analysis with these improvements (having two left turn lanes) and the results are attached to **Appendix E**.

FM 407 at Rayzor Rd:

The WBL movement is expected to operate at *LOS E and LOS F* in 2023 Existing AM and Existing PM conditions respectively and is expected to operate at *LOS F* in future scenarios. The proposed site has no impact on this intersection as the majority of the traffic for the proposed development is expected to travel north-south and vice-versa. Additionally, during peak hours of analysis, the maximum 95th percentile queue for Horizon and Horizon Plus Site is expected to be approximately 3 vehicles, which can be accommodated on the current turn lane of Razor Rd. Therefore no mitigation measure is recommended for this intersection by this development.

FM 407 at IT Neely Dr:

The EBLR movement is currently operating at *LOS F* with a maximum 95th percentile queue of 2 vehicles. The proposed site has no impact on this intersection as the majority of the traffic for the proposed development is expected to travel north-south and vice-versa. Therefore no mitigation measure is recommended for this intersection by this development.

FM 407 and Driveway 2:

The EBLR movement is expected to operate at failing *LOS* from the buildout year 2025 and onwards for both hypothetical scenarios. For this outbound movement from the proposed drive, a maximum 95th percentile queue of 20 vehicles is expected. Driveway 2 will have enough storage capacity to hold 20 projected vehicles. Therefore no mitigation measure is recommended for this intersection by this development.

The current and future expected queues at the failing intersection are represented in the following table.

Vehicular Queue Summary

Intersection	Traffic Movement	2023 Existing		2024 Background		2024 Background Plus Site(Scenario 1)		2024 Background Plus Site(Scenario 2)		2029 Horizon		2029 Horizon Plus Site(Scenario-1)		2029 Horizon Plus Site(Scenario-2)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Queue Length (Feet)															
FM 407	EB	16	16	16	16	16	16	16	16	17	17	17	17	17	17
McMakin Rd	EBL	253	499	258	512	271	514	258	512	288	580	301	582	288	580
Queue (Vehicle)															
FM 407	EBLR														
IT Neely Dr		2	1.8	2.2	2	2.7	2	2.2	2	3.4	3.2	4	3.3	3.4	3.2
CJ's Legacy Ranch	EBR														
FM 407		0	0	0	0	0.6	0.1	0	0	0	0	0.7	0.1	0	0
CJ's Legacy Ranch	EBL														
Dr		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Proposed Driveway	SBLR	---	---	--	--	0.2	0	--	0	--	--	0.2	0	--	0
FM 407	WBL														
Rayzor Rd		1	1.6	1.1	1.6	1.5	1.6	1.1	1.6	1.6	2.4	2.2	2.5	1.6	2.4
FM 407	EBLR														
Driveway 2		0	0	0	0	18.4	1.6	0	0.1	0	0	20.1	2.3	0	0.2

ROADWAY LINK ANALYSIS

FINDING: Based upon the roadway link analysis, all roadway links are expected to operate at *LOS D* or better for all different scenarios.

RECOMMENDATION: Based on the results of the study conducted on roadways links, it appears that the implementation of additional mitigation measures is not necessary.

DRIVEWAY SPACING ANALYSIS

FINDING: Based on TxDOT's driveway spacing guidelines and measurements from the preliminary site plan and Google Earth program, all the proposed site driveways satisfy the spacing criteria requirements.

RECOMMENDATION: Based on the results of the study conducted on driveway spacing, it appears that the implementation of additional mitigation measures is not necessary.

RIGHT - TURN DECELERATION ANALYSIS

FINDING: Based upon the projected volumes derived in this study and TxDOT's right-turn deceleration lane requirements, the installation of a right-turn deceleration lane is required at Driveway 2 at FM 407.

RECOMMENDATION: DeShazo recommends the maximum possible right-turn deceleration lane (within TxDOT recommended lengths) at this intersection's SBR movement to accommodate the expected right-turning vehicles.

LEFT-TURN DECELERATION ANALYSIS

FINDING: Based upon the projected volumes derived in this study and TxDOT's left-turn deceleration lane requirements, the installation of a left-turn deceleration lane is required at Driveway 2 at FM 407.

RECOMMENDATION: DeShazo recommends the maximum possible left-turn deceleration lane (within TxDOT recommended lengths) at this intersection's NBR movement to accommodate the expected left-turning vehicles.

INTERSECTION SIGHT DISTANCE ANALYSIS

FINDING: Based on the AASHTO and the Town of Bartonville's guidelines and measurements from the Google Earth program, all the proposed site driveway meets the intersection sight distance requirements.

RECOMMENDATION: Based on the results of the study conducted on intersection sight distance requirements, it appears that the implementation of additional mitigation measures is not necessary.

Disclaimer: However, if the site plans are developed further to include additional infrastructure such as fencing, walls, or landscaping in the vicinity of proposed driveways, intersection sight distances may need to be re-evaluated.

END OF SUMMARY

INTRODUCTION

The services of **DeShazo Group, Inc.** (DeShazo) were retained by **CCM Engineering** (Client), to conduct Traffic Engineering Services for the proposed ELTS School in Bartonville, Texas. The proposed development is located in the Northwest quadrant of FM 407 and CJ's Legacy Ranch Drive intersection in Bartonville, Texas.

Two-access drives will connect to FM 407 at the site, which are expected to be constructed by the year 2024. While the school will have a capacity of about 391 students, it is expected that all the students will be transported by bus and have a projected 5 bus operation per day. **Table 2.** represents Development Program Summary.

Table 2. Development Program Summary

Land Uses	Quantity	Unit	Buildout Year	Daily Busing Capacity
Charter Elementary School	391	Students	2024	5 Buses

A project vicinity map and a project location & surroundings map are provided in **Exhibit 1** and **Exhibit 2**, respectively. A preliminary site plan is provided in **Exhibit 3**.

PURPOSE

The purpose of this TIA is to determine if any improvements to the adjacent transportation system are needed to maintain a satisfactory level of service, an acceptable level of safety, and appropriate access for the proposed development. The *Town of Bartonville* is requiring that a TIA be completed for the subject site as part of the approval process. The study parameters used in this TIA are based upon the requirements of the *TxDOT/ Town of Bartonville* and are consistent with the standard industry practices used in similar studies.

TRAFFIC IMPACT ANALYSIS - METHODOLOGY

To achieve this objective, this analysis summarizes the traffic operational characteristics of the background conditions within a designated study area and the projected incremental impact of the Project as determined through standardized engineering analyses. The standard methodology used to conduct the traffic impact analysis is described below.

1. Collect current traffic volume data on a typical day throughout the study area to represent existing traffic conditions.
2. Apply growth factors to the existing volumes to project future background traffic at the site buildout year conditions.
3. Project traffic is generated by the proposed development using trip generation, trip distribution, and traffic assignment as described below.
 - a. Trip generation is calculated in terms of "trip ends" – a trip end is a one-way vehicular trip entering or exiting a site driveway (i.e., a single vehicle entering and exiting a site represents two trip ends).

- b. Trip distribution and assignment of site-generated trips to the surrounding roadway system are determined by proportionally estimating the orientation of travel via various travel routes. This is a subjective exercise based upon professional judgment considering such factors as directional characteristics of existing local traffic; trip attributes (e.g., trip purpose, trip length, travel time, etc.), roadway features (e.g., capacity, operational conditions, the character of the environment), regional demographics, etc.
4. Determine site-plus-background traffic by adding the projected site-generated traffic to the background traffic.
5. Analyze existing, background, and background-plus-site traffic volumes to evaluate the roadway conditions in the vicinity of the proposed development.
6. If needed, mitigation measures are recommended based on the analysis to improve roadway operational conditions.

ANALYSIS SCENARIOS

This TIA analyzed the AM and PM peak hour periods that are considered the most critical conditions on the public roadway system related to the proposed project. The AM and PM peak hour periods were determined from the data collection of the study area.

Appendix B summarizes the peak hour volumes used in the study. The proposed project was analyzed as per the city of Bartonville standards for future scenarios. Those scenarios include 2023- the existing year, 2024 - the build year, and 2029 - the horizon year.

This TIA further analyzed these scenarios for the following peak hour periods that were considered the most critical conditions on the public roadway system related to the proposed project and land uses related to it.

Roadway Intersections:

- Weekday: AM peak hour of adjacent street traffic (7:00 AM – 9:00 AM)
- Weekday: PM peak hour of adjacent street traffic (3:00 PM – 6:00 PM)

Roadway Links:

- Weekday: 24-Hour bi-directional roadway tube counts were collected to verify the collected peak periods.

Development scenarios considered in this analysis are summarized in **Table 3**.

Table 3. Development Scenarios Analyzed

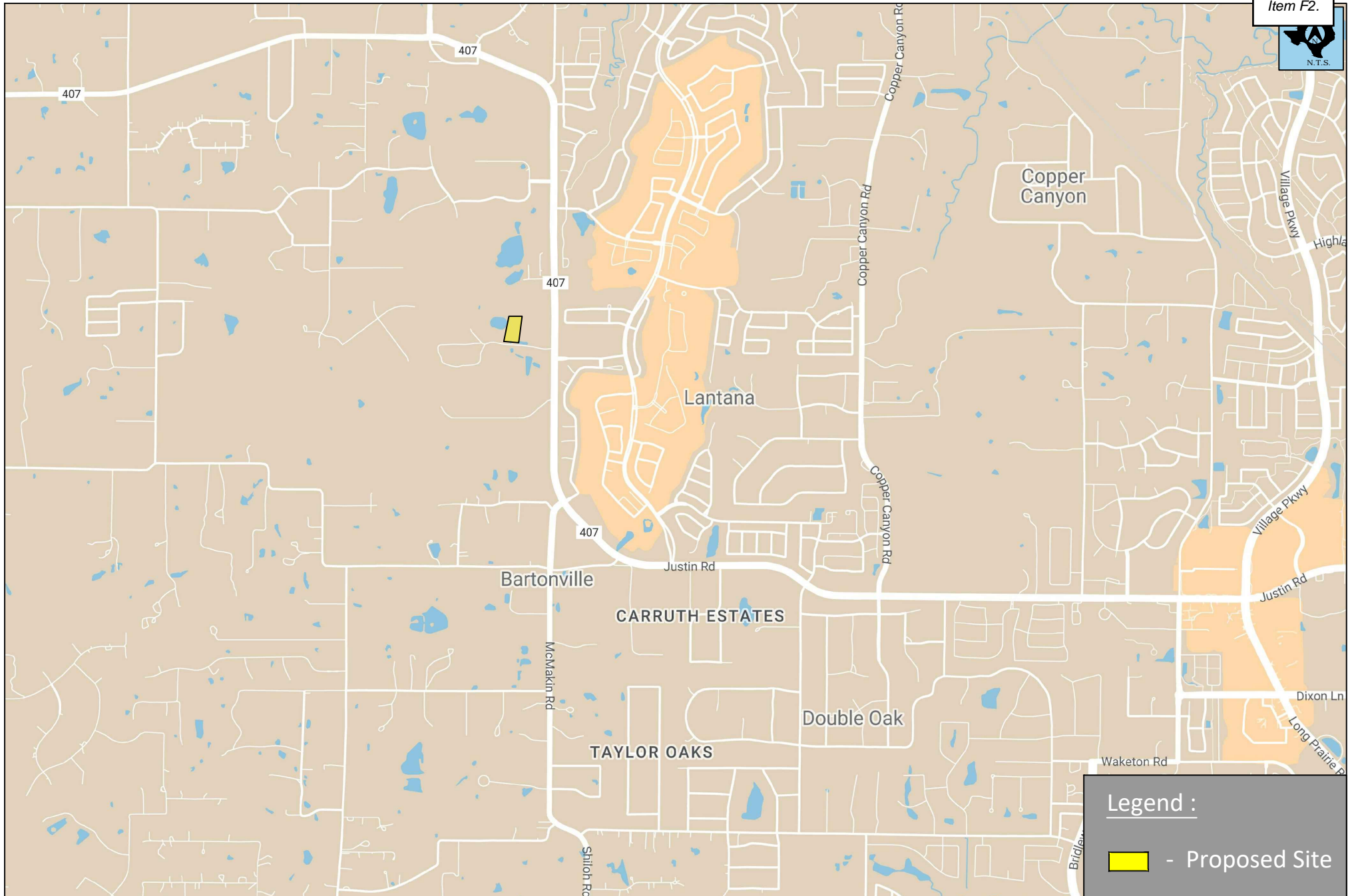
Scenario	Development Program	Traffic Volumes
2023 Existing	None Added	Existing 2023 Volumes
2024 Background	None Added	Existing 2023 volumes have grown at 2% ^[1] per year for 2 years
2024 Background + Full Buildout	Full Build Traffic Added Includes Scenario 1 ^[2] and Scenario 2 ^[3]	Existing 2023 volumes have grown at 2% ^[1] per year for 2 years plus proposed site traffic
2029 Horizon	None Added	Existing 2023 volumes have grown at 2% ^[1] per year for 6 years
2029 Horizon + Site	Full Build Traffic Added	Existing 2023 volumes have grown at 2% ^[1] per year for 6 years plus proposed site traffic

Notes:

^[1] The 2% growth rate is based on the Town of Bartonville's Population growth rate. The table representing the population growth rate is attached to **Appendix E**.

^[2] **Scenario 1:** This scenario is a hypothetical scenario where all students are picked up/drop off even though the school bus is in service. As a conservative approach, DeShazo has taken this situation into consideration.

^[2] **Scenario 2:** 100% of the students are bused is valid in case of an emergency where complete evacuation is mandatory. For e.g., severe weather conditions.



PROJECT VICINITY MAP

TIA for Bartonville ELTS School in Bartonville, Texas

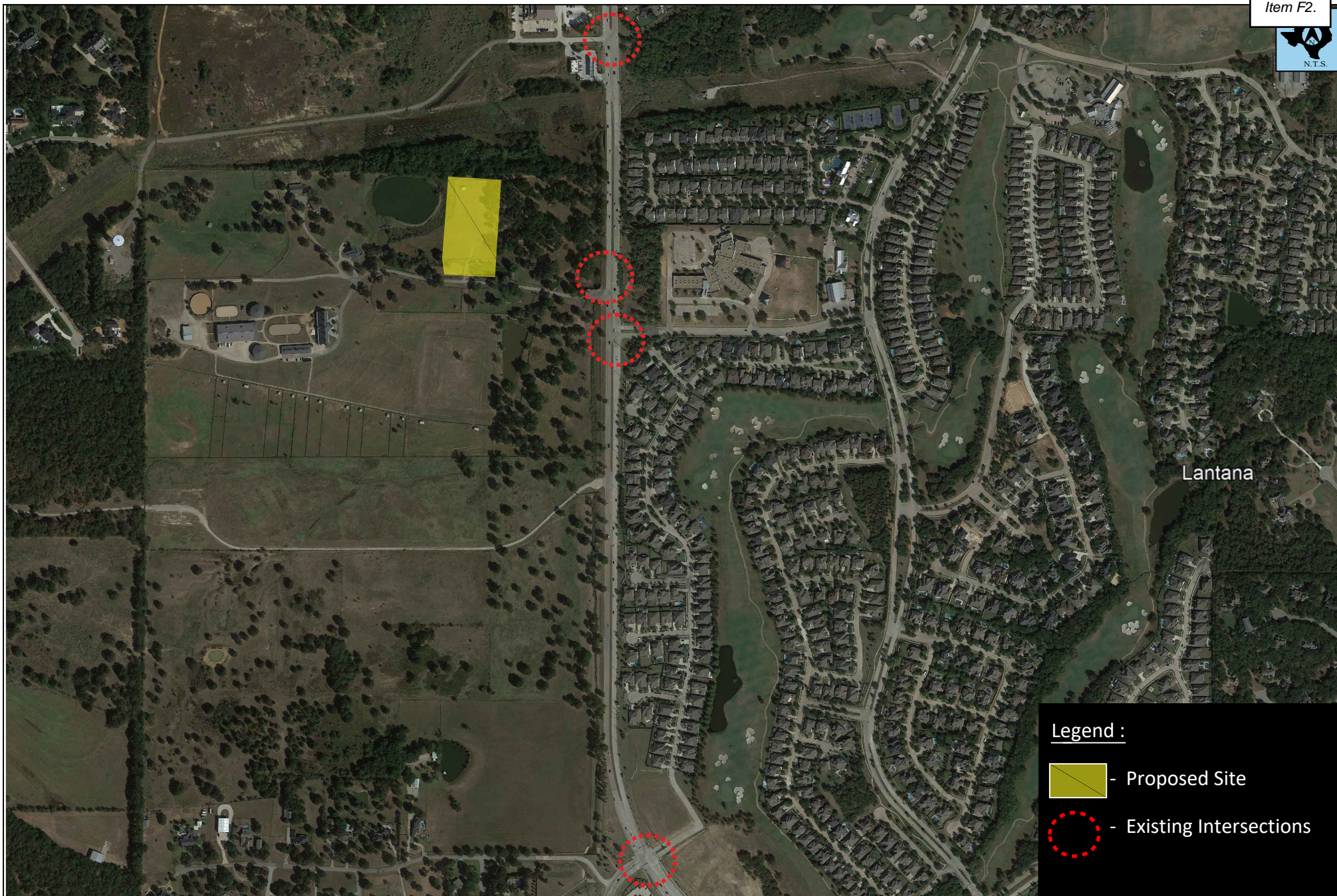
DGI PROJECT #:23031

DATE : MARCH 2023



PREPARED BY: RD

EXHIBIT

67



Legend :

-  - Proposed Site
-  - Existing Intersections

PROJECT LOCATION AND SURROUNDINGS MAP

TIA for Bartonville ELTS School in Bartonville, Texas

DGI PROJECT #:23031

DATE : MARCH 2023

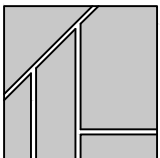
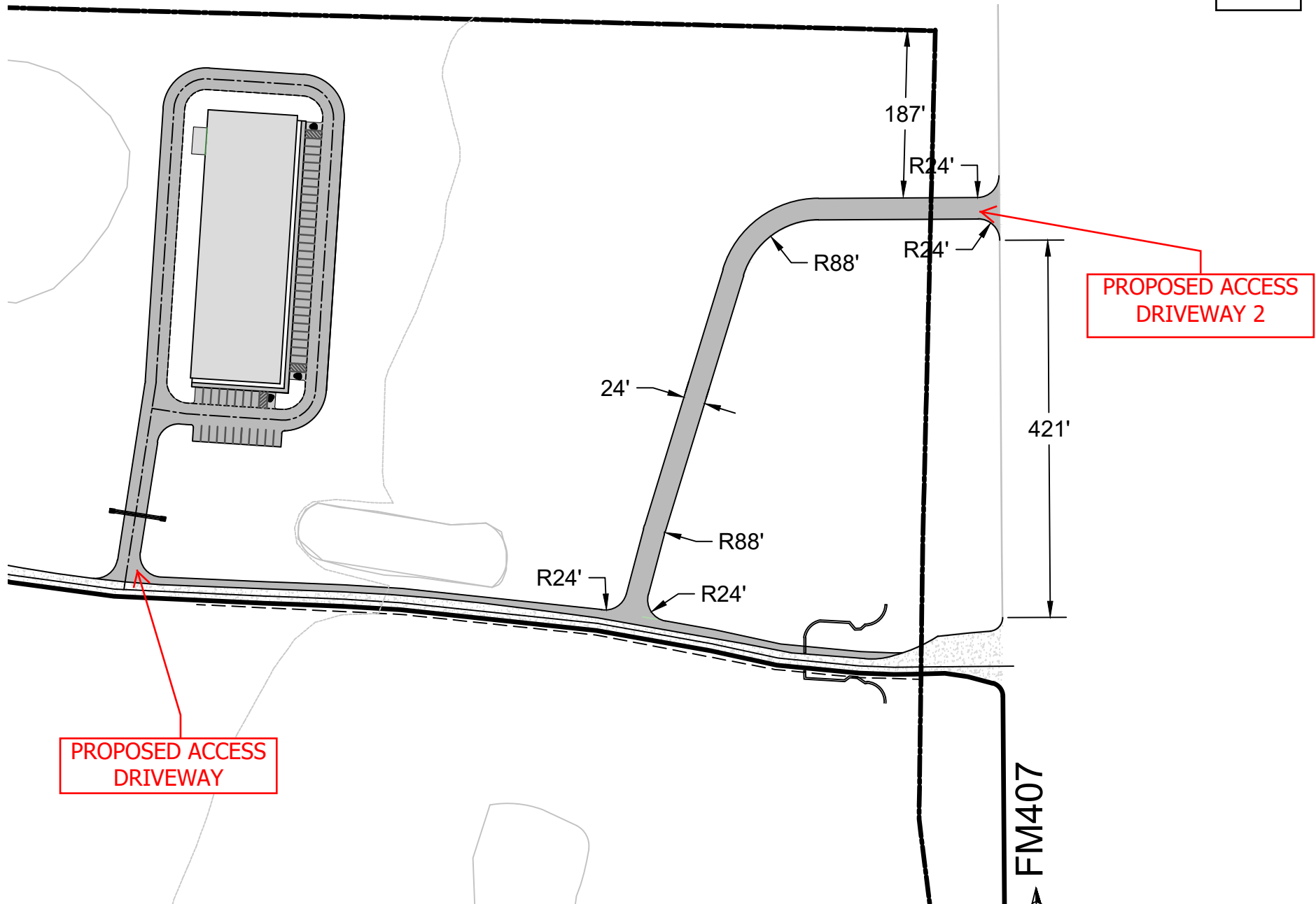
PREPARED BY: RD

EXHIBIT

68

EXHIBIT. 3. PRELIMINARY SITE PLAN

Item F2.



CCM Engineering

2570 FM 407, Suite 209
Highland Village, Texas 75077
Ph: 972.691.6633
Fax: 972.691.6628
TBPE FIRM #605

Bartonville ELTS New Driveway

SITE LOCATION AND STUDY AREA

STUDY AREA

The study area for a TIA is typically defined to allow an assessment of the most relevant traffic impacts on the local area. The extent of the study area is discretionary but is generally commensurate with the scale of the proposed development. Special localized factors may also be considered. **Table 4** below shows the existing and proposed roadway intersections analyzed in this study. All the existing intersections analyzed in this study were also shown in a project site location & surroundings map in **Exhibit 2**.

Table 4. Existing and Proposed Roadway Intersections

Intersection	Traffic control	Future Access Control Type
1. FM 407 at IT Neely Dr	Two-way-stop-control Intersection	--
2. FM 407 at CJ Legacy Ranch Dr	Two-way-stop-control Intersection	--
3. FM 407 at Rayzor Rd	Two-way-stop-control Intersection	--
4. Driveway 1 at CJ's Legacy Ranch Dr	Two-way-stop-control Intersection	--
5. FM 407 at McMakin Rd	Signalized Intersection	--
6. Driveway 2 at FM 407	Two-way-stop-control Intersection	Full Access

EXISTING ZONING AND DEVELOPMENT

The proposed site is currently zoned as AG: Agriculture (Min.10 acre lots). The site is currently vacant land. A site location map with the surroundings of the project was shown in **Exhibit 2**.

THOROUGHFARE SYSTEM

- FM 407 :
 - Existing operation and cross-section: Four lanes, Two-way operation, median divided.
 - Speed Limit: 50 MPH (posted)
 - TxDOT Functional Classification: Minor Arterial
 - Town of Bartonville Classification: Major Arterial 4 Lane Divided
- McMakin Rd :
 - Existing operation and cross-section: Two lanes, undivided, two-way operation
 - Speed Limit: 40 MPH (posted)
 - TxDOT Functional Classification: Major Collector
 - Town of Bartonville Classification: Principal Arterial 4 Lane Divided
- Rayzor Rd:
 - Existing operation and cross-section: Four lanes, undivided, two-way operation
 - Speed Limit: 20 MPH (posted)

- Denton County Functional Classification: Major Arterial 4 Lane Divided
- C J Legacy Ranch Dr
 - Existing operation and cross-section: Two lanes, undivided, two-way operation
 - Speed Limit: 25 MPH assumed (Not posted)
- I T Neely Dr:
 - Existing operation and cross-section: Two lanes, Two-way operation
 - Speed Limit: 30 MPH assumed (Not posted)
 - TxDOT Functional Classification: Not Classified

A summary of the existing and proposed intersection/roadway geometry and traffic control devices is shown in **Exhibit 4** and **Exhibit 5**.

TRAFFIC VOLUMES

EXISTING TRAFFIC VOLUMES

Traffic volumes were collected for the following intersections during the analysis periods at the study area intersections on Thursday, March 23rd, 2023. The traffic counts were collected from 7:00 AM to 9:00 AM for morning peak hours and 3:00 PM to 6:00 PM for evening/afternoon peak hours. The evening peak data collection was included from 3 PM to account for the adjacent school's peak dismissal timings.

Traffic volumes are graphically summarized in **Appendix A** and detailed 15-minute-count data sheets are provided in **Appendix B**.

PROJECTED BACKGROUND TRAFFIC VOLUMES

Background traffic growth is defined as normal traffic growth that is not directly related to the subject development of this study. Based on the recent TIA performed by DeShazo in the vicinity of the proposed development and the city official's comments, a 2% annual growth rate in the vicinity of the proposed site is considered very conservative. DeShazo used an annual growth rate of 2% from the collected (2023) for two years to 2024 background condition through the 2029 horizon year.

The 2% growth rate is based on the TxDOT Database System, city officials' comments, and previous TIA submitted in the vicinity of the proposed project. The approved TIA study scope from the city is attached in **Appendix E** of this report.

Future background traffic volumes estimated for the buildout years were calculated by applying the assumed growth rate to the study area intersections. These volumes are graphically summarized in **Appendix A**.

SITE-TRAFFIC CHARACTERISTICS

Traffic generated by the development is projected by first determining the number of trips generated by the planned land use, then distributing and assigning projected site-related trips to the roadway system.

TRIP GENERATION

The Institute of Transportation Engineers Trip Generation Manual (11th Edition) is an accepted source for calculating trip generation for common land uses for which sufficient published data is available.

Trip generation is calculated in terms of “trip ends”. A trip end is a one-way vehicular trip entering or exiting a site driveway (i.e., a single vehicle entering and exiting a site represents two trip ends). Trip generation for this Project was calculated using the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition). ITE Trip Generation is a compilation of actual, vehicular traffic volume generation data and statistics by land use as collected over several decades by credible sources across the country. This analysis evaluates typical weekday AM and PM peak hour conditions of the local street traffic. **Table 5** and **Table 6** provide a summary of the trip ends generated for the project.

According to the proposed school, all the students will be bused. This situation may not be accurate in reality. ITE Trip Generation Manual (11th Edition) has trip generated based on students and employees only and states that ‘the percentage of students at the sites who were transported to school via bus varied considerably. Some sites experienced higher than-average trip rates because many students did not utilize the available school bus service. Due to the varied transit and school bus usage at these sites, it is desirable that future studies report additional detail on the percentage of students who were bused to school and the percentage that were dropped off and picked up. Because of the uncertainty of the trips and their behavior. DeShazo performed the analysis based on two Scenarios.

Scenario 1: Bus + Passenger Car/Parent Pick up or Drop off.

Scenario 2: Bus Only

Scenario 1: This scenario is a hypothetical scenario where all students are picked up/drop off even though the school bus is in service. As a conservative approach, DeShazo has taken this situation into consideration.

Table 5. Full Buildout Projected Trip Generation for Scenario 1
(Bus + Passenger Cars Traffic)

ITE Code	ITE Land Use	Quantity	ay Trips	AM Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out
536	Charter Elementary School	391 Students	723	408	212	196	63	22	41
		<i>Subtotals:</i>	723	408	212	196	63	22	41
		Totals:	723	408	212	196	63	22	41

Scenario 2: i.e., 100% of students are bused. is valid in case of an emergency where complete evacuation is mandatory. For e.g., severe weather conditions.

Table 6. Full Buildout Projected Trip Generation for Scenario 2
(Only Bus Traffic)

Code	School Type	Quantity	Weekday Trips	AM Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out
	Charter Elementary School	10 Buses	10	5	5	0	5	0	5
		<i>Subtotals:</i>	10	5	5	0	5	0	5
		<i>Totals:</i>	10	5	5	0	5	0	5

TRIP DISTRIBUTION AND ASSIGNMENT

Traffic for the proposed development was distributed and assigned to the study area roadway network based upon the roadway network and regional travel flow [or existing traffic patterns]. Detailed trip distribution and traffic assignment calculations and results are summarized in **Appendix C**.

SITE-GENERATED TRAFFIC VOLUMES

Site-generated traffic is calculated by multiplying the trip generation value by the corresponding traffic assignments-both inbound and outbound (from **Appendix C**). The resulting cumulative (for all uses) peak period site-generated traffic volumes at the buildout of the Project are graphically summarized in **Appendix A**.

ROADWAY INTERSECTION ANALYSIS

INTERSECTION CAPACITY ANALYSIS - METHODOLOGY

The level of performance of infrastructure can often be measured through an analysis of volume and capacity that considers various physical and operational characteristics of the system. For vehicular traffic, an operational analysis of roadway intersection capacity is the most detailed type of analysis. An industry-standardized methodology for this type of analysis is presented in the *Highway Capacity Manual (HCM)*. HCM uses the term “level of service” (LOS) to qualitatively describe the efficiency using a letter grade of A through F. Generally, LOS is described as follows.

- LOS A = free, unobstructed flow
- LOS B = reasonably free flow
- LOS C = stable flow
- LOS D = approaching unstable flow
- LOS E = unstable flow, operating at design capacity
- LOS F = operating over design capacity

Traffic operational analysis is typically measured in one-hour periods during day-to-day peak conditions. In most urban settings, LOS C (or better) is desirable, although LOS D is considered to be acceptable. Nevertheless, periods of LOS E or F conditions are not uncommon for brief periods at major transportation facilities. In some cases, measures to add more capacity—either through operational changes and/or physical improvements—can be identified to increase efficiency and sometimes improve the level of service.

For traffic-signal-controlled (“signalized”) intersections and STOP-controlled (“unsignalized”) intersections, LOS is determined based upon the calculated average seconds of delay per vehicle. For signalized intersections, the average delay per vehicle can be effectively calculated for the entire intersection. However, the average delay per vehicle for unsignalized intersections is calculated by the separate approach or by individual traffic maneuvers that must stop or yield the right-of-way. For unsignalized intersections of a minor street or driveway and a major roadway, the analysis methodology often breaks down and yields low levels of service (often, LOS F) that cannot be mitigated unless a traffic signal is installed. However, for a traffic signal to be installed, the responsible agency that governs the right-of-way must issue its approval subject to very specific warrant criteria being met, *and* several other operational considerations being satisfied. Neither level of service nor delay is considered a criterion for traffic signal installation.

The following table summarizes the LOS criteria for signalized and unsignalized intersections as defined in the latest edition of the *Highway Capacity Manual*.

	Signalized Intersection (Average Delay per Vehicle)	Unsignalized Intersection (Average Delay per Vehicle)
LOS A	≤ 10	≤ 10
LOS B	$>10 - \leq 20$	$>10 - \leq 15$
LOS C	$>20 - \leq 35$	$>15 - \leq 25$
LOS D	$>35 - \leq 55$	$>25 - \leq 35$
LOS E	$>55 - \leq 80$	$>35 - \leq 50$
LOS F	>80	>50

NOTE: Signalized intersection operational parameters and operational results in this TIA were obtained directly from the optimized software output and may differ slightly from actual traffic signal operations.

2023 EXISTING – INTERSECTION ANALYSIS

Existing traffic volumes were analyzed to determine current operational conditions. Intersection capacity analyses presented in this study were performed using the **SYNCHRO** software package. **Table 7** provides a summary of peak period intersectional operational conditions (*). Detailed traffic volumes and software output for all intersection analyses are provided in **Appendix A** and **Appendix D**, respectively.

Table 7. 2023 Existing Intersection Analysis

Intersections	Traffic Movement	2023 Existing	
		AM	PM
Signalized Intersection			
FM 407			
McMakin Blvd/Blanco Dr	Overall	C (25.9)	D (35.4)
	EB	F (140.8)	F (119.7)
	WB	C (25.1)	C (31.4)
	NB	A (5.1)	A (9.9)
	SB	A (6.2)	B (10.1)
Unsignalized Intersection (TWSC)			
FM 407			
I T Neely Dr	NBL	B (12.7)	B (11.7)
	EBLR	F (83.5)	F (69.0)
CJ's Legacy Ranch Dr			
FM 407	EBR	B (14.0)	B (12.2)
FM 407			
Rayzor Rd	WBL	E (47.0)	F (121.4)
	WBR	B (12.0)	B (14.9)
	SBL	A (9.8)	C (15.2)
FM 407			
Driveway 2	NBL	--	--
	EBLR	--	--

FINDING: Based upon the existing 2023 analysis, all study intersections are currently operating at *LOS D* or better during the peak hour periods, except the following:

FM 407 and McMakin Rd:

The *EB* movement of this signalized intersection is operating at *LOS F* in 2023 Existing *AM* as well as *PM* condition.

FM 407 and I T Neely Dr: The *EBLR* movement of this unsignalized intersection is operating at *LOS F* in 2023 Existing *AM* as well as *PM* condition.

FM 407 and Rayzor Rd: The *WBL* movement of this unsignalized intersection is operating at *LOS E* in 2023 Existing *AM* and at *LOS F* in the existing *PM* condition.

KEY:

*A, B, C, D, E, F = Level-of-Service for each intersection approach
NB, SB, EB, WB = North-, South-, East-, Westbound approach*

L, T, R = Left, Through, Right Approach turning movement

AM = AM Peak Hour of Adjacent Street

PM = PM Peak Hour of Adjacent Street

NOTE: Signalized intersection operational parameters and operational results were obtained directly from the optimized software output and may differ slightly from actual traffic signal operations.

2024 BACKGROUND AND BACKGROUND PLUS SITE – INTERSECTION ANALYSIS

The proposed Bartonville ELTS school development is expected to be completed by the year 2024. Therefore, the year 2024 background (no build) and background-plus site traffic volumes were analyzed to determine the incremental change in operational conditions during peak periods *without* and *with* site-related traffic. The background plus site condition is analyzed in two scenarios. The LOS results are provided in **Table 8**.

Table 8. 2024 Scenario Intersection Analysis

Intersections	Traffic Movement	2024 Background		2024 Background Plus Site(Scenario 1)		2024 Background Plus Site(Scenario 2)	
		AM	PM	AM	PM	AM	PM
Signalized Intersection							
FM 407							
McMakin Blvd/	Overall	C (27.0)	D (37.3)	C (27.9)	D (37.2)	C (26.9)	D (37.3)
Blanco Dr	EB	F >100	F >100	F >100	F >100	F >100	F >100
	WB	C (25.1)	C (31.4)	C (25.1)	C (31.4)	C (25.1)	C (31.4)
	NB	A (5.1)	A (10.0)	A (5.4)	A (10.0)	A (5.1)	A (10.0)
	SB	A (6.2)	B (10.2)	A (6.6)	B (10.3)	A (6.2)	B (10.2)
Unsignalized Intersection (TWSC)							
FM 407							
I T Neely Dr	NBL	B (13.0)	B (11.9)	B (13.7)	B (12.0)	B (13.0)	B (11.9)
	EBLR	F (96.0)	F (74.8)	F >100	F (78.8)	F (96.0)	F (74.8)
CJ's Legacy Ranch Dr							
FM 407	EBR	B (14.1)	B (12.4)	C (16.9)	B (12.7)	B (14.2)	B (12.4)
FM 407							
Rayzor Rd	WBL	E (49.0)	F >100	F (70.9)	F >100	E (49.0)	F >100
	WBR	B (12.1)	C (15.2)	B (13.1)	C (15.3)	B (12.1)	C (15.2)
	SBL	A (9.5)	B (12.9)	B (10.1)	B (13.0)	A (9.5)	B (12.9)
FM 407							
Driveway 2	NBL	- -	- -	C (16.4)	B (11.1)	B (12.3)	A (0.0)
	EBLR	- -	- -	F >100	F (67.2)	A (0.0)	E (37.5)

FINDING: Based upon the 2024 Background and 2024 background-plus site buildout analysis, all study intersections are expected to operate at *LOS D* or better during the peak hour periods, except the following:

FM 407 and McMakin Rd:

The *EB* movement of this signalized intersection is expected to operate at *LOS F* during both the 2024 Background and Background Plus Site *AM* as well as *PM* conditions in both of the Scenarios.

FM 407 and I T Neely Dr:

The *EBLR* movement of this unsignalized intersection is expected to operate at *LOS F* during both the 2024 Background and Background Plus Site *AM* as well as *PM* conditions in both of the Scenarios.

FM 407 and Rayzor Rd:

The *WBL* movement of this unsignalized intersection is expected to operate at *LOS F* during both the Background Plus Site *AM* as well as *PM* conditions in Scenario 1. The intersection operates at *LOS E* during 2024 Background *AM* as well as Background Plus Site *AM* in Scenario 2.

FM 407 and Driveway 2:

The *EBLR* movement of this unsignalized intersection is expected to operate at *LOS F* during both the 2024 Background Plus Site *AM* as well as *PM* conditions in Scenario 1. And the intersection operates at *LOS E* during 2024 Background Plus Site *PM* Scenario 2.

2029 HORIZON AND HORIZON-PLUS-SITE – INTERSECTION ANALYSIS

A 5-year from full build year traffic analysis was performed. The 2029 horizon (no build), and horizon-plus-buildout traffic volumes were analyzed to determine the incremental change in operational conditions during peak periods *without* and *with* site-related traffic. The LOS results are provided in **Table 9**.

Table 9. 2029 Scenario Intersection Analysis

Intersections	Traffic Movement	2029 Horizon		2029 Horizon Plus Site(Scenario-1)		2029 Horizon Plus Site(Scenario-2)	
		AM	PM	AM	PM	AM	PM
Signalized Intersection							
FM 407 McMakin Blvd/ Blanco Dr	Overall	C (32.8)	D (48.1)	C (34.0)	D (47.9)	C (32.8)	D (48.0)
	EB	F >100	F >100	F >100	F >100	F >100	F >100
	WB	C (24.7)	A (0.9)	C (24.7)	C (30.9)	C (24.7)	C (30.9)
	NB	A (5.3)	B (10.4)	A (5.5)	B (10.5)	A (5.3)	B (10.4)
	SB	A (6.6)	B (10.5)	A (7.0)	B (10.6)	A (6.6)	B (10.5)
Unsignalized Intersection (TWSC)							
FM 407 I T Neely Dr	NBL EBLR	B (14.3) F >100	B (12.9) F >100	C (15.2) F >100	B (13.0) F >100	B (14.3) F >100	B (12.9) F >100
CJ's Legacy Ranch Dr FM 407	EBR	C (15.2)	B (13.0)	C (18.6)	B (13.4)	C (15.2)	B (13.1)
FM 407 Rayzor Rd	WBL WBR SBL	F (69.6) B (12.8) A (9.8)	F >100 C (16.7) B (14.2)	F >100 B (14.1) B (10.5)	F >100 C (16.9) B (14.3)	F (69.6) B (12.8) A (9.8)	F >100 C (16.7) B (14.2)
FM 407 Driveway 2	NBL EBLR	- - - -	- - - -	C (18.7) F >100	B (11.8) F >100	B (13.3) A (0.0)	A (0.0) E (48.0)

FINDING: Based upon the 2029 horizon and 2029 horizon-plus site buildout analysis all the intersections are expected to operate at **LOS D**, or better during the peak hour periods, with the exception of the following:

FM 407 and McMakin Rd :

- The signalized intersection is expected to operate (overall) at **LOS C** and **LOS D** during 2029 Horizon and 2029 Horizon Plus Site *AM as well as PM* conditions, respectively for both scenarios.
- The *EB* movement is expected to operate at **LOS F** during both the 2029 Horizon and 2029 Horizon Plus Site *AM and PM* conditions for both scenarios.

FM 407 and I T Neely Dr:

- The *EBLR* movement is expected to operate at **LOS F** during the 2029 Horizon and 2029 Horizon Plus Site *AM and PM* conditions for both scenarios.

FM 407 and Rayzor Rd:

- The *WBL* movement is expected to operate at **LOS F** during both the 2029 Horizon and 2029 Horizon Plus Site *AM and PM* conditions for both scenarios.

FM 407 and Driveway 2:

- The *EBLR* movement is expected to operate at *LOS F* during the 2029 Horizon Plus Site *AM* and *PM* conditions for scenario 1. And *LOS E* during 2029 Horizon Plus Site *PM* conditions for scenario 2.

ROADWAY LINK ANALYSIS - METHODOLOGY

A roadway link is a roadway segment between two intersections. Roadway link capacity analysis is a comparison of actual or forecasted traffic volumes to the theoretical roadway capacity. The capacity of the roadway link is a function of the roadway's cross-section (i.e., number of lanes, lane widths, type of center divider, etc.). However, other more theoretical factors also apply, such as the character of the environment and the functional classification of the roadway. Roadway link capacity is less critical than intersection capacity; however, it can provide a gauge of the utilization of a given roadway.

A specific industry standard for roadway link capacity does not exist, but the typical concept is derived from a base saturation flow rate (i.e., the maximum theoretical rate of continuous flow under ideal, unobstructed conditions). In the traffic engineering industry, this value is generally considered to range between 1,900-2,100 vehicles per lane per hour). A series of adjustment factors are then applied to the saturation flow rate to reflect the characteristics of a given location.

The North Central Texas Council of Governments (NCTCOG), the metropolitan planning agency for the DFW region, has derived internal "hourly service volume" guidelines used for transportation modeling purposes. The NCTCOG values were based upon the principles presented in the *Highway Capacity Manual* with "regional calibration" factors applied. Though these per-lane capacities, or "Service Volumes" (summarized in the table below), are intended for modeling purposes, they do provide a reasonable gauge of theoretical capacity.

Area Type	Hourly Service Volumes Capacity per Lane by Area Type and Roadway Function					
	Principal Arterial		Minor Arterial & Frontage Road		Collector & Local Street	
	Median-Divided or One-Way	Undivided Two-Way	Median-Divided or One-Way	Undivided Two-Way	Median-Divided or One-Way	Undivided Two-Way
CBD	725	650	725	650	475	425
Other Business	775	725	775	725	500	450
Urban/ Commercial	850	775	825	750	525	475
Suburban Residential	900	875	900	825	575	525
Rural	1,025	925	975	875	600	550

To determine the utilization of a roadway, the volume-to-capacity ratio is calculated – a V/C ratio of less than 1.0 indicates that the roadway is operating under capacity. NCTCOG's level of service denominations is as follows.

- Volume: Capacity Ratio $\leq 45\%$ is *LOS A/B*
- Volume: Capacity Ratio $> 45\%$ and $\leq 65\%$ is *LOS C*
- Volume: Capacity Ratio $> 65\%$ and $\leq 80\%$ is *LOS D*
- Volume: Capacity Ratio $> 80\%$ and $\leq 100\%$ is *LOS E*
- Volume: Capacity Ratio $\geq 100\%$ is *LOS F*

ROADWAY LINK ANALYSIS - RESULTS

For the purpose of the roadway link analysis, the area is considered Suburban Residential. Existing peak hour volumes, the growth rate factor, and peak hour projected site-generated trips were used to conduct the roadway link analysis which is summarized in **Table 10**.

Table 10. Roadway Link Capacity Analysis Results Summary

Roadway		Classification for Analysis	*Hourly Volume	# LANES	MEDIAN DIVIDED?	CAPACITY		V/C	LOS
						Per Lane	Roadway		
2023 Existing:									
FM 407 (Driveway 2 and CJ's Legacy Ranch Dr)	NB	Minor Arterial	1,267	2	Y	975	1,950	0.65	C
	SB		1,036	2		975	1,950	0.53	C
2024 Background:									
FM 407 (Driveway 2 and CJ's Legacy Ranch Dr)	NB	Minor Arterial	1,292	2	Y	975	1,950	0.66	D
	SB		1,057	2		975	1,950	0.54	C
2024 Background+Site: Scenario 1									
FM 407 (Driveway 2 and CJ's Legacy Ranch Dr)	NB	Minor Arterial	1,306	2	Y	975	1,950	0.67	D
	SB		1,352	2		975	1,950	0.69	D
2024 Background+Site: Scenario 2									
FM 407 (Driveway 2 and CJ's Legacy Ranch Dr)	NB	Minor Arterial	1,292	2	Y	975	1,950	0.66	D
	SB		1,262	2		975	1,950	0.65	C
2029 Horizon:									
FM 407 (Driveway 2 and CJ's Legacy Ranch Dr)	NB	Minor Arterial	1,427	2	Y	975	1,950	0.73	D
	SB		1,392	2		975	1,950	0.71	D
2029 Horizon+Site: Scenario 1									
FM 407 (Driveway 2 and CJ's Legacy Ranch Dr)	NB	Minor Arterial	1,440	2	Y	975	1,950	0.74	D
	SB		1,483	2		975	1,950	0.76	D
2029 Horizon+Site: Scenario 2									
FM 407 (Driveway 2 and CJ's Legacy Ranch Dr)	NB	Minor Arterial	1,295	2	Y	975	1,950	0.66	D
	SB		1,427	2		975	1,950	0.73	D

FINDING: Based upon the roadway link analysis, all roadway links are expected to operate at *LOS D* or better for all different scenarios.

SITE ACCESS REVIEW

The proposed development will have future access drives connection to the public/private roadway systems. As part of this TIA study, it has performed the proposed site access review based on appropriate agency requirements and guidelines. The Driveway Spacing, Deceleration Lane Requirements, and Intersection Sight Distance were evaluated as part of this site access review.

NOTE: The review of site access is reliant on the present state of the site and the preliminary site plan. In the event that any of these factors change, the site access review must be updated accordingly.

DRIVEWAY SPACING REVIEW

TXDOT DRIVEWAY SPACING CRITERIA:

The TxDOT Access Management Manual provides guidelines for new driveways along roadways based upon the posted speed limit. Based upon Tables 2-1, 2-2 (**Appendix E**) from TxDOT's Access Management Manual, the minimum driveway connection spacing is 425 feet for a speed limit equal to 50 mph, such as FM 407. TxDOT considers the spacing between access points as inside-edge- (of driveway pavement)-to inside-edge.

DRIVEWAY SPACING REVIEW FOR PROJECT:

A summary of the driveway spacing provided for each of the proposed site access points is presented in **Table 11**.

Table 11. Driveway Spacing Summary

Spacing Between	Speed Limit (MPH)	Required (Ft)	Provided (Ft)	Meets Requirements
CJ Legacy Ranch Dr and Driveway 2	50	425	~425	Yes
Driveway 2 and 7-Eleven Dr	50	425	~800	Yes

FINDING: Based on TxDOT's driveway spacing guidelines and measurements from the preliminary site plan and Google Earth program, all the proposed site driveways satisfy the spacing criteria requirements.

DECELERATION LANE ANALYSIS

DECELERATION LANE REQUIREMENTS:

The TxDOT criteria for providing right-turn deceleration auxiliary lanes are outlined in *Table 2-3 (Appendix E)* of the *Access Management Manual*. The threshold for roadways with a posted speed limit greater than 45 MPH is 50 vehicles per hour (or, 60 vehicles per hour for a posted speed limit of 45 MPH or lower).

Table 12 summarizes the expected right-turn volumes at each driveway during peak hours. A summary of the projected peak hour driveway volumes is included in **Appendix A** for each scenario analyzed.

Table 12. Right-Turn Deceleration Lane Analysis
(full build at Scenario 1)

Intersection	Traffic Movement	Analysis Scenario	Turning Vehicles (VPH)	Exceeds Requirements
CJ Legacy Ranch Dr at FM 407	SBR	2024 Full Buildout + Site AM	32	No
		2024 Full Buildout + Site PM	5	
Driveway 2 at FM 407	SBR	2024 Full Buildout + Site AM	55	Yes
		2024 Full Buildout + Site PM	6	

FINDING: Based upon the projected volumes derived in this study and *TxDOT's* right-turn deceleration lane requirements, the installation of a right-turn deceleration lane is required at Driveway 2 at FM 407.

LEFT TURN DECELERATION LANE REQUIREMENTS:

The *TxDOT* criteria for providing left-turn deceleration auxiliary lanes are outlined in *Table 2-3 (Appendix E)* of the *Access Management Manual*. The requirements state that;

1. For raised medians, left-turn deceleration lanes ("bays") are required for all left-turn opportunities.

FINDING: Based upon the projected volumes derived in this study and *TxDOT's* left-turn deceleration lane requirements, the installation of a left-turn deceleration lane is required at Driveway 2 at FM 407.

INTERSECTION SIGHT DISTANCE REVIEW

INTERSECTION SIGHT DISTANCE REVIEW FOR PROJECT

Table 13 provides the Intersection sight distance summary for this study.

Table 13. Intersection Sight Distance Summary

Intersections	Speed Limit (MPH)	Line of Sight to the Right ISD (Ft)		Line of Sight to the Left ISD (Ft)		Meets Requirements
		Required	Provided	Required	Provided	
CJ Legacy Ranch Dr at FM 407	50	480	>480	N/A	N/A	Yes
Driveway 2 at FM 407	50	480	>480	555	>555	Yes

FINDING: Based on the *AASHTO* and Town of Bartonville guidelines and measurements from the Google Earth program, the proposed site driveway meets the intersection sight distance requirements.

Disclaimer: However, if the site plans are developed further to include additional infrastructure such as fencing, walls, or landscaping in the vicinity of proposed driveways, intersection sight distances may need to be re-evaluated.

END OF MEMO

Exhibit 4. Existing Roadway Geometry

North
Not to Scale

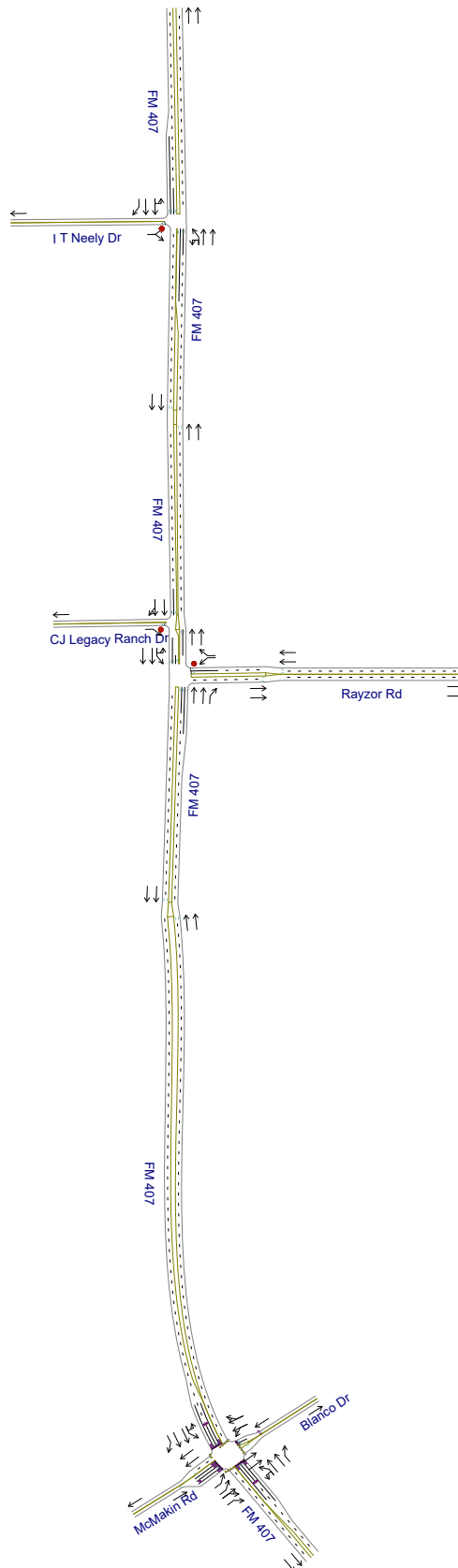
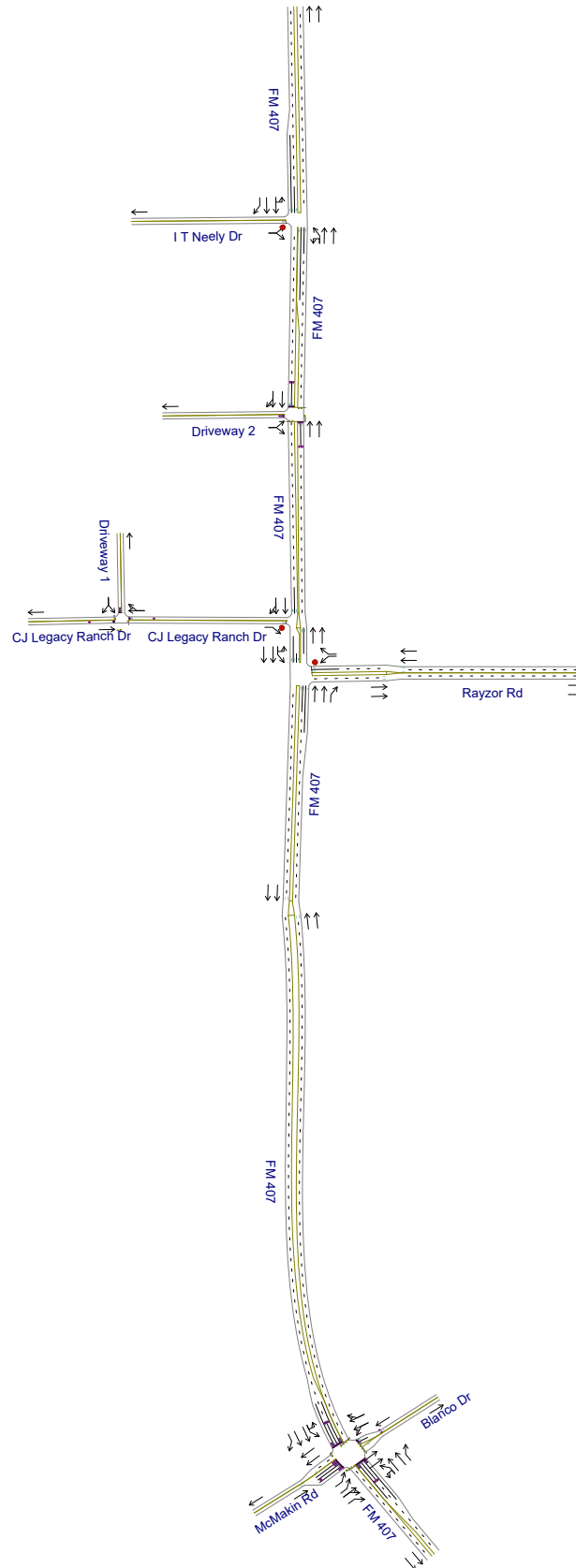


Exhibit 5. Proposed Roadway Geometry

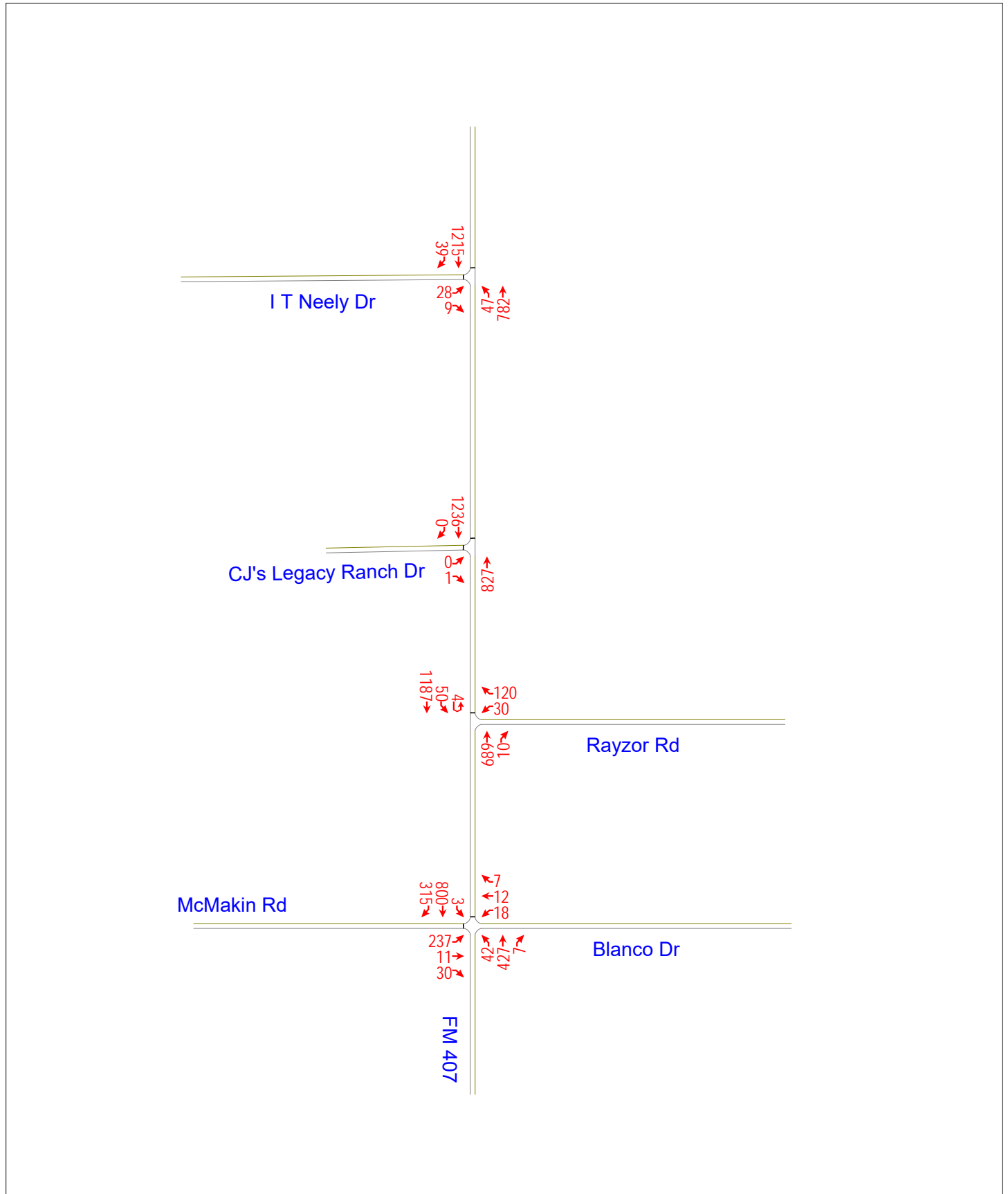
North
Not to Scale



Appendix A. Traffic Volume Exhibits

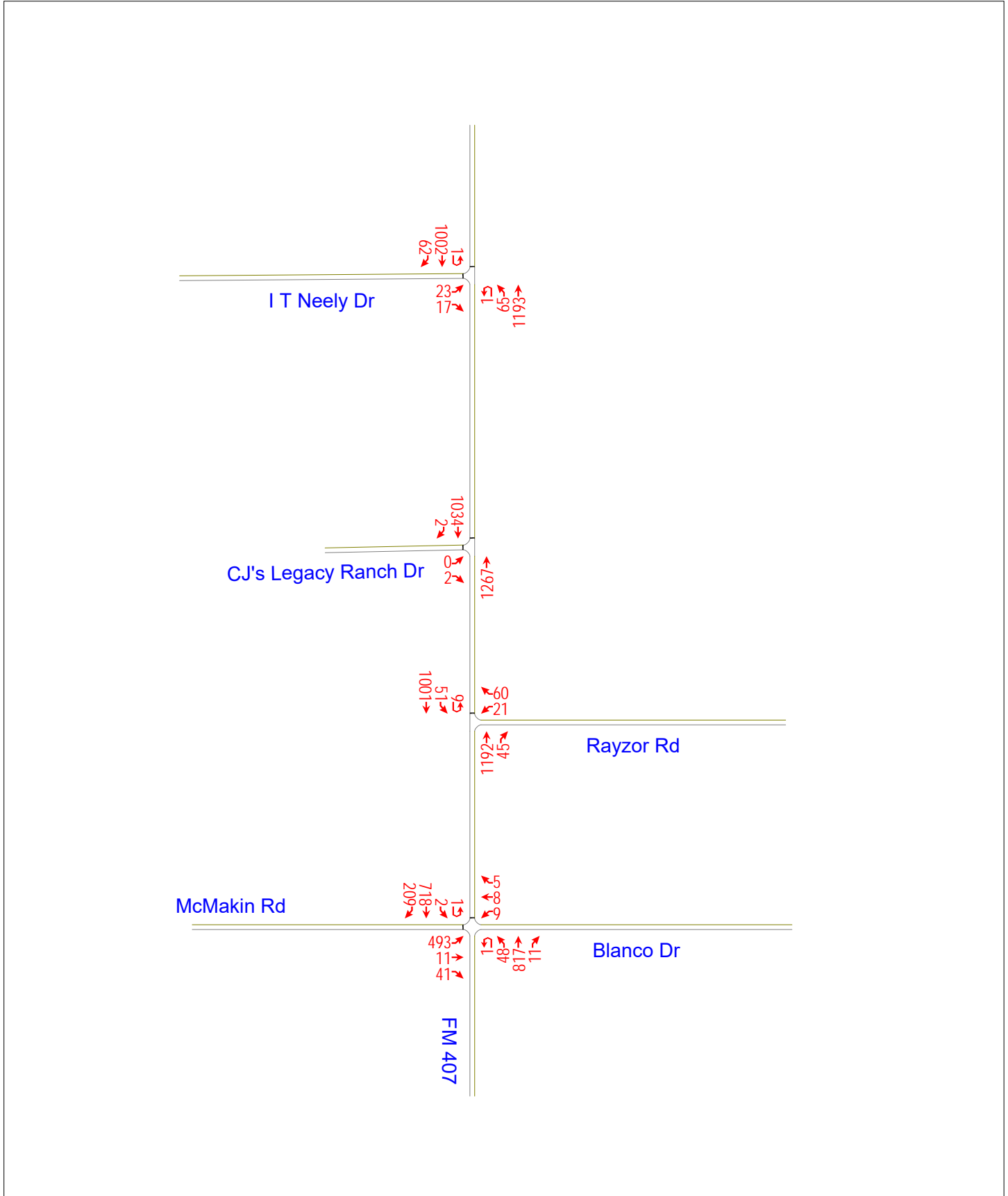
A1. 2023 Existing AM Peak Hour Traffic Volumes

North
Not to Scale



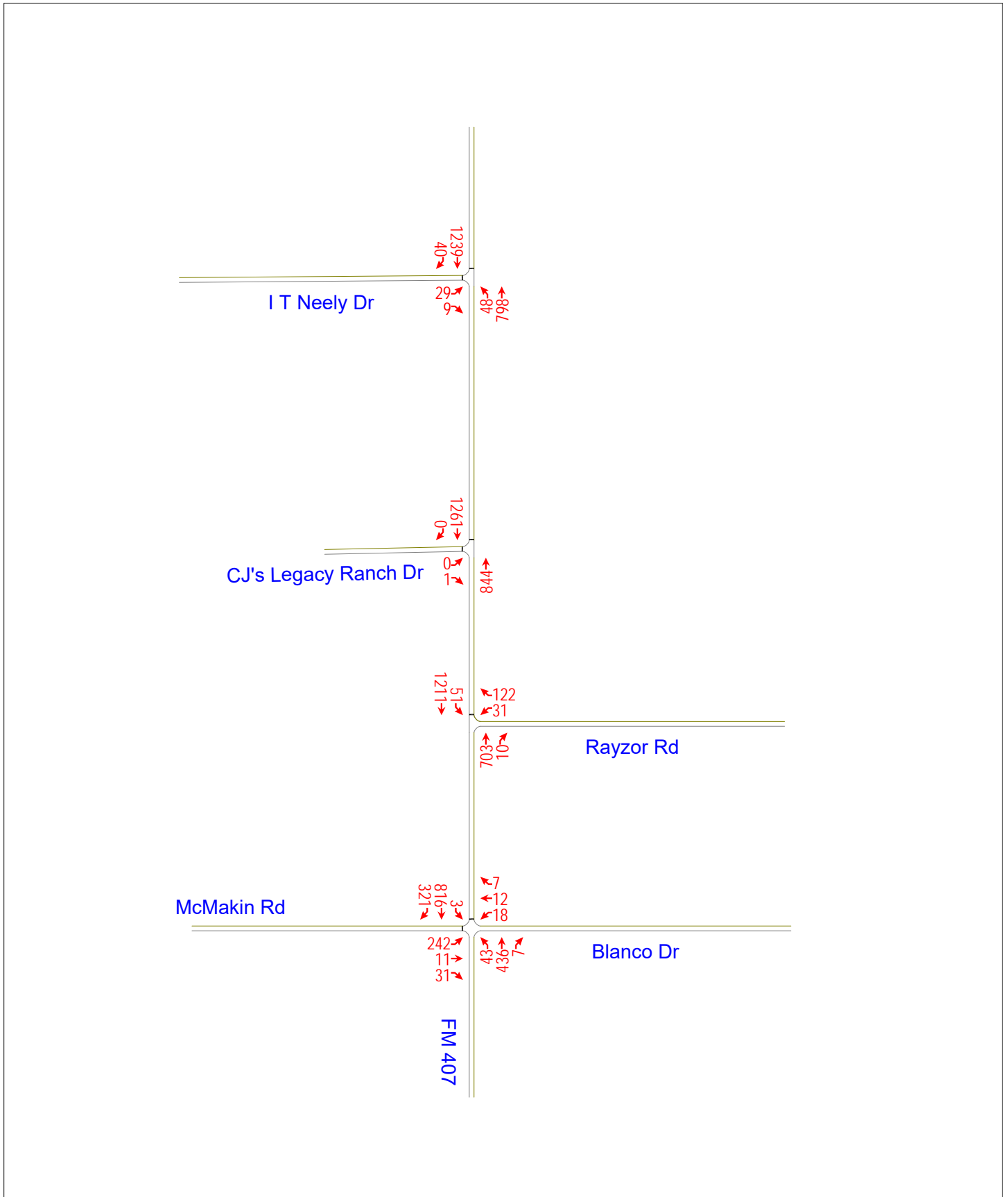
A2. 2023 Existing PM Peak Hour Traffic Volumes

North
Not to Scale



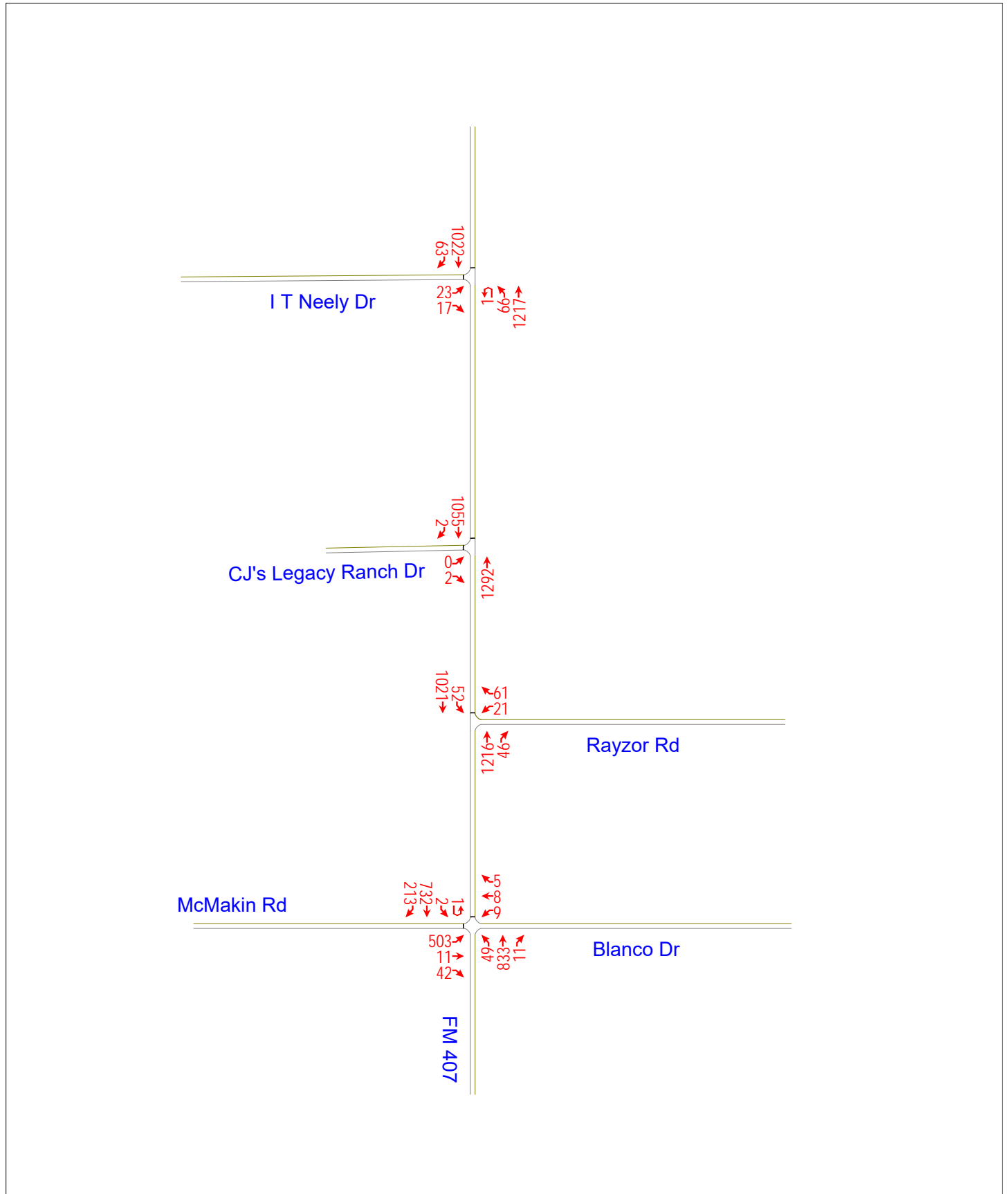
A3. 2024 Background AM Peak Hour Traffic Volumes

North
Not to Scale



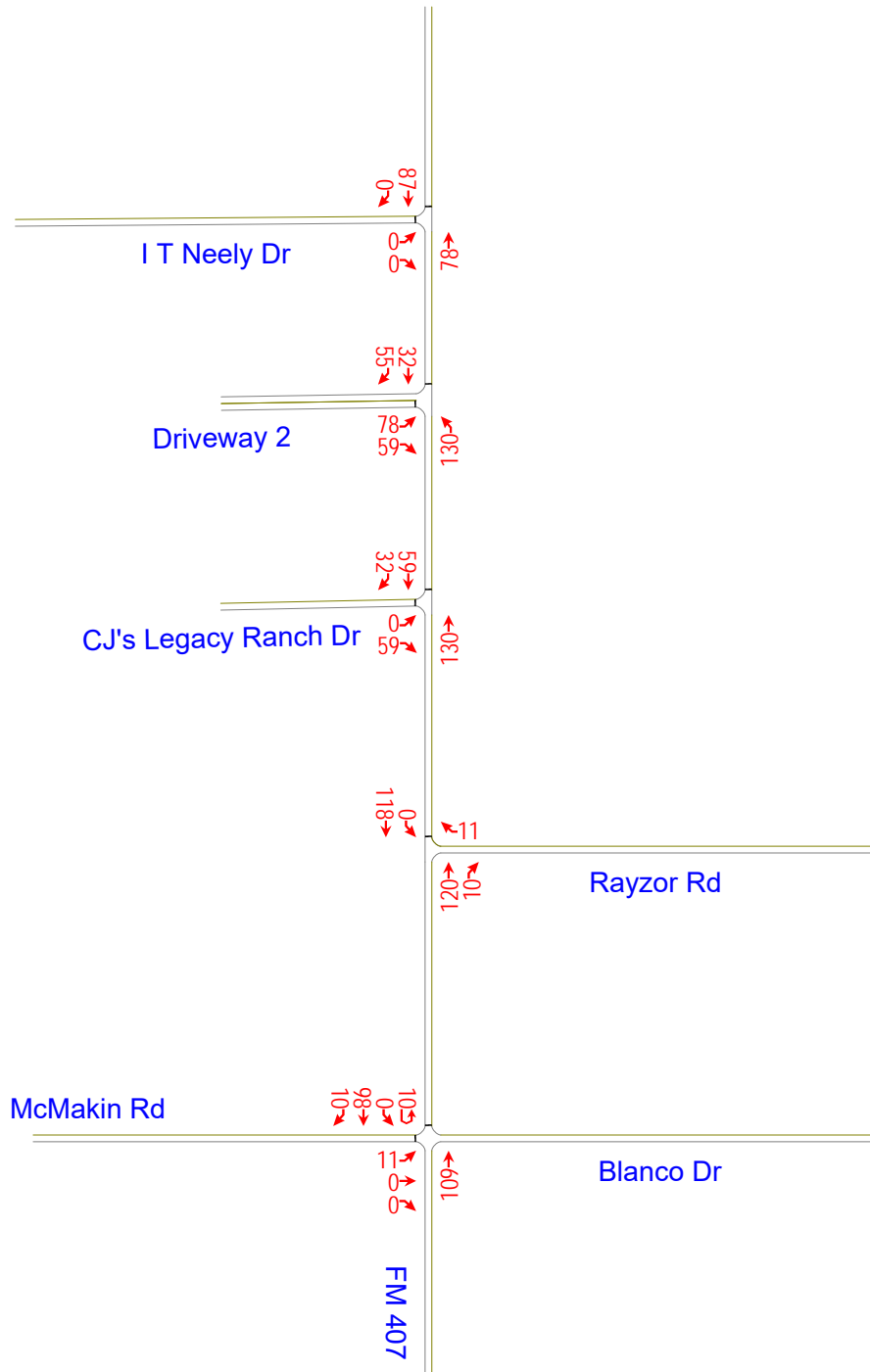
A4. 2024 Background PM Peak Hour Traffic Volumes

North
Not to Scale



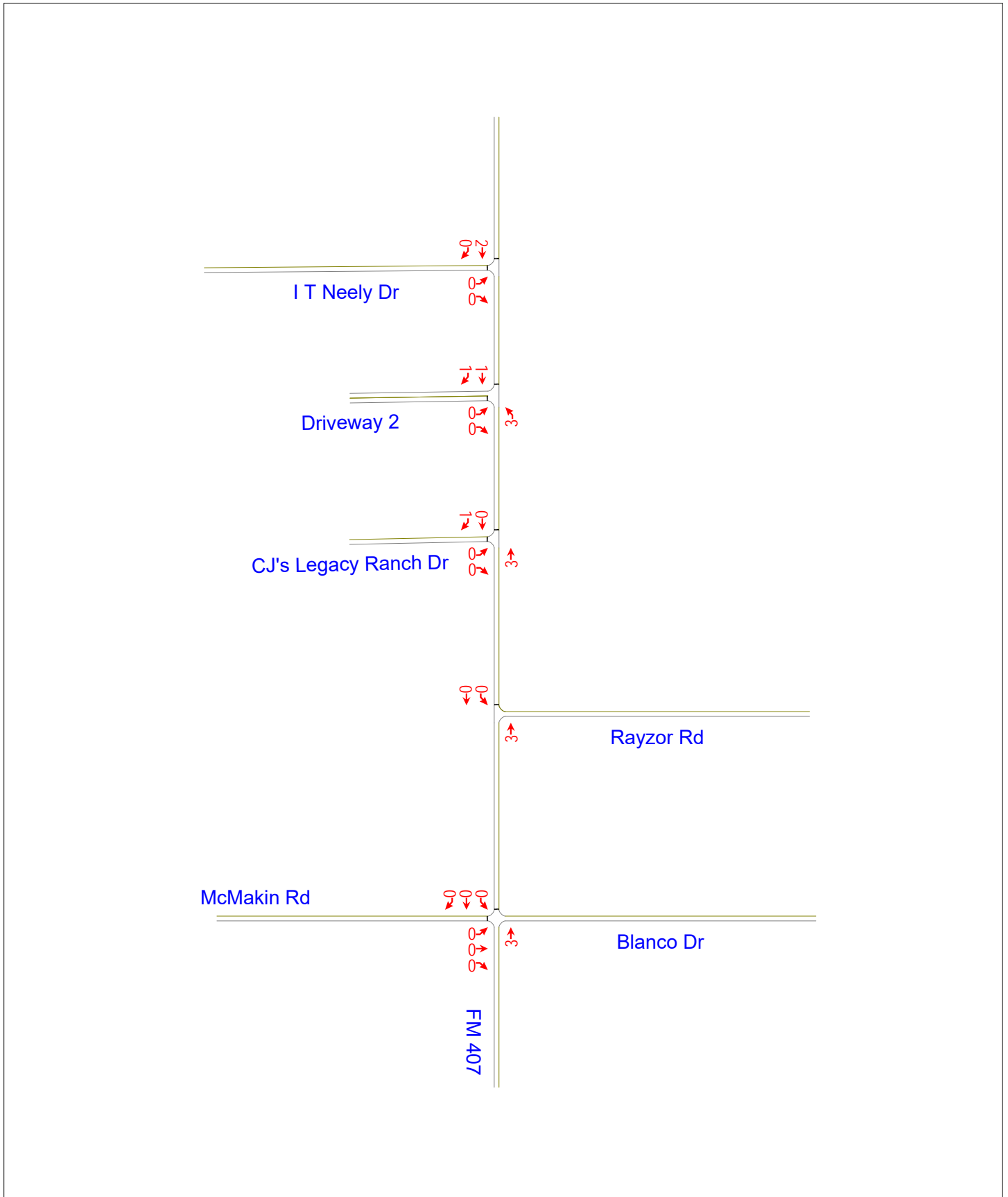
A5.1 2024 Site Generated AM Peak Hour Traffic Volumes (Scenario 1 - Buses and Passenger)

North
Not to Scale



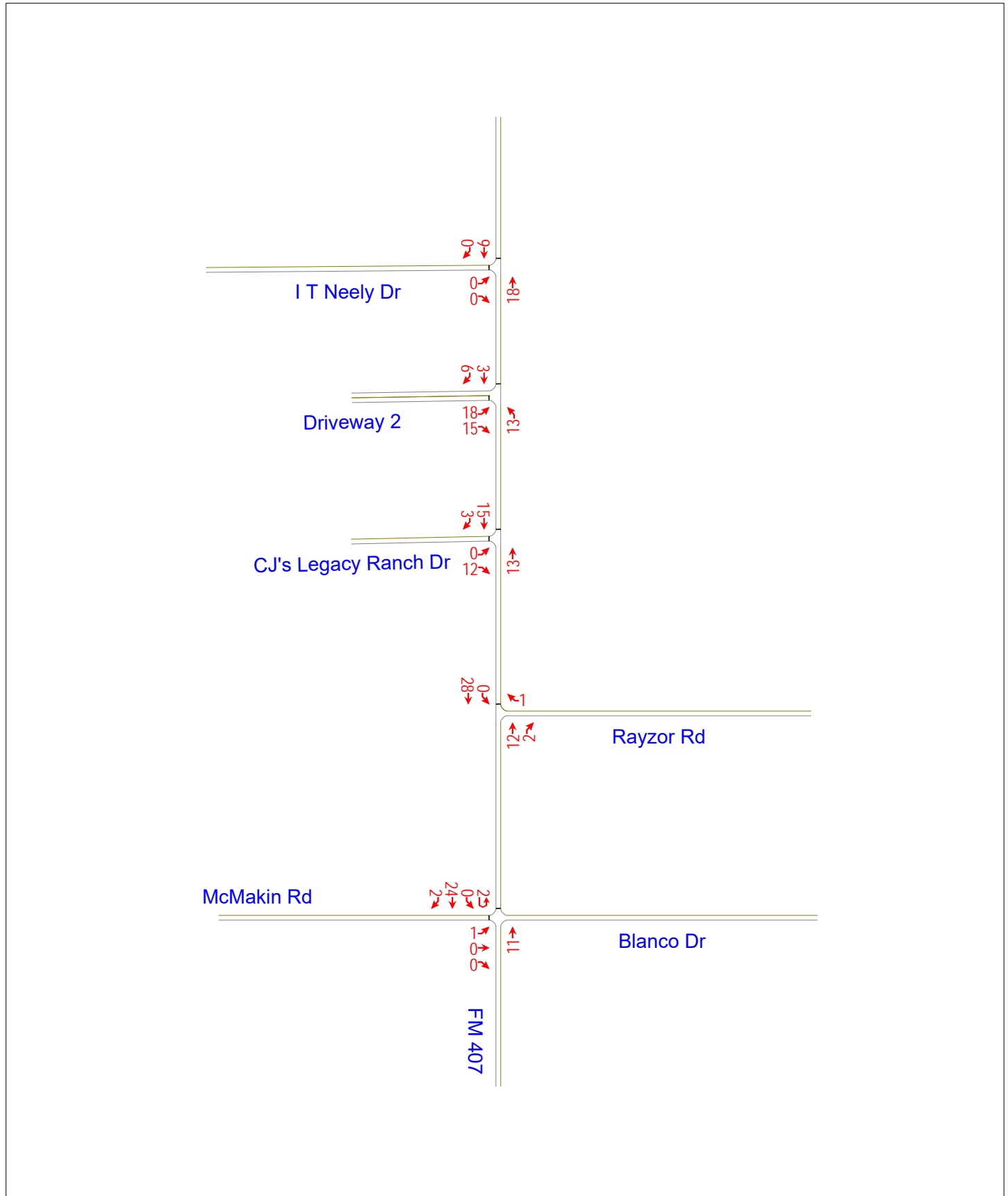
A5.2 2024 Site Generated AM Peak Hour Traffic Volumes (Scenario 2 - Buses only)

North
Not to Scale



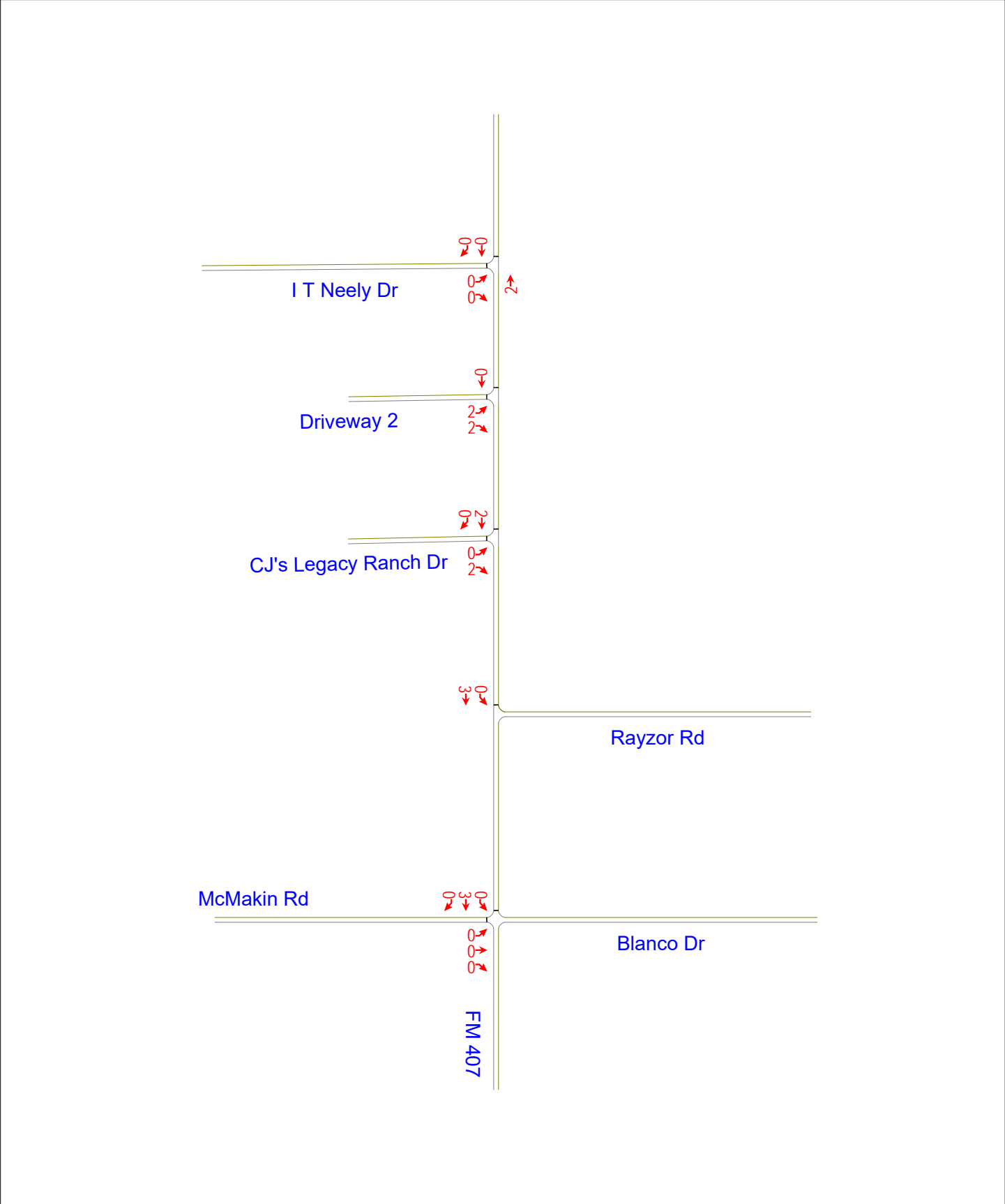
A6.1 2024 Site Generated PM Peak Hour Traffic Volumes (Scenario 1 - Buses and Passenger)

North
Not to Scale



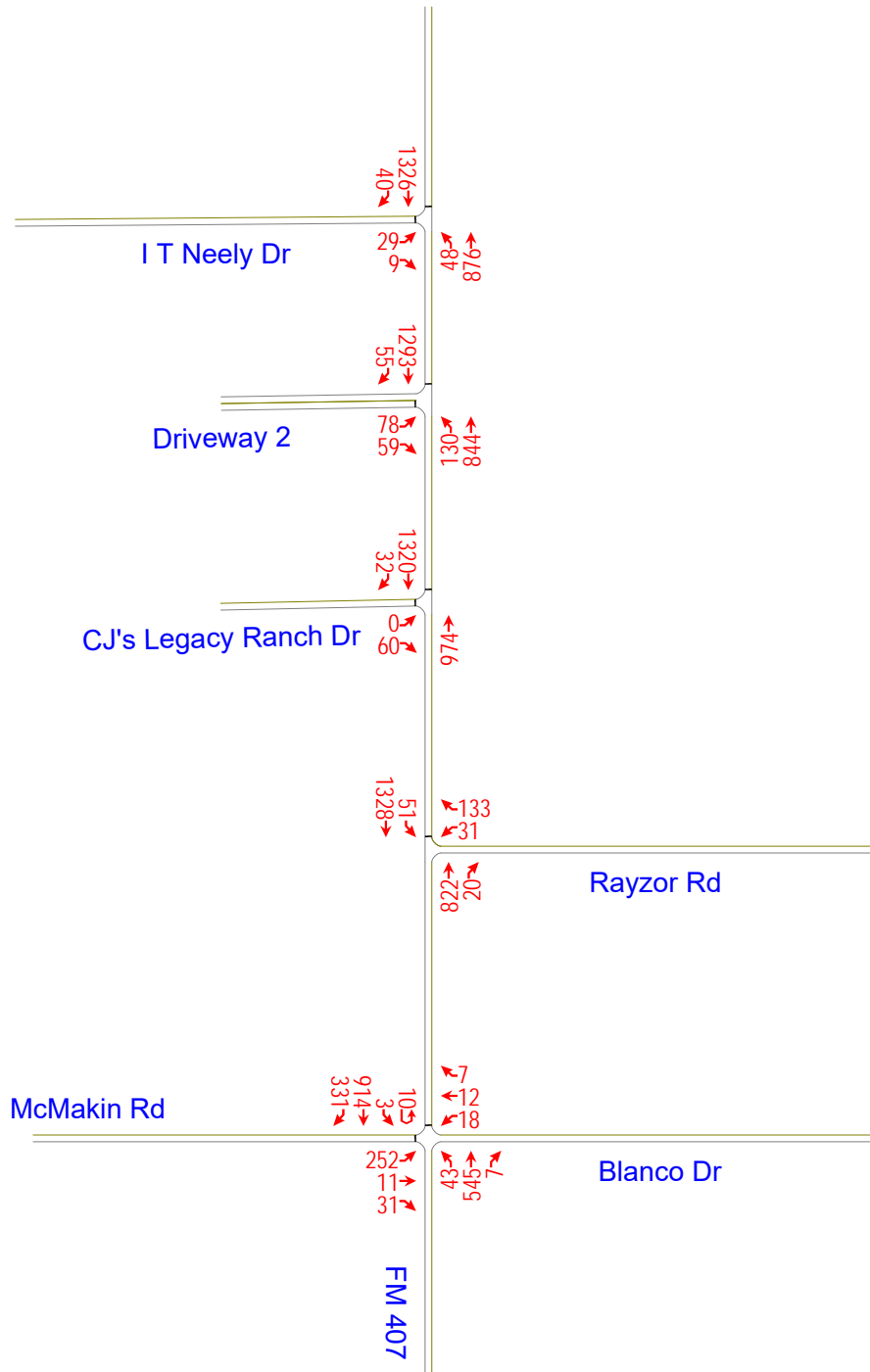
A6.2 2024 Site Generated PM Peak Hour Traffic Volumes (Scenario 2 - Buses only)

North
Not to Scale



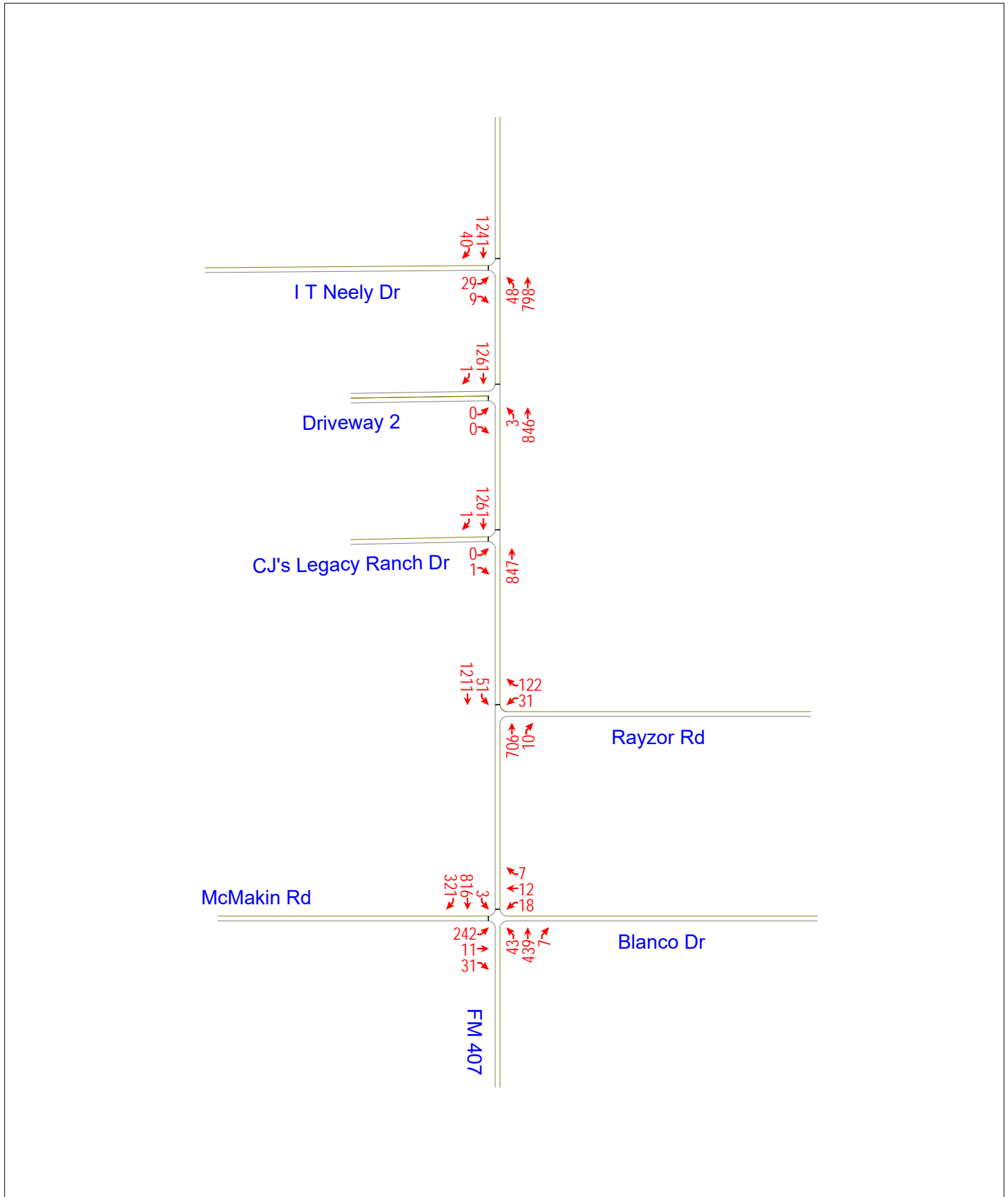
A7.1 2024 Background Plus Site Generated AM Peak Hour Traffic Volumes
(Scenario 1 - Buses and Passenger)

North
Not to Scale



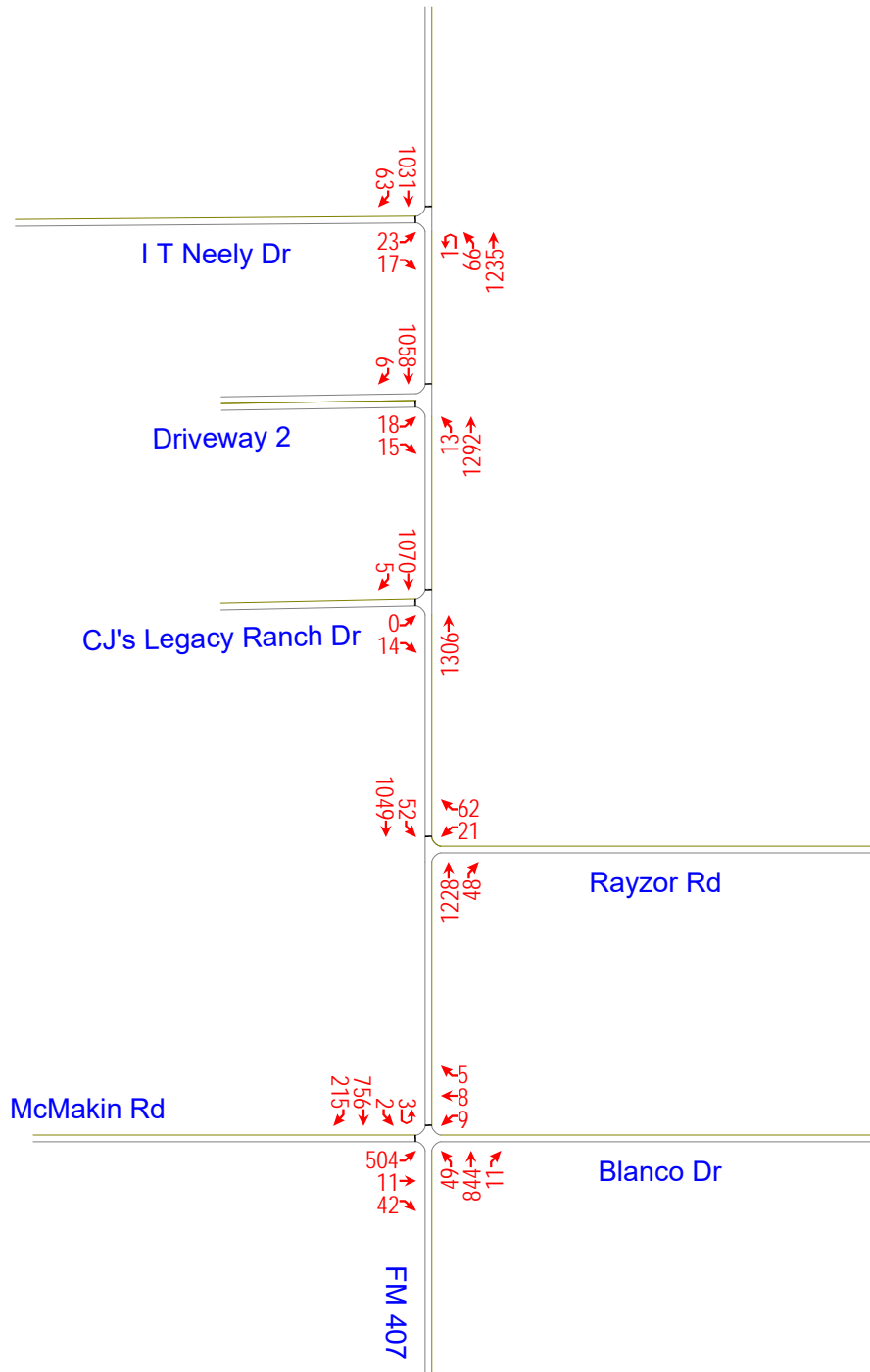
A7.2 2024 Background Plus Site Generated AM Peak Hour Traffic Volumes (Scenario 2 - Buses only)

North
Not to Scale



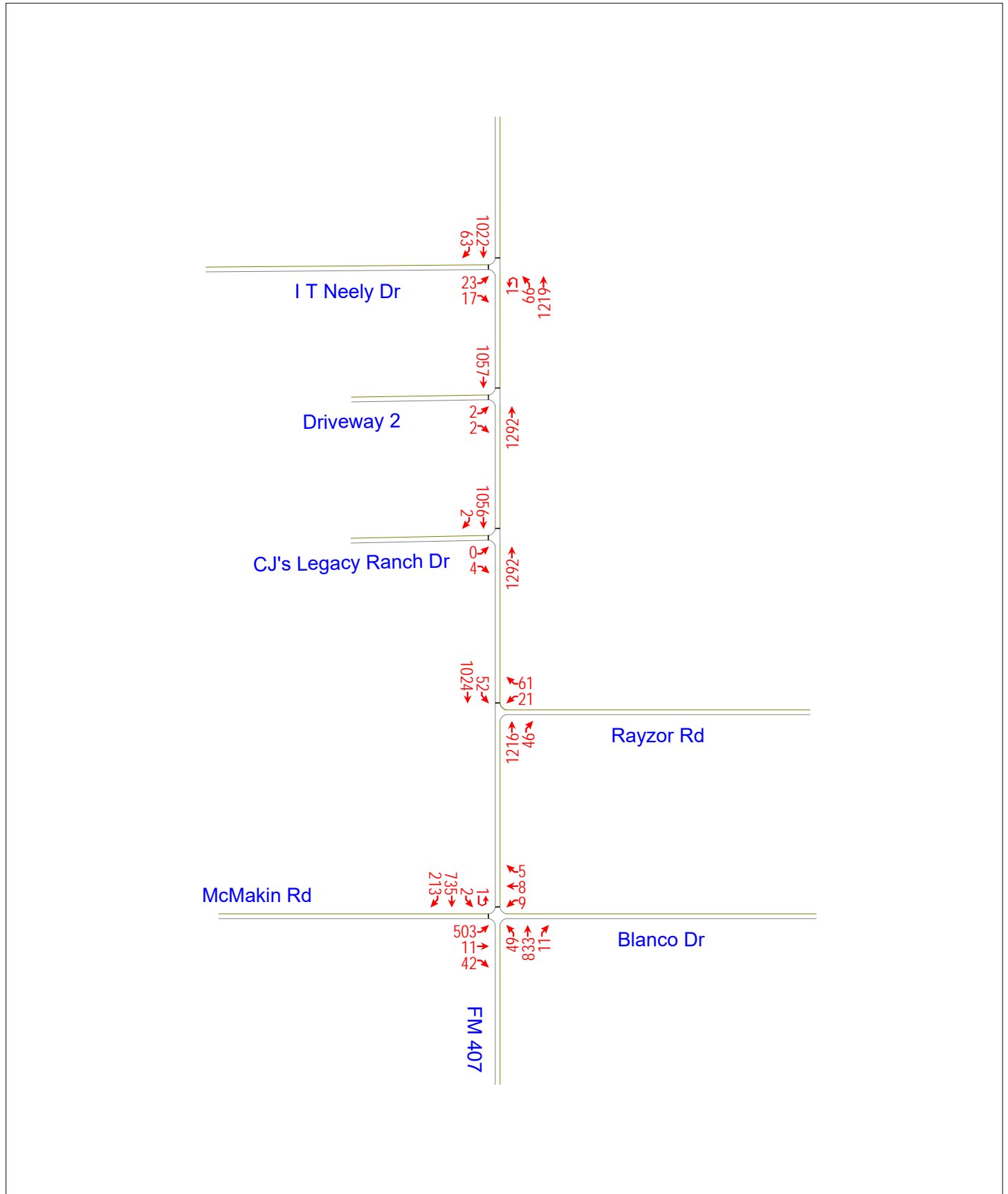
**A8.1 2024 Background Plus Site Generated PM Peak Hour Traffic Volumes
(Scenario 1 - Buses and Passenger)**

North
Not to Scale



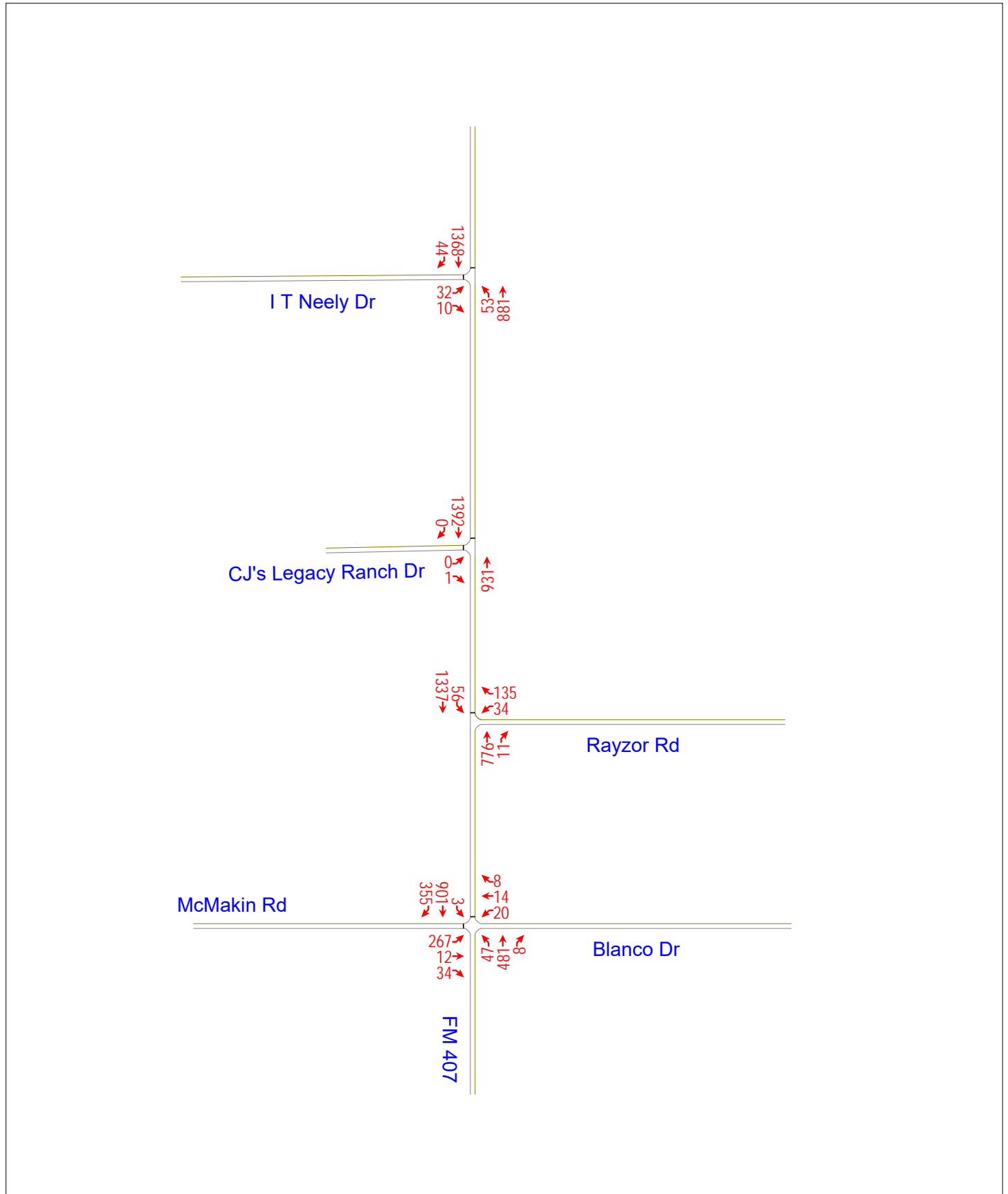
A8.2 2024 Background Plus Site Generated PM Peak Hour Traffic Volumes (Scenario 2 - Buses only)

North
Not to Scale



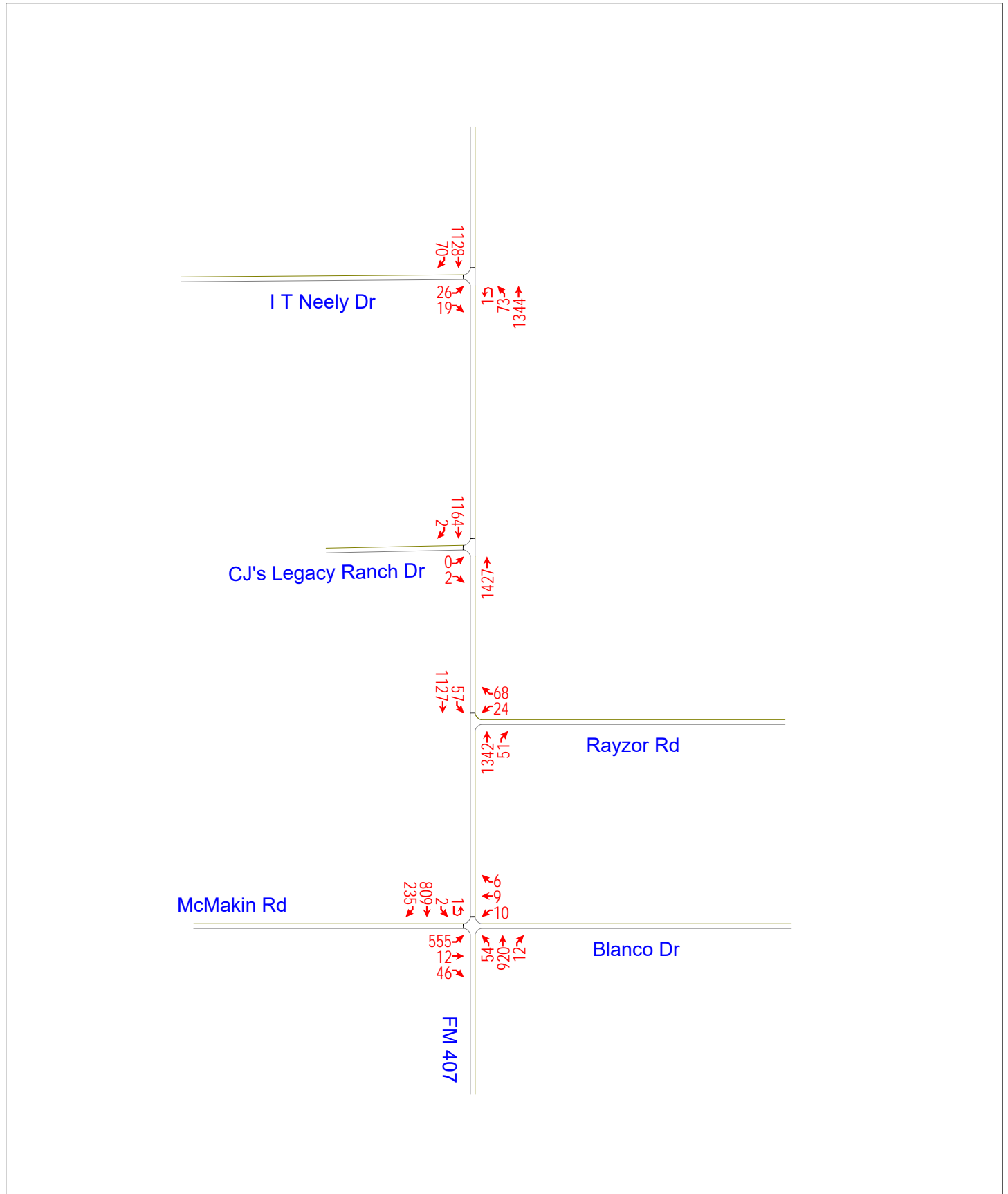
A9. 2029 Horizon AM Peak Hour Traffic Volumes

North
Not to Scale



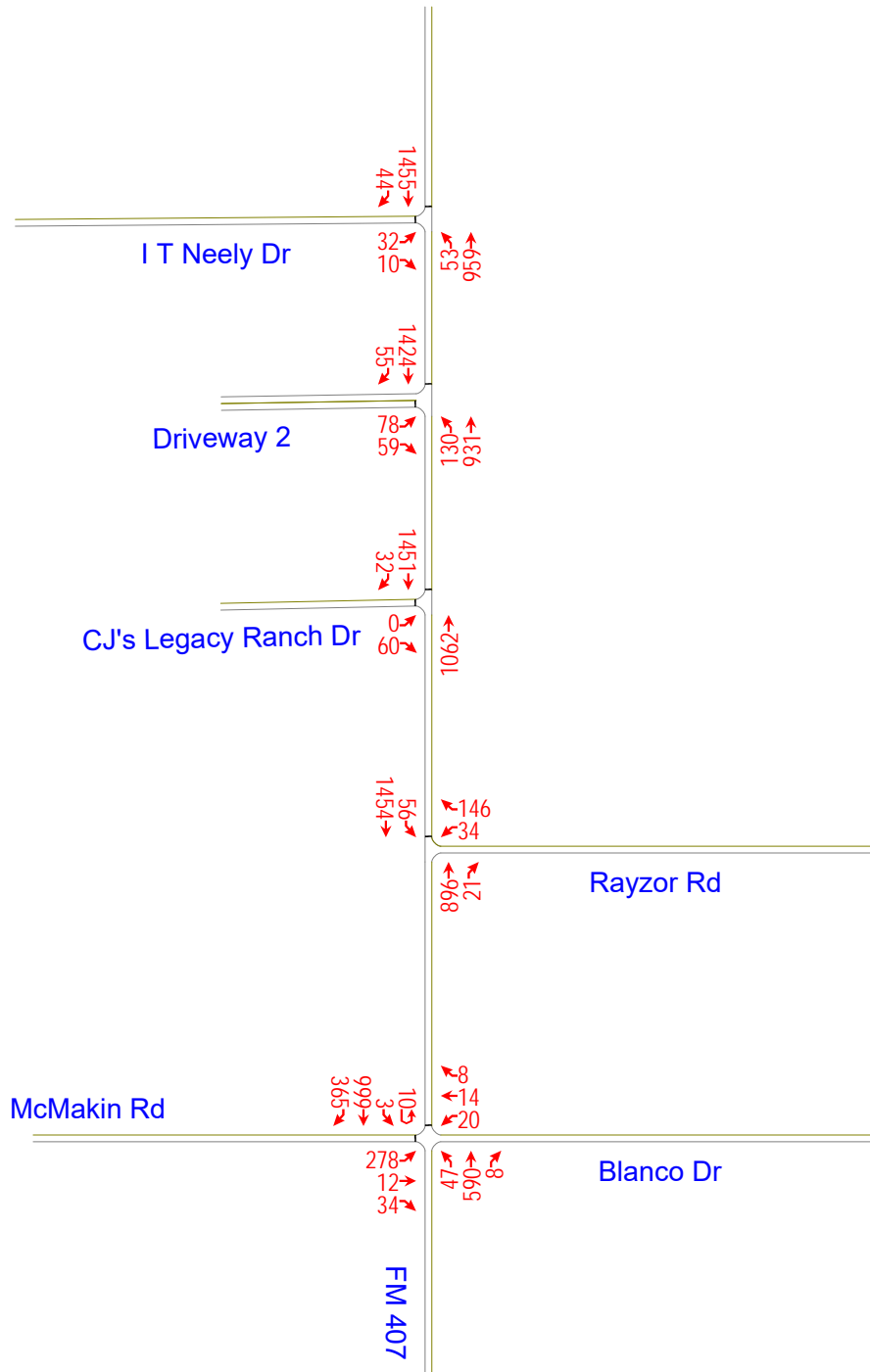
A10. 2029 Horizon PM Peak Hour Traffic Volumes

North
Not to Scale



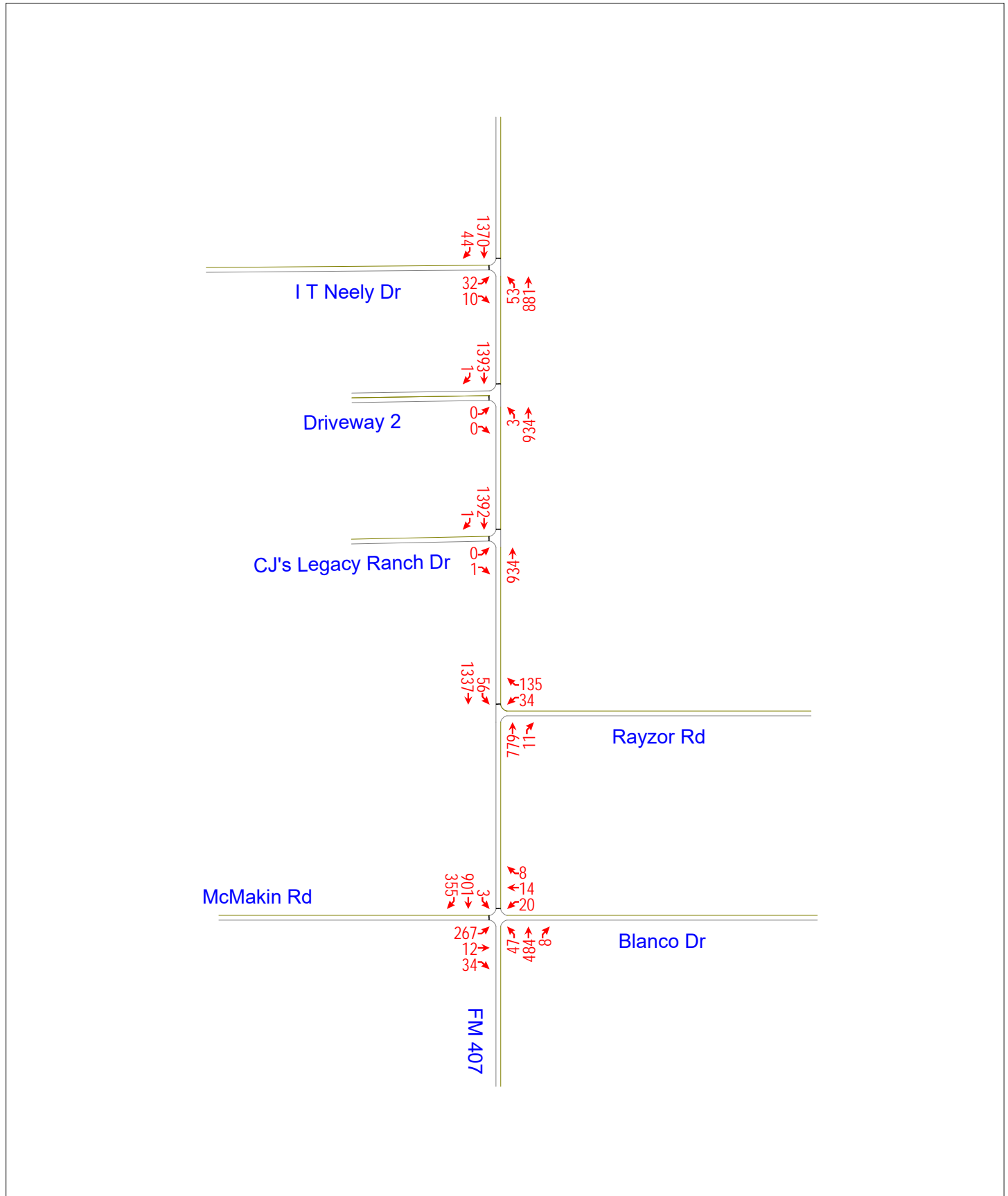
**A11.1 2024 Horizon Plus Site Generated AM Peak Hour Traffic Volumes
(Scenario 1 - Buses and Passenger)**

North
Not to Scale



A11.2 2029 Horizon Plus Site Generated AM Peak Hour Traffic Volumes (Scenario 2 - Buses only)

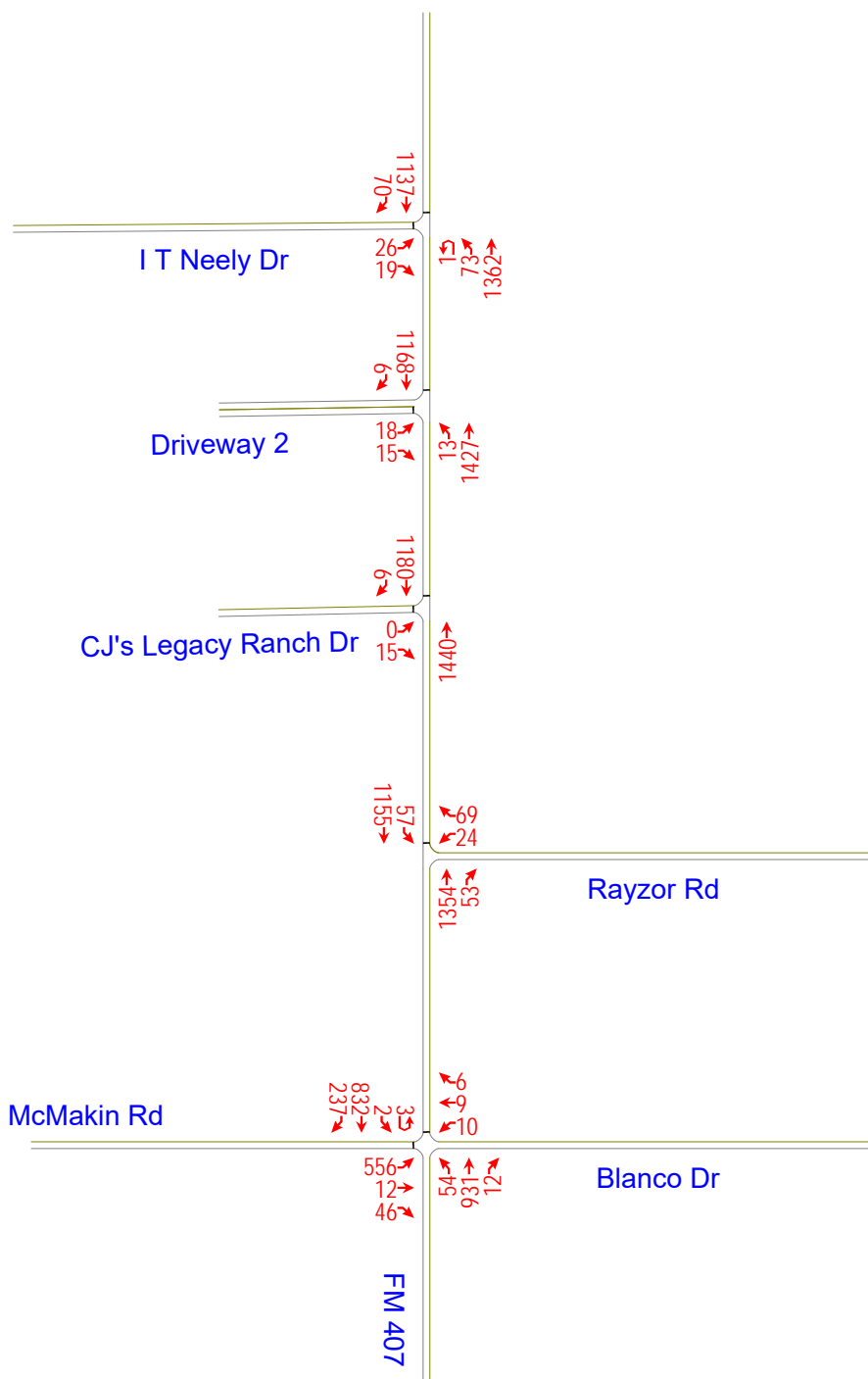
North
Not to Scale



**A12.1 2024 Horizon Plus Site Generated PM Peak Hour Traffic Volumes
(Scenario 1 - Buses and Passenger)**

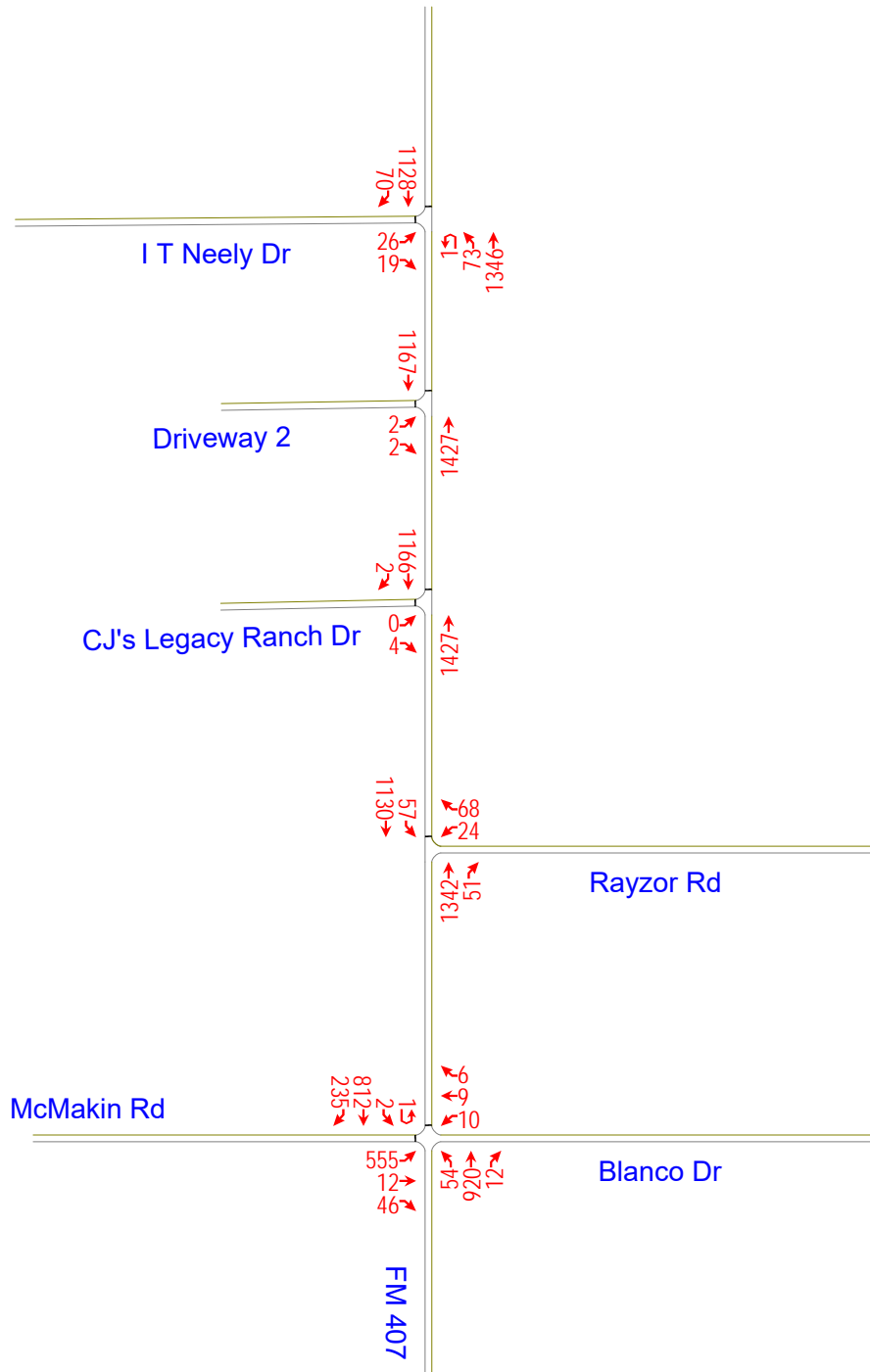
North
Not to Scale

Item F2.



A12.2 2029 Horizon Plus Site Generated PM Peak Hour Traffic Volumes (Scenario 2 - Buses only)

North
Not to Scale



Appendix B. Existing Traffic Count Data

1. FM 407 at Rayzor Road - TMC

Thu Mar 23, 2023

Full Length (7 AM-9 AM, 3 PM-6 PM)

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

All Movements

ID: 1048589, Location: 33.085902, -97.131193

Item F2.

CJ Henson
Associates, Inc.

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

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

Leg Direction	FM 407 Northbound					FM 407 Southbound					Rayzor Road Westbound					
Time	R	T	U	App	Ped*	T	L	U	App	Ped*	R	L	U	App	Ped*	Int
2023-03-23 7:00AM	4	71	0	75	0	184	16	0	200	0	5	4	0	9	0	284
7:15AM	6	117	0	123	0	217	22	0	239	0	37	17	0	54	0	416
7:30AM	1	143	0	144	0	280	22	1	303	0	73	18	0	91	0	538
7:45AM	3	185	0	188	0	308	9	3	320	0	20	6	0	26	0	534
Hourly Total	14	516	0	530	0	989	69	4	1062	0	135	45	0	180	0	1772
8:00AM	3	199	0	202	0	307	10	0	317	0	16	1	0	17	0	536
8:15AM	3	162	0	165	0	292	9	0	301	0	11	5	0	16	0	482
8:30AM	1	163	0	164	0	336	9	2	347	0	6	2	0	8	0	519
8:45AM	4	145	0	149	0	264	5	1	270	0	15	3	0	18	1	437
Hourly Total	11	669	0	680	0	1199	33	3	1235	0	48	11	0	59	1	1974
3:00PM	3	219	0	222	0	194	14	3	211	0	55	8	0	63	0	496
3:15PM	3	240	0	243	0	239	10	2	251	0	9	5	0	14	0	508
3:30PM	9	234	0	243	0	190	13	1	204	0	18	0	0	18	0	465
3:45PM	9	247	0	256	0	212	5	3	220	0	11	4	0	15	0	491
Hourly Total	24	940	0	964	0	835	42	9	886	0	93	17	0	110	0	1960
4:00PM	6	237	0	243	0	207	17	4	228	0	15	1	0	16	0	487
4:15PM	9	249	0	258	0	242	9	3	254	0	12	5	0	17	0	529
4:30PM	9	278	0	287	0	257	14	1	272	0	9	3	0	12	0	571
4:45PM	10	313	0	323	0	254	13	2	269	0	14	5	0	19	0	611
Hourly Total	34	1077	0	1111	0	960	53	10	1023	0	50	14	0	64	0	2198
5:00PM	8	289	0	297	0	239	8	2	249	0	17	6	0	23	0	569
5:15PM	18	312	0	330	0	251	16	4	271	0	20	7	0	27	0	628
5:30PM	12	259	0	271	0	239	15	1	255	0	21	5	0	26	0	552
5:45PM	13	288	0	301	0	217	11	0	228	0	9	4	0	13	0	542
Hourly Total	51	1148	0	1199	0	946	50	7	1003	0	67	22	0	89	0	2291
Total	134	4350	0	4484	0	4929	247	33	5209	0	393	109	0	502	1	10195
% Approach	3.0%	97.0%	0%	-	-	94.6%	4.7%	0.6%	-	-	78.3%	21.7%	0%	-	-	-
% Total	1.3%	42.7%	0%	44.0%	-	48.3%	2.4%	0.3%	51.1%	-	3.9%	1.1%	0%	4.9%	-	-
Lights	132	4300	0	4432	-	4866	243	33	5142	-	392	105	0	497	-	10071
% Lights	98.5%	98.9%	0%	98.8%	-	98.7%	98.4%	100%	98.7%	-	99.7%	96.3%	0%	99.0%	-	98.8%
Articulated Trucks	0	9	0	9	-	15	0	0	15	-	0	1	0	1	-	25
% Articulated Trucks	0%	0.2%	0%	0.2%	-	0.3%	0%	0%	0.3%	-	0%	0.9%	0%	0.2%	-	0.2%
Buses and Single-Unit Trucks	2	41	0	43	-	48	4	0	52	-	1	3	0	4	-	99
% Buses and Single-Unit Trucks	1.5%	0.9%	0%	1.0%	-	1.0%	1.6%	0%	1.0%	-	0.3%	2.8%	0%	0.8%	-	1.0%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	-

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

1. FM 407 at Rayzor Road - TMC

Thu Mar 23, 2023

Full Length (7 AM-9 AM, 3 PM-6 PM)

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

All Movements

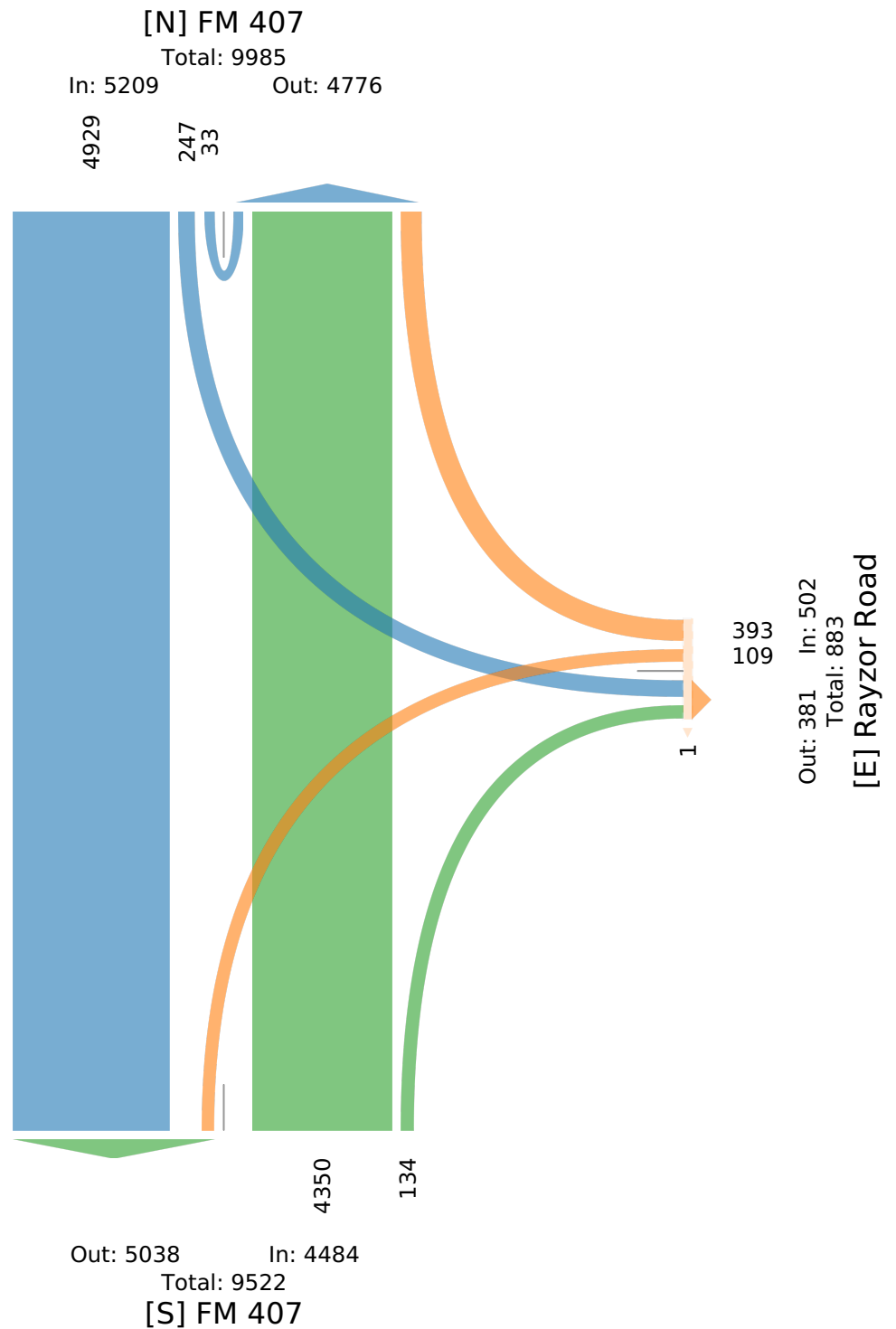
ID: 1048589, Location: 33.085902, -97.131193

Item F2.

CJ Henson
Associates, Inc.

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

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



1. FM 407 at Rayzor Road - TMC

Thu Mar 23, 2023

AM Peak (7:30 AM - 8:30 AM)

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

All Movements

ID: 1048589, Location: 33.085902, -97.131193

Item F2.

CJ Henson
Associates, Inc.

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

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

Leg Direction	FM 407 Northbound					FM 407 Southbound					Rayzor Road Westbound					
Time	R	T	U	App	Ped*	T	L	U	App	Ped*	R	L	U	App	Ped*	Int
2023-03-23 7:30AM	1	143	0	144	0	280	22	1	303	0	73	18	0	91	0	538
7:45AM	3	185	0	188	0	308	9	3	320	0	20	6	0	26	0	534
8:00AM	3	199	0	202	0	307	10	0	317	0	16	1	0	17	0	536
8:15AM	3	162	0	165	0	292	9	0	301	0	11	5	0	16	0	482
Total	10	689	0	699	0	1187	50	4	1241	0	120	30	0	150	0	2090
% Approach	1.4%	98.6%	0%	-	-	95.6%	4.0%	0.3%	-	-	80.0%	20.0%	0%	-	-	-
% Total	0.5%	33.0%	0%	33.4%	-	56.8%	2.4%	0.2%	59.4%	-	5.7%	1.4%	0%	7.2%	-	-
PHF	0.833	0.866	-	0.865	-	0.963	0.568	0.333	0.970	-	0.411	0.417	-	0.412	-	0.971
Lights	10	670	0	680	-	1175	49	4	1228	-	120	30	0	150	-	2058
% Lights	100%	97.2%	0%	97.3%	-	99.0%	98.0%	100%	99.0%	-	100%	100%	0%	100%	-	98.5%
Articulated Trucks	0	4	0	4	-	3	0	0	3	-	0	0	0	0	-	7
% Articulated Trucks	0%	0.6%	0%	0.6%	-	0.3%	0%	0%	0.2%	-	0%	0%	0%	0%	-	0.3%
Buses and Single-Unit Trucks	0	15	0	15	-	9	1	0	10	-	0	0	0	0	-	25
% Buses and Single-Unit Trucks	0%	2.2%	0%	2.1%	-	0.8%	2.0%	0%	0.8%	-	0%	0%	0%	0%	-	1.2%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

1. FM 407 at Rayzor Road - TMC

Thu Mar 23, 2023

AM Peak (7:30 AM - 8:30 AM)

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

All Movements

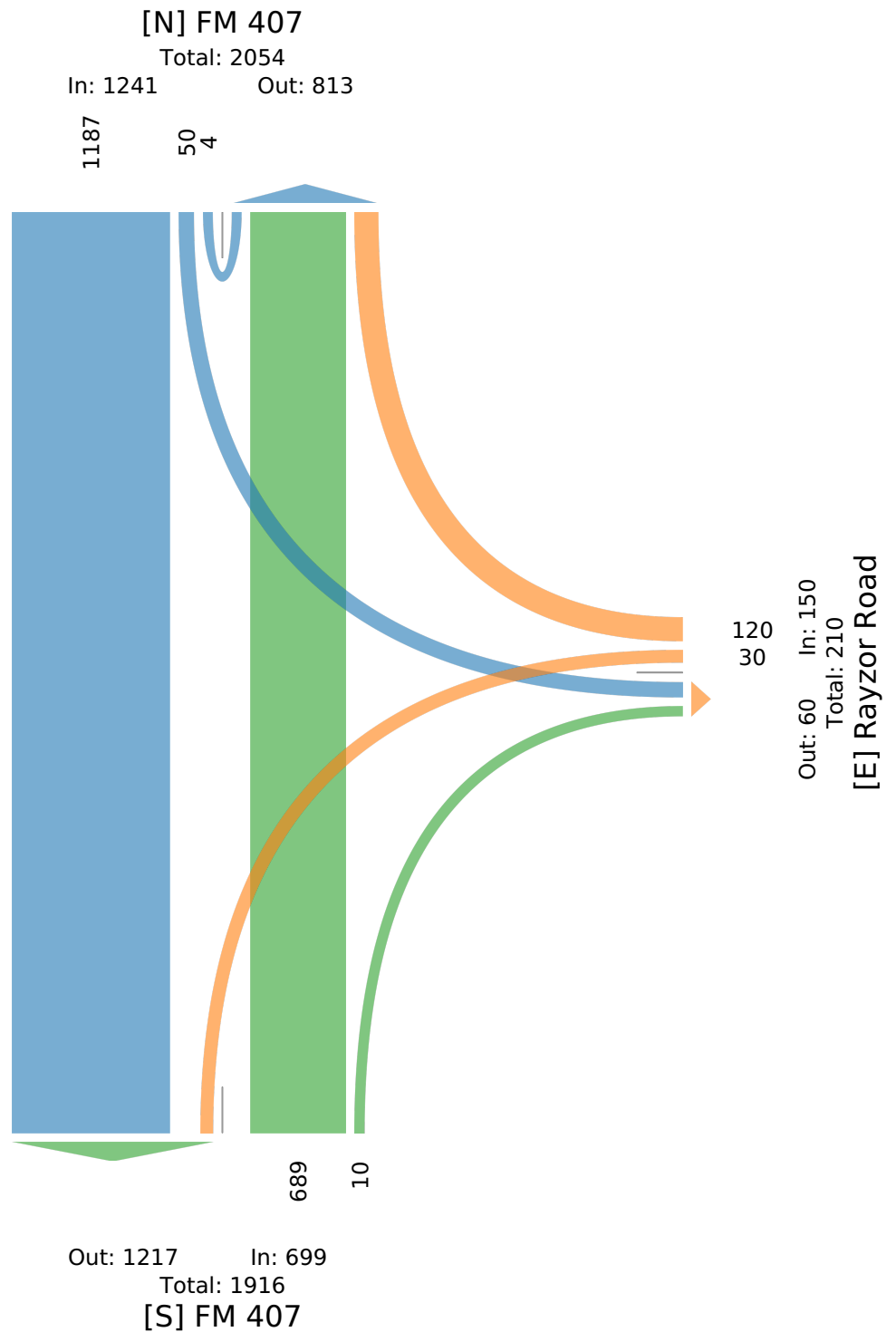
ID: 1048589, Location: 33.085902, -97.131193

Item F2.

CJ Henson
Associates, Inc.

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

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



1. FM 407 at Rayzor Road - TMC

Thu Mar 23, 2023

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

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

All Movements

ID: 1048589, Location: 33.085902, -97.131193

Item F2.

CJ Henson
Associates, Inc.

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

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

Leg Direction	FM 407 Northbound					FM 407 Southbound					Rayzor Road Westbound					
Time	R	T	U	App	Ped*	T	L	U	App	Ped*	R	L	U	App	Ped*	Int
2023-03-23 4:30PM	9	278	0	287	0	257	14	1	272	0	9	3	0	12	0	571
4:45PM	10	313	0	323	0	254	13	2	269	0	14	5	0	19	0	611
5:00PM	8	289	0	297	0	239	8	2	249	0	17	6	0	23	0	569
5:15PM	18	312	0	330	0	251	16	4	271	0	20	7	0	27	0	628
Total	45	1192	0	1237	0	1001	51	9	1061	0	60	21	0	81	0	2379
% Approach	3.6%	96.4%	0%	-	-	94.3%	4.8%	0.8%	-	-	74.1%	25.9%	0%	-	-	-
% Total	1.9%	50.1%	0%	52.0%	-	42.1%	2.1%	0.4%	44.6%	-	2.5%	0.9%	0%	3.4%	-	-
PHF	0.625	0.952	-	0.937	-	0.974	0.797	0.563	0.975	-	0.750	0.750	-	0.750	-	0.947
Lights	45	1186	0	1231	-	990	51	9	1050	-	60	21	0	81	-	2362
% Lights	100%	99.5%	0%	99.5%	-	98.9%	100%	100%	99.0%	-	100%	100%	0%	100%	-	99.3%
Articulated Trucks	0	3	0	3	-	4	0	0	4	-	0	0	0	0	-	7
% Articulated Trucks	0%	0.3%	0%	0.2%	-	0.4%	0%	0%	0.4%	-	0%	0%	0%	0%	-	0.3%
Buses and Single-Unit Trucks	0	3	0	3	-	7	0	0	7	-	0	0	0	0	-	10
% Buses and Single-Unit Trucks	0%	0.3%	0%	0.2%	-	0.7%	0%	0%	0.7%	-	0%	0%	0%	0%	-	0.4%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

1. FM 407 at Rayzor Road - TMC

Thu Mar 23, 2023

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

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

All Movements

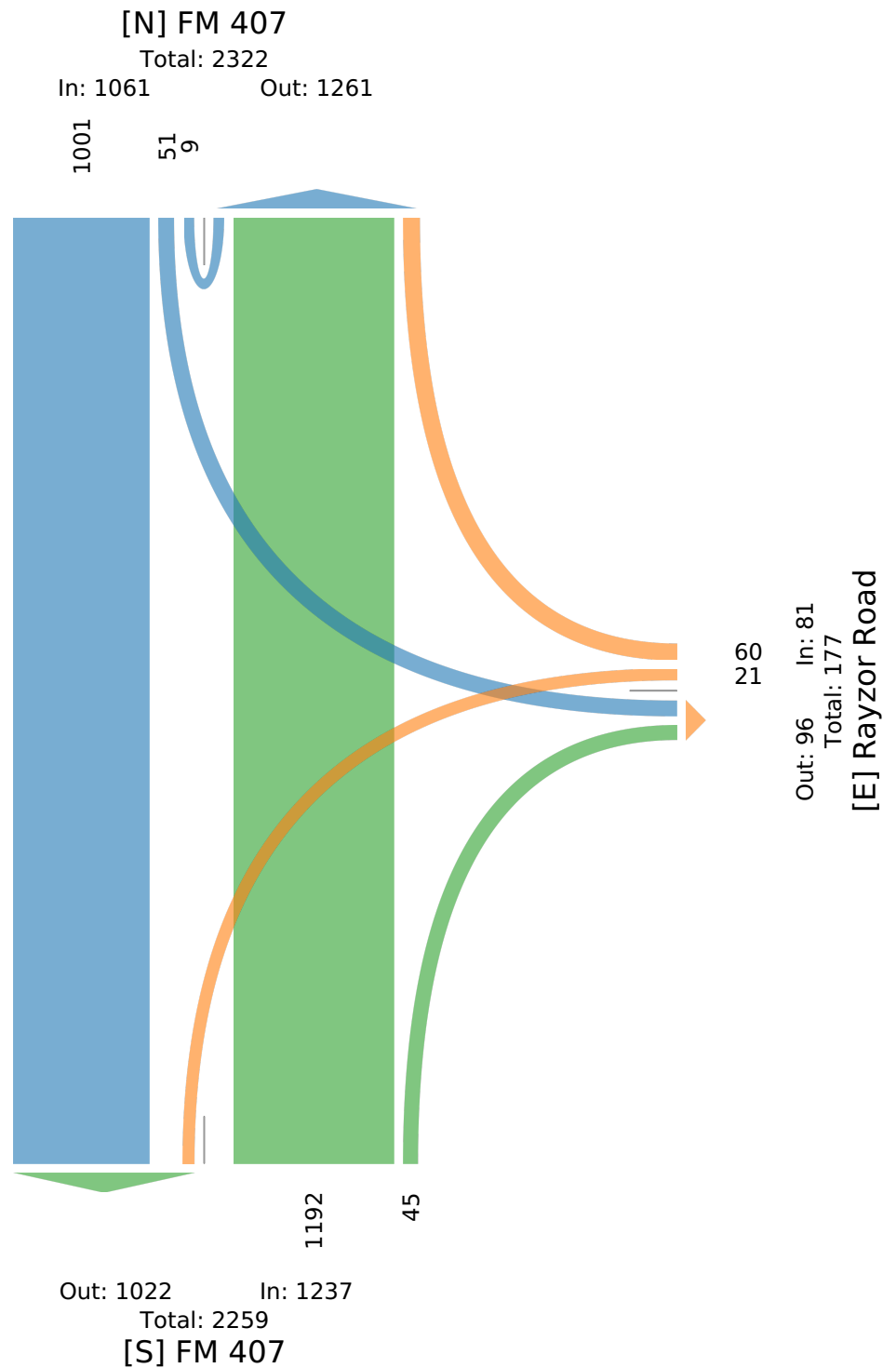
ID: 1048589, Location: 33.085902, -97.131193

Item F2.

CJ Henson
Associates, Inc.

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

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



2. FM 407 at CJ Legacy Ranch Drive - TMC

Thu Mar 23, 2023

Full Length (7 AM-9 AM, 3 PM-6 PM)

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

All Movements

ID: 1048590, Location: 33.086445, -97.131205

Item F2.

CJ Henson
Associates, Inc.

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

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

Leg Direction	FM 407 Northbound						FM 407 Southbound						CJ Legacy Ranch Drive Eastbound						
Time	T	L	U	App	Ped*		R	T	U	App	Ped*		R	L	U	App	Ped*	Int	
2023-03-23 7:00AM	90	0	0	90	0		0	183	0	183	0		0	0	0	0	0	273	
7:15AM	132	0	0	132	0		0	238	0	238	0		0	0	0	0	0	370	
7:30AM	244	0	0	244	0		0	309	0	309	0		0	0	0	0	0	553	
7:45AM	188	0	0	188	0		0	316	0	316	0		1	0	0	1	0	505	
Hourly Total	654	0	0	654	0		0	1046	0	1046	0		1	0	0	1	0	1701	
8:00AM	215	0	0	215	0		0	316	0	316	0		0	0	0	0	0	531	
8:15AM	180	0	0	180	0		0	295	0	295	0		0	0	0	0	0	475	
8:30AM	171	0	0	171	0		0	331	0	331	0		0	0	0	0	0	502	
8:45AM	160	0	0	160	0		1	277	0	278	0		0	0	0	0	0	438	
Hourly Total	726	0	0	726	0		1	1219	0	1220	0		0	0	0	0	0	1946	
3:00PM	262	0	0	262	0		0	201	0	201	0		1	0	0	1	0	464	
3:15PM	252	0	0	252	0		0	253	0	253	0		1	0	0	1	0	506	
3:30PM	259	0	0	259	0		0	190	0	190	0		0	0	0	0	0	449	
3:45PM	265	0	0	265	0		3	227	0	230	0		0	0	0	0	0	495	
Hourly Total	1038	0	0	1038	0		3	871	0	874	0		2	0	0	2	0	1914	
4:00PM	262	0	0	262	0		0	218	0	218	0		2	0	0	2	0	482	
4:15PM	255	0	0	255	0		1	250	0	251	0		0	0	0	0	0	506	
4:30PM	289	0	0	289	0		0	287	0	287	0		0	0	0	0	0	576	
4:45PM	331	0	0	331	0		2	244	0	246	0		1	0	0	1	0	578	
Hourly Total	1137	0	0	1137	0		3	999	0	1002	0		3	0	0	3	0	2142	
5:00PM	309	0	0	309	0		0	255	0	255	0		1	0	0	1	0	565	
5:15PM	316	0	0	316	0		0	267	0	267	0		0	0	0	0	0	583	
5:30PM	311	0	0	311	0		0	268	0	268	0		0	0	0	0	0	579	
5:45PM	285	0	0	285	0		0	219	0	219	0		0	0	0	0	0	504	
Hourly Total	1221	0	0	1221	0		0	1009	0	1009	0		1	0	0	1	0	2231	
Total	4776	0	0	4776	0		7	5144	0	5151	0		7	0	0	7	0	9934	
% Approach	100%	0%	0%	-	-		0.1%	99.9%	0%	-	-		100%	0%	0%	-	-	-	
% Total	48.1%	0%	0%	48.1%	-		0.1%	51.8%	0%	51.9%	-		0.1%	0%	0%	0.1%	-	-	
Lights	4718	0	0	4718	-		7	5095	0	5102	-		7	0	0	7	-	9827	
% Lights	98.8%	0%	0%	98.8%	-		100%	99.0%	0%	99.0%	-		100%	0%	0%	100%	-	98.9%	
Articulated Trucks	9	0	0	9	-		0	13	0	13	-		0	0	0	0	-	22	
% Articulated Trucks	0.2%	0%	0%	0.2%	-		0%	0.3%	0%	0.3%	-		0%	0%	0%	0%	-	0.2%	
Buses and Single-Unit Trucks	49	0	0	49	-		0	36	0	36	-		0	0	0	0	-	85	
% Buses and Single-Unit Trucks	1.0%	0%	0%	1.0%	-		0%	0.7%	0%	0.7%	-		0%	0%	0%	0%	-	0.9%	
Pedestrians	-	-	-	-	0		-	-	-	-	0		-	-	-	-	0		
% Pedestrians	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	-	
Bicycles on Crosswalk	-	-	-	-	0		-	-	-	-	0		-	-	-	-	0		
% Bicycles on Crosswalk	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		

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

2. FM 407 at CJ Legacy Ranch Drive - TMC

Thu Mar 23, 2023

Full Length (7 AM-9 AM, 3 PM-6 PM)

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

All Movements

ID: 1048590, Location: 33.086445, -97.131205

Item F2.

CJ Henson
Associates, Inc.

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

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

[N] FM 407

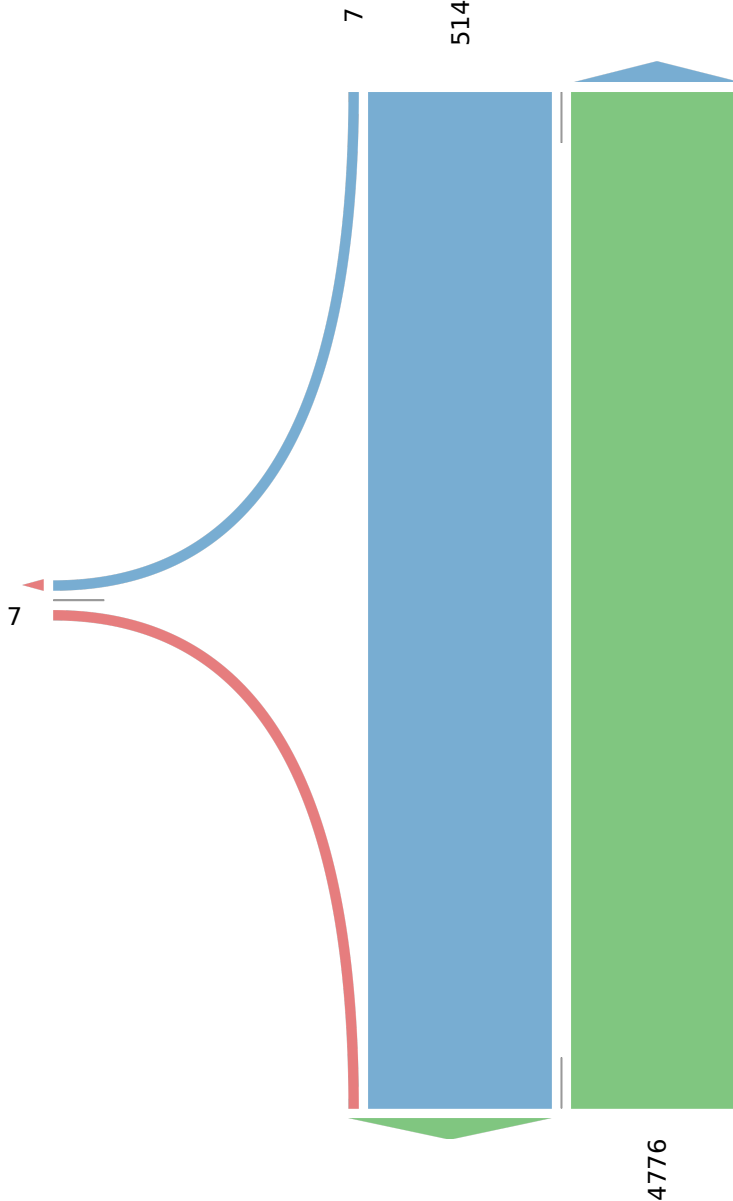
Total: 9927

In: 5151

Out: 4776

5144

7



[W] CJ Legacy Ranch Drive

Total: 14

In: 7 Out: 7

7

Out: 5151

In: 4776

Total: 9927

[S] FM 407

2. FM 407 at CJ Legacy Ranch Drive - TMC

Thu Mar 23, 2023

AM Peak (7:30 AM - 8:30 AM)

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

All Movements

ID: 1048590, Location: 33.086445, -97.131205

Item F2.

CJ Henson
Associates, Inc.

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

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

Leg Direction	FM 407 Northbound						FM 407 Southbound						CJ Legacy Ranch Drive Eastbound						
Time	T	L	U	App	Ped*		R	T	U	App	Ped*		R	L	U	App	Ped*	Int	
2023-03-23 7:30AM	244	0	0	244	0		0	309	0	309	0		0	0	0	0	0	553	
7:45AM	188	0	0	188	0		0	316	0	316	0		1	0	0	1	0	505	
8:00AM	215	0	0	215	0		0	316	0	316	0		0	0	0	0	0	531	
8:15AM	180	0	0	180	0		0	295	0	295	0		0	0	0	0	0	475	
Total	827	0	0	827	0		0	1236	0	1236	0		1	0	0	1	0	2064	
% Approach	100%	0%	0%	-	-		0%	100%	0%	-	-		100%	0%	0%	-	-	-	
% Total	40.1%	0%	0%	40.1%	-		0%	59.9%	0%	59.9%	-		0%	0%	0%	0%	-	-	
PHF	0.847	-	-	0.847	-		-	0.978	-	0.978	-		0.250	-	-	0.250	-	0.933	
Lights	807	0	0	807	-		0	1225	0	1225	-		1	0	0	1	-	2033	
% Lights	97.6%	0%	0%	97.6%	-		0%	99.1%	0%	99.1%	-		100%	0%	0%	100%	-	98.5%	
Articulated Trucks	2	0	0	2	-		0	2	0	2	-		0	0	0	0	-	4	
% Articulated Trucks	0.2%	0%	0%	0.2%	-		0%	0.2%	0%	0.2%	-		0%	0%	0%	0%	-	0.2%	
Buses and Single-Unit Trucks	18	0	0	18	-		0	9	0	9	-		0	0	0	0	-	27	
% Buses and Single-Unit Trucks	2.2%	0%	0%	2.2%	-		0%	0.7%	0%	0.7%	-		0%	0%	0%	0%	-	1.3%	
Pedestrians	-	-	-	-	0		-	-	-	-	0		-	-	-	-	0		
% Pedestrians	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-	-	
Bicycles on Crosswalk	-	-	-	-	0		-	-	-	-	0		-	-	-	-	0		
% Bicycles on Crosswalk	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		

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

2. FM 407 at CJ Legacy Ranch Drive - TMC

Thu Mar 23, 2023

AM Peak (7:30 AM - 8:30 AM)

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

All Movements

ID: 1048590, Location: 33.086445, -97.131205

Item F2.

CJ Henson
Associates, Inc.

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

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

[N] FM 407

Total: 2063

In: 1236 Out: 827

1236



827

Out: 1237 In: 827

Total: 2064

[S] FM 407

[W] CJ Legacy Ranch Drive

Total: 1
In: 1 Out: 0

1



2. FM 407 at CJ Legacy Ranch Drive - TMC

Thu Mar 23, 2023

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

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

All Movements

ID: 1048590, Location: 33.086445, -97.131205

Item F2.

CJ Henson
Associates, Inc.

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

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

Leg Direction	FM 407 Northbound						FM 407 Southbound						CJ Legacy Ranch Drive Eastbound						
Time	T	L	U	App	Ped*		R	T	U	App	Ped*		R	L	U	App	Ped*		Int
2023-03-23 4:45PM	331	0	0	331	0		2	244	0	246	0		1	0	0	1	0		578
5:00PM	309	0	0	309	0		0	255	0	255	0		1	0	0	1	0		565
5:15PM	316	0	0	316	0		0	267	0	267	0		0	0	0	0	0		583
5:30PM	311	0	0	311	0		0	268	0	268	0		0	0	0	0	0		579
Total	1267	0	0	1267	0		2	1034	0	1036	0		2	0	0	2	0		2305
% Approach	100%	0%	0%	-	-		0.2%	99.8%	0%	-	-		100%	0%	0%	-	-		-
% Total	55.0%	0%	0%	55.0%	-		0.1%	44.9%	0%	44.9%	-		0.1%	0%	0%	0.1%	-		-
PHF	0.957	-	-	0.957	-		0.250	0.965	-	0.966	-		0.500	-	-	0.500	-		0.988
Lights	1262	0	0	1262	-		2	1025	0	1027	-		2	0	0	2	-		2291
% Lights	99.6%	0%	0%	99.6%	-		100%	99.1%	0%	99.1%	-		100%	0%	0%	100%	-		99.4%
Articulated Trucks	1	0	0	1	-		0	3	0	3	-		0	0	0	0	-		4
% Articulated Trucks	0.1%	0%	0%	0.1%	-		0%	0.3%	0%	0.3%	-		0%	0%	0%	0%	-		0.2%
Buses and Single-Unit Trucks	4	0	0	4	-		0	6	0	6	-		0	0	0	0	-		10
% Buses and Single-Unit Trucks	0.3%	0%	0%	0.3%	-		0%	0.6%	0%	0.6%	-		0%	0%	0%	0%	-		0.4%
Pedestrians	-	-	-	-	0		-	-	-	-	0		-	-	-	-	0		-
% Pedestrians	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-
Bicycles on Crosswalk	-	-	-	-	0		-	-	-	-	0		-	-	-	-	0		-
% Bicycles on Crosswalk	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-

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

2. FM 407 at CJ Legacy Ranch Drive - TMC

Thu Mar 23, 2023
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)
All Movements
ID: 1048590, Location: 33.086445, -97.131205

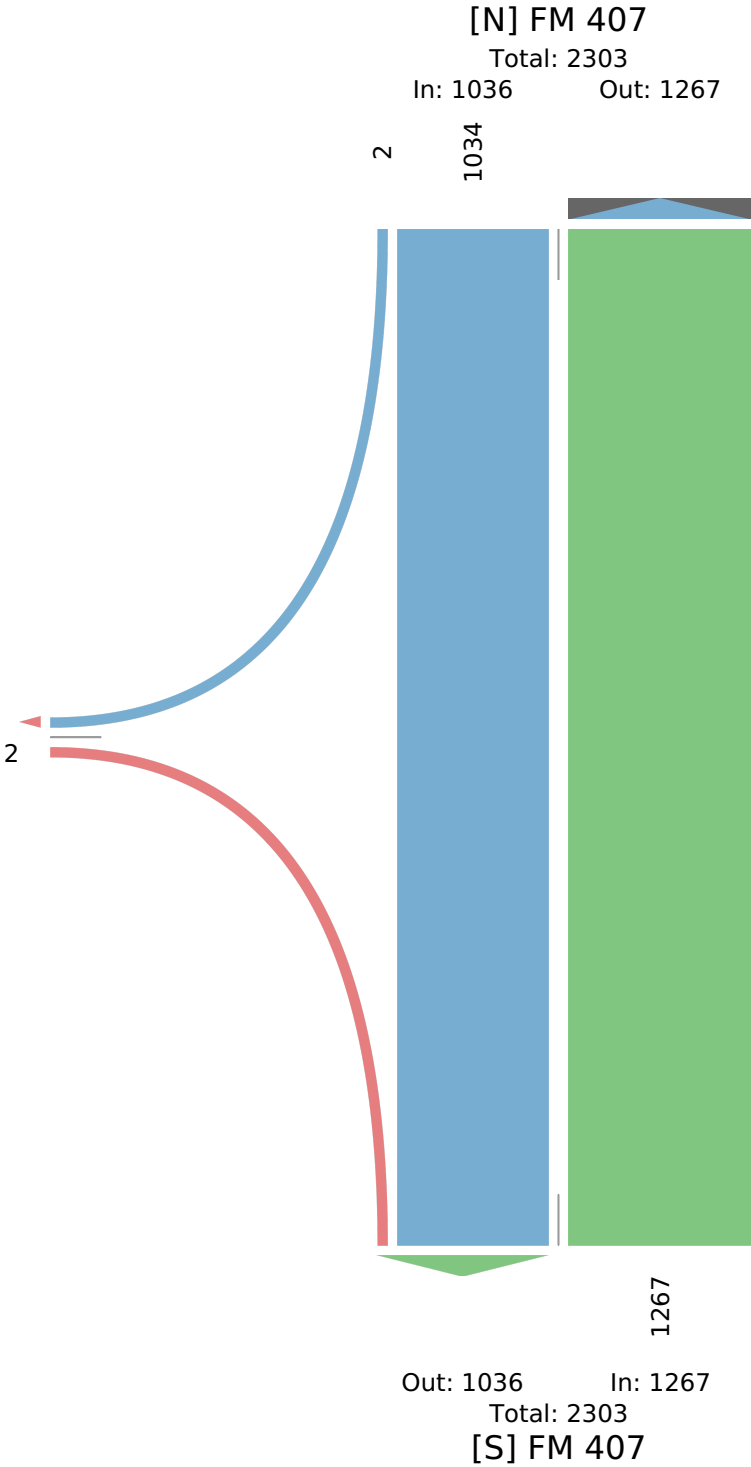
Item F2.

CJ Henson
Associates, Inc.

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

[W] CJ Legacy Ranch Drive

Total: 4
In: 2 Out: 2



3. FM 407 at IT Neely Drive - TMC

Thu Mar 23, 2023

Full Length (7 AM-9 AM, 3 PM-6 PM)

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

All Movements

ID: 1048591, Location: 33.090544, -97.131222

Item F2.

CJ Henson
Associates, Inc.

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

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

Leg Direction	FM 407 Northbound					FM 407 Southbound					IT Neely Drive Eastbound					
Time	T	L	U	App	Ped*	R	T	U	App	Ped*	R	L	U	App	Ped*	Int
2023-03-23 7:00AM	85	3	0	88	0	5	196	0	201	0	0	3	0	3	0	292
7:15AM	133	6	0	139	0	12	226	0	238	0	2	2	0	4	0	381
7:30AM	229	10	0	239	0	11	304	0	315	0	0	6	0	6	0	560
7:45AM	191	12	0	203	0	10	307	0	317	0	3	6	0	9	0	529
Hourly Total	638	31	0	669	0	38	1033	0	1071	0	5	17	0	22	0	1762
8:00AM	194	14	0	208	0	7	312	0	319	0	2	12	0	14	0	541
8:15AM	168	11	0	179	0	11	292	0	303	0	4	4	0	8	0	490
8:30AM	169	8	0	177	0	9	329	0	338	0	2	7	0	9	0	524
8:45AM	146	8	0	154	0	6	265	1	272	0	1	5	0	6	0	432
Hourly Total	677	41	0	718	0	33	1198	1	1232	0	9	28	0	37	0	1987
3:00PM	252	12	0	264	0	13	198	1	212	0	9	2	0	11	0	487
3:15PM	241	12	0	253	0	18	227	1	246	0	7	5	0	12	0	511
3:30PM	255	17	1	273	0	11	182	0	193	0	6	4	0	10	0	476
3:45PM	246	17	1	264	0	8	223	0	231	0	4	7	0	11	0	506
Hourly Total	994	58	2	1054	0	50	830	2	882	0	26	18	0	44	0	1980
4:00PM	234	12	0	246	0	9	210	1	220	0	3	6	0	9	0	475
4:15PM	250	11	0	261	0	13	233	3	249	0	8	2	0	10	0	520
4:30PM	261	14	0	275	0	16	251	2	269	0	11	8	0	19	0	563
4:45PM	324	14	1	339	0	15	249	0	264	0	5	4	0	9	0	612
Hourly Total	1069	51	1	1121	0	53	943	6	1002	0	27	20	0	47	0	2170
5:00PM	293	11	0	304	0	17	234	0	251	0	6	6	0	12	0	567
5:15PM	311	10	0	321	0	20	266	1	287	0	4	8	0	12	0	620
5:30PM	265	30	0	295	0	10	253	0	263	0	2	5	0	7	0	565
5:45PM	267	16	0	283	0	9	209	3	221	0	8	11	0	19	0	523
Hourly Total	1136	67	0	1203	0	56	962	4	1022	0	20	30	0	50	0	2275
Total	4514	248	3	4765	0	230	4966	13	5209	0	87	113	0	200	0	10174
% Approach	94.7%	5.2%	0.1%	-	-	4.4%	95.3%	0.2%	-	-	43.5%	56.5%	0%	-	-	-
% Total	44.4%	2.4%	0%	46.8%	-	2.3%	48.8%	0.1%	51.2%	-	0.9%	1.1%	0%	2.0%	-	-
Lights	4466	246	3	4715	-	227	4901	11	5139	-	86	111	0	197	-	10051
% Lights	98.9%	99.2%	100%	99.0%	-	98.7%	98.7%	84.6%	98.7%	-	98.9%	98.2%	0%	98.5%	-	98.8%
Articulated Trucks	13	1	0	14	-	1	15	0	16	-	0	1	0	1	-	31
% Articulated Trucks	0.3%	0.4%	0%	0.3%	-	0.4%	0.3%	0%	0.3%	-	0%	0.9%	0%	0.5%	-	0.3%
Buses and Single-Unit Trucks	35	1	0	36	-	2	50	2	54	-	1	1	0	2	-	92
% Buses and Single-Unit Trucks	0.8%	0.4%	0%	0.8%	-	0.9%	1.0%	15.4%	1.0%	-	1.1%	0.9%	0%	1.0%	-	0.9%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

3. FM 407 at IT Neely Drive - TMC

Thu Mar 23, 2023

Full Length (7 AM-9 AM, 3 PM-6 PM)

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

All Movements

ID: 1048591, Location: 33.090544, -97.131222

Item F2.

CJ Henson
Associates, Inc.

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

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

[N] FM 407

Total: 9849

In: 5209

Out: 4640

230

4966

13

[W] IT Neely Drive

Total: 678

In: 200 Out: 478

113
87



Out: 5056

In: 4765

Total: 9821

[S] FM 407

3
248

4514

3. FM 407 at IT Neely Drive - TMC

Thu Mar 23, 2023

AM Peak (7:30 AM - 8:30 AM)

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

All Movements

ID: 1048591, Location: 33.090544, -97.131222

Item F2.

CJ Henson
Associates, Inc.

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

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

Leg Direction	FM 407 Northbound					FM 407 Southbound					IT Neely Drive Eastbound					
Time	T	L	U	App	Ped*	R	T	U	App	Ped*	R	L	U	App	Ped*	Int
2023-03-23 7:30AM	229	10	0	239	0	11	304	0	315	0	0	6	0	6	0	560
7:45AM	191	12	0	203	0	10	307	0	317	0	3	6	0	9	0	529
8:00AM	194	14	0	208	0	7	312	0	319	0	2	12	0	14	0	541
8:15AM	168	11	0	179	0	11	292	0	303	0	4	4	0	8	0	490
Total	782	47	0	829	0	39	1215	0	1254	0	9	28	0	37	0	2120
% Approach	94.3%	5.7%	0%	-	-	3.1%	96.9%	0%	-	-	24.3%	75.7%	0%	-	-	-
% Total	36.9%	2.2%	0%	39.1%	-	1.8%	57.3%	0%	59.2%	-	0.4%	1.3%	0%	1.7%	-	-
PHF	0.854	0.839	-	0.867	-	0.886	0.974	-	0.983	-	0.563	0.583	-	0.661	-	0.946
Lights	766	46	0	812	-	39	1203	0	1242	-	9	27	0	36	-	2090
% Lights	98.0%	97.9%	0%	97.9%	-	100%	99.0%	0%	99.0%	-	100%	96.4%	0%	97.3%	-	98.6%
Articulated Trucks	2	1	0	3	-	0	3	0	3	-	0	1	0	1	-	7
% Articulated Trucks	0.3%	2.1%	0%	0.4%	-	0%	0.2%	0%	0.2%	-	0%	3.6%	0%	2.7%	-	0.3%
Buses and Single-Unit Trucks	14	0	0	14	-	0	9	0	9	-	0	0	0	0	-	23
% Buses and Single-Unit Trucks	1.8%	0%	0%	1.7%	-	0%	0.7%	0%	0.7%	-	0%	0%	0%	0%	-	1.1%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

3. FM 407 at IT Neely Drive - TMC

Thu Mar 23, 2023

AM Peak (7:30 AM - 8:30 AM)

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

All Movements

ID: 1048591, Location: 33.090544, -97.131222

Item F2.

CJ Henson
Associates, Inc.

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

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

[N] FM 407

Total: 2064

In: 1254

Out: 810

39

1215

[W] IT Neely Drive

Total: 123

In: 37 Out: 86

28
9

Out: 1224

In: 829

Total: 2053

[S] FM 407

47

782

3. FM 407 at IT Neely Drive - TMC

Thu Mar 23, 2023

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

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

All Movements

ID: 1048591, Location: 33.090544, -97.131222

Item F2.

CJ Henson
Associates, Inc.

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

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

Leg Direction	FM 407 Northbound					FM 407 Southbound					IT Neely Drive Eastbound					
Time	T	L	U	App	Ped*	R	T	U	App	Ped*	R	L	U	App	Ped*	Int
2023-03-23 4:45PM	324	14	1	339	0	15	249	0	264	0	5	4	0	9	0	612
5:00PM	293	11	0	304	0	17	234	0	251	0	6	6	0	12	0	567
5:15PM	311	10	0	321	0	20	266	1	287	0	4	8	0	12	0	620
5:30PM	265	30	0	295	0	10	253	0	263	0	2	5	0	7	0	565
Total	1193	65	1	1259	0	62	1002	1	1065	0	17	23	0	40	0	2364
% Approach	94.8%	5.2%	0.1%	-	-	5.8%	94.1%	0.1%	-	-	42.5%	57.5%	0%	-	-	-
% Total	50.5%	2.7%	0%	53.3%	-	2.6%	42.4%	0%	45.1%	-	0.7%	1.0%	0%	1.7%	-	-
PHF	0.921	0.542	0.250	0.928	-	0.775	0.942	0.250	0.928	-	0.708	0.719	-	0.833	-	0.953
Lights	1188	65	1	1254	-	62	992	1	1055	-	17	23	0	40	-	2349
% Lights	99.6%	100%	100%	99.6%	-	100%	99.0%	100%	99.1%	-	100%	100%	0%	100%	-	99.4%
Articulated Trucks	1	0	0	1	-	0	3	0	3	-	0	0	0	0	-	4
% Articulated Trucks	0.1%	0%	0%	0.1%	-	0%	0.3%	0%	0.3%	-	0%	0%	0%	0%	-	0.2%
Buses and Single-Unit Trucks	4	0	0	4	-	0	7	0	7	-	0	0	0	0	-	11
% Buses and Single-Unit Trucks	0.3%	0%	0%	0.3%	-	0%	0.7%	0%	0.7%	-	0%	0%	0%	0%	-	0.5%
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

3. FM 407 at IT Neely Drive - TMC

Thu Mar 23, 2023

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

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

All Movements

ID: 1048591, Location: 33.090544, -97.131222

Item F2.

CJ Henson
Associates, Inc.

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

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

[N] FM 407

Total: 2282

In: 1065

Out: 1217

62

1002

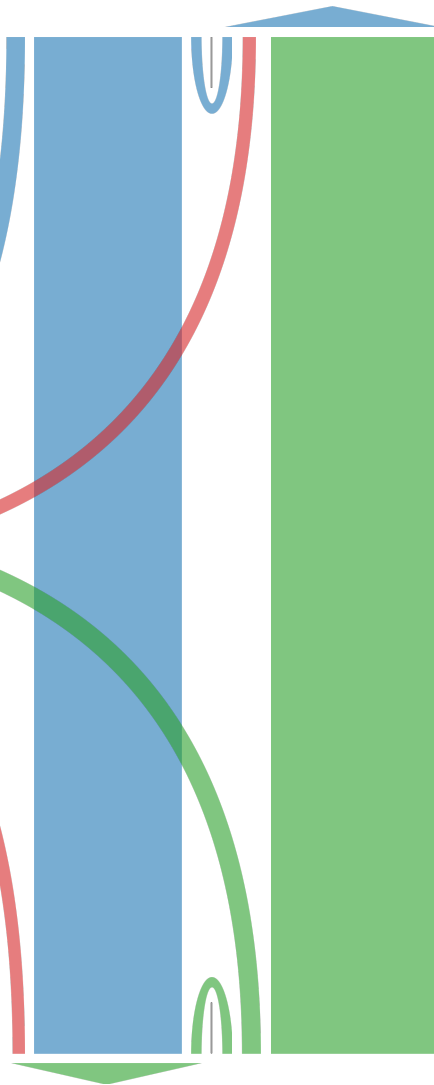
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[W] IT Neely Drive

Total: 167

In: 40 Out: 127

23
17



[S] FM 407

Total: 2279

Out: 1020

In: 1259

1
65

1193

4. FM 407 at McMakin Road - TMC

Tue Mar 28, 2023

Full Length (7 AM-9 AM, 3 PM-6 PM)

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

All Movements

ID: 1048592, Location: 33.077608, -97.130532

Item F2.

CJ Hensch & Associates, Inc.

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

Leg Direction	FM 407 Southbound						McMakin Road/Blanco Drive Westbound						FM 407 Northbound						McMakin Road Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2023-03-28 7:00AM	300	725	1	1	1027	0	5	10	12	0	27	0	2	343	31	0	376	0	26	4	173	0	203	0	1633
8:00AM	254	803	2	0	1059	0	5	14	18	0	37	0	7	424	31	0	462	0	37	10	238	0	285	0	1843
3:00PM	197	605	4	0	806	0	2	3	16	0	21	0	16	629	33	0	678	0	24	12	326	0	362	0	1867
4:00PM	210	668	2	0	880	0	2	8	12	0	22	0	14	725	52	1	792	0	29	9	371	0	409	0	2103
5:00PM	198	703	1	1	903	0	4	7	9	0	20	0	8	816	45	1	870	2	43	11	491	0	545	0	2338
Total	1159	3504	10	2	4675	0	18	42	67	0	127	0	47	2937	192	2	3178	2	159	46	1599	0	1804	0	9784
% Approach	24.8%	75.0%	0.2%	0%	-	-	14.2%	33.1%	52.8%	0%	-	-	1.5%	92.4%	6.0%	0.1%	-	-	8.8%	2.5%	88.6%	0%	-	-	-
% Total	11.8%	35.8%	0.1%	0%	47.8%	-	0.2%	0.4%	0.7%	0%	1.3%	-	0.5%	30.0%	2.0%	0%	32.5%	-	1.6%	0.5%	16.3%	0%	18.4%	-	-
Lights	1139	3456	10	2	4607	-	18	40	65	0	123	-	45	2904	192	2	3143	-	157	45	1589	0	1791	-	9664
% Lights	98.3%	98.6%	100%	100%	98.5%	-	100%	95.2%	97.0%	0%	96.9%	-	95.7%	98.9%	100%	100%	98.9%	-	98.7%	97.8%	99.4%	0%	99.3%	-	98.8%
Articulated Trucks	3	13	0	0	16	-	0	0	0	0	0	-	0	7	0	0	7	-	0	0	2	0	2	-	25
% Articulated Trucks	0.3%	0.4%	0%	0%	0.3%	-	0%	0%	0%	0%	0%	-	0%	0.2%	0%	0%	0.2%	-	0%	0%	0.1%	0%	0.1%	-	0.3%
Buses and Single-Unit Trucks	17	35	0	0	52	-	0	2	2	0	4	-	2	26	0	0	28	-	2	1	8	0	11	-	95
% Buses and Single-Unit Trucks	1.5%	1.0%	0%	0%	1.1%	-	0%	4.8%	3.0%	0%	3.1%	-	4.3%	0.9%	0%	0%	0.9%	-	1.3%	2.2%	0.5%	0%	0.6%	-	1.0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-

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

4. FM 407 at McMakin Road - TMC

Tue Mar 28, 2023

Full Length (7 AM-9 AM, 3 PM-6 PM)

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

All Movements

ID: 1048592, Location: 33.077608, -97.130532

Item F2.

CJ Henson
Associates, Inc.

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

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

[N] FM 407

Total: 9231

In: 4675

Out: 4556

1159

3504

10
2

[W] McMakin Road

Total: 3197
In: 1804 Out: 1393

1599
46
159

18
42
67

Out: 103 In: 127
Total: 230

[E] McMakin Road/Blanco Drive

1

2
192

2937

1
47

Out: 3732

In: 3178

Total: 6910

[S] FM 407

4. FM 407 at McMakin Road - TMC

Tue Mar 28, 2023

AM Peak (7:30 AM - 8:30 AM)

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

All Movements

ID: 1048592, Location: 33.077608, -97.130532

Item F2.

CJ Henschen
Associates, Inc.

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

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

Leg Direction	FM 407 Southbound						McMakin Road/Blanco Drive Westbound						FM 407 Northbound						McMakin Road Eastbound						
Time	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	Int
2023-03-28 7:30AM	90	171	1	0	262	0	2	3	11	0	16	0	0	99	11	0	110	0	8	2	54	0	64	0	452
7:45AM	83	237	0	0	320	0	2	2	0	0	4	0	2	103	12	0	117	0	8	1	55	0	64	0	505
8:00AM	84	189	2	0	275	0	2	3	4	0	9	0	2	106	8	0	116	0	7	4	76	0	87	0	487
8:15AM	58	203	0	0	261	0	1	4	3	0	8	0	3	119	11	0	133	0	7	4	52	0	63	0	465
Total	315	800	3	0	1118	0	7	12	18	0	37	0	7	427	42	0	476	0	30	11	237	0	278	0	1909
% Approach	28.2%	71.6%	0.3%	0%	-	-	18.9%	32.4%	48.6%	0%	-	-	1.5%	89.7%	8.8%	0%	-	-	10.8%	4.0%	85.3%	0%	-	-	-
% Total	16.5%	41.9%	0.2%	0%	58.6%	-	0.4%	0.6%	0.9%	0%	1.9%	-	0.4%	22.4%	2.2%	0%	24.9%	-	1.6%	0.6%	12.4%	0%	14.6%	-	-
PHF	0.875	0.844	0.375	-	0.873	-	0.875	0.750	0.409	-	0.578	-	0.583	0.897	0.875	-	0.895	-	0.938	0.688	0.780	-	0.799	-	0.945
Lights	313	789	3	0	1105	-	7	11	18	0	36	-	7	415	42	0	464	-	29	11	235	0	275	-	1880
% Lights	99.4%	98.6%	100%	0%	98.8%	-	100%	91.7%	100%	0%	97.3%	-	100%	97.2%	100%	0%	97.5%	-	96.7%	100%	99.2%	0%	98.9%	-	98.5%
Articulated Trucks	1	3	0	0	4	-	0	0	0	0	0	-	0	3	0	0	3	-	0	0	0	0	0	-	7
% Articulated Trucks	0.3%	0.4%	0%	0%	0.4%	-	0%	0%	0%	0%	0%	-	0%	0.7%	0%	0%	0.6%	-	0%	0%	0%	0%	0%	-	0.4%
Buses and Single-Unit Trucks	1	8	0	0	9	-	0	1	0	0	1	-	0	9	0	0	9	-	1	0	2	0	3	-	22
% Buses and Single-Unit Trucks	0.3%	1.0%	0%	0%	0.8%	-	0%	8.3%	0%	0%	2.7%	-	0%	2.1%	0%	0%	1.9%	-	3.3%	0%	0.8%	0%	1.1%	-	1.2%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

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

4. FM 407 at McMakin Road - TMC

Tue Mar 28, 2023

AM Peak (7:30 AM - 8:30 AM)

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

All Movements

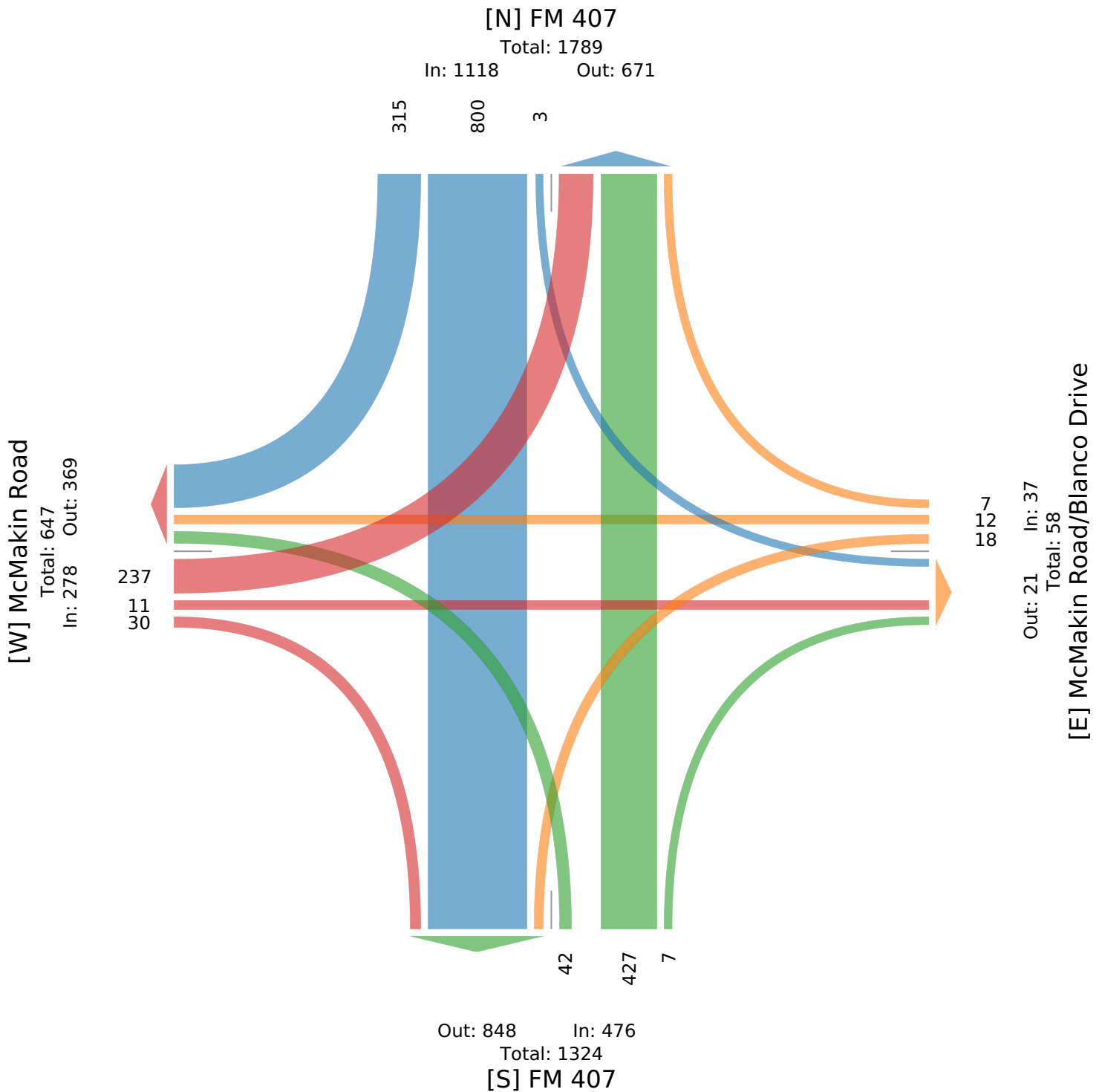
ID: 1048592, Location: 33.077608, -97.130532

Item F2.

CJ Henson
Associates, Inc.

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

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



4. FM 407 at McMakin Road - TMC

Tue Mar 28, 2023

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

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

All Movements

ID: 1048592, Location: 33.077608, -97.130532

Item F2.

CJ Hensch & Associates, Inc.

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

Leg Direction	FM 407 Southbound							McMakin Road/Blanco Drive Westbound							FM 407 Northbound							McMakin Road Eastbound							
Time	R	T	L	U	App	Ped*		R	T	L	U	App	Ped*		R	T	L	U	App	Ped*		R	T	L	U	App	Ped*		Int
2023-03-28 4:45PM	53	185	1	0	239	0		1	1	2	0	4	0		3	208	15	0	226	0		10	2	106	0	118	0		587
5:00PM	56	171	1	0	228	0		0	2	5	0	7	0		2	182	13	1	198	0		15	4	124	0	143	0		576
5:15PM	49	179	0	0	228	0		2	3	0	0	5	0		2	219	10	0	231	1		4	4	136	0	144	0		608
5:30PM	51	183	0	1	235	0		2	2	2	0	6	0		4	208	10	0	222	1		12	1	127	0	140	0		603
Total	209	718	2	1	930	0		5	8	9	0	22	0		11	817	48	1	877	2		41	11	493	0	545	0		2374
% Approach	22.5%	77.2%	0.2%	0.1%	-	-		22.7%	36.4%	40.9%	0%	-	-		1.3%	93.2%	5.5%	0.1%	-	-		7.5%	2.0%	90.5%	0%	-	-		-
% Total	8.8%	30.2%	0.1%	0%	39.2%	-		0.2%	0.3%	0.4%	0%	0.9%	-		0.5%	34.4%	2.0%	0%	36.9%	-		1.7%	0.5%	20.8%	0%	23.0%	-		-
PHF	0.933	0.970	0.500	0.250	0.973	-		0.625	0.667	0.450	-	0.786	-		0.688	0.933	0.800	0.250	0.949	-		0.683	0.688	0.906	-	0.946	-		0.976
Lights	207	709	2	1	919	-		5	8	8	0	21	-		10	814	48	1	873	-		41	10	492	0	543	-		2356
% Lights	99.0%	98.7%	100%	100%	98.8%	-		100%	100%	88.9%	0%	95.5%	-		90.9%	99.6%	100%	100%	99.5%	-		100%	90.9%	99.8%	0%	99.6%	-		99.2%
Articulated Trucks	0	1	0	0	1	-		0	0	0	0	0	-		0	0	0	0	0	-		0	0	0	0	0	-		1
% Articulated Trucks	0%	0.1%	0%	0%	0.1%	-		0%	0%	0%	0%	0%	-		0%	0%	0%	0%	0%	-		0%	0%	0%	0%	0%	-		0%
Buses and Single-Unit Trucks	2	8	0	0	10	-		0	0	1	0	1	-		1	3	0	0	4	-		0	1	1	0	2	-		17
% Buses and Single-Unit Trucks	1.0%	1.1%	0%	0%	1.1%	-		0%	0%	11.1%	0%	4.5%	-		9.1%	0.4%	0%	0%	0.5%	-		0%	9.1%	0.2%	0%	0.4%	-		0.7%
Pedestrians	-	-	-	-	-	0		-	-	-	-	-	0		-	-	-	-	-	0		-	-	-	-	-	0		-
% Pedestrians	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-	0%		-	-	-	-	-	-		-
Bicycles on Crosswalk	-	-	-	-	-	0		-	-	-	-	-	0		-	-	-	-	-	2		-	-	-	-	-	0		-
% Bicycles on Crosswalk	-	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-	100%		-	-	-	-	-	-		-

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

4. FM 407 at McMakin Road - TMC

Tue Mar 28, 2023

PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour

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

All Movements

ID: 1048592, Location: 33.077608, -97.130532

Item F2.

CJ Henson
Associates, Inc.

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

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

[N] FM 407

Total: 2246

In: 930

Out: 1316

209

718

21

[W] McMakin Road

Total: 810

In: 545

Out: 265

493

11
41

1000

Out: 24

In: 22

Total: 46

[E] McMakin Road/Blanco Drive

1

1

48

817

1

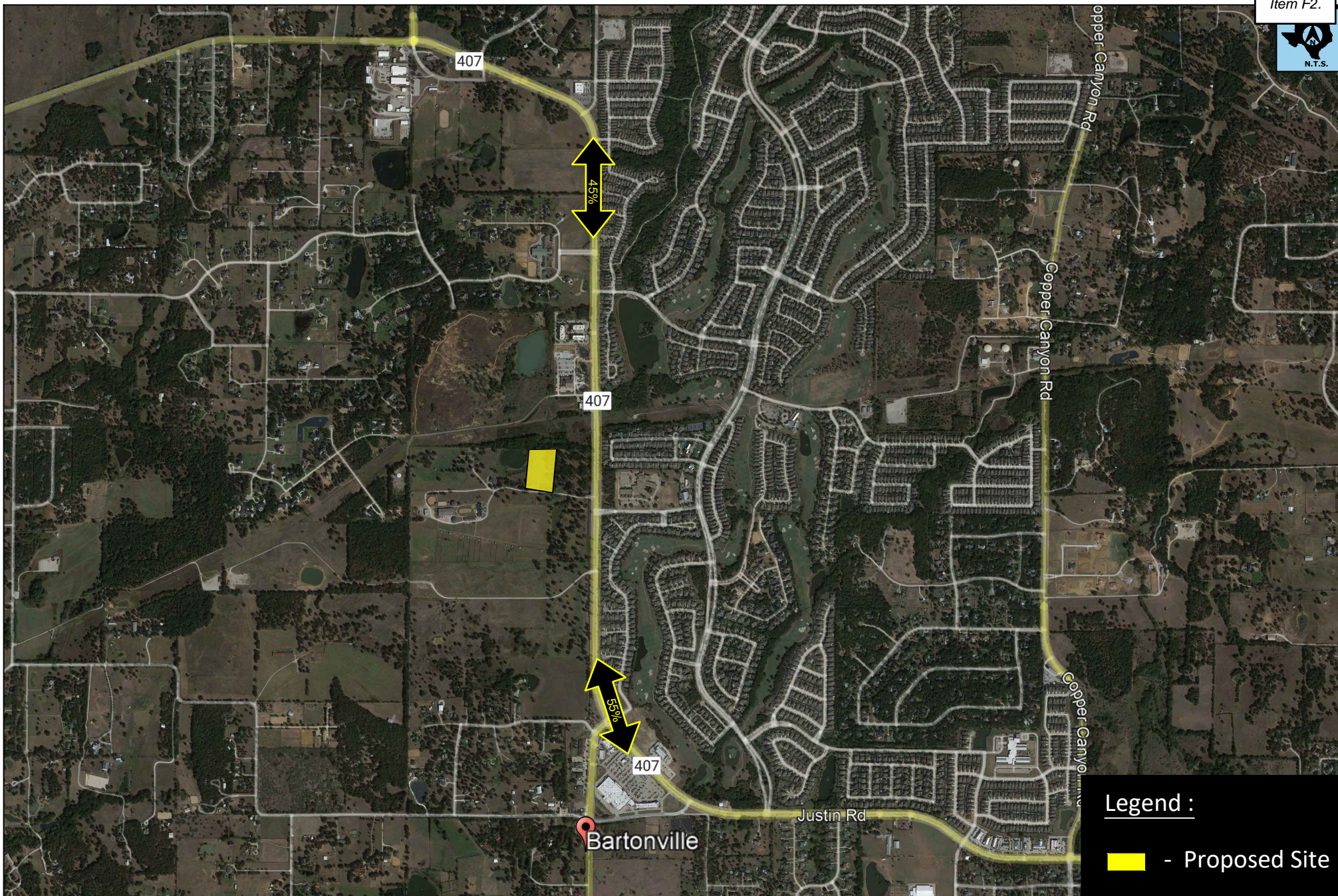
Out: 769

In: 877

Total: 1646

[S] FM 407

Appendix C. Site-Generated Traffic Supplement



Legend :

- Proposed Site

GLOBAL DISTRIBUTION - WEEKDAY

TIA for Bartonville ELTS School in Bartonville, Texas

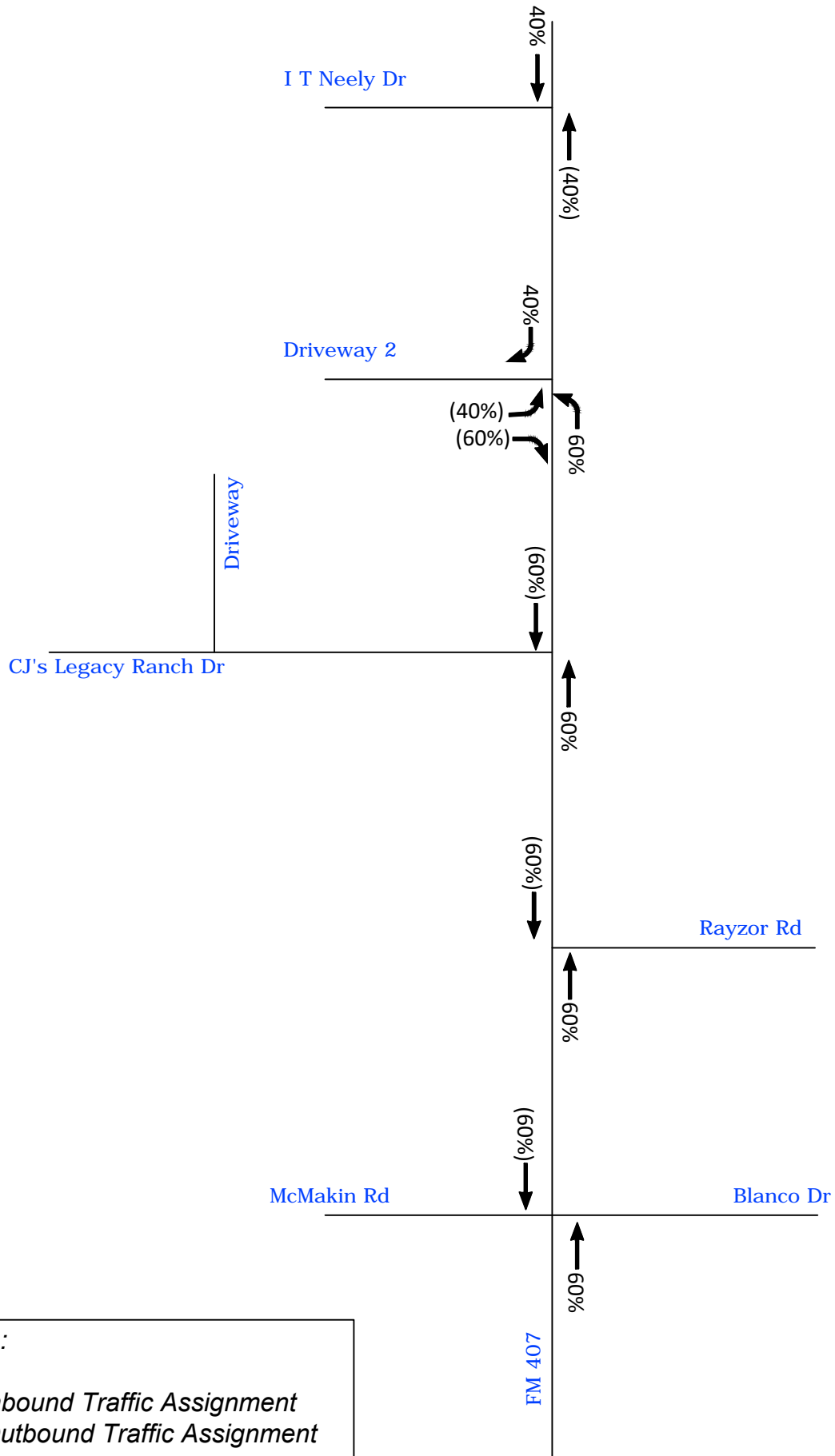
DGI PROJECT #:23031

DATE : APR.2023

PREPARED BY: RD

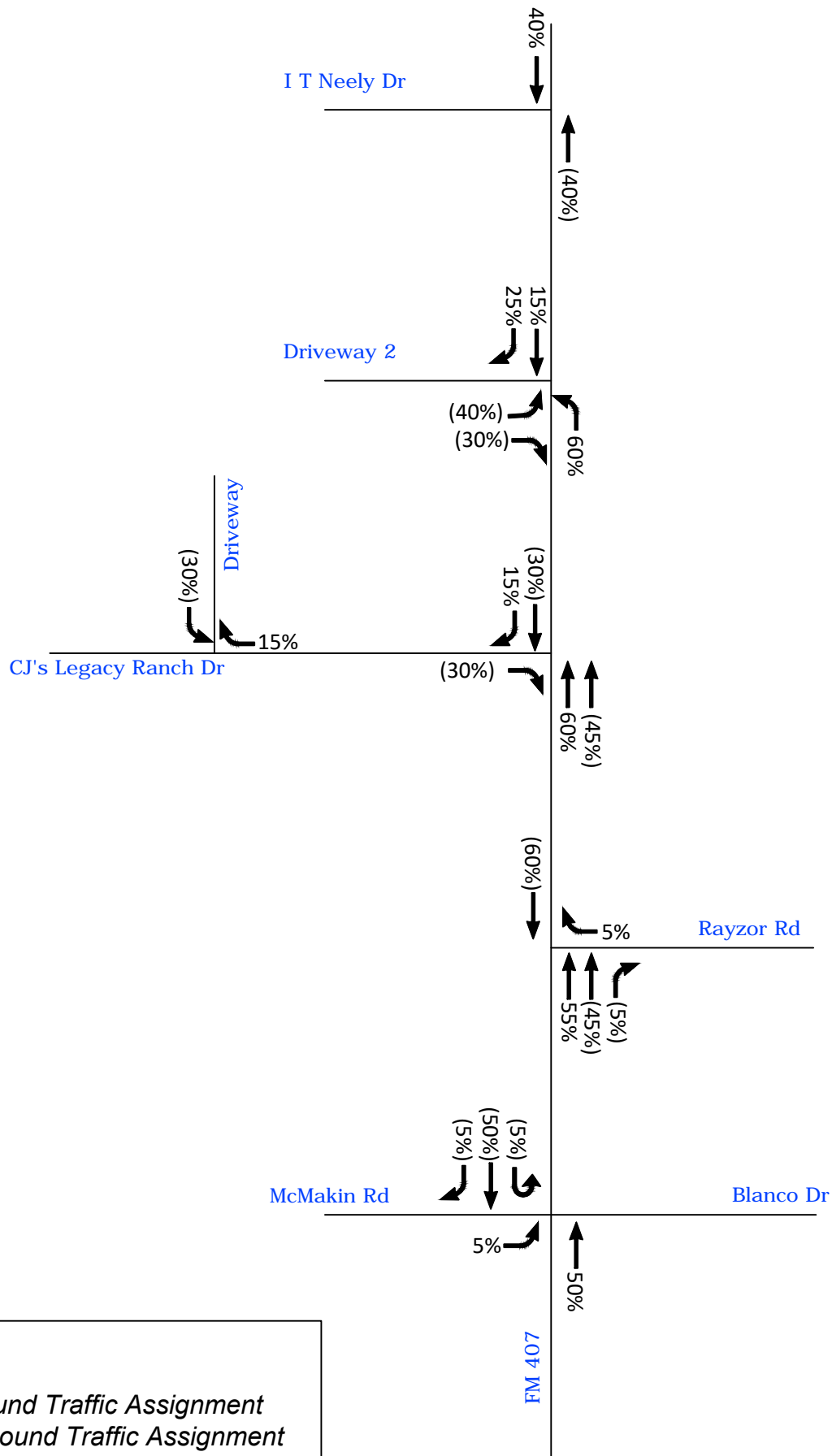
EXHIBIT

134



Legend :

XX - Inbound Traffic Assignment
(XX) - Outbound Traffic Assignment



Legend :

XX - Inbound Traffic Assignment
(XX) - Outbound Traffic Assignment

Appendix D. Detailed Intersection Capacity Analysis Results

Timings
5: FM 407 & McMakin Rd/Blanco Dr

2023 Existing
Timing Plan: AM

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↗	↘		↖↗		↖	↗	↘	↖↗	↘	↖	
Traffic Volume (vph)	237	11	30	18	12	7	42	427	7	3	800	315	
Future Volume (vph)	237	11	30	18	12	7	42	427	7	3	800	315	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		0	0		0	175		200	175		175	
Storage Lanes	1		1	0		0	1		1	1		1	
Taper Length (ft)	25			25			170			100			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Frt			0.850		0.973				0.850			0.850	
Flt Protected	0.950				0.976		0.950			0.950			
Satd. Flow (prot)	1770	1863	1583	0	3361	0	1770	3539	1583	1770	3539	1583	
Flt Permitted	0.488				0.928		0.287			0.490			
Satd. Flow (perm)	909	1863	1583	0	3196	0	535	3539	1583	913	3539	1583	
Right Turn on Red			Yes		Yes			Yes			Yes		
Satd. Flow (RTOR)			73		7			127			335		
Link Speed (mph)	30				25			50			50		
Link Distance (ft)	180				124			512			2145		
Travel Time (s)	4.1				3.4			7.0			29.3		
Lane Group Flow (vph)	252	12	32	0	39	0	45	454	7	3	851	335	
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	7	4			8		5	2		1	6		
Permitted Phases	4		4	8			2		2	6		6	
Detector Phase	7	4	4	8	8		5	2	2	1	6	6	
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	45.0	45.0	9.5	45.0	45.0	
Total Split (s)	7.5	40.5	40.5	33.0	33.0		7.5	42.0	42.0	7.5	42.0	42.0	
Total Split (%)	8.3%	45.0%	45.0%	36.7%	36.7%		8.3%	46.7%	46.7%	8.3%	46.7%	46.7%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5		4.5		4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max	
Act Effct Green (s)	10.4	10.4	10.4		6.2		43.0	42.4	42.4	41.3	39.6	39.6	
Actuated g/C Ratio	0.16	0.16	0.16		0.10		0.68	0.67	0.67	0.65	0.63	0.63	
v/c Ratio	1.22	0.04	0.10		0.12		0.11	0.19	0.01	0.00	0.38	0.30	
Control Delay	164.1	21.9	1.9		25.1		4.6	5.2	0.0	4.3	7.9	1.8	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	164.1	21.9	1.9		25.1		4.6	5.2	0.0	4.3	7.9	1.8	
LOS	F	C	A		C		A	A	A	A	A	A	
Approach Delay		140.8			25.1			5.1			6.2		
Approach LOS		F			C			A			A		
Queue Length 50th (ft)	-113	4	0		6		5	31	0	0	98	0	
Queue Length 95th (ft)	#253	16	5		20		15	72	0	3	143	32	
Internal Link Dist (ft)		100			44			432			2065		
Turn Bay Length (ft)							175		200	175		175	
Base Capacity (vph)	206	1071	941		1459		422	2372	1103	636	2215	1116	

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PMA

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Timings
5: FM 407 & McMakin Rd/Blanco Dr

2023 Existing
Timing Plan: AM

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	0	
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	0	
Reduced v/c Ratio	1.22	0.01	0.03		0.03		0.11	0.19	0.01	0.00	0.38	0.30	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 63.3

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.22

Intersection Signal Delay: 25.9

Intersection LOS: C

Intersection Capacity Utilization 57.3%

ICU Level of Service B

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: 5: FM 407 & McMakin Rd/Blanco Dr








TIA Study for Bartonville ELTS School in Bartonville, Texas
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HCM 6th TWSC
1: FM 407 & I T Neely Dr

2023 Existing
Timing Plan: AM

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	28	9	47	782	1215	39
Future Vol, veh/h	28	9	47	782	1215	39
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	-	280	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	29	9	49	823	1279	41




Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1789	640	1320	0	-	0
Stage 1	1279	-	-	-	-	-
Stage 2	510	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.16	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.23	-	-	-
Pot Cap-1 Maneuver	72	418	514	-	-	-
Stage 1	225	-	-	-	-	-
Stage 2	568	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	65	418	514	-	-	-
Mov Cap-2 Maneuver	65	-	-	-	-	-
Stage 1	204	-	-	-	-	-
Stage 2	568	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	83.5	0.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	514	-	82	-	-
HCM Lane V/C Ratio	0.096	-	0.475	-	-
HCM Control Delay (s)	12.7	-	83.5	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.3	-	2	-	-

HCM 6th TWSC
2: CJ Legacy Ranch Dr & FM 407

2023 Existing
Timing Plan: AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	827	1236	0
Future Vol, veh/h	0	1	0	827	1236	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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	1	0	889	1329	0




Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	665	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	403	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	403	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	403	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s)	-	14	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

HCM 6th TWSC
3: CJ Legacy Ranch Dr & Driveway

2023 Existing
Timing Plan: AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	0	0	0
Future Vol, veh/h	0	1	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	0	0	0








Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1622	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	-	1021
Mov Cap-2 Maneuver	-	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 6th TWSC
4: FM 407 & Rayzor Rd

2023 Existing
Timing Plan: AM

Intersection							
Int Delay, s/veh	1.6						
Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Vol, veh/h	30	120	689	10	4	50	1187
Future Vol, veh/h	30	120	689	10	4	50	1187
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	0	-	180	-	225	-
Veh in Median Storage, #	0	-	0	-	-	-	0
Grade, %	0	-	0	-	-	-	0
Peak Hour Factor	97	97	97	97	92	97	97
Heavy Vehicles, %	2	2	2	2	2	3	3
Mvmt Flow	31	124	710	10	4	52	1224

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1434	355	0	0	710	720
Stage 1	710	-	-	-	-	-
Stage 2	724	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	6.44	4.16
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.52	2.23
Pot Cap-1 Maneuver	125	641	-	-	509	871
Stage 1	448	-	-	-	-	-
Stage 2	441	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	116	641	-	-	802	802
Mov Cap-2 Maneuver	116	-	-	-	-	-
Stage 1	448	-	-	-	-	-
Stage 2	410	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	116	641	802	-
HCM Lane V/C Ratio	-	-	0.267	0.193	0.07	-
HCM Control Delay (s)	-	-	47	12	9.8	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	1	0.7	0.2	-

HCM 6th TWSC
6: FM 407 & Driveway 2

2023 Existing
Timing Plan: AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↕↕	↕↕	
Traffic Vol, veh/h	0	0	0	827	1236	0
Future Vol, veh/h	0	0	0	827	1236	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	0	0	0	899	1343	0
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1793	672	1343	0	-	0
Stage 1	1343	-	-	-	-	-
Stage 2	450	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	72	398	509	-	-	-
Stage 1	208	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	72	398	509	-	-	-
Mov Cap-2 Maneuver	72	-	-	-	-	-
Stage 1	208	-	-	-	-	-
Stage 2	609	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	509	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	0	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Timings
5: FM 407 & McMakin Rd/Blanco Dr

2023 Existing
Timing Plan: PM

	↖	→	↘	↙	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBR	SBL	SBR
Lane Configurations	↖	↗	↘	↙	↖	↗	↖	↗	↘	↙	↖	↗	↘
Traffic Volume (vph)	493	11	41	9	8	5	1	48	817	11	1	2	2
Future Volume (vph)	493	11	41	9	8	5	1	48	817	11	1	2	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0		175		200		175	
Storage Lanes	1		1	0		0		1		1		1	
Taper Length (ft)	25			25				170				100	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	0.95	1.00	0.95	1.00	
Frt			0.850			0.966				0.850			
Flt Protected	0.950				0.980			0.950				0.950	
Satd. Flow (prot)	1770	1863	1583	0	3351	0	0	1770	3539	1583	0	1770	
Flt Permitted	0.588				0.955			0.306				0.295	
Satd. Flow (perm)	1095	1863	1583	0	3265	0	0	570	3539	1583	0	550	
Right Turn on Red			Yes		Yes			Yes		Yes			
Satd. Flow (RTOR)			73		5			127		127			
Link Speed (mph)	30				25			50					
Link Distance (ft)	180				124			512					
Travel Time (s)	4.1				3.4			7.0					
Lane Group Flow (vph)	503	11	42	0	22	0	0	834	11	0	3		
Turn Type	pm+pt	NA	Perm	Perm	NA	custom	pm+pt	NA	Perm	custom	pm+pt		
Protected Phases	7	4			8			5	2			1	
Permitted Phases	4		4	8			5	2		2	1	6	
Detector Phase	7	4	4	8	8		5	5	2	2	1	1	
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	9.5	45.0	45.0	9.5	9.5	
Total Split (s)	20.0	35.0	35.0	15.0	15.0		10.0	10.0	45.0	45.0	10.0	10.0	
Total Split (%)	22.2%	38.9%	38.9%	16.7%	16.7%		11.1%	11.1%	50.0%	50.0%	11.1%	11.1%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0			0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.5	4.5	4.5		4.5			4.5	4.5	4.5		4.5	
Lead/Lag	Lead			Lag	Lag		Lead	Lead	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None		None	None	Max	Max	None	None	
Act Effct Green (s)	19.7	19.7	19.7		6.1			45.9	44.9	44.9		44.2	
Actuated g/C Ratio	0.26	0.26	0.26		0.08			0.61	0.59	0.59		0.59	
v/c Ratio	1.18	0.02	0.09		0.08			0.11	0.40	0.01		0.01	
Control Delay	131.6	21.4	2.6		31.4			7.4	10.2	0.0		7.3	
Queue Delay	0.0	0.0	0.0		0.0			0.0	0.0	0.0		0.0	
Total Delay	131.6	21.4	2.6		31.4			7.4	10.2	0.0		7.3	
LOS	F	C	A		C			A	B	A		A	
Approach Delay	119.7				31.4			9.9					
Approach LOS	F				C			A					
Queue Length 50th (ft)	-316	4	0		4			7	73	0		1	
Queue Length 95th (ft)	#499	16	10		16			25	211	0		4	
Internal Link Dist (ft)		100			44				432				
Turn Bay Length (ft)								175		200		175	
Base Capacity (vph)	426	764	693		465			435	2106	993		412	

TIA Study for Bartonville ELTS School in Bartonville, Texas
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Page 1

Timings
5: FM 407 & McMakin Rd/Blanco Dr

2023 Existing
Timing Plan: PM

	↓	↘
Lane Group	SBT	SBR
Lane Configurations	↘	↘
Traffic Volume (vph)	718	209
Future Volume (vph)	718	209
Ideal Flow (vphpl)	1900	1900
Storage Length (ft)		175
Storage Lanes		1
Taper Length (ft)		
Lane Util. Factor	0.95	1.00
Frt		0.850
Flt Protected		
Satd. Flow (prot)	3539	1583
Flt Permitted		
Satd. Flow (perm)	3539	1583
Right Turn on Red		Yes
Satd. Flow (RTOR)		213
Link Speed (mph)	50	
Link Distance (ft)	2145	
Travel Time (s)	29.3	
Lane Group Flow (vph)	733	213
Turn Type	NA	Perm
Protected Phases	6	
Permitted Phases		6
Detector Phase	6	6
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	45.0	45.0
Total Split (s)	45.0	45.0
Total Split (%)	50.0%	50.0%
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.5	4.5
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Max	Max
Act Effct Green (s)	41.2	41.2
Actuated g/C Ratio	0.55	0.55
v/c Ratio	0.38	0.22
Control Delay	12.3	2.7
Queue Delay	0.0	0.0
Total Delay	12.3	2.7
LOS	B	A
Approach Delay	10.1	
Approach LOS	B	
Queue Length 50th (ft)	96	0
Queue Length 95th (ft)	181	35
Internal Link Dist (ft)	2065	
Turn Bay Length (ft)		175
Base Capacity (vph)	1929	959

TIA Study for Bartonville ELTS School in Bartonville, Texas
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Synchro 11 Report
Page 2

Timings

5: FM 407 & McMakin Rd/Blanco Dr

2023 Existing

Timing Plan: PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Starvation Cap Reductn	0	0	0		0			0	0	0		0
Spillback Cap Reductn	0	0	0		0			0	0	0		0
Storage Cap Reductn	0	0	0		0			0	0	0		0
Reduced v/c Ratio	1.18	0.01	0.06		0.05			0.11	0.40	0.01		0.01

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	75.5
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.18
Intersection Signal Delay:	35.4
Intersection Capacity Utilization	72.0%
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: 5: FM 407 & McMakin Rd/Blanco Dr



 Ø1	 Ø2	 Ø4
40 s	45 s	35 s
 Ø5	 Ø6	 Ø7
40 s	45 s	20 s
		 Ø8
		15 s

Timings

5: FM 407 & McMakin Rd/Blanco Dr

2023 Existing

Timing Plan: PM

		
Lane Group	SBT	SBR
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.38	0.22

Intersection Summary	
----------------------	--

HCM 6th TWSC
1: FM 407 & I T Neely Dr

2023 Existing
Timing Plan: PM

Intersection								
Int Delay, s/veh	1.5							
Movement	EBL	EBR	NBU	NBL	NBT	SBU	SBT	SBR
Lane Configurations	↵			↵	↕		↕	↵
Traffic Vol, veh/h	23	17	1	65	1193	1	1002	62
Future Vol, veh/h	23	17	1	65	1193	1	1002	62
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	None	-	-	None	-	-	None
Storage Length	0	-	-	280	-	-	-	300
Veh in Median Storage, #	0	-	-	-	0	-	0	-
Grade, %	0	-	-	-	0	-	0	-
Peak Hour Factor	95	95	92	95	95	92	95	95
Heavy Vehicles, %	2	2	2	3	3	2	3	3
Mvmt Flow	24	18	1	68	1256	1	1055	65

Major/Minor	Minor2	Major1	Major2				
Conflicting Flow All	1823	528	1055	1120	0	1256	- 0
Stage 1	1057	-	-	-	-	-	-
Stage 2	766	-	-	-	-	-	-
Critical Hdwy	6.84	6.94	6.44	4.16	-	6.44	- -
Critical Hdwy Stg 1	5.84	-	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.52	2.23	-	2.52	- -
Pot Cap-1 Maneuver	69	495	306	614	-	227	- -
Stage 1	295	-	-	-	-	-	-
Stage 2	419	-	-	-	-	-	-
Platoon blocked, %					-	-	-
Mov Cap-1 Maneuver	60	495	604	604	-	227	- -
Mov Cap-2 Maneuver	60	-	-	-	-	-	-
Stage 1	261	-	-	-	-	-	-
Stage 2	414	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	69	0.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	604	-	96	-	-
HCM Lane V/C Ratio	0.115	-	0.439	-	-
HCM Control Delay (s)	11.7	-	69	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.4	-	1.8	-	-

HCM 6th TWSC
2: CJ Legacy Ranch Dr & FM 407

2023 Existing
Timing Plan: PM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↵		↕	↕	↵
Traffic Vol, veh/h	0	2	0	1267	1034	2
Future Vol, veh/h	0	2	0	1267	1034	2
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	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	2	0	1280	1044	2




Major/Minor	Minor2	Major1	Major2				
Conflicting Flow All	-	523	-	0	-	0	
Stage 1	-	-	-	-	-	-	
Stage 2	-	-	-	-	-	-	
Critical Hdwy	-	6.94	-	-	-	-	
Critical Hdwy Stg 1	-	-	-	-	-	-	
Critical Hdwy Stg 2	-	-	-	-	-	-	
Follow-up Hdwy	-	3.32	-	-	-	-	
Pot Cap-1 Maneuver	0	499	0	-	-	-	
Stage 1	0	-	0	-	-	-	
Stage 2	0	-	0	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	-	499	-	-	-	-	
Mov Cap-2 Maneuver	-	-	-	-	-	-	
Stage 1	-	-	-	-	-	-	
Stage 2	-	-	-	-	-	-	

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	499	-	-
HCM Lane V/C Ratio	-	0.004	-	-
HCM Control Delay (s)	-	12.2	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

HCM 6th TWSC
3: CJ Legacy Ranch Dr & Driveway

2023 Existing
Timing Plan: PM

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








Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	3
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	2
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1622	-	-	-	1019
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1021
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	-	1019
Mov Cap-2 Maneuver	-	-	-	-	1019
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1021

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 6th TWSC
4: FM 407 & Rayzor Rd

2023 Existing
Timing Plan: PM

Intersection							
Int Delay, s/veh	1.8						
Movement	WBL	WBR	NBT	NBR	SBU	SBL	SBT
Lane Configurations							
Traffic Vol, veh/h	21	60	1192	45	9	51	1001
Future Vol, veh/h	21	60	1192	45	9	51	1001
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	0	-	180	-	225	-
Veh in Median Storage, #	0	-	0	-	-	-	0
Grade, %	0	-	0	-	-	-	0
Peak Hour Factor	95	95	95	95	92	95	95
Heavy Vehicles, %	2	2	2	2	2	3	3
Mvmt Flow	22	63	1255	47	10	54	1054

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1910	628	0	0	1255
Stage 1	1255	-	-	-	-
Stage 2	655	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	6.44
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.52
Pot Cap-1 Maneuver	60	426	-	-	227
Stage 1	232	-	-	-	-
Stage 2	479	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	51	426	-	-	415
Mov Cap-2 Maneuver	51	-	-	-	-
Stage 1	232	-	-	-	-
Stage 2	406	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	42.5	0	0.9
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	51	426	415	-
HCM Lane V/C Ratio	-	-	0.433	0.148	0.153	-
HCM Control Delay (s)	-	-	121.4	14.9	15.2	-
HCM Lane LOS	-	-	F	B	C	-
HCM 95th %tile Q(veh)	-	-	1.6	0.5	0.5	-

HCM 6th TWSC
6: FM 407

2023 Existing
Timing Plan: PM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Vol, veh/h	0	0	0	1267	1034	0
Future Vol, veh/h	0	0	0	1267	1034	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	0	0	0	1377	1124	0
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1813	562	1124	0	-	0
Stage 1	1124	-	-	-	-	-
Stage 2	689	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	70	470	617	-	-	-
Stage 1	272	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	70	470	617	-	-	-
Mov Cap-2 Maneuver	70	-	-	-	-	-
Stage 1	272	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	617	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	0	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Timings
5: FM 407 & McMakin Rd/Blanco Dr

2024 Background
Timing Plan: AM

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↗	↘	↙	↖	↗	↘	↙	↖	↗	↘	↙	
Traffic Volume (vph)	242	11	31	18	12	7	43	436	7	3	816	321	
Future Volume (vph)	242	11	31	18	12	7	43	436	7	3	816	321	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		0	0		0	175		200	175		175	
Storage Lanes	1		1	0		0	1		1	1		1	
Taper Length (ft)	25			25			170			100			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Frt			0.850		0.973				0.850			0.850	
Flt Protected	0.950				0.976		0.950			0.950			
Satd. Flow (prot)	1770	1863	1583	0	3361	0	1770	3539	1583	1770	3539	1583	
Flt Permitted	0.488				0.928		0.280			0.485			
Satd. Flow (perm)	909	1863	1583	0	3196	0	522	3539	1583	903	3539	1583	
Right Turn on Red			Yes		Yes			Yes			Yes		
Satd. Flow (RTOR)			73		7			127			341		
Link Speed (mph)	30				25			50			50		
Link Distance (ft)	180				124			512			2145		
Travel Time (s)	4.1				3.4			7.0			29.3		
Lane Group Flow (vph)	257	12	33	0	39	0	46	464	7	3	868	341	
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	7	4			8		5	2		1	6		
Permitted Phases	4		4	8			2		2	6		6	
Detector Phase	7	4	4	8	8		5	2	2	1	6	6	
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	45.0	45.0	9.5	45.0	45.0	
Total Split (s)	7.5	40.5	40.5	33.0	33.0		7.5	42.0	42.0	7.5	42.0	42.0	
Total Split (%)	8.3%	45.0%	45.0%	36.7%	36.7%		8.3%	46.7%	46.7%	8.3%	46.7%	46.7%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5		4.5		4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max	
Act Effect Green (s)	10.4	10.4	10.4		6.2		42.9	42.3	42.3	41.2	39.5	39.5	
Actuated g/C Ratio	0.16	0.16	0.16		0.10		0.68	0.67	0.67	0.65	0.62	0.62	
v/c Ratio	1.25	0.04	0.10		0.12		0.11	0.20	0.01	0.00	0.39	0.31	
Control Delay	172.2	21.9	2.2		25.1		4.7	5.3	0.0	4.3	8.0	1.8	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	172.2	21.9	2.2		25.1		4.7	5.3	0.0	4.3	8.0	1.8	
LOS	F	C	A		C		A	A	A	A	A	A	
Approach Delay	147.6				25.1		5.1			6.2			
Approach LOS	F				C		A			A			
Queue Length 50th (ft)	-118	4	0		6		5	32	0	0	101	0	
Queue Length 95th (ft)	#258	16	6		20		15	73	0	3	147	32	
Internal Link Dist (ft)		100			44			432			2065		
Turn Bay Length (ft)							175		200	175		175	
Base Capacity (vph)	206	1073	943		1462		413	2370	1102	630	2213	1117	

TIA Study for Bartonville ELTS School in Bartonville, Texas
PMA

Synchro 11 Report
Page 1

Timings
5: FM 407 & McMakin Rd/Blanco Dr

2024 Background
Timing Plan: AM

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	0	0
Reduced v/c Ratio	1.25	0.01	0.03		0.03		0.11	0.20	0.01	0.00	0.39	0.31	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 63.2

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.25

Intersection Signal Delay: 27.0

Intersection LOS: C

Intersection Capacity Utilization 58.0%

ICU Level of Service B

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: 5: FM 407 & McMakin Rd/Blanco Dr








TIA Study for Bartonville ELTS School in Bartonville, Texas
PMA

Synchro 11 Report
Page 2

HCM 6th TWSC
1: FM 407 & I T Neely Dr

2024 Background
Timing Plan: AM

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	29	9	48	798	1239	40
Future Vol, veh/h	29	9	48	798	1239	40
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	-	280	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	31	9	51	840	1304	42




Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1826	652	1346	0	-	0
Stage 1	1304	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.16	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.23	-	-	-
Pot Cap-1 Maneuver	68	411	502	-	-	-
Stage 1	218	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	61	411	502	-	-	-
Mov Cap-2 Maneuver	61	-	-	-	-	-
Stage 1	196	-	-	-	-	-
Stage 2	560	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	96	0.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	502	-	76	-	-
HCM Lane V/C Ratio	0.101	-	0.526	-	-
HCM Control Delay (s)	13	-	96	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.3	-	2.2	-	-

HCM 6th TWSC
2: CJ Legacy Ranch Dr & FM 407

2024 Background
Timing Plan: AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	844	1261	0
Future Vol, veh/h	0	1	0	844	1261	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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	1	0	908	1356	0




Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	678	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	395	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	395	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	395	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s)	-	14.1	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

HCM 6th TWSC
3: CJ Legacy Ranch Dr & Driveway

2024 Background
Timing Plan: AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	0	0	0
Future Vol, veh/h	0	1	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	0	0	0







Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1622	-	-	1021	1084
Stage 1	-	-	-	1022	-
Stage 2	-	-	-	1022	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	1021	1084
Mov Cap-2 Maneuver	-	-	-	1021	-
Stage 1	-	-	-	1022	-
Stage 2	-	-	-	1022	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 6th TWSC
4: FM 407 & Rayzor Rd

2024 Background
Timing Plan: AM

Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	122	703	10	51	1211
Future Vol, veh/h	31	122	703	10	51	1211
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	180	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	32	126	725	10	53	1248

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1455	363	0	0	735
Stage 1	725	-	-	-	-
Stage 2	730	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.16
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.23
Pot Cap-1 Maneuver	121	634	-	-	860
Stage 1	440	-	-	-	-
Stage 2	438	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	113	634	-	-	860
Mov Cap-2 Maneuver	113	-	-	-	-
Stage 1	440	-	-	-	-
Stage 2	411	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.6	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	113	634	860	-
HCM Lane V/C Ratio	-	-	0.283	0.198	0.061	-
HCM Control Delay (s)	-	-	49	12.1	9.5	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	1.1	0.7	0.2	-

























HCM 6th TWSC
6: FM 407 & Driveway 2

2024 Background
Timing Plan: AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	🚗			🚗🚗	🚗🚗	
Traffic Vol, veh/h	0	0	0	844	1261	0
Future Vol, veh/h	0	0	0	844	1261	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	0	0	0	917	1371	0
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1830	686	1371	0	-	0
Stage 1	1371	-	-	-	-	-
Stage 2	459	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	68	390	497	-	-	-
Stage 1	201	-	-	-	-	-
Stage 2	603	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	68	390	497	-	-	-
Mov Cap-2 Maneuver	68	-	-	-	-	-
Stage 1	201	-	-	-	-	-
Stage 2	603	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	497	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	0	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Timings
5: FM 407 & McMakin Rd/Blanco Dr

2024 Background
Timing Plan: PM



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	503	11	42	9	8	5	49	833	11	1	2	732
Future Volume (vph)	503	11	42	9	8	5	49	833	11	1	2	732
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	175		200		175	
Storage Lanes	1		1	0		0	1		1		1	
Taper Length (ft)	25			25			170				100	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Frt			0.850			0.966			0.850			
Flt Protected	0.950				0.980		0.950				0.950	
Satd. Flow (prot)	1770	1863	1583	0	3351	0	1770	3539	1583	0	1770	3539
Flt Permitted	0.588				0.955		0.299				0.288	
Satd. Flow (perm)	1095	1863	1583	0	3265	0	557	3539	1583	0	536	3539
Right Turn on Red			Yes		Yes			Yes				
Satd. Flow (RTOR)			73		5			127				
Link Speed (mph)		30			25			50				50
Link Distance (ft)		180			124			512				2145
Travel Time (s)		4.1			3.4			7.0				29.3
Lane Group Flow (vph)	513	11	43	0	22	0	50	850	11	0	3	747
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	custom	pm+pt	NA
Protected Phases	7	4			8		5	2			1	6
Permitted Phases	4		4	8			2		2	1	6	
Detector Phase	7	4	4	8	8		5	2	2	1	1	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	45.0	45.0	9.5	9.5	45.0
Total Split (s)	20.0	35.0	35.0	15.0	15.0		10.0	45.0	45.0	10.0	10.0	45.0
Total Split (%)	22.2%	38.9%	38.9%	16.7%	16.7%		11.1%	50.0%	50.0%	11.1%	11.1%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5		4.5	4.5	4.5		4.5	4.5
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max	Max	None	None	Max
Act Effct Green (s)	19.7	19.7	19.7		6.1		45.9	44.9	44.9		44.2	41.2
Actuated g/C Ratio	0.26	0.26	0.26		0.08		0.61	0.59	0.59		0.59	0.55
v/c Ratio	1.20	0.02	0.09		0.08		0.12	0.40	0.01		0.01	0.39
Control Delay	140.5	21.4	2.6		31.4		7.4	10.3	0.0		7.3	12.3
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	140.5	21.4	2.6		31.4		7.4	10.3	0.0		7.3	12.3
LOS	F	C	A		C		A	B	A		A	B
Approach Delay		127.8			31.4			10.0				10.2
Approach LOS		F			C			A				B
Queue Length 50th (ft)	-326	4	0		4		7	75	0		1	98
Queue Length 95th (ft)	#512	16	11		16		25	216	0		4	185
Internal Link Dist (ft)		100			44			432				2065
Turn Bay Length (ft)							175		200		175	
Base Capacity (vph)	426	764	693		465		428	2106	993		405	1929

TIA Study for Bartonville ELTS School in Bartonville, Texas
RD

Synchro 11 Report
Page 1

Timings
5: FM 407 & McMakin Rd/Blanco Dr













2024 Background
Timing Plan: PM

	
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	213
Future Volume (vph)	213
Ideal Flow (vphpl)	1900
Storage Length (ft)	175
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	Yes
Satd. Flow (RTOR)	217
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Lane Group Flow (vph)	217
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	45.0
Total Split (s)	45.0
Total Split (%)	50.0%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Recall Mode	Max
Act Effct Green (s)	41.2
Actuated g/C Ratio	0.55
v/c Ratio	0.23
Control Delay	2.7
Queue Delay	0.0
Total Delay	2.7
LOS	A
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	36
Internal Link Dist (ft)	
Turn Bay Length (ft)	175
Base Capacity (vph)	961

TIA Study for Bartonville ELTS School in Bartonville, Texas
RD

Synchro 11 Report
Page 2


Timings 2024 Background
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
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	1.20	0.01	0.06		0.05		0.12	0.40	0.01		0.01	0.39

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	75.5
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.20
Intersection Signal Delay:	37.3
Intersection Capacity Utilization	73.0%
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: 5: FM 407 & McMakin Rd/Blanco Dr	
 Ø1	 Ø2
10 s	45 s
 Ø5	 Ø6
10 s	45 s
 Ø4	 Ø7
35 s	20 s
 Ø8	
15 s	

Timings 2024 Background
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

	
Lane Group	SBR
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.23

Intersection Summary

HCM 6th TWSC
1: FM 407 & I T Neely Dr

2024 Background
Timing Plan: PM

Intersection							
Int Delay, s/veh	1.6						
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations	↖			↖	↗	↗	↖
Traffic Vol, veh/h	23	17	1	66	1217	1022	63
Future Vol, veh/h	23	17	1	66	1217	1022	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	-	None	-	None
Storage Length	0	-	-	280	-	-	300
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	95	95	92	95	95	95	95
Heavy Vehicles, %	2	2	2	3	3	3	3
Mvmt Flow	24	18	1	69	1281	1076	66

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1857	538	1076	1142	0	-
Stage 1	1076	-	-	-	-	-
Stage 2	781	-	-	-	-	-
Critical Hdwy	6.84	6.94	6.44	4.16	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.52	2.23	-	-
Pot Cap-1 Maneuver	65	488	297	602	-	-
Stage 1	289	-	-	-	-	-
Stage 2	412	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	57	488	592	592	-	-
Mov Cap-2 Maneuver	57	-	-	-	-	-
Stage 1	254	-	-	-	-	-
Stage 2	412	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	74.8	0.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	592	-	91	-	-
HCM Lane V/C Ratio	0.119	-	0.463	-	-
HCM Control Delay (s)	11.9	-	74.8	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.4	-	2	-	-

HCM 6th TWSC
2: CJ Legacy Ranch Dr & FM 407

2024 Background
Timing Plan: PM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↖		↗	↗	↖
Traffic Vol, veh/h	0	2	0	1292	1055	2
Future Vol, veh/h	0	2	0	1292	1055	2
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	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	2	0	1305	1066	2




Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	534	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	491	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	491	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	491	-	-
HCM Lane V/C Ratio	-	0.004	-	-
HCM Control Delay (s)	-	12.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

HCM 6th TWSC
3: CJ Legacy Ranch Dr & Driveway

2024 Background
Timing Plan: PM

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







Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	3
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	2
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1622	-	-	-	1019
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1021
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	-	1019
Mov Cap-2 Maneuver	-	-	-	-	1019
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1021

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 6th TWSC
4: FM 407 & Rayzor Rd

2024 Background
Timing Plan: PM

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	61	1216	46	52	1021
Future Vol, veh/h	21	61	1216	46	52	1021
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	180	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	22	64	1280	48	55	1075

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1928	640	0	0	1328
Stage 1	1280	-	-	-	-
Stage 2	648	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.16
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.23
Pot Cap-1 Maneuver	58	418	-	-	510
Stage 1	225	-	-	-	-
Stage 2	483	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	52	418	-	-	510
Mov Cap-2 Maneuver	52	-	-	-	-
Stage 1	225	-	-	-	-
Stage 2	431	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	41.5	0	0.6
HCM LOS	E		

























Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	52	418	510	-
HCM Lane V/C Ratio	-	-	0.425	0.154	0.107	-
HCM Control Delay (s)	-	-	118	15.2	12.9	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	1.6	0.5	0.4	-

HCM 6th TWSC
6: FM 407

2024 Background
Timing Plan: PM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↕↕	↕↕	
Traffic Vol, veh/h	0	0	0	1292	1055	0
Future Vol, veh/h	0	0	0	1292	1055	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	0	0	0	1404	1147	0
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1849	574	1147	0	-	0
Stage 1	1147	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	66	462	605	-	-	-
Stage 1	265	-	-	-	-	-
Stage 2	453	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	66	462	605	-	-	-
Mov Cap-2 Maneuver	66	-	-	-	-	-
Stage 1	265	-	-	-	-	-
Stage 2	453	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	605	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	0	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	



Timings 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	252	11	31	18	12	7	43	545	7	10	3	914
Future Volume (vph)	252	11	31	18	12	7	43	545	7	10	3	914
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	175		200		175	
Storage Lanes	1		1	0		0	1		1		1	
Taper Length (ft)	25			25			170				100	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Frt			0.850			0.973			0.850			
Flt Protected	0.950				0.976		0.950				0.950	
Satd. Flow (prot)	1770	1863	1583	0	3361	0	1770	3539	1583	0	1770	3539
Flt Permitted	0.488				0.928		0.241				0.434	
Satd. Flow (perm)	909	1863	1583	0	3196	0	449	3539	1583	0	808	3539
Right Turn on Red			Yes		Yes			Yes				
Satd. Flow (RTOR)			73		7			127				
Link Speed (mph)	30				25			50				50
Link Distance (ft)	180				124			512				2145
Travel Time (s)	4.1				3.4			7.0				29.3
Lane Group Flow (vph)	268	12	33	0	39	0	46	580	7	0	14	972
Turn Type	pm+pt	NA	Perm	Perm	NA	NA	pm+pt	NA	Perm	custom	pm+pt	NA
Protected Phases	7	4			8		5	2			1	6
Permitted Phases	4		4	8			2		2	1	6	
Detector Phase	7	4	4	8	8		5	2	2	1	1	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	45.0	45.0	9.5	9.5	45.0
Total Split (s)	7.5	40.5	40.5	33.0	33.0		7.5	42.0	42.0	7.5	7.5	42.0
Total Split (%)	8.3%	45.0%	45.0%	36.7%	36.7%		8.3%	46.7%	46.7%	8.3%	8.3%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5		4.5	4.5	4.5		4.5	4.5
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max	Max	None	None	Max
Act Effct Green (s)	10.4	10.4	10.4		6.2		42.7	42.1	42.1		41.0	39.4
Actuated g/C Ratio	0.17	0.17	0.17		0.10		0.68	0.67	0.67		0.65	0.63
v/c Ratio	1.29	0.04	0.10		0.12		0.13	0.25	0.01		0.02	0.44
Control Delay	191.3	21.9	2.2		25.1		4.8	5.5	0.0		4.3	8.4
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	191.3	21.9	2.2		25.1		4.8	5.5	0.0		4.3	8.4
LOS	F	C	A		C		A	A	A		A	A
Approach Delay		164.8			25.1			5.4				6.6
Approach LOS		F			C			A				A
Queue Length 50th (ft)	-128	4	0		6		5	42	0		2	117
Queue Length 95th (ft)	#271	16	6		20		15	92	0		7	170
Internal Link Dist (ft)		100			44			432				2065
Turn Bay Length (ft)							175		200		175	
Base Capacity (vph)	207	1077	946		1467		367	2367	1101		572	2210

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Timings 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: AM

	
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	331
Future Volume (vph)	331
Ideal Flow (vphpl)	1900
Storage Length (ft)	175
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	Yes
Satd. Flow (RTOR)	352
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Lane Group Flow (vph)	352
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	45.0
Total Split (s)	42.0
Total Split (%)	46.7%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Recall Mode	Max
Act Effct Green (s)	39.4
Actuated g/C Ratio	0.63
v/c Ratio	0.31
Control Delay	1.9
Queue Delay	0.0
Total Delay	1.9
LOS	A
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	33
Internal Link Dist (ft)	
Turn Bay Length (ft)	175
Base Capacity (vph)	1120


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Timings 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
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	1.29	0.01	0.03		0.03		0.13	0.25	0.01		0.02	0.44

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	63
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.29
Intersection Signal Delay:	27.9
Intersection Capacity Utilization:	61.3%
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: 5: FM 407 & McMakin Rd/Blanco Dr	
 Ø1	 Ø2
7.5 s	42 s
 Ø5	 Ø6
7.5 s	42 s

Timings 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: AM

	
Lane Group	SBR
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.31

Intersection Summary	
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HCM 6th TWSC 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
1: FM 407 & I T Neely Dr Timing Plan: AM

Intersection						
Int Delay, s/veh	2.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↕↕	↕↕	↔
Traffic Vol, veh/h	29	9	48	876	1326	40
Future Vol, veh/h	29	9	48	876	1326	40
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	-	280	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	31	9	51	922	1396	42

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1959	698	1438	0	-	0
Stage 1	1396	-	-	-	-	-
Stage 2	563	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.16	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.23	-	-	-
Pot Cap-1 Maneuver	56	383	463	-	-	-
Stage 1	195	-	-	-	-	-
Stage 2	534	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	50	383	463	-	-	-
Mov Cap-2 Maneuver	50	-	-	-	-	-
Stage 1	174	-	-	-	-	-
Stage 2	534	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	131.9	0.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	463	-	63	-	-
HCM Lane V/C Ratio	0.109	-	0.635	-	-
HCM Control Delay (s)	13.7	-	131.9	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.4	-	2.7	-	-

HCM 6th TWSC 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
2: CJ Legacy Ranch Dr & FM 407 Timing Plan: AM




Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↔		↕↕	↕↕	↔
Traffic Vol, veh/h	0	60	0	974	1320	32
Future Vol, veh/h	0	60	0	974	1320	32
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	65	0	1047	1419	34

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	727	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	366	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	366	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	366	-	-
HCM Lane V/C Ratio	-	0.176	-	-
HCM Control Delay (s)	-	16.9	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.6	-	-

HCM 6th TWSC 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
3: CJ Legacy Ranch Dr & Driveway Timing Plan: AM







Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	32	59	0
Future Vol, veh/h	0	1	0	32	59	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	35	64	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	35	0	0	19	18
Stage 1	-	-	-	18	-
Stage 2	-	-	-	1	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1576	-	-	998	1061
Stage 1	-	-	-	1005	-
Stage 2	-	-	-	1022	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1576	-	-	998	1061
Mov Cap-2 Maneuver	-	-	-	998	-
Stage 1	-	-	-	1005	-
Stage 2	-	-	-	1022	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1576	-	-	-	998
HCM Lane V/C Ratio	-	-	-	-	0.064
HCM Control Delay (s)	0	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

HCM 6th TWSC 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
4: FM 407 & Rayzor Rd Timing Plan: AM

Intersection						
Int Delay, s/veh	1.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	133	822	20	51	1328
Future Vol, veh/h	31	133	822	20	51	1328
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	180	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	32	137	847	21	53	1369

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1638	424	0	0	868
Stage 1	847	-	-	-	-
Stage 2	791	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.16
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.23
Pot Cap-1 Maneuver	91	579	-	-	765
Stage 1	381	-	-	-	-
Stage 2	407	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	85	579	-	-	765
Mov Cap-2 Maneuver	85	-	-	-	-
Stage 1	381	-	-	-	-
Stage 2	379	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	85	579	765	-
HCM Lane V/C Ratio	-	-	0.376	0.237	0.069	-
HCM Control Delay (s)	-	-	70.9	13.1	10.1	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	1.5	0.9	0.2	-

HCM 6th TWSC 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
 6: FM 407 & Driveway 2 Timing Plan: AM

Intersection						
Int Delay, s/veh	137.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	🚗			🚗🚗	🚗🚗	
Traffic Vol, veh/h	78	59	130	844	1293	55
Future Vol, veh/h	78	59	130	844	1293	55
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	85	64	141	917	1405	60

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2176	733	1465
Stage 1	1435	-	-
Stage 2	741	-	-
Critical Hdwy	6.84	6.94	4.14
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	2.22
Pot Cap-1 Maneuver	~ 40	363	457
Stage 1	186	-	-
Stage 2	432	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 15	363	457
Mov Cap-2 Maneuver	~ 15	-	-
Stage 1	~ 69	-	-
Stage 2	432	-	-

Approach	EB	NB	SB
HCM Control Delay, s	2427.1	5.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	457	-	26	-	-
HCM Lane V/C Ratio	0.309	-	5.727	-	-
HCM Control Delay (s)	16.4	-	3.9 2427.1	-	-
HCM Lane LOS	C	A	F	-	-
HCM 95th %tile Q(veh)	1.3	-	18.4	-	-

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

Timings 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	
Lane Configurations	↖	↗	↘	↙	↖	↗	↘	↙	↖	↗	↘	↙	↖
Traffic Volume (vph)	504	11	42	9	8	5	49	844	11	3	2	756	
Future Volume (vph)	504	11	42	9	8	5	49	844	11	3	2	756	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		0	0		0	175		200		175		
Storage Lanes	1		1	0		0	1		1		1		
Taper Length (ft)	25			25			170				100		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00	0.95	1.00	0.95	
Frt			0.850			0.966			0.850				
Flt Protected	0.950				0.980		0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	0	3351	0	1770	3539	1583	0	1770	3539	
Flt Permitted	0.588				0.955		0.289				0.283		
Satd. Flow (perm)	1095	1863	1583	0	3265	0	538	3539	1583	0	527	3539	
Right Turn on Red			Yes		Yes		Yes		Yes				
Satd. Flow (RTOR)			73		5		127						
Link Speed (mph)	30				25		50					50	
Link Distance (ft)	180				124		512					2145	
Travel Time (s)	4.1				3.4		7.0					29.3	
Lane Group Flow (vph)	514	11	43	0	22	0	861		11	0	5	771	
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt		Perm	custom	pm+pt	NA	
Protected Phases	7	4			8		5	2			1	6	
Permitted Phases	4		4	8			2		2	1	6		
Detector Phase	7	4	4	8	8		5	2	2	1	1	6	
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	45.0	45.0	9.5	9.5	45.0	
Total Split (s)	20.0	35.0	35.0	15.0	15.0		10.0	45.0	45.0	10.0	10.0	45.0	
Total Split (%)	22.2%	38.9%	38.9%	16.7%	16.7%		11.1%	50.0%	50.0%	11.1%	11.1%	50.0%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5		4.5		4.5	4.5	4.5		4.5	4.5	
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None		None	Max	Max	None	None	Max	
Act Effct Green (s)	19.7	19.7	19.7		6.1		45.9	44.9	44.9		44.2	41.2	
Actuated g/C Ratio	0.26	0.26	0.26		0.08		0.61	0.59	0.59		0.59	0.55	
v/c Ratio	1.21	0.02	0.09		0.08		0.12	0.41	0.01		0.01	0.40	
Control Delay	141.5	21.4	2.6		31.4		7.5	10.3	0.0		7.2	12.5	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0	
Total Delay	141.5	21.4	2.6		31.4		7.5	10.3	0.0		7.2	12.5	
LOS	F	C	A		C		A	B	A		A	B	
Approach Delay	128.6				31.4		10.0				10.3		
Approach LOS	F				C		B				B		
Queue Length 50th (ft)	-327	4	0		4		7	76	0		1	102	
Queue Length 95th (ft)	#514	16	11		16		25	220	0		6	192	
Internal Link Dist (ft)	100				44			432				2065	
Turn Bay Length (ft)							175		200		175		
Base Capacity (vph)	426	764	693		465		418	2106	993		400	1929	

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Timings 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

Lane Group	↖	
Lane Configurations	↖	
Traffic Volume (vph)	215	
Future Volume (vph)	215	
Ideal Flow (vphpl)	1900	
Storage Length (ft)	175	
Storage Lanes	1	
Taper Length (ft)		
Lane Util. Factor	1.00	
Frt	0.850	
Flt Protected		
Satd. Flow (prot)	1583	
Flt Permitted		
Satd. Flow (perm)	1583	
Right Turn on Red	Yes	
Satd. Flow (RTOR)	219	
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Lane Group Flow (vph)	219	
Turn Type	Perm	
Protected Phases		
Permitted Phases	6	
Detector Phase	6	
Switch Phase		
Minimum Initial (s)	5.0	
Minimum Split (s)	45.0	
Total Split (s)	45.0	
Total Split (%)	50.0%	
Yellow Time (s)	3.5	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.5	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Recall Mode	Max	
Act Effct Green (s)	41.2	
Actuated g/C Ratio	0.55	
v/c Ratio	0.23	
Control Delay	2.7	
Queue Delay	0.0	
Total Delay	2.7	
LOS	A	
Approach Delay		
Approach LOS		
Queue Length 50th (ft)	0	
Queue Length 95th (ft)	36	
Internal Link Dist (ft)		
Turn Bay Length (ft)	175	
Base Capacity (vph)	962	

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Timings 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM


												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
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	1.21	0.01	0.06		0.05		0.12	0.41	0.01		0.01	0.40

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	75.5
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.21
Intersection Signal Delay:	37.2
Intersection Capacity Utilization	73.3%
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: 5: FM 407 & McMakin Rd/Blanco Dr

 Ø1	 Ø2	 Ø4
10 s	45 s	35 s
 Ø5	 Ø6	 Ø7
10 s	45 s	20 s
		 Ø8
		15 s

Timings 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

	
Lane Group	SBR
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.23

Intersection Summary	
----------------------	--

HCM 6th TWSC 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
1: FM 407 & I T Neely Dr Timing Plan: PM

Intersection							
Int Delay, s/veh	1.6						
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations	↖			↖	↗	↗	↖
Traffic Vol, veh/h	23	17	1	66	1235	1031	63
Future Vol, veh/h	23	17	1	66	1235	1031	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	-	None	-	None
Storage Length	0	-	-	280	-	-	300
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	95	95	92	95	95	95	95
Heavy Vehicles, %	2	2	2	3	3	3	3
Mvmt Flow	24	18	1	69	1300	1085	66

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1875	543	1085	1151	0	-
Stage 1	1085	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Critical Hdwy	6.84	6.94	6.44	4.16	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.52	2.23	-	-
Pot Cap-1 Maneuver	63	484	293	597	-	-
Stage 1	285	-	-	-	-	-
Stage 2	408	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	55	484	587	587	-	-
Mov Cap-2 Maneuver	55	-	-	-	-	-
Stage 1	251	-	-	-	-	-
Stage 2	408	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	78.8	0.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	587	-	88	-	-
HCM Lane V/C Ratio	0.12	-	0.478	-	-
HCM Control Delay (s)	12	-	78.8	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.4	-	2	-	-

HCM 6th TWSC 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
2: CJ Legacy Ranch Dr & FM 407 Timing Plan: PM

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↖		↗	↗	↖
Traffic Vol, veh/h	0	14	0	1306	1070	5
Future Vol, veh/h	0	14	0	1306	1070	5
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	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	14	0	1319	1081	5

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	543	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	484	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	484	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	484	-	-
HCM Lane V/C Ratio	-	0.029	-	-
HCM Control Delay (s)	-	12.7	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

HCM 6th TWSC 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
3: CJ Legacy Ranch Dr & Driveway Timing Plan: PM

Intersection						
Int Delay, s/veh	6.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	0	2	0	3	12	0
Future Vol, veh/h	0	2	0	3	12	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	3	13	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	3	0	0 4 2
Stage 1	-	-	- 2 -
Stage 2	-	-	- 2 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1619	-	- 1018 1082
Stage 1	-	-	- 1021 -
Stage 2	-	-	- 1021 -
Platoon blocked, %	-	-	- -
Mov Cap-1 Maneuver	1619	-	- 1018 1082
Mov Cap-2 Maneuver	-	-	- 1018 -
Stage 1	-	-	- 1021 -
Stage 2	-	-	- 1021 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1619	-	-	-	1018
HCM Lane V/C Ratio	-	-	-	-	0.013
HCM Control Delay (s)	0	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th TWSC 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
4: FM 407 & Rayzor Rd Timing Plan: PM

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	21	62	1228	48	52	1049
Future Vol, veh/h	21	62	1228	48	52	1049
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	180	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	22	65	1293	51	55	1104

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1955	647	0 0 1344 0
Stage 1	1293	-	- - - -
Stage 2	662	-	- - - -
Critical Hdwy	6.84	6.94	- - 4.16 -
Critical Hdwy Stg 1	5.84	-	- - - -
Critical Hdwy Stg 2	5.84	-	- - - -
Follow-up Hdwy	3.52	3.32	- - 2.23 -
Pot Cap-1 Maneuver	56	414	- - 503 -
Stage 1	221	-	- - - -
Stage 2	475	-	- - - -
Platoon blocked, %	-	-	- - - -
Mov Cap-1 Maneuver	50	414	- - 503 -
Mov Cap-2 Maneuver	50	-	- - - -
Stage 1	221	-	- - - -
Stage 2	423	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	43	0	0.6
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	50	414	503	-
HCM Lane V/C Ratio	-	-	0.442	0.158	0.109	-
HCM Control Delay (s)	-	-	124.9	15.3	13	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	1.6	0.6	0.4	-

HCM 6th TWSC 2024 Background Plus Site (Scenario 1-For Buses + Passenger Car)
6: FM 407 Timing Plan: PM

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↕↕	↕↕	
Traffic Vol, veh/h	18	15	13	1292	1058	6
Future Vol, veh/h	18	15	13	1292	1058	6
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	20	16	14	1404	1150	7
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1884	579	1157	0	-	0
Stage 1	1154	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	62	458	600	-	-	-
Stage 1	262	-	-	-	-	-
Stage 2	438	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	55	458	600	-	-	-
Mov Cap-2 Maneuver	55	-	-	-	-	-
Stage 1	234	-	-	-	-	-
Stage 2	438	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	67.2	0.7	0			
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	600	-	92	-	-	
HCM Lane V/C Ratio	0.024	-	0.39	-	-	
HCM Control Delay (s)	11.1	0.6	67.2	-	-	
HCM Lane LOS	B	A	F	-	-	
HCM 95th %tile Q(veh)	0.1	-	1.6	-	-	

Timings 2024 Background Plus Site (Scenario 2 - For Buses only)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: AM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱	↱	↰	↰	↰	↰	↱	↱	↱	↰	↰
Traffic Volume (vph)	242	11	31	18	12	7	43	439	7	3	816	321
Future Volume (vph)	242	11	31	18	12	7	43	439	7	3	816	321
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	175		200	175		175
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (ft)	25			25			170			100		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.973				0.850			0.850
Flt Protected	0.950				0.976		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	0	3361	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.488				0.928		0.280			0.484		
Satd. Flow (perm)	909	1863	1583	0	3196	0	522	3539	1583	902	3539	1583
Right Turn on Red			Yes		Yes			Yes		Yes		Yes
Satd. Flow (RTOR)			73		7			127				341
Link Speed (mph)	30				25			50			50	
Link Distance (ft)	180				124			512			2145	
Travel Time (s)	4.1				3.4			7.0			29.3	
Lane Group Flow (vph)	257	12	33	0	39	0	46	467	7	3	868	341
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Detector Phase	7	4	4	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	45.0	45.0	9.5	45.0	45.0
Total Split (s)	7.5	40.5	40.5	33.0	33.0		7.5	42.0	42.0	7.5	42.0	42.0
Total Split (%)	8.3%	45.0%	45.0%	36.7%	36.7%		8.3%	46.7%	46.7%	8.3%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Act Effect Green (s)	10.4	10.4	10.4		6.2		42.9	42.3	42.3	41.2	39.5	39.5
Actuated g/C Ratio	0.16	0.16	0.16		0.10		0.68	0.67	0.67	0.65	0.62	0.62
v/c Ratio	1.25	0.04	0.10		0.12		0.11	0.20	0.01	0.00	0.39	0.31
Control Delay	172.2	21.9	2.2		25.1		4.7	5.3	0.0	4.3	8.0	1.8
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	172.2	21.9	2.2		25.1		4.7	5.3	0.0	4.3	8.0	1.8
LOS	F	C	A		C		A	A	A	A	A	A
Approach Delay	147.6				25.1		5.1			6.2		
Approach LOS	F				C		A			A		
Queue Length 50th (ft)	-118	4	0		6		5	32	0	0	101	0
Queue Length 95th (ft)	#258	16	6		20		15	74	0	3	147	32
Internal Link Dist (ft)		100			44			432			2065	
Turn Bay Length (ft)							175		200	175		175
Base Capacity (vph)	206	1073	943		1462		413	2370	1102	629	2213	1117

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Timings 2024 Background Plus Site (Scenario 2 - For Buses only)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: AM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	0
Reduced v/c Ratio	1.25	0.01	0.03		0.03		0.11	0.20	0.01	0.00	0.39	0.31

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 63.2

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.25

Intersection Signal Delay: 26.9

Intersection LOS: C

Intersection Capacity Utilization 58.0%

ICU Level of Service B

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: 5: FM 407 & McMakin Rd/Blanco Dr








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HCM 6th TWSC
1: FM 407 & I T Neely Dr

2024 Background Plus Site (Scenario 2 - For Buses only)
Timing Plan: AM

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	29	9	48	798	1241	40
Future Vol, veh/h	29	9	48	798	1241	40
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	-	280	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	31	9	51	840	1306	42




Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1828	653	1348	0	-	0
Stage 1	1306	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.16	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.23	-	-	-
Pot Cap-1 Maneuver	68	410	502	-	-	-
Stage 1	218	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	61	410	502	-	-	-
Mov Cap-2 Maneuver	61	-	-	-	-	-
Stage 1	196	-	-	-	-	-
Stage 2	560	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	96	0.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	502	- 76	-	-
HCM Lane V/C Ratio	0.101	- 0.526	-	-
HCM Control Delay (s)	13	- 96	-	-
HCM Lane LOS	B	- F	-	-
HCM 95th %tile Q(veh)	0.3	- 2.2	-	-

HCM 6th TWSC
2: CJ Legacy Ranch Dr & FM 407

2024 Background Plus Site (Scenario 2 - For Buses only)
Timing Plan: AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	847	1261	1
Future Vol, veh/h	0	1	0	847	1261	1
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	1	0	911	1356	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	- 679	-	0	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	- 6.94	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	- 3.32	-	-	-	-	-
Pot Cap-1 Maneuver	0 394	0	-	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	- 394	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 394	-	-
HCM Lane V/C Ratio	- 0.003	-	-
HCM Control Delay (s)	- 14.2	-	-
HCM Lane LOS	- B	-	-
HCM 95th %tile Q(veh)	- 0	-	-

HCM 6th TWSC 2024 Background Plus Site (Scenario 2 - For Buses only)
 3: CJ Legacy Ranch Dr & Driveway Timing Plan: AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	1	0	0
Future Vol, veh/h	0	1	0	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	1	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1622	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	-	1021
Mov Cap-2 Maneuver	-	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 6th TWSC 2024 Background Plus Site (Scenario 2 - For Buses only)
 4: FM 407 & Rayzor Rd Timing Plan: AM

Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	122	706	10	51	1211
Future Vol, veh/h	31	122	706	10	51	1211
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	180	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	32	126	728	10	53	1248

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1458	364	0	0	738
Stage 1	728	-	-	-	-
Stage 2	730	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.16
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.23
Pot Cap-1 Maneuver	120	633	-	-	857
Stage 1	439	-	-	-	-
Stage 2	438	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	113	633	-	-	857
Mov Cap-2 Maneuver	113	-	-	-	-
Stage 1	439	-	-	-	-
Stage 2	411	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.6	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	113	633	857	-
HCM Lane V/C Ratio	-	-	0.283	0.199	0.061	-
HCM Control Delay (s)	-	-	49	12.1	9.5	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	1.1	0.7	0.2	-

























HCM 6th TWSC
6: FM 407 & Driveway 2

2024 Background Plus Site (Scenario 2 - For Buses only)

Timing Plan: AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑↑	↑↑	
Traffic Vol, veh/h	0	0	3	846	1261	1
Future Vol, veh/h	0	0	3	846	1261	1
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	0	0	3	920	1371	1
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1838	686	1372	0	-	0
Stage 1	1372	-	-	-	-	-
Stage 2	466	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	67	390	496	-	-	-
Stage 1	201	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	66	390	496	-	-	-
Mov Cap-2 Maneuver	66	-	-	-	-	-
Stage 1	199	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0.1		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	496	-	-	-	-	
HCM Lane V/C Ratio	0.007	-	-	-	-	
HCM Control Delay (s)	12.3	0.1	0	-	-	
HCM Lane LOS	B	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	



Timings 2024 Background Plus Site (Scenario 2 -For Buses only)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	503	11	42	9	8	5	49	833	11	1	2	735
Future Volume (vph)	503	11	42	9	8	5	49	833	11	1	2	735
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	175		200		175	
Storage Lanes	1		1	0		0	1		1		1	
Taper Length (ft)	25			25			170				100	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Frt			0.850			0.966			0.850			
Flt Protected	0.950				0.980		0.950				0.950	
Satd. Flow (prot)	1770	1863	1583	0	3351	0	1770	3539	1583	0	1770	3539
Flt Permitted	0.588				0.955		0.298				0.288	
Satd. Flow (perm)	1095	1863	1583	0	3265	0	555	3539	1583	0	536	3539
Right Turn on Red			Yes		Yes		Yes		Yes			
Satd. Flow (RTOR)			73		5		127					
Link Speed (mph)	30				25		50					50
Link Distance (ft)	180				124		512					2145
Travel Time (s)	4.1				3.4		7.0					29.3
Lane Group Flow (vph)	513	11	43	0	22	0	50	850	11	0	3	750
Turn Type	pm+pt	NA	Perm	Perm	NA	NA	pm+pt	NA	Perm	custom	pm+pt	NA
Protected Phases	7	4			8		5	2			1	6
Permitted Phases	4		4	8			2		2	1	6	
Detector Phase	7	4	4	8	8		5	2	2	1	1	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	45.0	45.0	9.5	9.5	45.0
Total Split (s)	20.0	35.0	35.0	15.0	15.0		10.0	45.0	45.0	10.0	10.0	45.0
Total Split (%)	22.2%	38.9%	38.9%	16.7%	16.7%		11.1%	50.0%	50.0%	11.1%	11.1%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5		4.5	4.5	4.5		4.5	4.5
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max	Max	None	None	Max
Act Effct Green (s)	19.7	19.7	19.7		6.1		45.9	44.9	44.9		44.2	41.2
Actuated g/C Ratio	0.26	0.26	0.26		0.08		0.61	0.59	0.59		0.59	0.55
v/c Ratio	1.20	0.02	0.09		0.08		0.12	0.40	0.01		0.01	0.39
Control Delay	140.5	21.4	2.6		31.4		7.4	10.3	0.0		7.3	12.3
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	140.5	21.4	2.6		31.4		7.4	10.3	0.0		7.3	12.3
LOS	F	C	A		C		A	B	A		A	B
Approach Delay	127.8				31.4		10.0				10.2	
Approach LOS	F				C		A				B	
Queue Length 50th (ft)	-326	4	0		4		7	75	0		1	98
Queue Length 95th (ft)	#512	16	11		16		25	216	0		4	186
Internal Link Dist (ft)		100			44			432				2065
Turn Bay Length (ft)							175		200		175	
Base Capacity (vph)	426	764	693		465		427	2106	993		405	1929

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Timings 2024 Background Plus Site (Scenario 2 -For Buses only)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

	
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	213
Future Volume (vph)	213
Ideal Flow (vphpl)	1900
Storage Length (ft)	175
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	Yes
Satd. Flow (RTOR)	217
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Lane Group Flow (vph)	217
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	45.0
Total Split (s)	45.0
Total Split (%)	50.0%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Recall Mode	Max
Act Effct Green (s)	41.2
Actuated g/C Ratio	0.55
v/c Ratio	0.23
Control Delay	2.7
Queue Delay	0.0
Total Delay	2.7
LOS	A
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	36
Internal Link Dist (ft)	
Turn Bay Length (ft)	175
Base Capacity (vph)	961

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Timings 2024 Background Plus Site (Scenario 2 -For Buses only)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM


												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
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	1.20	0.01	0.06		0.05		0.12	0.40	0.01		0.01	0.39

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	75.5
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.20
Intersection Signal Delay:	37.3
Intersection Capacity Utilization	73.0%
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: 5: FM 407 & McMakin Rd/Blanco Dr

 Ø1	 Ø2	 Ø4
40 s	45 s	35 s
 Ø5	 Ø6	 Ø7
40 s	45 s	20 s
		 Ø8
		15 s

Timings 2024 Background Plus Site (Scenario 2 -For Buses only)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

	
Lane Group	SBR
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.23

Intersection Summary	
----------------------	--

HCM 6th TWSC
1: FM 407 & I T Neely Dr

2024 Background Plus Site (Scenario 2 -For Buses only)
Timing Plan: PM

Intersection							
Int Delay, s/veh	1.6						
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	1	↔	↕↕	↕↕	↔
Traffic Vol, veh/h	23	17	1	66	1219	1022	63
Future Vol, veh/h	23	17	1	66	1219	1022	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	-	None	-	None
Storage Length	0	-	-	280	-	-	300
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	95	95	92	95	95	95	95
Heavy Vehicles, %	2	2	2	3	3	3	3
Mvmt Flow	24	18	1	69	1283	1076	66

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1858	538	1076	1142	0	- 0
Stage 1	1076	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Critical Hdwy	6.84	6.94	6.44	4.16	-	- -
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.52	2.23	-	- -
Pot Cap-1 Maneuver	65	488	297	602	-	- -
Stage 1	289	-	-	-	-	-
Stage 2	411	-	-	-	-	-
Platoon blocked, %					-	- -
Mov Cap-1 Maneuver	57	488	592	592	-	- -
Mov Cap-2 Maneuver	57	-	-	-	-	-
Stage 1	254	-	-	-	-	-
Stage 2	411	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	74.8	0.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	592	-	91	-	-
HCM Lane V/C Ratio	0.119	-	0.463	-	-
HCM Control Delay (s)	11.9	-	74.8	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.4	-	2	-	-

HCM 6th TWSC
2: CJ Legacy Ranch Dr & FM 407

2024 Background Plus Site (Scenario 2 -For Buses only)
Timing Plan: PM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↔		↕↕	↕↕	
Traffic Vol, veh/h	0	4	0	1292	1056	2
Future Vol, veh/h	0	4	0	1292	1056	2
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	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	4	0	1305	1067	2

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	- 535	-	0	-	0	
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	- 6.94	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	- 3.32	-	-	-	-	-
Pot Cap-1 Maneuver	0	490	0	-	- -	
Stage 1	0	-	0	-	- -	
Stage 2	0	-	0	-	- -	
Platoon blocked, %				-	- -	
Mov Cap-1 Maneuver	- 490	-	-	-	-	
Mov Cap-2 Maneuver	-	-	-	-	-	
Stage 1	-	-	-	-	-	
Stage 2	-	-	-	-	-	

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	490	-	-
HCM Lane V/C Ratio	-	0.008	-	-
HCM Control Delay (s)	-	12.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

HCM 6th TWSC
3: CJ Legacy Ranch Dr & Driveway

2024 Background Plus Site (Scenario 2 -For Buses only)

Timing Plan: PM

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	0	2	0	0	2	0
Future Vol, veh/h	0	2	0	0	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	0	2	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	3
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	2
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1622	-	-	1019	1084
Stage 1	-	-	-	1022	-
Stage 2	-	-	-	1021	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	1019	1084
Mov Cap-2 Maneuver	-	-	-	1019	-
Stage 1	-	-	-	1022	-
Stage 2	-	-	-	1021	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	1019
HCM Lane V/C Ratio	-	-	-	-	0.002
HCM Control Delay (s)	0	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th TWSC
4: FM 407 & Rayzor Rd

2024 Background Plus Site (Scenario 2 -For Buses only)

Timing Plan: PM

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	21	61	1216	46	52	1024
Future Vol, veh/h	21	61	1216	46	52	1024
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	180	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	22	64	1280	48	55	1078

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1929	640	0	0	1328
Stage 1	1280	-	-	-	-
Stage 2	649	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.16
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.23
Pot Cap-1 Maneuver	58	418	-	-	510
Stage 1	225	-	-	-	-
Stage 2	482	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	52	418	-	-	510
Mov Cap-2 Maneuver	52	-	-	-	-
Stage 1	225	-	-	-	-
Stage 2	430	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	41.5	0	0.6
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	52	418	510	-
HCM Lane V/C Ratio	-	-	0.425	0.154	0.107	-
HCM Control Delay (s)	-	-	118	15.2	12.9	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	1.6	0.5	0.4	-

HCM 6th TWSC
6: FM 407

2024 Background Plus Site (Scenario 2 -For Buses only)
Timing Plan: PM

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑↑	↑↑	
Traffic Vol, veh/h	2	2	0	1292	1057	0
Future Vol, veh/h	2	2	0	1292	1057	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	2	2	0	1404	1149	0
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1851	575	1149	0	-	0
Stage 1	1149	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	66	461	604	-	-	-
Stage 1	264	-	-	-	-	-
Stage 2	453	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	66	461	604	-	-	-
Mov Cap-2 Maneuver	66	-	-	-	-	-
Stage 1	264	-	-	-	-	-
Stage 2	453	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	37.5	0		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	604	-	115	-	-	
HCM Lane V/C Ratio	-	-	0.038	-	-	
HCM Control Delay (s)	0	-	37.5	-	-	
HCM Lane LOS	A	-	E	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

Timings
5: FM 407 & McMakin Rd/Blanco Dr

2029 Horizon
Timing Plan: AM

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘	
Traffic Volume (vph)	267	12	34	20	14	8	47	481	8	3	901	355	
Future Volume (vph)	267	12	34	20	14	8	47	481	8	3	901	355	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		0	0		0	175		200	175		175	
Storage Lanes	1		1	0		0	1		1	1		1	
Taper Length (ft)	25			25			170			100			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Frt			0.850		0.970				0.850			0.850	
Flt Protected	0.950				0.977		0.950			0.950			
Satd. Flow (prot)	1770	1863	1583	0	3354	0	1770	3539	1583	1770	3539	1583	
Flt Permitted	0.488				0.919		0.245			0.463			
Satd. Flow (perm)	909	1863	1583	0	3155	0	456	3539	1583	862	3539	1583	
Right Turn on Red			Yes		Yes			Yes			Yes		
Satd. Flow (RTOR)			73		9			127			378		
Link Speed (mph)	30				25			50			50		
Link Distance (ft)	180				124			512			2145		
Travel Time (s)	4.1				3.4			7.0			29.3		
Lane Group Flow (vph)	284	13	36	0	45	0	50	512	9	3	959	378	
Turn Type	pm+pt	NA	Perm	Perm	NA	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	
Protected Phases	7	4			8		5	2		1	6		
Permitted Phases	4		4	8			2		2	6		6	
Detector Phase	7	4	4	8	8		5	2	2	1	6	6	
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	45.0	45.0	9.5	45.0	45.0	
Total Split (s)	7.5	40.5	40.5	33.0	33.0		7.5	42.0	42.0	7.5	42.0	42.0	
Total Split (%)	8.3%	45.0%	45.0%	36.7%	36.7%		8.3%	46.7%	46.7%	8.3%	46.7%	46.7%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5		4.5		4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max	
Act Effect Green (s)	10.4	10.4	10.4		6.3		42.4	41.8	41.8	40.7	39.0	39.0	
Actuated g/C Ratio	0.17	0.17	0.17		0.10		0.68	0.67	0.67	0.65	0.62	0.62	
v/c Ratio	1.37	0.04	0.11		0.14		0.13	0.22	0.01	0.00	0.44	0.34	
Control Delay	217.6	21.9	2.8		24.7		4.9	5.4	0.0	4.3	8.4	1.9	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	217.6	21.9	2.8		24.7		4.9	5.4	0.0	4.3	8.4	1.9	
LOS	F	C	A		C		A	A	A	A	A	A	
Approach Delay	186.8				24.7		5.3			6.6			
Approach LOS	F				C		A			A			
Queue Length 50th (ft)	-144	4	0		7		6	36	0	0	116	0	
Queue Length 95th (ft)	#288	17	8		22		16	81	0	3	167	34	
Internal Link Dist (ft)		100			44			432			2065		
Turn Bay Length (ft)							175		200	175		175	
Base Capacity (vph)	208	1083	951		1457		371	2360	1098	603	2204	1128	

TIA Study for Bartonville ELTS School in Bartonville, Texas
RD

Synchro 11 Report
Page 1

Timings
5: FM 407 & McMakin Rd/Blanco Dr

2029 Horizon
Timing Plan: AM

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	0	0
Reduced v/c Ratio	1.37	0.01	0.04		0.03		0.13	0.22	0.01	0.00	0.44	0.34	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 62.7

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.37

Intersection Signal Delay: 32.8

Intersection LOS: C

Intersection Capacity Utilization 61.8%

ICU Level of Service B

Analysis Period (min) 15

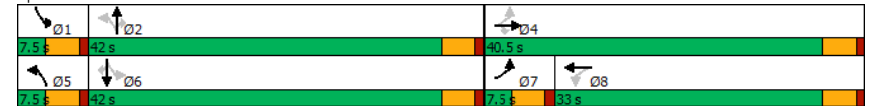
- Volume exceeds capacity, queue is theoretically infinite.

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: 5: FM 407 & McMakin Rd/Blanco Dr



TIA Study for Bartonville ELTS School in Bartonville, Texas
RD

Synchro 11 Report
Page 2

HCM 6th TWSC
1: FM 407 & I T Neely Dr

2029 Horizon
Timing Plan: AM

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↵		↵	↕↕	↕↕	↵
Traffic Vol, veh/h	32	10	53	881	1368	44
Future Vol, veh/h	32	10	53	881	1368	44
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	-	280	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	34	11	56	927	1440	46

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2016	720	1486	0	-	0
Stage 1	1440	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.16	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.23	-	-	-
Pot Cap-1 Maneuver	51	370	444	-	-	-
Stage 1	184	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	45	370	444	-	-	-
Mov Cap-2 Maneuver	45	-	-	-	-	-
Stage 1	161	-	-	-	-	-
Stage 2	525	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	174.5	0.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	444	-	57	-	-
HCM Lane V/C Ratio	0.126	-	0.776	-	-
HCM Control Delay (s)	14.3	-	174.5	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.4	-	3.4	-	-

HCM 6th TWSC
2: CJ Legacy Ranch Dr & FM 407

2029 Horizon
Timing Plan: AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↵		↕↕	↕↕	
Traffic Vol, veh/h	0	1	0	931	1392	0
Future Vol, veh/h	0	1	0	931	1392	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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	1	0	1001	1497	0




Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	749	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	354	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	354	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	354	-	-
HCM Lane V/C Ratio	-	0.003	-	-
HCM Control Delay (s)	-	15.2	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0	-	-

HCM 6th TWSC
3: CJ Legacy Ranch Dr & Driveway

2029 Horizon
Timing Plan: AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	0	0	0
Future Vol, veh/h	0	1	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	0	0	0







Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1622	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	-	1021
Mov Cap-2 Maneuver	-	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 6th TWSC
4: FM 407 & Rayzor Rd

2029 Horizon
Timing Plan: AM

Intersection						
Int Delay, s/veh	2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	135	776	11	56	1337
Future Vol, veh/h	34	135	776	11	56	1337
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	180	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	35	139	800	11	58	1378

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1605	400	0	0	811
Stage 1	800	-	-	-	-
Stage 2	805	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.16
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.23
Pot Cap-1 Maneuver	96	600	-	-	805
Stage 1	403	-	-	-	-
Stage 2	400	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	89	600	-	-	805
Mov Cap-2 Maneuver	89	-	-	-	-
Stage 1	403	-	-	-	-
Stage 2	371	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.2	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	89	600	805	-
HCM Lane V/C Ratio	-	-	0.394	0.232	0.072	-
HCM Control Delay (s)	-	-	69.6	12.8	9.8	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	1.6	0.9	0.2	-






















HCM 6th TWSC
6: FM 407 & Driveway 2

2029 Horizon
Timing Plan: AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑↑	↑↑	
Traffic Vol, veh/h	0	0	0	931	1392	0
Future Vol, veh/h	0	0	0	931	1392	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	0	0	0	1012	1513	0
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2019	757	1513	0	-	0
Stage 1	1513	-	-	-	-	-
Stage 2	506	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	51	350	438	-	-	-
Stage 1	168	-	-	-	-	-
Stage 2	571	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	51	350	438	-	-	-
Mov Cap-2 Maneuver	51	-	-	-	-	-
Stage 1	168	-	-	-	-	-
Stage 2	571	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	438	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	0	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Timings
5: FM 407 & McMakin Rd/Blanco Dr

2029 Horizon
Timing Plan: PM



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	555	12	46	10	9	6	54	920	12	1	2	809
Future Volume (vph)	555	12	46	10	9	6	54	920	12	1	2	809
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	175		200		175	
Storage Lanes	1		1	0		0	1		1		1	
Taper Length (ft)	25			25			170				100	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Frt			0.850			0.964			0.850			
Flt Protected	0.950				0.980		0.950				0.950	
Satd. Flow (prot)	1770	1863	1583	0	3344	0	1770	3539	1583	0	1770	3539
Flt Permitted	0.580				0.955		0.265				0.251	
Satd. Flow (perm)	1080	1863	1583	0	3258	0	494	3539	1583	0	468	3539
Right Turn on Red			Yes		Yes			Yes				
Satd. Flow (RTOR)			73		6			127				
Link Speed (mph)	30				25			50				50
Link Distance (ft)	180				124			512				2145
Travel Time (s)	4.1				3.4			7.0				29.3
Lane Group Flow (vph)	566	12	47	0	25	0	55	939	12	0	3	826
Turn Type	pm+pt	NA	Perm	Perm	NA	NA	pm+pt	NA	Perm	custom	pm+pt	NA
Protected Phases	7	4			8		5	2			1	6
Permitted Phases	4		4	8			2		2	1	6	
Detector Phase	7	4	4	8	8		5	2	2	1	1	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	45.0	45.0	9.5	9.5	45.0
Total Split (s)	20.0	35.0	35.0	15.0	15.0		10.0	45.0	45.0	10.0	10.0	45.0
Total Split (%)	22.2%	38.9%	38.9%	16.7%	16.7%		11.1%	50.0%	50.0%	11.1%	11.1%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5		4.5	4.5	4.5		4.5	4.5
Lead/Lag	Lead				Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max	Max	None	None	Max
Act Effct Green (s)	19.7	19.7	19.7		6.1		45.9	44.9	44.9		44.2	41.1
Actuated g/C Ratio	0.26	0.26	0.26		0.08		0.61	0.59	0.59		0.59	0.54
v/c Ratio	1.33	0.02	0.10		0.09		0.14	0.45	0.01		0.01	0.43
Control Delay	191.0	21.4	3.1		30.9		7.6	10.7	0.0		7.3	12.8
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	191.0	21.4	3.1		30.9		7.6	10.7	0.0		7.3	12.8
LOS	F	C	A		C		A	B	A		A	B
Approach Delay		173.7			30.9			10.4				10.5
Approach LOS		F			C			B				B
Queue Length 50th (ft)	-378	4	0		4		7	86	0		1	112
Queue Length 95th (ft)	#580	17	13		17		27	245	0		4	209
Internal Link Dist (ft)		100			44			432				2065
Turn Bay Length (ft)							175		200		175	
Base Capacity (vph)	425	764	692		465		394	2105	993		370	1928

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RD

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Timings
5: FM 407 & McMakin Rd/Blanco Dr













2029 Horizon
Timing Plan: PM

	
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	235
Future Volume (vph)	235
Ideal Flow (vphpl)	1900
Storage Length (ft)	175
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	Yes
Satd. Flow (RTOR)	240
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Lane Group Flow (vph)	240
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	45.0
Total Split (s)	45.0
Total Split (%)	50.0%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Recall Mode	Max
Act Effct Green (s)	41.1
Actuated g/C Ratio	0.54
v/c Ratio	0.25
Control Delay	2.7
Queue Delay	0.0
Total Delay	2.7
LOS	A
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	38
Internal Link Dist (ft)	
Turn Bay Length (ft)	175
Base Capacity (vph)	971

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RD

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Timings 2029 Horizon
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
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	1.33	0.02	0.07		0.05		0.14	0.45	0.01		0.01	0.43

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	75.5
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.33
Intersection Signal Delay:	48.1
Intersection Capacity Utilization	78.3%
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: 5: FM 407 & McMakin Rd/Blanco Dr	
 Ø1	 Ø2
10 s	45 s
 Ø5	 Ø6
10 s	45 s
 Ø4	 Ø7
35 s	20 s
 Ø8	
15 s	

Timings 2029 Horizon
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

	
Lane Group	SBR
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.25

Intersection Summary

HCM 6th TWSC
1: FM 407 & I T Neely Dr

2029 Horizon
Timing Plan: PM

Intersection							
Int Delay, s/veh	2.7						
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	26	19	1	73	1344	1128	70
Future Vol, veh/h	26	19	1	73	1344	1128	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	-	None	-	None
Storage Length	0	-	-	280	-	-	300
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	95	95	92	95	95	95	95
Heavy Vehicles, %	2	2	2	3	3	3	3
Mvmt Flow	27	20	1	77	1415	1187	74

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2051	594	1187	1261	0	- 0
Stage 1	1187	-	-	-	-	-
Stage 2	864	-	-	-	-	-
Critical Hdwy	6.84	6.94	6.44	4.16	-	- -
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.52	2.23	-	- -
Pot Cap-1 Maneuver	48	448	252	542	-	- -
Stage 1	252	-	-	-	-	-
Stage 2	373	-	-	-	-	-
Platoon blocked, %					-	- -
Mov Cap-1 Maneuver	41	448	533	533	-	- -
Mov Cap-2 Maneuver	41	-	-	-	-	-
Stage 1	215	-	-	-	-	-
Stage 2	373	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	139.2	0.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	533	-	67	-	-
HCM Lane V/C Ratio	0.146	-	0.707	-	-
HCM Control Delay (s)	12.9	-	139.2	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.5	-	3.2	-	-

HCM 6th TWSC
2: CJ Legacy Ranch Dr & FM 407

2029 Horizon
Timing Plan: PM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↔		↔	↔	↔
Traffic Vol, veh/h	0	2	0	1427	1164	2
Future Vol, veh/h	0	2	0	1427	1164	2
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	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	2	0	1441	1176	2




Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	- 589	-	0	-	0	
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	- 6.94	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	- 3.32	-	-	-	-	-
Pot Cap-1 Maneuver	0	452	0	-	- -	
Stage 1	0	-	0	-	- -	
Stage 2	0	-	0	-	- -	
Platoon blocked, %				-	- -	
Mov Cap-1 Maneuver	- 452	-	-	-	-	
Mov Cap-2 Maneuver	-	-	-	-	-	
Stage 1	-	-	-	-	-	
Stage 2	-	-	-	-	-	

Approach	EB	NB	SB
HCM Control Delay, s	13	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	452	-	-
HCM Lane V/C Ratio	-	0.004	-	-
HCM Control Delay (s)	-	13	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

HCM 6th TWSC
3: CJ Legacy Ranch Dr & Driveway

2029 Horizon
Timing Plan: PM

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







Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	0	3	1
Stage 1	-	-	-	1	-
Stage 2	-	-	-	2	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1622	-	-	1019	1084
Stage 1	-	-	-	1022	-
Stage 2	-	-	-	1021	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	1019	1084
Mov Cap-2 Maneuver	-	-	-	1019	-
Stage 1	-	-	-	1022	-
Stage 2	-	-	-	1021	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 6th TWSC
4: FM 407 & Rayzor Rd

2029 Horizon
Timing Plan: PM

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	68	1342	51	57	1127
Future Vol, veh/h	24	68	1342	51	57	1127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	180	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	25	72	1413	54	60	1186

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2126	707	0	0	1467
Stage 1	1413	-	-	-	-
Stage 2	713	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.16
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.23
Pot Cap-1 Maneuver	43	378	-	-	451
Stage 1	191	-	-	-	-
Stage 2	447	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	37	378	-	-	451
Mov Cap-2 Maneuver	37	-	-	-	-
Stage 1	191	-	-	-	-
Stage 2	388	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	69.2	0	0.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	37	378	451	-
HCM Lane V/C Ratio	-	-	0.683	0.189	0.133	-
HCM Control Delay (s)	-	-	218	16.7	14.2	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	2.4	0.7	0.5	-

HCM 6th TWSC
6: FM 407

2029 Horizon
Timing Plan: PM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↕↕	↕↕	
Traffic Vol, veh/h	0	0	0	1427	1164	0
Future Vol, veh/h	0	0	0	1427	1164	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	0	0	0	1551	1265	0
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2041	633	1265	0	-	0
Stage 1	1265	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	49	422	545	-	-	-
Stage 1	229	-	-	-	-	-
Stage 2	414	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	49	422	545	-	-	-
Mov Cap-2 Maneuver	49	-	-	-	-	-
Stage 1	229	-	-	-	-	-
Stage 2	414	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	545	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	0	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Timings 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: AM

	↖	→	↘	↙	←	↖	↙	↗	↘	↖	↙	↗	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	
Lane Configurations	↖	↗	↘		↖	↗	↖	↗	↘		↖	↗	↘
Traffic Volume (vph)	278	12	34	20	14	8	47	590	8	10	3	999	
Future Volume (vph)	278	12	34	20	14	8	47	590	8	10	3	999	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0		0	0		0	175		200		175		
Storage Lanes	1		1	0		0	1		1		1		
Taper Length (ft)	25			25			170				100		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00	0.95	1.00	0.95	
Frt			0.850			0.970			0.850				
Flt Protected	0.950				0.977		0.950				0.950		
Satd. Flow (prot)	1770	1863	1583	0	3354	0	1770	3539	1583	0	1770	3539	
Flt Permitted	0.488				0.919		0.211				0.410		
Satd. Flow (perm)	909	1863	1583	0	3155	0	393	3539	1583	0	764	3539	
Right Turn on Red			Yes		Yes		Yes		Yes				
Satd. Flow (RTOR)			73		9		127						
Link Speed (mph)	30				25		50					50	
Link Distance (ft)	180				124		512					2145	
Travel Time (s)	4.1				3.4		7.0					29.3	
Lane Group Flow (vph)	296	13	36	0	45	0	50	628	9	0	14	1063	
Turn Type	pm+pt	NA	Perm	Perm	NA	NA	pm+pt	NA	Perm	custom	pm+pt	NA	
Protected Phases	7	4			8		5	2			1	6	
Permitted Phases	4		4	8			2		2	1	6		
Detector Phase	7	4	4	8	8		5	2	2	1	1	6	
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	45.0	45.0	9.5	9.5	45.0	
Total Split (s)	7.5	40.5	40.5	33.0	33.0		7.5	42.0	42.0	7.5	7.5	42.0	
Total Split (%)	8.3%	45.0%	45.0%	36.7%	36.7%		8.3%	46.7%	46.7%	8.3%	8.3%	46.7%	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5		4.5		4.5	4.5	4.5		4.5	4.5	
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None		None	Max	Max	None	None	Max	
Act Effct Green (s)	10.4	10.4	10.4		6.3		42.2	41.6	41.6		40.5	38.9	
Actuated g/C Ratio	0.17	0.17	0.17		0.10		0.68	0.67	0.67		0.65	0.62	
v/c Ratio	1.42	0.04	0.11		0.14		0.15	0.27	0.01		0.03	0.48	
Control Delay	239.3	21.9	2.8		24.7		5.1	5.6	0.0		4.4	8.9	
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0	
Total Delay	239.3	21.9	2.8		24.7		5.1	5.6	0.0		4.4	8.9	
LOS	F	C	A		C		A	A	A		A	A	
Approach Delay		206.5			24.7			5.5				7.0	
Approach LOS		F			C			A				A	
Queue Length 50th (ft)	-156	4	0		7		6	46	0		2	134	
Queue Length 95th (ft)	#301	17	8		22		16	101	0		7	192	
Internal Link Dist (ft)		100			44			432				2065	
Turn Bay Length (ft)							175		200		175		
Base Capacity (vph)	209	1087	954		1463		331	2357	1096		544	2200	

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Timings 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: AM

	↖	
Lane Group	SBR	
Lane Configurations	↖	
Traffic Volume (vph)	365	
Future Volume (vph)	365	
Ideal Flow (vphpl)	1900	
Storage Length (ft)	175	
Storage Lanes	1	
Taper Length (ft)		
Lane Util. Factor	1.00	
Frt	0.850	
Flt Protected		
Satd. Flow (prot)	1583	
Flt Permitted		
Satd. Flow (perm)	1583	
Right Turn on Red	Yes	
Satd. Flow (RTOR)	381	
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Lane Group Flow (vph)	388	
Turn Type	Perm	
Protected Phases		
Permitted Phases	6	
Detector Phase	6	
Switch Phase		
Minimum Initial (s)	5.0	
Minimum Split (s)	45.0	
Total Split (s)	42.0	
Total Split (%)	46.7%	
Yellow Time (s)	3.5	
All-Red Time (s)	1.0	
Lost Time Adjust (s)	0.0	
Total Lost Time (s)	4.5	
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Recall Mode	Max	
Act Effct Green (s)	38.9	
Actuated g/C Ratio	0.62	
v/c Ratio	0.34	
Control Delay	2.0	
Queue Delay	0.0	
Total Delay	2.0	
LOS	A	
Approach Delay		
Approach LOS		
Queue Length 50th (ft)	1	
Queue Length 95th (ft)	36	
Internal Link Dist (ft)		
Turn Bay Length (ft)	175	
Base Capacity (vph)	1128	


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Timings 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
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	1.42	0.01	0.04		0.03		0.15	0.27	0.01		0.03	0.48

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	62.5
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.42
Intersection Signal Delay:	34.0
Intersection Capacity Utilization	65.1%
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: 5: FM 407 & McMakin Rd/Blanco Dr	
 Ø1	 Ø2
7.5 s	42 s
 Ø5	 Ø6
7.5 s	42 s

Timings 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: AM

	
Lane Group	SBR
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.34

Intersection Summary	
----------------------	--

HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
1: FM 407 & I T Neely Dr Timing Plan: AM

Intersection						
Int Delay, s/veh	4.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↵		↵	↕↕	↕↕	↵
Traffic Vol, veh/h	32	10	53	959	1455	44
Future Vol, veh/h	32	10	53	959	1455	44
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	-	280	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	34	11	56	1009	1532	46

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2149	766	1578	0	-	0
Stage 1	1532	-	-	-	-	-
Stage 2	617	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.16	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.23	-	-	-
Pot Cap-1 Maneuver	41	345	408	-	-	-
Stage 1	164	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	35	345	408	-	-	-
Mov Cap-2 Maneuver	35	-	-	-	-	-
Stage 1	142	-	-	-	-	-
Stage 2	501	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	269.2	0.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	408	-	45	-
HCM Lane V/C Ratio	0.137	-	0.982	-
HCM Control Delay (s)	15.2	-	269.2	-
HCM Lane LOS	C	-	F	-
HCM 95th %tile Q(veh)	0.5	-	4	-

HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
2: CJ Legacy Ranch Dr & FM 407 Timing Plan: AM




Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↵		↕↕	↕↕	
Traffic Vol, veh/h	0	60	0	1062	1451	32
Future Vol, veh/h	0	60	0	1062	1451	32
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	65	0	1142	1560	34

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	797	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	329	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	329	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	-	329	-
HCM Lane V/C Ratio	-	0.196	-
HCM Control Delay (s)	-	18.6	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	0.7	-

HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
 3: CJ Legacy Ranch Dr & Driveway Timing Plan: AM







Intersection						
Int Delay, s/veh	5.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	32	59	0
Future Vol, veh/h	0	1	0	32	59	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	35	64	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	35	0	0	19	18
Stage 1	-	-	-	18	-
Stage 2	-	-	-	1	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1576	-	-	998	1061
Stage 1	-	-	-	1005	-
Stage 2	-	-	-	1022	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1576	-	-	998	1061
Mov Cap-2 Maneuver	-	-	-	998	-
Stage 1	-	-	-	1005	-
Stage 2	-	-	-	1022	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1576	-	-	-	998
HCM Lane V/C Ratio	-	-	-	-	0.064
HCM Control Delay (s)	0	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
 4: FM 407 & Rayzor Rd Timing Plan: AM

Intersection						
Int Delay, s/veh	2.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	146	896	21	56	1454
Future Vol, veh/h	34	146	896	21	56	1454
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	180	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	35	151	924	22	58	1499

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1790	462	0	0	946
Stage 1	924	-	-	-	-
Stage 2	866	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.16
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.23
Pot Cap-1 Maneuver	72	547	-	-	715
Stage 1	347	-	-	-	-
Stage 2	372	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	66	547	-	-	715
Mov Cap-2 Maneuver	66	-	-	-	-
Stage 1	347	-	-	-	-
Stage 2	342	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	32.1	0	0.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	66	547	715	-
HCM Lane V/C Ratio	-	-	0.531	0.275	0.081	-
HCM Control Delay (s)	-	-	109.5	14.1	10.5	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	2.2	1.1	0.3	-

HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
 6: FM 407 & Driveway 2 Timing Plan: AM

Intersection						
Int Delay, s/veh	360.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑↑	↑↑	
Traffic Vol, veh/h	78	59	130	931	1424	55
Future Vol, veh/h	78	59	130	931	1424	55
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	85	64	141	1012	1548	60





















Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2366	804	1608	0	-	0
Stage 1	1578	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 29	326	402	-	-	-
Stage 1	155	-	-	-	-	-
Stage 2	409	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 6	326	402	-	-	-
Mov Cap-2 Maneuver	~ 6	-	-	-	-	-
Stage 1	~ 31	-	-	-	-	-
Stage 2	409	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	6980.7	7.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	402	-	10	-	-
HCM Lane V/C Ratio	0.352	-	14.891	-	-
HCM Control Delay (s)	18.7	-	5.9	6980.7	-
HCM Lane LOS	C	A	F	-	-
HCM 95th %tile Q(veh)	1.6	-	20.1	-	-

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

Timings 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	556	12	46	10	9	6	54	931	12	3	2	832
Future Volume (vph)	556	12	46	10	9	6	54	931	12	3	2	832
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	175		200		175	
Storage Lanes	1		1	0		0	1		1		1	
Taper Length (ft)	25			25			170				100	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Frt			0.850		0.964				0.850			
Flt Protected	0.950				0.980		0.950				0.950	
Satd. Flow (prot)	1770	1863	1583	0	3344	0	1770	3539	1583	0	1770	3539
Flt Permitted	0.580				0.955		0.255				0.246	
Satd. Flow (perm)	1080	1863	1583	0	3258	0	475	3539	1583	0	458	3539
Right Turn on Red			Yes		Yes			Yes	Yes		Yes	
Satd. Flow (RTOR)			73		6			127				
Link Speed (mph)	30				25			50				50
Link Distance (ft)	180				124			512				2145
Travel Time (s)	4.1				3.4			7.0				29.3
Lane Group Flow (vph)	567	12	47	0	25	0	55	950	12	0	5	849
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm	custom	pm+pt	NA
Protected Phases	7	4			8		5	2			1	6
Permitted Phases	4		4	8			2		2	1	6	
Detector Phase	7	4	4	8	8		5	2	2	1	1	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	45.0	45.0	9.5	9.5	45.0
Total Split (s)	20.0	35.0	35.0	15.0	15.0		10.0	45.0	45.0	10.0	10.0	45.0
Total Split (%)	22.2%	38.9%	38.9%	16.7%	16.7%		11.1%	50.0%	50.0%	11.1%	11.1%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5		4.5	4.5	4.5		4.5	4.5
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max	Max	None	None	Max
Act Effect Green (s)	19.7	19.7	19.7		6.1		45.9	44.9	44.9		44.2	41.1
Actuated g/C Ratio	0.26	0.26	0.26		0.08		0.61	0.59	0.59		0.59	0.54
v/c Ratio	1.33	0.02	0.10		0.09		0.14	0.45	0.01		0.01	0.44
Control Delay	192.0	21.4	3.1		30.9		7.7	10.8	0.0		7.2	12.9
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	192.0	21.4	3.1		30.9		7.7	10.8	0.0		7.2	12.9
LOS	F	C	A		C		A	B	A		A	B
Approach Delay		174.6			30.9			10.5				10.6
Approach LOS		F			C			B				B
Queue Length 50th (ft)	~379	4	0		4		7	87	0		1	116
Queue Length 95th (ft)	#582	17	13		17		27	249	0		6	216
Internal Link Dist (ft)		100			44			432				2065
Turn Bay Length (ft)							175		200		175	
Base Capacity (vph)	425	764	692		465		384	2105	993		365	1928

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Timings 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

	↖
Lane Group	SBR
Lane Configurations	↖
Traffic Volume (vph)	237
Future Volume (vph)	237
Ideal Flow (vphpl)	1900
Storage Length (ft)	175
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	Yes
Satd. Flow (RTOR)	242
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Lane Group Flow (vph)	242
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	45.0
Total Split (s)	45.0
Total Split (%)	50.0%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Recall Mode	Max
Act Effct Green (s)	41.1
Actuated g/C Ratio	0.54
v/c Ratio	0.25
Control Delay	2.7
Queue Delay	0.0
Total Delay	2.7
LOS	A
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	38
Internal Link Dist (ft)	
Turn Bay Length (ft)	175
Base Capacity (vph)	972

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Timings 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM


												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
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	1.33	0.02	0.07		0.05		0.14	0.45	0.01		0.01	0.44

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	75.5
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.33
Intersection Signal Delay:	47.9
Intersection Capacity Utilization	78.6%
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: 5: FM 407 & McMakin Rd/Blanco Dr

 Ø1	 Ø2	 Ø4
40 s	45 s	35 s
 Ø5	 Ø6	 Ø7
40 s	45 s	20 s
		 Ø8
		15 s

Timings 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

	
Lane Group	SBR
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.25

Intersection Summary	
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HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
1: FM 407 & I T Neely Dr Timing Plan: PM

Intersection							
Int Delay, s/veh	2.8						
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	1	↔	↕↕	↕↕	↔
Traffic Vol, veh/h	26	19	1	73	1362	1137	70
Future Vol, veh/h	26	19	1	73	1362	1137	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	-	None	-	None
Storage Length	0	-	-	280	-	-	300
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	95	95	92	95	95	95	95
Heavy Vehicles, %	2	2	2	3	3	3	3
Mvmt Flow	27	20	1	77	1434	1197	74

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2070	599	1197	1271	0	0
Stage 1	1197	-	-	-	-	-
Stage 2	873	-	-	-	-	-
Critical Hdwy	6.84	6.94	6.44	4.16	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.52	2.23	-	-
Pot Cap-1 Maneuver	47	445	248	537	-	-
Stage 1	249	-	-	-	-	-
Stage 2	369	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	40	445	528	528	-	-
Mov Cap-2 Maneuver	40	-	-	-	-	-
Stage 1	212	-	-	-	-	-
Stage 2	369	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	147.3	0.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	528	-	65	-	-
HCM Lane V/C Ratio	0.148	-	0.729	-	-
HCM Control Delay (s)	13	-	147.3	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.5	-	3.3	-	-

HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
2: CJ Legacy Ranch Dr & FM 407 Timing Plan: PM

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↔		↕↕	↕↕	
Traffic Vol, veh/h	0	15	0	1440	1180	6
Future Vol, veh/h	0	15	0	1440	1180	6
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	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	15	0	1455	1192	6

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	-	599	-	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-
Pot Cap-1 Maneuver	0	445	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	445	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	445	-	-
HCM Lane V/C Ratio	-	0.034	-	-
HCM Control Delay (s)	-	13.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
 3: CJ Legacy Ranch Dr & Driveway Timing Plan: PM

Intersection						
Int Delay, s/veh	6.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	0	2	0	3	12	0
Future Vol, veh/h	0	2	0	3	12	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	3	13	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	3	0	0	4	2
Stage 1	-	-	-	2	-
Stage 2	-	-	-	2	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1619	-	-	1018	1082
Stage 1	-	-	-	1021	-
Stage 2	-	-	-	1021	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1619	-	-	1018	1082
Mov Cap-2 Maneuver	-	-	-	1018	-
Stage 1	-	-	-	1021	-
Stage 2	-	-	-	1021	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1619	-	-	-	1018
HCM Lane V/C Ratio	-	-	-	-	0.013
HCM Control Delay (s)	0	-	-	-	8.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
 4: FM 407 & Rayzor Rd Timing Plan: PM

Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	24	69	1354	53	57	1155
Future Vol, veh/h	24	69	1354	53	57	1155
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	180	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	25	73	1425	56	60	1216

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2153	713	0	0	1481
Stage 1	1425	-	-	-	-
Stage 2	728	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.16
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.23
Pot Cap-1 Maneuver	41	374	-	-	445
Stage 1	188	-	-	-	-
Stage 2	439	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	35	374	-	-	445
Mov Cap-2 Maneuver	35	-	-	-	-
Stage 1	188	-	-	-	-
Stage 2	380	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	74.1	0	0.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	35	374	445	-
HCM Lane V/C Ratio	-	-	0.722	0.194	0.135	-
HCM Control Delay (s)	-	-	238.5	16.9	14.3	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	2.5	0.7	0.5	-

HCM 6th TWSC
6: FM 407

2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
Timing Plan: PM

Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↕	↕	↔
Traffic Vol, veh/h	18	15	13	1427	1168	6
Future Vol, veh/h	18	15	13	1427	1168	6
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	20	16	14	1551	1270	7
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2078	639	1277	0	-	0
Stage 1	1274	-	-	-	-	-
Stage 2	804	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	46	419	540	-	-	-
Stage 1	226	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	37	419	540	-	-	-
Mov Cap-2 Maneuver	37	-	-	-	-	-
Stage 1	184	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	120.3	1.2	0			
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	540	-	63	-	-	
HCM Lane V/C Ratio	0.026	-	0.569	-	-	
HCM Control Delay (s)	11.8	1.1	120.3	-	-	
HCM Lane LOS	B	A	F	-	-	
HCM 95th %tile Q(veh)	0.1	-	2.3	-	-	

Timings 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: AM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↱	↰	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	267	12	34	20	14	8	47	484	8	3	901	355
Future Volume (vph)	267	12	34	20	14	8	47	484	8	3	901	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	175		200	175		175
Storage Lanes	1		1	0		0	1		1	1		1
Taper Length (ft)	25			25			170			100		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850		0.970				0.850			0.850
Flt Protected	0.950				0.977		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	0	3354	0	1770	3539	1583	1770	3539	1583
Flt Permitted	0.488				0.919		0.245			0.462		
Satd. Flow (perm)	909	1863	1583	0	3155	0	456	3539	1583	861	3539	1583
Right Turn on Red			Yes		Yes			Yes		Yes		Yes
Satd. Flow (RTOR)			73		9			127				378
Link Speed (mph)	30				25			50			50	
Link Distance (ft)	180				124			512			2145	
Travel Time (s)	4.1				3.4			7.0			29.3	
Lane Group Flow (vph)	284	13	36	0	45	0	50	515	9	3	959	378
Turn Type	pm+pt	NA	Perm	Perm	NA	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		6
Detector Phase	7	4	4	8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	45.0	45.0	9.5	45.0	45.0
Total Split (s)	7.5	40.5	40.5	33.0	33.0		7.5	42.0	42.0	7.5	42.0	42.0
Total Split (%)	8.3%	45.0%	45.0%	36.7%	36.7%		8.3%	46.7%	46.7%	8.3%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5		4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	Max
Act Effect Green (s)	10.4	10.4	10.4		6.3		42.4	41.8	41.8	40.7	39.0	39.0
Actuated g/C Ratio	0.17	0.17	0.17		0.10		0.68	0.67	0.67	0.65	0.62	0.62
v/c Ratio	1.37	0.04	0.11		0.14		0.13	0.22	0.01	0.00	0.44	0.34
Control Delay	217.6	21.9	2.8		24.7		4.9	5.4	0.0	4.3	8.4	1.9
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	217.6	21.9	2.8		24.7		4.9	5.4	0.0	4.3	8.4	1.9
LOS	F	C	A		C		A	A	A	A	A	A
Approach Delay		186.8			24.7			5.3			6.6	
Approach LOS		F			C			A			A	
Queue Length 50th (ft)	-144	4	0		7		6	36	0	0	116	0
Queue Length 95th (ft)	#288	17	8		22		16	82	0	3	167	34
Internal Link Dist (ft)		100			44			432			2065	
Turn Bay Length (ft)							175		200	175		175
Base Capacity (vph)	208	1083	951		1457		371	2360	1098	603	2204	1128

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Timings 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: AM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0	0		0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0		0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0		0		0	0	0	0	0	0
Reduced v/c Ratio	1.37	0.01	0.04		0.03		0.13	0.22	0.01	0.00	0.44	0.34

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 62.7

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.37

Intersection Signal Delay: 32.8

Intersection LOS: C

Intersection Capacity Utilization 61.8%

ICU Level of Service B

Analysis Period (min) 15

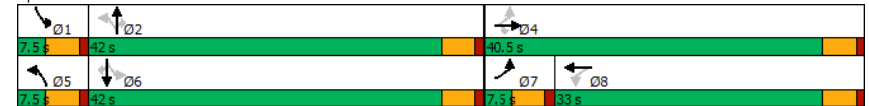
- Volume exceeds capacity, queue is theoretically infinite.

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: 5: FM 407 & McMakin Rd/Blanco Dr



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HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
1: FM 407 & I T Neely Dr Timing Plan: AM

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↕↕	↕↕	↔
Traffic Vol, veh/h	32	10	53	881	1370	44
Future Vol, veh/h	32	10	53	881	1370	44
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	-	280	-	-	300
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	3	3	3	3
Mvmt Flow	34	11	56	927	1442	46

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2018	721	1488	0	-	0
Stage 1	1442	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.16	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.23	-	-	-
Pot Cap-1 Maneuver	51	370	443	-	-	-
Stage 1	184	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	45	370	443	-	-	-
Mov Cap-2 Maneuver	45	-	-	-	-	-
Stage 1	161	-	-	-	-	-
Stage 2	525	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	174.5	0.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT EBLn1	SBT	SBR
Capacity (veh/h)	443	-	57	-
HCM Lane V/C Ratio	0.126	-	0.776	-
HCM Control Delay (s)	14.3	-	174.5	-
HCM Lane LOS	B	-	F	-
HCM 95th %tile Q(veh)	0.4	-	3.4	-

HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
2: CJ Legacy Ranch Dr & FM 407 Timing Plan: AM




Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↔		↕↕	↕↕	
Traffic Vol, veh/h	0	1	0	934	1392	1
Future Vol, veh/h	0	1	0	934	1392	1
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	1	0	1004	1497	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	749	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	354	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	354	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	-	354	-
HCM Lane V/C Ratio	-	0.003	-
HCM Control Delay (s)	-	15.2	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	0	-

HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
 3: CJ Legacy Ranch Dr & Driveway Timing Plan: AM







Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	0	1	0	0
Future Vol, veh/h	0	1	0	1	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	1	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	-	0	2
Stage 1	-	-	-	-	1
Stage 2	-	-	-	-	1
Critical Hdwy	4.12	-	-	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	2.218	-	-	-	3.518
Pot Cap-1 Maneuver	1622	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	-	1021
Mov Cap-2 Maneuver	-	-	-	-	1021
Stage 1	-	-	-	-	1022
Stage 2	-	-	-	-	1022

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
 4: FM 407 & Rayzor Rd Timing Plan: AM

Intersection						
Int Delay, s/veh	2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	135	779	11	56	1337
Future Vol, veh/h	34	135	779	11	56	1337
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	180	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	35	139	803	11	58	1378

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1608	402	0	0	814
Stage 1	803	-	-	-	-
Stage 2	805	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.16
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.23
Pot Cap-1 Maneuver	96	598	-	-	802
Stage 1	401	-	-	-	-
Stage 2	400	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	89	598	-	-	802
Mov Cap-2 Maneuver	89	-	-	-	-
Stage 1	401	-	-	-	-
Stage 2	371	-	-	-	-






















Approach	WB	NB	SB
HCM Control Delay, s	24.2	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	89	598	802	-
HCM Lane V/C Ratio	-	-	0.394	0.233	0.072	-
HCM Control Delay (s)	-	-	69.6	12.8	9.8	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	1.6	0.9	0.2	-

HCM 6th TWSC 2029 Horizon Plus Site(Scenario 1-For Buses + Passenger Car)
 6: FM 407 & Driveway 2 Timing Plan: AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↕↕	↕↕	
Traffic Vol, veh/h	0	0	3	934	1393	1
Future Vol, veh/h	0	0	3	934	1393	1
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	0	0	3	1015	1514	1
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2029	758	1515	0	-	0
Stage 1	1515	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	50	350	437	-	-	-
Stage 1	168	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	49	350	437	-	-	-
Mov Cap-2 Maneuver	49	-	-	-	-	-
Stage 1	165	-	-	-	-	-
Stage 2	565	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	0	0.1	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	437	-	-	-	-	
HCM Lane V/C Ratio	0.007	-	-	-	-	
HCM Control Delay (s)	13.3	0.1	0	-	-	
HCM Lane LOS	B	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	



Timings 2029 Horizon Plus Site(Scenario 2 - For Buses only)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	555	12	46	10	9	6	54	920	12	1	2	812
Future Volume (vph)	555	12	46	10	9	6	54	920	12	1	2	812
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	175		200		175	
Storage Lanes	1		1	0		0	1		1		1	
Taper Length (ft)	25			25			170				100	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.95	1.00	0.95	1.00	0.95
Frt			0.850			0.964			0.850			
Flt Protected	0.950				0.980		0.950				0.950	
Satd. Flow (prot)	1770	1863	1583	0	3344	0	1770	3539	1583	0	1770	3539
Flt Permitted	0.580				0.955		0.264				0.251	
Satd. Flow (perm)	1080	1863	1583	0	3258	0	492	3539	1583	0	468	3539
Right Turn on Red			Yes		Yes			Yes				
Satd. Flow (RTOR)			73		6			127				
Link Speed (mph)	30				25			50				50
Link Distance (ft)	180				124			512				2145
Travel Time (s)	4.1				3.4			7.0				29.3
Lane Group Flow (vph)	566	12	47	0	25	0	55	939	12	0	3	829
Turn Type	pm+pt	NA	Perm	Perm	NA	NA	pm+pt	NA	Perm	custom	pm+pt	NA
Protected Phases	7	4			8		5	2			1	6
Permitted Phases	4		4	8			2		2	1	6	
Detector Phase	7	4	4	8	8		5	2	2	1	1	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	35.0	35.0	35.0	35.0		9.5	45.0	45.0	9.5	9.5	45.0
Total Split (s)	20.0	35.0	35.0	15.0	15.0		10.0	45.0	45.0	10.0	10.0	45.0
Total Split (%)	22.2%	38.9%	38.9%	16.7%	16.7%		11.1%	50.0%	50.0%	11.1%	11.1%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5		4.5		4.5	4.5	4.5		4.5	4.5
Lead/Lag	Lead			Lag	Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None		None	Max	Max	None	None	Max
Act Effct Green (s)	19.7	19.7	19.7		6.1		45.9	44.9	44.9		44.2	41.1
Actuated g/C Ratio	0.26	0.26	0.26		0.08		0.61	0.59	0.59		0.59	0.54
v/c Ratio	1.33	0.02	0.10		0.09		0.14	0.45	0.01		0.01	0.43
Control Delay	191.0	21.4	3.1		30.9		7.6	10.7	0.0		7.3	12.8
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	191.0	21.4	3.1		30.9		7.6	10.7	0.0		7.3	12.8
LOS	F	C	A		C		A	B	A		A	B
Approach Delay		173.7			30.9			10.4				10.5
Approach LOS		F			C			B				B
Queue Length 50th (ft)	-378	4	0		4		7	86	0		1	112
Queue Length 95th (ft)	#580	17	13		17		27	245	0		4	210
Internal Link Dist (ft)		100			44			432				2065
Turn Bay Length (ft)							175		200		175	
Base Capacity (vph)	425	764	692		465		393	2105	993		370	1928

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






Timings 2029 Horizon Plus Site(Scenario 2 - For Buses only)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

	
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	235
Future Volume (vph)	235
Ideal Flow (vphpl)	1900
Storage Length (ft)	175
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	Yes
Satd. Flow (RTOR)	240
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Lane Group Flow (vph)	240
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Detector Phase	6
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	45.0
Total Split (s)	45.0
Total Split (%)	50.0%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Recall Mode	Max
Act Effct Green (s)	41.1
Actuated g/C Ratio	0.54
v/c Ratio	0.25
Control Delay	2.7
Queue Delay	0.0
Total Delay	2.7
LOS	A
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	38
Internal Link Dist (ft)	
Turn Bay Length (ft)	175
Base Capacity (vph)	971

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Timings 2029 Horizon Plus Site(Scenario 2 - For Buses only)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
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	1.33	0.02	0.07		0.05		0.14	0.45	0.01		0.01	0.43

Intersection Summary	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	75.5
Natural Cycle:	100
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.33
Intersection Signal Delay:	48.0
Intersection Capacity Utilization	78.3%
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.	



Timings 2029 Horizon Plus Site(Scenario 2 - For Buses only)
5: FM 407 & McMakin Rd/Blanco Dr Timing Plan: PM

	
Lane Group	SBR
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.25

Intersection Summary	
----------------------	--

HCM 6th TWSC
1: FM 407 & I T Neely Dr

2029 Horizon Plus Site(Scenario 2 - For Buses only)
Timing Plan: PM

Intersection							
Int Delay, s/veh	2.7						
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	1	↔	↕↕	↕↕	↔
Traffic Vol, veh/h	26	19	1	73	1346	1128	70
Future Vol, veh/h	26	19	1	73	1346	1128	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	-	None	-	None
Storage Length	0	-	-	280	-	-	300
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	95	95	92	95	95	95	95
Heavy Vehicles, %	2	2	2	3	3	3	3
Mvmt Flow	27	20	1	77	1417	1187	74

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2052	594	1187	1261	0	- 0
Stage 1	1187	-	-	-	-	-
Stage 2	865	-	-	-	-	-
Critical Hdwy	6.84	6.94	6.44	4.16	-	- -
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.52	2.23	-	- -
Pot Cap-1 Maneuver	48	448	252	542	-	- -
Stage 1	252	-	-	-	-	-
Stage 2	373	-	-	-	-	-
Platoon blocked, %					-	- -
Mov Cap-1 Maneuver	41	448	533	533	-	- -
Mov Cap-2 Maneuver	41	-	-	-	-	-
Stage 1	215	-	-	-	-	-
Stage 2	373	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	139.2	0.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	533	-	67	-	-
HCM Lane V/C Ratio	0.146	-	0.707	-	-
HCM Control Delay (s)	12.9	-	139.2	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.5	-	3.2	-	-

HCM 6th TWSC
2: CJ Legacy Ranch Dr & FM 407

2029 Horizon Plus Site(Scenario 2 - For Buses only)
Timing Plan: PM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↔		↕↕	↕↕	
Traffic Vol, veh/h	0	4	0	1427	1166	2
Future Vol, veh/h	0	4	0	1427	1166	2
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	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	0	4	0	1441	1178	2

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	- 590	-	0	-	- 0	
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	- 6.94	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	- 3.32	-	-	-	-	-
Pot Cap-1 Maneuver	0	451	0	-	- -	
Stage 1	0	-	0	-	- -	
Stage 2	0	-	0	-	- -	
Platoon blocked, %					-	- -
Mov Cap-1 Maneuver	- 451	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	0	0
HCM LOS	B		




Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	451	-	-
HCM Lane V/C Ratio	-	0.009	-	-
HCM Control Delay (s)	-	13.1	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0	-	-

HCM 6th TWSC

2029 Horizon Plus Site(Scenario 2 - For Buses only)

3: CJ Legacy Ranch Dr & Driveway

Timing Plan: PM

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	0	2	0
Future Vol, veh/h	0	2	0	0	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	0	2	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1	0	0	3	1
Stage 1	-	-	-	1	-
Stage 2	-	-	-	2	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1622	-	-	1019	1084
Stage 1	-	-	-	1022	-
Stage 2	-	-	-	1021	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	1019	1084
Mov Cap-2 Maneuver	-	-	-	1019	-
Stage 1	-	-	-	1022	-
Stage 2	-	-	-	1021	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.5
HCM LOS			A







Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	1019
HCM Lane V/C Ratio	-	-	-	-	0.002
HCM Control Delay (s)	0	-	-	-	8.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th TWSC

2029 Horizon Plus Site(Scenario 2 - For Buses only)

4: FM 407 & Rayzor Rd

Timing Plan: PM

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	68	1342	51	57	1130
Future Vol, veh/h	24	68	1342	51	57	1130
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	180	225	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	3	3
Mvmt Flow	25	72	1413	54	60	1189

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2128	707	0	0	1467
Stage 1	1413	-	-	-	-
Stage 2	715	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.16
Critical Hdwy Stg 1	5.84	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.23
Pot Cap-1 Maneuver	43	378	-	-	451
Stage 1	191	-	-	-	-
Stage 2	446	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	37	378	-	-	451
Mov Cap-2 Maneuver	37	-	-	-	-
Stage 1	191	-	-	-	-
Stage 2	387	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	69.2	0	0.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	37	378	451	-
HCM Lane V/C Ratio	-	-	0.683	0.189	0.133	-
HCM Control Delay (s)	-	-	218	16.7	14.2	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	2.4	0.7	0.5	-

HCM 6th TWSC

2029 Horizon Plus Site(Scenario 2 - For Buses only)

6: FM 407

Timing Plan: PM

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑↑	↑↑	
Traffic Vol, veh/h	2	2	0	1427	1167	0
Future Vol, veh/h	2	2	0	1427	1167	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	2	2	0	1551	1268	0
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2044	634	1268	0	-	0
Stage 1	1268	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	49	422	544	-	-	-
Stage 1	228	-	-	-	-	-
Stage 2	414	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	49	422	544	-	-	-
Mov Cap-2 Maneuver	49	-	-	-	-	-
Stage 1	228	-	-	-	-	-
Stage 2	414	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	48	0	0			
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	544	-	88	-	-	
HCM Lane V/C Ratio	-	-	0.049	-	-	
HCM Control Delay (s)	0	-	48	-	-	
HCM Lane LOS	A	-	E	-	-	
HCM 95th %tile Q(veh)	0	-	0.2	-	-	

Appendix E. Supplemental Information

population growth indicates that growth is moving northward out of Tarrant County. Cities within close proximity to Bartonville have experienced increased rates of population growth over the past ten years. **Table 1-1** shows population growth for Bartonville, Denton County, and selected area cities from 1990 to 2016.

Table 1-1
Population Growth 1980 to 2016

Place	Population Estimate				Growth 1990-2016		Compound Growth Rate	
	1990	2000	2010	2016	Change	% Change	1990-2010	2010-2016
Bartonville	849	1,093	1,469	1,650	801	94.3%	1.8%	1.2%
Denton County	273,525	432,976	662,614	784,840	511,315	186.9%	3.0%	1.7%
Argyle	1,575	2,365	3,282	3,820	2,245	142.5%	2.5%	1.5%
Copper Canyon	978	1,216	1,334	1,380	402	41.1%	1.0%	0.3%
Corinth	3,944	11,325	19,935	20,740	16,796	425.9%	5.5%	0.4%
Denton	66,270	80,537	113,383	125,980	59,710	90.1%	1.8%	1.1%
Double Oak	1,664	2,179	2,867	2,950	1,286	77.3%	1.8%	0.3%
Flower Mound	15,527	50,702	64,669	69,080	53,553	344.9%	4.9%	0.7%
Hickory Creek	1,893	2,078	3,247	3,730	1,837	97.0%	1.8%	1.4%
Highland Village	7,027	12,173	15,056	15,370	8,343	118.7%	2.6%	0.2%

SOURCE: U.S. Census, 1990, 2000, 2010, 2016

The data shows that Bartonville and its neighboring cities have experienced a moderate rate of growth over the past ten years. From 2000 to 2016, Bartonville has grown at a rate that is similar to Denton County as a whole. It is anticipated that the county population growth pattern will continue and that Bartonville will continue to experience a healthy rate of growth. Due to the limited opportunities for additional residential development within the Bartonville Planning Area, it is also expected that Bartonville's residential areas will build-out relatively quickly.

Description

An elementary school is a public school that typically serves students attending kindergarten through the fifth or sixth grade. An elementary school is usually centrally located in a residential community to facilitate student access. Bus service is commonly provided to students living beyond a specified distance from the school. Middle school/junior high school (Land Use 522), private school (K-8) (Land Use 530), private school (K-12) (Land Use 532), charter elementary school (Land Use 536), and charter school (K-12) (Land Use 538) are related uses.

Additional Data

Elementary school students generally used school buses more than regular transit and were dropped off and picked up more than high school students, who were apt to walk longer distances, ride bicycles, or, in some cases, drive to school. The percentage of students at the sites who were transported to school via bus varied considerably. Some sites experienced higher than average trip rates because many students did not utilize the available school bus service. Due to the varied transit and school bus usage at these sites, it is desirable that future studies report additional detail on the percentage of students who were bused to school and the percentage that were dropped off and picked up.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alabama, Arizona, British Columbia (CAN), California, Connecticut, Florida, Hawaii, Minnesota, Montana, Nevada, New York, Oregon, Texas, Utah, Washinton, and West Virginia.

Source Numbers

186, 383, 390, 395, 533, 536, 572, 579, 583, 609, 611, 612, 613, 632, 707, 852, 856, 858, 866, 877, 878, 896, 940, 1039, 1048, 1067, 1083

Metric				US Customary			
Design speed (km/h)	Stopping sight distance (m)	Intersection sight distance for passenger cars		Design speed (mph)	Stopping sight distance (ft)	Intersection sight distance for passenger cars	
		Calculated (m)	Design (m)			Calculated (ft)	Design (ft)
20	20	36.1	40	15	80	143.3	145
30	35	54.2	55	20	115	191.1	195
40	50	72.3	75	25	155	238.9	240
50	65	90.4	95	30	200	286.7	290
60	85	108.4	110	35	250	334.4	335
70	105	126.5	130	40	305	382.2	385
80	130	144.6	145	45	360	430.0	430
90	160	162.6	165	50	425	477.8	480
100	185	180.7	185	55	495	525.5	530
110	220	198.8	200	60	570	573.3	575
120	250	216.8	220	65	645	621.1	625
130	285	234.9	235	70	730	668.9	670
				75	820	716.6	720
				80	910	764.4	765

Note: Intersection sight distance shown is for a stopped passenger car to turn right onto or cross a two-lane highway with no median and grades 3 percent or less. For other conditions, the time gap must be adjusted and required sight distance recalculated.

Exhibit 9-58. Design Intersection Sight Distance—Case B2—Right Turn from Stop and Case B3—Crossing Maneuver

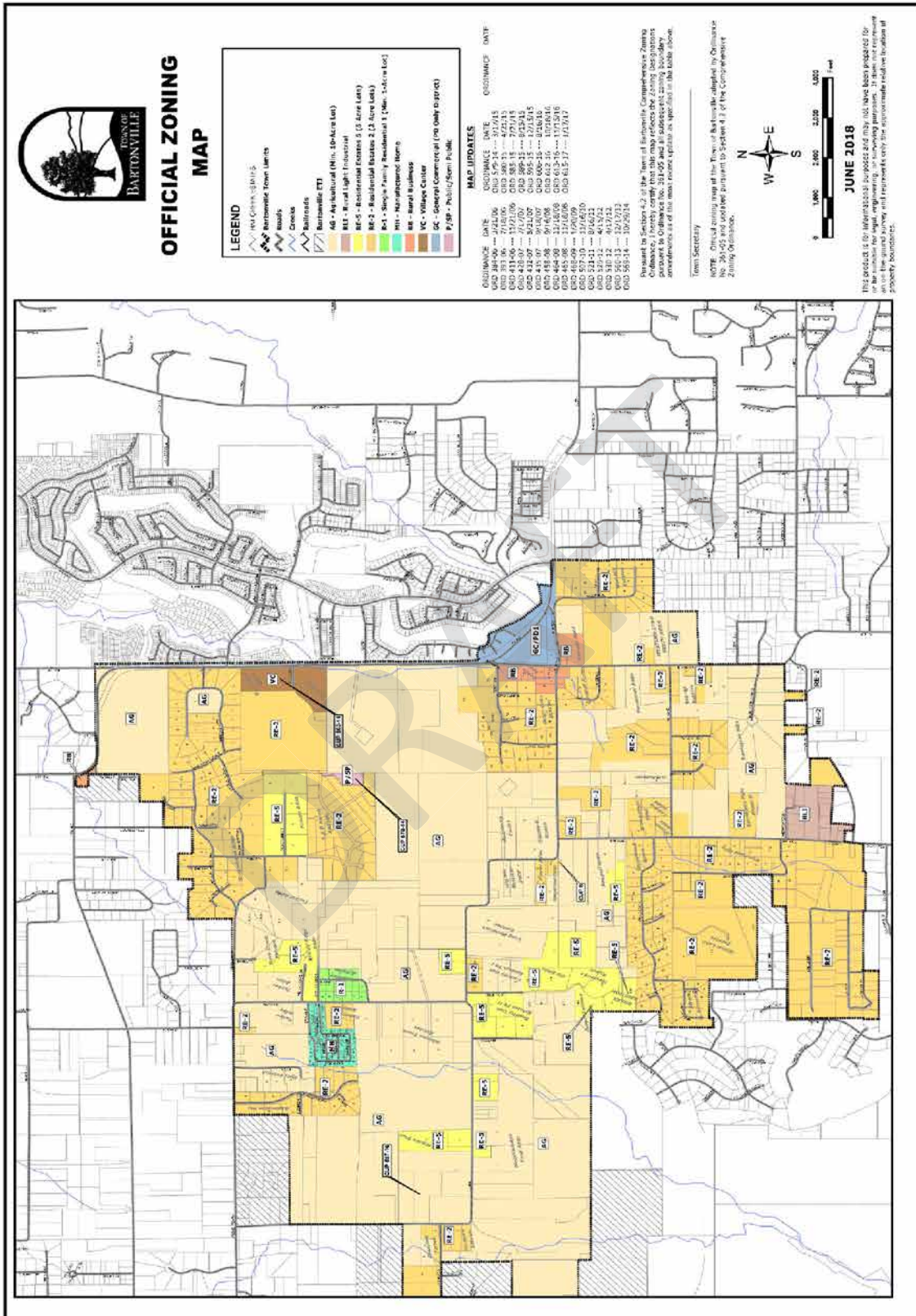
Metric				US Customary			
Design speed (km/h)	Stopping sight distance (m)	Intersection sight distance for passenger cars		Design speed (mph)	Stopping sight distance (ft)	Intersection sight distance for passenger cars	
		Calculated (m)	Design (m)			Calculated (ft)	Design (ft)
20	20	41.7	45	15	80	165.4	170
30	35	62.6	65	20	115	220.5	225
40	50	83.4	85	25	155	275.6	280
50	65	104.3	105	30	200	330.8	335
60	85	125.1	130	35	250	385.9	390
70	105	146.0	150	40	305	441.0	445
80	130	166.8	170	45	360	496.1	500
90	160	187.7	190	50	425	551.3	555
100	185	208.5	210	55	495	606.4	610
110	220	229.4	230	60	570	661.5	665
120	250	250.2	255	65	645	716.6	720
130	285	271.1	275	70	730	771.8	775
				75	820	826.9	830
				80	910	882.0	885

Note: Intersection sight distance shown is for a stopped passenger car to turn left onto a two-lane highway with no median and grades 3 percent or less. For other conditions, the time gap must be adjusted and required sight distance recalculated.

Exhibit 9-55. Design Intersection Sight Distance—Case B1—Left Turn from Stop

Existing Zoning Map

Please confirm accuracy / currency of data with contact on cover



Future Land Use Plan

Please confirm accuracy / currency of data with contact on cover

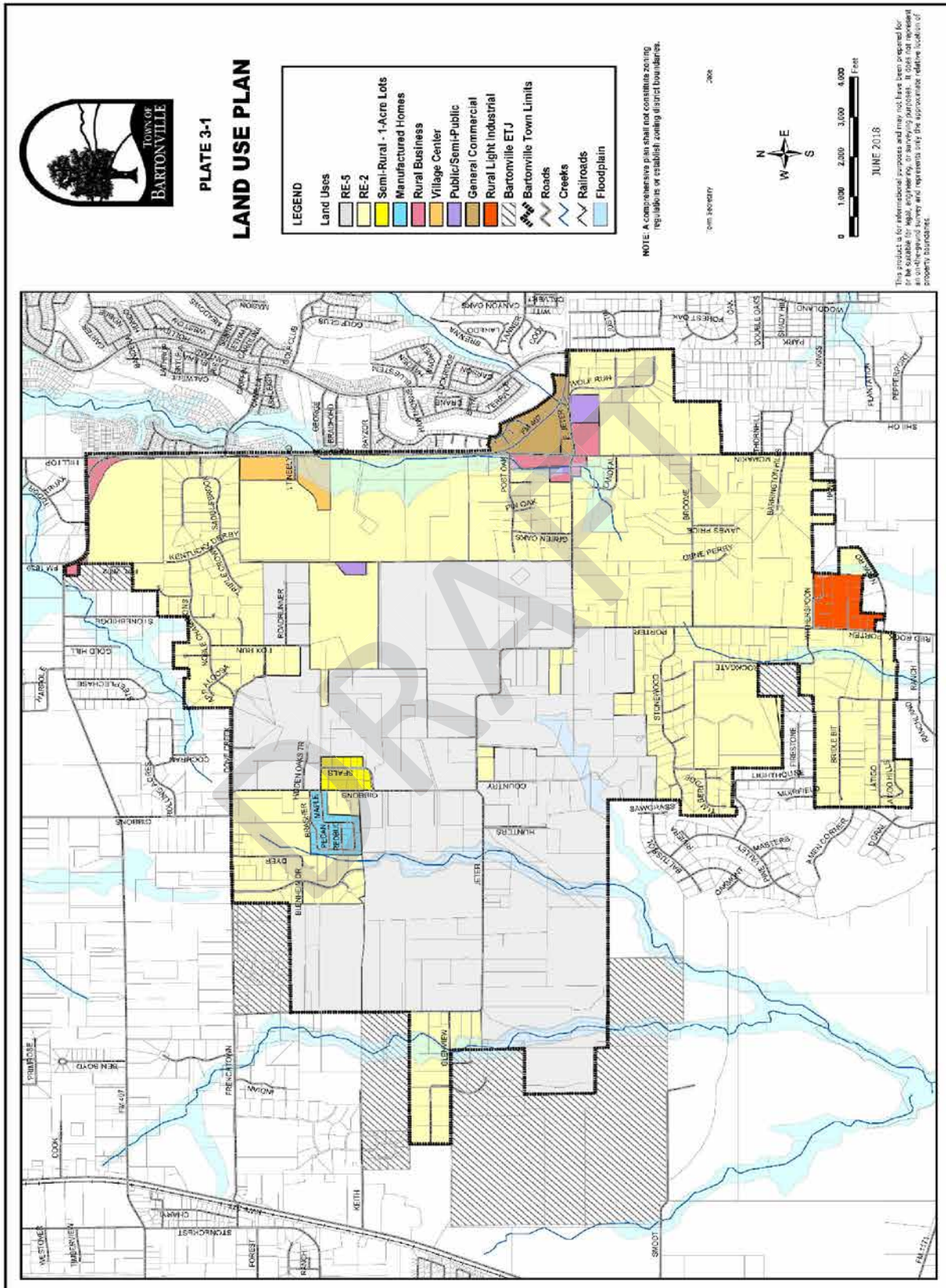




PLATE 4-1
Town of
Bartonville, Texas

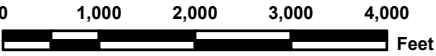
THOROUGHFARE
PLAN

LEGEND

Thoroughfare Plan

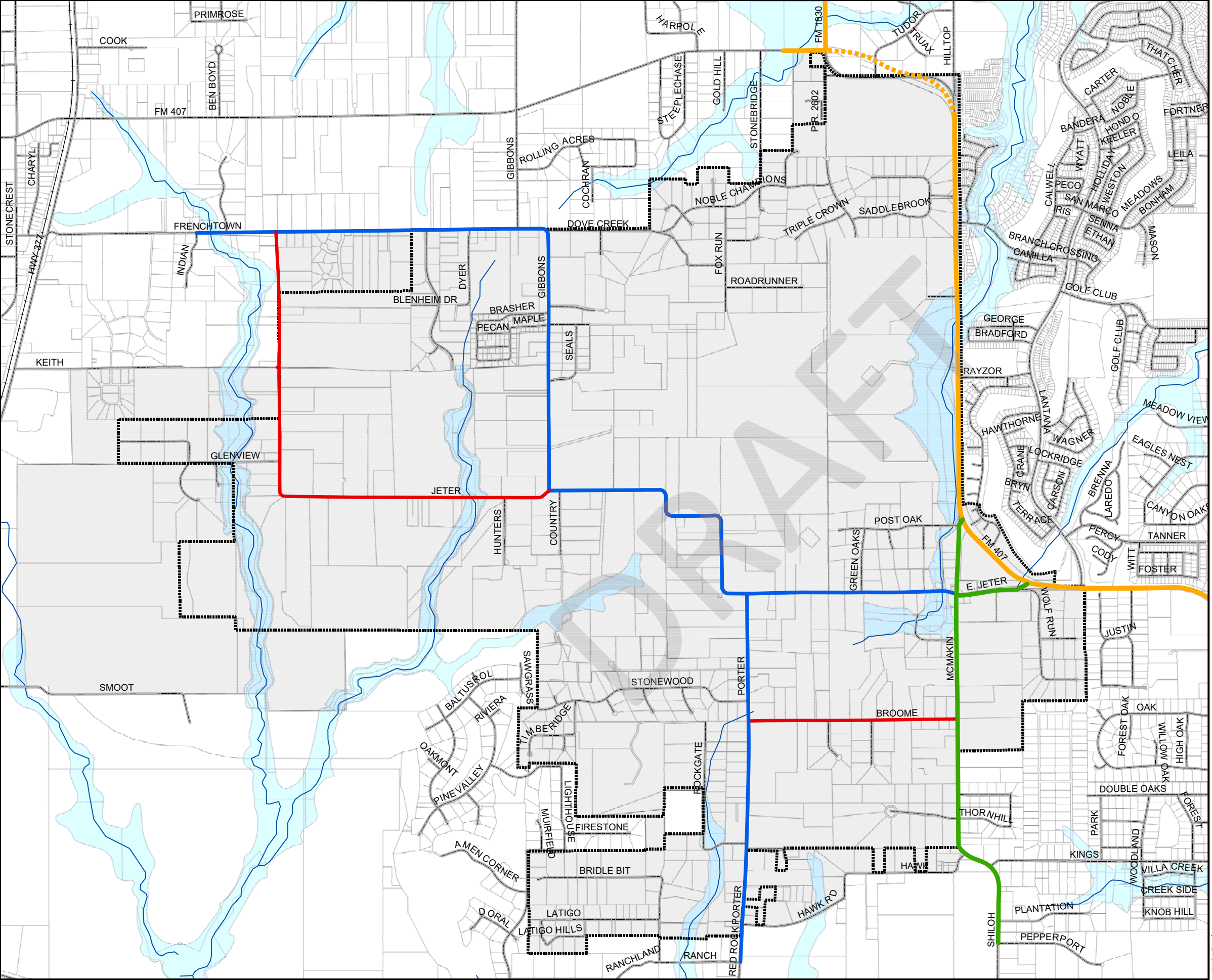
- Highway
- Highway - Future
- Rural Collector
- Minor Collector
- Local Thoroughfare
- Bartonville Town Limits
- Roads
- Creeks
- Railroads
- Floodplain
- Parcels

NOTE: A comprehensive plan shall not constitute zoning regulations or establish zoning district boundaries.



NOVEMBER 2012

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.










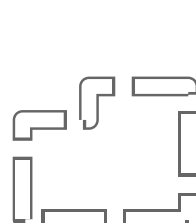






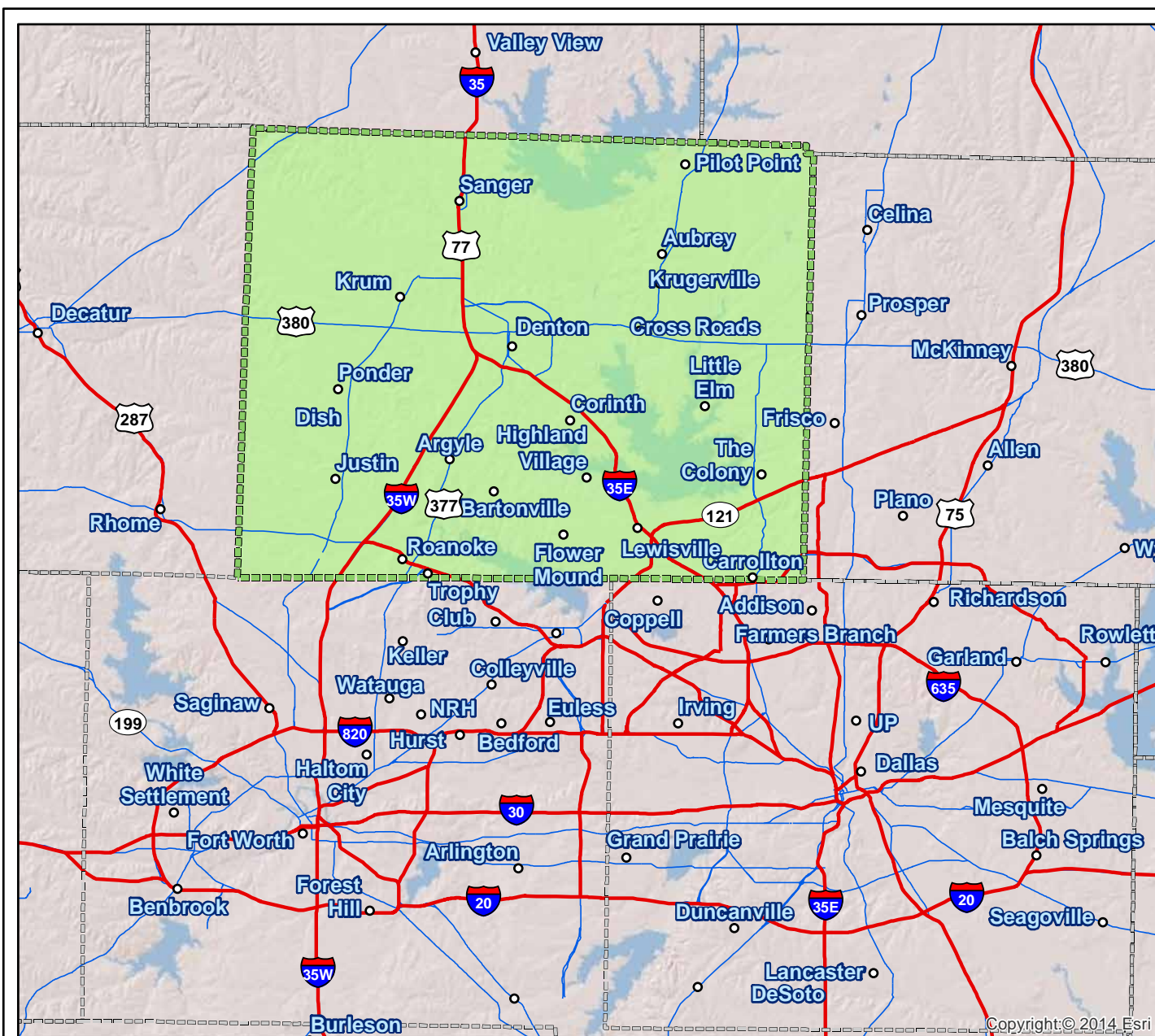
Denton County Thoroughfare Plan

Approved: April 18, 2017

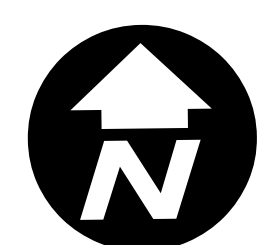
LEGEND

Road Types

- | | |
|---|--|
|  | Freeway/Highway |
|  | Toll Road |
|  | Principal Arterial 6 Lane Divided (120' to 160' ROW) |
|  | Principal Arterial 4 Lane Divided (100' to 120' ROW) |
|  | Major Arterial 6 Lane Divided (120' to 140' ROW) |
|  | Major Arterial 4 Lane Divided (100' to 120' ROW) |
|  | Minor Arterial 4 Lane Undivided / 3 Lane (80' to 100' ROW) |
|  | One-way Couplet (Lanes and ROW vary) |
|  | Minor Arterial 2 Lane (70' ROW) |
|  | County Line |
|  | Airport |
|  | Rail Line |
|  | Lakes |
|  | 1-Percent Flood Risk Zones (FEMA) |



Relationship to the Region



0 0.5 1 2 3 4 Miles

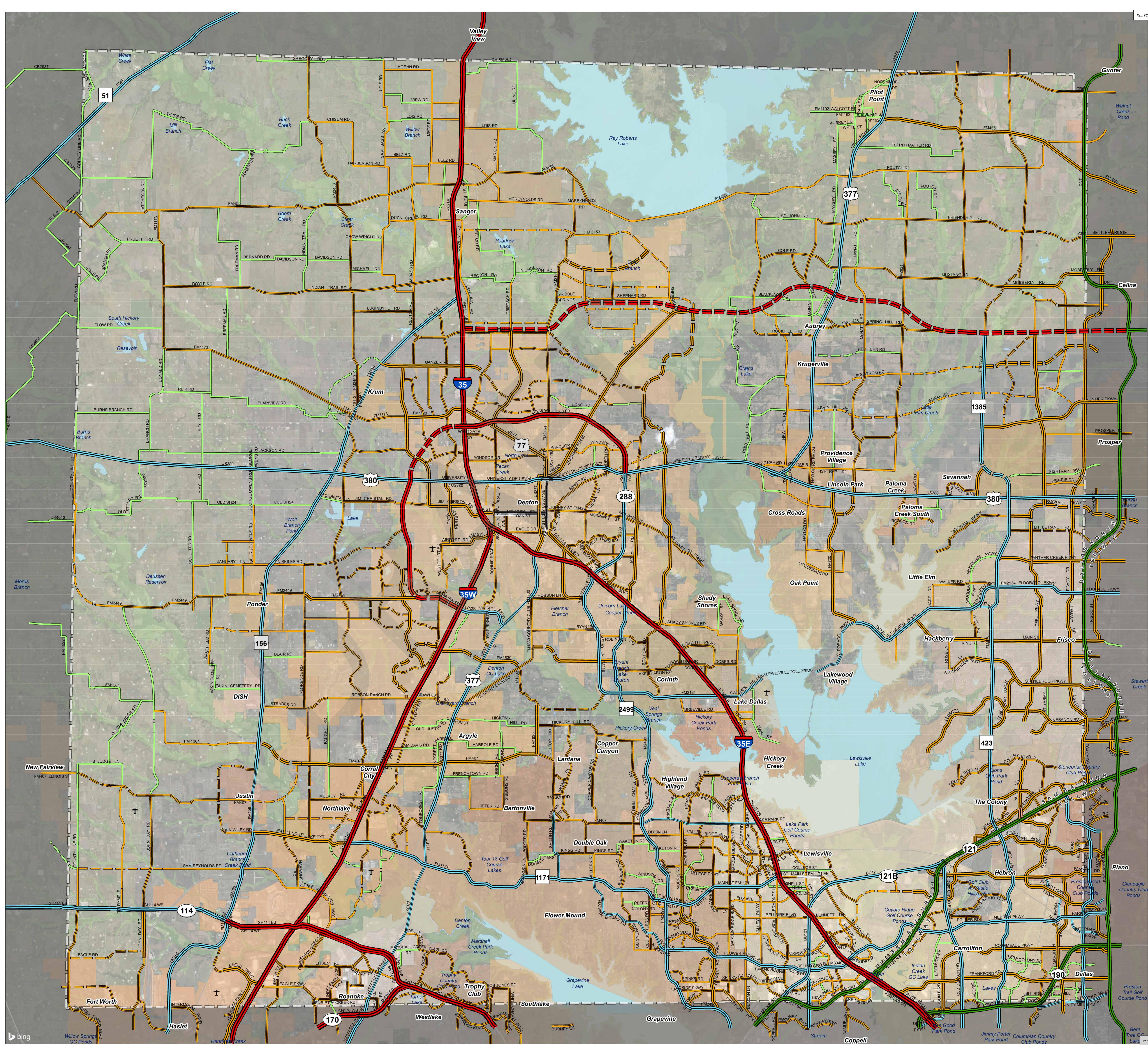
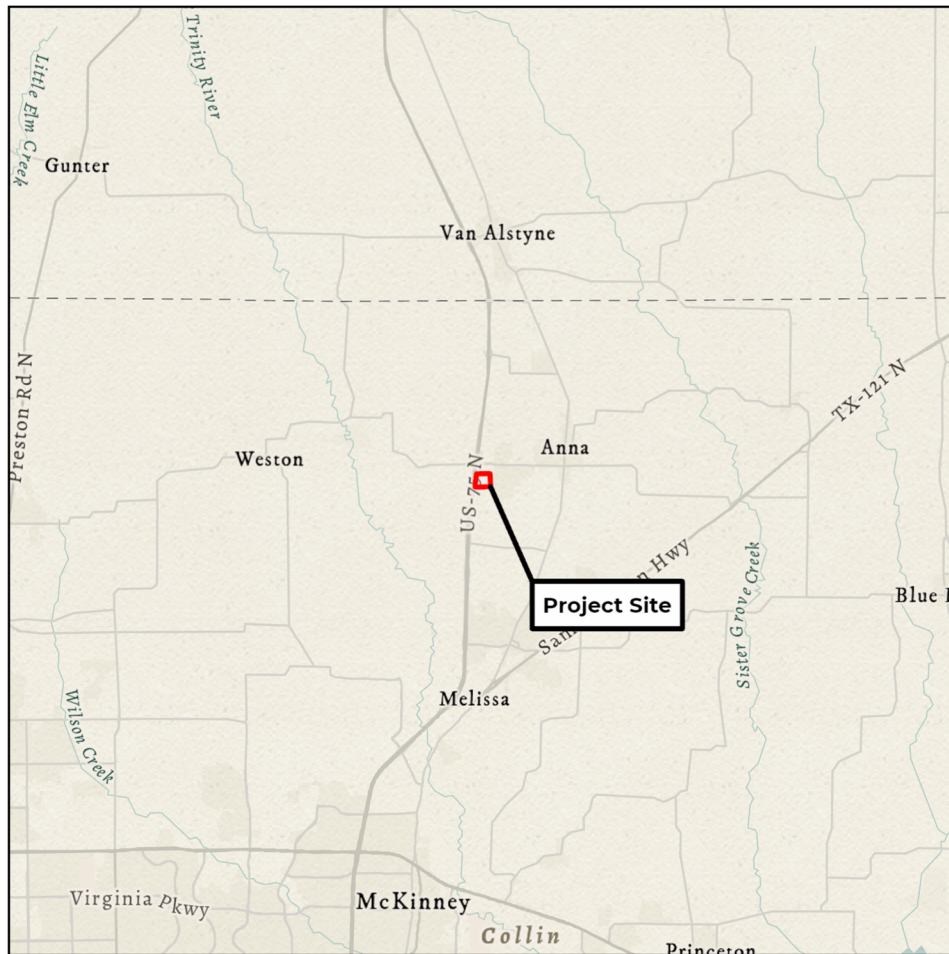


Exhibit 3

ELTSF ADDITION FLOOD STUDY

Loving Branch

Bartonville, TX



Prepared by:



TBPE Firm No. F -11976

Prepared for:



October 12, 2023



10/12/2023



CCM Engineering

Attn: Cody Crannell, P.E.
2570 Justin Road
Highland Village, TX 75077

October 12, 2023

Re: Flood Study – Loving Branch
Project Name – ELTSF Addition, Bartonville, TX

Dear Mr. Crannell:

Enclosed is the Flood Study Report for Loving Branch to support the proposed improvements in Bartonville, Texas. This report includes hydrologic and hydraulic modeling and results for the Pre-Project and Post-Project conditions for FEMA effective and fully-developed flows.

Should you have any questions or concerns, please do not hesitate to contact me at (214) 986-2283 to discuss any items related to this report.

Sincerely,



John Foote, P.E., CFM
Cardinal Strategies Engineering Services, LLC
TBPE Firm Registration No. F-11976

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Appendix B – Hydrologic Data
Appendix C – Hydraulic Data
Appendix D – Digital Data

1.0 Project Description

1.1 Purpose

The purpose of this flood study is to evaluate the 100-year fully-developed peak discharges for Loving Branch in the vicinity of the ELTSF Addition development. The improvement includes the expansion of existing private drive and proposed construction of a secondary drive from FM-407 E. A hydrologic and hydraulic evaluation was performed for the watershed and stream. This study will establish the existing and ultimate 100-year channel velocities and water surface elevations of the floodplain for Loving Branch.

1.2 Site Location and Proposed Improvements

A new school building is proposed on the 95-acre site for the Education Leads to Success Foundation. The site is located on FM-407 East, Loving Branch flows from south to north through the site. The site location can be seen in Figure 1.

1.3 FEMA Flood Insurance Rate Map

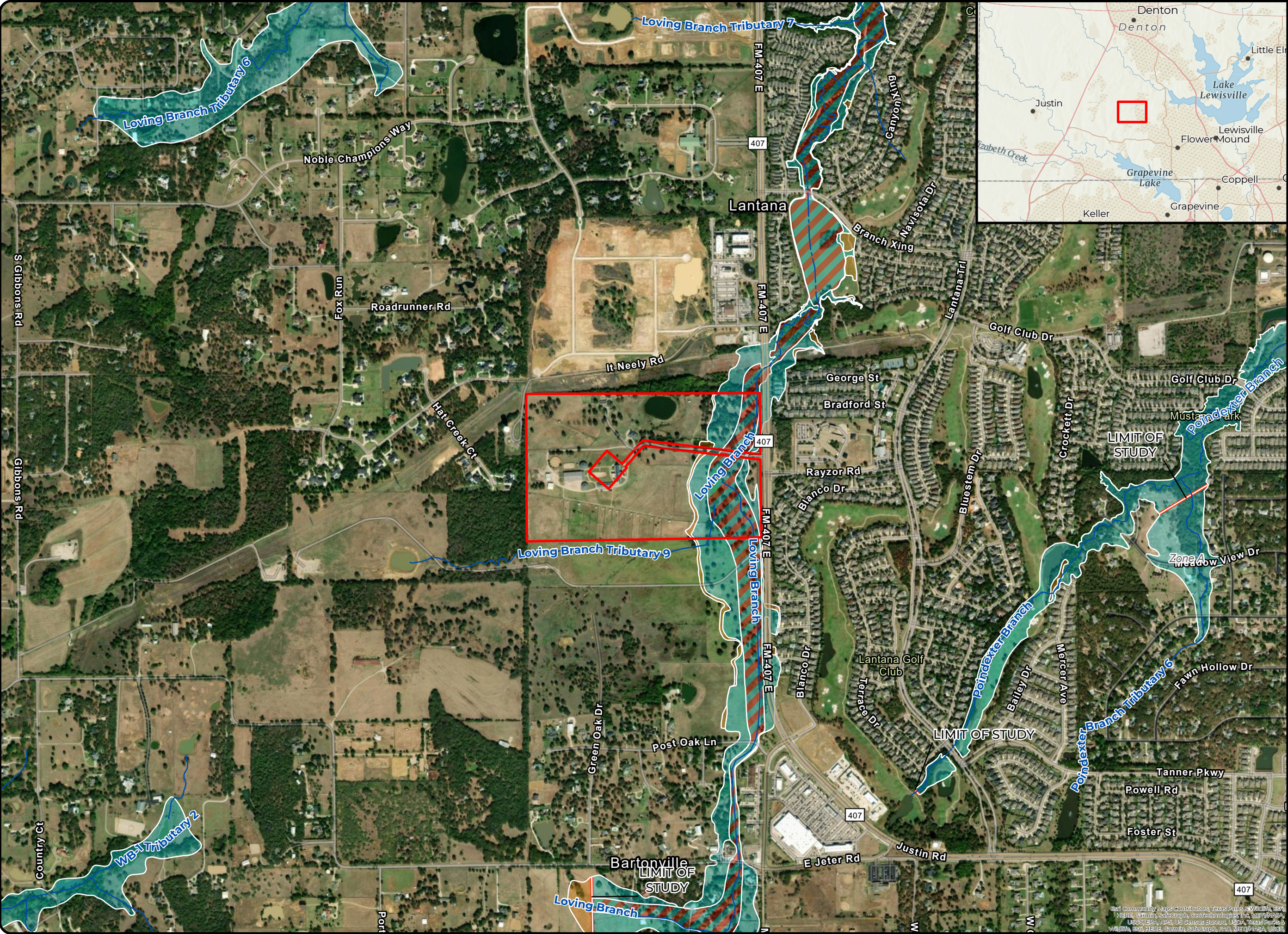
Loving Branch is currently mapped as a FEMA Zone AE with floodway on the Flood Insurance Rate Map (FIRM) 48121C0510G dated April 18, 2011, as shown in Figure 2.

1.4 Data Collection

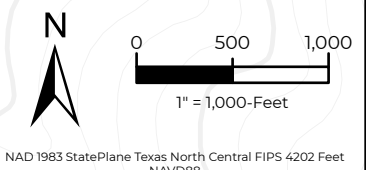
Data obtained in support of the ELTSF Addition flood study includes:

- Texas Natural Resources Information System (TNRIS) 1m Lidar dated 2020.
- Soils provided by USDA Natural Resources Conservation Service (NRCS).
- Future Land Use Map of the Town of Bartonville effective by 2037.
- Engineering Plans and Survey by CCM Engineering dated June 2023

The horizontal datum utilized for the project is the NAD83 Texas State Plane North Central Zone FIPS 4202. The vertical datum is NAVD88.



- Project Site Boundary**
- FEMA NFHL**
- Profile Baselines
 - Water Lines
- Flood Hazard Zones**
- 1% Annual Chance Flood Hazard
 - Regulatory Floodway
 - 0.2% Annual Chance Flood Hazard



Flood Study

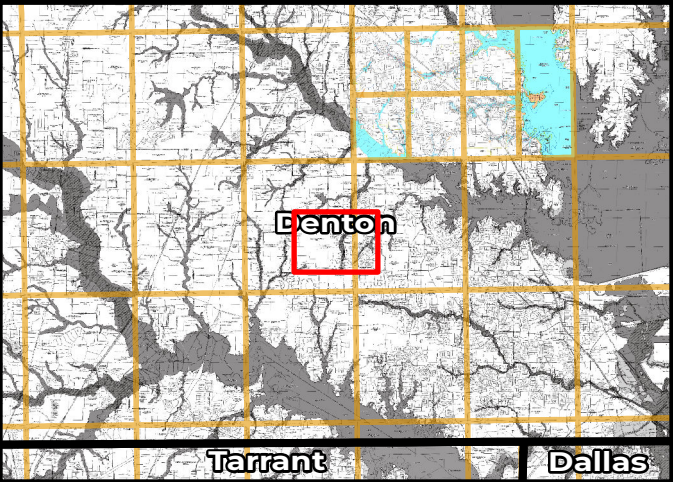
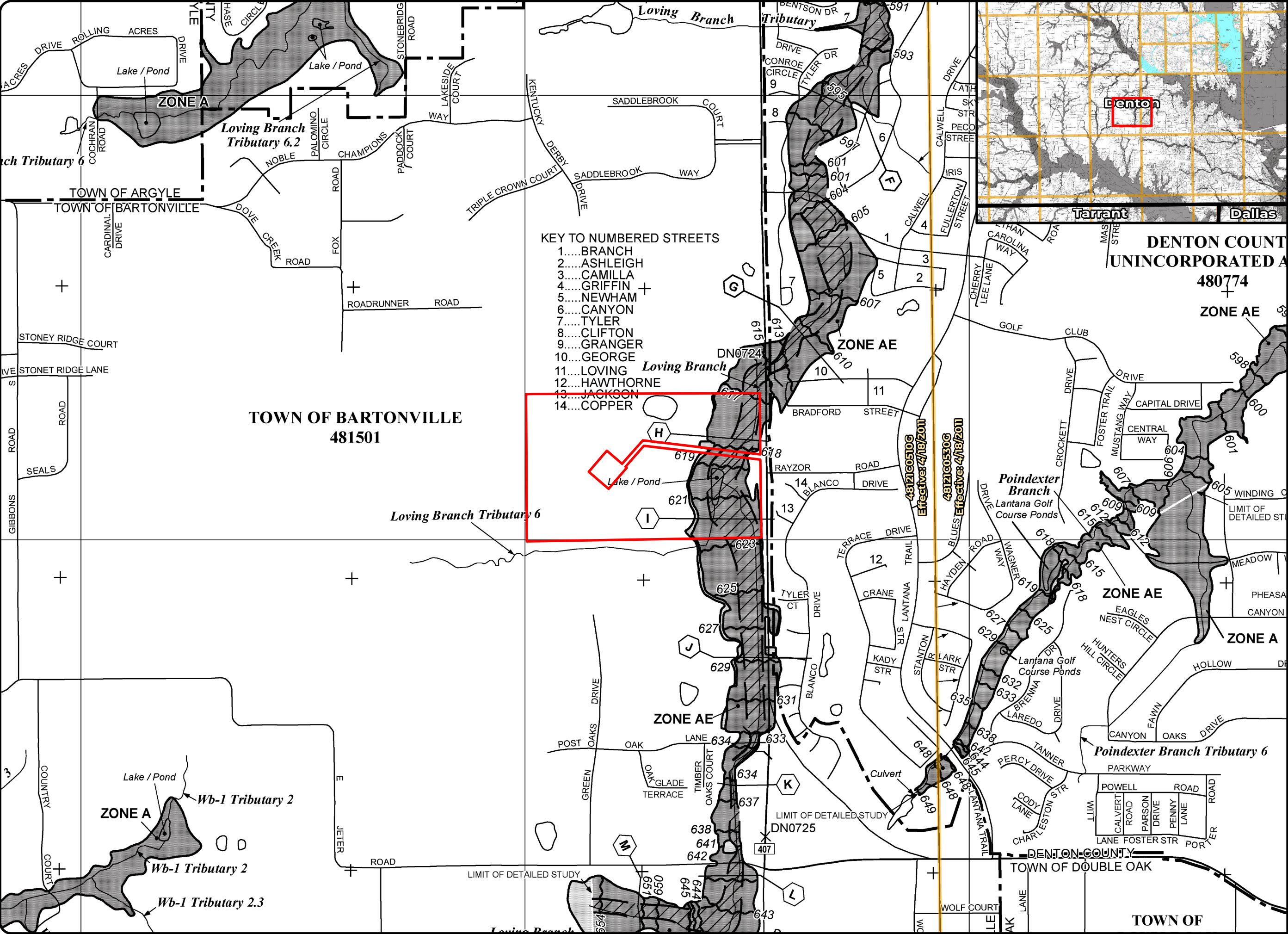
Loving Branch



ELTSF Addition
Bartonville, TX

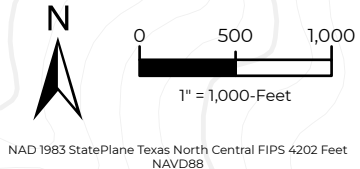
Prepared For:
CCM ENGINEERING

Vicinity Map

Figure
218




 Project Site Boundary
 FIRM Panel Boundary



Flood Study

Loving Branch

ELTSF Addition
Bartonville, TX

Prepared For:


FEMA FIRM

Figure
219

2.0 Hydrologic Analysis

A hydrologic analysis was performed for Loving Branch to calculate fully-developed peak discharges in the stream for the hydraulic analysis. The intersection of Loving Branch and FM-407 East crossing is the downstream extent of the hydrologic analysis.

A fully-developed SCS Unit Hydrograph model was created for the analysis using HEC-HMS version 4.10.

The drainage areas for Loving Branch were delineated using 1-foot contours from 2020 TNRIS lidar data. Figure 3 provides the fully-developed hydrologic map.

The watershed is comprised of type A, B, C and D soils provided by the NRCS. The SCS Curve Number and SCS time of concentration methods were used to estimate losses and lag times. The curve number values from iSWM are shown below in Table 1.

Table 1 - Land Use Curve Numbers

HMS Element	Curve Number by Soil Group			
	A	B	C	D
Open Space - Good	39	61	74	80
Commercial/Business	89	92	94	95
Industrial	81	88	91	93
Residential - 2 acre	46	65	77	82
Paved - Roads	98	98	98	98

The times of concentration were calculated for the longest flow paths using TNRIS 1-foot contours and the equations used for calculating sheet, shallow, and channel flow. The calculations for the longest flow paths can be found in Appendix B. The time of concentration for each basin were converted to lag times by multiplying each value by 0.6. Lag times are provided in Table 2.

The fully-developed land use was developed based on the Town of Bartonville 2037 Comprehensive Plan. The composite curve number for each basin is shown below in Table 2. Muskingum-Cunge was used for all the routing reaches. The shapefile used for the routing can be found in Appendix D. The calculations can be found in Appendix B.

The rainfall depth used in this hydrologic analysis was obtained from the Denton Rainfall Table of iSWM Technical Manual, April 2020.

Table 2 – Fully-Developed Hydrologic Parameters

HMS Element	Area (mi ²)	Area (acres)	Curve Number	Lag Time (min)
DA_01	0.1918	122.75	74.2	12.0
DA_02	0.5795	370.89	76.7	19.6
DA_03	0.7645	489.25	76.6	13.3
DA_04	0.0593	37.95	90.3	7.2
DA_05	0.2633	168.54	69.5	11.9

Project Site Boundary

Pre-Project Fully-Developed Hydrology

Junctions

Muskingum-Cunge 8-Point Cross Section

Flow Paths

Sheet Flow

Shallow Concentrated Flow

Channel Flow

Swale Flow

Pond Flow

Routing Reaches

Drainage Areas

Soil Hydrologic Group

A

B

C

All Other Areas Group D

iSWM Land Cover

Commercial/Business

Industrial

Lake

Open Space - Good

Paved - Roads

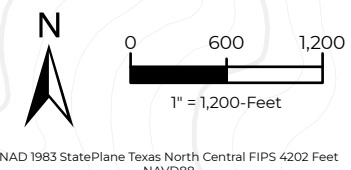
Residential - 1/4 Acre

Residential - 2 Acre

TNRIS_2020 Contours

25-FT

5-FT



Flood Study

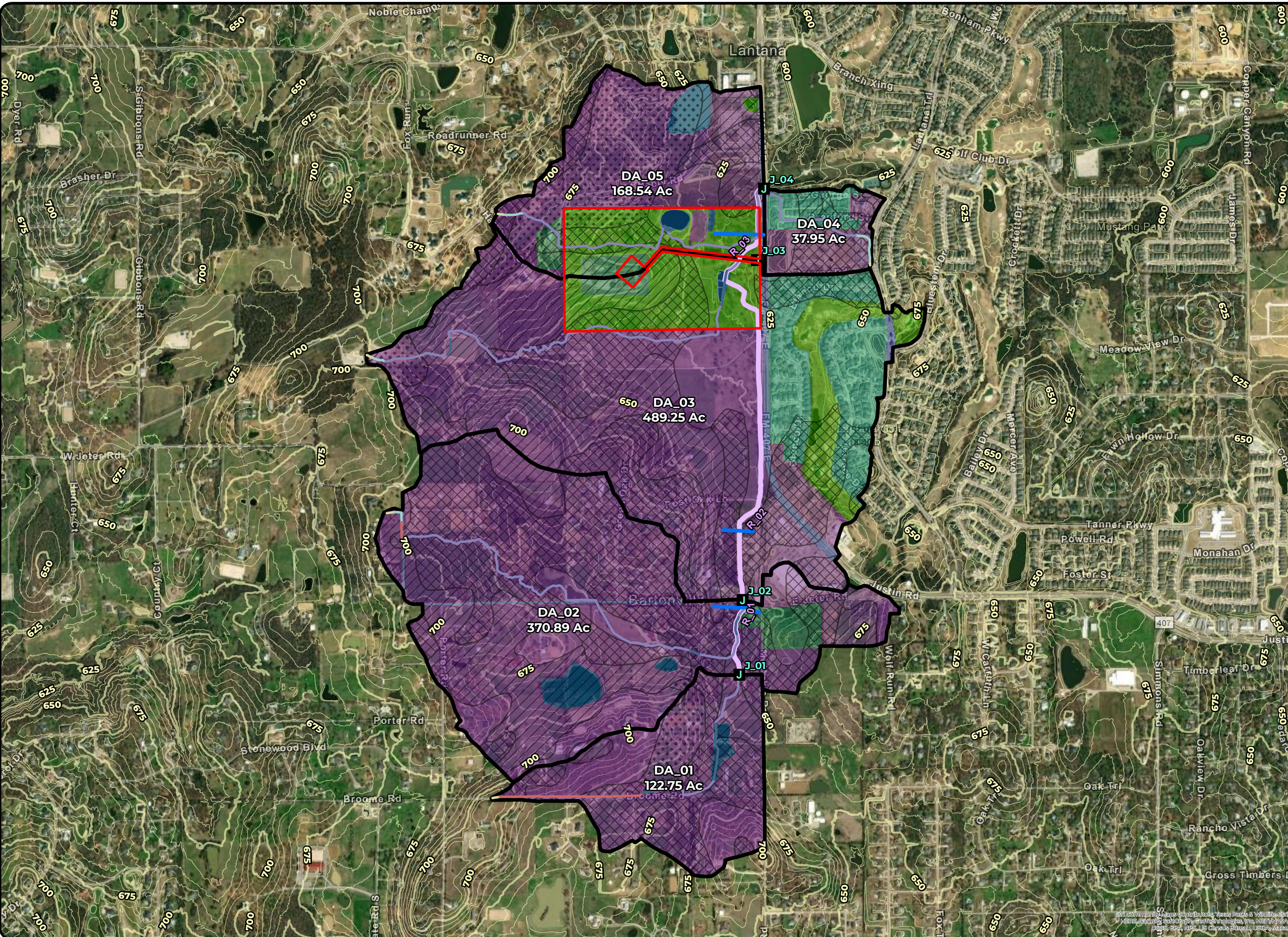
Loving Branch

ELTSF Addition
Bartonville, TX

Prepared For:


Fully-Developed Hydrologic Map

Figure
222



2.1 Results

The results of 100-yr fully-developed peak discharges are shown below in Table 3. The following flow will be used in the hydraulic analysis to study the impacts of proposed driveway expansion. Section 4.0 describes hydraulic modeling.

Table 3 –Fully-Developed Hydrologic Results

HMS Element	Peak Discharge (cfs)
J-01	650
J-02	2225
J-03	3185
J-04	3925

3.0 Hydraulic Analysis

A hydraulic model was built for Loving Branch to evaluate the impacts of the proposed construction of the private drive in the stream. A hydraulic model was created using HEC-RAS version 6.3.1. The following sections will provide more detail for both the Pre-Project and Post-Project analysis.

3.1 Flows Data

The FEMA Effective multiple profiles utilized effective WSELs at existing cross section letter “G” provided in the LOMR 11-06-3364P. The existing multiple profiles use the revised effective water surface elevation from LOMR study for the downstream boundary condition, while the fully-developed flows utilized the normal depth of 0.00314 ft/ft. Table 4 shows the peak discharges used in the hydraulic analysis.

Table 4 - Peak Discharges

Cross-Section	10% (cfs)	2% (cfs)	1% (cfs)	0.2% (cfs)	1% FD (cfs)
4455	1280	1730	1930	2340	2225
1984	1770	2440	2740	3340	3185
733	1900	2730	3070	3740	3925

3.2 Pre-Project

Cross sections were cut approximately every 200 feet starting from FEMA cross-section letter “J” to cross-section letter “G”. Cross sections were made from the 2020 TNRIS points and on-site survey to develop an existing conditions geometry for the stream. Aerial imagery was used to determine the roughness coefficients for the channel and overbanks of the model. The Manning’s roughness values range from 0.045 to 0.05.

Table 5 shows the difference of 100YR WSELs under the existing and fully-developed conditions. The two profiles use the same geometry but different flow data and downstream boundary conditions.

Table 5 – 100 YR Comparison – Existing vs Fully-Developed Conditions.

Cross-Section	Existing WSEL (ft)	Fully-Developed WSEL (ft)	Difference (ft)
4450	628.69	628.84	0.15
4195	627.63	627.78	0.15
3932	626.04	626.16	0.12
3652	624.2	624.34	0.14
3111	621.8	621.97	0.17
2848	620.1	620.19	0.09
2659	618.66	618.88	0.22
2024	618.14	618.32	0.18
1984	618.08	618.25	0.17
1912	Private Drive		
1857	616.52	616.86	0.34
1577	616.24	616.62	0.38
1414	616.12	616.5	0.38
1383	616.1	616.49	0.39
1272	615.85	616.27	0.42
1237	615.49	615.85	0.36
938	612.82	613.29	0.47
890	612.42	612.93	0.51
759	FM-407 E		
733	612.53	612.96	0.43
622	612.02	612.45	0.43
237	611.1	611.75	0.65

3.3 Post-Project

The Pre-Project model was used as the starting point for the Post-Project hydraulic analysis. The existing drive across Loving Branch is widened by 10 ft and the upstream deck elevation is updated. The Post-Project model incorporates the second proposed drive from the grading plan provided by CCM Engineering. A 7' x 4' box culvert is proposed underneath the proposed drive as it crosses through the main channel at the entrance with FM-407 E. Grading is proposed to mitigate the rises in water surface elevation. The engineering plan can be found in Appendix A. The results of hydraulic analysis are shown below.

3.4 Results

The comparisons provided in Tables 6-9 demonstrate that the ELTSF Addition development does not cause any adverse changes to 100-YR existing and fully-developed water surface elevation and channel velocity in Loving Branch. Figure 4 shows the fully-developed hydraulic workmap.

Table 6 – Existing 100-YR Water Surface Elevations Comparison.

Cross-Section	Pre-Project WSEL (ft)	Post-Project WSEL (ft)	Difference (ft)
4450	628.69	628.69	0.00
4195	627.63	627.63	0.00
3932	626.04	626.04	0.00
3652	624.2	624.2	0.00
3111	621.8	621.8	0.00
2848	620.1	620.1	0.00
2659	618.66	618.66	0.00
2024	618.14	618.12	-0.02
1984	618.08	618.06	-0.02
1912	Private Drive		
1857	616.52	616.45	-0.07
1577	616.24	616.19	-0.05
1414	616.12	616.08	-0.04
1383	616.1	616.06	-0.04
1300	Proposed Drive		
1272	615.85	615.84	-0.01
1237	615.49	615.48	-0.01
938	612.82	612.82	0.00
890	612.42	612.42	0.00
759	FM-407 E		
733	612.53	612.53	0.00
622	612.02	612.02	0.00
237	611.1	611.1	0.00

Table 7 – Fully Developed 100-YR Water Surface Elevations Comparison.

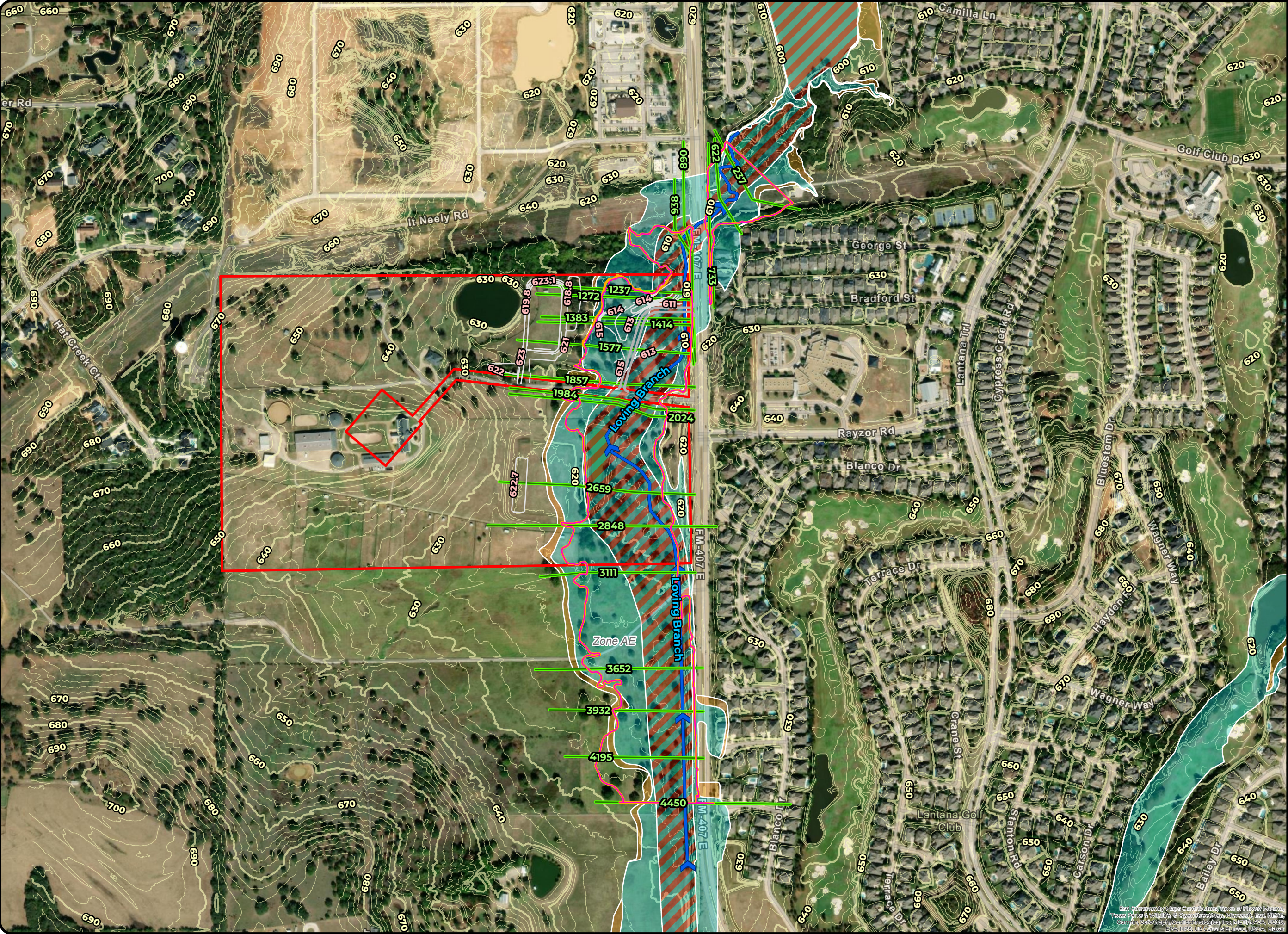
Cross-Section	Pre-Project WSEL (ft)	Post-Project WSEL (ft)	Difference (ft)
4450	628.84	628.84	0.00
4195	627.78	627.78	0.00
3932	626.16	626.16	0.00
3652	624.34	624.34	0.00
3111	621.97	621.97	0.00
2848	620.19	620.19	0.00
2659	618.87	618.86	-0.01
2024	618.32	618.29	-0.03
1984	618.25	618.22	-0.03
1912	Private Drive		
1857	616.86	616.81	-0.05
1577	616.62	616.58	-0.04
1414	616.50	616.48	-0.02
1383	616.49	616.46	-0.03
1300	Proposed Drive		
1272	616.27	616.25	-0.02
1237	615.85	615.86	0.01
938	613.29	613.29	0.00
890	612.94	612.94	0.00
759	FM-407 E		
733	612.96	612.96	0.00
622	612.45	612.45	0.00
237	611.75	611.75	0.00

Table 8 – Existing 100-YR Channel Velocity Comparison.

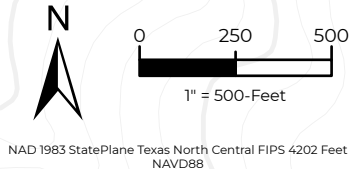
Cross-Section	Pre-Project Velocity (fps)	Post-Project Velocity (fps)	Difference (ft)
4450	5.27	5.27	0.00
4195	5.14	5.14	0.00
3932	5.59	5.59	0.00
3652	4.22	4.21	-0.01
3111	3.20	3.20	0.00
2848	4.77	4.76	-0.01
2659	2.97	2.97	0.00
2024	1.98	1.99	0.01
1984	2.64	2.65	0.01
1912	Private Drive		
1857	3.18	3.29	0.11
1577	2.77	2.62	-0.15
1414	2.86	2.70	-0.16
1383	2.15	2.04	-0.11
1300	Proposed Drive		
1272	3.89	3.45	-0.44
1237	5.56	5.19	-0.37
938	7.88	7.87	-0.01
890	6.00	6.00	0.00
759	FM-407 E		
733	4.88	4.88	0.00
622	3.48	3.48	0.00
237	3.71	3.71	0.00

Table 9 – Fully Developed 100-YR Channel Velocity Comparison.

Cross-Section	Pre-Project Velocity (fps)	Post-Project Velocity (fps)	Difference (ft)
4450	5.57	5.57	0.00
4195	5.23	5.23	0.00
3932	5.87	5.88	0.01
3652	4.34	4.34	0.00
3111	3.37	3.38	0.01
2848	5.13	5.12	-0.01
2659	3.05	3.06	0.01
2024	2.15	2.16	0.01
1984	2.89	2.91	0.02
1912	Private Drive		
1857	3.20	3.28	0.08
1577	2.77	2.62	-0.15
1414	2.9	2.78	-0.12
1383	2.22	2.1	-0.12
1300	Proposed Drive		
1272	3.83	3.42	-0.41
1237	5.84	5.41	-0.43
938	7.79	7.79	0.00
890	6.19	6.19	0.00
759	FM-407 E		
733	5.58	5.58	0.00
622	3.69	3.69	0.00
237	3.35	3.35	0.00



- Post-Project 100yr Fully-Developed Floodplain
 - Pre-Project 100yr Fully-Developed Floodplain
 - Proposed Grading
 - Cross Sections
 - Stream Centerline
 - Project Site Boundary
- FEMA NFHL**
- Flood Hazard Zones**
- 1% Annual Chance Flood Hazard
 - Regulatory Floodway
 - 0.2% Annual Chance Flood Hazard
- TNRIS_20 Contours**
- 10-FT
 - 2-FT



Flood Study

Loving Branch

ELTSF Addition
Bartonville, TX

Prepared For:
CCM ENGINEERING

Fully-Developed Hydraulic Workmap

Figure
230

4.0 Conclusion

The proposed plan includes widening the existing private drive while proposing another drive from FM-407 E. The hydraulic results show that the improvement results in no adverse impacts to the existing and fully-developed 100-year flood risk. There is a minimal rise in channel velocity, but this should be negligible as the velocity is relatively small and not considered corrosive.

All collected data is provided in Appendix A, hydrologic output and calculations in Appendix B, and hydraulic output in Appendix C. Appendix D contains the digital models, GIS data.



TOWN COUNCIL COMMUNICATION

DATE December 19, 2023

FROM: Thad Chambers, Town Administrator

AGENDA ITEM: Conduct a Public Hearing and consider a Resolution adopting and ratifying plat application submittal list posting requirements set forth by new legislation HB 3699.

SUMMARY: During the course of the 88th Regular Session of the Texas Legislature conducted in early 2023, House Bill 3699 was passed and signed by Governor Abbott to become effective September 1, 2023, which added a new Section 212.0081 to the Texas Local Government Code ("HB 3699").

HB 3699 requires municipalities to adopt and make publicly available a complete written list of all documentation and other information that is required to submit a plat application, including publication on a City (Town) website.

The Town of Bartonville, Texas Town Council ("the Town Council") has held the required public hearing, and has investigated and determined that it would be advantageous and beneficial to the Town and its citizens, and in the interest of good governance, the public health, safety, and general welfare, to adopt and ratify the plat application submittal requirements developed by Town staff.

FISCAL INFORMATION:

No financial impact anticipated.

RECOMMENDED MOTION OR ACTION:

Approve the resolution adopting and ratifying plat application submittal list posting requirements set forth by new legislation HB 3699.

ATTACHMENTS:

- Draft Resolution

**TOWN OF BARTONVILLE, TEXAS
RESOLUTION NO. 2023-XX**

**A RESOLUTION OF THE TOWN OF BARTONVILLE, TEXAS, ADOPTING AND RATIFYING
PLAT APPLICATION SUBMITTAL REQUIREMENTS; PROVIDING FOR SAVINGS,
SEVERABILITY, AND REPEALER CLAUSES; AND PROVIDING FOR AN EFFECTIVE DATE.**

WHEREAS, the Town of Bartonville, Texas ("Town"), is a Texas general law municipality authorized to regulate the development of property within its territory, which includes the review and approval of plat applications as provided by Texas Local Government Code Chapter 212 and other law; and

WHEREAS, in the course of the 88th Regular Session of the Texas Legislature conducted in early 2023, House Bill 3699 was passed and signed by Governor Abbott to become effective September 1, 2023, which added a new Section 212.0081 to the Texas Local Government Code ("HB 3699"); and

WHEREAS, HB 3699 requires municipalities to adopt and make publicly available a complete written list of all documentation and other information that is required to submit a plat application, including publication on the Town website; and

WHEREAS, the Town Council of the Town of Bartonville, Texas ("Town Council"), has held the required public hearing, and has investigated and determined that it would be advantageous and beneficial to the Town and its citizens, and in the interest of good governance, the public health, safety, and general welfare, to adopt and ratify the plat application submittal requirements developed by Town staff.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF BARTONVILLE, TEXAS, THAT:

Section 1. Recitals Incorporated.

The above-referenced recitals are incorporated herein as the findings of the Town Council as if set forth in full.

Section 2. Adoption and Ratification of Plat Submittal Requirements.

By passage of this Resolution, the Town Council adopts and ratifies the list of required documentation and other information for plat applications developed by Town staff and published on the website of the Town. Such online publication shall be updated no later than thirty (30) days after the date the Town adopts or amends the list.

Section 3. Savings, Severability, and Repealing Clauses.

All ordinances, resolutions, and prior enactments of the Town in conflict with the provisions of this Resolution are hereby repealed to the extent of that conflict. If any provision of this Resolution shall be held to be invalid or unconstitutional, the remainder of this Resolution shall continue in full force and effect the same as if such invalid or unconstitutional provision had never been a part hereof. The Town declares that it would have passed this Resolution, and each section, subsection, clause, or phrase thereof irrespective of the fact that any one or more section, subsection, sentence, clause, and phrase be declared unconstitutional or invalid.

Section 4. Effective Date.

This Resolution shall take effect immediately from and after its passage, and it is accordingly so resolved.

DULY ADOPTED by the Bartonville Town Council on this 19th day of December, 2023.

Jaclyn Carrington, Mayor

ATTEST:

Shannon Montgomery, TRMC, City Secretary



TOWN COUNCIL COMMUNICATION

DATE December 19, 2023

FROM: Thad Chambers, Town Administrator

AGENDA ITEM: Discuss and consider approval of a Resolution accepting the Town's investment policy for Fiscal Year 2023-2024.

SUMMARY:

Texas Government Code, Chapter 2256, the Public Funds Investment Act, requires that all municipalities engaging in investment activities have a formal investment policy and that it be reviewed annually. The attached investment policy was originally adopted in 2019.

Staff has reviewed the adopted investment policy and recommend no changes.

FISCAL INFORMATION: N/A

RECOMMENDED MOTION OR ACTION:

Move to approve Resolution approving the investment policy for the investment of municipal funds for Fiscal Year 2023-2024.

ATTACHMENTS:

- Resolution approving Investment Policy
- Investment Policy

**TOWN OF BARTONVILLE, TEXAS
RESOLUTION 2023-XX**

**A RESOLUTION OF THE TOWN OF BARTONVILLE, APPROVING AN INVESTMENT
POLICY FOR THE INVESTMENT OF MUNICIPAL FUNDS; PROVIDING A
SEVERABILITY CLAUSE; AND PROVIDING FOR AN EFFECTIVE DATE.**

WHEREAS, the Town of Bartonville, Texas is a Type “A” General Law Municipality located in Denton County, Texas, created in accordance with the provisions of the Texas Local Government Code and operating pursuant to the enabling legislation of the State of Texas; and

WHEREAS, the Town Council recognizes the necessity of utilizing the public funds entrusted to it by the citizens of Bartonville in the most advantageous manner so as to maximize the benefit of those funds for the citizens of Bartonville, Texas; and

WHEREAS, the Town Council recognizes the necessity of protecting the principal of those funds and ensure the ready accessibility of such funds; and

WHEREAS, section 2256.005(b) of the Texas Government Code, as amended, requires the Town to adopt a written investment policy regarding the investment of Town funds which emphasizes safety of principal and liquidity; addresses investment diversification, yield, maturity, and the quality and capability of investment management; and

WHEREAS, the Texas Public Funds Investment Act requires an annual review and approval of the investment policy; and

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF BARTONVILLE, TEXAS:

Section 1. That the foregoing recitals are hereby found to be true and correct findings of the Town of Bartonville, Texas, and are fully incorporated into the body of this resolution.

Section 2. That the Town of Bartonville does hereby adopt Texas Government Code, Chapter 2256, Public Funds Investment Act, in its entirety, as the rule and guide for the investment of such public funds as are entrusted to it and are deemed suitable for investment purposes. The Investment Policy attached hereto as **Exhibit A** (“Investment Policy of the Town of Bartonville, Texas”), and made a part hereof for all purposes is hereby reviewed and adopted as the Investment Policy of the Town of Bartonville, Texas, as required by Chapter 2256 of the Texas Government Code.

PASSED AND APPROVED this the 19th day of December 2023.



APPROVED:

Jaclyn Carrington, Mayor

ATTEST:

Shannon Montgomery, TRMC, Town Secretary

EXHIBIT “A”



**INVESTMENT POLICY
OF THE
TOWN OF BARTONVILLE, TEXAS
FY 2023-2024**

I. INTRODUCTION

The purpose of this Policy is to set specific investment policy and strategy guidelines for the Town of Bartonville in order to achieve the goals of safety, liquidity, yield, and diversification for all investment activity. In accordance with state statute, the Town Council of the Town of Bartonville shall review its investment strategies and policy no less than annually. This Policy satisfies the statutory requirement of Texas Government Code Chapter 2256, the Public Funds Investment Act (the “Act”).

II. SCOPE

This investment policy applies to all financial assets of the Town of Bartonville. These funds are reported in the Town’s Annual Audit and include:

- General Funds
- Capital Improvement Funds
- Community Development Corporation
- Crime Control & Prevention District

III. OBJECTIVES

The Town of Bartonville shall manage and invest its cash and assets with four major objectives, listed in order of priority: safety, liquidity, diversification, and yield. Safety of the principal is the primary objective. All investments shall be managed in a manner responsive to public trust and consistent with state and local law.

The Town shall maintain a cash management program which includes timely collection of accounts receivable, vendor payments in accordance with invoice terms, and prudent investment of assets. Cash management is the process of managing monies in order to ensure maximum cash availability and reasonable yield on short-term investments.

Safety

The primary objective of the Town’s investment activity is the preservation of capital. Each investment transaction shall be conducted in a manner to avoid capital losses, whether they be from security defaults, safekeeping, or erosion of market value.

Liquidity

The Town’s investment portfolio shall be structured to meet all expected obligations in a timely manner. This shall be achieved by matching investment maturities with forecasted cash flow liabilities and maintaining additional liquidity for unexpected liabilities.

Diversification

The Town’s portfolio shall be diversified by market sector and maturity in order to avoid market risk.

Yield

The benchmark for the Town's portfolio shall be the one-year U.S. Treasury, designated for its comparability to the Town's expected average cash flow pattern. The investment program shall seek to augment returns above this threshold consistent with risk limitations identified herein and prudent investment policies.

IV. INVESTMENT STRATEGY

The Town of Bartonville maintains one commingled portfolio for investment purposes which incorporates the specific investment strategy considerations and the unique characteristics of the fund groups represented in the portfolio:

- A. The investment strategy for the operating fund has as its primary objective assurance that anticipated liabilities are matched and adequate investment liquidity provided. The secondary objective is to create a portfolio structure which will experience minimal volatility.
- B. The investment strategy for debt service funds shall have as its primary objective the assurance of available funds adequate to fund the debt service obligations on a timely basis. Successive debt service dates will be fully funded before extension.
- C. The investment strategy for debt service reserve funds shall have as its primary objective the ability to generate a revenue stream to the debt service funds from high quality securities with a low degree of volatility. Securities should be of high credit quality and, except as may be required by the bond ordinance specific to an individual issue, of short to intermediate-term maturities. The potential for loss shall be further controlled through the purchase of securities within the desired maturity range.
- D. The investment strategy for capital projects or capital project funds will have as its primary objective assurance that anticipated cash flows are matched and provide adequate investment liquidity. At least 10% total liquidity is planned to provide flexibility and for unanticipated project outlays. The stated final maturity dates of securities held may not exceed the estimated project completion date.

The Town of Bartonville intends to match investments with the projected cash flow analysis and liquidity needs of the Town. In no case will the average maturity of the portfolio exceed twelve (12) months. The maximum final stated maturity of any investment shall not exceed two years.

The Town shall pursue a conservative portfolio management strategy. Securities may be sold before they mature if market conditions present an opportunity for the Town to benefit from the trade, but the strategy will be primarily buy-and-hold. The investment officer will continuously monitor the contents of the portfolio, the available markets, and the relative value of competing instruments to adjust the portfolio in response to market conditions.

V. RESPONSIBILITY AND CONTROL

Investment Officer(s)

The Town Administrator is designated by Council as the Investment Officer and the Town Secretary as the secondary Investment Officer of the Town responsible for investment decisions and activities. Other Investment Officers may be so designated. The Town may further contract with a registered investment advisor to advise on the management of the Town's portfolio. No person may engage in an investment transaction except as provided under the terms of this Policy and supporting procedures.

All investment officers shall attend at least one training session provided by an independent source, in accordance with the Act, within 12 months after assuming investment duties and shall attend eight hours of training every two successive fiscal years beginning at the first day of the fiscal year.

Internal Controls

The Town Administrator is responsible for establishing and maintaining an internal control structure designed to reasonably assure that assets of the Town are protected from loss, theft, or misuse. The concept of reasonable assurance recognizes that the cost of a control should not exceed the benefits likely to be derived, and the valuation of costs and benefits requires ongoing estimates and judgments by management.

The internal controls shall address the following points at a minimum:

- Control of collusion,
- Separation of transaction authority from accounting and record keeping,
- Custodial safekeeping,
- Clear delegation of authority,
- Written confirmation for all transactions, and
- Review, maintenance, and monitoring of security procedures both manual and automated.

The external auditor shall provide an annual independent review of quarterly investment reports to assure compliance with state law, policies, and procedures.

The Town Administrator shall monitor, on no less than a weekly basis, the credit rating on all authorized investments in the portfolio based upon independent information from a nationally recognized rating agency. If any security falls below the minimum rating required by Policy, the Town Administrator shall notify the Town Council of the loss of rating, conditions affecting the rating and possible loss of principal with liquidation options available, within two weeks after the loss of the required rating. All prudent measures will be taken to liquidate an investment that is downgraded to less than the required minimum rating.

The Town Administrator shall monitor, on no less than a weekly basis, the status and ownership of all banks issuing brokered CDs owned by the Town based upon information from the FDIC. If any bank has been acquired or merged with another bank in which brokered CDs are owned, the

Town Administrator shall immediately liquidate any brokered CD which is above the FDIC insurance level.

VI. PRUDENCE

The standard of prudence to be applied to all Town investments shall be the “prudent person” rule, which states:

“Investments shall be made with judgment and care, under circumstances then prevailing, which persons of prudence, discretion and intelligence exercise in the management of their own affairs, not for speculation, but for investment, considering the probable safety of their capital as well as the probable income to be derived.”

In determining whether an investment officer has exercised prudence with respect to an investment decision, the determination shall be made taking into consideration the investment of all funds under the Town’s control, over which the officer has responsibility rather than a consideration as to the prudence of a single investment.

The Investment Officer, acting in accordance with written procedures and exercising due diligence, shall be held responsible, but not personally liable for a specific security’s credit risk or market price changes, provided that these deviations are reported immediately, and that appropriate action is taken to control adverse developments.

VII. CONFLICTS OF INTEREST

Investment Officers and Town staff involved in the investment process shall refrain from personal business activity that could conflict with proper execution of the investment program or which could impair the ability to make impartial investment decisions. Town staff shall disclose to the Town Administrator any personal business with or material financial interests in financial institutions that conduct business with the Town.

An Investment Officer of the Town who has a personal business relationship with an organization seeking to sell an investment to the Town shall file a statement disclosing that personal business interest to the Town Council and the Texas Ethics Commission. An investment officer who is related within the second degree by affinity or consanguinity to an individual seeking to sell an investment to the Town shall file a like statement disclosing that relationship.

VIII. AUTHORIZED INVESTMENTS

The assets of the Town of Bartonville may be invested only in the following instruments as further defined by the Act. If changes are made to the Act they will not be authorized until this Policy is modified and adopted by the Town Council.

- A. AAA-rated, constant-dollar Local Government Investment Pools as defined by the Act and authorized by Town Council which strive to maintain a \$1 net asset value.

Delivery versus Payment

All securities shall be purchased on a delivery versus payment (DVP) settlement basis. Funds shall not be released until receipt of the security by the Town's approved custodian. The custodian shall provide the Town with proof of ownership or claim by an original safekeeping receipt delivered to the Town.

IX. REPORTING

Quarterly Reporting

The Investment Officers shall submit a signed quarterly investment report to the Council in accordance with the Act. The reports shall summarize investment strategies employed in the most recent quarter and fully describe investment securities, maturities, risk characteristics, and investment return for the quarter. The report will include the following:

- A full description of individual securities held at the end of the reporting period based on amortized value,
- Unrealized gains or losses,
- Overall change in market value during the period as a measure of volatility,
- Weighted average yield of the portfolio and its applicable benchmarks,
- Earnings for the period,
- Analysis of the total portfolio by market sector and maturity, and
- Statement of compliance of the investment portfolio with the Act and the Investment Policy of the Town.

Market prices for the calculation of market value will be obtained from independent sources. Marketing to market will be done at least quarterly.

X. FINANCIAL COUNTER-PARTIES

Town Depository

At least every five years a Town Depository shall be selected through a formal request for proposal (RFP) process in accordance with the Texas Government Code 105.017. In selecting a depository, the services, cost of services, credit worthiness, earnings potential, and collateralization by the institutions shall be considered.

Security Broker/Dealers

All financial institutions and broker/dealers who desire to transact business with the Town must supply the following documents will be maintained by Finance.

- Financial Industry Regulatory Authority (FINRA) certification and CRD #
- proof of Texas State Securities registration
- policy review certification

Each counterparty must be provided a copy of the current Investment Policy and certify to a review stating understanding of the Policy and that controls are in place to assure only Policy

approved investments will be sold to the Town.

A list of qualified broker/dealers will be reviewed, revised and adopted at least annually by the Town Council.

XI. COLLATERAL, SAFEKEEPING AND CUSTODY

Time and Demand Pledged Collateral

All Town time and demand deposits shall be secured above FDIC coverage by pledged collateral. In order to anticipate market changes and provide a level of security for all funds, collateral will be maintained and monitored by the depository at 102% of market value of principal and accrued interest on the deposits. The bank shall review collateral at least weekly to assure that the market value of the pledged securities is maintained at 102% or more.

Collateral pledged to secure deposits shall be held by an independent financial institution outside the holding company of the depository in accordance with a safekeeping agreement signed by authorized representatives of the Town, the Depository, and the custodian (with the exception of the Federal Reserve as Custodian).

All collateral shall be subject to inspection and audit by the Town or the Town's independent auditors.

Authorized Collateral

The Town shall accept only the following securities as collateral for time and demand deposits or repurchase agreements:

- A. FDIC insurance coverage.
- B. Obligations of the United States, its agencies or instrumentalities, or other evidence of indebtedness of the United States guaranteed as to principal and interest including CMO which pass the *bank test*.
- C. Obligations, the principle, and interest on which, are guaranteed or insured by the State of Texas.
- D. Obligations of other states or of a county, Town or other political subdivision of a state having been rated as investment grade (investment rating no less than "A" or its equivalent) by two nationally recognized rating agencies.

XII. INVESTMENT POLICY ADOPTION

The Town of Bartonville Investment Policy and investment strategies shall be reviewed and adopted by resolution of the Town Council no less than annually. The approving resolution must include the changes made to the Policy.



TOWN COUNCIL COMMUNICATION

DATE December 19, 2023

FROM: Shannon Montgomery, Town Secretary

AGENDA ITEM: Discuss and consider appointment(s) to the Bartonville Community Development Corporation, including the consideration of removing a member due to absenteeism.

SUMMARY:

Section 1.04.003, Attendance at Meetings, of the Town of Bartonville Code of Ordinances states:

§ 1.04.003 Attendance at meetings.

(a) Requirements.

(1) *Generally.* Any member of any board and/or commission which is appointed by the town council under this article who is absent from three consecutive regular meetings of the board and/or commission may be removed from office by the town council. Three (3) consecutive absences shall constitute grounds for removal for cause.

(2) *Board of adjustment.* Any member of the board of adjustment who is absent from three consecutive meetings of the board shall be removed from office by the town council in accordance with section 211.08 of the Local Government Code.

(b) *Request for waiver.* Any board and/or commission member may request a waiver from the requirements set forth in subsection (a) of this section due to illness or extenuating circumstances. The request should be made in writing to the mayor prior to the meeting. Appeals may be made to the town council at the next regularly scheduled town council meeting.

			Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23	Aug 23	Sep 23	Oct 23	Nov 23	Dec 23
Position	Term	Current Member															
Director	2022-2024	Jim Foringer (2006)	NO MEETING	NO MEETING	P	P	P	P	P	A	A	NO MEETING	P	A	A	P	A
Director	2022-2024	Terry Rock (2014)			P	A	A	P	P	P	P		P	P	P	P	P
Chair	2022-2024	Brenda Latham (2021)			P	P	P	P	P	P	P		P	P	P	P	P
Director	2022-2024	James Kennemer (2022)			P	A	A	P	A	A	P		P	A	A	A	P
Director	2021-2023	Jim Langford (2015)			P	P	P	P	P	P	A		P	A	P	P	P
Director	2021-2023	Randy Van Alstine (2014)			P	P	P	P	P	P	P		P	P	P	P	P
Vice Chair	2021-2023	Dwain Skrobarcek (2015)			P	P	A	P	P	P	A		A	P			

FISCAL INFORMATION: N/A

RECOMMENDED MOTION OR ACTION:

The Town Council shall review attendance records and decide whether to remove an appointed official based on their three consecutive absences.

ATTACHMENTS: None



TOWN COUNCIL COMMUNICATION

DATE December 19, 2023

FROM: Shannon Montgomery, Town Secretary

AGENDA ITEM: Discuss and consider approval of a Resolution appointing new member(s) to the Bartonville Community Development Corporation.

SUMMARY:

The Bartonville Community Development Corporation (BCDC) has a vacant position as the Town did not receive enough applications during the annual appointment process. Staff has continued advertising the vacancy and has received two applications as of the December 8, 2023 deadline.

FISCAL INFORMATION: N/A

RECOMMENDED MOTION OR ACTION:

Move to approve a Resolution appointing XX persons to the Bartonville Community Development Corporation.

ATTACHMENTS:

- Applications received
- Draft Resolution

**TOWN OF BARTONVILLE, TEXAS
RESOLUTION 2023-XX**

**A RESOLUTION OF THE TOWN OF BARTONVILLE, DENTON COUNTY, TEXAS,
PROVIDING FOR THE APPOINTMENT OF PERSONS TO SERVE A TWO-YEAR TERM
ON THE BOARD OF DIRECTORS OF THE BARTONVILLE COMMUNITY
DEVELOPMENT CORPORATION.**

WHEREAS, the Town of Bartonville, Texas is a Type "A" General Law Municipality located in Denton County, Texas, created in accordance with the provisions of the Texas Local Government Code and operating pursuant to the enabling legislation of the State of Texas; and

WHEREAS, on February 4, 2002, Town of Bartonville voters approved the adoption an additional Sales and Use Tax for projects authorized by Section 4B of the Development Corporation Act of 1979, Tex. Rev. Civ. Stat. Ann. Art. 5190.6, as amended (hereinafter "The Development Corporation Act"); and

WHEREAS, Article II, Section 1(B), of the Bartonville Community Development Corporation Bylaws, provides that vacancies on the Board shall be filled by appointment of the Town Council.

THEREFORE, BE IT RESOLVED, BY THE TOWN COUNCIL OF THE TOWN OF BARTONVILLE, TEXAS:

Section 1: THAT ALL matters stated in the preamble are true and correct and are incorporated herein by reference, as if copied in their entirety.

Section 2: THAT the following persons are hereby appointed to serve on the Board of Directors of the Bartonville Community Development Corporation, effective December 19, 2023, for a two-year term expiring as noted below:

Regular Members:

1. _____ (expires September 2024)
2. _____ (expires September 2025)

Section 3: THAT this resolution shall take effect immediately upon passage by the Town Council.

PASSED AND APPROVED this the 19th day of December 2023.

APPROVED:

ATTEST:

Jaclyn Carrington, Mayor

Shannon Montgomery, TRMC, Town Secretary

FORM CENTER

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- MAIN
- FIELD SETS
- LEGACY FORMS
- PROPERTIES
- PERMISSIONS

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- PRINT

Form Center ▶ Contact Us ▶ Application for Boards and Commissions ▶ Submission #2651

This application and all information contained herein is a public record. Public service opportunities are offered by the Town of Bartonville without regard to race, color, national origin, religion, sex, genetic information or disability

Date & Time

10/23/2023

10:45 AM

SAVE CHANGES

CANCEL

Form Details

Submitted By:
Submitted On:
October 23, 2023 11:04 AM
IP Address:
47.185.183.166
Referrer:
https://www.townofbartonville.com...
Answered 20 of 25 (80.0%)

First Name *

Jennifer

Last Name *

Buck

Address1 *

175 Porter Rd

City *

Bartonville

State *

Texas

Zip *

76226

Phone Number *

Email Address

jennifer@luminousglowmedspa.com

Are you a registered voter*

- ☒ Yes
- ☐ No

Voter Registration Number

1091631413

To verify your voter registration number go to www.votedenton.com, voter information, voter lookup

Length of Residency in Bartonville *

8

In order to serve as an appointed official, you must be a resident of the Town for at least six (6) months. In order to serve on the Planning and Zoning Commission or Board of Adjustments, you must be a resident property owner of the Town for a least six months.

Please select which board(s) you are interested in. If more than one, prioritize your selections using the choice options below as applicable.

Choice 1 *

Community Development Corporation ▼

Choice 2

-- Select One -- ▼

Choice 3

-- Select One -- ▼

Choice 4

-- Select One -- ▼

Business' owner

List any experience that qualifies you to serve in the position(s) sought:

Being a business owner, in this community

Are you currently serving on a Board, Commissions, or other capacity?*

- ☒ Yes
 ☐ No

If yes, which

Crime

Have you served on a Board, Commission, or Committee before?*

- ☒ Yes
 ☐ No

If yes, which

Crime

Please list organization memberships and positions held

Please List Areas of Special Interest



References

Mrs. Carrington Brenda Latham

FORM CENTER

VIEW SITE

MAIN

FIELD SETS

LEGACY FORMS

PROPERTIES

PERMISSIONS

BACK

PRINT

Form Center ► Contact Us ► Application for Boards and Commissions ► Submission #4867

This application and all information contained herein is a public record. Public service opportunities are offered by the Town of Bartonville without regard to race, color, national origin, religion, sex, genetic information or disability

Date & Time

12/06/2023

10:45 AM

First Name *

Lacy

Last Name *

Burhus

Address1 *

1231 Latigo Lane

City *

Bartonville

State *

Texas

Zip *

75022

Phone Number *

SAVE CHANGES

CANCEL

Form Details

Submitted By:

Submitted On:
December 6, 2023 11:37 AM

IP Address:
76.85.77.123

Referrer:
http://www.townofbartonville.com/...

Answered 22 of 25 (88.0%)

Email Address

Are you a registered voter*

- ☒ Yes
- ☐ No

Voter Registration Number

2123151262

To verify your voter registration number go to www.votedenton.com, voter information, voter lookup

Length of Residency in Bartonville *

2 yrs 7 months

In order to serve as an appointed official, you must be a resident of the Town for at least six (6) months. In order to serve on the Planning and Zoning Commission or Board of Adjustments, you must be a resident property owner of the Town for a least six months.

Please select which board(s) you are interested in. If more than one, prioritize your selections using the choice options below as applicable.

Choice 1 *

Community Development Corporation ▾

Choice 2

Planning and Zoning Commission ▾

Choice 3

Board of Adjustment ▾

Choice 4

Crime Control & Prevention District ▾

Retired, Department Lead and Program Manager U.S. Navy

List any experience that qualifies you to serve in the position(s) sought:

I served on boards and committees, as well as led various programs throughout my military career. I was involved in surveying sites and conducting logistical planning for operations (environmental considerations, impact to services and community)

Are you currently serving on a Board, Commissions, or other capacity?*

- ☐ Yes
- ☒ No

If yes, which

Have you served on a Board, Commission, or Committee before?*

- ☐ Yes
- ☒ No

If yes, which

Please list organization memberships and positions held

Active volunteer with Liberty Christian School, previously held chairman for school events and committees, organization coordinator for projects and programs in the Navy and served as a member of community improvement programs in places I lived around the world.



Interested in serving where needs exist for the betterment of my community.

References

Sally Westgard 619-840-4943 (prior work colleague and long time friend); Vicki Ready 214-697-7363 (neighbor)



TOWN COUNCIL COMMUNICATION

DATE December 19, 2023

FROM: Thad Chambers, Town Administrator

AGENDA ITEM: Discuss and consider an agreement with MWH Group for external auditing services for the fiscal year ending September 30, 2023, and authorize the Town Administrator to execute same on behalf of the Town.

SUMMARY:

The Local Government Code states a “municipality shall have its records and accounts audited annually and shall have an annual financial statement prepared based on the audit.”

The annual audit includes an examination of the financial statements of all accounts and funds of the Town and all component entities. The examination is made in accordance with all generally accepted auditing standards for local governments as established by the American Institute of Certified Public Accountants and in accordance with all applicable federal and state laws. The annual audit also reports on the adequacy of the Town’s system of internal accounting controls and policies.

FISCAL INFORMATION:

Fees will range between \$14,500 - \$18,500, plus any necessary travel costs.

RECOMMENDED MOTION OR ACTION:

Approve agreement with MWH Group for external auditing services for Fiscal Year ending September 30, 2023, and authorize the Town Administrator to execute same on behalf of the Town.

ATTACHMENTS:

- MWH Group Engagement Letter
- MWH Group Proposal



MWH GROUP
CERTIFIED PUBLIC ACCOUNTANTS
CONSULTANTS

Item F7.

Thad Chambers, Town Administrator
Town of Bartonville, Texas
1941 E. Jeter Road
Bartonville, TX 76226

Dear Mr. Chambers:

Thank you for the opportunity to respond to your request for proposal to provide audit services for the Town of Bartonville, Texas (Town).

MWH Group, P.C. has been providing auditing, accounting, and consulting services to governments throughout the North Texas area since our Firm's inception in the 1960's. With such a large segment of our practice devoted to governments, we have committed a significant amount of resources, including personnel, training, and financial, to maintain our status as a leader in the industry.

We are committed to providing the services you are requesting in a professional and timely manner. We value the opportunity to retain the Town of Bartonville, Texas as one of our clients. We take great pride in our clients and the services that we provide to them. As a result, we strive to ensure that our clients receive professional, timely, and personal services. If selected as auditors, you can be certain that our team assigned to your Town will have experience and knowledge in serving the government industry. Such an approach allows for an efficient and beneficial audit process.

As a client service organization, we know that our business depends on successful relationships with the clients that we serve. In addition to audit services, we are committed to do the following to continually build our relationship with you.

- Meet periodically with the finance staff or members of the Town Council to share planning ideas, discuss the results of the audit, and receive feedback on the services performed.
- Provide guidance for staff on accounting and tax issues, including updates on pertinent regulatory issues.

We understand that it is necessary for an audit firm to possess certain critical components in order to perform efficient and effective audits. We believe the following areas are key expectations of the audit firm:

- Experience in serving Cities and governmental clients;
- A highly qualified service team;
- Competitive fees; and
- A technical resource and advisor for the Town.

Experience in Serving Cities and Governmental Clients

We have served as the independent certified public accountants for many cities and local governments. All of this knowledge and experience will directly benefit the Town and provide for the more efficient and effective audit. We will periodically rotate certain staff members engaged to work on the audit to increase the level of professional skepticism our Firm brings to your Town. However, each team member will be trained in the area of governmental audits.

Additionally, we perform audits in accordance with *Government Auditing Standards* for many other local governments and nonprofit entities, including City of Burkburnett, Texas, City of Bowie, Texas, and City of Graham, Texas.

A Highly Qualified Service Team

We have an Accounting & Audit Department, whose primary emphasis is in providing accounting, auditing, and consulting services to our clients, and in particular governmental clients. In this department we have team members specifically dedicated to providing services to our governmental clients. It is from these members that we have selected the team to serve you.

Valerie R. Halverson, CPA, will serve as the engagement shareholder for all services to the Town of Bartonville, Texas. She has over fifteen years of experience in public accounting and performing audits of local governments.

Competitive Fees

We understand that local governments are faced with budget constraints, and we know that it is important to Town management to pay a fair price for audit services. We believe that our fees for the services to be provided will be reasonable and competitive with other major accounting firms for similar quality services. We estimate that our fees will range between \$14,500 - \$18,500 for the audit, plus any necessary travel costs.

A Technical Resource and Advisor for the Town

We are available any time throughout the year to provide assistance to our clients, whether it be simply answering questions, providing assistance with accounting or bookkeeping matters, or assisting with more complex projects. Our goal is to provide personalized, one-on-one services to assist our clients in any way we can.

We are large enough to draw upon specialized resources as the need arises. Our reference materials contain complete, up-to-date information, regarding the most current accounting and auditing requirements, trends, and practices effecting the governmental environment. In addition to our technical library, the Firm maintains voluntary membership in the AICPA Government Audit Quality Center, the Government Finance Officers Association, the AICPA Center For Audit Quality, and the AICPA Private Company Practice Section as additional sources of current information.

Thad Chambers, Town Administrator
Town of Bartonville, Texas
1941 E. Jeter Road
Bartonville, TX 76226

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With respect to our proposal and other matters related to this engagement, the following people are authorized to make representations on behalf of our Firm and will be responsible for conducting the Town's audit:

Valerie R. Halverson, CPA, Shareholder
Rodney D. Case, CPA, MAFF, Shareholder

Both may be contacted by phone at (940) 723-1471 or by mail at P. O. Box 97000, Wichita Falls, Texas 76307-7000. The fax number is (940) 723-2251, and their e-mail addresses are vhalverson@mwhpc.com and rcase@mwhpc.com.

We appreciate this opportunity to present our qualifications, capabilities, and the approach we will take to serve your needs. We believe the quality and experience of the personnel involved, our approach, and the organization of our efforts are all of vital importance in providing you with outstanding professional services.

This proposal is a firm and irrevocable offer for one year and will be held open for acceptance for 90 days. We will be happy to discuss any questions you may have regarding our proposal, or any other matters related to this engagement.

Very truly yours,

MWH Group, P.C.

MWH GROUP, P.C.

Wichita Falls, Texas
November 1, 2023



November 1, 2023

Honorable Mayor and Town Council
Town of Bartonville
1941 E. Jeter Rd.
Bartonville, TX 76226

Honorable Mayor and Town Council:

We are pleased to confirm our understanding of the services we are to provide Town of Bartonville, Texas for the year ended September 30, 2023.

Audit Scope and Objectives

We will audit the financial statements of the governmental activities, each major fund, and the aggregate remaining fund information, and the disclosures, which collectively comprise the basic financial statements of Town of Bartonville, Texas as of and for the year ended September 30, 2023. Accounting standards generally accepted in the United States of America (GAAP) provide for certain required supplementary information (RSI), such as management's discussion and analysis (MD&A), to supplement Town of Bartonville's basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. As part of our engagement, we will apply certain limited procedures to Town of Bartonville's RSI in accordance with auditing standards generally accepted in the United States of America (GAAS). These limited procedures will consist of inquiries of management regarding the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We will not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient appropriate evidence to express an opinion or provide any assurance. The following RSI is required by GAAP and will be subjected to certain limited procedures, but will not be audited:

- 1) Management's Discussion and Analysis.
- 2) Budgetary Comparison Schedule
- 3) Schedule of Changes in Pension Liability and Related Ratios
- 4) Schedule of Pension Contributions
- 5) Schedule of Changes in Total OPEB Liability and Related Ratios

The objectives of our audit are to obtain reasonable assurance as to whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, issue an auditor's report that includes our opinion about whether your financial statements are fairly presented, in all material respects, in conformity with GAAP and report on the fairness of the supplementary information referred to in the second paragraph when considered in relation to the financial statements as a whole. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. Misstatements, including omissions, can arise from fraud or error and are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment of a reasonable user made based on the financial statements.

The objectives also include reporting on internal control over financial reporting and compliance with provisions of laws, regulations, contracts and award agreements, noncompliance with which could have a material effect on the financial statements in accordance with *Government Auditing Standards*.

Honorable Mayor and Town Council
Town of Bartonville, Texas
November 1, 2023

Page 2

Auditor's Responsibilities for the Audit of the Financial Statements

We will conduct our audit in accordance with GAAS and the standards for financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, and will include tests of your accounting records of Town of Bartonville, Texas and other procedures we consider necessary to enable us to express such opinions. As part of an audit in accordance with GAAS and *Government Auditing Standards*, we exercise professional judgment and maintain professional skepticism throughout the audit.

We will evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management. We will also evaluate the overall presentation of the financial statements, including the disclosures, and determine whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation. We will plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether from (1) errors, (2) fraudulent financial reporting, (3) misappropriation of assets, or (4) violations of laws or governmental regulations that are attributable to the government or to acts by management or employees acting on behalf of the government. Because the determination of waste and abuse is subjective, *Government Auditing Standards* do not expect auditors to perform specific procedures to detect waste or abuse in financial audits nor do they expect auditors to provide reasonable assurance of detecting waste or abuse.

Because of the inherent limitations of an audit, combined with the inherent limitations of internal control, and because we will not perform a detailed examination of all transactions, there is an unavoidable risk that some material misstatements may not be detected by us, even though the audit is properly planned and performed in accordance with GAAS and *Government Auditing Standards*. In addition, an audit is not designed to detect immaterial misstatements or violations of laws or governmental regulations that do not have a direct and material effect on the financial statements. However, we will inform the appropriate level of management of any material errors, fraudulent financial reporting, or misappropriation of assets that comes to our attention. We will also inform the appropriate level of management of any violations of laws or governmental regulations that come to our attention, unless clearly inconsequential. Our responsibility as auditors is limited to the period covered by our audit and does not extend to any later periods for which we are not engaged as auditors.

We will also conclude, based on the audit evidence obtained, whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the government's ability to continue as a going concern for a reasonable period of time.

Our procedures will include tests of documentary evidence supporting the transactions recorded in the accounts, tests of the physical existence of inventories, and direct confirmation of receivables and certain assets and liabilities by correspondence with selected customers, creditors, and financial institutions. We will also request written representations from your attorneys as part of the engagement.

We may, from time to time and depending on the circumstances, use third-party service providers in serving your account. We may share confidential information about you with these service providers but remain committed to maintaining the confidentiality and security of your information. Accordingly, we maintain internal policies, procedures, and safeguards to protect the confidentiality of your personal information. In addition, we will secure confidentiality agreements with all service providers to maintain the confidentiality of your information and we will take reasonable precautions to determine that they have appropriate procedures in place to prevent the unauthorized release of your confidential information to others. In the event that we are unable to secure an appropriate confidentiality agreement, you will be asked to provide your consent prior to the sharing of your confidential information with the third-party service provider. Furthermore, we will remain responsible for the work provided by any such third-party service providers.

Our audit of financial statements does not relieve you of your responsibilities.

Audit Procedures—Internal Control

We will obtain an understanding of the government and its environment, including internal control relevant to the audit, sufficient to identify and assess the risks of material misstatement of the financial statements, whether due to error or fraud, and to design and perform audit procedures responsive to those risks and obtain evidence that is sufficient and appropriate to provide a basis for our opinions. Tests of controls may be performed to test the effectiveness of certain controls that we consider relevant to preventing and detecting errors and fraud that are

Page 3

material to the financial statements and to preventing and detecting misstatements resulting from illegal acts and other noncompliance matters that have a direct and material effect on the financial statements. Our tests, if performed, will be less in scope than would be necessary to render an opinion on internal control and, accordingly, no opinion will be expressed in our report on internal control issued pursuant to *Government Auditing Standards*.

The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentation, or the override of internal control. An audit is not designed to provide assurance on internal control or to identify significant deficiencies or material weaknesses. Accordingly, we will express no such opinion. However, during the audit, we will communicate to management and those charged with governance internal control related matters that are required to be communicated under AICPA professional standards and *Government Auditing Standards*.

Audit Procedures—Compliance

As part of obtaining reasonable assurance about whether the financial statements are free of material misstatement, we will perform tests of Town of Bartonville's compliance with the provisions of applicable laws, regulations, contracts, agreements, and grants. However, the objective of our audit will not be to provide an opinion on overall compliance, and we will not express such an opinion in our report on compliance issued pursuant to *Government Auditing Standards*.

Other Services

We will also assist in preparing the financial statements, and related notes of Town of Bartonville, Texas in conformity with accounting principles generally accepted in the United States of America and the Uniform Guidance based on information provided by you. Additionally, we will assist in converting the accounting records from cash basis to accrual basis, maintain the depreciation schedule, prepare the government-wide conversion, and assist in implementing new accounting standards, if applicable. These nonaudit services do not constitute an audit under *Government Auditing Standards* and such services will not be conducted in accordance with *Government Auditing Standards*. We will perform the services in accordance with applicable professional standards. The other services are limited to the financial statements and related notes, cash to accrual conversion, depreciation schedule, government-wide conversion, and new standard implementation, as previously defined. We, in our sole professional judgment, reserve the right to refuse to perform any procedure or take any action that could be construed as assuming management responsibilities.

You agree to assume all management responsibilities relating to the financial statements and related notes, cash to accrual conversion, depreciation schedule, government-wide conversion, and new standard implementation, and any other nonaudit services we provide. You will be required to acknowledge in the management representation letter our assistance with preparation of the financial statements, the schedule of, and related notes, cash to accrual conversion, depreciation schedule, government-wide conversion, and new standard implementation, and that you have reviewed and approved the financial statements and related notes, cash to accrual conversion entries, depreciation schedule, government-wide conversion, and new standard implementation, prior to their issuance and have accepted responsibility for them. Further, you agree to oversee the nonaudit services by designating an individual, preferably from senior management, with suitable skill, knowledge, or experience; evaluate the adequacy and results of those services; and accept responsibility for them.

Responsibilities of Management for the Financial Statements

Our audit will be conducted on the basis that you acknowledge and understand your responsibility for designing, implementing, establishing, and maintaining effective internal controls relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error, and for evaluating and monitoring ongoing activities to help ensure that appropriate goals and objectives are met; following laws and regulations; and ensuring that management and financial information is reliable and properly reported. Management is also responsible for implementing systems designed to achieve compliance with applicable laws, regulations, contracts, and grant agreements. You are also responsible for the selection and application of accounting principles, for the preparation and fair presentation of the financial statements and all accompanying information in conformity with accounting principles generally accepted in the United States of America, and for compliance with applicable laws and regulations and the provisions of contracts and grant agreements.

Honorable Mayor and Town Council
Town of Bartonville, Texas
November 1, 2023

Page 4

Management is responsible for making drafts of financial statements, all financial records and related information available to us and for the accuracy and completeness of that information (including information from outside of the general and subsidiary ledgers). You are also responsible for providing us with (1) access to all information of which you are aware that is relevant to the preparation and fair presentation of the financial statements, such as records, documentation, identification of all related parties and all related-party relationships and transactions, and other matters; (2) additional information that we may request for the purpose of the audit, and (3) unrestricted access to persons within the government from whom we determine it necessary to obtain audit evidence. At the conclusion of our audit, we will require certain written representations from you about your responsibilities for the financial statements; compliance with laws, regulations, contracts, and grant agreements; and other responsibilities required by GAAS and *Government Auditing Standards*.

Your responsibilities include adjusting the financial statements to correct material misstatements and for confirming to us in the written representation letter that the effects of any uncorrected misstatements aggregated by us during the current engagement and pertaining to the latest period presented are immaterial, both individually and in the aggregate, to the financial statements of each opinion unit taken as a whole.

You are responsible for the design and implementation of programs and controls to prevent and detect fraud, and for informing us about all known or suspected fraud affecting the government involving (1) management, (2) employees who have significant roles in internal control, and (3) others where the fraud could have a material effect on the financial statements. Your responsibilities include informing us of your knowledge of any allegations of fraud or suspected fraud affecting the government received in communications from employees, former employees, grantors, regulators, or others. In addition, you are responsible for identifying and ensuring that the government complies with applicable laws, regulations, contracts, agreements, and grants and for taking timely and appropriate steps to remedy fraud and noncompliance with provisions of laws, regulations, or contracts or grant agreements that we report.

You are responsible for the preparation of the supplementary information, which we have been engaged to report on, in conformity with accounting principles generally accepted in the United States of America (GAAP). You agree to include our report on the supplementary information in any document that contains and indicates that we have reported on the supplementary information. You also agree to include the audited financial statements with any presentation of the supplementary information that includes our report thereon OR make the audited financial statements readily available to users of the supplementary information no later than the date the supplementary information is issued with our report thereon. Your responsibilities include acknowledging to us in the written representation letter that (1) you are responsible for presentation of the supplementary information in accordance with GAAP; (2) you believe the supplementary information, including its form and content, is fairly presented in accordance with GAAP; (3) the methods of measurement or presentation have not changed from those used in the prior period (or, if they have changed, the reasons for such changes); and (4) you have disclosed to us any significant assumptions or interpretations underlying the measurement or presentation of the supplementary information.

Management is responsible for establishing and maintaining a process for tracking the status of audit findings and recommendations. Management is also responsible for identifying and providing report copies of previous financial audits, attestation engagements, performance audits or other studies related to the objectives discussed in the Audit Scope and Objectives section of this letter. This responsibility includes relaying to us corrective actions taken to address significant findings and recommendations resulting from those audits, attestation engagements, performance audits, or other studies. You are also responsible for providing management's views on our current findings, conclusions, and recommendations, as well as your planned corrective actions, for the report, and for the timing and format for providing that information.

Engagement Administration, Fees, and Other

We understand that your employees will prepare all cash, accounts receivable, or other confirmations we request and will locate any documents selected by us for testing.

We will provide copies of our reports to the Town of Bartonville; however, management is responsible for distribution of the reports and the financial statements. Unless restricted by law or regulation, or containing privileged and confidential information, copies of our reports are to be made available for public inspection.

Honorable Mayor and Town Council
Town of Bartonville, Texas
November 1, 2023

Page 5

The audit documentation for this engagement is the property of MWH Group, P.C. and constitutes confidential information. However, subject to applicable laws and regulations, audit documentation and appropriate individuals will be made available upon request and in a timely manner to a cognizant agency or its designee, a federal agency providing direct or indirect funding, or the U.S. Government Accountability Office for the purposes of a quality review of the audit, to resolve audit findings, or to carry out oversight responsibilities. We will notify you of any such request. If requested, access to such audit documentation will be provided under the supervision of MWH Group, P.C.'s personnel. Furthermore, upon request, we may provide copies of selected audit documentation to the aforementioned parties. These parties may intend, or decide, to distribute the copies or information contained therein to others, including other governmental agencies.

The audit documentation for this engagement will be retained for a minimum of five years after the report release date or for any additional period requested by the cognizant agencies. If we are aware that a federal awarding agency or auditee is contesting an audit finding, we will contact the party(ies) contesting the audit finding for guidance prior to destroying the audit documentation.

Valerie Halverson, CPA, is the engagement shareholder and is responsible for supervising the engagement and signing the reports or authorizing another individual to sign them.

Our fee for services will be at our standard hourly rates plus out-of-pocket costs (such as report reproduction, word processing, postage, travel, copies, telephone, etc.) except that we agree that our gross fee, including expenses, will be between \$14,500 and \$18,500. Our standard hourly rates vary according to the degree of responsibility involved and the experience level of the personnel assigned to your audit. Our invoices for these fees will be rendered each month as work progresses and are payable on presentation. In accordance with our firm policies, work may be suspended if your account becomes 30 days or more overdue and may not be resumed until your account is paid in full. If we elect to terminate our services for nonpayment, our engagement will be deemed to have been completed upon written notification of termination, even if we have not completed our report. You will be obligated to compensate us for all time expended and to reimburse us for all out-of-pocket costs through the date of termination. The above fee is based on anticipated cooperation from your personnel and the assumption that unexpected circumstances will not be encountered during the audit. If significant additional time is necessary, we will discuss it with you and arrive at a new fee estimate before we incur the additional costs.

Reporting

We will issue a written report upon completion of our audit of Town of Bartonville, Texas' financial statements. Our report will be addressed to management and those charged with governance of the Town of Bartonville, Texas. Circumstances may arise in which our report may differ from its expected form and content based on the results of our audit. Depending on the nature of these circumstances, it may be necessary for us to modify our opinions, add a separate section, or add an emphasis-of-matter or other-matter paragraph to our auditor's report, or if necessary, withdraw from this engagement. If our opinions are other than unmodified, we will discuss the reasons with you in advance. If, for any reason, we are unable to complete the audit or are unable to form or have not formed opinions, we may decline to express opinions or issue reports, or we may withdraw from this engagement.

We will also provide a report (that does not include an opinion) on internal control related to the financial statements and compliance with the provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a material effect on the financial statements as required by *Government Auditing Standards*. The report on internal control and on compliance and other matters will state (1) that the purpose of the report is solely to describe the scope of testing of internal control and compliance, and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control on compliance, and (2) that the report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. The report will also state that the report is not suitable for any other purpose. If during our audit we become aware that Town of Bartonville, Texas is subject to an audit requirement that is not encompassed in the terms of this engagement, we will communicate to management and those charged with governance that an audit in accordance with U.S. generally accepted auditing standards and the standards for financial audits contained in *Government Auditing Standards* may not satisfy the relevant legal, regulatory, or contractual requirements.

We appreciate the opportunity to be of service to Town of Bartonville, Texas and believe this letter accurately summarizes the significant terms of our engagement. If you have any questions, please let us know. If you agree with the terms of our engagement as described in this letter, please sign the attached copy and return it to us.

Honorable Mayor and Town Council
Town of Bartonville, Texas
November 1, 2023

Page 6

Very truly yours,

MWH Group, P.C.

MWH Group, P.C.

RESPONSE:

This letter correctly sets forth the understanding of Town of Bartonville, Texas:

Signature: _____

Title: _____

Date: _____



TOWN COUNCIL COMMUNICATION

DATE December 19, 2023

FROM: Wendell Mitchell, Interim Chief of Police

AGENDA ITEM: Discuss and consider a Master Services and Purchasing Agreement with Axon Enterprise, Inc. for the purchase of tasers and associated equipment in an amount not to exceed \$17,526.00; and authorize the Town Administrator to execute same on behalf of the Town.

SUMMARY:

Professional law enforcement agencies utilize various technologies in their service to the community. One of these technologies is electronic control devices (ECD or Tasers). Using ECDs, specifically the Axon Enterprise, Inc. Taser, is a law enforcement best practice that assists officers safely de-escalating and detaining subjects displaying active aggression. The Bartonville Police Department has effectively incorporated Tasers to safely de-escalate encounters with actively aggressive subjects over the last ten years. Often, active-aggressive individuals will voluntarily comply following a warning of impending Taser deployment. Our current Tasers, X26P, are one of the earlier Axon models and are out of warranty.

FISCAL INFORMATION:

\$17,526.00 over a five-year term.

RECOMMENDED MOTION OR ACTION:

The recommendation is to enter into a purchasing agreement to acquire six (6) Axon Taser 7. The Taser 7 is more technologically advanced than the X26P, providing officers with two deployment options and rechargeable batteries.

ATTACHMENTS:

- Axon Enterprise Taser Quote
- Axon Master Services Purchasing Agreement



Axon Enterprise, Inc.
17800 N 85th St.
Scottsdale, Arizona 85255
United States
VAT: 86-0741227
Domestic: (800) 978-2737
International: +1.800.978.2737

Q-517206-452 *Item F8.*

➡

Issued: 12/15/2023

Quote Expiration: 12/20/2023

Estimated Contract Start Date: 03/01/2024

Account Number: 460464
Payment Terms: N30
Delivery Method:

SHIP TO	BILL TO
Bartonville Police Dept - TX 1941 E Jeter Rd Bartonville, TX 76226-9401 USA	Bartonville Police Dept - TX 1941 E Jeter Rd Bartonville TX 76226-9401 USA Email:

SALES REPRESENTATIVE	PRIMARY CONTACT
Ryan Sabo Phone: (480) 716-3516 Email: rsabo@axon.com Fax:	Colby Scudder Phone: (817) 430-1913 Email: cscudder@townofbartonville.com Fax:

Quote Summary

Program Length	60 Months
TOTAL COST	\$17,526.00
ESTIMATED TOTAL W/ TAX	\$17,526.00

Discount Summary

Average Savings Per Year	\$808.80
TOTAL SAVINGS	\$4,044.00

Payment Summary

Date	Subtotal	Tax	Total
Jan 2024	\$3,505.20	\$0.00	\$3,505.20
Jan 2025	\$3,505.20	\$0.00	\$3,505.20
Jan 2026	\$3,505.20	\$0.00	\$3,505.20
Jan 2027	\$3,505.20	\$0.00	\$3,505.20
Jan 2028	\$3,505.20	\$0.00	\$3,505.20
Total	\$17,526.00	\$0.00	\$17,526.00

Quote Unbundled Price:
Quote List Price:
Quote Subtotal:

\$21
Item F8.
\$18,492.00
\$17,526.00

Pricing

All deliverables are detailed in Delivery Schedules section lower in proposal

Item	Description	Qty	Term	Unbundled	List Price	Net Price	Subtotal	Tax	Total
Program									
T7Basic	TASER 7 Basic Bundle	6	60	\$54.55	\$46.00	\$46.00	\$16,560.00	\$0.00	\$16,560.00
A la Carte Hardware									
22176	TASER 7 LIVE CARTRIDGE, CLOSE QUARTERS (12-DEGREE) NS	24			\$40.25	\$0.00	\$0.00	\$0.00	\$0.00
22175	TASER 7 LIVE CARTRIDGE, STANDOFF (3.5-DEGREE) NS	24			\$40.25	\$40.25	\$966.00	\$0.00	\$966.00
Total							\$17,526.00	\$0.00	\$17,526.00

Delivery Schedule

Hardware

Bundle	Item	Description	QTY	Estimated Delivery Date
TASER 7 Basic Bundle	20008	TASER 7 HANDLE, YLW, HIGH VISIBILITY (GREEN LASER), CLASS 3R	6	02/01/2024
TASER 7 Basic Bundle	20018	TASER BATTERY PACK, TACTICAL	7	02/01/2024
TASER 7 Basic Bundle	20062	TASER 7 HOLSTER - BLACKHAWK, RIGHT HAND	6	02/01/2024
TASER 7 Basic Bundle	70033	WALL MOUNT BRACKET, ASSY, EVIDENCE.COM DOCK	1	02/01/2024
TASER 7 Basic Bundle	71019	NORTH AMER POWER CORD FOR AB3 8-BAY, AB2 1-BAY / 6-BAY DOCK	1	02/01/2024
TASER 7 Basic Bundle	74200	TASER 6-BAY DOCK AND CORE	1	02/01/2024
TASER 7 Basic Bundle	80087	TASER TARGET, CONDUCTIVE, PROFESSIONAL (RUGGEDIZED)	1	02/01/2024
TASER 7 Basic Bundle	80090	TARGET FRAME, PROFESSIONAL, 27.5 IN. X 75 IN., TASER 7	1	02/01/2024
A la Carte	22175	TASER 7 LIVE CARTRIDGE, STANDOFF (3.5-DEGREE) NS	24	02/01/2024
A la Carte	22176	TASER 7 LIVE CARTRIDGE, CLOSE QUARTERS (12-DEGREE) NS	24	02/01/2024

Software

Bundle	Item	Description	QTY	Estimated Start Date	Estimated End Date
TASER 7 Basic Bundle	20248	TASER - EVIDENCE.COM LICENSE	6	03/01/2024	02/28/2029
TASER 7 Basic Bundle	20248	TASER - EVIDENCE.COM LICENSE	1	03/01/2024	02/28/2029

Warranties

Bundle	Item	Description	QTY	Estimated Start Date	Estimated End Date
TASER 7 Basic Bundle	80374	EXT WARRANTY, TASER 7 BATTERY PACK	7	02/01/2025	02/28/2029
TASER 7 Basic Bundle	80395	EXT WARRANTY, TASER 7 HANDLE	6	02/01/2025	02/28/2029
TASER 7 Basic Bundle	80396	EXT WARRANTY, TASER 7 SIX BAY DOCK	1	02/01/2025	02/28/2029

Payment Details

Item F8.

Jan 2024

Invoice Plan	Item	Description	Qty	Subtotal	Tax	Total
Year 1	22175	TASER 7 LIVE CARTRIDGE, STANDOFF (3.5-DEGREE) NS	24	\$193.20	\$0.00	\$193.20
Year 1	22176	TASER 7 LIVE CARTRIDGE, CLOSE QUARTERS (12-DEGREE) NS	24	\$0.00	\$0.00	\$0.00
Year 1	T7Basic	TASER 7 Basic Bundle	6	\$3,312.00	\$0.00	\$3,312.00
Total				\$3,505.20	\$0.00	\$3,505.20

Jan 2025

Invoice Plan	Item	Description	Qty	Subtotal	Tax	Total
Year 2	22175	TASER 7 LIVE CARTRIDGE, STANDOFF (3.5-DEGREE) NS	24	\$193.20	\$0.00	\$193.20
Year 2	22176	TASER 7 LIVE CARTRIDGE, CLOSE QUARTERS (12-DEGREE) NS	24	\$0.00	\$0.00	\$0.00
Year 2	T7Basic	TASER 7 Basic Bundle	6	\$3,312.00	\$0.00	\$3,312.00
Total				\$3,505.20	\$0.00	\$3,505.20

Jan 2026

Invoice Plan	Item	Description	Qty	Subtotal	Tax	Total
Year 3	22175	TASER 7 LIVE CARTRIDGE, STANDOFF (3.5-DEGREE) NS	24	\$193.20	\$0.00	\$193.20
Year 3	22176	TASER 7 LIVE CARTRIDGE, CLOSE QUARTERS (12-DEGREE) NS	24	\$0.00	\$0.00	\$0.00
Year 3	T7Basic	TASER 7 Basic Bundle	6	\$3,312.00	\$0.00	\$3,312.00
Total				\$3,505.20	\$0.00	\$3,505.20

Jan 2027

Invoice Plan	Item	Description	Qty	Subtotal	Tax	Total
Year 4	22175	TASER 7 LIVE CARTRIDGE, STANDOFF (3.5-DEGREE) NS	24	\$193.20	\$0.00	\$193.20
Year 4	22176	TASER 7 LIVE CARTRIDGE, CLOSE QUARTERS (12-DEGREE) NS	24	\$0.00	\$0.00	\$0.00
Year 4	T7Basic	TASER 7 Basic Bundle	6	\$3,312.00	\$0.00	\$3,312.00
Total				\$3,505.20	\$0.00	\$3,505.20

Jan 2028

Invoice Plan	Item	Description	Qty	Subtotal	Tax	Total
Year 5	22175	TASER 7 LIVE CARTRIDGE, STANDOFF (3.5-DEGREE) NS	24	\$193.20	\$0.00	\$193.20
Year 5	22176	TASER 7 LIVE CARTRIDGE, CLOSE QUARTERS (12-DEGREE) NS	24	\$0.00	\$0.00	\$0.00
Year 5	T7Basic	TASER 7 Basic Bundle	6	\$3,312.00	\$0.00	\$3,312.00
Total				\$3,505.20	\$0.00	\$3,505.20

Tax is estimated based on rates applicable at date of quote and subject to change at time of invoicing. If a tax exemption certificate should be applied, please submit prior to invoicing.

Standard Terms and Conditions

Axon Enterprise Inc. Sales Terms and Conditions

Axon Master Services and Purchasing Agreement:

This Quote is limited to and conditional upon your acceptance of the provisions set forth herein and Axon's Master Services and Purchasing Agreement (posted at www.axon.com/legal/sales-terms-and-conditions), as well as the attached Statement of Work (SOW) for Axon Fleet and/or Axon Interview Room purchase, if applicable. In the event you and Axon have entered into a prior agreement to govern all future purchases, that agreement shall govern to the extent it includes the products and services being purchased and does not conflict with the Axon Customer Experience Improvement Program Appendix as described below.

ACEIP:

The Axon Customer Experience Improvement Program Appendix, which includes the sharing of de-identified segments of Agency Content with Axon to develop new products and improve your product experience (posted at www.axon.com/legal/sales-terms-and-conditions), is incorporated herein by reference. By signing below, you agree to the terms of the Axon Customer Experience Improvement Program.

Acceptance of Terms:

Any purchase order issued in response to this Quote is subject solely to the above referenced terms and conditions. By signing below, you represent that you are lawfully able to enter into contracts. If you are signing on behalf of an entity (including but not limited to the company, municipality, or government agency for whom you work), you represent to Axon that you have legal authority to bind that entity. If you do not have this authority, please do not sign this Quote.

Signature

Date Signed

12/15/2023



This Master Services and Purchasing Agreement ("**Agreement**") is between Axon Enterprise, Inc. ("**Axon**"), and the agency listed below or, if no agency is listed below, the agency on the Quote attached hereto ("**Agency**"). This Agreement is effective as of the later of the (a) last signature date on this Agreement or (b) signature date on the Quote ("**Effective Date**"). Axon and Agency are each a "**Party**" and collectively "**Parties**". This Agreement governs Agency's purchase and use of the Axon Devices and Services detailed in the Quote Appendix ("**Quote**"). It is the intent of the Parties that this Agreement will govern all subsequent purchases by Agency for the same Axon Devices and Services in the Quote, and all such subsequent quotes accepted by Agency shall be also incorporated into this Agreement by reference as a Quote. The Parties agree as follows:

1. **Definitions.**

- 1.1. "**Axon Cloud Services**" means Axon's web services for Axon Evidence, Axon Records, Axon Dispatch, and interactions between Axon Evidence and Axon Devices or Axon client software. Axon Cloud Service excludes third-party applications, hardware warranties, and my.evidence.com.
- 1.2. "**Axon Device**" means all hardware provided by Axon under this Agreement. Axon-manufactured Devices are a subset of Axon Devices.
- 1.3. "**Quote**" means an offer to sell and is only valid for devices and services on the offer at the specified prices. Any inconsistent or supplemental terms within Agency's purchase order in response to a Quote will be void. Orders are subject to prior credit approval. Changes in the deployment estimated ship date may change charges in the Quote. Shipping dates are estimates only. Axon is not responsible for typographical errors in any Quote by Axon, and Axon reserves the right to cancel any orders resulting from such errors.
- 1.4. "**Services**" means all services provided by Axon under this Agreement, including software, Axon Cloud Services, and professional services.

2. **Term.** This Agreement begins on the Effective Date and continues until all subscriptions hereunder have expired or have been terminated ("**Term**").

- 2.1. All subscriptions including Axon Evidence, Axon Fleet, Officer Safety Plans, Technology Assurance Plans, and TASER 7 or TASER 10 plans begin on the date stated in the Quote. Each subscription term ends upon completion of the subscription stated in the Quote ("**Subscription Term**").
- 2.2. Upon completion of the Subscription Term, the Subscription Term will automatically renew for an additional 5 years ("**Renewal Term**"). For purchase of TASER 7 or TASER 10 as a standalone, Axon may increase pricing to its then-current list pricing for any Renewal Term. For all other purchases, Axon may increase pricing on all line items in the Quote by up to 3% at the beginning of each year of the Renewal Term. New devices and services may require additional terms. Axon will not authorize services until Axon receives a signed Quote or accepts a purchase order, whichever is first.

3. **Payment.** Axon invoices upon shipment, or on the date specified within the invoicing plan in the Quote. Payment is due net 30 days from the invoice date. Payment obligations are non-cancelable. Unless otherwise prohibited by law, Agency will pay interest on all past-due sums at the lower of one-and-a-half percent (1.5%) per month or the highest rate allowed by law. Agency will pay invoices without setoff, deduction, or withholding. If Axon sends a past due account to collections, Agency is responsible for collection and attorneys' fees.

4. **Taxes.** Agency is responsible for sales and other taxes associated with the order unless Agency provides Axon a valid tax exemption certificate.

5. **Shipping.** Axon may make partial shipments and ship Axon Devices from multiple locations. All shipments are EXW (Incoterms 2020) via common carrier. Title and risk of loss pass to Agency upon Axon's delivery to the common carrier. Agency is responsible for any shipping charges in the Quote.

6. **Returns.** All sales are final. Axon does not allow refunds or exchanges, except warranty returns or as provided by state or federal law.

7. **Warranty.**

- 7.1. **Limited Warranty.** Axon warrants that Axon-manufactured Devices are free from defects in workmanship and materials for one (1) year from the date of Agency's receipt, except Signal Sidearm and Axon-manufactured accessories, which Axon warrants for thirty (30) months and ninety (90) days, respectively, from the date of Agency's receipt. Used conducted energy weapon ("**CEW**") cartridges are deemed to have operated properly. Extended warranties run from the expiration of the one- (1-) year hardware warranty through the extended warranty term.
- 7.2. **Disclaimer.** All software and Axon Cloud Services are provided "**AS IS,**" without any warranty of any kind, either express or implied, including without limitation the implied warranties of merchantability,

fitness for a particular purpose and non-infringement. Axon Devices and Services that are not manufactured, published or performed by Axon ("Third-Party Products") are not covered by Axon's warranty and are only subject to the warranties of the third-party provider or manufacturer.

- 7.3. **Claims.** If Axon receives a valid warranty claim for an Axon-manufactured Device during the warranty term, Axon's sole responsibility is to repair or replace the Axon-manufactured Device with the same or like Axon-manufactured Device, at Axon's option. A replacement Axon-manufactured Device will be new or like new. Axon will warrant the replacement Axon-manufactured Device for the longer of (a) the remaining warranty of the original Axon-manufactured Device or (b) ninety (90) days from the date of repair or replacement.

7.3.1. If Agency exchanges an Axon Device or part, the replacement item becomes Agency's property, and the replaced item becomes Axon's property. Before delivering an Axon-manufactured Device for service, Agency must upload Axon-manufactured Device data to Axon Evidence or download it and retain a copy. Axon is not responsible for any loss of software, data, or other information contained in storage media or any part of the Axon-manufactured Device sent to Axon for service.

- 7.4. **Spare Axon Devices.** At Axon's reasonable discretion, Axon may provide Agency a predetermined number of spare Axon Devices as detailed in the Quote ("**Spare Axon Devices**"). Spare Axon Devices are intended to replace broken or non-functioning units while Agency submits the broken or non-functioning units, through Axon's warranty return process. Axon will repair or replace the unit with a replacement Axon Device. Title and risk of loss for all Spare Axon Devices shall pass to Agency in accordance with shipping terms under Section 5. Axon assumes no liability or obligation in the event Agency does not utilize Spare Axon Devices for the intended purpose.

- 7.5. **Limitations.** Axon's warranty excludes damage related to: (a) failure to follow Axon Device use instructions; (b) Axon Devices used with equipment not manufactured or recommended by Axon; (c) abuse, misuse, or intentional damage to Axon Device; (d) force majeure; (e) Axon Devices repaired or modified by persons other than Axon without Axon's written permission; or (f) Axon Devices with a defaced or removed serial number. Axon's warranty will be void if Agency resells Axon Devices.

7.5.1. **To the extent permitted by law, the above warranties and remedies are exclusive. Axon disclaims all other warranties, remedies, and conditions, whether oral, written, statutory, or implied. If statutory or implied warranties cannot be lawfully disclaimed, then such warranties are limited to the duration of the warranty described above and by the provisions in this Agreement. Agency confirms and agrees that, in deciding whether to sign this Agreement, it has not relied on any statement or representation by Axon or anyone acting on behalf of Axon related to the subject matter of this Agreement that is not in this Agreement.**

7.5.2. **Axon's cumulative liability to any party for any loss or damage resulting from any claim, demand, or action arising out of or relating to any Axon Device or Service will not exceed the purchase price paid to Axon for the Axon Device, or if for Services, the amount paid for such Services over the twelve (12) months preceding the claim. Neither Party will be liable for direct, special, indirect, incidental, punitive or consequential damages, however caused, whether for breach of warranty or contract, negligence, strict liability, tort or any other legal theory.**

- 7.6. **Online Support Platforms.** Use of Axon's online support platforms (e.g., Axon Academy and MyAxon) is governed by the Axon Online Support Platforms Terms of Use Appendix available at www.axon.com/sales-terms-and-conditions.

- 7.7. **Third-Party Software and Services.** Use of software or services other than those provided by Axon is governed by the terms, if any, entered into between Agency and the respective third-party provider, including, without limitation, the terms applicable to such software or services located at www.axon.com/sales-terms-and-conditions, if any.

- 7.8. **Axon Aid.** Upon mutual agreement between Axon and Agency, Axon may provide certain products and services to Agency, as a charitable donation under the Axon Aid program. In such event, Agency expressly waives and releases any and all claims, now known or hereafter known, against Axon and its officers, directors, employees, agents, contractors, affiliates, successors, and assigns (collectively, "**Releasees**"), including but not limited to, on account of injury, death, property damage, or loss of data, arising out of or attributable to the Axon Aid program whether arising out of the negligence of any Releasees or otherwise. Agency agrees not to make or bring any such claim against any Releasee, and forever release and discharge all Releasees from liability under such claims. Agency expressly allows Axon to publicly announce its participation in Axon Aid and use its name in marketing materials. Axon may terminate the Axon Aid program without cause immediately upon notice to the Agency.

8. **Statement of Work.** Certain Axon Devices and Services, including Axon Interview Room, Axon Channel Services,

Title: Master Services and Purchasing Agreement between Axon and Agency

Department: Legal

Version: 18.0

Release Date: 6/26/2023

and Axon Fleet, may require a Statement of Work that details Axon's Service deliverables ("**SOW**"). In the event Axon provides an SOW to Agency, Axon is only responsible for the performance of Services described in the SOW. Additional services are out of scope. The Parties must document scope changes in a written and signed change order. Changes may require an equitable adjustment in fees or schedule. The SOW is incorporated into this Agreement by reference.

9. **Axon Device Warnings.** See www.axon.com/legal for the most current Axon Device warnings.
10. **Design Changes.** Axon may make design changes to any Axon Device or Service without notifying Agency or making the same change to Axon Devices and Services previously purchased by Agency.
11. **Bundled Offerings.** Some offerings in bundled offerings may not be generally available at the time of Agency's purchase. Axon will not provide a refund, credit, or additional discount beyond what is in the Quote due to a delay of availability or Agency's election not to utilize any portion of an Axon bundle.
12. **Insurance.** Axon will maintain General Liability, Workers' Compensation, and Automobile Liability insurance. Upon request, Axon will supply certificates of insurance.
13. **IP Rights.** Axon owns and reserves all right, title, and interest in Axon-manufactured Devices and Services and suggestions to Axon, including all related intellectual property rights. Agency will not cause any Axon proprietary rights to be violated.
14. **IP Indemnification.** Axon will indemnify Agency against all claims, losses, and reasonable expenses from any third-party claim alleging that the use of Axon-manufactured Devices or Services infringes or misappropriates the third-party's intellectual property rights. Agency must promptly provide Axon with written notice of such claim, tender to Axon the defense or settlement of such claim at Axon's expense and cooperate fully with Axon in the defense or settlement of such claim. Axon's IP indemnification obligations do not apply to claims based on (a) modification of Axon-manufactured Devices or Services by Agency or a third-party not approved by Axon; (b) use of Axon-manufactured Devices and Services in combination with hardware or services not approved by Axon; (c) use of Axon Devices and Services other than as permitted in this Agreement; or (d) use of Axon software that is not the most current release provided by Axon.
15. **Agency Responsibilities.** Agency is responsible for (a) Agency's use of Axon Devices; (b) breach of this Agreement or violation of applicable law by Agency or an Agency end user; (c) disputes between Agency and a third-party over Agency's use of Axon Devices; (d) ensuring Axon Devices are destroyed and disposed of securely and sustainably at Agency's cost; and (e) any regulatory violations or fines, as a result of improper destruction or disposal of Axon Devices.
16. **Termination.**
 - 16.1. **For Breach.** A Party may terminate this Agreement for cause if it provides thirty (30) days written notice of the breach to the other Party, and the breach remains uncured at the end of thirty (30) days. If Agency terminates this Agreement due to Axon's uncured breach, Axon will refund prepaid amounts on a prorated basis based on the effective date of termination.
 - 16.2. **By Agency.** If sufficient funds are not appropriated or otherwise legally available to pay the fees, Agency may terminate this Agreement. Agency will deliver notice of termination under this section as soon as reasonably practicable.
 - 16.3. **Effect of Termination.** Upon termination of this Agreement, Agency rights immediately terminate. Agency remains responsible for all fees incurred before the effective date of termination. If Agency purchases Axon Devices for less than the manufacturer's suggested retail price ("**MSRP**") and this Agreement terminates before the end of the Term, Axon will invoice Agency the difference between the MSRP for Axon Devices received, including any Spare Axon Devices, and amounts paid towards those Axon Devices. Only if terminating for non-appropriation, Agency may return Axon Devices to Axon within thirty (30) days of termination. MSRP is the standalone price of the individual Axon Device at the time of sale. For bundled Axon Devices, MSRP is the standalone price of all individual components.
17. **Confidentiality.** "**Confidential Information**" means nonpublic information designated as confidential or, given the nature of the information or circumstances surrounding disclosure, should reasonably be understood to be confidential. Each Party will take reasonable measures to avoid disclosure, dissemination, or unauthorized use of the other Party's Confidential Information. Unless required by law, neither Party will disclose the other Party's Confidential Information during the Term and for five (5) years thereafter. To the extent permissible by law, Axon pricing is Confidential Information and competition sensitive. If Agency receives a public records request to disclose Axon Confidential Information, to the extent allowed by law, Agency will provide notice to Axon before disclosure. Axon may publicly announce information related to this Agreement.

18. General.

- 18.1. **Force Majeure.** Neither Party will be liable for any delay or failure to perform due to a cause beyond a Party's reasonable control.
- 18.2. **Independent Contractors.** The Parties are independent contractors. Neither Party has the authority to bind the other. This Agreement does not create a partnership, franchise, joint venture, agency, fiduciary, or employment relationship between the Parties.
- 18.3. **Third-Party Beneficiaries.** There are no third-party beneficiaries under this Agreement.
- 18.4. **Non-Discrimination.** Neither Party nor its employees will discriminate against any person based on race; religion; creed; color; sex; gender identity and expression; pregnancy; childbirth; breastfeeding; medical conditions related to pregnancy, childbirth, or breastfeeding; sexual orientation; marital status; age; national origin; ancestry; genetic information; disability; veteran status; or any class protected by local, state, or federal law.
- 18.5. **Export Compliance.** Each Party will comply with all import and export control laws and regulations.
- 18.6. **Assignment.** Neither Party may assign this Agreement without the other Party's prior written consent. Axon may assign this Agreement, its rights, or obligations without consent: (a) to an affiliate or subsidiary; or (b) for purposes of financing, merger, acquisition, corporate reorganization, or sale of all or substantially all its assets. This Agreement is binding upon the Parties respective successors and assigns.
- 18.7. **Waiver.** No waiver or delay by either Party in exercising any right under this Agreement constitutes a waiver of that right.
- 18.8. **Severability.** If a court of competent jurisdiction holds any portion of this Agreement invalid or unenforceable, the remaining portions of this Agreement will remain in effect.
- 18.9. **Survival.** The following sections will survive termination: Payment, Warranty, Axon Device Warnings, Indemnification, IP Rights, and Agency Responsibilities.
- 18.10. **Governing Law.** The laws of the country, state, province, or municipality where Agency is physically located, without reference to conflict of law rules, govern this Agreement and any dispute arising from it. The United Nations Convention for the International Sale of Goods does not apply to this Agreement.
- 18.11. **Notices.** All notices must be in English. Notices posted on Agency's Axon Evidence site are effective upon posting. Notices by email are effective on the sent date of the email. Notices by personal delivery are effective immediately. Notices to Agency shall be provided to the address on file with Axon. Notices to Axon shall be provided to Axon Enterprise, Inc., Attn: Legal, 17800 North 85th Street, Scottsdale, Arizona 85255 with a copy to legal@axon.com.
- 18.12. **Entire Agreement.** This Agreement, including the Appendices and any SOW(s), represents the entire agreement between the Parties. This Agreement supersedes all prior agreements or understandings, whether written or verbal, regarding the subject matter of this Agreement. This Agreement may only be modified or amended in a writing signed by the Parties.

Each Party, by and through its respective representative authorized to execute this Agreement, has duly executed and delivered this Agreement as of the date of signature.

AXON:

Axon Enterprise, Inc.

Signature: _____

Name: _____

Title: _____

Date: _____

AGENCY:

Signature: _____

Name: _____

Title: _____

Date: _____

Axon Cloud Services Terms of Use Appendix

1. Definitions.

- a. **"Agency Content"** is data uploaded into, ingested by, or created in Axon Cloud Services within Agency's tenant, including media or multimedia uploaded into Axon Cloud Services by Agency. Agency Content includes Evidence but excludes Non-Content Data.
- b. **"Evidence"** is media or multimedia uploaded into Axon Evidence as 'evidence' by an Agency. Evidence is a subset of Agency Content.
- c. **"Non-Content Data"** is data, configuration, and usage information about Agency's Axon Cloud Services tenant, Axon Devices and client software, and users that is transmitted or generated when using Axon Devices. Non-Content Data includes data about users captured during account management and customer support activities. Non-Content Data does not include Agency Content.
- d. **"Personal Data"** means any information relating to an identified or identifiable natural person. An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person.

2. **Access.** Upon Axon granting Agency a subscription to Axon Cloud Services, Agency may access and use Axon Cloud Services to store and manage Agency Content. Agency may not exceed more end users than the Quote specifies. Axon Air requires an Axon Evidence subscription for each drone operator. For Axon Evidence Lite, Agency may access and use Axon Evidence only to store and manage TASER CEW and TASER CAM data ("**TASER Data**"). Agency may not upload non-TASER Data to Axon Evidence Lite.
3. **Agency Owns Agency Content.** Agency controls and owns all right, title, and interest in Agency Content. Except as outlined herein, Axon obtains no interest in Agency Content, and Agency Content is not Axon's business records. Agency is solely responsible for uploading, sharing, managing, and deleting Agency Content. Axon will only have access to Agency Content for the limited purposes set forth herein. Agency agrees to allow Axon access to Agency Content to (a) perform troubleshooting, maintenance, or diagnostic screenings; and (b) enforce this Agreement or policies governing use of the Axon products.
4. **Security.** Axon will implement commercially reasonable and appropriate measures to secure Agency Content against accidental or unlawful loss, access or disclosure. Axon will maintain a comprehensive information security program to protect Axon Cloud Services and Agency Content including logical, physical access, vulnerability, risk, and configuration management; incident monitoring and response; encryption of uploaded digital evidence; security education; and data protection. Axon agrees to the Federal Bureau of Investigation Criminal Justice Information Services Security Addendum.
5. **Agency Responsibilities.** Agency is responsible for (a) ensuring Agency owns Agency Content; (b) ensuring no Agency Content or Agency end user's use of Agency Content or Axon Cloud Services violates this Agreement or applicable laws; and (c) maintaining necessary computer equipment and Internet connections for use of Axon Cloud Services. If Agency becomes aware of any violation of this Agreement by an end user, Agency will immediately terminate that end user's access to Axon Cloud Services.
 - a. Agency will also maintain the security of end usernames and passwords and security and access by end users to Agency Content. Agency is responsible for ensuring the configuration and utilization of Axon Cloud Services meet applicable Agency regulation and standards. Agency may not sell, transfer, or sublicense access to any other entity or person. Agency shall contact Axon immediately if an unauthorized party may be using Agency's account or Agency Content, or if account information is lost or stolen.
 - b. To the extent Agency uses the Axon Cloud Services to interact with YouTube®, such use may be governed by the YouTube Terms of Service, available at <https://www.youtube.com/static?template=terms>.
6. **Privacy.** Agency's use of Axon Cloud Services is subject to the Axon Cloud Services Privacy Policy, a current version of which is available at <https://www.axon.com/legal/cloud-services-privacy-policy>. Agency agrees to allow Axon access to Non-Content Data from Agency to (a) perform troubleshooting, maintenance, or diagnostic

Master Services and Purchasing Agreement for Agency

screenings; (b) provide, develop, improve, and support current and future Axon products and related services; and (c) enforce this Agreement or policies governing the use of Axon products.

7. **Axon Body 3 Wi-Fi Positioning.** Axon Body 3 cameras offer a feature to enhance location services where GPS/GNSS signals may not be available, for instance, within buildings or underground. Agency administrators can manage their choice to use this service within the administrative features of Axon Cloud Services. If Agency chooses to use this service, Axon must also enable the usage of the feature for Agency's Axon Cloud Services tenant. Agency will not see this option with Axon Cloud Services unless Axon has enabled Wi-Fi Positioning for Agency's Axon Cloud Services tenant. When Wi-Fi Positioning is enabled by both Axon and Agency, Non-Content and Personal Data will be sent to Skyhook Holdings, Inc. ("**Skyhook**") to facilitate the Wi-Fi Positioning functionality. Data controlled by Skyhook is outside the scope of the Axon Cloud Services Privacy Policy and is subject to the Skyhook Services Privacy Policy.
8. **Storage.** For Axon Unlimited Device Storage subscriptions, Agency may store unlimited data in Agency's Axon Evidence account only if data originates from Axon Capture or the applicable Axon Device. Axon may charge Agency additional fees for exceeding purchased storage amounts. Axon may place Agency Content that Agency has not viewed or accessed for six (6) months into archival storage. Agency Content in archival storage will not have immediate availability and may take up to twenty-four (24) hours to access.

For Third-Party Unlimited Storage the following restrictions apply: (i) it may only be used in conjunction with a valid Axon's Evidence.com user license; (ii) is limited to data of the law enforcement agency that purchased the Third-Party Unlimited Storage and the Axon's Evidence.com end user or Agency is prohibited from storing data for other law enforcement agencies; and (iii) Agency may only upload and store data that is directly related to: (1) the investigation of, or the prosecution of a crime; (2) common law enforcement activities; or (3) any Agency Content created by Axon Devices or Evidence.com.

9. **Location of Storage.** Axon may transfer Agency Content to third-party subcontractors for storage. Axon will determine the locations of data centers for storage of Agency Content. For United States agencies, Axon will ensure all Agency Content stored in Axon Cloud Services remains within the United States. Ownership of Agency Content remains with Agency.
10. **Suspension.** Axon may temporarily suspend Agency's or any end user's right to access or use any portion or all of Axon Cloud Services immediately upon notice, if Agency or end user's use of or registration for Axon Cloud Services may (a) pose a security risk to Axon Cloud Services or any third-party; (b) adversely impact Axon Cloud Services, the systems, or content of any other customer; (c) subject Axon, Axon's affiliates, or any third-party to liability; or (d) be fraudulent. Agency remains responsible for all fees incurred through suspension. Axon will not delete Agency Content because of suspension, except as specified in this Agreement.
11. **Axon Cloud Services Warranty.** Axon disclaims any warranties or responsibility for data corruption or errors before Agency uploads data to Axon Cloud Services.
12. **Axon Records.** Axon Records is the software-as-a-service product that is generally available at the time Agency purchases an OSP 7 or OSP 10 bundle. During Agency's Axon Records Subscription Term, if any, Agency will be entitled to receive Axon's Update and Upgrade releases on an if-and-when available basis.
 - a. The Axon Records Subscription Term will end upon the completion of the Axon Records Subscription as documented in the Quote, or if purchased as part of an OSP 7 or OSP 10 bundle, upon completion of the OSP 7 or OSP 10 Term ("**Axon Records Subscription**")
 - b. An "**Update**" is a generally available release of Axon Records that Axon makes available from time to time. An "**Upgrade**" includes (i) new versions of Axon Records that enhance features and functionality, as solely determined by Axon; and/or (ii) new versions of Axon Records that provide additional features or perform additional functions. Upgrades exclude new products that Axon introduces and markets as distinct products or applications.
 - c. New or additional Axon products and applications, as well as any Axon professional services needed to configure Axon Records, are not included. If Agency purchases Axon Records as part of a bundled offering, the Axon Record subscription begins on the later of the (1) start date of that bundled offering, or (2) date Axon provisions Axon Records to Agency.
 - d. Users of Axon Records at the Agency may upload files to entities (incidents, reports, cases, etc) in Axon Records with no limit to the number of files and amount of storage. Notwithstanding the foregoing, Axon

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may limit usage should the Agency exceed an average rate of one-hundred (100) GB per user per year of uploaded files. Axon will not bill for overages.

13. **Axon Cloud Services Restrictions.** Agency and Agency end users (including employees, contractors, agents, officers, volunteers, and directors), may not, or may not attempt to:
- a. copy, modify, tamper with, repair, or create derivative works of any part of Axon Cloud Services;
 - b. reverse engineer, disassemble, or decompile Axon Cloud Services or apply any process to derive any source code included in Axon Cloud Services, or allow others to do the same;
 - c. access or use Axon Cloud Services with the intent to gain unauthorized access, avoid incurring fees or exceeding usage limits or quotas;
 - d. use trade secret information contained in Axon Cloud Services, except as expressly permitted in this Agreement;
 - e. access Axon Cloud Services to build a competitive device or service or copy any features, functions, or graphics of Axon Cloud Services;
 - f. remove, alter, or obscure any confidentiality or proprietary rights notices (including copyright and trademark notices) of Axon's or Axon's licensors on or within Axon Cloud Services; or
 - g. use Axon Cloud Services to store or transmit infringing, libelous, or other unlawful or tortious material; material in violation of third-party privacy rights; or malicious code.
14. **After Termination.** Axon will not delete Agency Content for ninety (90) days following termination. There will be no functionality of Axon Cloud Services during these ninety (90) days other than the ability to retrieve Agency Content. Agency will not incur additional fees if Agency downloads Agency Content from Axon Cloud Services during this time. Axon has no obligation to maintain or provide Agency Content after these ninety (90) days and will thereafter, unless legally prohibited, delete all Agency Content. Upon request, Axon will provide written proof that Axon successfully deleted and fully removed all Agency Content from Axon Cloud Services.
15. **Post-Termination Assistance.** Axon will provide Agency with the same post-termination data retrieval assistance that Axon generally makes available to all customers. Requests for Axon to provide additional assistance in downloading or transferring Agency Content, including requests for Axon's data egress service, will result in additional fees and Axon will not warrant or guarantee data integrity or readability in the external system.
16. **U.S. Government Rights.** If Agency is a U.S. Federal department or using Axon Cloud Services on behalf of a U.S. Federal department, Axon Cloud Services is provided as a "commercial item," "commercial computer software," "commercial computer software documentation," and "technical data", as defined in the Federal Acquisition Regulation and Defense Federal Acquisition Regulation Supplement. If Agency is using Axon Cloud Services on behalf of the U.S. Government and these terms fail to meet the U.S. Government's needs or are inconsistent in any respect with federal law, Agency will immediately discontinue use of Axon Cloud Services.
17. **Survival.** Upon any termination of this Agreement, the following sections in this Appendix will survive: Agency Owns Agency Content, Privacy, Storage, Axon Cloud Services Warranty, and Axon Cloud Services Restrictions.

Axon Customer Experience Improvement Program Appendix

1. **Axon Customer Experience Improvement Program (ACEIP).** The ACEIP is designed to accelerate Axon's development of technology, such as building and supporting automated features, to ultimately increase safety within communities and drive efficiency in public safety. To this end, subject to the limitations on Axon as described below, Axon, where allowed by law, may make limited use of Agency Content from all of its customers to provide, develop, improve, and support current and future Axon products (collectively, "ACEIP Purposes"). However, at all times, Axon will comply with its obligations pursuant to the Axon Cloud Services Terms of Use Appendix to maintain a comprehensive data security program (including compliance with the CJIS Security Policy for Criminal Justice Information), privacy program, and data governance policy, including high industry standards of de-identifying Personal Data, to enforce its security and privacy obligations for the ACEIP. ACEIP has 2 tiers of participation, Tier 1 and Tier 2. By default, Agency will be a participant in ACEIP Tier 1. If Agency does not want to participate in ACEIP Tier 1, Agency can revoke its consent at any time. If Agency wants to participate in Tier 2, as detailed below, Agency can check the ACEIP Tier 2 box below. If Agency does not want to participate in ACEIP Tier 2, Agency should leave box unchecked. At any time, Agency may revoke its consent to ACEIP Tier 1, Tier 2, or both Tiers.
2. **ACEIP Tier 1.**
 - 2.1. When Axon uses Agency Content for the ACEIP Purposes, Axon will extract from Agency Content and may store separately copies of certain segments or elements of the Agency Content (collectively, "**ACEIP Content**"). When extracting ACEIP Content, Axon will use commercially reasonable efforts to aggregate, transform or de-identify Agency Content so that the extracted ACEIP Content is no longer reasonably capable of being associated with, or could reasonably be linked directly or indirectly to a particular individual ("**Privacy Preserving Technique(s)**"). For illustrative purposes, some examples are described in footnote 1¹. For clarity, ACEIP Content will still be linked indirectly, with an attribution, to the Agency from which it was extracted. This attribution will be stored separately from the data itself, but is necessary for and will be solely used to enable Axon to identify and delete all ACEIP Content upon Agency request. Once de-identified, ACEIP Content may then be further modified, analyzed, and used to create derivative works. At any time, Agency may revoke the consent granted herein to Axon to access and use Agency Content for ACEIP Purposes. Within 30 days of receiving the Agency's request, Axon will no longer access or use Agency Content for ACEIP Purposes and will delete any and all ACEIP Content. Axon will also delete any derivative works which may reasonably be capable of being associated with, or could reasonably be linked directly or indirectly to Agency. In addition, if Axon uses Agency Content for the ACEIP Purposes, upon request, Axon will make available to Agency a list of the specific type of Agency Content being used to generate ACEIP Content, the purpose of such use, and the retention, privacy preserving extraction technique, and relevant data protection practices applicable to the Agency Content or ACEIP Content ("**Use Case**"). From time to time, Axon may develop and deploy new Use Cases. At least 30 days prior to authorizing the deployment of any new Use Case, Axon will provide Agency notice (by updating the list of Use Case at <https://www.axon.com/aceip> and providing Agency with a mechanism to obtain notice of that update or another commercially reasonable method to Agency designated contact) ("**New Use Case**").
 - 2.2. **Expiration of ACEIP Tier 1.** Agency consent granted herein will expire upon termination of the Agreement. In accordance with section 1.1.1, within 30 days of receiving the Agency's request, Axon will no longer access or use Agency Content for ACEIP Purposes and will delete ACEIP Content. Axon will also delete any derivative works which may reasonably be capable of being associated with, or could reasonably be linked directly or indirectly to, Agency.
3. **ACEIP Tier 2.** In addition to ACEIP Tier 1, if Agency wants to help further improve Axon's services, Agency may choose to participate in Tier 2 of the ACEIP. ACEIP Tier 2 grants Axon certain additional rights to use Agency Content, in addition to those set forth in Tier 1 above, without the guaranteed deployment of a Privacy Preserving Technique

¹ For example; (a) when extracting specific text to improve automated transcription capabilities, text that could be used to directly identify a particular individual would not be extracted, and extracted text would be disassociated from identifying metadata of any speakers, and the extracted text would be split into individual words and aggregated with other data sources (including publicly available data) to remove any reasonable ability to link any specific text directly or indirectly back to a particular individual; (b) when extracting license plate data to improve Automated License Plate Recognition (ALPR) capabilities, individual license plate characters would be extracted and disassociated from each other so a complete plate could not be reconstituted, and all association to other elements of the source video, such as the vehicle, location, time, and the surrounding environment would also be removed; (c) when extracting audio of potential acoustic events (such as glass breaking or gun shots), very short segments (<1 second) of audio that only contains the likely acoustic events would be extracted and all human utterances would be removed.



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to enable product development, improvement, and support that cannot be accomplished with aggregated, transformed, or de-identified data.

☐ Check this box if Agency wants to help further improve Axon's services by participating in ACEIP Tier 2 in addition to Tier 1. Axon will not enroll Agency into ACEIP Tier 2 until Axon and Agency agree to terms in writing providing for such participation in ACEIP Tier 2.

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Professional Services Appendix

If any of the Professional Services specified below are included on the Quote, this Appendix applies.

- Utilization of Services.** Agency must use professional services as outlined in the Quote and this Appendix within six (6) months of the Effective Date.
- Axon Full Service (Axon Full Service).** Axon Full Service includes advance remote project planning and configuration support and up to four (4) consecutive days of on-site service and a professional services manager to work with Agency to assess Agency's deployment and determine which on-site services are appropriate. If Agency requires more than four (4) consecutive on-site days, Agency must purchase additional days. Axon Full Service options include:

System set up and configuration

- Instructor-led setup of Axon View on smartphones (if applicable)
- Configure categories and custom roles based on Agency need
- Register cameras to Agency domain
- Troubleshoot IT issues with Axon Evidence and Axon Dock ("Dock") access
- One on-site session included

Dock configuration

- Work with Agency to decide the ideal location of Docks and set configurations on Dock
- Authenticate Dock with Axon Evidence using admin credentials from Agency
- On-site assistance, not to include physical mounting of docks

Best practice implementation planning session

- Provide considerations for the establishment of video policy and system operations best practices based on Axon's observations with other agencies
- Discuss the importance of entering metadata in the field for organization purposes and other best practices for digital data management
- Provide referrals of other agencies using the Axon camera devices and Axon Evidence
- Recommend rollout plan based on review of shift schedules

System Admin and troubleshooting training sessions

Step-by-step explanation and assistance for Agency's configuration of security, roles & permissions, categories & retention, and other specific settings for Axon Evidence

Axon instructor training (Train the Trainer)

Training for Agency's in-house instructors who can support Agency's Axon camera and Axon Evidence training needs after Axon has fulfilled its contractual on-site obligations

Evidence sharing training

Tailored workflow instruction for Investigative Units on sharing Cases and Evidence with local prosecuting agencies

End user go-live training and support sessions

- Assistance with device set up and configuration
- Training on device use, Axon Evidence, and Evidence Sync

[Implementation document packet](#)

Axon Evidence administrator guides, camera implementation guides, network setup guide, sample policies, and categories & roles guide

Post go-live review

- Body-Worn Camera Starter Service (Axon Starter).** Axon Starter includes advance remote project planning and configuration support and one (1) day of on-site Services and a professional services manager to work closely with Agency to assess Agency's deployment and determine which Services are appropriate. If Agency requires more than one (1) day of on-site Services, Agency must purchase additional on-site Services. The Axon Starter options include:

System set up and configuration (Remote Support)

- Instructor-led setup of Axon View on smartphones (if applicable)
- Configure categories & custom roles based on Agency need
- Troubleshoot IT issues with Axon Evidence and Dock access

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Dock configuration

- Work with Agency to decide the ideal location of Dock setup and set configurations on Dock
- Authenticate Dock with Axon Evidence using "Administrator" credentials from Agency
- Does not include physical mounting of docks

Axon instructor training (Train the Trainer)

Training for Agency's in-house instructors who can support Agency's Axon camera and Axon Evidence training needs after Axon's has fulfilled its contracted on-site obligations

End user go-live training and support sessions

- Assistance with device set up and configuration
- Training on device use, Axon Evidence, and Evidence Sync

[Implementation document packet](#)

Axon Evidence administrator guides, camera implementation guides, network setup guide, sample policies, and categories & roles guide

4. **Body-Worn Camera Virtual 1-Day Service (Axon Virtual).** Axon Virtual includes all items in the BWC Starter Service Package, except one (1) day of on-site services.
5. **CEW Services Packages.** CEW Services Packages are detailed below:

System set up and configuration

- Configure Axon Evidence categories & custom roles based on Agency need.
- Troubleshoot IT issues with Axon Evidence.
- Register users and assign roles in Axon Evidence.
- **For the CEW Full Service Package:** On-site assistance included
- **For the CEW Starter Package:** Virtual assistance included

Dedicated Project Manager

Assignment of specific Axon representative for all aspects of planning the rollout (Project Manager). Ideally, Project Manager will be assigned to Agency 4–6 weeks before rollout

Best practice implementation planning session to include:

- Provide considerations for the establishment of CEW policy and system operations best practices based on Axon's observations with other agencies
- Discuss the importance of entering metadata and best practices for digital data management
- Provide referrals to other agencies using TASER CEWs and Axon Evidence
- **For the CEW Full Service Package:** On-site assistance included
- **For the CEW Starter Package:** Virtual assistance included

System Admin and troubleshooting training sessions

On-site sessions providing a step-by-step explanation and assistance for Agency's configuration of security, roles & permissions, categories & retention, and other specific settings for Axon Evidence

Axon Evidence Instructor training

- Provide training on the Axon Evidence to educate instructors who can support Agency's subsequent Axon Evidence training needs.
- **For the CEW Full Service Package:** Training for up to 3 individuals at Agency
- **For the CEW Starter Package:** Training for up to 1 individual at Agency

TASER CEW inspection and device assignment

Axon's on-site professional services team will perform functions check on all new TASER CEW Smart weapons and assign them to a user on Axon Evidence.

Post go-live review

For the CEW Full Service Package: On-site assistance included.

For the CEW Starter Package: Virtual assistance included.

6. **Smart Weapon Transition Service.** The Smart Weapon Transition Service includes:

Archival of CEW Firing Logs

Axon's on-site professional services team will upload CEW firing logs to Axon Evidence from all TASER CEW Smart Weapons that Agency is replacing with newer Smart Weapon models.

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Return of Old Weapons

Axon's on-site professional service team will ship all old weapons back to Axon's headquarters.
Axon will provide Agency with a Certificate of Destruction

*Note: CEW Full Service packages for TASER 7 or TASER 10 include Smart Weapon Transition Service instead of 1-Day Device Specific Instructor Course.

7. **VR Services Package.** VR Service includes advance remote project planning and configuration support and one (1) day of on-site service and a professional services manager to work with Agency to assess Agency's deployment and determine which Services are appropriate. The VR Service training options include:

System set up and configuration (Remote Support)

- Instructor-led setup of Axon VR headset content
- Configure agency settings based on Agency need
- Troubleshoot IT issues with Axon VR headset

Axon instructor training (Train the Trainer)

Training for up to five (5) Agency's in-house instructors who can support Agency's Axon VR CET and SIM training needs after Axon's has fulfilled its contracted on-site obligations

Classroom and practical training sessions

Step-by-step explanation and assistance for Agency's configuration of Axon VR CET and SIM functionality, basic operation, and best practices

8. **Axon Air, On-Site Training.** Axon Air, On-Site training includes advance remote project planning and configuration support and one (1) day of on-site Services and a professional services manager to work closely with Agency to assess Agency's deployment and determine which Services are appropriate. If Agency's requires more than one (1) day of on-site Services, Agency must purchase additional on-site Services. The Axon Air, On-Site training options include:

System set up and configuration (Remote Support)

- Instructor-led setup of Axon Air App (ASDS)
- Configure agency settings based on Agency need
- Configure drone controller
- Troubleshoot IT issues with Axon Evidence

Axon instructor training (Train the Trainer)

Training for Agency's in-house instructors who can support Agency's Axon Air and Axon Evidence training needs after Axon's has fulfilled its contracted on-site obligations

Classroom and practical training sessions

Step-by-step explanation and assistance for Agency's configuration of Axon Respond+ livestreaming functionality, basic operation, and best practices

9. **Axon Air, Virtual Training.** Axon Air, Virtual training includes all items in the Axon Air, On-Site Training Package, except the practical training session, with the Axon Instructor training for up to four hours virtually.

10. **Signal Sidearm Installation Service.**

- Purchases of 50 SSA units or more:** Axon will provide one (1) day of on-site service and one professional services manager and will provide train the trainer instruction, with direct assistance on the first of each unique holster/mounting type. Agency is responsible for providing a suitable work/training area.
- Purchases of less than 50 SSA units:** Axon will provide a 1-hour virtual instruction session on the basics of installation and device calibration.

11. **Out of Scope Services.** Axon is only responsible to perform the professional services described in the Quote and this Appendix. Any additional professional services are out of scope. The Parties must document scope changes in a written and signed change order. Changes may require an equitable adjustment in the charges or schedule.

12. **Delivery of Services.** Axon personnel will work Monday through Friday, 8:30 a.m. to 5:30 p.m., except holidays. Axon will perform all on-site tasks over a consecutive timeframe. Axon will not charge Agency travel time by Axon personnel to Agency premises as work hours.

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13. **Access Computer Systems to Perform Services.** Agency authorizes Axon to access relevant Agency computers and networks, solely for performing the Services. Axon will work to identify as soon as reasonably practicable resources and information Axon expects to use and will provide an initial itemized list to Agency. Agency is responsible for and assumes the risk of any problems, delays, losses, claims, or expenses resulting from the content, accuracy, completeness, and consistency of all data, materials, and information supplied by Agency.
14. **Site Preparation.** Axon will provide a hardcopy or digital copy of current user documentation for the Axon Devices ("**User Documentation**"). User Documentation will include all required environmental specifications for the professional services and Axon Devices to operate per the Axon Device User Documentation. Before installation of Axon Devices (whether performed by Agency or Axon), Agency must prepare the location(s) where Axon Devices are to be installed ("**Installation Site**") per the environmental specifications in the Axon Device User Documentation. Following installation, Agency must maintain the Installation Site per the environmental specifications. If Axon modifies Axon Device User Documentation for any Axon Devices under this Agreement, Axon will provide the update to Agency when Axon generally releases it
15. **Acceptance.** When Axon completes professional services, Axon will present an acceptance form ("**Acceptance Form**") to Agency. Agency will sign the Acceptance Form acknowledging completion. If Agency reasonably believes Axon did not complete the professional services in substantial conformance with this Agreement, Agency must notify Axon in writing of the specific reasons for rejection within seven (7) calendar days from delivery of the Acceptance Form. Axon will address the issues and re-present the Acceptance Form for signature. If Axon does not receive the signed Acceptance Form or written notification of reasons for rejection within seven (7) calendar days of delivery of the Acceptance Form, Axon will deem Agency to have accepted the professional services.
16. **Agency Network.** For work performed by Axon transiting or making use of Agency's network, Agency is solely responsible for maintenance and functionality of the network. In no event will Axon be liable for loss, damage, or corruption of Agency's network from any cause.

Technology Assurance Plan Appendix

If Technology Assurance Plan ("TAP") or a bundle including TAP is on the Quote, this appendix applies.

1. **TAP Warranty.** The TAP warranty is an extended warranty that starts at the end of the one- (1-) year hardware limited warranty.
2. **Officer Safety Plan.** If Agency purchases an Officer Safety Plan ("OSP"), Agency will receive the deliverables detailed in the Quote. Agency must accept delivery of the TASER CEW and accessories as soon as available from Axon.
3. **OSP 7 or OSP 10 Term.** OSP 7 or OSP 10 begins on the date specified in the Quote ("OSP Term").
4. **TAP BWC Upgrade.** If Agency has no outstanding payment obligations and purchased TAP, Axon will provide Agency a new Axon body-worn camera ("BWC Upgrade") as scheduled in the Quote. If Agency purchased TAP, Axon will provide a BWC Upgrade that is the same or like Axon Device, at Axon's option. Axon makes no guarantee the BWC Upgrade will utilize the same accessories or Axon Dock.
5. **TAP Dock Upgrade.** If Agency has no outstanding payment obligations and purchased TAP, Axon will provide Agency a new Axon Dock as scheduled in the Quote ("Dock Upgrade"). Accessories associated with any Dock Upgrades are subject to change at Axon discretion. Dock Upgrades will only include a new Axon Dock bay configuration unless a new Axon Dock core is required for BWC compatibility. If Agency originally purchased a single-bay Axon Dock, the Dock Upgrade will be a single-bay Axon Dock model that is the same or like Axon Device, at Axon's option. If Agency originally purchased a multi-bay Axon Dock, the Dock Upgrade will be a multi-bay Axon Dock that is the same or like Axon Device, at Axon's option.
6. **Upgrade Delay.** Axon may ship the BWC and Dock Upgrades as scheduled in the Quote without prior confirmation from Agency unless the Parties agree in writing otherwise at least ninety (90) days in advance. Axon may ship the final BWC and Dock Upgrade as scheduled in the Quote sixty (60) days before the end of the Subscription Term without prior confirmation from Agency.
7. **Upgrade Change.** If Agency wants to upgrade Axon Device models from the current Axon Device to an upgraded Axon Device, Agency must pay the price difference between the MSRP for the current Axon Device and the MSRP for the upgraded Axon Device. If the model Agency desires has an MSRP less than the MSRP of the offered BWC Upgrade or Dock Upgrade, Axon will not provide a refund. The MSRP is the MSRP in effect at the time of the upgrade.
8. **Return of Original Axon Device.** Within thirty (30) days of receiving a BWC or Dock Upgrade, Agency must return the original Axon Devices to Axon or destroy the Axon Devices and provide a certificate of destruction to Axon including serial numbers for the destroyed Axon Devices. If Agency does not return or destroy the Axon Devices, Axon will deactivate the serial numbers for the Axon Devices received by Agency.
9. **Termination.** If Agency's payment for TAP, OSP, or Axon Evidence is more than thirty (30) days past due, Axon may terminate TAP or OSP. Once TAP or OSP terminates for any reason:
 - 9.1. TAP and OSP coverage terminate as of the date of termination and no refunds will be given.
 - 9.2. Axon will not and has no obligation to provide the Upgrade Models.
 - 9.3. Agency must make any missed payments due to the termination before Agency may purchase any future TAP or OSP.

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TASER 7 Appendix

This TASER 7 Appendix applies to Agency's TASER 7, OSP 7, or OSP 7 Plus purchase from Axon, if applicable.

1. **Duty Cartridge Replenishment Plan.** If the Quote includes "Duty Cartridge Replenishment Plan", Agency must purchase the plan for each CEW user. A CEW user includes officers that use a CEW in the line of duty and those that only use a CEW for training. Agency may not resell cartridges received. Axon will only replace cartridges used in the line of duty.
2. **Training.** If the Quote includes a training voucher, Agency must use the voucher within one (1) year of issuance, or the voucher will be void. Axon will issue Agency a voucher annually beginning on the start of the TASER Subscription Term. The voucher has no cash value. Agency cannot exchange it for another device or service. Unless stated in the Quote, the voucher does not include travel expenses and will be Agency's responsibility. If the Quote includes Axon Online Training or Virtual Reality Content Empathy Development for Autism/Schizophrenia (collectively, "Training Content"), Agency may access Training Content. Axon will deliver all Training Content electronically.
3. **TASER Upgrade.** If Agency purchases Axon's 10-year certification program for Axon's latest version of its TASER energy weapon ("Certification Program") and has no outstanding payment obligations as of the beginning of the sixth (6th) year of the Certification Program, Agency will qualify for an upgrade to any subsequent version of the Certification Program ("CEW Upgrade"). Agency will receive the CEW Upgrade at no additional cost, only to the extent such subsequent version of the Certification Program includes the same products or features as the Certification Program purchased by Agency. If Agency wants to upgrade to a Certification Program that includes additional products or features, Agency will pay the additional cost associated with such products and features. For the avoidance of doubt, Agency is not required to upgrade to any subsequent version of the Certification Program. Axon may ship the CEW Upgrade as scheduled in the Quote without prior confirmation from agency unless the Parties agree in writing otherwise at least ninety (90) days in advance. If necessary to maintain compatibility among Axon Devices, within thirty (30) days of receiving the CEW Upgrade, Agency must, if requested by Axon, return all hardware and related accessories received in connection with the Certification Program to Axon. In such event, Agency must ship batteries via ground shipping or in accordance with federal regulations in place at the time of the return. Axon will pay shipping costs for the return if Agency uses Axon's RMA process.
4. **Extended Warranty.** If the Quote includes an extended warranty, the extended warranty coverage period warranty will be for a five- (5-) year term, which includes the hardware manufacturer's warranty plus the four- (4-) year extended term.
5. **Trade-in.** If the Quote contains a discount on CEW-related line items, including items related to OSP, then that discount may only be applied as a trade-in credit, and Agency must return used hardware and accessories associated with the discount ("Trade-In Units") to Axon. Agency must ship batteries via ground shipping. Axon will pay shipping costs of the return. If Axon does not receive Trade-In Units within the timeframe below, Axon will invoice Agency the value of the trade-in credit. Agency may not destroy Trade-In Units and receive a trade-in credit.

<u>Agency Size</u>	<u>Days to Return from Start Date of TASER 7 Subscription</u>
Less than 100 officers	30 days
100 to 499 officers	90 days
500+ officers	180 days

6. **TASER 7 Subscription Term.** The TASER 7 Subscription Term for a standalone TASER 7 purchase begins on shipment of the TASER 7 hardware. The TASER 7 Subscription Term for OSP 7 begins on the OSP 7 start date.
7. **Access Rights.** Upon Axon granting Agency a TASER 7 Axon Evidence subscription, Agency may access and use Axon Evidence for the storage and management of data from TASER 7 CEW devices during the TASER 7 Subscription Term. Agency may not exceed the number of end users the Quote specifies.
8. **Privacy.** Axon will not disclose Agency Content or any information about Agency except as compelled by a court or administrative body or required by any law or regulation. Axon will give notice if any disclosure request is received for Agency Content, so Agency may file an objection with the court or administrative body.
9. **Termination.** If payment for TASER 7 is more than thirty (30) days past due, Axon may terminate Agency's TASER 7 plan by notifying Agency. Upon termination for any reason, then as of the date of termination:
 - 9.1. TASER 7 extended warranties and access to Training Content will terminate. No refunds will be given.



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- 9.2. Axon will invoice Agency the remaining MSRP for TASER 7 products received before termination. If terminating for non-appropriations, Axon will not invoice Agency if Agency returns the CEW, rechargeable battery, holster, dock, core, training suits, and unused cartridges to Axon within thirty (30) days of the date of termination.
- 9.3. Agency will be responsible for payment of any missed payments due to the termination before being allowed to purchase any future TASER 7 plan.

Master Services and Purchasing Agreement for Agency

TASER 10 Appendix

This TASER 10 Appendix applies to Agency's TASER 10, OSP 10, OSP Plus, or OSP 10 Plus Premium purchase from Axon, if applicable.

1. **Duty Cartridge Replenishment Plan**. If the Quote includes "Duty Cartridge Replenishment Plan", Agency must purchase the plan for each CEW user. A CEW user includes officers that use a CEW in the line of duty and those that only use a CEW for training. Agency may not resell cartridges received. Axon will only replace cartridges used in the line of duty.
2. **Training**. If the Quote includes a training voucher, Agency must use the voucher within one (1) year of issuance, or the voucher will be void. Axon will issue Agency a voucher annually beginning on the start of the TASER Subscription Term. The voucher has no cash value. Agency cannot exchange it for another device or service. Unless stated in the Quote, the voucher does not include travel expenses and will be Agency's responsibility. If the Quote includes Axon Online Training or Virtual Reality Content Empathy Development for Autism/Schizophrenia (collectively, "Training Content"), Agency may access Training Content. Axon will deliver all Training Content electronically.
3. **Extended Warranty**. If the Quote includes an extended warranty, the extended warranty coverage period warranty will be for a five- (5-) year term, which includes the hardware manufacturer's warranty plus the four- (4-) year extended term.
4. **Trade-in**. If the Quote contains a discount on CEW-related line items, including items related to OSP, then that discount may only be applied as a trade-in credit, and Agency must return used hardware and accessories associated with the discount ("Trade-In Units") to Axon. Agency must ship batteries via ground shipping. Axon will pay shipping costs of the return. If Axon does not receive Trade-In Units within the timeframe below, Axon will invoice Agency the value of the trade-in credit. Agency may not destroy Trade-In Units and receive a trade-in credit.

<u>Agency Size</u>	<u>Days to Return from Start Date of TASER 10 Subscription</u>
Less than 100 officers	60 days
100 to 499 officers	90 days
500+ officers	180 days

5. **TASER 10 Subscription Term**. The TASER 10 Subscription Term for a standalone TASER 10 purchase begins on shipment of the TASER 10 hardware. The TASER 10 Subscription Term for OSP 10 begins on the OSP 10 start date.
6. **Access Rights**. Upon Axon granting Agency a TASER 10 Axon Evidence subscription, Agency may access and use Axon Evidence for the storage and management of data from TASER 10 CEW devices during the TASER 10 Subscription Term. Agency may not exceed the number of end users the Quote specifies.
7. **Agency Warranty**. If Agency is located in the US, Agency warrants and acknowledges that TASER 10 is classified as a firearm and is being acquired for official Agency use pursuant to a law enforcement agency transfer under the Gun Control Act of 1968.
8. **Purchase Order**. To comply with applicable laws and regulations, Agency must provide a purchase order to Axon prior to shipment of TASER 10.

Axon Auto-Tagging Appendix

If Auto-Tagging is included on the Quote, this Appendix applies.

1. **Scope.** Axon Auto-Tagging consists of the development of a module to allow Axon Evidence to interact with Agency's Computer-Aided Dispatch ("**CAD**") or Records Management Systems ("**RMS**"). This allows end users to auto-populate Axon video meta-data with a case ID, category, and location-based on data maintained in Agency's CAD or RMS.
2. **Support.** For thirty (30) days after completing Auto-Tagging Services, Axon will provide up to five (5) hours of remote support at no additional charge. Axon will provide free support due to a change in Axon Evidence, if Agency maintains an Axon Evidence and Auto-Tagging subscription. Axon will not provide support if a change is required because Agency changes its CAD or RMS.
3. **Changes.** Axon is only responsible to perform the Services in this Appendix. Any additional Services are out of scope. The Parties must document scope changes in a written and signed change order. Changes may require an equitable adjustment in fees or schedule.
4. **Agency Responsibilities.** Axon's performance of Auto-Tagging Services requires Agency to:
 - 4.1. Make available relevant systems, including Agency's current CAD or RMS, for assessment by Axon (including remote access if possible);
 - 4.2. Make required modifications, upgrades or alterations to Agency's hardware, facilities, systems and networks related to Axon's performance of Auto-Tagging Services;
 - 4.3. Provide access to the premises where Axon is performing Auto-Tagging Services, subject to Agency safety and security restrictions, and allow Axon to enter and exit the premises with laptops and materials needed to perform Auto-Tagging Services;
 - 4.4. Provide all infrastructure and software information (TCP/IP addresses, node names, network configuration) necessary for Axon to provide Auto-Tagging Services;
 - 4.5. Promptly install and implement any software updates provided by Axon;
 - 4.6. Ensure that all appropriate data backups are performed;
 - 4.7. Provide assistance, participation, and approvals in testing Auto-Tagging Services;
 - 4.8. Provide Axon with remote access to Agency's Axon Evidence account when required;
 - 4.9. Notify Axon of any network or machine maintenance that may impact the performance of the module at Agency; and
 - 4.10. Ensure reasonable availability of knowledgeable staff and personnel to provide timely, accurate, complete, and up-to-date documentation and information to Axon.
5. **Access to Systems.** Agency authorizes Axon to access Agency's relevant computers, network systems, and CAD or RMS solely for performing Auto-Tagging Services. Axon will work diligently to identify the resources and information Axon expects to use and will provide an initial list to Agency. Agency is responsible for and assumes the risk of any problems, delays, losses, claims, or expenses resulting from the content, accuracy, completeness, and consistency of all data, materials, and information supplied by Agency.

Master Services and Purchasing Agreement for Agency**Axon Fleet Appendix**

If Axon Fleet is included on the Quote, this Appendix applies.

1. Agency Responsibilities.
 19. Agency must ensure its infrastructure and vehicles adhere to the minimum requirements to operate Axon Fleet 2 or Axon Fleet 3 (collectively, "**Axon Fleet**") as established by Axon during the qualifier call and on-site assessment at Agency and in any technical qualifying questions. If Agency's representations are inaccurate, the Quote is subject to change.
 20. Agency is responsible for providing a suitable work area for Axon or Axon third-party providers to install Axon Fleet systems into Agency vehicles. Agency is responsible for making available all vehicles for which installation services were purchased, during the agreed upon onsite installation dates. Failure to make vehicles available may require an equitable adjustment in fees or schedule.
2. **Cradlepoint.** If Agency purchases Cradlepoint Enterprise Cloud Manager, Agency will comply with Cradlepoint's end user license agreement. The term of the Cradlepoint license may differ from the Axon Evidence Subscription. If Agency requires Cradlepoint support, Agency will contact Cradlepoint directly.
3. **Third-party Installer.** Axon will not be liable for the failure of Axon Fleet hardware to operate per specifications if such failure results from installation not performed by, or as directed by Axon.
4. Wireless Offload Server.
 - 4.1. **License Grant.** Axon grants Agency a non-exclusive, royalty-free, worldwide, perpetual license to use Wireless Offload Server ("**WOS**"). "Use" means storing, loading, installing, or executing WOS solely for data communication with Axon Devices for the number of licenses purchased. The WOS term begins upon the start of the Axon Evidence Subscription.
 - 4.2. **Restrictions.** Agency may not: (a) modify, alter, tamper with, repair, or create derivative works of WOS; (b) reverse engineer, disassemble, or decompile WOS, apply any process to derive the source code of WOS, or allow others to do so; (c) access or use WOS to avoid incurring fees or exceeding usage limits; (d) copy WOS in whole or part; (e) use trade secret information contained in WOS; (f) resell, rent, loan or sublicense WOS; (g) access WOS to build a competitive device or service or copy any features, functions or graphics of WOS; or (h) remove, alter or obscure any confidentiality or proprietary rights notices (including copyright and trademark notices) of Axon or Axon's licensors on or within WOS.
 - 4.3. **Updates.** If Agency purchases WOS maintenance, Axon will make updates and error corrections to WOS ("**WOS Updates**") available electronically via the Internet or media as determined by Axon. Agency is responsible for establishing and maintaining adequate Internet access to receive WOS Updates and maintaining computer equipment necessary for use of WOS. The Quote will detail the maintenance term.
 - 4.4. **WOS Support.** Upon request by Axon, Agency will provide Axon with access to Agency's store and forward servers solely for troubleshooting and maintenance.
5. Axon Vehicle Software.
 - 5.1. **License Grant.** Axon grants Agency a non-exclusive, royalty-free, worldwide, perpetual license to use ViewXL or Dashboard (collectively, "**Axon Vehicle Software**".) "Use" means storing, loading, installing, or executing Axon Vehicle Software solely for data communication with Axon Devices. The Axon Vehicle Software term begins upon the start of the Axon Evidence Subscription.
 - 5.2. **Restrictions.** Agency may not: (a) modify, alter, tamper with, repair, or create derivative works of Axon Vehicle Software; (b) reverse engineer, disassemble, or decompile Axon Vehicle Software, apply any process to derive the source code of Axon Vehicle Software, or allow others to do so; (c) access or use Axon Vehicle Software to avoid incurring fees or exceeding usage limits; (d) copy Axon Vehicle Software in whole or part; (e) use trade secret information contained in Axon Vehicle Software; (f) resell, rent, loan or sublicense Axon Vehicle Software; (g) access Axon Vehicle Software to build a competitive device or service or copy any features, functions or graphics of Axon Vehicle Software; or (h) remove, alter or obscure any confidentiality or proprietary rights notices (including copyright and trademark notices) of Axon or Axon's licensors on or within Axon Vehicle Software.

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6. **Acceptance Checklist.** If Axon provides services to Agency pursuant to any statement of work in connection with Axon Fleet, within seven (7) days of the date on which Agency retrieves Agency's vehicle(s) from the Axon installer, said vehicle having been installed and configured with tested and fully and properly operational in-car hardware and software identified above, Agency will receive a Professional Services Acceptance Checklist to submit to Axon indicating acceptance or denial of said deliverables.
7. **Axon Fleet Upgrade.** If Agency has no outstanding payment obligations and has purchased the "Fleet Technology Assurance Plan" (Fleet TAP), Axon will provide Agency with the same or like model of Fleet hardware ("**Axon Fleet Upgrade**") as scheduled on the Quote.
 - 7.1. If Agency would like to change models for the Axon Fleet Upgrade, Agency must pay the difference between the MSRP for the offered Axon Fleet Upgrade and the MSRP for the model desired. The MSRP is the MSRP in effect at the time of the upgrade. Agency is responsible for the removal of previously installed hardware and installation of the Axon Fleet Upgrade.
 - 7.2. Within thirty (30) days of receiving the Axon Fleet Upgrade, Agency must return the original Axon Devices to Axon or destroy the Axon Devices and provide a certificate of destruction to Axon, including serial numbers of the destroyed Axon Devices. If Agency does not destroy or return the Axon Devices to Axon, Axon will deactivate the serial numbers for the Axon Devices received by Agency.
8. **Axon Fleet Termination.** Axon may terminate Agency's Fleet subscription for non-payment. Upon any termination:
 - 8.1. Axon Fleet subscription coverage terminates, and no refunds will be given.
 - 8.2. Axon will not and has no obligation to provide the Axon Fleet Upgrade.
 - 8.3. Agency will be responsible for payment of any missed payments due to the termination before being allowed to purchase any future Fleet TAP.

Master Services and Purchasing Agreement for Agency**Axon Respond Appendix**

This Axon Respond Appendix applies to both Axon Respond and Axon Respond Plus, if either is included on the Quote.

1. **Axon Respond Subscription Term.** If Agency purchases Axon Respond as part of a bundled offering, the Axon Respond subscription begins on the later of the (1) start date of that bundled offering, or (2) date Axon provisions Axon Respond to Agency. If Agency purchases Axon Respond as a standalone, the Axon Respond subscription begins the later of the (1) date Axon provisions Axon Respond to Agency, or (2) first day of the month following the Effective Date. The Axon Respond subscription term will end upon the completion of the Axon Evidence Subscription associated with Axon Respond.
2. **Scope of Axon Respond.** The scope of Axon Respond is to assist Agency with real-time situational awareness during critical incidents to improve officer safety, effectiveness, and awareness. In the event Agency uses Axon Respond outside this scope, Axon may initiate good-faith discussions with Agency on upgrading Agency's Axon Respond to better meet Agency's needs.
3. **Axon Body 3 LTE Requirements.** Axon Respond is only available and usable with an LTE enabled body-worn camera. Axon is not liable if Agency utilizes the LTE device outside of the coverage area or if the LTE carrier is unavailable. LTE coverage is only available in the United States, including any U.S. territories. Axon may utilize a carrier of Axon's choice to provide LTE service. Axon may change LTE carriers during the Term without Agency's consent.
4. **Axon Fleet 3 LTE Requirements.** Axon Respond is only available and usable with a Fleet 3 system configured with LTE modem and service. Agency is responsible for providing LTE service for the modem. Coverage and availability of LTE service is subject to Agency's LTE carrier.
5. **Axon Respond Service Limitations.** Agency acknowledges that LTE service is made available only within the operating range of the networks. Service may be temporarily refused, interrupted, or limited because of: (a) facilities limitations; (b) transmission limitations caused by atmospheric, terrain, other natural or artificial conditions adversely affecting transmission, weak batteries, system overcapacity, movement outside a service area or gaps in coverage in a service area, and other causes reasonably outside of the carrier's control such as intentional or negligent acts of third parties that damage or impair the network or disrupt service; or (c) equipment modifications, upgrades, relocations, repairs, and other similar activities necessary for the proper or improved operation of service.
 - 5.1. With regard to Axon Body 3, Partner networks are made available as-is and the carrier makes no warranties or representations as to the availability or quality of roaming service provided by carrier partners, and the carrier will not be liable in any capacity for any errors, outages, or failures of carrier partner networks. Agency expressly understands and agrees that it has no contractual relationship whatsoever with the underlying wireless service provider or its affiliates or contractors and Agency is not a third-party beneficiary of any agreement between Axon and the underlying carrier.
6. **Termination.** Upon termination of this Agreement, or if Agency stops paying for Axon Respond or bundles that include Axon Respond, Axon will end Axon Respond services, including any Axon-provided LTE service.

Add-on Services Appendix

This Appendix applies if Axon Community Request, Axon Redaction Assistant, and/or Axon Performance are included on the Quote.

1. **Subscription Term.** If Agency purchases Axon Community Request, Axon Redaction Assistant, or Axon Performance as part of OSP 7 or OSP 10, the subscription begins on the later of the (1) start date of the OSP 7 or OSP 10 Term, or (2) date Axon provisions Axon Community Request Axon Redaction Assistant, or Axon Performance to Agency.
 - 1.1. If Agency purchases Axon Community Request, Axon Redaction Assistant, or Axon Performance as a standalone, the subscription begins the later of the (1) date Axon provisions Axon Community Request, Axon Redaction Assistant, or Axon Performance to Agency, or (2) first day of the month following the Effective Date.
 - 1.2. The subscription term will end upon the completion of the Axon Evidence Subscription associated with the add-on.
2. **Axon Community Request Storage.** For Axon Community Request, Agency may store an unlimited amount of data submitted through the public portal ("**Portal Content**"), within Agency's Axon Evidence instance. The post-termination provisions outlined in the Axon Cloud Services Terms of Use Appendix also apply to Portal Content.
3. **Performance Auto-Tagging Data.** In order to provide some features of Axon Performance to Agency, Axon will need to store call for service data from Agency's CAD or RMS.

Axon Auto-Transcribe Appendix

This Appendix applies if Axon Auto-Transcribe is included on the Quote.

1. **Subscription Term.** If Agency purchases Axon Auto-Transcribe as part of a bundle or Axon Cloud Services subscription, the subscription begins on the later of the (1) start date of the bundle or Axon Cloud Services license term, or (2) date Axon provisions Axon Auto-Transcribe to Agency. If Agency purchases Axon Auto-Transcribe minutes as a standalone, the subscription begins on the date Axon provisions Axon Auto-Transcribe to Agency.
 - 1.1. If Agency cancels Auto-Transcribe services, any amounts owed by the Parties will be based on the amount of time passed under the annual subscription, rather than on the number of minutes used, regardless of usage.
2. **Auto-Transcribe A-La-Carte Minutes.** Upon Axon granting Agency a set number of minutes, Agency may utilize Axon Auto-Transcribe, subject to the number of minutes allowed on the Quote. Agency will not have the ability to roll over unused minutes to future Auto-Transcribe terms. Axon may charge Agency additional fees for exceeding the number of purchased minutes. Axon Auto-Transcribe minutes expire one year after being provisioned to Agency by Axon.
3. **Axon Unlimited Transcribe.** Upon Axon granting Agency an Unlimited Transcribe subscription to Axon Auto-Transcribe, Agency may utilize Axon Auto-Transcribe with no limit on the number of minutes. Unlimited Transcribe includes automatic transcription of all Axon BWC and Axon Capture footage. With regard to Axon Interview Room, Axon Fleet, Axon Citizen, or third-party transcription, transcription must be requested on demand. Notwithstanding the foregoing, Axon may limit usage after 5,000 minutes per user per month for multiple months in a row. Axon will not bill for overages.
4. **Warranty.** Axon disclaims all warranties, express or implied, for Axon Auto-Transcribe.

Axon Virtual Reality Content Terms of Use Appendix

If Virtual Reality is included on the Quote, this Appendix applies.

1. **Term.** The Quote will detail the products and license duration, as applicable, of the goods, services, and software, and contents thereof, provided by Axon to Agency related to virtual reality (collectively, "**Virtual Reality Media**").
2. **Headsets.** Agency may purchase additional virtual reality headsets from Axon. In the event Agency decides to purchase additional virtual reality headsets for use with Virtual Reality Media, Agency must purchase those headsets from Axon.
3. **License Restrictions.** All licenses will immediately terminate if Agency does not comply with any term of this Agreement. If Agency utilizes more users than stated in this Agreement, Agency must purchase additional Virtual Reality Media licenses from Axon. Agency may not use Virtual Reality Media for any purpose other than as expressly permitted by this Agreement. Agency may not:
 - 3.1. modify, tamper with, repair, or otherwise create derivative works of Virtual Reality Media;
 - 3.2. reverse engineer, disassemble, or decompile Virtual Reality Media or apply any process to derive the source code of Virtual Reality Media, or allow others to do the same;
 - 3.3. copy Virtual Reality Media in whole or part, except as expressly permitted in this Agreement;
 - 3.4. use trade secret information contained in Virtual Reality Media;
 - 3.5. resell, rent, loan or sublicense Virtual Reality Media;
 - 3.6. access Virtual Reality Media to build a competitive device or service or copy any features, functions, or graphics of Virtual Reality Media; or
 - 3.7. remove, alter, or obscure any confidentiality or proprietary rights notices (including copyright and trademark notices) of Axon or Axon's licensors on or within Virtual Reality Media or any copies of Virtual Reality Media.
4. **Privacy.** Agency's use of the Virtual Reality Media is subject to the Axon Virtual Reality Privacy Policy, a current version of which is available at <https://www.axon.com/legal/axon-virtual-reality-privacy-policy>.
5. **Termination.** Axon may terminate Agency's license immediately for Agency's failure to comply with any of the terms in this Agreement.

Axon Evidence Local Software Appendix

This Appendix applies if Axon Evidence Local is included on the Quote.

1. **License.** Axon owns all executable instructions, images, icons, sound, and text in Axon Evidence Local. All rights are reserved to Axon. Axon grants a non-exclusive, royalty-free, worldwide right and license to use Axon Evidence Local. "Use" means storing, loading, installing, or executing Axon Evidence Local exclusively for data communication with an Axon Device. Agency may use Axon Evidence Local in a networked environment on computers other than the computer it installs Axon Evidence Local on, so long as each execution of Axon Evidence Local is for data communication with an Axon Device. Agency may make copies of Axon Evidence Local for archival purposes only. Axon shall retain all copyright, trademark, and proprietary notices in Axon Evidence Local on all copies or adaptations.
2. **Term.** The Quote will detail the duration of the Axon Evidence Local license, as well as any maintenance. The term will begin upon installation of Axon Evidence Local.
3. **License Restrictions.** All licenses will immediately terminate if Agency does not comply with any term of this Agreement. Agency may not use Axon Evidence Local for any purpose other than as expressly permitted by this Agreement. Agency may not:
 - 3.1. modify, tamper with, repair, or otherwise create derivative works of Axon Evidence Local;
 - 3.2. reverse engineer, disassemble, or decompile Axon Evidence Local or apply any process to derive the source code of Axon Evidence Local, or allow others to do the same;
 - 3.3. access or use Axon Evidence Local to avoid incurring fees or exceeding usage limits or quotas;
 - 3.4. copy Axon Evidence Local in whole or part, except as expressly permitted in this Agreement;
 - 3.5. use trade secret information contained in Axon Evidence Local;
 - 3.6. resell, rent, loan or sublicense Axon Evidence Local;
 - 3.7. access Axon Evidence Local to build a competitive device or service or copy any features, functions, or graphics of Axon Evidence Local; or
 - 3.8. remove, alter, or obscure any confidentiality or proprietary rights notices (including copyright and trademark notices) of Axon or Axon's licensors on or within Axon Evidence Local or any copies of Axon Evidence Local.
4. **Support.** Axon may make available updates and error corrections ("**Updates**") to Axon Evidence Local. Axon will provide Updates electronically via the Internet or media as determined by Axon. Agency is responsible for establishing and maintaining adequate access to the Internet to receive Updates. Agency is responsible for maintaining the computer equipment necessary to use Axon Evidence Local. Axon may provide technical support of a prior release/version of Axon Evidence Local for six (6) months from when Axon made the subsequent release/version available.
5. **Termination.** Axon may terminate Agency's license immediately for Agency's failure to comply with any of the terms in this Agreement. Upon termination, Axon may disable Agency's right to login to Axon Evidence Local.

Axon Application Programming Interface Appendix

This Appendix applies if Axon's API Services are included on the Quote.

1. **Definitions.**

- 1.1. **"API Client"** means the software that acts as the interface between Agency's computer and the server, which is already developed or to be developed by Agency.
- 1.2. **"API Interface"** means software implemented by Agency to configure Agency's independent API Client Software to operate in conjunction with the API Service for Agency's authorized Use.
- 1.3. **"Axon Evidence Partner API, API or Axon API"** (collectively **"API Service"**) means Axon's API which provides a programmatic means to access data in Agency's Axon Evidence account or integrate Agency's Axon Evidence account with other systems.
- 1.4. **"Use"** means any operation on Agency's data enabled by the supported API functionality.

2. **Purpose and License.**

- 2.1. Agency may use API Service and data made available through API Service, in connection with an API Client developed by Agency. Axon may monitor Agency's use of API Service to ensure quality, improve Axon devices and services, and verify compliance with this Agreement. Agency agrees to not interfere with such monitoring or obscure from Axon Agency's use of API Service. Agency will not use API Service for commercial use.
- 2.2. Axon grants Agency a non-exclusive, non-transferable, non-sublicensable, worldwide, revocable right and license during the Term to use API Service, solely for Agency's Use in connection with Agency's API Client.
- 2.3. Axon reserves the right to set limitations on Agency's use of the API Service, such as a quota on operations, to ensure stability and availability of Axon's API. Axon will use reasonable efforts to accommodate use beyond the designated limits.

3. **Configuration.** Agency will work independently to configure Agency's API Client with API Service for Agency's applicable Use. Agency will be required to provide certain information (such as identification or contact details) as part of the registration. Registration information provided to Axon must be accurate. Agency will inform Axon promptly of any updates. Upon Agency's registration, Axon will provide documentation outlining API Service information.

4. **Agency Responsibilities.** When using API Service, Agency and its end users may not:

- 4.1. use API Service in any way other than as expressly permitted under this Agreement;
- 4.2. use in any way that results in, or could result in, any security breach to Axon;
- 4.3. perform an action with the intent of introducing any viruses, worms, defect, Trojan horses, malware, or any items of a destructive nature to Axon Devices and Services;
- 4.4. interfere with, modify, disrupt or disable features or functionality of API Service or the servers or networks providing API Service;
- 4.5. reverse engineer, decompile, disassemble, or translate or attempt to extract the source code from API Service or any related software;
- 4.6. create an API Interface that functions substantially the same as API Service and offer it for use by third parties;
- 4.7. provide use of API Service on a service bureau, rental or managed services basis or permit other individuals or entities to create links to API Service;
- 4.8. frame or mirror API Service on any other server, or wireless or Internet-based device;
- 4.9. make available to a third-party, any token, key, password or other login credentials to API Service;
- 4.10. take any action or inaction resulting in illegal, unauthorized or improper purposes; or
- 4.11. disclose Axon's API manual.

5. **API Content.** All content related to API Service, other than Agency Content or Agency's API Client content, is considered Axon's API Content, including:

- 5.1. the design, structure and naming of API Service fields in all responses and requests;

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- 5.2. the resources available within API Service for which Agency takes actions on, such as evidence, cases, users, or reports;
 - 5.3. the structure of and relationship of API Service resources; and
 - 5.4. the design of API Service, in any part or as a whole.
6. **Prohibitions on API Content.** Neither Agency nor its end users will use API content returned from the API Interface to:
- 6.1. scrape, build databases, or otherwise create permanent copies of such content, or keep cached copies longer than permitted by the cache header;
 - 6.2. copy, translate, modify, create a derivative work of, sell, lease, lend, convey, distribute, publicly display, or sublicense to any third-party;
 - 6.3. misrepresent the source or ownership; or
 - 6.4. remove, alter, or obscure any confidentiality or proprietary rights notices (including copyright and trademark notices).
7. **API Updates.** Axon may update or modify the API Service from time to time ("**API Update**"). Agency is required to implement and use the most current version of API Service and to make any applicable changes to Agency's API Client required as a result of such API Update. API Updates may adversely affect how Agency's API Client access or communicate with API Service or the API Interface. Each API Client must contain means for Agency to update API Client to the most current version of API Service. Axon will provide support for one (1) year following the release of an API Update for all depreciated API Service versions.



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Advanced User Management Appendix

This Appendix applies if Axon Advanced User Management is included on the Quote.

1. **Scope.** Advanced User Management allows Agency to (a) utilize bulk user creation and management, (b) automate user creation and management through System for Cross-domain Identity Management ("**SCIM**"), and (c) automate group creation and management through SCIM.
2. **Advanced User Management Configuration.** Agency will work independently to configure Agency's Advanced User Management for Agency's applicable Use. Upon request, Axon will provide general guidance to Agency, including documentation that details the setup and configuration process.

Axon Channel Services Appendix

This Appendix applies if Agency purchases Axon Channel Service, as set forth on the Quote.

1. **Definitions.**
 - 1.1. **"Axon Digital Evidence Management System"** means Axon Evidence or Axon Evidence Local, as specified in the attached Channel Services Statement of Work.
 - 1.2. **"Active Channel"** means a third-party system that is continuously communicating with an Axon Digital Evidence Management System.
 - 1.3. **"Inactive Channel"** means a third-party system that will have a one-time communication to an Axon Digital Evidence Management System.
2. **Scope.** Agency currently has a third-party system or data repository from which Agency desires to share data with Axon Digital Evidence Management. Axon will facilitate the transfer of Agency's third-party data into an Axon Digital Evidence Management System or the transfer of Agency data out of an Axon Digital Evidence Management System as defined in the Channel Services Statement of Work ("**Channel Services SOW**"). Channel Services will not delete any Agency Content. Agency is responsible for verifying all necessary data is migrated correctly and retained per Agency policy.
3. **Changes.** Axon is only responsible to perform the Services described in this Appendix and Channel Services SOW. Any additional services are out of scope. The Parties must document scope changes in a written and signed change order. Changes may require an equitable adjustment in the charges or schedule.
4. **Purpose and Use.** Agency is responsible for verifying Agency has the right to share data from and provide access to third-party system as it relates to the Services described in this Appendix and the Channel Services SOW. For Active Channels, Agency is responsible for any changes to a third-party system that may affect the functionality of the channel service. Any additional work required for the continuation of the Service may require additional fees. An Axon Field Engineer may require access to Agency's network and systems to perform the Services described in the Channel Services SOW. Agency is responsible for facilitating this access per all laws and policies applicable to Agency.
5. **Project Management.** Axon will assign a Project Manager to work closely with Agency's project manager and project team members and will be responsible for completing the tasks required to meet all contract deliverables on time and budget.
6. **Warranty.** Axon warrants that it will perform the Channel Services in a good and workmanlike manner.
7. **Monitoring.** Axon may monitor Agency's use of Channel Services to ensure quality, improve Axon devices and services, prepare invoices based on the total amount of data migrated, and verify compliance with this Agreement. Agency agrees not to interfere with such monitoring or obscure from Axon Agency's use of channel services.
8. **Agency's Responsibilities.** Axon's successful performance of the Channel Services requires Agency:
 - 8.1. Make available its relevant systems for assessment by Axon (including making these systems available to Axon via remote access);
 - 8.2. Provide access to the building facilities and where Axon is to perform the Channel Services, subject to safety and security restrictions imposed by the Agency (including providing security passes or other necessary documentation to Axon representatives performing the Channel Services permitting them to enter and exit Agency premises with laptop personal computers and any other materials needed to perform the Channel Services);
 - 8.3. Provide all necessary infrastructure and software information (TCP/IP addresses, node names, and network configuration) for Axon to provide the Channel Services;
 - 8.4. Ensure all appropriate data backups are performed;
 - 8.5. Provide Axon with remote access to the Agency's network and third-party systems when required for Axon to perform the Channel Services;
 - 8.6. Notify Axon of any network or machine maintenance that may impact the performance of the Channel Services; and
 - 8.7. Ensure the reasonable availability by phone or email of knowledgeable staff, personnel, system administrators,



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and operators to provide timely, accurate, complete, and up-to-date documentation and information to Axon (these contacts are to provide background information and clarification of information required to perform the Channel Services).

VIEVU Data Migration Appendix

This Appendix applies if Agency purchases Migration services, as set forth on the Quote.

1. **Scope.** Agency currently has legacy data in the VIEVU solution from which Agency desires to move to Axon Evidence. Axon will work with Agency to copy legacy data from the VIEVU solution into Axon Evidence ("**Migration**"). Before Migration, Agency and Axon will work together to develop a Statement of Work ("**Migration SOW**") to detail all deliverables and responsibilities. The Migration will require the availability of Agency resources. Such resources will be identified in the SOW. On-site support during Migration is not required. Upon Agency's request, Axon will provide on-site support for an additional fee. Any request for on-site support will need to be pre-scheduled and is subject to Axon's resource availability.
 - 1.1. A small amount of unexposed data related to system information will not be migrated from the VIEVU solution to Axon Evidence. Upon request, some of this data can be manually exported before Migration and provided to Agency. The Migration SOW will provide further detail.
2. **Changes.** Axon is only responsible to perform the Services described in this Appendix and Migration SOW. Any additional services are out of scope. The Parties must document scope changes in a written and signed change order. Changes may require an equitable adjustment in the charges or schedule.
3. **Project Management.** Axon will assign a Project Manager to work closely with Agency's project manager and project team members and will be responsible for completing the tasks required to meet all contract deliverables on time and budget.
4. **Downtime.** There may be downtime during the Migration. The duration of the downtime will depend on the amount of data that Agency is migrating. Axon will work with Agency to minimize any downtime. Any VIEVU mobile application will need to be disabled upon Migration.
5. **Functionality Changes.** Due to device differences between the VIEVU solution and the Axon's Axon Evidence solution, there may be functionality gaps that will not allow for all migrated data to be displayed the same way in the user interface after Migration.
6. **Acceptance.** Once the Migration is complete, Axon will notify Agency and provide an acceptance form. Agency is responsible for verifying that the scope of the project has been completed and all necessary data is migrated correctly and retained per Agency policy. Agency will have ninety (90) days to provide Axon acceptance that the Migration was successful, or Axon will deem the Migration accepted.
 - 6.1. In the event Agency does not accept the Migration, Agency agrees to notify Axon within a reasonable time. Agency also agrees to allow Axon a reasonable time to resolve any issue. In the event Agency does not provide Axon with a written rejection of the Migration during these ninety (90) days, Agency may be charged for additional monthly storage costs. After Agency provides acceptance of the Migration, Axon will delete all data from the VIEVU solution ninety (90) days after the Migration.
7. **Post-Migration.** After Migration, the VIEVU solution may not be supported and updates may not be provided. Axon may end of life the VIEVU solution in the future. If Agency elects to maintain data within the VIEVU solution, Axon will provide Agency ninety (90) days' notice before ending support for the VIEVU solution.
8. **Warranty.** Axon warrants that it will perform the Migration in a good and workmanlike manner.
9. **Monitoring.** Axon may monitor Agency's use of Migration to ensure quality, improve Axon Devices and Services, prepare invoices based on the total amount of data migrated, and verify compliance with this Agreement. Agency agrees not to interfere with such monitoring or obscure Agency's use of Migration from Axon.

Axon Technical Account Manager Appendix

This Appendix applies if Axon Support Engineer services are included on the Quote.

1. **Axon Technical Account Manager Payment.** Axon will invoice for Axon Technical Account Manager ("TAM") services, as outlined in the Quote, when the TAM commences work on-site at Agency.

2. **Full-Time TAM Scope of Services.**

- 2.1. A Full-Time TAM will work on-site four (4) days per week, unless an alternate schedule or reporting location is mutually agreed upon by Axon and Customer.
- 2.2. Agency's Axon sales representative and Axon's Agency Success team will work with Agency to define its support needs and ensure the Full-Time TAM has skills to align with those needs. There may be up to a six- (6-) month waiting period before the Full-Time TAM can work on-site, depending upon Agency's needs and availability of a Full-Time TAM.
- 2.3. The purchase of Full-Time TAM Services includes two (2) complimentary Axon Accelerate tickets per year of the Agreement, so long as the TAM has started work at Agency, and Agency is current on all payments for the Full-Time TAM Service.
- 2.4. The Full-Time TAM **Service options are listed below:**

Ongoing System Set-up and Configuration

Assisting with assigning cameras and registering docks
Maintaining **Agency's Axon Evidence account**
Connecting Agency to "Early Access" programs for new devices

Account Maintenance

Conducting on-site training on new features and **devices for Agency leadership team(s)**
Thoroughly documenting issues and workflows and suggesting new workflows to improve **the effectiveness of the Axon program**
Conducting weekly meetings to cover current issues and program status

Data Analysis

Providing on-demand Axon usage data to identify trends and insights for improving daily workflows
Comparing **Agency's Axon usage and trends to peers to establish best practices**
Proactively monitoring the health of Axon equipment and coordinating returns when needed

Direct Support

Providing on-site, Tier 1 and Tier 2 (as defined in Axon's Service Level Agreement) technical support for Axon Devices
Proactively monitoring the health of **Axon equipment**
Creating and monitoring RMAs **on-site**
Providing Axon app support
Monitoring and testing new firmware and workflows before they are released to Agency's production environment

Agency Advocacy

Coordinating **bi-annual voice of customer meetings with Axon's Device Management team**
Recording and tracking Agency feature requests and major bugs

3. **Regional TAM Scope of Services**

- 3.1. A Regional TAM will work on-site for three (3) consecutive days per quarter. Agency must schedule the on-site days at least two (2) weeks in advance. The Regional TAM will also be available by phone and email during regular business hours up to eight (8) hours per week.
- 3.2. There may be up to a six- (6-) month waiting period before Axon assigns a Regional TAM to Agency, depending upon the availability of a Regional TAM.
- 3.3. The purchase of Regional TAM Services includes two (2) complimentary Axon Accelerate tickets per year of the Agreement, so long as the TAM has started work at Agency and Agency is current on all payments for the Regional TAM Service.
- 3.4. The Regional TAM service options are listed below:

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Account Maintenance

Conducting remote training on new features and **devices for Agency's leadership**

Thoroughly documenting issues and workflows and suggesting new **workflows to improve the effectiveness of the Axon program**

Conducting weekly conference calls to cover **current issues and program status**

Visiting Agency quarterly (up to 3 consecutive days) to perform a quarterly business review, discuss Agency's goals for your Axon program, and continue to ensure a successful deployment of Axon Devices

Direct Support

Providing remote, Tier 1 and Tier 2 (As defined Axon's Service Level Agreement) technical support for Axon Devices

Creating and monitoring RMAs remotely

Data Analysis

Providing quarterly Axon **usage data to identify trends and program efficiency opportunities**

Comparing an **Agency's Axon usage and trends to peers to establish best practices**

Proactively monitoring the health of Axon equipment and coordinating returns when needed

Agency Advocacy

Coordinating bi-yearly Voice of **Agency meetings with Device Management team**

Recording and tracking Agency feature requests and major bugs

4. **Out of Scope Services.** The TAM is responsible to perform only the Services described in this Appendix. Any additional Services discussed or implied that are not defined explicitly in this Appendix will be considered out of the scope.
5. **TAM Leave Time.** The TAM will be allowed up seven (7) days of sick leave and up to fifteen (15) days of vacation time per each calendar year. The TAM will work with Agency to coordinate any time off and will provide Agency with at least two (2) weeks' notice before utilizing any vacation days.

Master Services and Purchasing Agreement for Agency**Axon Investigate Appendix**

If the Quote includes Axon's On Prem Video Suite known as Axon Investigate or Third Party Video Support License, the following appendix shall apply.

1. **License Grant.** Subject to the terms and conditions specified below and upon payment of the applicable fees set forth in the Quote, Axon grants to Agency a nonexclusive, nontransferable license to install, use, and display the Axon Investigate software ("**Software**") solely for its own internal use only and for no other purpose, for the duration of subscription term set forth in the Quote. This Agreement does not grant Agency any right to enhancements or updates, but if such are made available to Agency and obtained by Agency they shall become part of the Software and governed by the terms of this Agreement.
2. **Third-Party Licenses.** Axon licenses several third-party codecs and applications that are integrated into the Software. Users with an active support contract with Axon are granted access to these additional features. By accepting this agreement, Agency agrees to and understands that an active support contract is required for all of the following features: DNxHD output formats, decoding files via the "fast indexing" method, proprietary file metadata, telephone and email support, and all future updates to the software. If Agency terminates the annual support contract with Axon, the features listed above will be disabled within the Software. It is recommended that users remain on an active support contract to maintain the full functionality of the Software.
3. **Restrictions on Use.** Agency may not permit any other person to use the Software unless such use is in accordance with the terms of this Agreement. Agency may not modify, translate, reverse engineer, reverse compile, decompile, disassemble or create derivative works with respect to the Software, except to the extent applicable laws specifically prohibit such restrictions. Agency may not rent, lease, sublicense, grant a security interest in or otherwise transfer Agency's rights to or to use the Software. Any rights not granted are reserved to Axon.
4. **Term.** For purchased perpetual Licenses only—excluding Licenses leased for a pre-determined period, evaluation licenses, companion licenses, as well as temporary licenses—the license shall be perpetual unless Agency fails to observe any of its terms, in which case it shall terminate immediately, and without additional prior notice. The terms of Paragraphs 1, 2, 3, 5, 6, 8 and 9 shall survive termination of this Agreement. For licenses leased for a pre-determined period, for evaluation licenses, companion licenses, as well as temporary licenses, the license is granted for a period beginning at the installation date and for the duration of the evaluation period or temporary period as agreed between Axon and Agency.
5. **Title.** Axon and its licensors shall have sole and exclusive ownership of all right, title, and interest in and to the Software and all changes, modifications, and enhancements thereof (including ownership of all trade secrets and copyrights pertaining thereto), regardless of the form or media in which the original or copies may exist, subject only to the rights and privileges expressly granted by Axon. This Agreement does not provide Agency with title or ownership of the Software, but only a right of limited use.
6. **Copies.** The Software is copyrighted under the laws of the United States and international treaty provisions. Agency may not copy the Software except for backup or archival purposes, and all such copies shall contain all Axon's notices regarding proprietary rights as contained in the Software as originally provided to Agency. If Agency receives one copy electronically and another copy on media, the copy on media may be used only for archival purposes and this license does not authorize Agency to use the copy of media on an additional server.
7. **Actions Required Upon Termination.** Upon termination of the license associated with this Agreement, Agency agrees to destroy all copies of the Software and other text and/or graphical documentation, whether in electronic or printed format, that describe the features, functions and operation of the Software that are provided by Axon to Agency ("**Software Documentation**") or return such copies to Axon. Regarding any copies of media containing regular backups of Agency's computer or computer system, Agency agrees not to access such media for the purpose of recovering the Software or online Software Documentation.
8. **Export Controls.** None of the Software, Software Documentation or underlying information may be downloaded or otherwise exported, directly or indirectly, without the prior written consent, if required, of the office of Export Administration of the United States, Department of Commerce, nor to any country to which the U.S. has embargoed goods, to any person on the U.S. Treasury Department's list of Specially Designated Nations, or the U.S. Department of Commerce's Table of Denials.
9. **U.S. Government Restricted Rights.** The Software and Software Documentation are Commercial Computer Software provided with Restricted Rights under Federal Acquisition Regulations and agency supplements to them. Use, duplication or disclosure by the U.S. Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFAR 255.227-7013 et. Seq. or 252.211-7015, or



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subparagraphs (a) through (d) of the Commercial Computer Software Restricted Rights at FAR 52.227-19, as applicable, or similar clauses in the NASA FAR Supplement. Contractor/manufacturer is Axon Enterprise, Inc., 17800 North 85th Street, Scottsdale, Arizona 85255.

My90 Terms of Use Appendix

Definitions.

- 1.1. **"My90"** means Axon's proprietary platform and methodology to obtain and analyze feedback, and other related offerings, including, without limitation, interactions between My90 and Axon products.
- 1.2. **"Recipient Contact Information"** means contact information, as applicable, including phone number or email address (if available) of the individual whom Agency would like to obtain feedback.
- 1.3. **"Agency Data"** means
 - 1.3.1. "My90 Agency Content" which means data, including Recipient Contact Information, provided to My90 directly by Agency or at their direction, or by permitting My90 to access or connect to an information system or similar technology. My90 Agency Content does not include My90 Non-Content Data.
 - 1.3.2. "My90 Non-Content Data" which means data, configuration, and usage information about Agency's My90 tenant, and client software, users, and survey recipients that is Processed (as defined in Section 1.6 of this Appendix) when using My90 or responding to a My90 Survey. My90 Non-Content Data includes data about users and survey recipients captured during account management and customer support activities. My90 Non-Content Data does not include My90 Agency Content.
 - 1.3.3. "Survey Response" which means survey recipients' response to My90 Survey.
- 1.4. **"My90 Data"** means
 - 1.4.1. "My90 Survey" which means surveys, material(s) or content(s) made available by Axon to Agency and survey recipients within My90.
 - 1.4.2. "Aggregated Survey Response" which means Survey Response that has been de-identified and aggregated or transformed so that it is no longer reasonably capable of being associated with, or could reasonably be linked directly or indirectly to, a particular individual.
- 1.5. **"Personal Data"** means any information relating to an identified or identifiable natural person. An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural, or social identity of that natural person.
- 1.6. **"Processing"** means any operation or set of operations which is performed on data or on sets of data, whether or not by automated means, such as collection, recording, organization, structuring, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, restriction, erasure, or destruction.
- 1.7. **"Sensitive Personal Data"** means Personal Data that reveals an individual's health, racial or ethnic origin, sexual orientation, disability, religious or philosophical beliefs, or trade union membership.
2. **Access.** Upon Axon granting Agency a subscription to My90, Agency may access and use My90 to store and manage My90 Agency Content, and applicable My90 Surveys and Aggregated Survey Responses. This Appendix is subject to the Terms and Conditions of Axon's Master Service and Purchasing Agreement or in the event you and Axon have entered into a prior agreement to govern all future purchases, that agreement shall govern.
3. **IP address.** Axon will not store survey respondents' IP address.
4. **Agency Owns My90 Agency Content.** Agency controls or owns all right, title, and interest in My90 Agency Content. Except as outlined herein, Axon obtains no interest in My90 Agency Content, and My90 Agency Content is not Axon's business records. Except as set forth in this Agreement, Agency is responsible for uploading, sharing, managing, and deleting My90 Agency Content. Axon will only have access to My90 Agency Content for the limited purposes set forth herein. Agency agrees to allow Axon access to My90 Agency Content to (a) perform troubleshooting, maintenance, or diagnostic screenings; and (b) enforce this Agreement or policies governing use of My90 and other Axon products.
5. **Details of the Processing.** The nature and purpose of the Processing under this Appendix are further specified

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in Schedule 1 Details of the Processing, to this Appendix.

6. **Security.** Axon will implement commercially reasonable and appropriate measures to secure Agency Data against accidental or unlawful loss, access, or disclosure. Axon will maintain a comprehensive information security program to protect Agency Data including logical, physical access, vulnerability, risk, and configuration management; incident monitoring and response; security education; and data protection. Axon will not treat Agency Data in accordance with FBI CJIS Security Policy requirements and does not agree to the CJIS Security Addendum for this engagement or any other security or privacy related commitments that have been established between Axon and Agency, such as ISO 27001 certification or SOC 2 Reporting.
7. **Privacy.** Agency use of My90 is subject to the My90 Privacy Policy, a current version of which is available at <https://www.axon.com/legal/my90privacypolicy>. Agency agrees to allow Axon access to My90 Non-Content Data from Agency to (a) perform troubleshooting, maintenance, or diagnostic screenings; (b) provide, develop, improve, and support current and future Axon products including My90 and related services; and (c) enforce this Agreement or policies governing the use of My90 or other Axon products.
8. **Location of Storage.** Axon may transfer Agency Data to third-party subcontractors for Processing. Axon will determine the locations for Processing of Agency Data. For all Agency, Axon will Process and store Agency Data within the United States. Ownership of My90 Agency Content remains with Agency.
9. **Required Disclosures.** Axon will not disclose Agency Data that Agency shares with Axon except as compelled by a court or administrative body or required by any law or regulation. Axon will notify Agency if any disclosure request is received for Agency Data so Agency may file an objection with the court or administrative body, unless prohibited by law.
10. **Data Sharing.** Axon may share data only with entities that control or are controlled by or under common control of Axon, and as described below:
 - 10.1. Axon may share Agency Data with third parties it employs to perform tasks on Axon's behalf to provide products or services to Customer.
 - 10.2. Axon may share Aggregated Survey Response with third parties, such as other Axon customers, local city agencies, private companies, or members of the public that are seeking a way to collect analysis on general policing and community trends. Aggregated Survey Response will not be reasonably capable of being associated with or reasonably be linked directly or indirectly to a particular individual.
11. **License and Intellectual Property.** Agency grants Axon, its affiliates, and assignees the irrevocable, perpetual, fully paid, royalty-free, and worldwide right and license to use Agency Data for internal use including but not limited to analysis and creation of derivatives. Axon may not release Agency Data to any third party under this right that is not aggregated and de-identified. Agency acknowledges that Agency will have no intellectual property right in any media, good or service developed or improved by Axon. Agency acknowledges that Axon may make any lawful use of My90 Data and any derivative of Agency Data including, without limitation, the right to monetize, redistribute, make modification of, and make derivatives of the surveys, survey responses and associated data, and Agency will have no intellectual property right in any good, service, media, or other product that uses My90 Data.
12. **Agency Use of Aggregated Survey Response.** Axon will make available to Agency Aggregated Survey Response and rights to use for any Agency purpose.
13. **Data Subject Rights.** Taking into account the nature of the Processing, Axon shall assist Agency by appropriate technical and organizational measures, insofar as this is reasonable, for the fulfilment of Agency's obligation to respond to a Data Subject Request regarding any Personal Data contained within My90 Agency Content. If in regard to My90 Agency Content, Axon receives a Data Subject Request from Agency's data subject to exercise one or more of its rights under applicable Data Protection Law, Axon will redirect the data subject within seventy-two (72) hours, to make its request directly to Agency. Agency will be responsible for responding to any such request.
14. **Assistance with Requests Related to My90 Agency Content.** With regard to the processing of My90 Agency Content, Axon shall, if not prohibited by applicable law, notify Agency without delay after receipt, if Axon: (a) receives a request for information from the Supervisory Authority or any other competent authority regarding My90 Agency Content; (b) receives a complaint or request from a third party regarding the obligations of Agency or Axon under applicable Data Protection Law; or (c) receives any other communication which directly or indirectly pertains to My90 Agency Content or the Processing or protection of My90 Agency Content. Axon shall not respond to such requests, complaints, or communications, unless Agency has given Axon written instructions to

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that effect or if such is required under a statutory provision. In the latter case, prior to responding to the request, Axon shall notify Agency of the relevant statutory provision and Axon shall limit its response to what is necessary to comply with the request.

15. **Axon Evidence Partner Sharing.** If Axon Evidence partner sharing is used to share My90 Agency Content, Agency will manage the data sharing partnership with Axon and access to allow only for authorized data sharing with Axon. Agency acknowledges that any applicable audit trail on the original source data will not include activities and processing performed against the instances, copies or clips that has been shared with Axon. Agency also acknowledges that the retention policy from the original source data is not applied to any data shared with Axon. Except as provided herein, data shared with Axon may be retained indefinitely by Axon.
16. **Data Retention.** Phone numbers provided to Axon directly by Agency or at their direction, or by permitting My90 to access or connect to an information system or similar technology will be retained for twenty-four (24) hours. Axon will not delete Aggregated Survey Response for four (4) years following termination of this Agreement. There will be no functionality of My90 during these four (4) years other than the ability to submit a request to retrieve Aggregated Survey Response. Axon has no obligation to maintain or provide Aggregated Survey Response after these four years and may thereafter, unless legally prohibited, delete all Aggregated Survey Response.
17. **Termination.** Termination of an My90 Agreement will not result in the removal or modification of previously shared My90 Agency Content or the potential monetization of Survey Response and Aggregated Survey Response.
18. **Managing Data Shared.** Agency is responsible for:
 - 18.1. Ensuring My90 Agency Content is appropriate for use in My90. This includes, prior to sharing: (a) applying any and all required redactions, clipping, removal of metadata, logs, etc. and (b) coordination with applicable public disclosure officers and related legal teams;
 - 18.2. Ensuring that only My90 Agency Content that is authorized to be shared for the purposes outlined is shared with Axon. Agency will periodically monitor or audit this shared data;
 - 18.3. Using an appropriately secure data transfer mechanism to provide My90 Agency Content to Axon;
 - 18.4. Immediately notifying Axon if My90 Agency Content that is not authorized for sharing has been shared. Axon may not be able to immediately retrieve or locate all instances, copies or clips of My90 Agency Content in the event Agency requests to un-share previously shared My90 Agency Content;
19. **Prior to enrollment in My90.** Prior to enrolling in My90, Agency will:
 - 19.1. determine how to use My90 in accordance with applicable laws and regulations including but not limited to consents, use of info or other legal considerations;
 - 19.2. develop a set of default qualification criteria of what My90 Agency Content may be shared with Axon; and
 - 19.3. assign responsibilities for managing what My90 Agency Content is shared with Axon and educate users on what data may or not be shared with Axon.
20. **Agency Responsibilities.** Agency is responsible for:
 - 20.1. ensuring no My90 Agency Content or Agency end user's use of My90 Agency Content or My90 violates this Agreement or applicable laws;
 - 20.2. providing, and will continue to provide, all notices and has obtained, and will continue to obtain, all consents and rights necessary under applicable laws for Axon to process Agency Data in accordance with this Agreement; and
 - 20.3. maintaining necessary computer equipment and Internet connections for use of My90. If Agency becomes aware of any violation of this Agreement by an end user, Agency will immediately terminate that end user's access to My90. Agency will also maintain the security of end usernames and passwords and security and access by end users to My90 Agency Content. Agency is responsible for ensuring the configuration and utilization of My90 meets applicable Agency regulations and standards. Agency may not sell, transfer, or sublicense access to any other entity or person. Agency shall contact Axon immediately if an unauthorized party may be using Agency's account or My90 Agency Content or if account information is lost or stolen.
21. **Suspension.** Axon may temporarily suspend Agency's or any end user's right to access or use any portion or all of My90 immediately upon notice, if Agency or end user's use of or registration for My90 may (a) pose a security

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risk to Axon products including My90, or any third-party; (b) adversely impact My90, the systems, or content of any other customer; (c) subject Axon, Axon's affiliates, or any third-party to liability; or (d) be fraudulent. Agency remains responsible for all fees, if applicable, incurred through suspension. Axon will not delete My90 Agency Content or Aggregated Survey Response because of suspension, except as specified in this Agreement.

22. My90 Restrictions. Agency and Agency end users (including employees, contractors, agents, officers, volunteers, and directors), may not, or may not attempt to:

- 22.1. copy, modify, tamper with, repair, or create derivative works of any part of My90;
- 22.2. reverse engineer, disassemble, or decompile My90 or apply any process to derive any source code included in My90, or allow others to do the same;
- 22.3. access or use My90 with the intent to gain unauthorized access, avoid incurring fees or exceeding usage limits or quotas;
- 22.4. use trade secret information contained in My90, except as expressly permitted in this Agreement;
- 22.5. access My90 to build a competitive product or service or copy any features, functions, or graphics of My90;
- 22.6. remove, alter, or obscure any confidentiality or proprietary rights notices (including copyright and trademark notices) of Axon's or Axon's licensors on or within My90; or
- 22.7. use My90 to store or transmit infringing, libelous, or other unlawful or tortious material; to store or transmit material in violation of third-party privacy rights; or to store or transmit malicious code.

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Schedule 1- Details of the Processing

1. **Nature and Purpose of the Processing.** To help Agency obtain feedback from individuals, such as members of their community, staff, or officers. Features of My90 may include:
- 1.1. Survey Tool where Agency may create, distribute, and analyze feedback from individuals it designates. Agency may designate members of the community, staff or officers from whom they would like to obtain feedback;
 - 1.2. Creation of custom forms for surveys. Agency may select questions from a list of pre-drafted questions or create their own;
 - 1.3. Distribution of survey via multiple distribution channels such as text message;
 - 1.4. Ability to access and analyze Survey Response. Axon may also provide Agency Aggregated Survey Responses which contain analysis and insights from the Survey Response;
 - 1.5. Direct integrations into information systems including Computer Aided Dispatch ("**CAD**"). This will enable Agency to share contact information easily and quickly with Axon of any individuals from whom it wishes to obtain feedback, enabling Axon to communicate directly with these individuals;
 - 1.6. Data Dashboard Beta Test ("**Data Dashboard**") where Survey Response and Aggregated Survey Response will be displayed for Agency use. Agency will be able to analyze, interpret, and share results of the Survey Response. My90 may provide beta versions of the Data Dashboard that are specifically designed for Agency to test before they are publicly available;
 - 1.7. Survey Responses will be aggregated and de-identified and may be subsequently distributed and disclosed through various mediums to: (1) Agency; (2) other Axon Agency; (3) private companies; and (4) members of the public. The purpose of disclosure is to provide ongoing insights and comparisons on general policing and community trends. Prior to disclosing this information, Axon will ensure that the Survey Response has been de-identified and aggregated or transformed so that it is no longer reasonably capable of being associated with, or could reasonably be linked directly or indirectly to a particular individual; and
 - 1.8. Provide services and materials to engage Agency stakeholders, market the partnership to the public, and facilitate training.

Axon Customer Experience Improvement Program Appendix

- 1 **Axon Customer Experience Improvement Program (ACEIP)**. The ACEIP is designed to accelerate Axon's development of technology, such as building and supporting automated features, to ultimately increase safety within communities and drive efficiency in public safety. To this end, subject to the limitations on Axon as described below, Axon, where allowed by law, may make limited use of Agency Content from all of its customers, to provide, develop, improve, and support current and future Axon products (collectively, "**ACEIP Purposes**"). However, at all times, Axon will comply with its obligations pursuant to the Axon Cloud Services Terms of Use Appendix to maintain a comprehensive data security program (including compliance with the CJIS Security Policy for Criminal Justice Information), privacy program, and data governance policy, including high industry standards of de-identifying Personal Data, to enforce its security and privacy obligations for the ACEIP. ACEIP has 2 tiers of participation, Tier 1 and Tier 2. By default, Agency will be a participant in ACEIP Tier 1. If Agency does not want to participate in ACEIP Tier 1, Agency can revoke its consent at any time. If Agency wants to participate in Tier 2, as detailed below, Agency can check the ACEIP Tier 2 box below. If Agency does not want to participate in ACEIP Tier 2, Agency should leave box unchecked. At any time, Agency may revoke its consent to ACEIP Tier 1, Tier 2, or both Tiers.

1.1 ACEIP Tier 1.

- 1.1.1. When Axon uses Agency Content for the ACEIP Purposes, Axon will extract from Agency Content and may store separately copies of certain segments or elements of the Agency Content (collectively, "**ACEIP Content**"). When extracting ACEIP Content, Axon will use commercially reasonable efforts to aggregate, transform or de-identify Agency Content so that the extracted ACEIP Content is no longer reasonably capable of being associated with, or could reasonably be linked directly or indirectly to a particular individual ("**Privacy Preserving Technique(s)**"). For illustrative purposes, some examples are described in footnote 1¹. For clarity, ACEIP Content will still be linked indirectly, with an attribution, to the Agency from which it was extracted. This attribution will be stored separately from the data itself, but is necessary for and will be solely used to enable Axon to identify and delete all ACEIP Content upon Agency request. Once de-identified, ACEIP Content may then be further modified, analyzed, and used to create derivative works. At any time, Agency may revoke the consent granted herein to Axon to access and use Agency Content for ACEIP Purposes. Within 30 days of receiving the Agency's request, Axon will no longer access or use Agency Content for ACEIP Purposes and will delete any and all ACEIP Content. Axon will also delete any derivative works which may reasonably be capable of being associated with, or could reasonably be linked directly or indirectly to Agency. In addition, if Axon uses Agency Content for the ACEIP Purposes, upon request, Axon will make available to Agency a list of the specific type of Agency Content being used to generate ACEIP Content, the purpose of such use, and the retention, privacy preserving extraction technique, and relevant data protection practices applicable to the Agency Content or ACEIP Content ("Use Case"). From time

¹ For example; (a) when extracting specific text to improve automated transcription capabilities, text that could be used to directly identify a particular individual would not be extracted, and extracted text would be disassociated from identifying metadata of any speakers, and the extracted text would be split into individual words and aggregated with other data sources (including publicly available data) to remove any reasonable ability to link any specific text directly or indirectly back to a particular individual; (b) when extracting license plate data to improve Automated License Plate Recognition (ALPR) capabilities, individual license plate characters would be extracted and disassociated from each other so a complete plate could not be reconstituted, and all association to other elements of the source video, such as the vehicle, location, time, and the surrounding environment would also be removed; (c) when extracting audio of potential acoustic events (such as glass breaking or gun shots), very short segments (<1 second) of audio that only contains the likely acoustic events would be extracted and all human utterances would be removed.

to time, Axon may develop and deploy new Use Cases. At least 30 days prior to authorizing the deployment of any new Use Case, Axon will provide Agency notice (by updating the list of Use Case at <https://www.axon.com/aceip> and providing Agency with a mechanism to obtain notice of that update or another commercially reasonable method to Agency designated contact) (“**New Use Case**”).

1.1.2. Expiration of ACEIP Tier 1. Agency consent granted herein, will expire upon termination of the Agreement. In accordance with section 1.1.1, within 30 days of receiving the Agency's request, Axon will no longer access or use Agency Content for ACEIP Purposes and will delete ACEIP Content. Axon will also delete any derivative works which may reasonably be capable of being associated with, or could reasonably be linked directly or indirectly to Agency.

1.2 ACEIP Tier 2. In addition to ACEIP Tier 1, if Agency wants to help further improve Axon's services, Agency may choose to participate in Tier 2 of the ACEIP. ACEIP Tier 2, grants Axon certain additional rights to use Agency Content, in addition to those set forth in Tier 1 above, without the guaranteed deployment of a Privacy Preserving Technique to enable product development, improvement, and support that cannot be accomplished with aggregated, transformed or de-identified data.

☐ Check this box if Agency wants to help further improve Axon's services by participating in ACEIP Tier 2 in addition to Tier 1. By checking this box, Agency hereby agrees to the Axon Customer Experience Improvement Program Tier 2 Terms of Service, available at <https://www.axon.com/sales-terms-and-conditions> and incorporated herein by reference.