

Traffic Impact Analysis

The Park at West Main Dallas, Texas

July 26, 2021

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
INTRODUCTION	1
Purpose	1
Project Description	1
Study Parameters	4
Study Scenarios	4
Study Area	4
Roadway Network	4
Roadway Descriptions	4
Bicycle Facilities	5
THOROUGHFARE AMENDMENT	7
Thoroughfare Plan Summary	7
Current Plans	7
Proposed Amendment	8
Existing Traffic Volumes	9
Background (No-Build) Traffic Volumes	9
Growth Factor	9
Projected Traffic for “Additional Developments”	9
Background Traffic Volumes	10
Site-Generated Traffic Volumes	18
Background-Plus-Site (Build) Traffic Volumes	18
TRAFFIC IMPACT ANALYSIS	25
Intersection Capacity Analysis – Methodology	25
Intersection Capacity Analysis	26
Alternative Intersection Analysis	29
Intersection Analysis Results and Recommended Mitigations	30
Roadway Link Capacity Analysis – Methodology	34
Roadway Link Capacity Analysis	35
Auxiliary Lane Analysis	36
Sight Distance Analysis	36
Driveway Spacing Review	37
ON-STREET PARKING	38
Indented/Head-In Parking	38
PEDESTRIAN AMENITIES	38
CONCLUSIONS AND RECOMMENDATIONS	39

LIST OF EXHIBITS

Exhibit 1. Vicinity Map	2
Exhibit 2. Site Plan	3
Exhibit 3. Existing and Planned Roadway Geometry.....	6
Exhibit 4. Additional Properties Considered for Redevelopment.....	11
Exhibit 5. Year 2020 Existing Traffic Volumes (Original)	12
Exhibit 6. Year 2020 Existing Traffic Volumes (Adjusted for COVID-19).....	13
Exhibit 7. Year 2027 Background Traffic Volumes – Without Bataan St. Connection.....	14
Exhibit 8. Year 2027 Background Traffic Volumes – With Bataan St. Connection	15
Exhibit 9. Year 2032 Background Traffic Volumes – Without Bataan St. Connection.....	16
Exhibit 10. Year 2032 Background Traffic Volumes – With Bataan St. Connection	17
Exhibit 11. Site Traffic Volumes – Without Bataan Street Connection	19
Exhibit 12. Site Traffic Volumes – With Bataan Street Connection.....	20
Exhibit 13. Year 2027 Bkgd.-Plus-Site Traffic Volumes – Without Bataan St. Connection	21
Exhibit 14. Year 2027 Bkgd.-Plus-Site Traffic Volumes – With Bataan St. Connection	22
Exhibit 15. Year 2032 Bkgd.-Plus-Site Traffic Volumes – Without Bataan St. Connection	23
Exhibit 16. Year 2032 Bkgd.-Plus-Site Traffic Volumes – With Bataan St. Connection	24
Exhibit 17. Recommended Roadway Geometry.....	33

LIST OF TABLES

Table 1. Development Program.....	1
Table 2. Projected Trip Generation.....	18
Table 3. Intersection LOS Summary – Without Bataan St. Extension.....	26
Table 4. LOS Summary for Site Driveways – Without Bataan St. Connection.....	27
Table 5. Intersection LOS Summary – With Bataan St. Connection.....	28
Table 6. Intersection LOS Summary for Site Driveways – With Bataan St. Connection ..	29
Table 7. Intersection LOS Summary for Fort Worth Avenue/W. Commerce Street Planned Geometry.....	29
Table 8. Intersection LOS Summary with Recommended Improvements – Without Bataan St. Connection	31
Table 9. Intersection LOS Summary with Recommended Improvements - With Bataan St. Connection	32
Table 10. Roadway LOS Summary (Without Bataan Street Connection)	35
Table 11. Sight Distance Requirements	36
Table 12. Driveway Spacing Summary	37

EXECUTIVE SUMMARY

Lambeth Engineering Associates, PLLC, conducted a traffic impact analysis for The Park at West Main, a proposed mixed-use development, generally located north of West Commerce Street, east of Beaver Street in Dallas, Texas. This TIA is being conducted to support creating a subdistrict within the existing PD and a request to amend the City of Dallas Thoroughfare Plan so Bataan Street is not extended across the railroad tracks.

The project, to be completed in 2027, is planned to contain 484 residential units plus 25,017 SF of office/retail/restaurant uses.

This study evaluated the impact the proposed development will have on the surrounding roadway network and provides recommended mitigation measures needed to maintain acceptable roadway conditions. The study also evaluated the impact to the roadway network considering the proposed amendment to remove Bataan Street from crossing the Union Pacific Railroad, just north of the site.

The following roadway intersections were studied in this analysis:

- West Commerce Street at Sylvan Avenue (signalized)
- West Commerce Street at Yuma Street (unsignalized)
- West Commerce Street at Beaver Street (unsignalized)
- West Commerce Street at Fort Worth Avenue (signalized)
- West Commerce Street at Pittman Street (unsignalized)
- West Commerce Street at Guest Street (unsignalized)
- West Commerce Street at Herbert Street/Haslett Street (currently unsignalized, signal planned)
- West Main Street at Pittman Street (unsignalized)
- Singleton Boulevard at Bataan Street (unsignalized)
- Singleton Boulevard at Herbert Street (currently unsignalized, signal planned)
- Site driveways

The following study scenarios were analyzed during the weekday AM and PM peak hours:

- 2020 Existing
- 2027 Background
- 2027 Background-Plus-Site
- 2032 Horizon Year Background
- 2032 Horizon Year Background-Plus-Site

A 2% annual growth rate was applied to the existing traffic volumes to project future background volumes. Due to the vast amount of upcoming development projected in the area, to account for “buildout of the area” and project traffic to evaluate the Bataan Street Thoroughfare Plan amendment, traffic was also projected for additional future developments in the area which would use a future Bataan Street connection across the railroad tracks.

This study takes into consideration the site is a mixed-use development, and patrons will walk to/from work/office/retail/shopping. After taking into consideration internal capture due to the mixed-use nature, The Park at West Main site is projected to generate 230 trips in the AM peak hour (82 inbound

and 148 outbound) and 335 trips during the PM peak hour (202 inbound and 133 outbound). The projected weekday total (inbound and outbound) is 6,894 trips.

Below is a summary of findings from the analyses presented in this report.

- The roadway intersections are shown to operate with an overall LOS D or better considering existing, background, and background-plus-site traffic volumes, with the following recommended mitigations.
 - **Singleton Boulevard at Herbert Street** – As part of the West Dallas Gateway Project, the City of Dallas is planning to signalize the Singleton Boulevard/Herbert Street intersection. Signalization is recommended to improve the LOS and serve traffic generated by future developments.
 - **W. Commerce Street at Herbert Street/Haslett Street** – As part of the West Dallas Gateway Project, the City of Dallas is planning to signalize the W. Commerce Street/Herbert Street intersection. Signalization is recommended to improve the LOS and serve traffic generated by future developments.
 - **Singleton Boulevard at Bataan Street** – It is recommended the City consider signalizing the Singleton Boulevard/Bataan Street intersection even without the Bataan Street thoroughfare extension to accommodate background traffic volumes.
 - **Sylvan Avenue at W. Commerce Street** – As W. Commerce Street continues to develop on both east and west sides of Sylvan, it is recommended the City consider adding exclusive eastbound and westbound, left-turn lanes on W. Commerce Street at Sylvan Avenue.
 - **W. Main Street at Herbert Street** – When considering the Bataan Street connection in place, the westbound approach is projected to operate at LOS E with 2027 background conditions, and the delay worsen with the additional site traffic. When analyzed as an all-way STOP-controlled intersection, all intersection approaches are projected to operate at LOS D or better.
- The roadway links are shown to operate at LOS D or better considering existing, background, and background-plus-site traffic volumes with the existing roadway geometries.
- No deceleration lanes are recommended at the site driveways.
- All driveways satisfy City of Dallas' minimum driveway spacing criteria.
- All driveways satisfy City of Dallas' minimum sight distance criteria.
- Indented parking and on-street parallel parking are expected to operate smoothly in the area.
- The project is providing wide sidewalks and green spaces which will encourage pedestrian activity in the area.
- It is recommended the request to amend the City of Dallas Thoroughfare Plan to remove the Bataan Street connection be approved due to the following:
 - Herbert Street is two-lanes on the Thoroughfare Plan.
 - Herbert Street is being designed as a four-lane roadway, wider than planned, since there are not plans to extend Bataan Street or Amonette Street across the railroad with

any designated time frame (this is Lambeth's understanding of why there is an increase in Herbert Street's width from two-lanes to four-lanes.)

- The TIA included the site traffic plus additional developments in the area which may use the Bataan Street connection that is being considered.
- Even considering the vast amount of upcoming, additional development, the planned improvements for Herbert Street are more than adequate to serve the overall area.

Based upon this analysis, the proposed development is shown to not have a significant impact on the surrounding roadway network.

INTRODUCTION

Purpose

The services of Lambeth Engineering Associates, PLLC, (herein Lambeth) were retained to conduct a traffic impact analysis (TIA) for The Park at West Main, a proposed mixed-use development, in Dallas, Texas. The purpose of this study is to project the anticipated traffic that will be generated by the proposed development, determine the impact it will have on the surrounding roadway network, and determine necessary mitigation measures needed to maintain acceptable roadway conditions. This TIA is being conducted to support creating a subdistrict within the existing PD and a request to amend the City of Dallas Thoroughfare Plan so Bataan Street is not extended across the railroad tracks.

Project Description

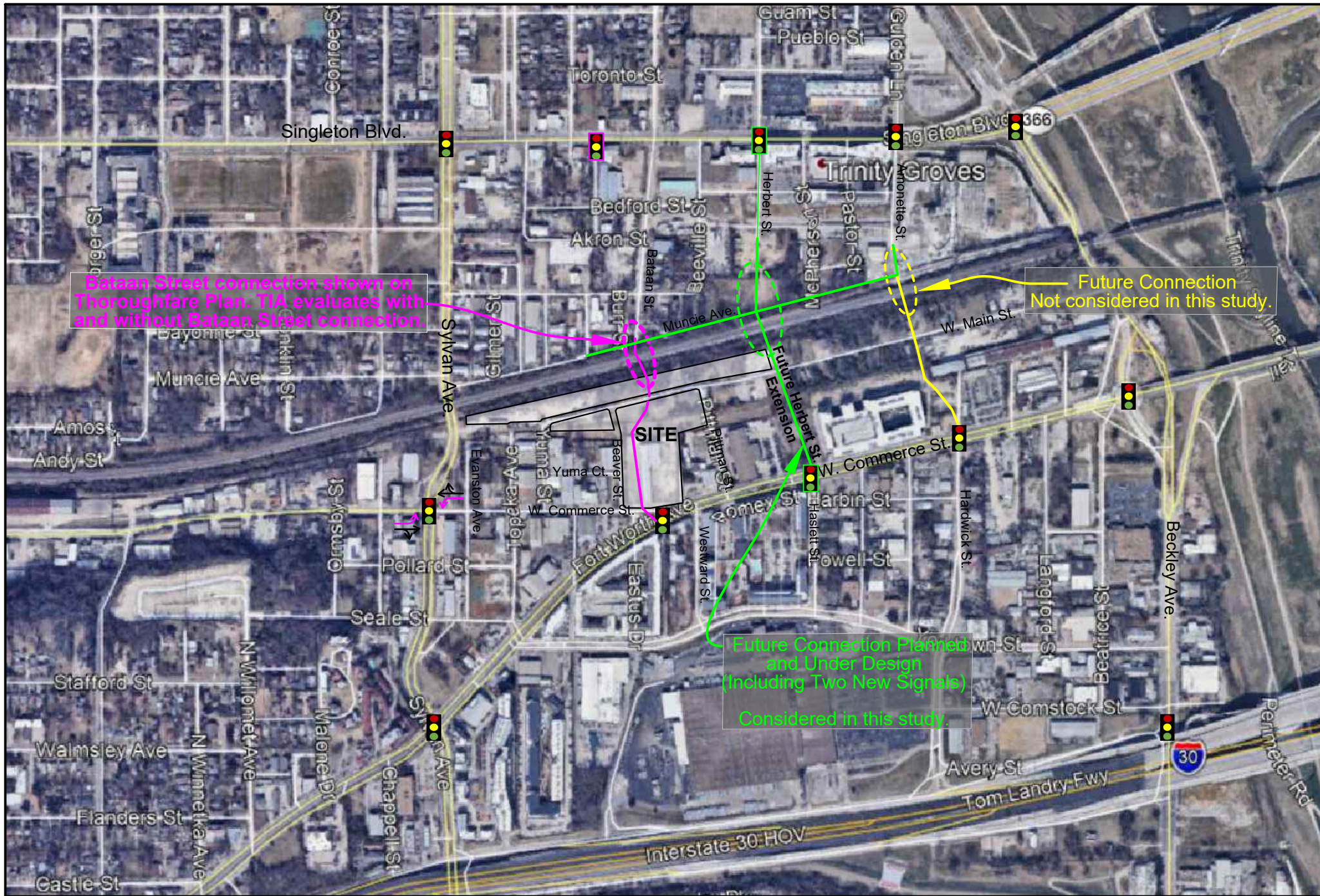
The project site is generally located north of W. Commerce Street, east of Beaver Street. A portion of the property is vacant and there are some commercial buildings.

The project is projected to be completed in 2027 and will contain multifamily residential, office, retail, and restaurant uses. The development program is presented in **Table 1**.

Table 1. Development Program

Use	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Total
Residential:							
Multifamily, Low-Rise (Condos)	24 Units	28 Units	23 Units	69 Units		40 Units	184 Units
Multifamily, Mid-Rise					300 Units		300 Units
Residential Total:	24 Units	28 Units	23 Units	69 Units	300 Units	40 Units	484 Units
Commercial:							
Office					5,989 SF		5,989 SF
Retail				3,483 SF			3,483 SF
Health/Fitness Center					5,989 SF		5,989 SF
Restaurant, Sit-Down				6,977 SF	2,579 SF		9,556 SF
Retail/Office/Rest. Total:	--	--	--	10,460 SF	14,557 SF	--	25,017 SF

A vicinity map is shown in **Exhibit 1**, and the site plan is shown in **Exhibit 2**.



Bataan Street connection shown on Thoroughfare Plan. TIA evaluates with and without Bataan Street connection.

Future Connection Not considered in this study.

Future Connection Planned and Under Design (Including Two New Signals) Considered in this study.

- = Planned Herbert St. and Muncie St. Extension
- = Proposed Bataan St. Thoroughfare Amendment; Remove Bataan St. Extension
- = Amotte St. Extension on Dallas Thoroughfare Plan; No Plans for Construction
- = Signalized Intersections



Study Parameters

This TIA considered the following study parameters that were reviewed and approved by the City of Dallas at the onset of this TIA.

Study Scenarios

The following scenarios were studied in this analysis:

- Roadway Intersections: Weekday AM and PM peak hours of adjacent street traffic
- Roadway Links: Weekday AM and PM peak hours of adjacent street traffic
- Analysis Scenarios:
 - 2020 Existing
 - 2027 Background
 - 2027 Background-Plus-Site
 - 2032 Background (Horizon Year)
 - 2032 Background-Plus-Site

Study Area

The following roadway intersections were studied in this analysis:

- West Commerce Street at Sylvan Avenue (signalized)
- West Commerce Street at Yuma Street (unsignalized)
- West Commerce Street at Beaver Street (unsignalized)
- West Commerce Street at Fort Worth Avenue (signalized)
- West Commerce Street at Pittman Street (unsignalized)
- West Commerce Street at Guest Street (unsignalized)
- West Commerce Street at Haslett Street (currently unsignalized, signal planned)
- West Main Street at Pittman Street (unsignalized)
- Singleton Boulevard at Bataan Street (unsignalized)
- Singleton Boulevard at Herbert Street (currently unsignalized, signal planned)
- Site driveways

Roadway Network

Roadway Descriptions

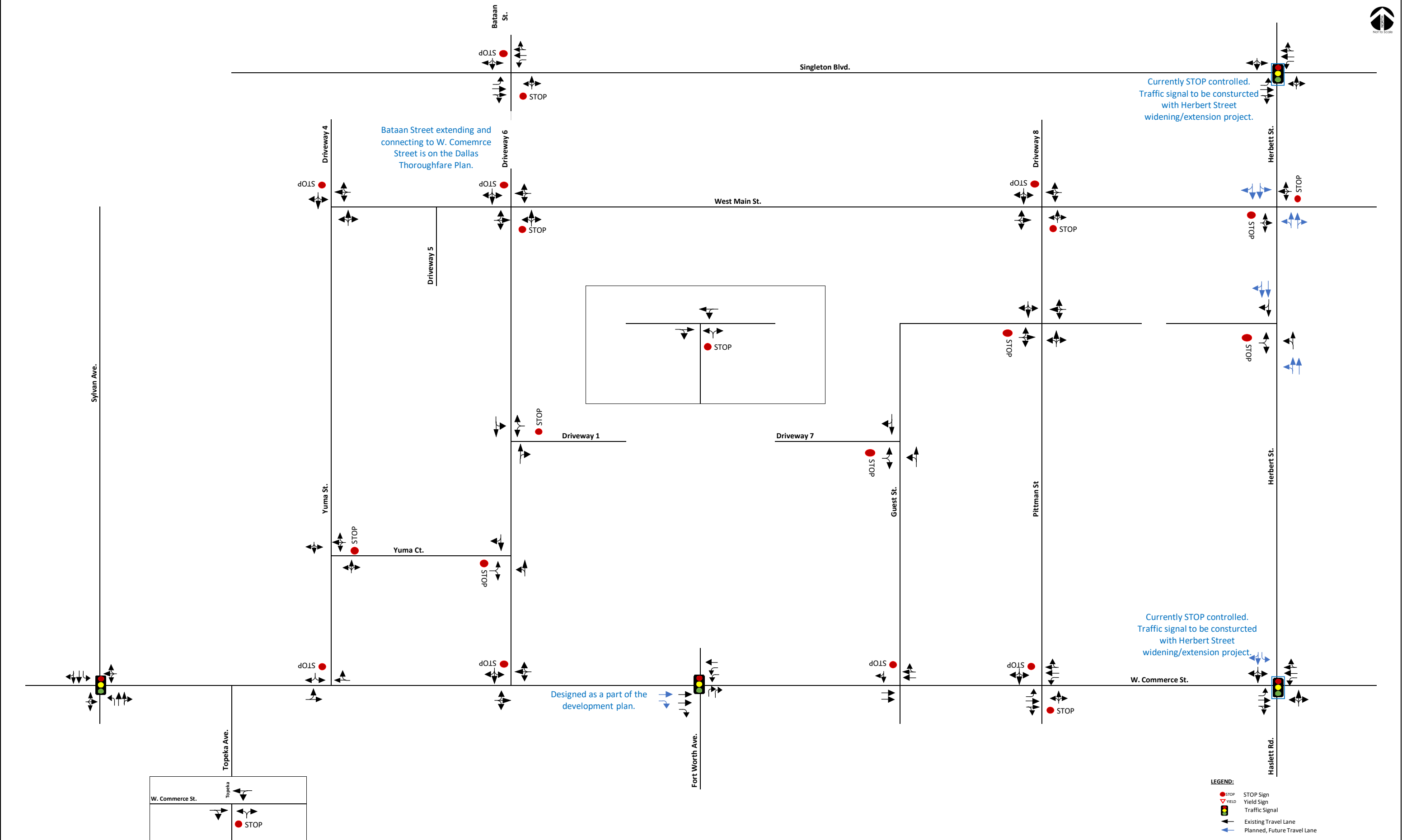
The project includes the following roadways:

- West Commerce Street
 - Existing Cross Section:
 - East of Fort Worth Avenue - Four-lane, divided roadway
 - West of Fort Worth Avenue - Two-lane, undivided roadway
 - Speed Limit: 35 MPH
 - Thoroughfare Plan Designation:
 - East of Fort Worth Avenue – Principal Arterial
 - West of Fort Worth Avenue – Community Collector
- West Main Street
 - Existing Cross Section: Two-lane, undivided roadway
 - Speed Limit: Not posted (assume 30 MPH for TIA)
 - Thoroughfare Plan Designation: Local Roadway, not designated on the thoroughfare plan

- Herbert Street
 - Existing Cross Section: Two-lane, undivided roadway north of Broadway Avenue
 - Speed Limit: Not posted (assume 30 MPH for TIA)
 - Thoroughfare Plan Designation: Community Collector, shown as a two-lane, undivided roadway, but being designed as a four-lane, undivided roadway with on-street parking on both sides
- Haslett Street
 - Existing Cross Section: Two-lane, undivided roadway south of W. Commerce Street
 - Speed Limit: Not posted (assume 30 MPH for TIA)
 - Thoroughfare Plan Designation: Local Road, not designated on the thoroughfare plan
- Bataan Street
 - Existing Cross Section: Two-lane, undivided roadway currently beginning south of Fabrication Street and extending to the north
 - Speed Limit: Not posted (assume 30 MPH for TIA)
 - Thoroughfare Plan Designation: Community Collector, two-lane, undivided, shown to extend south from Fabrication Street, cross the railroad tracks, and connect with W. Commerce Street. Proposed thoroughfare amendment removes the southern portion of Bataan Street from the thoroughfare plan.
- Beaver Street
 - Existing Cross Section: Two-lane, undivided roadway south of W. Main Street
 - Speed Limit: Not posted (assume 30 MPH for TIA)
 - Thoroughfare Plan Designation: Local Road, not designated on the thoroughfare plan
- Fort Worth Avenue
 - Existing Cross Section: Six-lane, divided roadway
 - Speed Limit: 35 MPH
 - Thoroughfare Plan Designation: Principal Arterial
- Yuma Street
 - Existing Cross Section: Two-lane, undivided roadway
 - Speed Limit: Not posted (assume 30 MPH for TIA)
 - Thoroughfare Plan Designation: Local Road, not designated on the thoroughfare plan
- Pittman Street
 - Existing Cross Section: Two-lane, undivided roadway
 - Speed Limit: Not posted (assume 30 MPH for TIA)
 - Thoroughfare Plan Designation: Local Road, not designated on the thoroughfare plan
- Singleton Boulevard
 - Existing Cross Section: Four-lane, undivided roadway
 - Speed Limit: 30 MPH
 - Thoroughfare Plan Designation: Principal Arterial
- Sylvan Avenue
 - Existing Cross Section: Four-lane, divided roadway
 - Speed Limit: 30 MPH
 - Thoroughfare Plan Designation: Principal Arterial

Bicycle Facilities

There are dedicated bike lanes on Sylvan Avenue, one in each direction.



- LEGEND:**
- STOP Sign
 - ▼ YIELD Sign
 - 🚦 Traffic Signal
 - ↔ Existing Travel Lane
 - ↔ Planned, Future Travel Lane

Exhibit 3. Existing and Planned Roadway Geometry

THOROUGHFARE AMENDMENT

Thoroughfare Plan Summary

An application has been submitted to the City of Dallas to amend the Bataan Street alignment shown on the Thoroughfare Plan. As shown in **Figure 1**, the thoroughfare plan currently includes three extensions across the Union Pacific Railroad, each shown as a two-lane roadway:

1. Bataan Street
2. Herbert Street
3. Amonette Street



Figure 1. Dallas Thoroughfare Plan Excerpt

Current Plans

The City is in the process of designing the Herbert Street extension, and construction is expected to begin in December 2022 and complete in December 2024. The railroad denied request for additional crossings, and it is our understanding the current railroad personnel does not intend to approve an additional crossing.

Although the Herbert Street extension is a two-lane roadway on the thoroughfare plan, it is being designed as a four-lane roadway from W. Commerce Street to Singleton Boulevard and includes traffic signals at Singleton Boulevard and W. Commerce Street. Muncie Avenue is being constructed as a local roadway to extend from Parva Avenue and connect with Amonette Street. Amonette Street will be extended to the south to connect with Muncie Street. The planned improvements are illustrated in **Figure 2**.

It is our understanding a traffic analysis was not conducted to determine whether Herbert Street needed to be a four-lane road, but since no time frame has been designated yet for constructing the Bataan Street and Amonette Street connections, Herbert Street is being constructed wider to account for additional traffic that would have potentially used the future Bataan Street or Amonette Street extensions to cross the railroad.

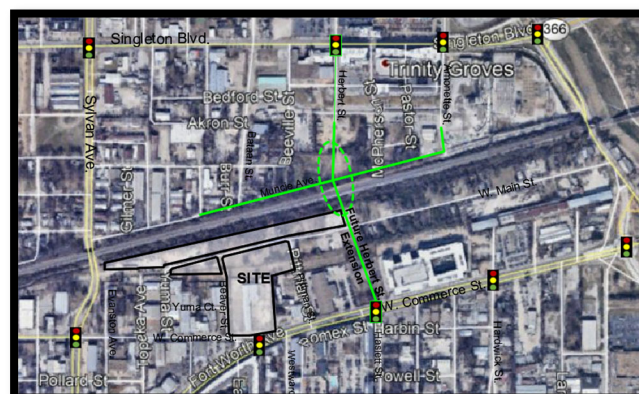


Figure 2. Herbert Street and Muncie Street Planned Improvements (Estimated to be complete in December 2024)

Proposed Amendment

On the Thoroughfare Plan, it can be seen that the current location of Beaver Street, south of West Main Street, follows generally parallel to the intended location of the Bataan Street extension, which is slightly to the east, as shown as a green line in **Figure 3**. If the Bataan Street extension is built and crosses under the railroad at some point in the future, it is our understanding it would tie into the existing Beaver Street, through the site.

However, if The Park at West Main donates right-of-way for the future Bataan Street connection and it is never extended, then there would be undevelopable green space that would not be used to best connect with the development. This study evaluates the need for the Bataan Street connection under the railroad.



Figure 3. Bataan Street and Beaver Street Comparison

As will be shown, the currently planned Herbert Street extension is more than adequate to serve the West Dallas area, even considering the upcoming future development and redevelopment of the area. Therefore, amending the Thoroughfare Plan so that Bataan Street does not cross the railroad tracks will not be a hinderance to traffic flow for the overall area and will allow The Park at West Main site to fully develop this portion of land and tie it into the development as opposed to having a section of land dedicated for right-of-way but not potentially used due to the extreme cost of crossing under the railroad tracks.

Figure 4 illustrates the thoroughfare amendment request which is supported by this TIA.

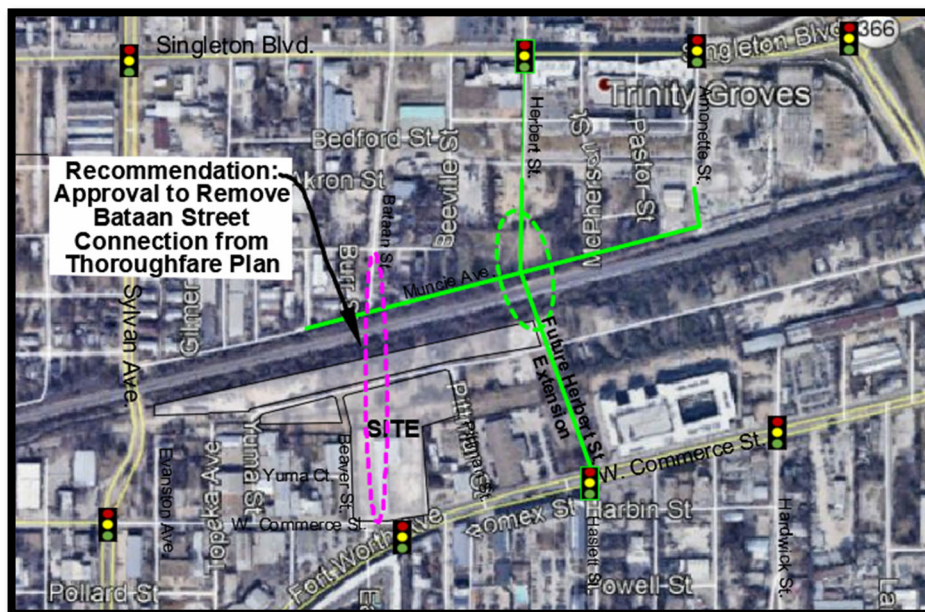


Figure 4. Proposed Bataan Street Thoroughfare Amendment (Remove Connection Across Railroad)

TRAFFIC VOLUMES

Existing Traffic Volumes

Intersection turning-movement volumes and roadway link traffic volumes were collected on Thursday, October 29, 2020, from 7:00 to 9:00 AM and from 4:00 to 6:00 PM. Year 2020 traffic volumes are presented in **Exhibit 5**. Detailed data sheets are provided in the **Appendix**.

Traffic volumes were lower in 2020 than in typical years due to COVID-19. Therefore, year 2019 traffic volumes were obtained for the Sylvan Avenue/W. Commerce Street intersection and compared to determine typical year 2020 traffic volumes. The 2020 existing traffic volumes were grown by 40% during the AM peak hour and 10% during the PM peak hour to represent typical traffic volumes.

The existing traffic volumes are summarized in **Exhibit 5**, and the adjusted traffic volumes are summarized in **Exhibit 6**.

Background (No-Build) Traffic Volumes

Growth Factor

Historical traffic volume data were obtained from TxDOT's online traffic counts¹, which show relatively stable growth in the area. However, the area is being intensely redeveloped. A 2% annual growth rate was used for this analysis. The TxDOT historical volumes are provided in the **Appendix**.

Projected Traffic for "Additional Developments"

In order to thoroughly evaluate the Bataan Street thoroughfare amendment, properties which may use the potential Bataan Street connection were evaluated for sites that could be considered for re-development. To determine areas that are candidates for redevelopment, site visits were conducted, TIAs for other projects were provided by the City, and the West Dallas Urban Structure and Guidelines Guidebook² subdistrict plan was used. A map depicting the properties included in this TIA as "additional developments" is provided in **Exhibit 4**.

Development plans for Toll Brothers, Trinity Groves Gateway Tower, Trinity Groves Brewery, and other nearby sites were obtained, and traffic was projected for these sites using ITE *Trip Generation Manual*, 10th Edition. To account for mixed-use, dense urban environment, a 30% internal capture reduction was applied for the office towers.

For areas for which building programs were not obtained, development programs were created based on descriptions of the areas in the West Dallas Urban guidebook and similar developments in the area. Development programs were created for each sub-district area and traffic was generated "per acre" of development. An internal capture rate of 10% in AM and 30% in PM was applied to each area.

The "additional developments" considered in this study include approximately 2,600 residential units, 2,400,000 SF office, and nearly 100,000 SF of retail/restaurant. A detailed development program and trip generation data are provided in the **Appendix**.

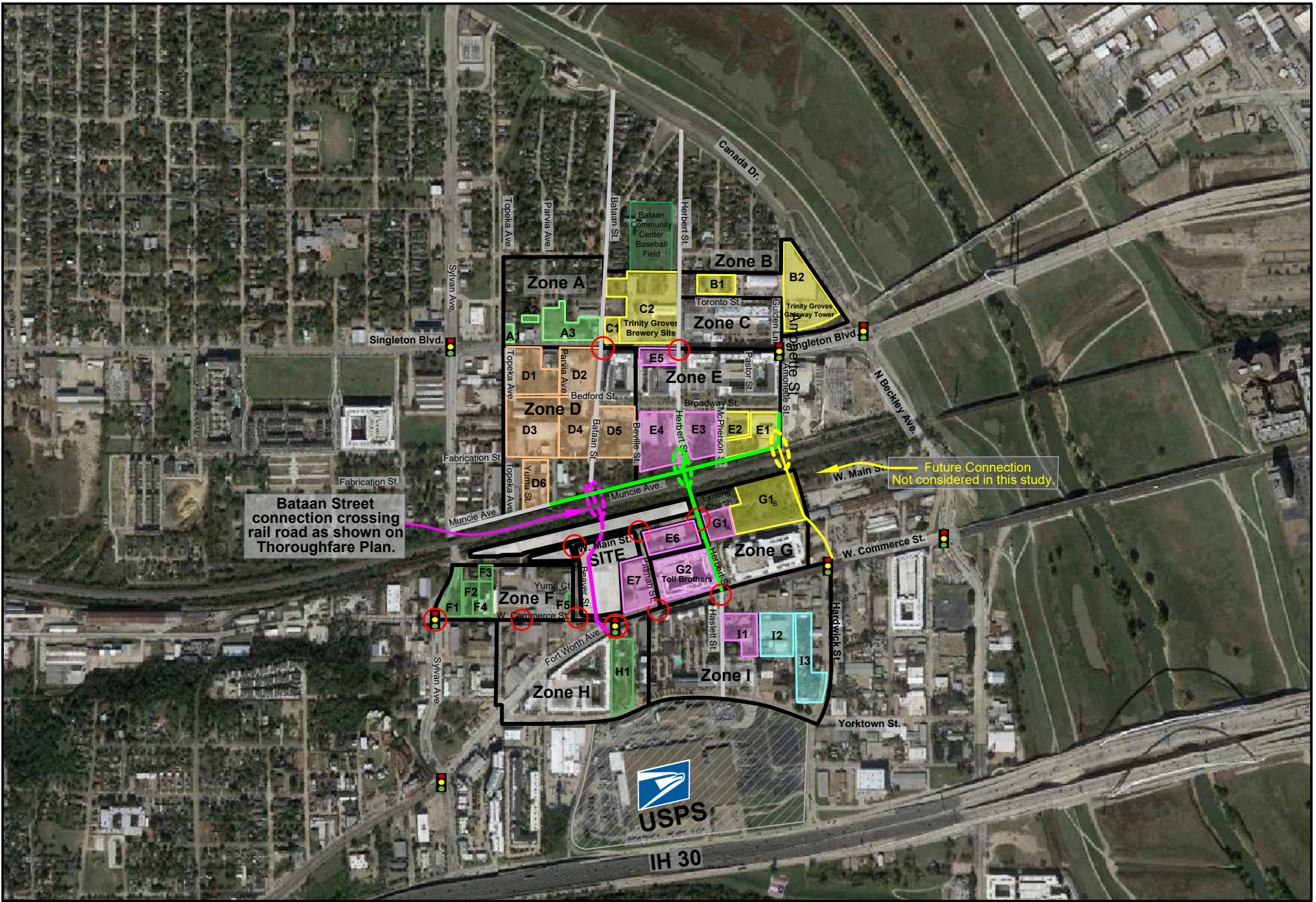
¹ Texas Department of Transportation Planning and Programming Division's Statewide Traffic Analysis and Reporting System II, <https://txdot.ms2soft.com/tcds/tsearch.asp?loc=Txdot&mod=>. Accessed November 2020.

² https://dallascityhall.com/departments/citydesignstudio/DCH%20Documents/pdf/WD_UrbanStructure_guidebook-eng.pdf

Background Traffic Volumes

Traffic forecasts were developed for the year 2027 no-build scenario by applying the 2% annual growth rate to the adjusted existing traffic volumes and adding projected traffic for other future developments, illustrated in **Exhibit 7** and **Exhibit 8**.

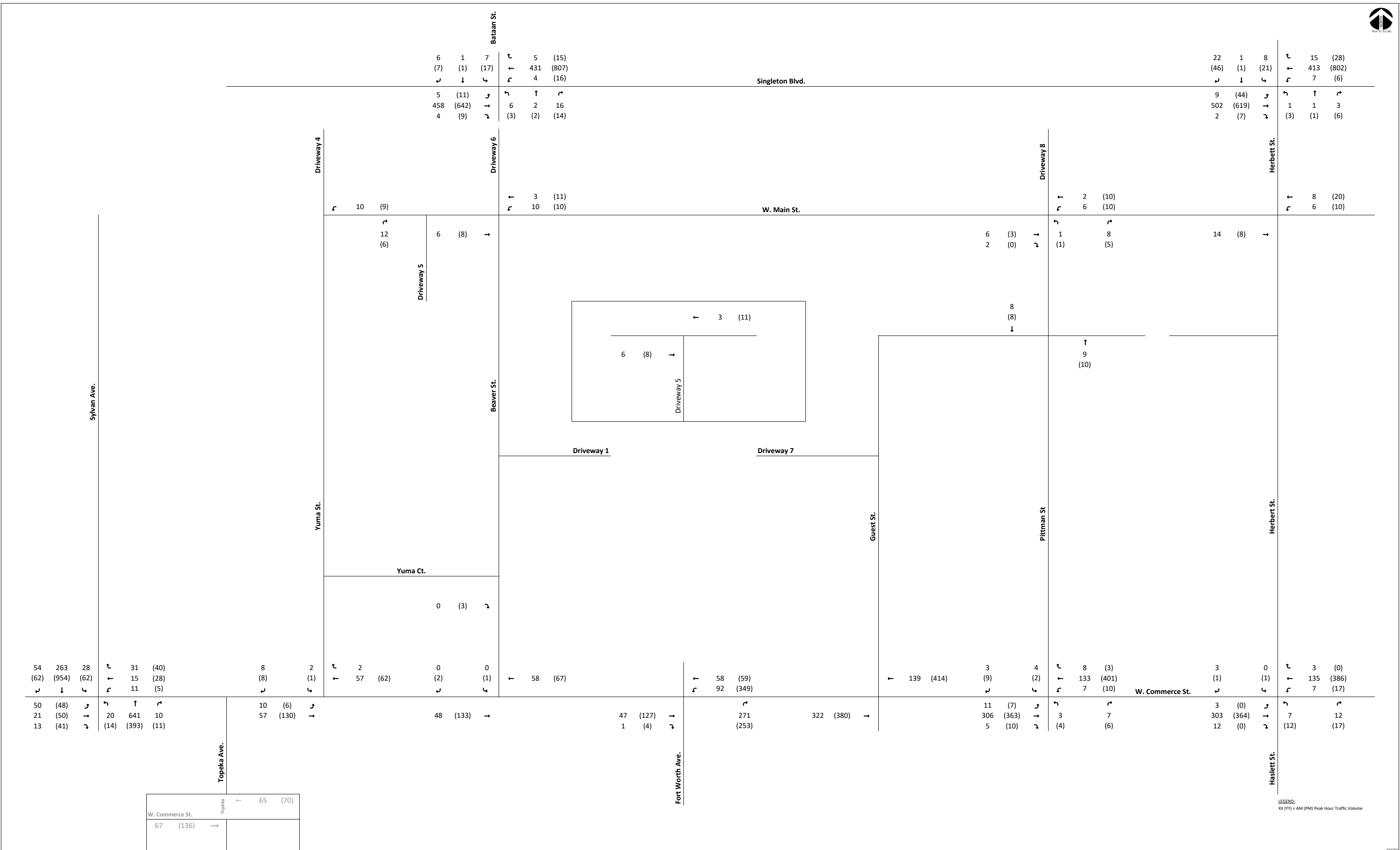
A five-year horizon scenario was also considered. Year 2032 background (no-build) volumes were determined by increasing the background traffic using the 2% annual growth rate and adding the projected traffic for other future developments. The 2032 volumes are shown in **Exhibit 9** and **Exhibit 10**.



Bataan Street connection crossing rail road as shown on Thoroughfare Plan.

Future Connection Not considered in this study.

- : La Bajada
- : Trinity Point
- : Commerce West
- : Study Intersection
- : Singleton
- : Herbert Street
- : Yorktown
- : Traffic Signals



LEGEND:
XX (YY) = AM (PM) Peak Hour Traffic Volume

Exhibit 5. Year 2020 Existing Traffic Volumes (Original)

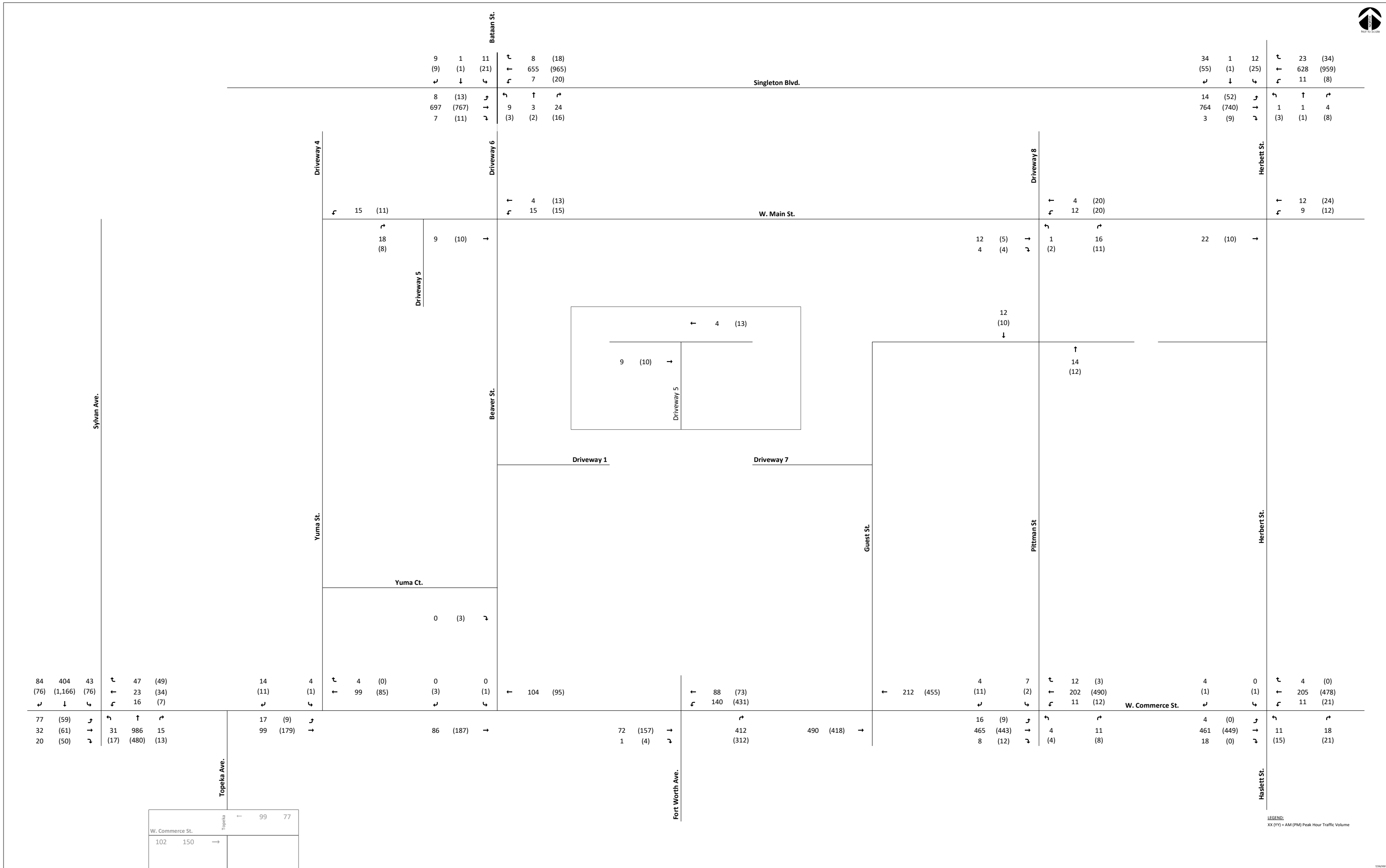
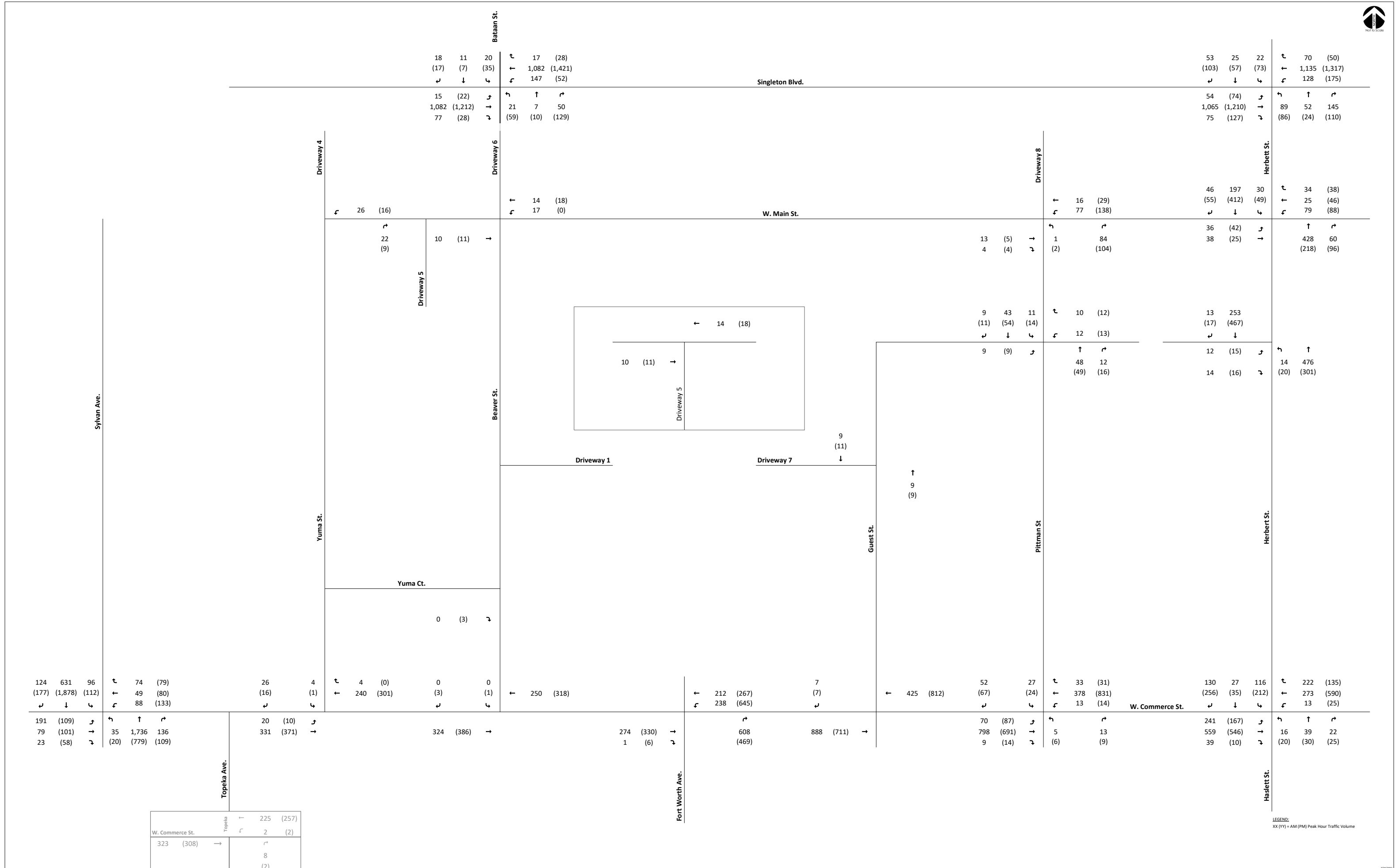


Exhibit 6. Year 2020 Existing Traffic Volumes (Adjusted for COVID-19)



124 (177)	631 (1,878)	96 (112)	↑	74 (79)	26 (16)	4 (1)	↑	4 (0)	0 (3)	0 (1)	↑	212 (267)	7 (7)	↑	425 (812)	52 (67)	27 (24)	↑	33 (31)	130 (256)	27 (35)	116 (212)	↑	222 (135)		
↓	↓	↓	↑	88 (133)	↓	↓	↑	240 (301)	↓	↓	↑	238 (645)	↓	↓	↓	↓	↓	↑	378 (831)	↓	↓	↓	↑	273 (590)		
↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻		
191 (109)	79 (101)	23 (58)	↻	35 (20)	331 (371)	20 (10)	↻	324 (386)	↻	274 (330)	1 (6)	608 (469)	888 (711)	↻	70 (87)	798 (691)	9 (14)	↻	5 (6)	241 (167)	559 (546)	39 (10)	↻	16 (20)	39 (30)	22 (25)
↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	↻	

Topoka Ave.	↑	225 (257)
W. Commerce St.	↻	2 (2)
323 (308)	→	8 (2)

LEGEND:
XX (YY) = AM (PM) Peak Hour Traffic Volume

Exhibit 7. Year 2027 Background Traffic Volumes - Without Bataan St. Connection



Driveway 6	196 (404) ↓	
Bataan St.		↑ 334 (162)

107 (143)	544 (1,710)	93 (112)	↑	75 (80)		26 (16)	4 (1)	↑	4 (0)	141 (329)	12 (45)	↑	18 (9)	232 (617)	11 (13)	↑	414 (778)	52 (67)	27 (24)	↑	33 (31)	108 (145)	38 (31)	101 (206)	↑	222 (135)	
↓	↓	↓	↑	66 (113)	176 (301)	↓	↓	↑	358 (530)	↓	↓	↑	232 (226)	212 (194)	233 (617)	850 (814)	↓	↓	↓	↑	367 (724)	168 (193)	31 (12)	206 (25)	↑	273 (590)	
↶	↶	↶	↶	176 (301)	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶	
155 (84)	84 (126)	25 (58)	↶	35 (20)	1,579 (686)	291 (201)	↶	↶	↶	↶	↶	↶	↶	232 (373)	8 (35)	611 (469)	850 (814)	↶	↶	↶	↶	↶	↶	↶	↶	↶	↶
↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	↷	

Topoka Ave.	Topoka	↑	329 (478)
W. Commerce St.	Topoka	↶	2 (2)
508 (449)	→	↶	12 (4)

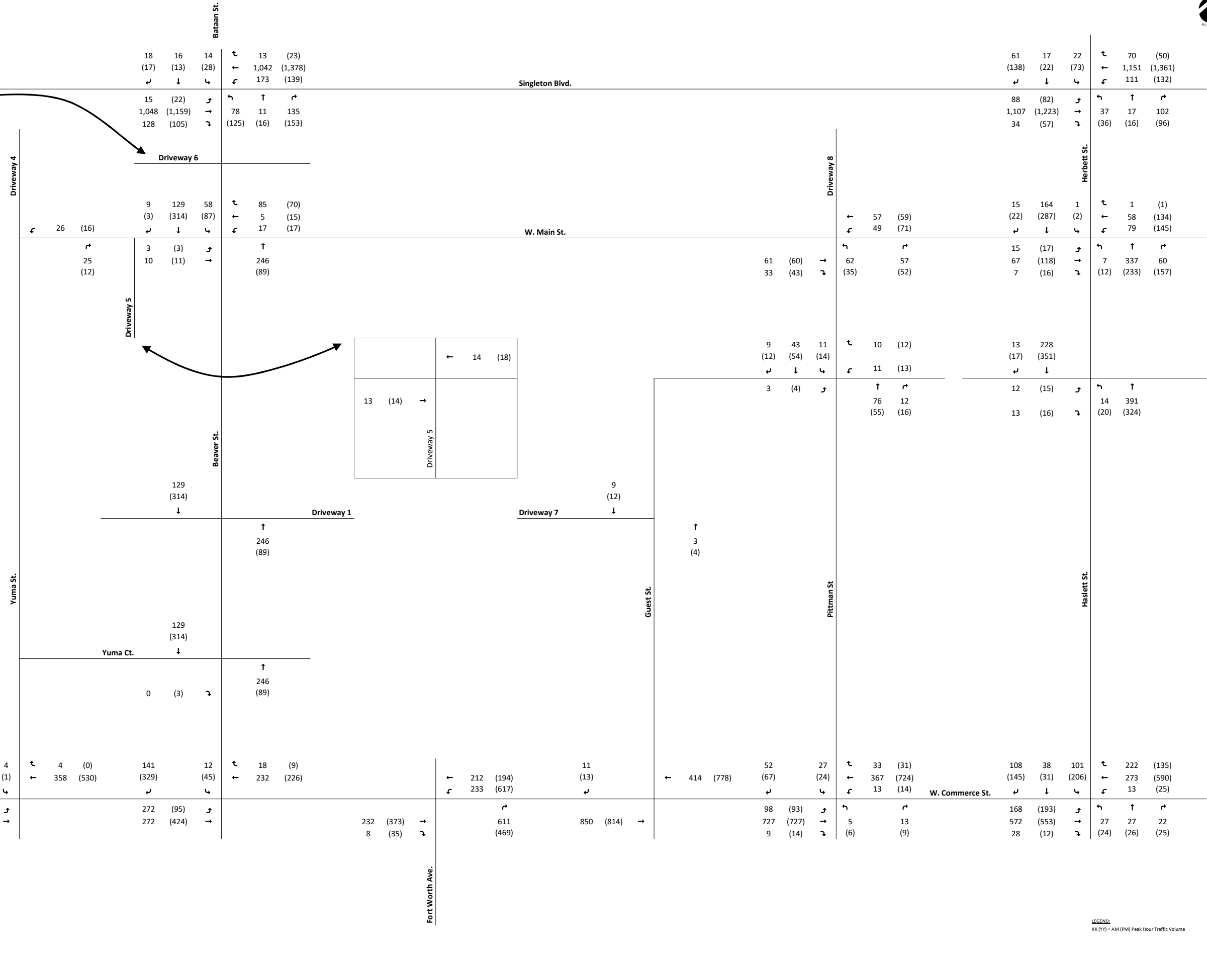


Exhibit 8. Year 2027 Background Traffic Volumes - With Bataan St. Connection

LEGEND:
XX (YY) = AM (PM) Peak Hour Traffic Volume

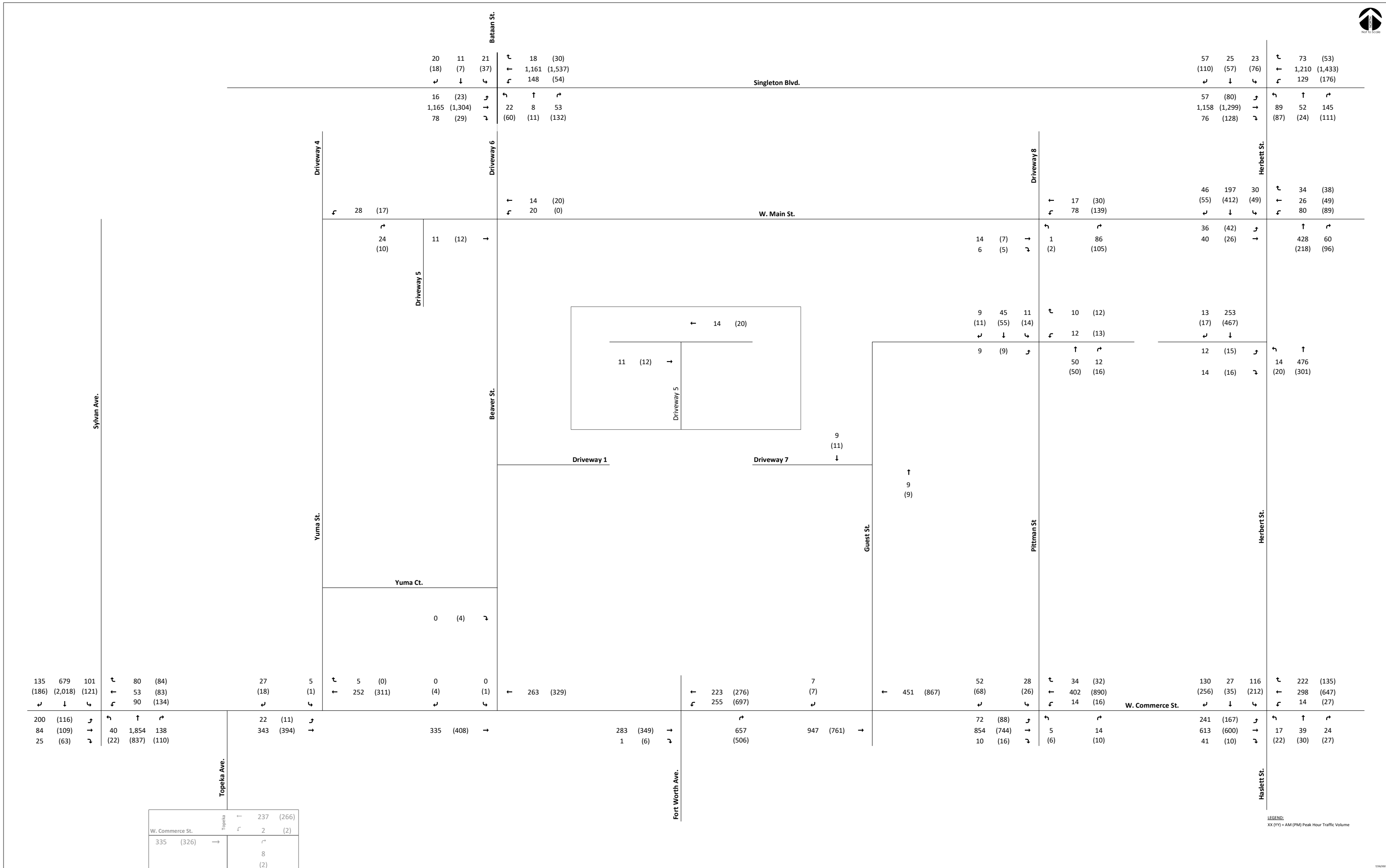
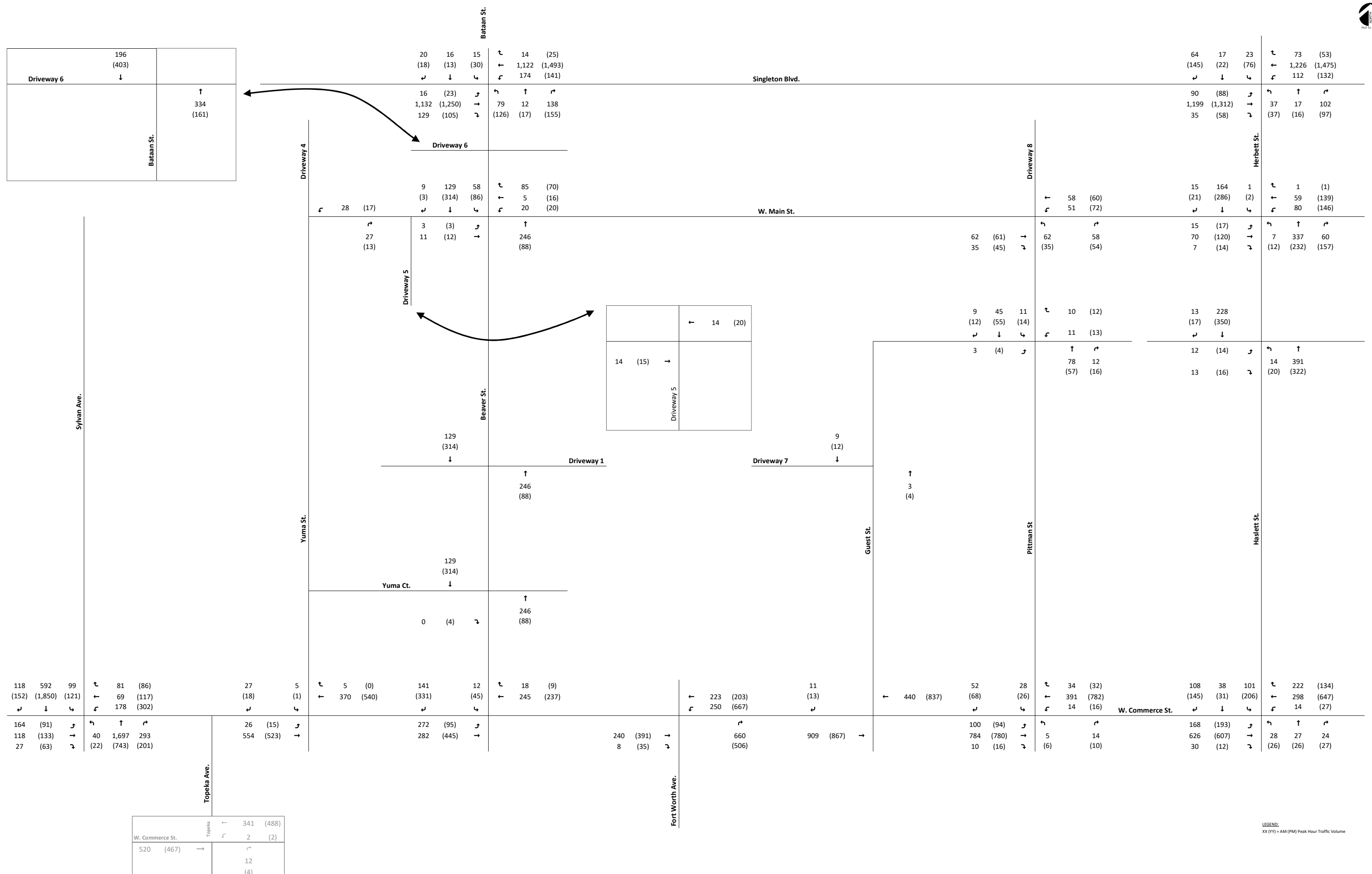


Exhibit 9. Year 2032 Background Traffic Volumes - Without Bataan St. Connection



LEGEND:
 XX (YY) = AM (PM) Peak Hour Traffic Volume

Exhibit 10. Year 2032 Background Traffic Volumes - With Bataan St. Connection

Site-Generated Traffic Volumes

Traffic generated by the development, known as trip generation, is calculated based upon methods and rates published in the *Institute of Transportation Engineers (ITE) Trip Generation Manual*, 10th Edition.

Internal capture reductions were calculated for the site’s restaurant and retail uses based upon the *National Cooperative Highway Research Report 684*.

Pass-by trips were calculated for the site based upon data from the *ITE Trip Generation Handbook*, 3rd Edition. Resulting pass-by trips were low; they will not have a significant impact on the study area and were not considered for this analysis.

The resulting trip generation is shown in **Table 2**.

Table 2. Projected Trip Generation

	Use	Quantity	Weekday	AM Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out
Block 1									
220	Multifamily Housing (Low-Rise)	24 Units	141	12	3	9	17	11	6
Block 2									
220	Multifamily Housing (Low-Rise)	28 Units	171	14	3	11	19	12	7
Block 3									
220	Multifamily Housing (Low-Rise)	23 Units	133	12	3	9	16	10	6
Block 4 v3									
220	Multifamily Housing (Low-Rise)	69 Units	481	34	8	26	42	26	16
820	Shopping Center (AM - Rate, PM - Formula)	3,483 SF	613	3	2	1	45	22	23
930	Fast Casual Restaurant	6,977 SF	2,199	14	9	5	99	54	45
Block 5									
221	Multifamily Housing (Mid-Rise)	300 Units	1,633	100	26	74	127	77	50
710	General Office	5,989 SF	69	32	28	4	8	1	7
492	Health/Fitness Club	5,989 SF	380	8	4	4	38	22	16
930	Fast Casual Restaurant	2,579 SF	813	5	3	2	36	20	16
Block 6									
220	Multifamily Housing (Low-Rise)	40 Units	262	20	5	15	26	16	10
Total:			6,894	254	94	160	473	271	202
Internal Capture (AM = 9%, PM = 29%):			--	24	12	12	138	69	69
Trips to Site:			6,894	230	82	148	335	202	133

The site-generated traffic was distributed through the study area based upon existing traffic volumes, roadway configurations, and study area. The overall distribution, as well as the traffic assignment to individual site access points, is shown in the **Appendix**.

The resulting site-related traffic volumes are shown in **Exhibit 11**, considering the distribution without the Bataan Street extension, and in **Exhibit 12**, considering the Bataan Street extension in place.

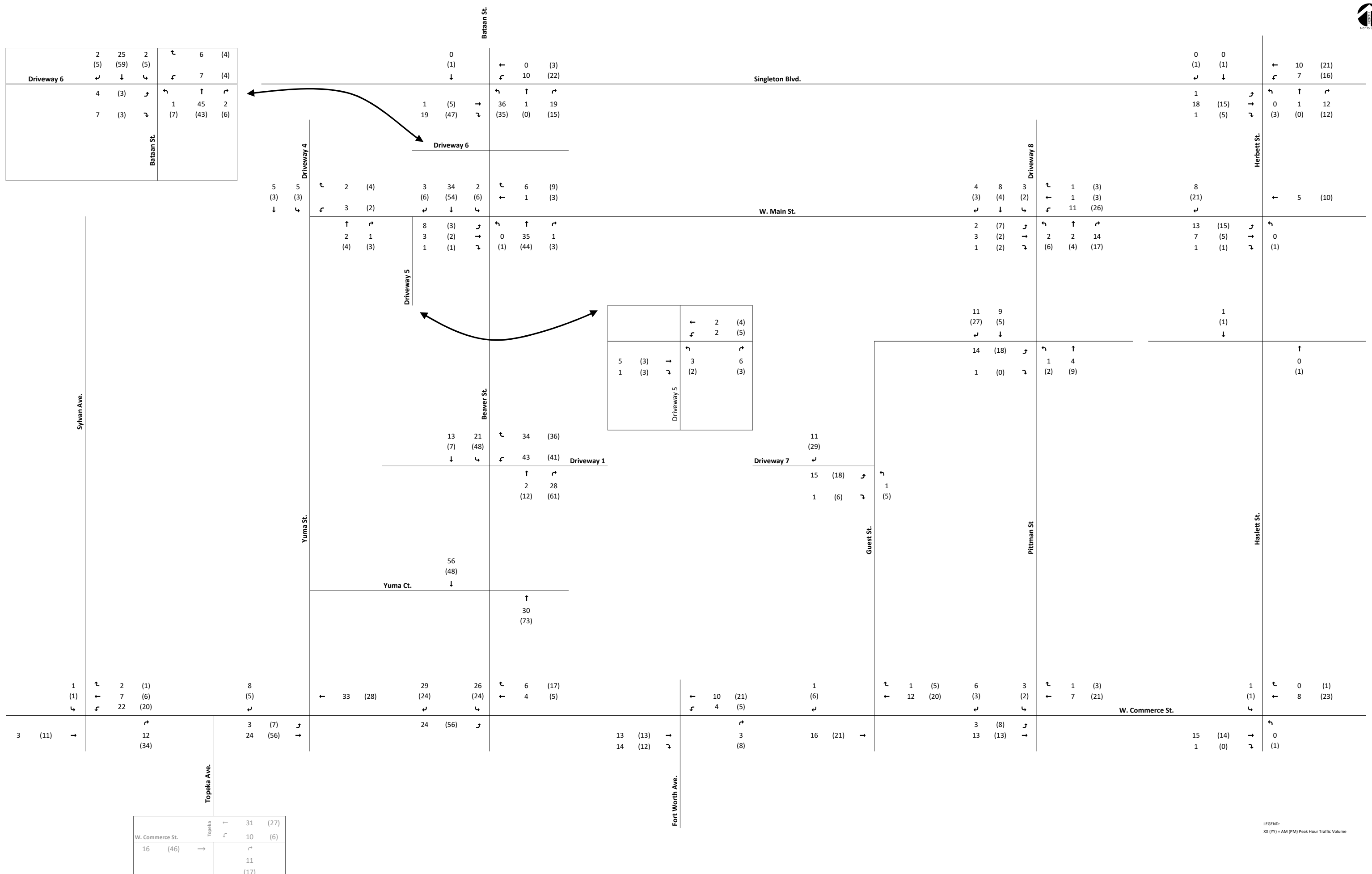
Background-Plus-Site (Build) Traffic Volumes

Background-plus-site (build) traffic forecasts were developed for each analysis scenario by adding the projected traffic generated by the proposed development to the 2027 and 2032 background (no-build) volumes. The resulting background-plus-site volumes are summarized in **Exhibit 13** through **Exhibit 16**.



Driveway 6	2 (5)	25 (59)	2 (5)	↖	6 (4)
	↗	↘	↙	7 (4)	
	4 (3)	↗	↖	1 (7)	45 (43)
	7 (3)	↘	↙	2 (6)	

W. Commerce St.	Topoka	↑	31 (27)
	↖	10 (6)	
	16 (46)	→	↗
			11 (17)



LEGEND:
XX (YY) = AM (PM) Peak Hour Traffic Volume

Exhibit 12. Site Traffic Volumes - With Bataan Connection



124 631 116 (177) (1,878) (164) ↻ ↓ ↻			110 (118) ↑ 57 (87) ↻ 112 (156)			56 (33) ↻ 4 (1)			4 (0) ↑ 300 (370) ↻ 46 (60)			32 (27) ↻ 0 (3)			6 (17) ↑ 267 (332)			230 (294) ↻ 243 (655)			8 (13) ↑ 435 (827)			57 (69) ↻ 29 (27)			33 (33) ↑ 390 (859) ↻ 13 (14)			130 (256) 27 (35) 125 (216)			223 (139) ↑ 285 (619) ↻ 13 (25)		
191 (109) 82 (113) 23 (58)			35 (20) ↑ 1,736 (779) ↻ 149 (143)			30 (41) 380 (493)			51 (126) 324 (386)			288 (346) 13 (12)			609 (471) 904 (726)			71 (89) 812 (708) 9 (14)			5 (6) 13 (9)			241 (167) 574 (564) 40 (10)			16 (21) 39 (30) 22 (25)								
124 631 116 (177) (1,878) (164) ↻ ↓ ↻			110 (118) ↑ 57 (87) ↻ 112 (156)			56 (33) ↻ 4 (1)			4 (0) ↑ 300 (370) ↻ 46 (60)			32 (27) ↻ 0 (3)			6 (17) ↑ 267 (332)			230 (294) ↻ 243 (655)			8 (13) ↑ 435 (827)			57 (69) ↻ 29 (27)			33 (33) ↑ 390 (859) ↻ 13 (14)			130 (256) 27 (35) 125 (216)			223 (139) ↑ 285 (619) ↻ 13 (25)		
191 (109) 82 (113) 23 (58)			35 (20) ↑ 1,736 (779) ↻ 149 (143)			30 (41) 380 (493)			51 (126) 324 (386)			288 (346) 13 (12)			609 (471) 904 (726)			71 (89) 812 (708) 9 (14)			5 (6) 13 (9)			241 (167) 574 (564) 40 (10)			16 (21) 39 (30) 22 (25)								
124 631 116 (177) (1,878) (164) ↻ ↓ ↻			110 (118) ↑ 57 (87) ↻ 112 (156)			56 (33) ↻ 4 (1)			4 (0) ↑ 300 (370) ↻ 46 (60)			32 (27) ↻ 0 (3)			6 (17) ↑ 267 (332)			230 (294) ↻ 243 (655)			8 (13) ↑ 435 (827)			57 (69) ↻ 29 (27)			33 (33) ↑ 390 (859) ↻ 13 (14)			130 (256) 27 (35) 125 (216)			223 (139) ↑ 285 (619) ↻ 13 (25)		
191 (109) 82 (113) 23 (58)			35 (20) ↑ 1,736 (779) ↻ 149 (143)			30 (41) 380 (493)			51 (126) 324 (386)			288 (346) 13 (12)			609 (471) 904 (726)			71 (89) 812 (708) 9 (14)			5 (6) 13 (9)			241 (167) 574 (564) 40 (10)			16 (21) 39 (30) 22 (25)								

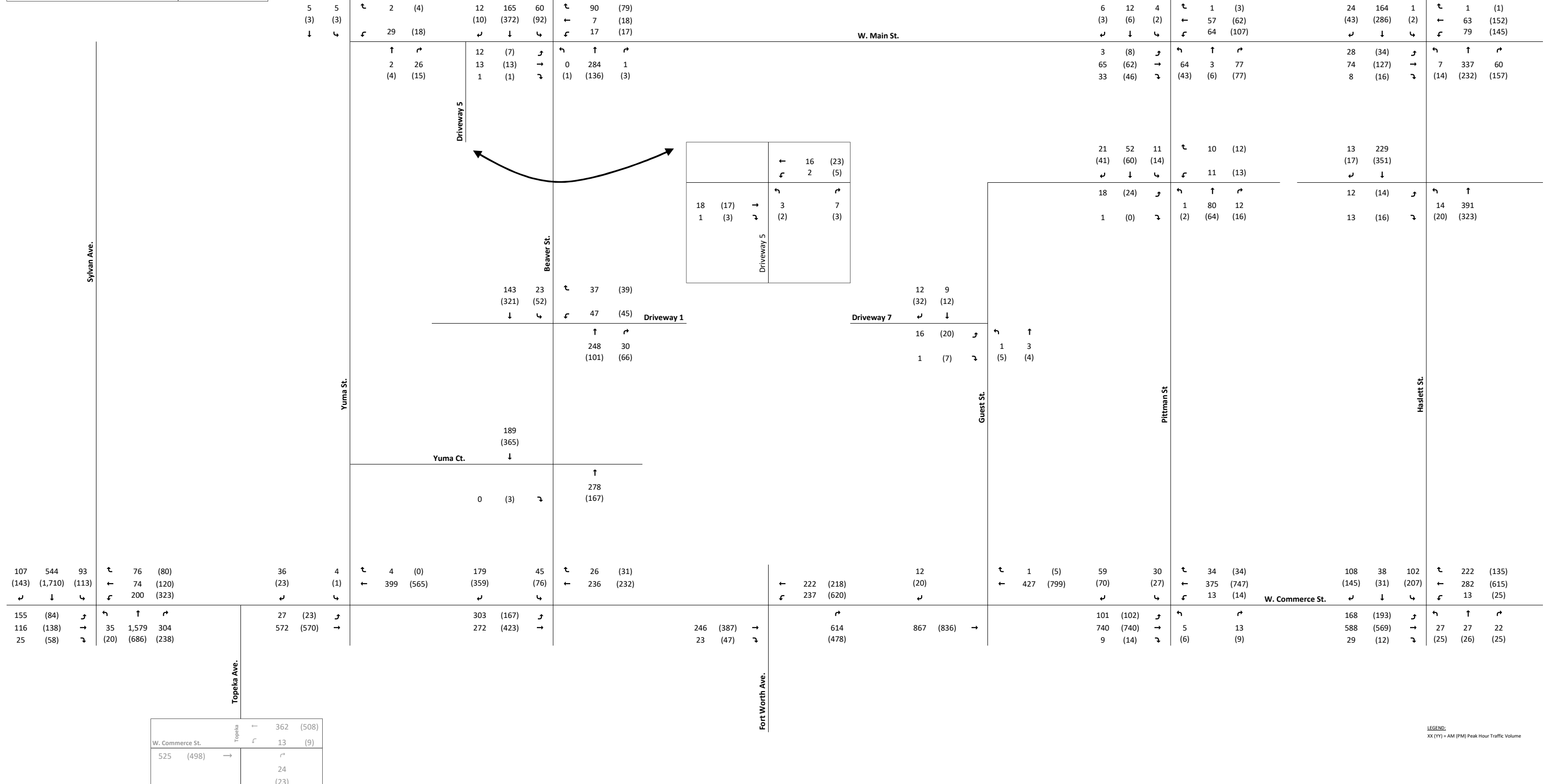
Topoka Ave.	↻	292 (318)
W. Commerce St.	↻	14 (9)
360 (397)	→	23 (35)

LEGEND:
 XX (YY) = AM (PM) Peak Hour Traffic Volume

Exhibit 13. Year 2027 Background-Plus-Site Traffic Volumes - Without Bataan St. Connection



Driveway 6	2	223	2	↖	7	(4)
	(5)	(467)	(5)	↙	8	(4)
	4	(3)	↘	↖	↑	↗
	8	(3)	↙	1	383	2
				(8)	(208)	(7)



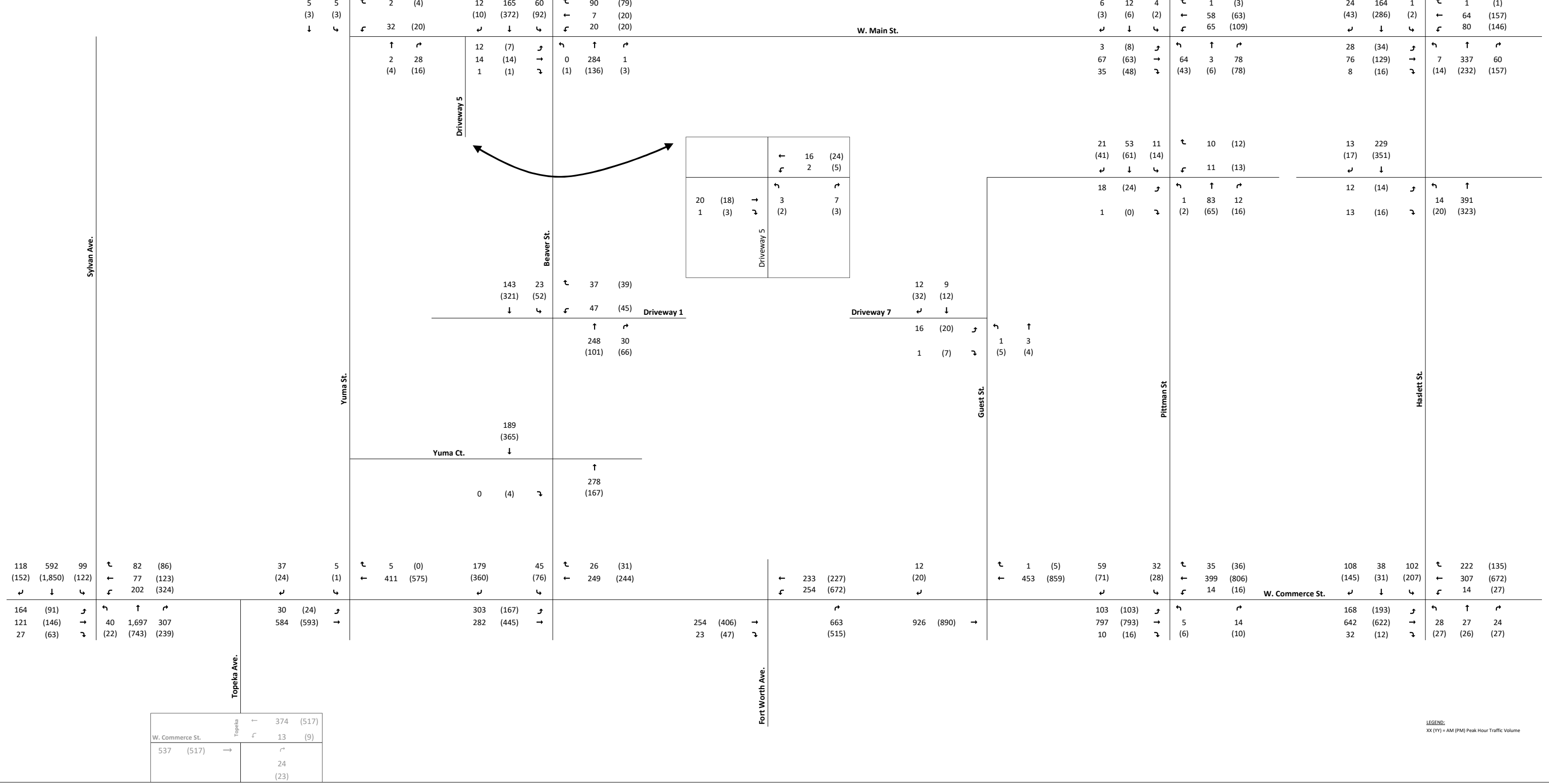
W. Commerce St.	Topoka	↑	362	(508)
		↖	13	(9)
525	(498)	→	↗	
			↖	24
				(23)

LEGEND:
XX (YY) = AM (PM) Peak Hour Traffic Volume

Exhibit 14. Year 2027 Background-Plus-Site Traffic Volumes - Without Bataan St. Connection



	2	223	2	↖	7	(4)
	(5)	(467)	(5)	↘	8	(4)
Driveway 6	↖	↘	↙	↗	↖	↗
	4	(3)	↗	↖	↑	↗
	8	(3)	↘	↖	1	383
					(8)	(208)
					2	(7)



	Topoka	↖	374	(517)
W. Commerce St.	↖	↗	13	(9)
537	(517)	→	↖	24
			↗	(23)

LEGEND:
 XX (YY) = AM (PM) Peak Hour Traffic Volume

Exhibit 16. Year 2027 Background-Plus-Site Traffic Volumes - Without Bataan St. Connection

TRAFFIC IMPACT ANALYSIS

Intersection Capacity Analysis – Methodology

Intersection capacity analysis was conducted for the study intersections following the guidelines contained in the *Highway Capacity Manual*. Intersections are assigned a “level of service” (LOS) letter grade for the peak hour of traffic based upon the number of lanes at the intersection, traffic volumes, and traffic control. Level of Service A (LOS A) represents light traffic flow (free-flow conditions) while LOS F represents heavy traffic flow (over-capacity conditions). LOS D is typically considered acceptable in the region. Individual movements are also assigned LOS grades. It is important to note that one or more individual movement(s) typically operate at LOS F when the overall intersection is operating at LOS D.

The following table summarizes the LOS criteria for signalized and unsignalized intersections as defined in the *Highway Capacity Manual*, 6th Edition.

Intersection LOS Criteria

	Signalized Intersection Average Total Delay (Seconds/Vehicle)	Unsignalized Intersection Average Total Delay (Seconds/Vehicle)
LOS A	≤ 10	≤ 10
LOS B	>10 - ≤20	>10 - ≤15
LOS C	>20 - ≤35	>15 - ≤25
LOS D	>35 - ≤55	>25 - ≤35
LOS E	>55 - ≤80	>35 - ≤50
LOS F	>80	>50

Obtained from Highway Capacity Manual, 6th Edition, Exhibits 19-8, 20-2, and 21-8

The LOS calculations for this analysis were conducted in accordance with the *Highway Capacity Manual*, 6th Edition, using *VISTRO*. Detailed *VISTRO* reports summarizing analysis data for each scenario are provided in the **Appendix**.

Intersection Capacity Analysis

The study area was analyzed considering each scenario (existing, background, and background-plus-site) to determine the projected impact that the proposed development will have on the roadway system. LOS results are based upon the existing and planned traffic control and lane configurations using the current signal timing.

The LOS results for the existing and currently planned roadway improvements are shown in **Table 3** for the signalized and unsignalized intersections and in **Table 4** for the site driveways.

Table 3. Intersection LOS Summary – Without Bataan St. Extension

Intersection #	Intersection	2020 Existing (Adjusted)		2027 Background		2027 Bkgd-Plus-Site		2032 Background		2032 Bkgd-Plus-Site			
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		
		LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)
Signalized Intersections:		Approach											
101 W. Commerce St. at Sylvan Ave.	NB	A (7.0)	A (6.4)	D (39.0)	B (13.4)	D (50.9)	B (13.7)	E (61.6)	B (13.9)	E (69.3)	B (14.2)		
	SB	A (5.7)	A (8.1)	B (16.9)	C (31.8)	B (18.9)	C (31.8)	B (18.3)	D (45.5)	B (19.4)	D (44.7)		
	EB	D (45.0)	D (44.4)	D (45.5)	D (49.8)	D (47.0)	E (55.1)	D (46.6)	E (58.2)	D (53.7)	E (67.1)		
	WB	D (42.5)	D (41.2)	C (32.4)	E (78.6)	C (33.9)	F (152.9)	C (31.4)	F (83.5)	C (34.6)	F (163.8)		
	Overall	B (11.1)	B (12.1)	C (33.4)	C (32.3)	D (40.9)	D (40.6)	D (46.9)	D (41.5)	D (52.1)	D (49.7)		
102 W. Commerce St. at Fort Worth Ave.	SB	D (42.8)	C (25.0)	D (47.0)	C (26.5)	D (46.6)	C (26.7)	D (47.0)	C (26.8)	D (46.2)	C (27.0)		
	EB	A (2.2)	A (3.5)	A (2.6)	A (3.8)	A (2.7)	A (3.8)	A (2.7)	A (3.8)	A (2.8)	A (3.8)		
	WB	A (2.1)	A (3.7)	A (2.6)	A (4.5)	A (2.7)	A (4.5)	A (2.7)	A (4.6)	A (2.9)	A (4.6)		
	Overall	A (6.3)	A (7.1)	B (11.8)	A (8.6)	B (12.3)	A (8.8)	B (11.5)	A (8.7)	B (12.0)	A (8.9)		
Unsignalized Intersections:		Approach											
201 W. Commerce St. at Yuma St.	SB	A (9.1)	A (8.9)	B (10.2)	B (10.2)	B (10.7)	B (11.0)	B (10.4)	B (10.3)	B (10.9)	B (11.0)		
	EBL	A (7.5)	A (7.4)	A (7.8)	A (7.9)	A (7.9)	A (8.1)	A (7.8)	A (7.9)	A (8.0)	A (8.2)		
202 W. Commerce St. at Beaver St.	SB	A (9.2)	A (9.1)	B (11.0)	B (12.0)	B (12.2)	B (13.8)	B (11.2)	B (12.2)	B (12.4)	B (14.1)		
	EBL	A (7.4)	A (7.4)	A (7.7)	A (7.9)	A (7.9)	A (8.2)	A (7.8)	A (7.9)	A (7.9)	A (8.3)		
203 W. Commerce St. at Pittman St.	NB	B (11.5)	B (12.0)	C (15.9)	C (19.8)	C (16.2)	C (20.5)	C (16.6)	C (21.1)	C (17.0)	C (21.8)		
	SB	B (11.2)	B (11.4)	B (14.6)	C (22.1)	B (14.9)	C (24.4)	C (15.4)	D (25.5)	C (15.8)	D (28.0)		
	EBL	A (7.7)	A (8.4)	A (8.4)	B (10.2)	A (8.4)	B (10.4)	A (8.4)	B (10.6)	A (8.5)	B (10.7)		
	WBL	B (10.2)	B (10.2)	B (12.6)	B (11.8)	B (12.7)	B (11.9)	B (13.1)	B (12.3)	B (13.2)	B (12.4)		
204 W. Commerce St. at Herbert St./Haslett St.	NB	B (11.9)	B (12.6)	F (86.5)	F (118.8)	F (94.3)	F (148.8)	F (113.5)	F (201.3)	F (124.7)	F (267.6)		
	SB	A (9.6)	B (12.8)	F (96.4)	F (>300)	F (125.7)	F (>300)	F (134.4)	F (>300)	F (175.4)	F (>300)		
	EBL	A (7.7)	A (8.3)	A (9.4)	B (10.1)	A (9.4)	B (10.3)	A (9.5)	B (10.4)	A (9.6)	B (10.6)		
	WBL	B (10.3)	B (10.2)	B (11.0)	B (10.9)	B (11.2)	B (11.0)	B (11.4)	B (11.3)	B (11.6)	B (11.4)		
205 Singleton Blvd. at Bataan St.	NB	C (17.5)	C (20.2)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)		
	SB	C (20.8)	E (47.1)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)		
	EBL	A (8.9)	B (10.3)	B (10.9)	B (13.2)	B (10.9)	B (13.2)	B (11.3)	B (14.1)	B (11.3)	B (14.2)		
	WBL	A (9.1)	A (9.4)	B (13.0)	B (12.1)	B (13.0)	B (12.2)	B (13.8)	B (12.8)	B (13.8)	B (12.9)		
206 Singleton Blvd. at Herbert St.	NB	C (18.2)	C (24.4)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)		
	SB	C (16.4)	E (37.5)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)		
	EBL	A (8.9)	B (10.6)	B (11.9)	B (13.5)	B (11.9)	B (13.5)	B (12.5)	B (14.8)	B (12.5)	B (14.8)		
	WBL	A (9.3)	A (9.3)	B (12.5)	C (15.7)	B (12.8)	C (17.3)	B (13.3)	C (17.1)	B (13.7)	C (19.2)		
209 W. Main St. at Beaver St./Driveway 6	NB	--	--	--	--	A (8.6)	A (8.7)	--	--	A (8.6)	A (8.7)		
	SB	--	--	--	--	A (9.0)	A (9.0)	--	--	A (9.0)	A (9.0)		
	EBL	--	--	--	--	A (7.3)	A (7.3)	--	--	A (7.3)	A (7.3)		
	WBL	--	--	--	--	A (7.3)	A (7.3)	--	--	A (7.3)	A (7.3)		
211 W. Main St. at Pittman St.	NB	A (8.5)	A (8.5)	A (8.7)	A (8.8)	A (8.9)	A (9.3)	A (8.7)	A (8.8)	A (9.0)	A (9.4)		
	SB	--	--	--	--	B (11.2)	B (14.2)	--	--	B (11.2)	B (14.4)		
	EBL	--	--	--	--	A (7.3)	A (7.4)	--	--	A (7.3)	A (7.4)		
	WBL	A (7.3)	A (7.3)	A (7.4)	A (7.4)	A (7.5)	A (7.6)	A (7.4)	A (7.5)	A (7.5)	A (7.6)		
213 W. Main St. at Herbet St.	NBL	--	--	A (7.7)	A (8.3)	A (7.8)	A (8.5)	A (7.7)	A (8.3)	A (7.8)	A (8.5)		
	SBL	--	--	A (8.5)	A (8.0)	A (8.5)	A (8.5)	A (8.0)	A (8.0)	A (8.5)	A (8.0)		
	EB	A (9.1)	A (9.1)	C (17.9)	C (21.9)	C (19.2)	D (26.7)	C (18.1)	C (22.2)	C (19.4)	D (27.1)		
	WB	A (9.0)	A (9.0)	C (20.0)	C (21.9)	C (20.5)	C (23.3)	C (20.3)	C (23.5)	C (20.8)	C (24.0)		
214 W. Commerce St. at Guest St.	SB	A (9.6)	B (10.5)	B (10.4)	B (12.2)	B (10.6)	B (12.6)	B (10.5)	B (12.5)	B (10.7)	B (12.9)		

- a) A, B, C, D, E, or F represents the level of service for the turning movement.
- b) The number in parenthesis is the average delay (in seconds) for the respective turning movement.
- c) When there is no turning movement in the scenario, "--" is noted.
- d) NB, SB, EB, WB = Northbound, Southbound, Eastbound, or Westbound; L, T, R = Left, Through, or Right

Table 4. LOS Summary for Site Driveways – Without Bataan St. Connection

Intersection #	Intersection	2020 Existing (Adjusted)		2027 Background		2027 Bkgd-Plus-Site		2032 Background		2032 Bkgd-Plus-Site		
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
		LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS
Unsignalized Intersections:		Approach										
207	W. Main St. at Yuma/Driveway 4	NBT	--	--	--	--	A (7.3)	A (7.3)	--	--	A (7.3)	A (7.3)
		SB	--	--	--	--	A (9.2)	A (9.1)	--	--	A (9.2)	A (9.1)
208	W. Main St. at Driveway 5	NB	--	--	--	--	A (8.7)	A (8.7)	--	--	A (8.7)	A (8.7)
		WBL	--	--	--	--	A (7.3)	A (7.3)	--	--	A (7.3)	A (7.3)
304	Beaver St. at Driveway 1	SBL	--	--	--	--	A (7.3)	A (7.5)	--	--	A (7.3)	A (7.5)
		WB	--	--	--	--	A (9.0)	A (9.3)	--	--	A (8.9)	A (9.3)
305	Guest St. at Driveway 7	NBL	--	--	--	--	A (7.3)	A (7.3)	--	--	A (7.3)	A (7.3)
		EB	--	--	--	--	A (8.8)	A (8.7)	--	--	A (8.7)	A (8.7)

Table 5. Intersection LOS Summary – With Bataan St. Connection

Intersection #	Intersection	2027 Background		2027 Bkgd-Plus-Site		2032 Background		2032 Bkgd-Plus-Site		
		AM	PM	AM	PM	AM	PM	AM	PM	
		LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS
Signalized Intersections:		Approach								
101	W. Commerce St. at Sylvan Ave.	NB	D (35.1)	B (11.6)	D (35.6)	B (12.1)	D (53.9)	B (12.8)	D (54.6)	B (13.4)
		SB	B (15.8)	B (19.2)	B (15.7)	B (19.9)	B (17.0)	C (25.5)	B (16.8)	C (26.6)
		EB	D (45.0)	D (46.8)	D (44.9)	D (47.3)	D (46.0)	D (48.1)	D (45.8)	D (48.7)
		WB	E (64.3)	F (>300)	F (91.3)	F (>300)	E (59.9)	F (>300)	F (82.6)	F (>300)
		Overall	C (34.4)	F (96.5)	D (37.9)	F (108.5)	D (45.2)	F (93.8)	D (48.0)	F (104.9)
102	W. Commerce St. at Fort Worth Ave.	SB	D (45.0)	C (27.0)	D (45.3)	C (27.2)	D (45.2)	C (27.3)	D (45.6)	C (27.6)
		EB	A (2.6)	A (3.8)	A (2.6)	A (3.8)	A (2.6)	A (3.8)	A (2.6)	A (3.9)
		WB	A (2.6)	A (4.3)	A (2.6)	A (4.4)	A (2.6)	A (4.4)	A (2.7)	A (4.4)
		Overall	B (10.4)	A (9.6)	B (11.2)	A (9.9)	B (10.3)	A (9.7)	B (11.0)	A (9.9)
Unsignalized Intersections:		Approach								
201	W. Commerce St. at Yuma St.	SB	B (11.6)	B (12.3)	B (11.9)	B (12.7)	B (12.0)	B (12.4)	B (12.3)	B (12.8)
		EBL	A (8.1)	A (8.5)	A (8.2)	A (8.7)	A (8.1)	A (8.6)	A (8.2)	A (8.7)
202	W. Commerce St. at Beaver St.	SB	B (11.4)	B (13.9)	C (15.5)	C (19.1)	B (11.6)	B (14.3)	C (15.9)	C (20.0)
		EBL	A (8.3)	A (7.9)	A (8.4)	A (8.1)	A (8.3)	A (7.9)	A (8.4)	A (8.1)
203	W. Commerce St. at Pittman St.	NB	C (15.6)	C (19.8)	C (15.9)	C (20.8)	C (16.3)	C (21.1)	C (16.6)	C (22.1)
		SB	B (14.8)	C (19.9)	C (15.3)	C (22.0)	C (15.6)	C (22.7)	C (16.3)	C (25.0)
		EBL	B (12.0)	A (9.7)	A (8.4)	A (9.9)	A (8.5)	B (10.0)	A (8.5)	B (10.2)
		WBL	B (12.0)	B (12.1)	B (12.1)	B (12.2)	B (12.5)	B (12.6)	B (12.6)	B (12.7)
204	W. Commerce St. at Herbert St./Haslett St.	NB	F (50.1)	F (111.9)	F (53.3)	F (133.8)	F (62.3)	F (183.1)	F (67.1)	F (>300)
		SB	E (36.4)	F (>300)	E (38.5)	F (>300)	E (43.3)	F (>300)	E (46.4)	F (>300)
		EBL	A (9.0)	B (10.3)	A (9.1)	B (10.4)	A (9.1)	B (10.6)	A (9.2)	B (10.8)
		WBL	B (11.1)	B (10.9)	B (11.2)	B (11.1)	B (11.5)	B (11.3)	B (11.6)	B (11.4)
205	Singleton Blvd. at Bataan St.	NB	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)
		SB	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)
		EBL	B (10.6)	B (12.8)	B (10.6)	B (12.8)	B (11.1)	B (13.7)	B (11.1)	B (13.8)
		WBL	B (13.6)	B (13.8)	B (14.1)	C (15.0)	B (14.6)	B (14.9)	C (15.2)	C (16.4)
206	Singleton Blvd. at Herbert St.	NB	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)
		SB	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)	F (>300)
		EBL	B (12.5)	B (14.1)	B (12.6)	B (14.3)	B (13.2)	C (15.5)	B (13.3)	C (15.7)
		WBL	B (12.2)	B (13.8)	B (12.5)	B (14.5)	B (13.0)	B (14.8)	B (13.4)	C (15.4)
209	W. Main St. at Beaver/Bataan Street	NB	B (12.3)	B (10.2)	B (13.4)	B (10.8)	B (12.4)	B (10.2)	B (13.6)	B (10.8)
		SB	B (12.2)	B (13.6)	B (13.5)	C (16.4)	B (12.3)	B (13.7)	B (13.7)	C (16.6)
		EBL	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)	A (7.4)
		WBL	A (7.3)	A (7.2)	A (7.3)	A (7.2)	A (7.3)	A (7.2)	A (7.3)	A (7.3)
211	W. Main St. at Pittman St.	NB	B (10.2)	A (10.0)	B (10.7)	B (10.9)	B (10.2)	A (10.0)	B (10.7)	B (11.0)
		SB	--	--	B (10.6)	B (11.5)	--	--	B (10.7)	B (11.6)
		EBL	--	--	A (7.3)	A (7.4)	--	--	A (7.3)	A (7.4)
		WBL	A (7.5)	A (7.5)	A (7.5)	A (7.6)	A (7.5)	A (7.6)	A (7.5)	A (7.6)
213	W. Main St. at Herbet St.	NBL	A (7.6)	A (7.9)	A (7.6)	A (8.0)	A (7.6)	A (7.9)	A (7.6)	A (8.0)
		SBL	A (8.1)	A (8.1)	A (8.1)	A (8.1)	A (8.1)	A (8.1)	A (8.1)	A (8.1)
		EB	B (15.0)	C (21.3)	C (15.6)	D (25.4)	C (15.1)	C (21.5)	C (15.7)	D (25.9)
		WB	C (18.1)	F (50.3)	C (18.7)	F (66.7)	C (18.3)	F (53.3)	C (18.9)	F (71.2)
214	W. Commerce St. at Guest St.	SB	B (10.4)	B (12.1)	B (10.4)	B (12.3)	B (10.5)	B (12.4)	B (10.6)	B (12.7)

Table 6. Intersection LOS Summary for Site Driveways – With Bataan St. Connection

Intersection #	Intersection	2027 Background		2027 Bkgd-Plus-Site		2032 Background		2032 Bkgd-Plus-Site		
		AM	PM	AM	PM	AM	PM	AM	PM	
		LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS
Unsignalized Intersections:		Approach								
207	W. Main St. at Yuma/Driveway 4	NBT	--	--	A (7.3)	A (7.3)	--	--	A (7.3)	A (7.3)
		SB	--	--	A (9.0)	A (8.9)	--	--	A (9.1)	A (9.0)
208	W. Main St. at Driveway 5	NB	--	--	A (8.5)	A (8.6)	--	--	A (8.5)	A (8.6)
		WBL	--	--	A (7.3)	A (7.3)	--	--	A (7.3)	A (7.3)
304	Beaver St. at Driveway 1	SBL	--	--	A (7.8)	A (7.6)	--	--	A (7.8)	A (7.6)
		WB	--	--	B (11.2)	B (11.5)	--	--	B (11.2)	B (13.1)
305	Guest St. at Driveway 7	NBL	--	--	A (7.3)	A (7.3)	--	--	A (7.3)	A (7.3)
		EB	--	--	A (8.7)	A (8.8)	--	--	A (8.7)	A (8.8)
305	Bataan St. at Driveway 6	NBL	--	--	A (7.7)	A (8.3)	--	--	A (7.7)	A (8.3)
		SBL	--	--	A (8.1)	A (7.7)	--	--	A (8.1)	A (7.7)
		WB	--	--	B (11.1)	B (13.4)	--	--	B (11.1)	B (13.4)
		EB	--	--	B (12.6)	B (12.5)	--	--	B (12.6)	B (12.5)

Alternative Intersection Analysis

The City requested improvements to the W. Commerce Street/Fort Worth Avenue intersection be considered as part of this project. The site plan depicts removal of the westbound, right-turn lane connecting the two legs of W. Commerce Street, and reducing the southbound, left-turn from W. Commerce Street to W. Commerce Street from dual left-turns to a single left-turn.

The TIA analyzed the intersection with the proposed geometry and the intersection is projected to operate with an overall LOS D or better. **Table 7** summarizes the LOS results for the Fort Worth Avenue/W. Commerce Street intersection.

Table 7. Intersection LOS Summary for Fort Worth Avenue/W. Commerce Street Planned Geometry

Intersection #	Intersection	2027 Bkgd-Plus-Site (Without Bataan St. Connection)		2032 Bkgd-Plus-Site (Without Bataan St. Connection)		2027 Bkgd-Plus-Site (With Bataan St. Connection)		2032 Bkgd-Plus-Site (With Bataan St. Connection)		
		AM	PM	AM	PM	AM	PM	AM	PM	
		LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS
Signalized Intersections:		Approach								
102	W. Commerce St. at Fort Worth Ave.	SB	D (46.5)	D (35.5)	D (46.4)	D (37.4)	D (47.3)	D (40.3)	D (47.1)	D (48.1)
		EB	A (4.7)	A (5.3)	A (4.9)	A (5.5)	A (4.0)	A (5.6)	A (4.2)	A (5.7)
		WB	A (4.8)	A (6.2)	A (5.0)	A (6.6)	A (4.0)	A (6.4)	A (4.2)	A (6.5)
		Overall	B (13.8)	B (11.9)	B (13.7)	B (12.5)	B (12.3)	B (14.6)	B (12.5)	B (16.4)

Intersection Analysis Results and Recommended Mitigations

The study intersections are all projected to operate with an overall LOS D or better with the existing geometry with the future Herbert Street connection, with the following exceptions:

- **Singleton Boulevard at Herbert Street** – As part of the West Dallas Gateway Project, the City of Dallas is planning to signalize the Singleton Boulevard/Herbert Street intersection. Signalization is recommended to improve the LOS and serve traffic generated by future developments.
- **W. Commerce Street at Herbert Street/Haslett Street** – As part of the West Dallas Gateway Project, the City of Dallas is planning to signalize the W. Commerce Street/Herbert Street intersection. Signalization is recommended to improve the LOS and serve traffic generated by future developments.
- **Singleton Boulevard at Bataan Street** – It is recommended the City consider signalizing the Singleton Boulevard/Bataan Street intersection even without the Bataan Street thoroughfare extension.
- **Sylvan Avenue at W. Commerce Street** – The westbound approach is projected to operate at LOS E with 2027 background conditions, and the EB and WB approaches worsen with the additional site traffic. During the 2032 background scenario, the westbound and eastbound approaches operate at LOS E and worsen with additional site traffic.
- **W. Main Street at Herbert Street** – When considering the Bataan Street connection in place, the westbound approach is projected to operate at LOS E with 2027 background conditions, and the delay worsen with the additional site traffic. When analyzed as an all-way STOP-controlled intersection, all intersection approaches are projected to operate at LOS D or better.

It is recommended the City consider adding eastbound and westbound, exclusive left-turn lanes at the W. Commerce Street/Sylvan Avenue intersection. The eastbound/westbound approaches currently have shared left/through/right lanes for each approach. As the area develops, the minor street approach volumes are increasing, and the additional turn lanes will improve the overall intersection LOS. If the turn lanes are not installed, the overall intersection LOS remains D and better; the vehicles approaching the minor street approaches will have increased delays and likely navigate to other roadways.

- It is recommended that the signal timings be updated/evaluated every 3-5 years to adjust for traffic growth.

Considering the above recommendations, all intersection approaches are projected to operate at LOS D or better, as shown in **Table 8**.

Table 8. Intersection LOS Summary with Recommended Improvements – Without Bataan St. Connection

Intersection #	Intersection	2020 Existing (Adjusted) (Without Bataan St.)		2027 Background (Without Bataan St.)		2027 Bkgd-Plus-Site (Without Bataan St.)		2032 Background (Without Bataan St.)		2032 Bkgd-Plus-Site (Without Bataan St.)	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
		LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)
Signalized Intersections:											
101 W. Commerce St. at Sylvan Ave.	NB	B (12.8)	A (7.4)	C (22.5)	B (12.4)	C (27.4)	B (13.6)	C (27.1)	B (13.4)	C (35.0)	B (14.4)
	SB	B (10.0)	A (9.3)	B (15.0)	C (25.4)	B (17.9)	C (27.9)	B (16.0)	C (34.8)	B (18.7)	D (38.0)
	EB	C (22.1)	D (43.2)	D (48.0)	D (50.4)	D (45.1)	D (49.0)	D (48.0)	D (49.8)	D (45.4)	D (49.2)
	WB	C (27.1)	D (49.6)	D (51.1)	D (47.8)	D (49.6)	D (49.2)	D (50.7)	D (47.2)	D (49.4)	D (49.0)
	Overall	B (13.4)	B (13.3)	C (24.7)	C (25.8)	C (28.3)	C (28.0)	C (27.5)	C (31.5)	C (32.8)	C (34.0)
204 W. Commerce St. at Herbert St./Haslett St.	NB	A (9.9)	A (10.0)	B (10.3)	B (10.6)	B (10.3)	B (10.6)	B (10.3)	B (10.7)	B (10.3)	B (10.7)
	SB	A (9.7)	A (9.6)	B (11.3)	B (15.6)	B (11.4)	B (15.7)	B (11.3)	B (15.6)	B (11.4)	B (15.7)
	EB	B (11.0)	B (10.9)	B (15.8)	B (15.1)	B (15.9)	B (15.4)	B (16.0)	B (15.6)	B (16.1)	B (15.9)
	WB	B (10.7)	B (12.0)	B (12.5)	B (14.0)	B (12.5)	B (14.3)	B (12.6)	B (14.5)	B (12.7)	B (14.8)
	Overall	B (10.8)	B (11.4)	B (13.8)	B (14.7)	B (13.9)	B (14.9)	B (14.0)	B (15.0)	B (14.1)	B (15.3)
205 Singleton Blvd. at Bataan St.	NB	C (21.9)	C (21.5)	C (23.4)	C (30.3)	C (23.4)	C (30.2)	C (23.6)	C (30.7)	C (23.6)	C (30.6)
	SB	C (21.4)	C (21.7)	C (22.2)	C (22.8)	C (22.2)	C (22.8)	C (22.3)	C (22.9)	C (22.3)	C (23.0)
	EB	A (3.9)	A (4.0)	A (5.1)	A (5.4)	A (5.1)	A (5.4)	A (5.4)	A (5.7)	A (5.4)	A (5.7)
	WB	A (3.8)	A (4.5)	A (5.7)	A (6.2)	A (5.8)	A (6.2)	A (6.1)	A (6.8)	A (6.1)	A (6.8)
	Overall	A (4.5)	A (4.8)	A (6.3)	A (7.8)	A (6.3)	A (7.8)	A (6.6)	A (8.2)	A (6.6)	A (8.2)
206 Singleton Blvd. at Herbert St.	NB	B (15.5)	C (20.3)	C (22.5)	C (32.1)	C (24.4)	D (36.8)	C (22.4)	C (32.8)	C (24.4)	D (37.6)
	SB	B (16.2)	C (22.4)	B (17.1)	C (31.9)	B (17.1)	C (32.4)	B (17.2)	C (33.3)	B (17.2)	C (33.8)
	EB	A (7.4)	A (4.6)	A (9.7)	A (6.7)	A (9.7)	A (6.7)	B (10.4)	A (7.2)	B (10.4)	A (7.2)
	WB	A (7.1)	A (5.0)	B (11.0)	A (8.2)	B (11.2)	A (9.7)	B (11.6)	A (9.1)	B (12.1)	B (10.9)
	Overall	A (7.6)	A (5.7)	B (11.7)	B (10.7)	B (12.3)	B (12.0)	B (12.3)	B (11.4)	B (12.8)	B (12.8)

Table 9. Intersection LOS Summary with Recommended Improvements - With Bataan St. Connection

Intersection #	Intersection	2027 Background (With Bataan St.)		2027 Bkgd-Plus-Site (With Bataan St.)		2032 Background (With Bataan St.)		2032 Bkgd-Plus-Site (With Bataan St.)		
		AM	PM	AM	PM	AM	PM	AM	PM	
		LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS
Signalized Intersections:										
101 W. Commerce St. at Sylvan Ave.	NB	C (25.8)	B (17.6)	C (26.3)	B (18.3)	C (31.1)	B (18.4)	C (32.4)	B (18.8)	
	SB	B (15.1)	D (36.5)	B (15.1)	D (37.8)	B (15.6)	D (53.7)	B (15.6)	D (53.5)	
	EB	D (45.6)	D (41.2)	D (45.9)	D (42.0)	D (46.2)	D (41.8)	D (46.3)	D (45.3)	
	WB	D (45.6)	D (42.5)	D (47.9)	D (46.8)	D (46.8)	D (43.0)	D (49.4)	D (49.1)	
	Overall	C (27.1)	C (32.9)	C (27.9)	C (34.4)	C (30.3)	D (42.6)	C (31.5)	D (43.5)	
204 W. Commerce St. at Herbert St./Haslett St.	NB	C (22.4)	B (17.3)	C (22.4)	B (17.3)	C (22.4)	B (17.4)	C (22.4)	B (17.4)	
	SB	C (24.8)	C (22.9)	C (24.8)	C (23.0)	C (24.8)	C (23.0)	C (24.8)	C (23.0)	
	EB	A (4.0)	A (7.8)	A (4.0)	A (7.9)	A (4.0)	A (7.9)	A (4.0)	A (8.1)	
	WB	A (3.6)	A (6.7)	A (3.6)	A (6.8)	A (3.6)	A (6.9)	A (3.6)	A (7.0)	
	Overall	A (7.9)	B (10.7)	A (7.9)	B (10.7)	A (7.8)	B (10.7)	A (7.8)	B (10.7)	
205 Singleton Blvd. at Bataan St.	NB	B (17.2)	B (18.7)	B (18.5)	C (20.2)	B (17.3)	B (18.8)	B (18.6)	C (20.3)	
	SB	B (14.4)	B (14.5)	B (14.4)	B (14.6)	B (14.4)	B (14.6)	B (14.4)	B (14.6)	
	EB	B (19.3)	C (20.8)	B (19.7)	C (22.0)	C (20.7)	C (22.7)	C (21.2)	C (24.3)	
	WB	C (25.5)	C (26.8)	C (28.7)	C (32.0)	C (29.5)	C (31.8)	C (34.2)	D (39.8)	
	Overall	C (21.8)	C (23.4)	C (23.5)	C (26.4)	C (24.3)	C (26.7)	C (26.6)	C (31.1)	
206 Singleton Blvd. at Herbert St.	NB	C (24.7)	C (24.5)	C (25.0)	C (24.9)	C (24.7)	C (24.6)	C (25.0)	C (24.9)	
	SB	C (23.4)	C (26.5)	C (23.4)	C (26.7)	C (23.5)	C (26.8)	C (23.5)	C (27.0)	
	EB	C (23.0)	C (25.4)	C (23.3)	C (25.8)	C (24.5)	C (28.0)	C (24.8)	C (28.6)	
	WB	C (24.3)	C (29.1)	C (24.9)	C (31.6)	C (26.0)	C (32.8)	C (26.7)	D (36.6)	
	Overall	C (23.8)	C (27.2)	C (24.1)	C (28.6)	C (25.2)	C (30.1)	C (25.7)	C (32.1)	
Unsignalized Intersections:										
213 Herbert St. at W. Main St.	Approach									
	NB	B (10.2)	B (12.2)	B (10.5)	B (12.9)	B (10.3)	B (12.2)	B (10.5)	B (13.0)	
	SB	A (9.2)	B (11.8)	A (9.4)	B (12.5)	A (9.2)	B (11.8)	A (9.4)	B (12.6)	
	EBL	A (9.4)	B (11.6)	A (9.7)	B (12.8)	A (9.4)	B (11.7)	A (9.8)	B (12.9)	
	WBL	A (10.0)	B (14.8)	B (10.2)	C (16.4)	B (10.0)	C (15.1)	B (10.3)	C (16.8)	

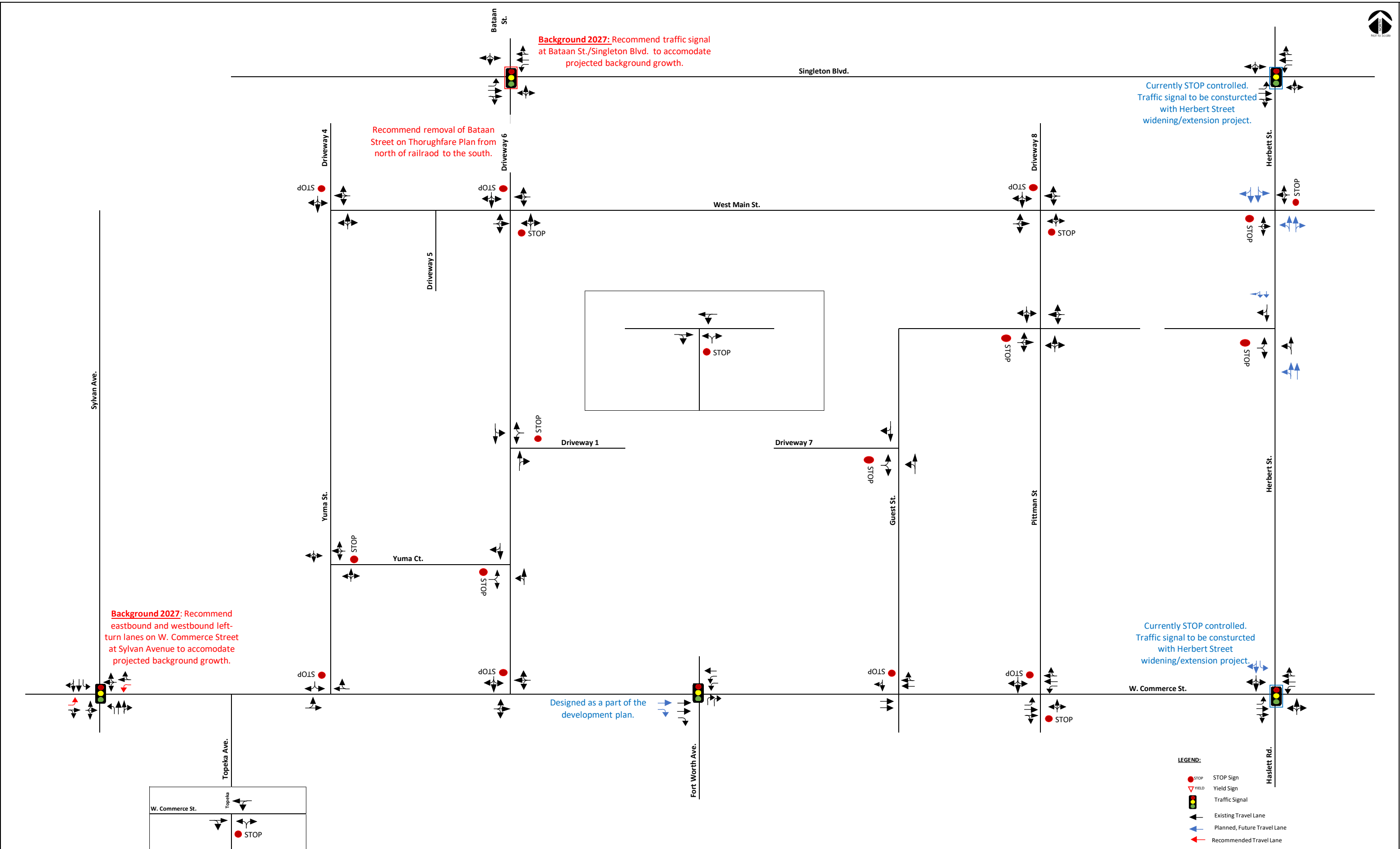


Exhibit 17. Recommended Roadway Geometry

Roadway Link Capacity Analysis – Methodology

Roadway links are roadway segments between intersections. The North Central Texas Council of Governments’ (NCTCOG) *Dallas-Fort Worth Regional Travel Model (DFWRTM): Description of the Multimodal Forecasting Process, 2000*, outlines hourly service volume capacities based upon type of roadway function and area. The table below summarizes the roadway link capacities.

NCTCOG Roadway Link Hourly Service Volumes (Capacity)

Area Type	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
CBD Fringe	775	725	775	725	500	450
Urban/Commercial	850	775	825	750	525	475
Suburban Residential	925	875	900	825	575	525
Rural	1,025	925	975	875	600	550

Obtained from NCTCOG Regional Travel Model, Exhibits 23 and 24

To determine the LOS of a roadway link, the volume-to-capacity ratio (V/C) is calculated using the projected traffic volume and the roadway capacities noted above. A V/C ratio below 1.0 indicates that the roadway is operating under capacity. The NCTCOG’s roadway link LOS criteria are summarized in the table below.

NCTCOG Roadway Link LOS Criteria

LOS	Volume-to-Capacity Ratio (V/C)
A/B	≤ 45%
C	> 45% - ≤ 65%
D	> 65% - ≤ 80%
E	> 80% - ≤ 100%
F	> 100%

Obtained from NCTCOG Regional Travel Model, Exhibits 23 and 24

Roadway Link Capacity Analysis

A roadway link capacity analysis was performed considering the peak hour volumes. The LOS results are shown in **Table 10**. As shown, the study area roadway links will continue to operate at LOS D or better with the added site-generated traffic in both buildout year 2027 and horizon year 2032.

Table 10. Roadway LOS Summary (Without Bataan Street Connection)

Roadway Link	Roadway Capacity			2020 Existing (Adjusted)			2027 Background			2027 Bkgd.-Plus-Site			2032 Background			2032 Bkgd.-Plus-Site		
	Capacity Per Lane (Veh/Ln)	No. of Lanes	Roadway Capacity	Veh/Hr	V/C	LOS	Veh/Hr	V/C	LOS	Veh/Hr	V/C	LOS	Veh/Hr	V/C	LOS	Veh/Hr	V/C	LOS
Herbert St., North of W. Commerce St.																		
Northbound	475	2	950	8	1%	A/B	502	53%	C	503	53%	C	502	53%	C	503	53%	C
Southbound	475	2	950	2	0%	A/B	503	53%	C	507	53%	C	503	53%	C	508	53%	C
Herbert St., South of W. Main St.																		
Northbound	475	2	950	0	0%	A/B	488	51%	C	489	51%	C	488	51%	C	489	51%	C
Southbound	475	2	950	12	1%	A/B	500	53%	C	504	53%	C	501	53%	C	506	53%	C
W. Main St., West of Beaver St.																		
Eastbound	475	1	475	18	4%	A/B	22	5%	A/B	34	7%	A/B	24	5%	A/B	35	7%	A/B
Westbound	475	1	475	15	3%	A/B	26	5%	A/B	46	10%	A/B	28	6%	A/B	48	10%	A/B
W. Commerce St., East of Sylvan Ave.																		
Eastbound	750	1	750	150	20%	A/B	323	43%	A/B	420	56%	C	340	45%	C	438	58%	C
Westbound	750	1	750	99	13%	A/B	292	39%	A/B	361	48%	C	301	40%	A/B	370	49%	C
W. Commerce St., East of Haslett St.																		
Eastbound	750	3	2,250	479	21%	A/B	783	35%	A/B	805	36%	A/B	839	37%	A/B	861	38%	A/B
Westbound	750	3	2,250	499	22%	A/B	750	33%	A/B	783	35%	A/B	809	36%	A/B	842	37%	A/B

Veh/Hr = Vehicles per Hour; V/C = Volume-to-Capacity Ratio; LOS = Level of Service

SITE ACCESS REVIEW

Auxiliary Lane Analysis

City of Dallas requires right-turn, deceleration lanes at driveways when the right-turning volume into the driveway exceeds 120 vehicles in the peak hour (as noted in the 2004 *Off-Street Parking and Driveways Handbook* and confirmed with City staff.)

Projected turning-movement volumes into the driveways are all below 120 vehicles per hour during the peak hour. Therefore, no right-turn, deceleration lanes are recommended.

Sight Distance Analysis

Sight distances were evaluated, as required by the City of Dallas, to ensure that motorists can safely maneuver to/from the site driveways. It is assumed the roadways around the site will have a speed limit of 30 MPH. The safety minimum and desirable sight distances are provided in the City of Dallas September 2019 *Street Design Manual* and are summarized in **Table 11**.

Table 11. Sight Distance Requirements

Classification	Speed Limit	Sight Distance Scenario	Desirable Distance	Required Distance
S-2-U	30 MPH	Left Side	315	145
		Right Side	315	200
M-4-U	30 MPH	Left Side	405	180
		Right Side	410	225

The roadways around the site are relatively straight and do not have significant grades, so the sight visibility to/from the site is adequate and all driveways satisfy the City’s minimum sight distance requirements. As portions of the site develop, cleaning of overgrown brush and trees should be conducted on surrounding areas to ensure adequate sight distance.

Driveway Spacing Review

The City of Dallas requires driveways to be spaced a minimum distance from intersections and other driveways. Table 1 and Figure 1 of June 2004 *City of Dallas Off-Street Parking and Driveways Handbook* indicate, “The minimum distance between driveways, measured from edges of driveway throats, is normally 20 feet except for local streets.” The manual also notes, “Driveways should be designed to line up with the centerlines of existing driveways on the other side of street.”

The City of Dallas’ *Street Design Manual* requires 40-foot spacing on local roads intersecting with arterial thoroughfares or collector roads and 30-foot spacing on local roads intersecting with local roads, per Figure 3.8. However, Figure 4.61 illustrates a minimum spacing of 100 feet from roadways for commercial developments, but no further explanation is given to define the illustration. Since multi-family is considered commercial, 100-foot spacing between intersections and driveways is preferred by the City.

The access spacing review for the proposed development is summarized below in **Table 12**. As shown, all driveways satisfy the City’s desirable driveway spacing criteria except Driveway 5B is about 50 feet from Beaver Street instead of 100 feet. Due to the low volumes on W. Main Street (less than 30 vehicles per hour) and low turning movement volumes (less than 10 vehicles per hour), it is recommended this driveway spacing be approved since it meets the minim spacing per Figure 3.8.

Table 12. Driveway Spacing Summary

Spacing Between	City of Dallas Access Spacing Distance (Feet)	Provided Access Spacing Distance (Feet)	Satisfies Spacing Criteria?
Beaver Street:			
W. Commerce Street and Driveway 1	100	~300	YES
Driveway 1 and W.Main Street	100	~215	YES
Guest Street:			
W. Commerce Street and Driveway 7	100	~250	YES
W. Main Street:			
Yuma Street and Driveway 5A	100	~125	YES
Driveway 5A and Driveway 5B	20	~170	YES
Driveway 5B and Beaver Street	Min: 45; Desirable: 100	~50	Min: YES
Driveway 4 and Driveway 6	20	~380	YES
Driveway 6 and Driveway 8	20	~475	YES
Driveway 8 and Herbert Street	100	~465	YES

ON-STREET PARKING

Indented/Head-In Parking

The City of Dallas Section 43-62 notes that indented parking may be approved if “the speed limit for the portion of the public roadway required for maneuvering into or out of the proposed indented parking space or spaces is 35 miles per hour or less and that the proposed indented parking would not constitute a traffic hazard.”

The concept plan, shown in **Exhibit 2**, provides indented parking on the west side of Pittman Street, both sides of Beaver Street and both sides on West Main Street. All the roads providing indented parking have a speed limit less than 35 miles per hour. There will not be a significant amount of traffic along these roads; the projected traffic volumes on these roadways are primarily site related. Indented parking includes both head-in and parallel parking spaces.

Head-in parking is provided on Beaver Street. The detailed site plan will need to be reviewed, but if the head-in parking spaces are 9-foot wide, as shown on the concept plan, and if there is a space of 22 feet behind the head-in parking spaces for vehicles to maneuver in while backing out of the spaces, then the proposed indented parking is expected to operate well and not cause traffic congestion or unsafe maneuvers.

On-street, parallel parking is provided along W. Main Street, Beaver Street, and Pittman Street. The projected traffic volumes along the streets are well under capacity, and the parallel parking maneuvers are not expected to create traffic congestion.

Indented parking should be reviewed with site plans submittals to ensure adequate sight distance is provided at all access points and, also, at the nearby intersections. As long as sight distances are adequate, as expected, indented parking is not expected to create traffic congestion in the area.

Pedestrian Amenities

The site is being developed with pedestrian amenities on all adjacent roadways. A 15-foot sidewalk is being designed along W. Commerce Street and Fort Worth Avenue. All other streets will be provided with 11.5 feet sidewalks. The sidewalks will have street trees planted within a 4’x4’ tree grate within the sidewalk. Barrier-free ramps will be provided at all adjacent corners.

The wide sidewalks and low-traveled roads within the site will make the area pedestrian friendly. The site will have pedestrian connectivity with the new Herbert Street roadway, which the City also plans to construct as pedestrian friendly. As adjacent lots develop, pedestrian connectivity will be further provided in the area.

CONCLUSIONS AND RECOMMENDATIONS

Lambeth Engineering Associates, PLLC, conducted a traffic impact analysis for the proposed The Park at West Main mixed-use development in Dallas, Texas. This TIA is being conducted to support creating a subdistrict within the existing PD and a request to amend the City of Dallas Thoroughfare Plan so Bataan Street is not extended south of the railroad tracks.

The project is planned to be completed in 2027 and is planned to contain 484 residential units plus 25,017 SF of office/fitness center/retail/restaurant uses.

This study evaluated the impact the proposed development will have on the surrounding roadway network and provides recommended mitigation measures needed to maintain acceptable roadway conditions. Below is a summary of findings from the analyses presented in this report.

- The roadway intersections are shown to operate with an overall LOS D or better considering existing, background, and background-plus-site traffic volumes, with the following recommended mitigations.
 - **Singleton Boulevard at Herbert Street** – As part of the West Dallas Gateway Project, the City of Dallas is planning to signalize the Singleton Boulevard/Herbert Street intersection. Signalization is recommended to improve the LOS and serve traffic generated by future developments.
 - **W. Commerce Street at Herbert Street/Haslett Street** – As part of the West Dallas Gateway Project, the City of Dallas is planning to signalize the W. Commerce Street/Herbert Street intersection. Signalization is recommended to improve the LOS and serve traffic generated by future developments.
 - **Singleton Boulevard at Bataan Street** – It is recommended the City consider signalizing the Singleton Boulevard/Bataan Street intersection even without the Bataan Street thoroughfare extension to accommodate background traffic volumes.
 - **Sylvan Avenue at W. Commerce Street** – As W. Commerce Street continues to develop on both east and west sides of Sylvan, it is recommended the City consider adding exclusive eastbound and westbound left-turn lanes on W. Commerce Street at Sylvan Avenue.
 - **W. Main Street at Herbert Street** – When considering the Bataan Street connection in place, the westbound approach is projected to operate at LOS E with 2027 background conditions, and the delay worsen with the additional site traffic. When analyzed as an all-way STOP-controlled intersection, all intersection approaches are projected to operate at LOS D or better.
- The roadway links are shown to operate at LOS D or better considering existing, background, and background-plus-site traffic volumes with the existing roadway geometries.
- No deceleration lanes are recommended at the site driveways.
- All driveways satisfy City of Dallas' minimum driveway spacing criteria.
- All driveways satisfy City of Dallas' minimum sight distance criteria.
- Indented parking is expected to operate smoothly in the area.

- The project is providing wide sidewalks and green spaces which will encourage pedestrian activity in the area.
- It is recommended the request to amend the City of Dallas Thoroughfare Plan to remove the Bataan Street connection be approved due to the following:
 - Herbert Street is two-lanes on the Thoroughfare Plan.
 - Herbert Street is being designed as a four-lane roadway, wider than planned, since there are not plans to extend Bataan Street or Amonette Street across the railroad with any designated time frame (this is Lambeth's understanding of why there is an increase in Herbert Street's width from two-lanes to four-lanes.)
 - The TIA included the site traffic plus additional developments in the area that may use the Bataan Street connection that is being considered.
 - Even considering the vast amount of upcoming, additional development, the planned improvements for Herbert Street are more than adequate to serve the overall area.

Based upon this analysis, the proposed development is shown to not have a significant impact on the surrounding roadway network.

END

Appendix

- A. Site Pictures
- B. Existing Traffic Volumes
- C. TxDOT Historical Traffic Volume Data
- D. Projected Traffic for Additional Developments
- E. Site Trip Distribution
- F. Vistro Analysis Results
- G. DART Bus Stops

Appendix A. Site Pictures

Appendix B.

Existing Traffic Volumes

Appendix C. Historical Traffic Volumes

Appendix D. Projected Traffic for Additional Developments

Appendix E. Site Trip Distribution

Appendix F.

Vistro Analysis

Vistro Scenarios:

1. 2020 Existing Adjusted AM
2. 2020 Existing Adjusted PM
3. 2027 Bkgd AM
4. 2027 Bkgd PM
5. 2027 Bkgd + Site AM
6. 2027 Bkgd + Site PM
7. 2032 Bkgd AM
8. 2032 Bkgd PM
9. 2032 Bkgd + Site AM
10. 2032 Bkgd + Site PM

Geometry Scenarios

1. Existing and Planned Roadway Geometry – Without Bataan Street Connection
2. Existing and Planned Roadway Geometry – With Bataan Street Connection
3. Recommended Improvements - Without Bataan Street Connection
4. Recommended Improvements - With Bataan Street Connection
5. Planned Roadway Geometry for Fort Worth Ave./W. Commerce Street – Without Bataan Street
6. Planned Roadway Geometry for Fort Worth Ave./W. Commerce Street – With Bataan Street

Appendix F1. Vistro Analysis

Geometry Scenario

1. Existing and Planned Roadway Geometry – Without Bataan Street Connection

Vistro Scenarios:

1. 2020 Existing Adjusted AM
2. 2020 Existing Adjusted PM
3. 2027 Bkgd AM
4. 2027 Bkgd PM
5. 2027 Bkgd + Site AM
6. 2027 Bkgd + Site PM
7. 2032 Bkgd AM
8. 2032 Bkgd PM
9. 2032 Bkgd + Site AM
10. 2032 Bkgd + Site PM

Appendix F2.

Vistro Analysis

Geometry Scenario

2. Existing and Planned Roadway Geometry – With Bataan Street Connection

Vistro Scenarios:

1. 2020 Existing Adjusted AM
2. 2020 Existing Adjusted PM
3. 2027 Bkgd AM
4. 2027 Bkgd PM
5. 2027 Bkgd + Site AM
6. 2027 Bkgd + Site PM
7. 2032 Bkgd AM
8. 2032 Bkgd PM
9. 2032 Bkgd + Site AM
10. 2032 Bkgd + Site PM

Appendix F3. Vistro Analysis

Geometry Scenario

3. Recommended Improvements - Without Bataan Street Connection

Vistro Scenarios:

1. 2020 Existing Adjusted AM
2. 2020 Existing Adjusted PM
3. 2027 Bkgd AM
4. 2027 Bkgd PM
5. 2027 Bkgd + Site AM
6. 2027 Bkgd + Site PM
7. 2032 Bkgd AM
8. 2032 Bkgd PM
9. 2032 Bkgd + Site AM
10. 2032 Bkgd + Site PM

Appendix F4.

Vistro Analysis

Geometry Scenario

4. Recommended Improvements - With Bataan Street Connection

Vistro Scenarios:

1. 2020 Existing Adjusted AM
2. 2020 Existing Adjusted PM
3. 2027 Bkgd AM
4. 2027 Bkgd PM
5. 2027 Bkgd + Site AM
6. 2027 Bkgd + Site PM
7. 2032 Bkgd AM
8. 2032 Bkgd PM
9. 2032 Bkgd + Site AM
10. 2032 Bkgd + Site PM

Appendix F5.

Vistro Analysis

Geometry Scenario

5. Planned Roadway Geometry for Fort Worth Ave./W. Commerce Street – Without Bataan Street

Vistro Scenarios:

11. 2027 Bkgd + Site AM
12. 2027 Bkgd + Site PM
13. 2032 Bkgd + Site AM
14. 2032 Bkgd + Site PM

Appendix F5.

Vistro Analysis

Geometry Scenario

6. Planned Roadway Geometry for Fort Worth Ave./W. Commerce Street – Without Bataan Street

Vistro Scenarios:

- 15.2027 Bkgd + Site AM
- 16.2027 Bkgd + Site PM
- 17.2032 Bkgd + Site AM
- 18.2032 Bkgd + Site PM

Appendix G. DART Bus Stops