Traffic Impact Study

Winsome Filing No. 3

El Paso County, CO

Prepared for:

Winsome, LLC
1864 Woodmoor Drive, Suite 100
Monument, CO 80132

Prepared by:

KELLAR ENGINEERING

www.kellarengineering.com
970.219.1602 phone

COLORADO REGISTERED
SEAN K. KELLAR
38650
PROFESSIONAL ENGINEER

February 22, 2023

Sean K. Kellar, PE, PTOE

File No. SF21-015

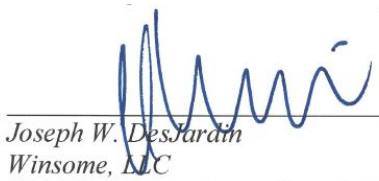
Traffic Engineer's Statement

The attached traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.

Sean K. Kellar, P.E. #38560 2/22/2023
Date

Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.



Joseph W. DesJardin
Winsome, LLC
1864 Woodmoor Drive, Suite 100
Monument, CO 80132

2/22/2023
Date

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1.0 Introduction

The purpose of this Traffic Impact Study (TIS) is to identify project traffic generation characteristics, to identify potential traffic related impacts on the adjacent street system, and to develop mitigation measures required for identified traffic impacts. This TIS is for the proposed Winsome project located at the northwest quadrant of the intersection of Hodgen Road and Meridian Road in El Paso County, CO. See Figure 1: Vicinity Map.

Kellar Engineering LLC (KE) has prepared the TIS to document the results of the project's anticipated traffic conditions in accordance with the El Paso County Engineering Criteria Manual and to identify projected impacts to the transportation system. This TIS is for Winsome Filing No. 3. The trip generation for the entire build-out of the Winsome Subdivision is provided in this TIS to provide context of the entire project build-out. See Table 1: Trip Generation.

2.0 Existing Conditions and Roadway Network

The project site is located at the northwest quadrant of the intersection of Hodgen Road and Meridian Road. Hodgen Road an east-west street arterial with a posted speed of 55 mph adjacent to the project site. Hodgen Road is classified as a Minor Arterial in the 2040 Roadway Plan. Meridian Road is a north-south arterial with a posted speed of 40 mph adjacent to the project site. Meridian Road is classified as a Minor Arterial in the 2040 Roadway Plan. See Appendix D. Traffic volumes have also been included for Bison Meadows Ct. and Woodridge Terrace using the ITE Trip Generation rates for the appropriate number of dwelling units. Due to the low number of dwelling units on these local streets (less than 6 dwelling units on each street), the ITE Trip Generation rates were used instead of obtaining separate traffic counts. See Figure 8 and Figure 9.

2.1 Existing Traffic Volumes

Existing peak hour traffic volume counts were conducted using data collection cameras on Thursday, August 30, 2018. The traffic counts were conducted during the peak hours of adjacent street traffic in 15-minute intervals from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. These turning movement counts are shown in Figure 3 with the count sheets provided in Appendix A. ADT counts are referenced in the appropriate figures for Hodgen Road from the El

Paso County Major Transportation Corridors (MTC) Plan Update. ADT counts are not provided for Meridian Road in the MTC. Per the Highway Capacity Manual (HCM) methodology, ADT volumes are not used for peak hour LOS calculations but are provided as a reference in this study.

Per ECM criteria, additional offsite major intersections are to be included in the study if the project contributed a 10% impact (AM or PM peak hour) to any approach leg of the intersection where the intersection is operating at LOS C or better or contributes a 5% impact where the intersection operates at LOS D or worse in the short range horizon. Based upon the traffic distribution on Hodgen Road and Meridian Road to the project site, the traffic approaching the project site consists of thru volumes on Hodgen Road and Meridian Road until turning movements are made to access the project site. Based upon the proposed traffic volumes, the existing traffic volumes, and the LOS impact on offsite intersections per the HCM methodology, the study of additional offsite intersections is not required for the project.

Figure 1: Vicinity Map

Google Maps

Figure 2: Site Plan

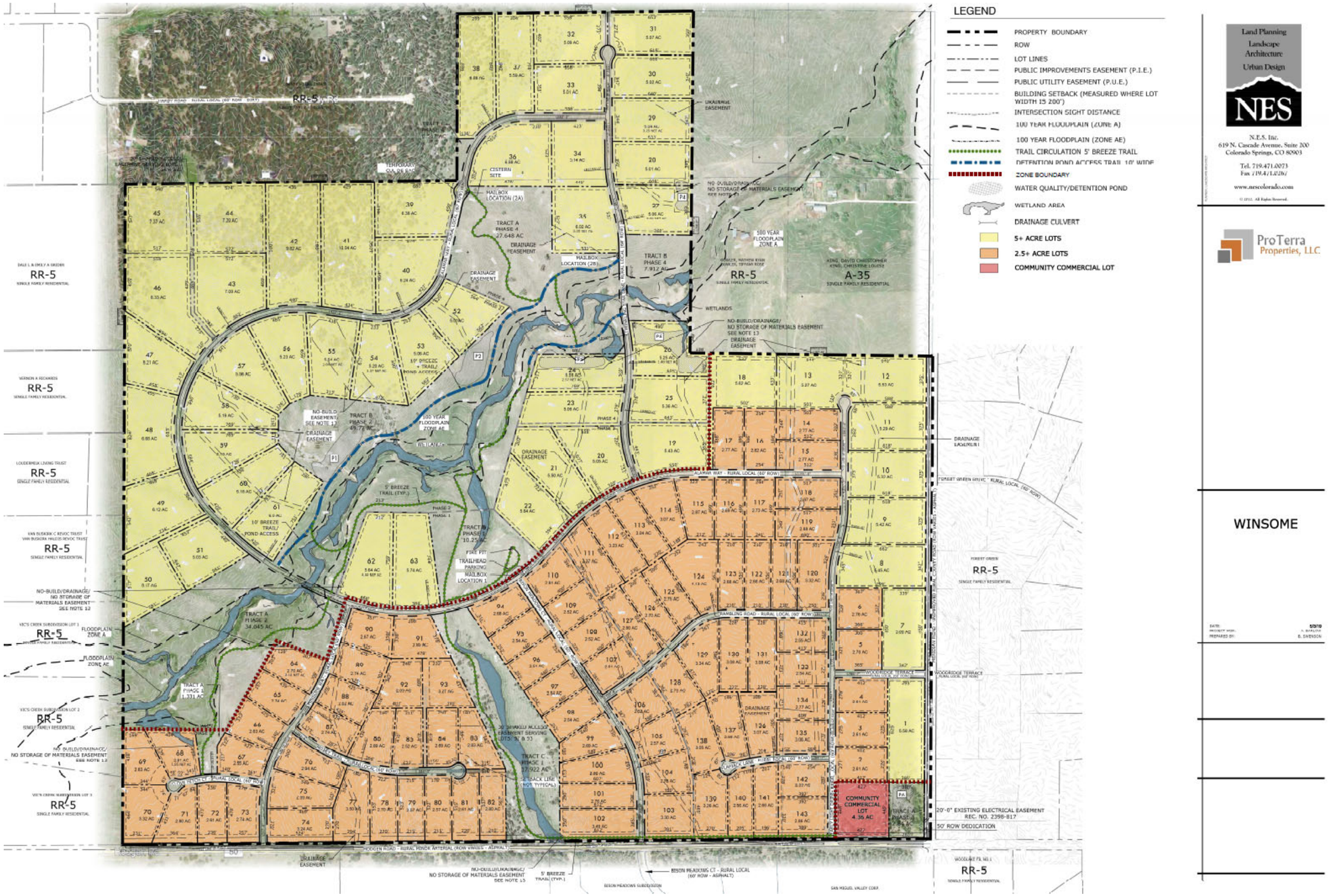
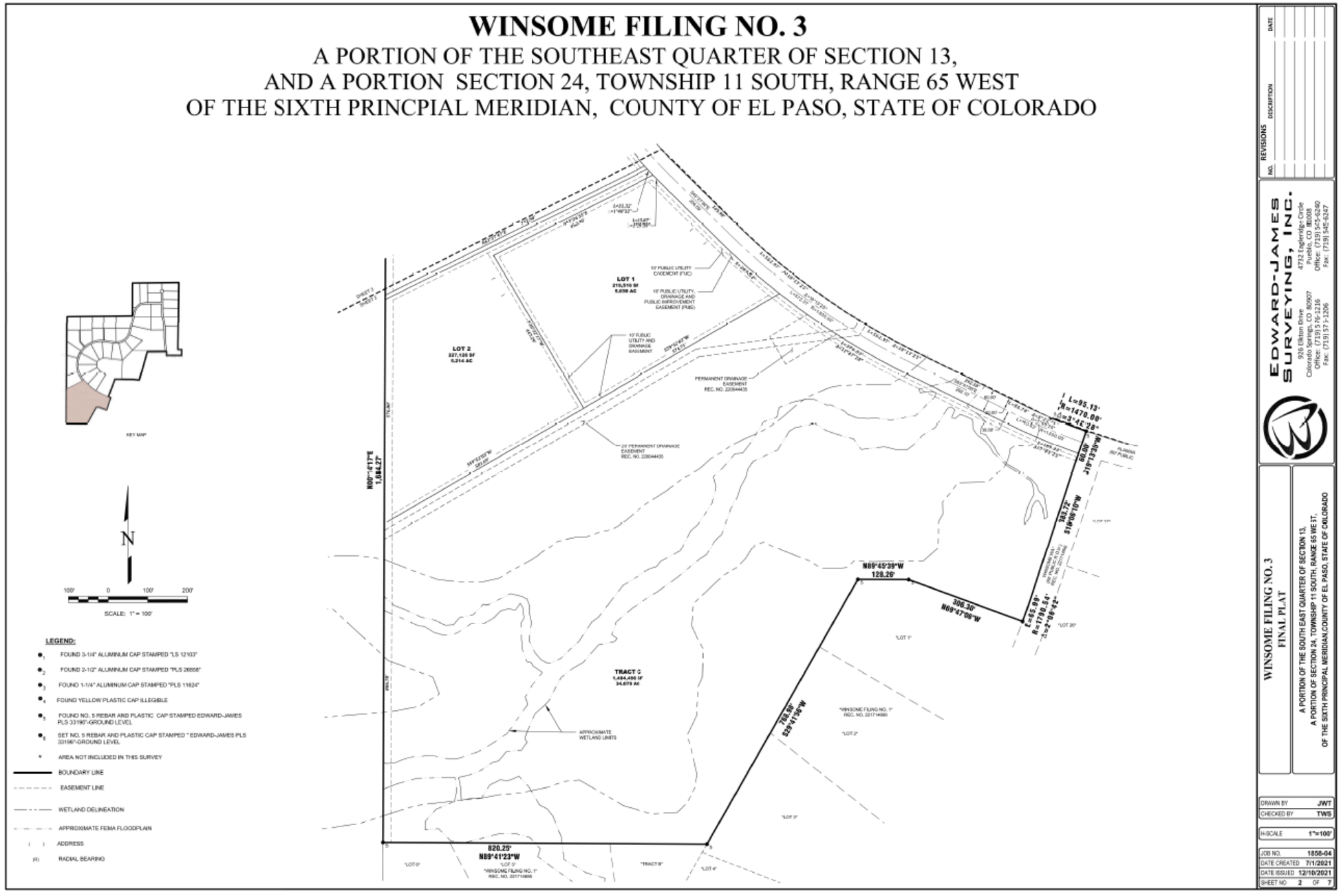


Figure 2: Site Plan Filing No.3



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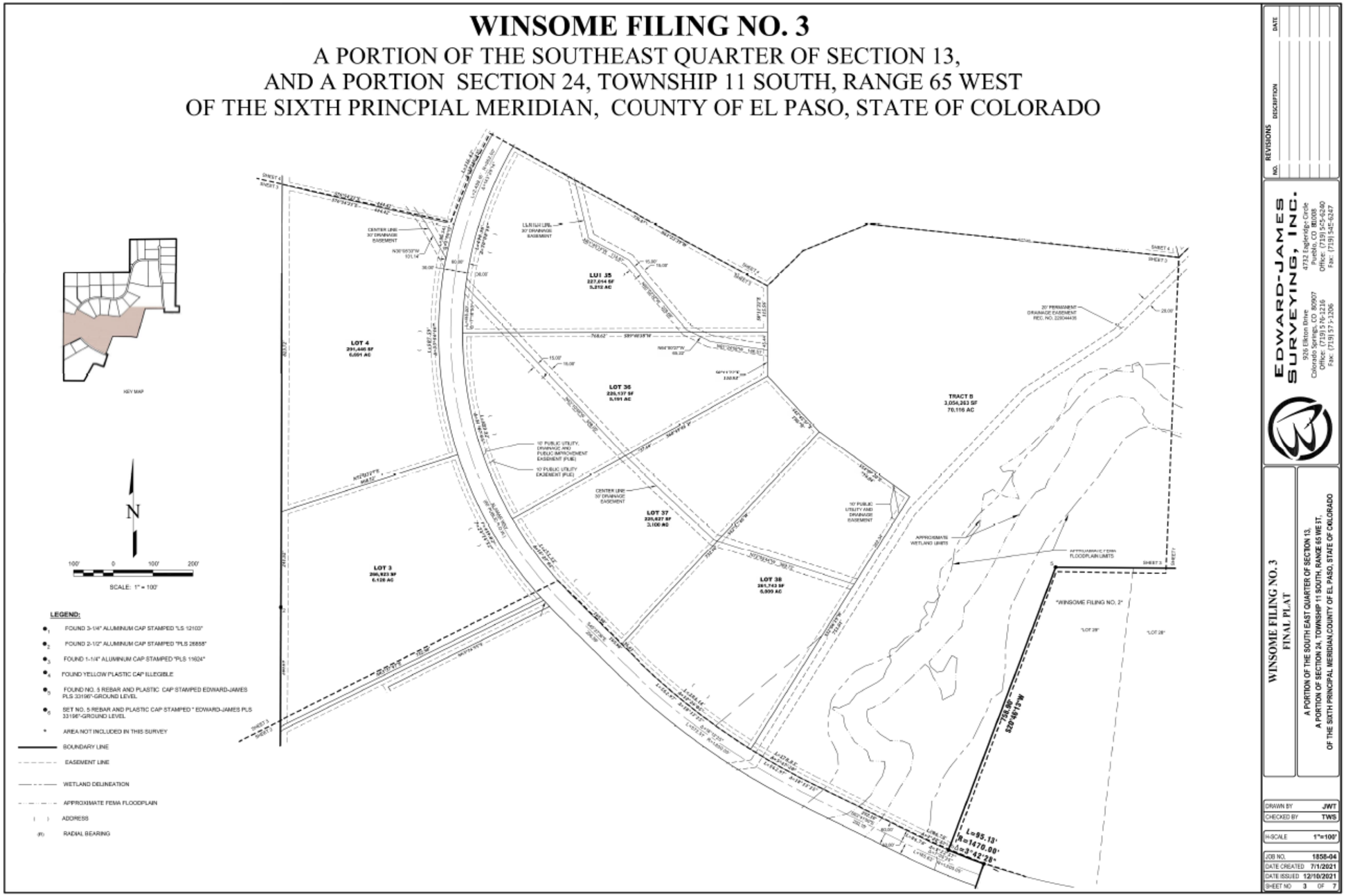

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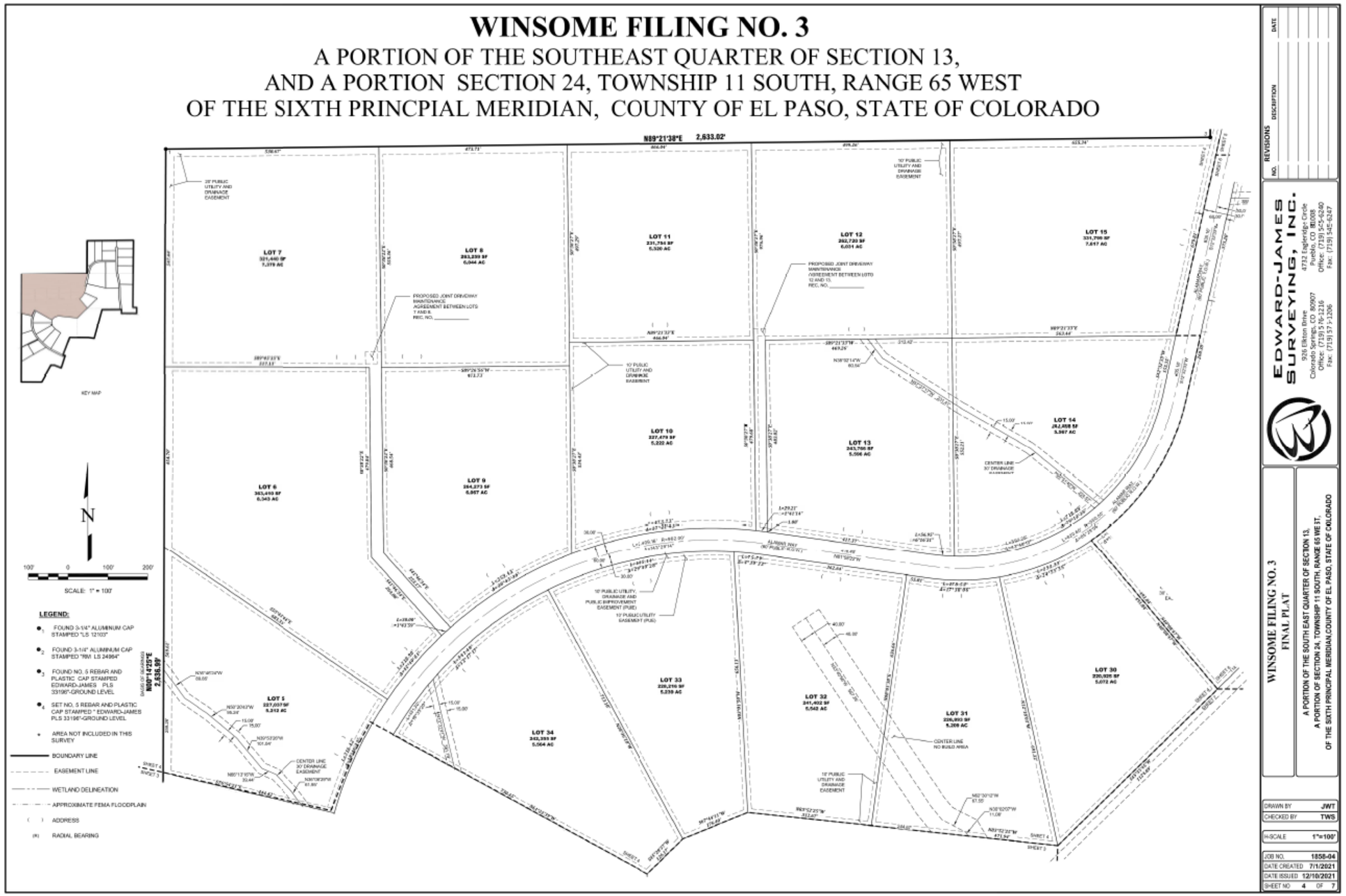

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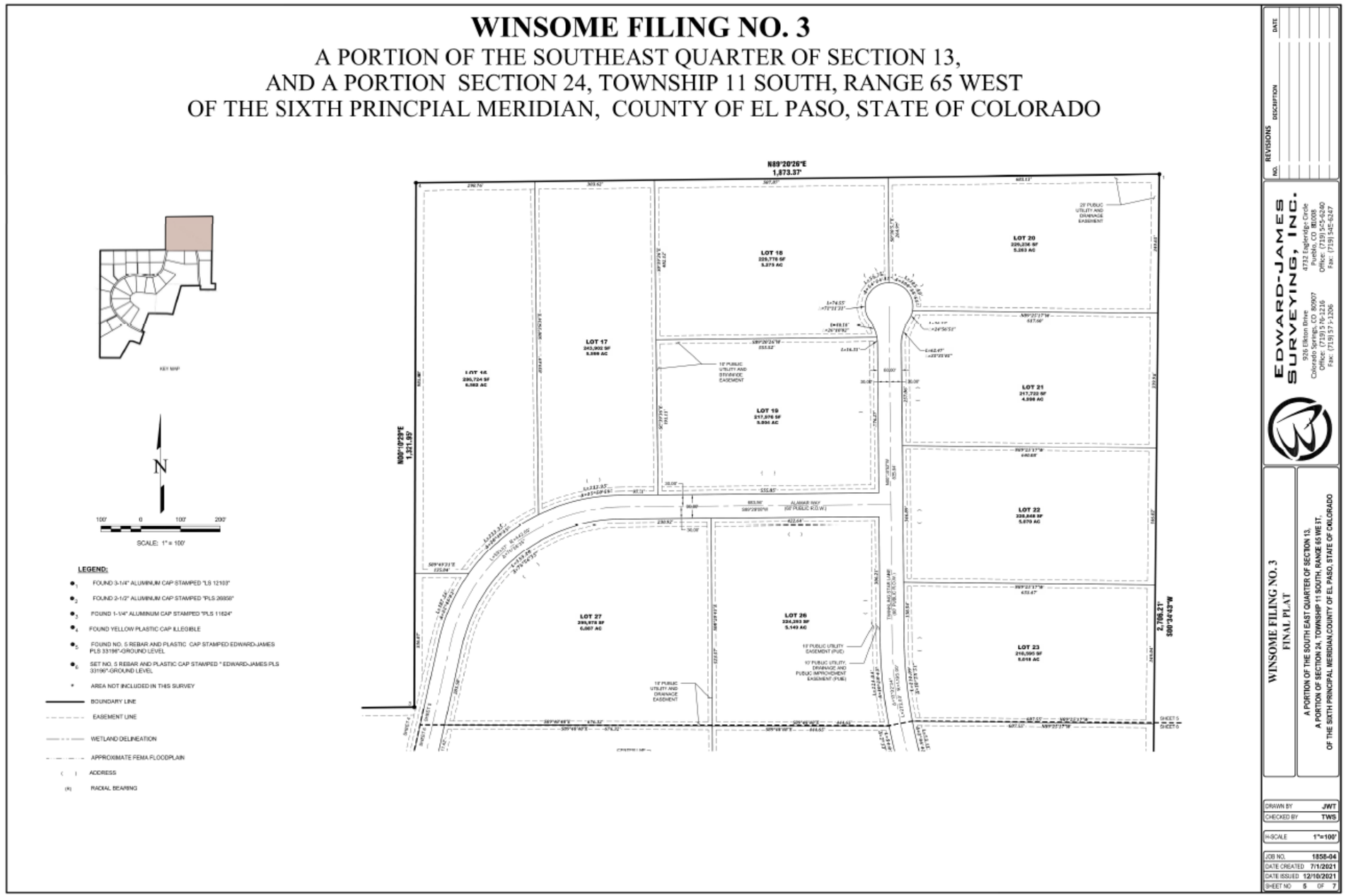


Figure 2: Site Plan Filing No.3 continued

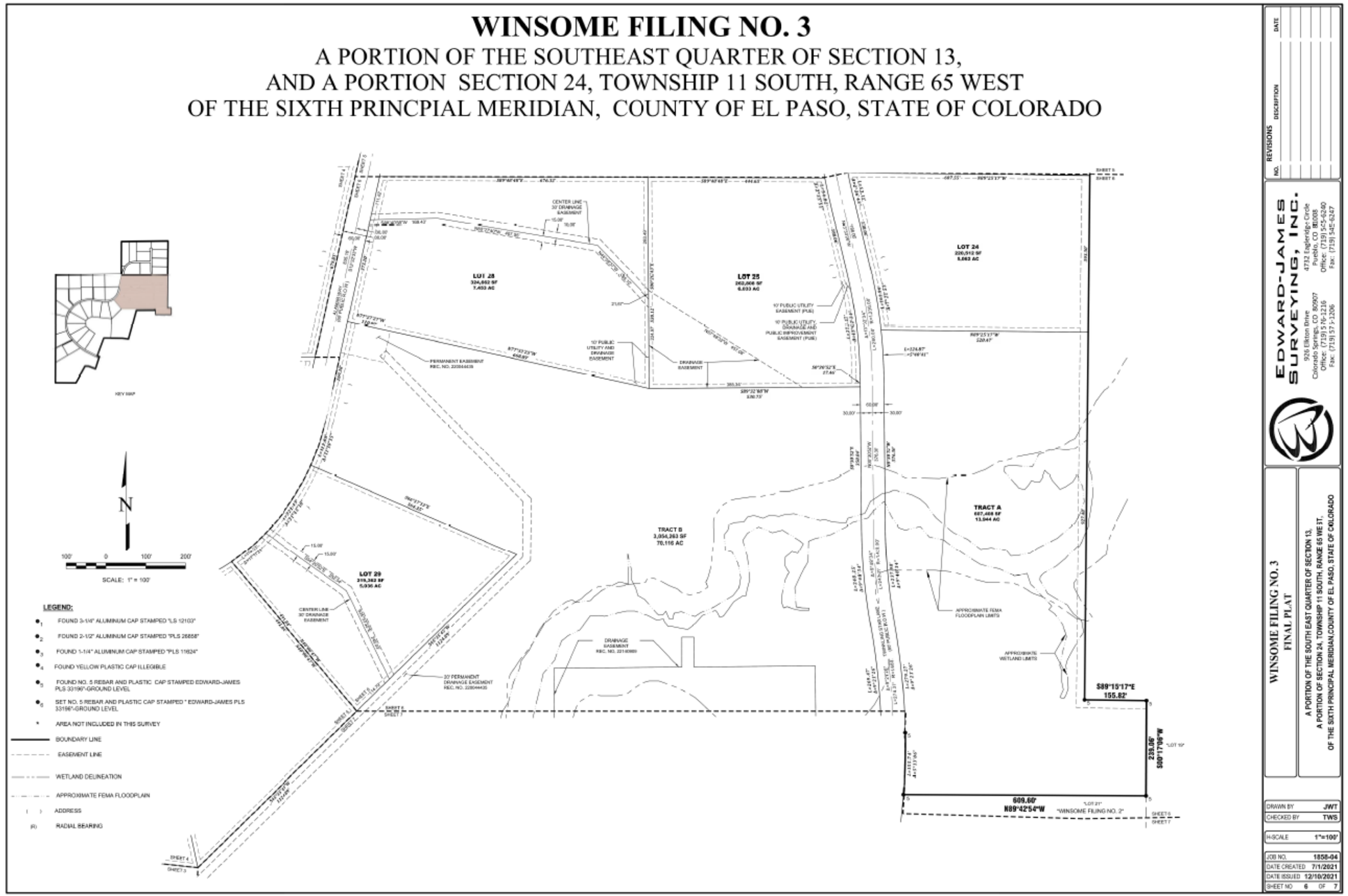
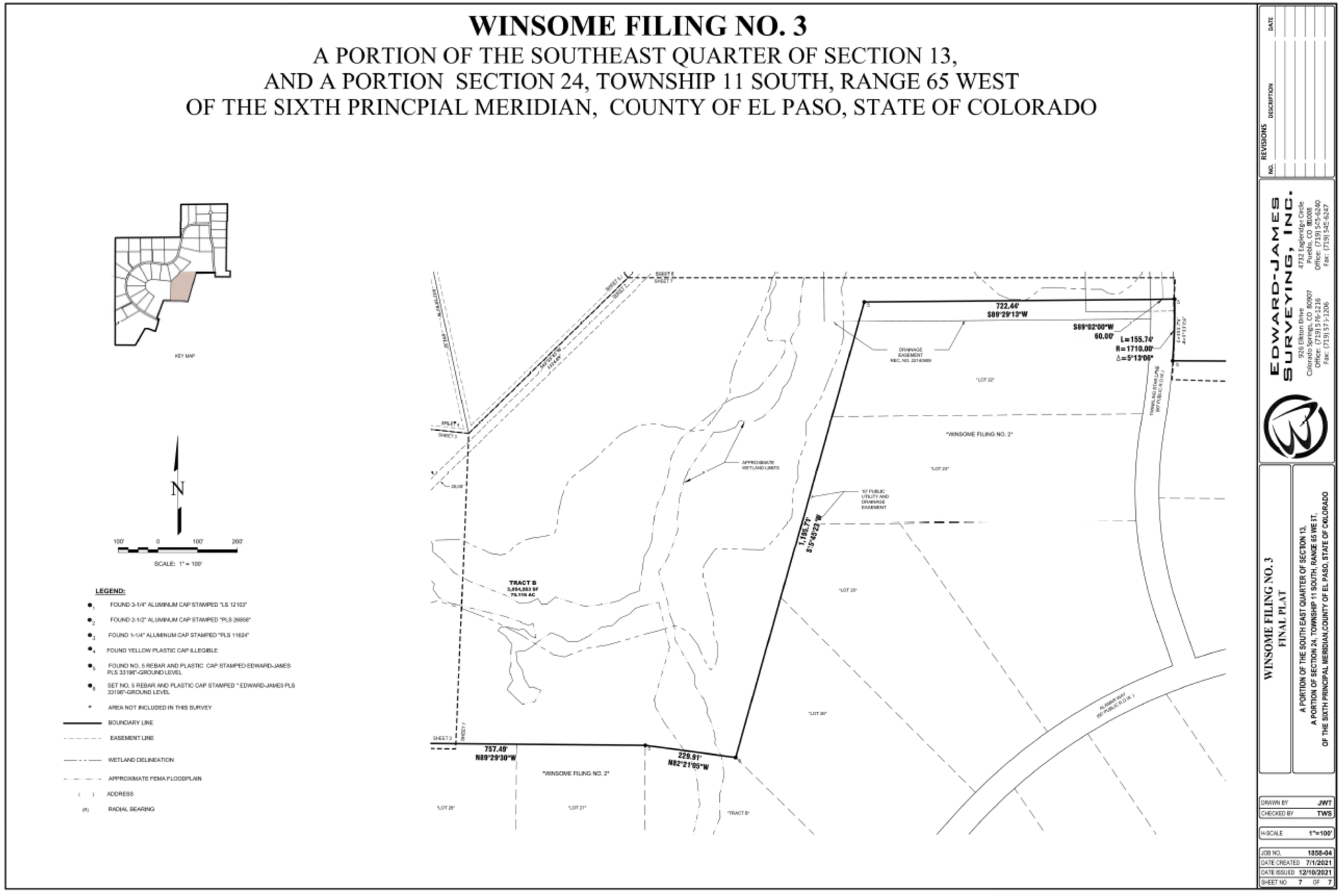


Figure 2: Site Plan Filing No.3 continued



3.0 Proposed Development

Winsome Filing No. 3 consists of 38 single family lots. Access to the development is proposed from three full-movement intersections to Hodgen Road (Hodgen Road/Winsome Way, Hodgen Road/Bison Meadows Ct., and Hodgen Road/Early Light Drive) and one full-movement access to Meridian Road (Woodridge Terrace/Meridian Road intersection). See Table 1: Trip Generation, Figure 2: Site Plan, and Section 4.3 Intersection Improvements.

3.1 Trip Generation

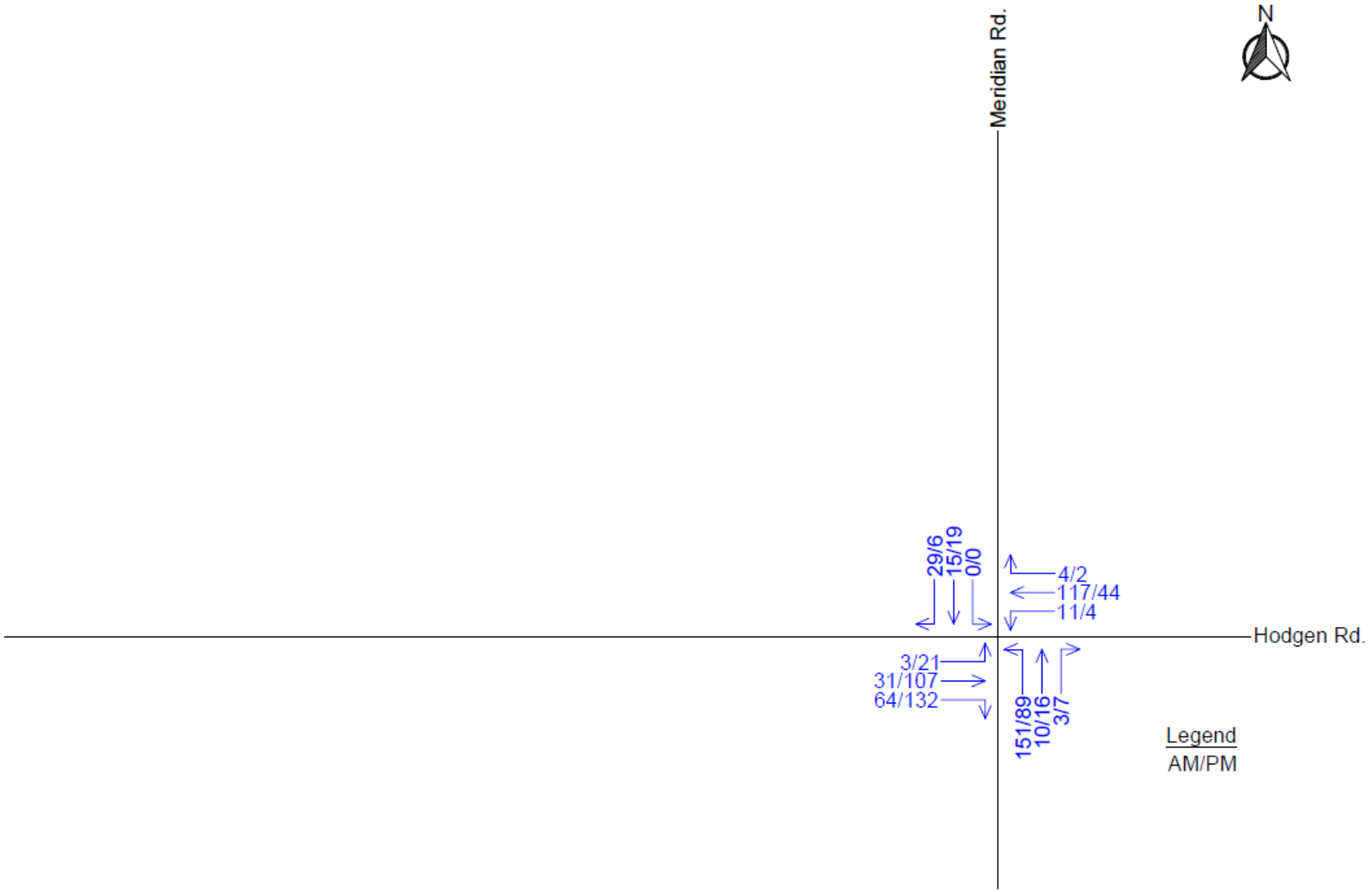
Site generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Report* published by the Institute of Transportation Engineers (ITE). ITE has established trip generation rates in nationwide studies of similar land uses. For this study, KE used the ITE 9th Edition Trip Generation Report average trip rates for the traffic associated with this proposed development. Per the ITE, full project build-out of the Winsome Development is anticipated to generate approximately: 2,720 daily weekday trips, 315 AM total peak hour trips, and 228 PM total peak hour trips. Table 1 summarizes the ITE Trip Generation for the proposed development.

Table 1: Trip Generation

ITE Code	Filing	Land Use		Average Daily Trips		AM Peak Hour Trips						PM Peak Hour Trips					
			Size	Rate	Total	Rate	% In	In	% Out	Out	Total	Rate	% In	In	% Out	Out	Total
		Phase 1															
210	Filing No. 1	Single Family	47 DU	9.52	447	0.75	25%	9	75%	26	35	1.00	63%	30	37%	17	47
		Subtotal Phase 1			**447**			**9**		**26**	**35**			**30**		**17**	**47**
		Phase 2															
210	Filing No. 2	Single Family	36 DU	9.52	343	0.75	25%	7	75%	20	27	1.00	63%	23	37%	13	36
826	Filing No. 2	Retail	30.0 KSF	44.32	1,330	6.84	48%	98	52%	107	205	2.71	44%	36	56%	46	82
		Subtotal Phase 2			**1,673**			**105**		**127**	**232**			**59**		**59**	**118**
		Phase 3															
210	Filing No. 2	Single Family	25 DU	9.52	238	0.75	25%	5	75%	14	19	1.00	63%	16	37%	9	25
		Subtotal Phase 3			**238**			**5**		**14**	**19**			**16**		**9**	**25**
		Phase 4															
210	Filing No. 3	Single Family	38 DU	9.52	362	0.75	25%	7	75%	22	29	1.00	63%	24	37%	14	38
		Subtotal Phase 4			**362**			**7**		**22**	**29**			**24**		**14**	**38**
Total (146 DU + Commercial Lot)					**2,720**			**126**		**189**	**315**			**129**		**99**	**228**

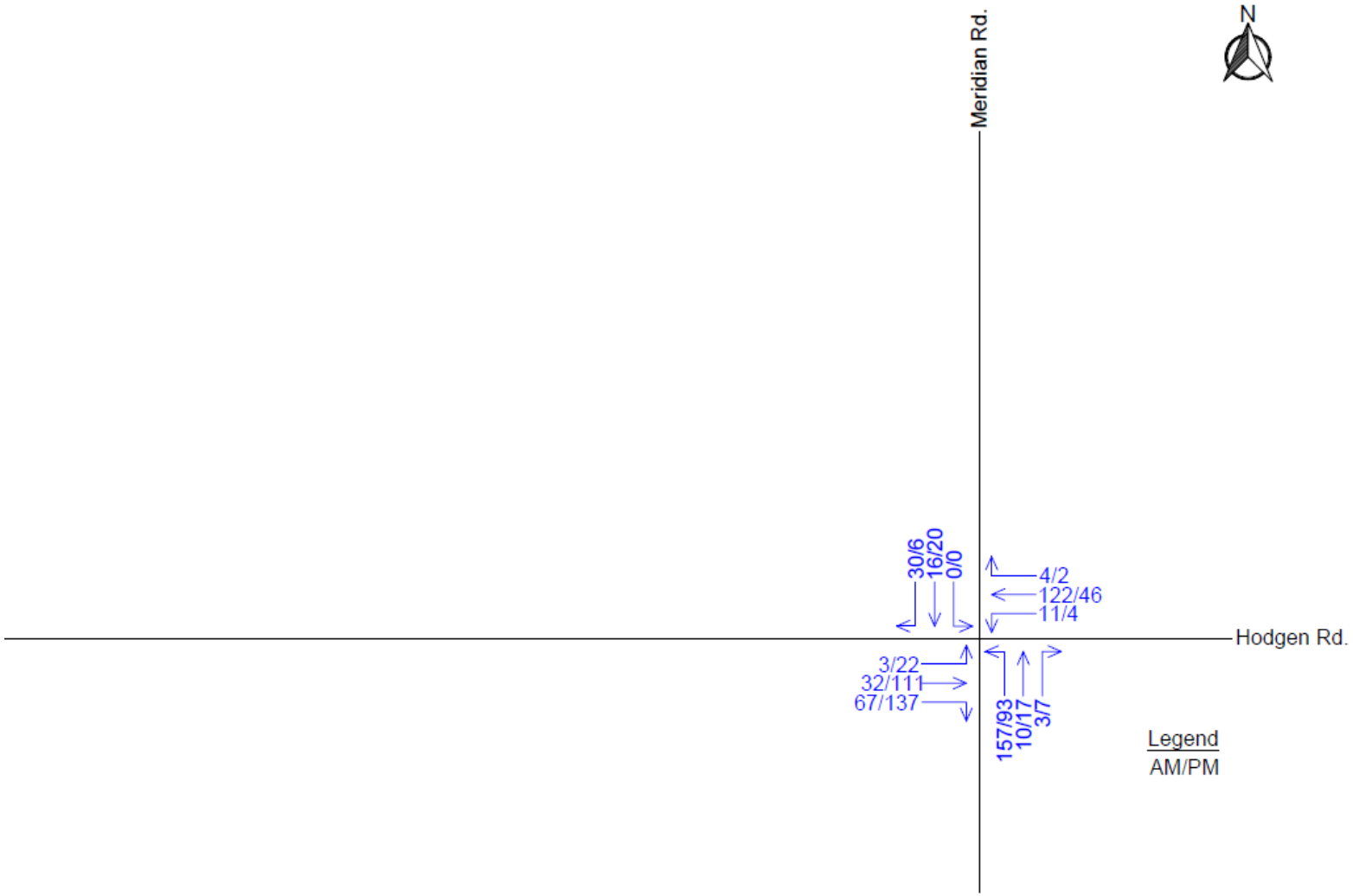
DU = Dwelling Units
KSF = Thousand Square Feet

Figure 3: Recent Peak Hour Traffic



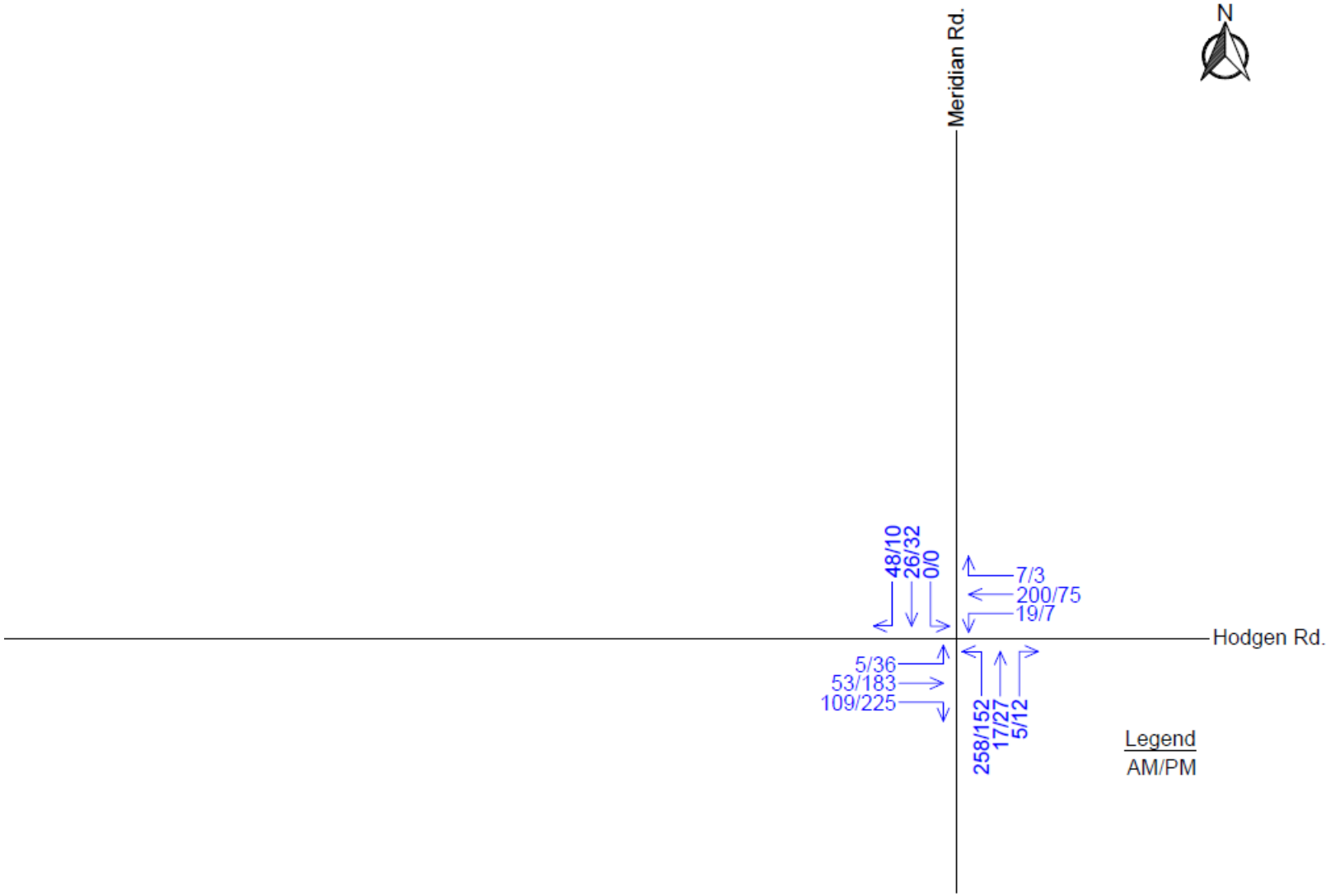
Hodgen Road ~ 4,000 ADT (See Section 2.1)
Meridian Road ~ 2,500 ADT (10 times the highest peak hour used, rounded up to be conservative)

Figure 4: 2025 Background Traffic



Hodgen Road ~ 4,000 ADT (See Section 2.1)
Meridian Road ~ 2,500 ADT (10 times the highest peak hour used, rounded up to be conservative)

Figure 5: 2045 Background Traffic



Hodgen Road ~ 12,000 ADT (See Section 2.1)
Meridian Road ~ 4,000 ADT (10 times the highest peak hour used, rounded up to be conservative)

Figure 6: Trip Distribution

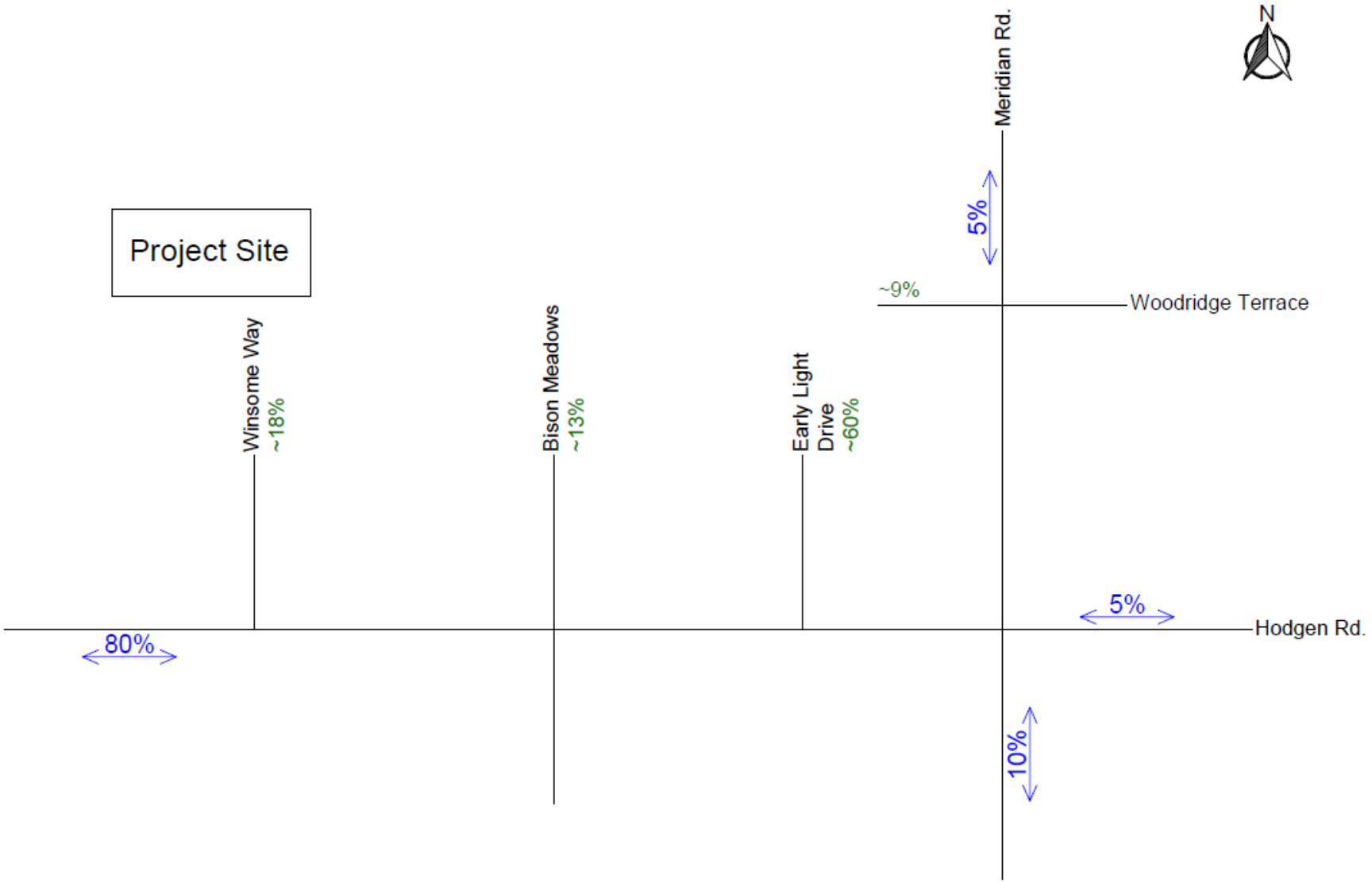


Figure 7: Site Generated Peak Hour Traffic

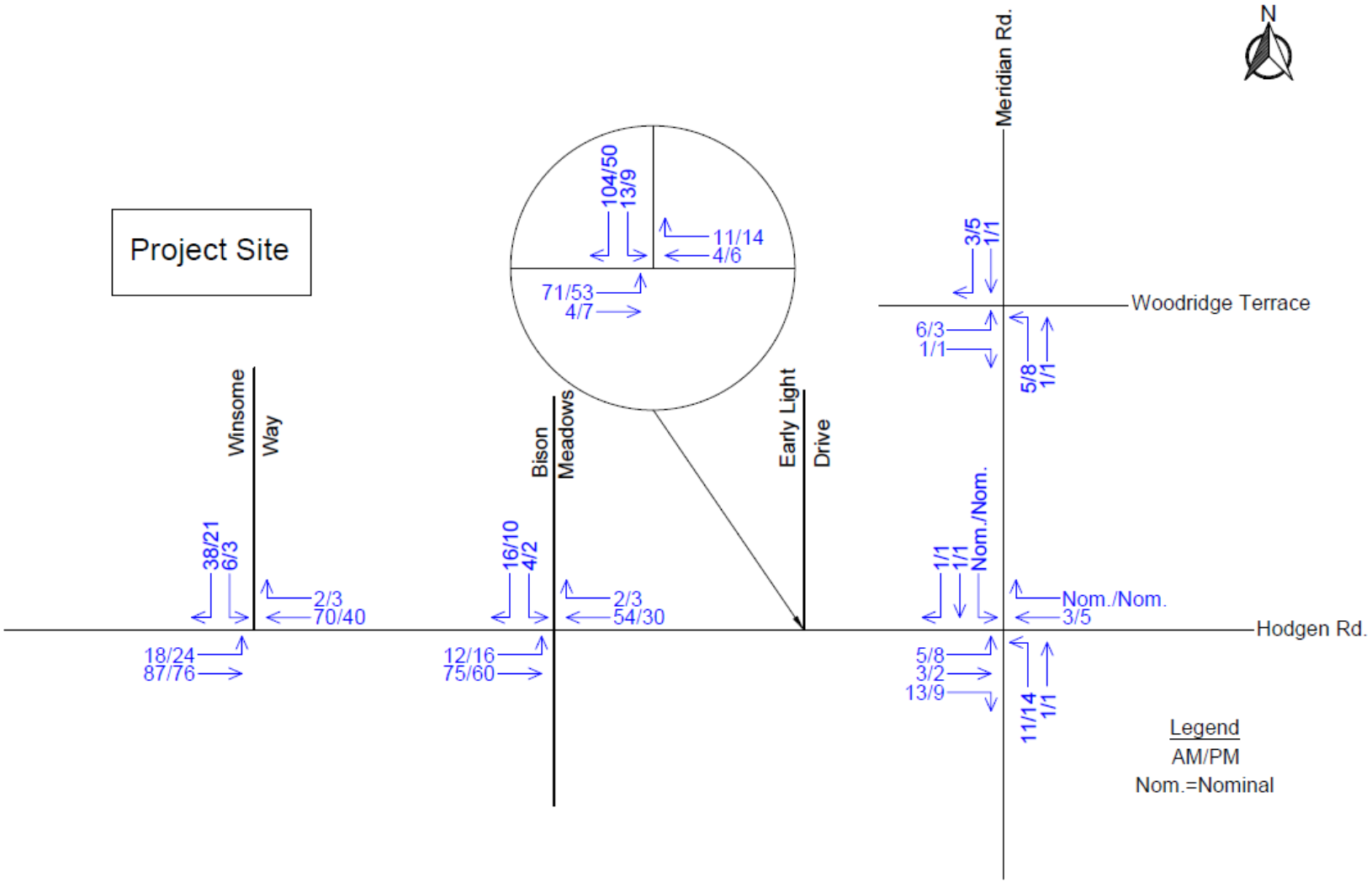
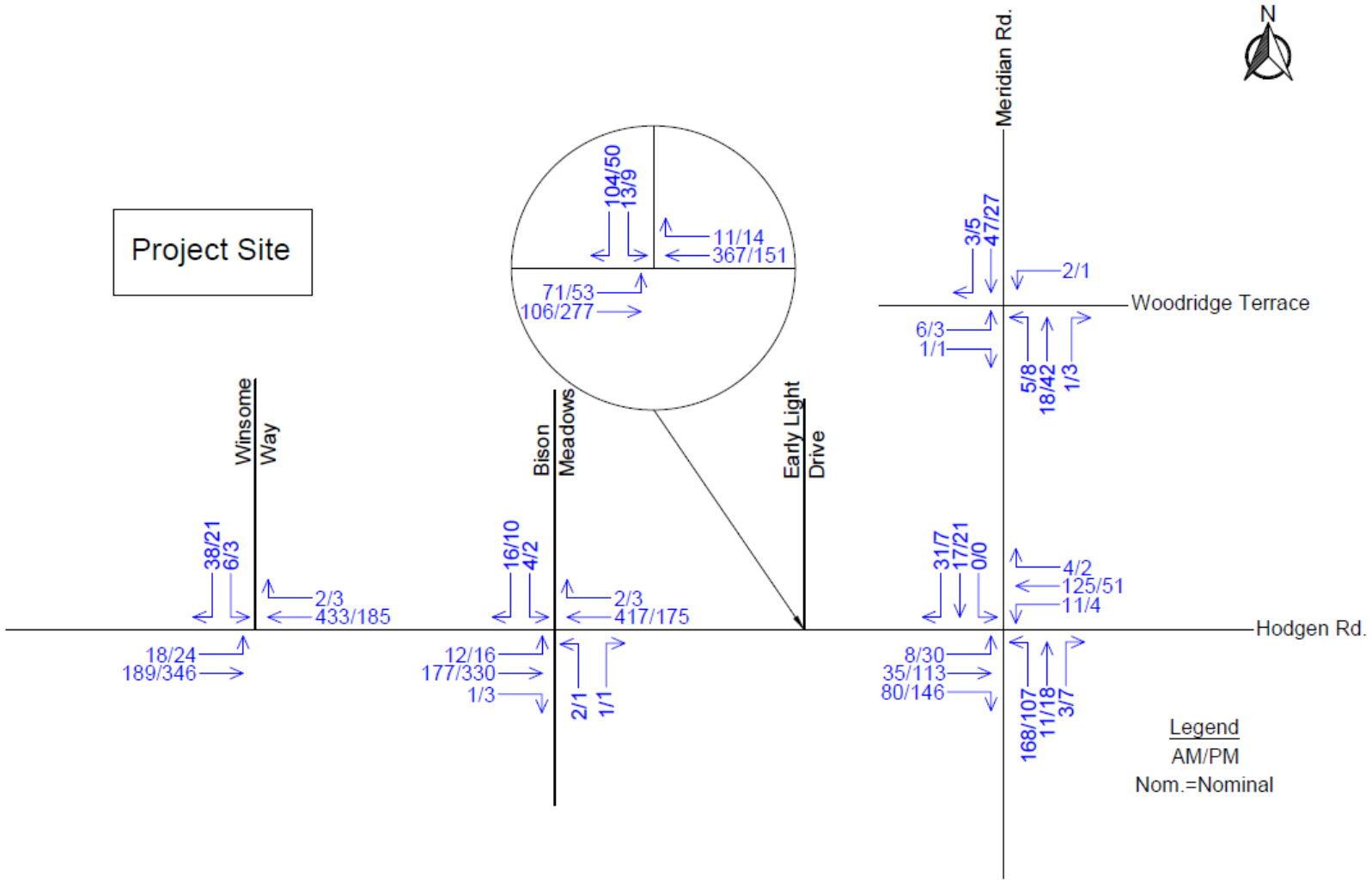
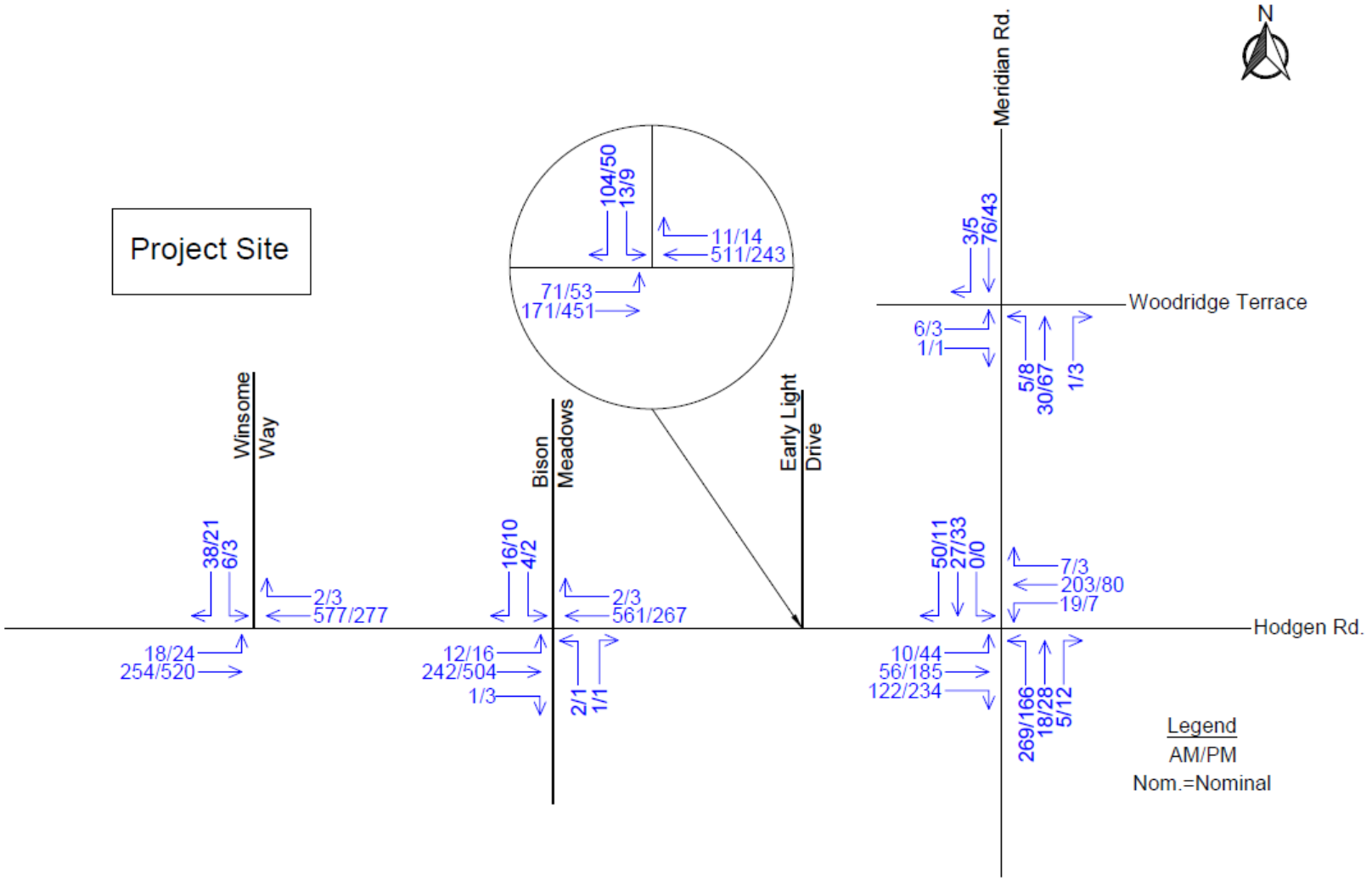


Figure 8: 2025 Short Range Total Traffic



Hodgen Road ~ 4,000 ADT (See Section 2.1)
Meridian Road ~ 2,500 ADT (10 times the highest peak hour used, rounded up to be conservative)

Figure 9: 2045 Long Range Total Traffic



Hodgen Road ~ 12,000 ADT (See Section 2.1)
Meridian Road ~ 4,000 ADT (10 times the highest peak hour used, rounded up to be conservative)

3.2 Trip Distribution

Distribution of site traffic on the street system was based on the area street system characteristics, existing traffic patterns and volumes, anticipated surrounding development areas, and the proposed access system for the project. The directional distribution of traffic is a means to quantify the percentage of site generated traffic that approaches the site from a given direction and departs the site back to the original source. The trip distributions were obtained from looking at the traffic patterns associated with the traffic counts and the origins/destinations. This study reviews the typical weekday peak hour traffic associated with the weekday AM and PM peak hours. Based upon this, the majority of traffic during the week will be traveling to and from the west during the weekday AM and PM peak hours. Additionally, trip distributions for each proposed roadway connection were assigned per the ITE recommendations. Figure 6 illustrates the trip distribution used for the project's analysis.

3.3 Traffic Assignment

Traffic assignment was obtained by applying the trip distributions to the estimated trip generation of the development. Figures 7 shows the site generated traffic assignment for the project.

3.4 Short Range Total Peak Hour Traffic

Site generated peak hour traffic volumes were added to the background traffic volumes to represent the estimated traffic conditions for the short range 2025 horizon. These background (2025) and short range (2025) total traffic volumes are shown in Figures 4 and 8. The short range analysis year 2025 includes the proposed development for this project plus an increase in background traffic. Background traffic growth rate (2%) obtained from the most recent available information in the CDOT Online Transportation Information Systems (OTIS). To be conservative, these traffic volumes show the entire build-out of the Winsome Subdivision.

3.5 Long Range Total Peak Hour Traffic

Site generated peak hour traffic volumes were added to the background traffic volumes to represent the estimated traffic conditions for the long range 2045 horizon. These background

(2045) and long range (2045) total traffic volumes are shown in Figures 5 and 9. The long range analysis year 2045 includes the proposed development for the project plus an increase in background traffic. Background traffic growth rate (2%) obtained from the most recent available information in the CDOT Online Transportation Information Systems (OTIS). To be conservative, these traffic volumes show the entire build-out of the Winsome Subdivision.

4.0 Traffic Operation Analysis

KE's analysis of traffic operations in the site vicinity was conducted to determine the capacity at the identified intersections. The acknowledged source for determining overall capacity is the 2010 Edition of the Highway Capacity Manual (HCM).

4.1 Analysis Methodology

Capacity analysis results are listed in terms of level of service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. LOS ranges from an A (very little delay) to an F (long delays). A description of the level of service (LOS) for signalized and unsignalized intersections from the 2010 Highway Capacity Manual (HCM) are provided in Appendix B.

4.2 Intersection Operational Analysis

Operational analysis was performed for the short range 2025 horizon and the long range 2045 horizon. The calculations for this analysis are provided in Appendix E. Using the short range and long range total traffic volumes, the project's study intersections are projected to operate acceptably. See Table 5 and Table 6 for the 2025 Short Range Total and 2045 Long Range Total Peak Hour Operation. To be conservative, the LOS service in these tables reflects the entire build-out of the Winsome Subdivision.

4.3 Intersection Improvements

The auxiliary lane analysis for the study intersections were conducted using the criteria in the El Paso County Engineering Criteria Manual. Based upon this criteria, a left-turn deceleration lane is required in Hodgen Road at an intersection with a projected peak hour ingress turning volume greater than 25 vph. Additionally, a right-turn deceleration lane is required in Hodgen Road at

an intersection with a projected peak hour ingress turning volume greater than 50 vph, and a right-turn acceleration lane is generally not required. Additionally, a left-turn deceleration lane is required in Meridian Road at an intersection with a projected peak hour ingress turning volume greater than 25 vph and a right-turn deceleration lane is required in Meridian Road at an intersection with a projected peak hour ingress turning volume greater than 50 vph, and a right-turn acceleration lane is generally not required. Based upon this criteria, an eastbound left-turn deceleration lane is required at the Hodgen Road/Early Light Drive intersection. While not required per ECM criteria, an eastbound left-turn lane at the Hodgen Road/Winsome Way intersection is also recommended to provide an added benefit to the project and roadway system.

Therefore, based upon the projected distribution of traffic of the development and the projected traffic volumes, the following are the auxiliary lane recommendations for the Winsome Project.

Phase 1 Intersection Improvements (Filing No. 1):

- Eastbound left-turn lane at the intersection of Hodgen Road/Winsome Way. Minimum total length = 580' (240' bay taper + 340' full width) with a 12' minimum lane width.

Phase 2 Intersection Improvements (Filing No. 2):

- Eastbound left-turn lane at the intersection of Hodgen Road/Winsome Way (if not already constructed). Minimum total length = 580' (240' bay taper + 340' full width) with a 12' minimum lane width.

Phase 3 Intersection Improvements (Filing No. 2):

- Eastbound left-turn lane at the intersection of Hodgen Road/Early Light Drive. Minimum total length = 630' (240' bay taper + 390' full width) with a 12' minimum lane width.
- The Hodgen Road/Early Light Drive intersection should also be designed with a dedicated southbound right-turn lane (SBRTL). The recommended minimum geometry for this SBRTL in Early Light Drive is a combined total length of 335' = 120' (bay taper) + 115' (lane length) + 100' (storage).

Phase 4 Intersection Improvements (Filing No. 3):

- Eastbound left-turn lane at the intersection of Hodgen Road/Winsome Way (if not

already constructed). Minimum total length = 580' (240' bay taper + 340' full width) with a 12' minimum lane width.

- Eastbound left-turn lane at the intersection of Hodgen Road/Early Light Drive (if not already constructed). Minimum total length = 630' (240' bay taper + 390' full width) with a 12' minimum lane width.

Total Project Build-out Intersection Improvements:

- Eastbound left-turn lane at the intersection of Hodgen Road/Winsome Way. Minimum total length = 580' (240' bay taper + 340' full width) with a 12' minimum lane width.
- Eastbound left-turn lane at the intersection of Hodgen Road/Early Light Drive. Minimum total length = 630' (240' bay taper + 390' full width) with a 12' minimum lane width.

Note: The Bay Taper = WS/3. W = 12', S (design speed) = 60 mph.
Therefore, Bay Taper = 240'.

4.4 Sight Distance

The sight distance for the proposed project intersections were reviewed. Based upon site visits, review of photos, and topographic survey, the sight distance at the proposed access points to the project were found to be appropriate. Additionally, the Hodgen Road profile was plotted and the proposed access point locations were reviewed on the plot to make sure that vertical sight distance at the proposed access locations was sufficient. The intersection sight distance was reviewed and the proposed intersections comply with the sight distance criteria in Table 2-21 of the El Paso County Engineering Criteria Manual (ECM).

4.5 ECM Deviations

- Section 2.25.B.1 Spacing for Rural Minor Arterial. 0.25 mile spacing of proposed access (Winsome Way) to Hodgen Road. The standard is 0.25 mile (1,320') intersection spacing. The proposed access (Winsome Way) is spaced at approximately 780' (measured to center of intersection). See end of Appendix for approved deviation

4.6 Transportation Impact Fees

The developer is aware of the Transportation Impact Fees and will coordinate with El Paso County on the payment of these fees.

Table 2: Recent Peak Hour Operation

Intersection	Movement	Level of Service (LOS)	
		AM	PM
		LOS	LOS
Meridian Road/Hodgen Road	EB Left	A	A
	EB Thru	A	A
	EB Right	A	A
	EB Approach	A	A
	WB Left	A	A
	WB Thru/Right	A	A
	WB Approach	A	A
	NB Left	B	B
	NB Thru/Right	B	B
	NB Approach	B	B
	SB Left/Thru/Right	A	B
	SB Approach	A	B
	Overall	A	A

Table 3: 2025 Background Peak Hour Operation

Intersection	Movement	Level of Service (LOS)	
		AM	PM
		LOS	LOS
Meridian Road/Hodgen Road	EB Left	A	A
	EB Thru	A	A
	EB Right	A	A
	EB Approach	A	A
	WB Left	A	A
	WB Thru/Right	A	A
	WB Approach	A	A
	NB Left	B	B
	NB Thru/Right	B	B
	NB Approach	B	B
	SB Left/Thru/Right	A	B
	SB Approach	A	B
	Overall	A	A

Table 4: 2045 Background Peak Hour Operation

Intersection	Movement	Level of Service (LOS)	
		AM	PM
		LOS	LOS
Meridian Road/Hodgen Road	EB Left	A	A
	EB Thru	A	A
	EB Right	A	A
	EB Approach	A	A
	WB Left	A	A
	WB Thru/Right	A	A
	WB Approach	A	A
	NB Left	C	B
	NB Thru/Right	B	B
	NB Approach	C	B
	SB Left/Thru/Right	B	B
	SB Approach	B	B
	Overall	A	A

Table 5: 2025 Short Range Peak Hour Operation

Intersection	Movement	Level of Service (LOS)	
		AM	PM
		LOS	LOS
Meridian Road/Hodgen Road	EB Left	A	A
	EB Thru	A	A
	EB Right	A	A
	EB Approach	A	A
	WB Left	A	A
	WB Thru/Right	A	A
	WB Approach	A	A
	NB Left	B	B
	NB Thru/Right	B	B
	NB Approach	B	B
	SB Left/Thru/Right	B	B
	SB Approach	B	B
	Overall	A	A

Intersection	Movement	Level of Service (LOS)	
		AM	PM
		LOS	LOS
Hodgen Road/Winsome Way	EB Left	A	A
	EB Thru	A	A
	EB Approach	A	A
	WB Thru/Right	A	A
	WB Approach	A	A
	SB Left/Right	B	B
	SB Approach	B	B
	Overall	A	A

Table 5: 2025 Short Range Peak Hour Operation (Continued…)

Intersection	Movement	Level of Service (LOS)	
		AM	PM
		LOS	LOS
Hodgen Rd./Bison Meadows Court	EB Left	A	A
	EB Thru/Right	A	A
	EB Approach	A	A
	WB Left/Thru/Right	A	A
	WB Approach	A	A
	NB Left/Thru/Right	B	B
	NB Approach	B	B
	SB Left/Thru/Right	B	B
	SB Approach	B	B
	Overall	A	A

Intersection	Movement	Level of Service (LOS)	
		AM	PM
		LOS	LOS
Hodgen Road/Early Light Drive	EB Left	A	A
	EB Thru	A	A
	EB Approach	A	A
	WB Thru/Right	A	A
	WB Approach	A	A
	SB Left/Right	B	B
	SB Approach	B	B
	Overall	A	A

Table 5: 2025 Short Range Peak Hour Operation (Continued…)

Intersection	Movement	Level of Service (LOS)	
		AM	PM
		LOS	LOS
Meridian Road/Woodridge Terrace	EB Left/Thru/Right	A	A
	EB Approach	A	A
	WB Left/Thru/Right	A	A
	WB Approach	A	A
	NB Left/Thru/Right	A	A
	NB Approach	A	A
	SB Left/Thru/Right	A	A
	SB Approach	A	A
	Overall	A	A

Table 6: 2045 Long Range Peak Hour Operation

Intersection	Movement	Level of Service (LOS)	
		AM	PM
		LOS	LOS
Meridian Road/Hodgen Road	EB Left	A	A
	EB Thru	A	A
	EB Right	A	A
	EB Approach	A	A
	WB Left	A	A
	WB Thru/Right	A	A
	WB Approach	A	A
	NB Left	C	C
	NB Thru/Right	B	B
	NB Approach	C	B
	SB Left/Thru/Right	B	B
	SB Approach	B	B
	Overall	A	A

Intersection	Movement	Level of Service (LOS)	
		AM	PM
		LOS	LOS
Hodgen Road/Winsome Way	EB Left	A	A
	EB Thru	A	A
	EB Approach	A	A
	WB Thru/Right	A	A
	WB Approach	A	A
	SB Left/Right	B	B
	SB Approach	B	B
	Overall	A	A

Table 6: 2045 Long Range Peak Hour Operation (Continued…)

Intersection	Movement	Level of Service (LOS)	
		AM	PM
		LOS	LOS
Hodgen Rd./Bison Meadows Court	EB Left	A	A
	EB Thru/Right	A	A
	EB Approach	A	A
	WB Left/Thru/Right	A	A
	WB Approach	A	A
	NB Left/Thru/Right	C	C
	NB Approach	C	C
	SB Left/Thru/Right	B	B
	SB Approach	B	B
	Overall	A	A

Intersection	Movement	Level of Service (LOS)	
		AM	PM
		LOS	LOS
Hodgen Road/Early Light Drive	EB Left	A	A
	EB Thru	A	A
	EB Approach	A	A
	WB Thru/Right	A	A
	WB Approach	A	A
	SB Left/Right	B	B
	SB Approach	B	B
	Overall	A	A

Table 6: 2045 Long Range Peak Hour Operation (Continued…)

Intersection	Movement	Level of Service (LOS)	
		AM	PM
		LOS	LOS
Meridian Road/Woodridge Terrace	EB Left/Thru/Right	A	A
	EB Approach	A	A
	WB Left/Thru/Right	A	A
	WB Approach	A	A
	NB Left/Thru/Right	A	A
	NB Approach	A	A
	SB Left/Thru/Right	A	A
	SB Approach	A	A
	Overall	A	A

5.0 Findings:

Based upon the analysis presented in this TIS, the Winsome project located at the northwest quadrant of the intersection of Hodgen Road and Meridian Road in El Paso County, CO will be able to be successfully meet El Paso County's requirements with the below recommended street improvements. All study intersections are projected to operate acceptably upon full development project. See Appendix E for Synchro outputs.

Based upon the projected distribution of traffic for the development and the projected traffic volumes, the following are the auxiliary lane recommendations for the Winsome Project.

Phase 1 (Filing No. 1) Intersection Improvements:

- Eastbound left-turn lane at the intersection of Hodgen Road/Winsome Way. Minimum total length = 580' (240' bay taper + 340' full width) with a 12' minimum lane width.
- 8' paved shoulders on Hodgen Road is recommended adjacent to the proposed eastbound left-turn lane. Additionally, a 2' paved shoulder (min.) along the PCRs of the second entrance (Bison Meadows Ct.) to Hodgen Road is recommended to provide more pavement area to comfortably accommodate right-turns.

Phase 2 (Filing No. 2) Intersection Improvements:

- Eastbound left-turn lane at the intersection of Hodgen Road/Winsome Way (if not already constructed). Minimum total length = 580' (240' bay taper + 340' full width) with a 12' minimum lane width.

Phase 3 (Filing No. 2) Intersection Improvements:

- Eastbound left-turn lane at the intersection of Hodgen Road/Early Light Drive. Minimum total length = 630' (240' bay taper + 390' full width) with a 12' minimum lane width.
- 8' paved shoulders on Hodgen Road is recommended adjacent to the proposed eastbound left-turn lane. Additionally, a 2' paved shoulder (min.) along the PCRs at the Hodgen Road/Early Light Drive intersection is recommended to provide more pavement area to comfortably accommodate right-turns.
- The Hodgen Road/Early Light Drive intersection should also be designed with a dedicated southbound right-turn lane (SBRTL). The recommended minimum geometry for this SBRTL in Early Light Drive is a combined total length of 335' = 120' (bay taper) +

115’ (lane length) + 100’ (storage).

Phase 4 (Filing No. 3) Intersection Improvements:

- Eastbound left-turn lane at the intersection of Hodgen Road/Winsome Way (if not already constructed). Minimum total length = 580’ (240’ bay taper + 340’ full width) with a 12’ minimum lane width.
- Eastbound left-turn lane at the intersection of Hodgen Road/Early Light Drive (if not already constructed). Minimum total length = 630’ (240’ bay taper + 390’ full width) with a 12’ minimum lane width.

Total Project Build-out Intersection Improvements:

- Eastbound left-turn lane at the intersection of Hodgen Road/Winsome Way. Minimum total length = 580’ (240’ bay taper + 340’ full width) with a 12’ minimum lane width.
- Eastbound left-turn lane at the intersection of Hodgen Road/Early Light Drive. Minimum total length = 630’ (240’ bay taper + 390’ full width) with a 12’ minimum lane width.

Project Findings:

- Total build-out of the Winsome project is anticipated to generate approximately 2,720 daily weekday trips, 315 AM total peak hour trips, and 228 PM total peak hour trips.
- The study intersections will operate acceptably with the development of the Winsome project and background traffic in the 2025 Short Range and 2045 Long Range future.
- The proposed site access points (Winsome Way, Bison Meadows, Early Light Drive, and Woodridge Terrace) are full-movements access points to Hodgen Road and Meridian Road. The proposed access point of Early Light Drive to Hodgen Road is less than 0.25 mile spacing (approximately 780’ measured to center of intersection). The other proposed site access points (Winsome Way, Bison Meadows, and Woodridge Terrace) meet the 0.25 mile intersection spacing requirement. While the intersection spacing of Early Light Drive is less than 1,320’ (0.25 mile), the access point location is appropriate from a traffic engineering perspective. Typically, the 1,320’ (0.25 mile) access spacing on arterials is to provide for acceleration lanes and deceleration lanes for all traffic scenarios on arterials. For the Winsome project, acceleration lanes are not triggered per the El Paso County Engineering Criteria Manual and the deceleration lanes are able to be designed and constructed with the project’s proposed full-movement access spacing.

Therefore, the proposed access point locations are appropriate from a traffic engineering and safety aspect. See Section 4.3 Intersection Improvements.

- 8' paved shoulders on Hodgen Road is recommended adjacent to the proposed left-turn lanes. Additionally, a 2' paved shoulder (min.) along the PCRs of the access points to Hodgen Road are recommended to provide more pavement area to comfortably accommodate right-turns.
- A recent site visit of the project site confirmed that the existing pavement condition of Hodgen Road and Meridian Road is in good condition and has been appropriately maintained.
- Traffic signal warrants are not anticipated to be warranted at the study intersections with the full development of the Winsome project and background traffic in the 2025 Short Range future and the 2045 Long Range future.
- The proposed project's site access, layout, proposed land use, and size is appropriate from a traffic engineering perspective.
- Based upon projected traffic volumes the following are the year 2045 roadway classifications for the streets adjacent to and within the Winsome project. The proposed internal streets within the Winsome Subdivision are recommended to be local streets.

  a) Hodgen Road – Minor Arterial

  b) Meridian Road – Minor Arterial

  c) Winsome Way – Local

  d) Bison Meadows Ct. – Local

  e) Early Light Drive – Local

  f) Woodridge Terrace – Local

  g) Alamar Way – Local

  h) Clove Hitch Ct. – Local

  i) Mosey Trail – Local

  j) Flapjack Lane – Local

  k) Twinkling Star Lane – Local

  l) Rambling Road - Local

- The proposed project is consistent with the El Paso County 2016 Major Transportation Corridors Plan (MTCP) Update and the 2040 Roadway Plan.
- Table 4: 2040 Roadway Improvement Projects in the MTCP shows Hodgen Road being improved to the 2 lane Minor Arterial rural cross section from Goshawk Road to Meridian Road (Project ID U6). Winsome's public roadway improvements are to meet the requirements for the Winsome development and are not reimbursable under the current Major Transportation Corridors Plan (MTCP).

- The Hodgen Road/Early Light Drive intersection should be designed with a dedicated southbound right-turn lane (SBRTL). The recommended minimum geometry for this SBRTL in Early Light Drive is a combined total length of 335' = 120' (bay taper) + 115' (lane length) + 100' (storage).

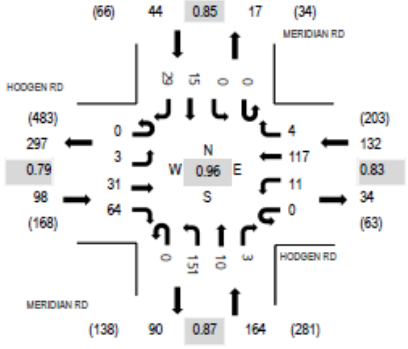
- Filing No. 3 connects to Alamar Way which was constructed with Filing No. 1 and Twinkling Star was constructed with Filing No. 2. The existing and planned roadway improvements are adequate to accommodate the project's traffic.

APPENDICES:

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

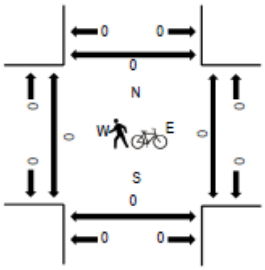
Location: 1 MERIDIAN RD & HODGEN RD AM
Date and Start Time: Thursday, August 30, 2018
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

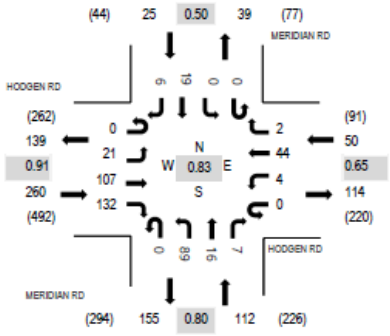
Interval Start Time	HODGEN RD Eastbound				HODGEN RD Westbound				MERIDIAN RD Northbound				MERIDIAN RD Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	1	11	19	0	2	27	0	0	35	2	0	0	0	6	7	110	438	0	0	0	0
7:15 AM	0	1	5	14	0	3	32	0	0	44	2	1	0	0	0	6	108	406	0	0	0	0
7:30 AM	0	0	10	16	0	5	32	3	0	34	0	2	0	0	5	7	114	371	0	0	0	0
7:45 AM	0	1	5	15	0	1	26	1	0	38	6	0	0	0	4	9	106	328	0	0	0	0
8:00 AM	0	3	6	10	0	1	22	0	0	26	5	0	0	0	3	2	78	280	0	0	0	0
8:15 AM	0	2	8	6	0	1	21	0	0	26	3	0	0	0	2	4	73		0	0	0	0
8:30 AM	0	0	7	8	0	0	12	0	0	34	2	0	0	0	2	6	71		0	0	0	0
8:45 AM	0	1	8	11	0	2	12	0	0	20	1	0	0	0	2	1	58		0	0	0	0
Count Total	0	9	60	99	0	15	184	4	0	257	21	3	0	0	24	42	718		0	0	0	0
Peak Hour	0	3	31	64	0	11	117	4	0	151	10	3	0	0	15	29	438		0	0	0	0

All Traffic Data
Services Inc.

(303) 216-2439
www.alltrafficdata.net

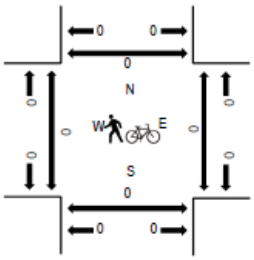
Location: 1 MERIDIAN RD & HODGEN RD PM
Date and Start Time: Thursday, August 30, 2018
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	HODGEN RD Eastbound				HODGEN RD Westbound				MERIDIAN RD Northbound				MERIDIAN RD Southbound				Total	Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	3	18	28	0	0	10	0	0	19	8	2	0	0	4	2	94	417	0	0	0	0
4:15 PM	0	4	16	26	0	1	10	0	0	23	2	1	0	0	2	0	85	397	0	0	0	0
4:30 PM	0	4	32	29	0	1	5	0	0	31	6	1	0	0	5	0	114	447	0	0	0	0
4:45 PM	0	5	27	41	0	1	19	0	0	21	5	2	0	0	2	1	124	442	0	0	0	0
5:00 PM	0	5	16	27	0	0	9	0	0	10	2	2	0	0	2	1	74	436	0	0	0	0
5:15 PM	0	7	32	35	0	2	11	2	0	27	3	2	0	0	10	4	135		0	0	0	0
5:30 PM	0	4	31	38	0	1	6	1	0	17	4	4	0	1	1	1	109		0	0	0	0
5:45 PM	0	7	27	30	0	3	9	0	0	23	5	6	0	0	5	3	118		0	0	0	0
Count Total	0	39	199	254	0	9	79	3	0	171	35	20	0	1	31	12	853		0	0	0	0
Peak Hour	0	21	107	132	0	4	44	2	0	89	16	7	0	0	19	6	447		0	0	0	0

Appendix B: Level of Service (LOS) Table

Level of Service Definitions

Level of Service (LOS)	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

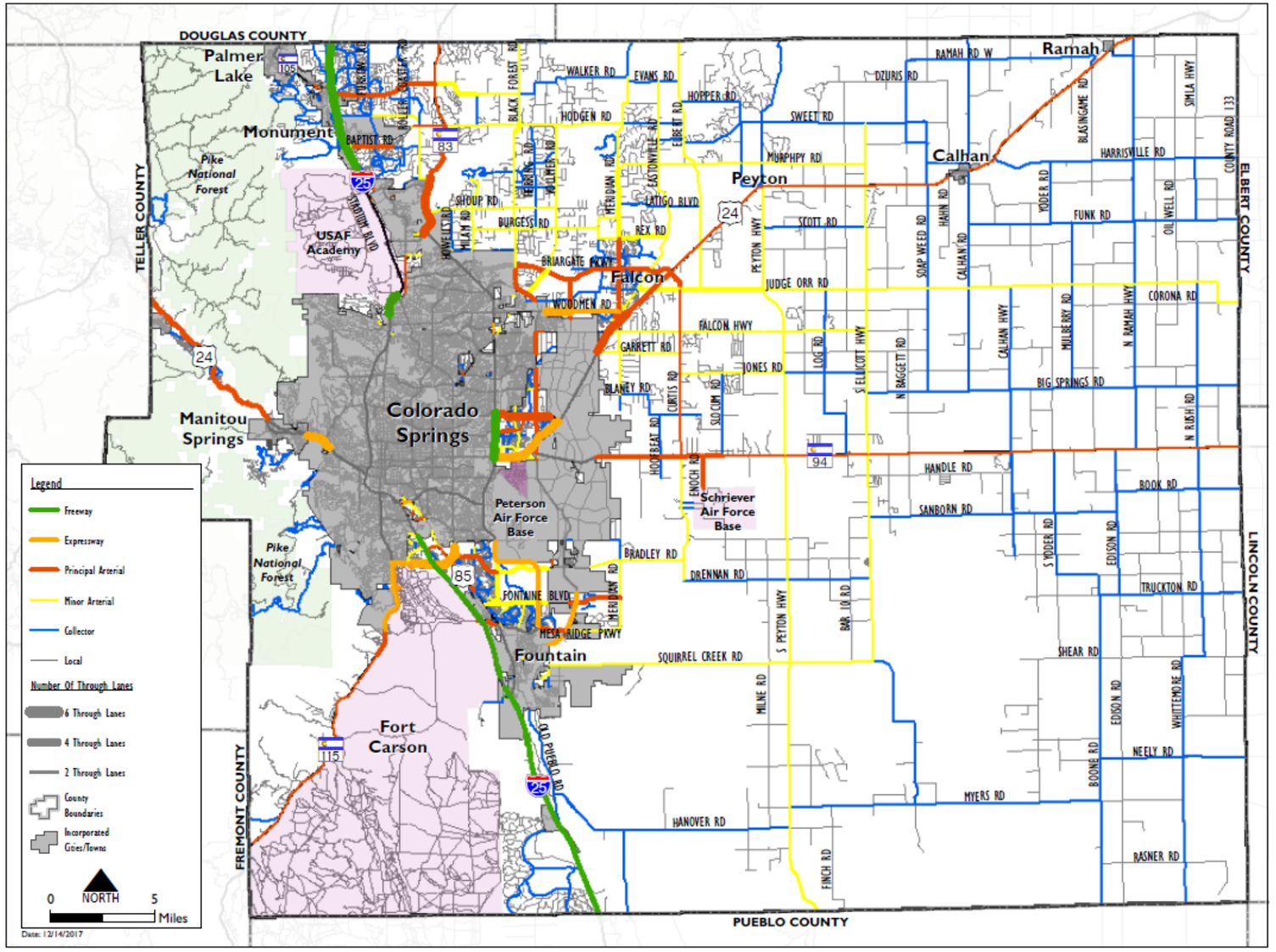
Appendix C: Aerial Image

Hodgen Road looking west

Hodgen Road looking west

Appendix D: 2040 Roadway Plan

Map 14: 2040 Functional Classification



Appendix E: HCM Calculations (Synchro)

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	31	64	11	117	4	151	10	3	0	15	29
Future Vol, veh/h	3	31	64	11	117	4	151	10	3	0	15	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	280	400	-	-	300	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	87	87	87	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	36	75	13	138	5	174	11	3	0	18	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	142	0	0	36	0	0	236	212	36	217	210	140
Stage 1	-	-	-	-	-	-	44	44	-	166	166	-
Stage 2	-	-	-	-	-	-	192	168	-	51	44	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1441	-	-	1575	-	-	718	685	1037	739	687	908
Stage 1	-	-	-	-	-	-	970	858	-	836	761	-
Stage 2	-	-	-	-	-	-	810	759	-	962	858	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1441	-	-	1575	-	-	672	677	1037	721	679	908
Mov Cap-2 Maneuver	-	-	-	-	-	-	672	677	-	721	679	-
Stage 1	-	-	-	-	-	-	967	856	-	834	755	-
Stage 2	-	-	-	-	-	-	755	753	-	943	856	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.6	12	9.7
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	672	736	1441	-	-	1575	-	-	814
HCM Lane V/C Ratio	0.258	0.02	0.002	-	-	0.008	-	-	0.064
HCM Control Delay (s)	12.2	10	7.5	-	-	7.3	-	-	9.7
HCM Lane LOS	B	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	1	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	107	132	4	44	2	89	16	7	0	19	6
Future Vol, veh/h	21	107	132	4	44	2	89	16	7	0	19	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	280	400	-	-	300	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	118	145	5	52	2	105	19	8	0	22	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	54	0	0	118	0	0	241	228	118	239	226	53
Stage 1	-	-	-	-	-	-	164	164	-	62	62	-
Stage 2	-	-	-	-	-	-	77	64	-	177	164	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1551	-	-	1470	-	-	713	671	934	715	673	1014
Stage 1	-	-	-	-	-	-	838	762	-	949	843	-
Stage 2	-	-	-	-	-	-	932	842	-	825	762	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1551	-	-	1470	-	-	680	659	934	684	661	1014
Mov Cap-2 Maneuver	-	-	-	-	-	-	680	659	-	684	661	-
Stage 1	-	-	-	-	-	-	826	751	-	935	840	-
Stage 2	-	-	-	-	-	-	898	839	-	785	751	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.6	11.1	10.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	680	724	1551	-	-	1470	-	-	721
HCM Lane V/C Ratio	0.154	0.037	0.015	-	-	0.003	-	-	0.041
HCM Control Delay (s)	11.3	10.2	7.4	-	-	7.5	-	-	10.2
HCM Lane LOS	B	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	32	67	11	122	4	157	10	3	0	16	30
Future Vol, veh/h	3	32	67	11	122	4	157	10	3	0	16	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	280	400	-	-	300	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	87	87	87	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	38	79	13	144	5	180	11	3	0	19	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	148	0	0	38	0	0	244	219	38	224	217	146
Stage 1	-	-	-	-	-	-	45	45	-	172	172	-
Stage 2	-	-	-	-	-	-	199	174	-	52	45	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1434	-	-	1572	-	-	710	679	1034	732	681	901
Stage 1	-	-	-	-	-	-	969	857	-	830	756	-
Stage 2	-	-	-	-	-	-	803	755	-	961	857	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1434	-	-	1572	-	-	662	672	1034	714	673	901
Mov Cap-2 Maneuver	-	-	-	-	-	-	662	672	-	714	673	-
Stage 1	-	-	-	-	-	-	966	855	-	828	750	-
Stage 2	-	-	-	-	-	-	746	749	-	942	855	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.6	12.3	9.8
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	662	731	1434	-	-	1572	-	-	806
HCM Lane V/C Ratio	0.273	0.02	0.002	-	-	0.008	-	-	0.067
HCM Control Delay (s)	12.5	10	7.5	-	-	7.3	-	-	9.8
HCM Lane LOS	B	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	1.1	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	111	137	4	46	2	93	17	7	0	20	6
Future Vol, veh/h	22	111	137	4	46	2	93	17	7	0	20	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	280	400	-	-	300	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	87	87	87	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	131	161	5	54	2	107	20	8	0	24	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	56	0	0	131	0	0	262	248	131	261	247	55
Stage 1	-	-	-	-	-	-	182	182	-	65	65	-
Stage 2	-	-	-	-	-	-	80	66	-	196	182	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1549	-	-	1454	-	-	691	655	919	692	655	1012
Stage 1	-	-	-	-	-	-	820	749	-	946	841	-
Stage 2	-	-	-	-	-	-	929	840	-	806	749	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1549	-	-	1454	-	-	657	642	919	660	642	1012
Mov Cap-2 Maneuver	-	-	-	-	-	-	657	642	-	660	642	-
Stage 1	-	-	-	-	-	-	806	736	-	930	838	-
Stage 2	-	-	-	-	-	-	894	837	-	765	736	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.6	11.3	10.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	657	704	1549	-	-	1454	-	-	701
HCM Lane V/C Ratio	0.163	0.039	0.017	-	-	0.003	-	-	0.044
HCM Control Delay (s)	11.5	10.3	7.4	-	-	7.5	-	-	10.4
HCM Lane LOS	B	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0.1	0.1	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	35	80	11	125	4	168	11	3	0	17	31
Future Vol, veh/h	8	35	80	11	125	4	168	11	3	0	17	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	280	400	-	-	300	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	87	87	87	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	41	94	13	147	5	193	13	3	0	20	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	152	0	0	135	0	0	263	237	41	290	329	150
Stage 1	-	-	-	-	-	-	59	59	-	176	176	-
Stage 2	-	-	-	-	-	-	204	178	-	114	153	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1429	-	-	1449	-	-	690	664	1030	662	590	896
Stage 1	-	-	-	-	-	-	953	846	-	826	753	-
Stage 2	-	-	-	-	-	-	798	752	-	891	771	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1429	-	-	1449	-	-	637	654	1030	643	581	896
Mov Cap-2 Maneuver	-	-	-	-	-	-	637	654	-	643	581	-
Stage 1	-	-	-	-	-	-	947	841	-	821	746	-
Stage 2	-	-	-	-	-	-	738	745	-	869	766	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.6	12.9	10.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	637	710	1429	-	-	1449	-	-	752
HCM Lane V/C Ratio	0.303	0.023	0.007	-	-	0.009	-	-	0.075
HCM Control Delay (s)	13.1	10.2	7.5	-	-	7.5	-	-	10.2
HCM Lane LOS	B	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.3	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	71	106	367	11	13	104
Future Vol, veh/h	71	106	367	11	13	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	290	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	125	432	13	15	122

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	445	0	-	0	732	439
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	293	-
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	1115	-	-	-	388	618
Stage 1	-	-	-	-	650	-
Stage 2	-	-	-	-	757	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1115	-	-	-	359	618
Mov Cap-2 Maneuver	-	-	-	-	359	-
Stage 1	-	-	-	-	601	-
Stage 2	-	-	-	-	757	-

Approach	EB	WB	SB
HCM Control Delay, s	3.4	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1115	-	-	-	572
HCM Lane V/C Ratio	0.075	-	-	-	0.241
HCM Control Delay (s)	8.5	-	-	-	13.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	177	1	0	417	2	2	0	1	4	0	16
Future Vol, veh/h	12	177	1	0	417	2	2	0	1	4	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	290	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	208	1	0	491	2	2	0	1	5	0	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	493	0	0	209	0	0	739	730	209	729	729	492
Stage 1	-	-	-	-	-	-	237	237	-	492	492	-
Stage 2	-	-	-	-	-	-	502	493	-	237	237	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1071	-	-	1362	-	-	333	349	831	338	350	577
Stage 1	-	-	-	-	-	-	766	709	-	558	548	-
Stage 2	-	-	-	-	-	-	552	547	-	766	709	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1071	-	-	1362	-	-	319	344	831	334	345	577
Mov Cap-2 Maneuver	-	-	-	-	-	-	319	344	-	334	345	-
Stage 1	-	-	-	-	-	-	756	700	-	551	548	-
Stage 2	-	-	-	-	-	-	534	547	-	755	700	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	14.1	12.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	401	1071	-	-	1362	-	-	504
HCM Lane V/C Ratio	0.009	0.013	-	-	-	-	-	0.047
HCM Control Delay (s)	14.1	8.4	-	-	0	-	-	12.5
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	189	433	2	6	38
Future Vol, veh/h	18	189	433	2	6	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	290	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	222	509	2	7	45

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	511	0	-	0	774	510
Stage 1	-	-	-	-	510	-
Stage 2	-	-	-	-	264	-
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	1054	-	-	-	367	563
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	780	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1054	-	-	-	360	563
Mov Cap-2 Maneuver	-	-	-	-	360	-
Stage 1	-	-	-	-	591	-
Stage 2	-	-	-	-	780	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1054	-	-	-	523
HCM Lane V/C Ratio	0.02	-	-	-	0.099
HCM Control Delay (s)	8.5	-	-	-	12.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	6	0	1	2	0	0	5	18	0	0	47	3
Future Vol, veh/h	6	0	1	2	0	0	5	18	0	0	47	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	0	1	2	0	0	6	21	0	0	55	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	90	90	57	91	92	21	59	0	0	21	0	0
Stage 1	57	57	-	33	33	-	-	-	-	-	-	-
Stage 2	33	33	-	58	59	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	895	800	1009	893	798	1056	1545	-	-	1595	-	-
Stage 1	955	847	-	983	868	-	-	-	-	-	-	-
Stage 2	983	868	-	954	846	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	892	797	1009	889	795	1056	1545	-	-	1595	-	-
Mov Cap-2 Maneuver	892	797	-	889	795	-	-	-	-	-	-	-
Stage 1	951	847	-	979	865	-	-	-	-	-	-	-
Stage 2	979	865	-	953	846	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	9.1	1.6	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1545	-	-	907	889	1595	-	-
HCM Lane V/C Ratio	0.004	-	-	0.009	0.003	-	-	-
HCM Control Delay (s)	7.3	0	-	9	9.1	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	113	146	4	51	2	107	18	7	0	21	7
Future Vol, veh/h	30	113	146	4	51	2	107	18	7	0	21	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	280	400	-	-	300	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	124	160	5	60	2	126	21	8	0	25	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	62	0	0	284	0	0	278	262	124	356	421	61
Stage 1	-	-	-	-	-	-	190	190	-	71	71	-
Stage 2	-	-	-	-	-	-	88	72	-	285	350	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1541	-	-	1278	-	-	674	643	927	599	524	1004
Stage 1	-	-	-	-	-	-	812	743	-	939	836	-
Stage 2	-	-	-	-	-	-	920	835	-	722	633	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1541	-	-	1278	-	-	632	627	927	567	511	1004
Mov Cap-2 Maneuver	-	-	-	-	-	-	632	627	-	567	511	-
Stage 1	-	-	-	-	-	-	795	727	-	919	833	-
Stage 2	-	-	-	-	-	-	882	832	-	680	620	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.5	11.8	11.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	632	689	1541	-	-	1278	-	-	583
HCM Lane V/C Ratio	0.199	0.043	0.021	-	-	0.004	-	-	0.057
HCM Control Delay (s)	12.1	10.5	7.4	-	-	7.8	-	-	11.5
HCM Lane LOS	B	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0.1	0.1	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	53	277	151	14	9	50
Future Vol, veh/h	53	277	151	14	9	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	290	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	62	326	178	16	11	59

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	194	0	-	0	636	186
Stage 1	-	-	-	-	186	-
Stage 2	-	-	-	-	450	-
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	1379	-	-	-	442	856
Stage 1	-	-	-	-	846	-
Stage 2	-	-	-	-	642	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1379	-	-	-	422	856
Mov Cap-2 Maneuver	-	-	-	-	422	-
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	642	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1379	-	-	-	740
HCM Lane V/C Ratio	0.045	-	-	-	0.094
HCM Control Delay (s)	7.7	-	-	-	10.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	330	3	0	175	3	1	0	1	2	0	10
Future Vol, veh/h	16	330	3	0	175	3	1	0	1	2	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	290	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	388	4	0	206	4	1	0	1	2	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	210	0	0	392	0	0	642	638	390	637	638	208
Stage 1	-	-	-	-	-	-	428	428	-	208	208	-
Stage 2	-	-	-	-	-	-	214	210	-	429	430	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1361	-	-	1167	-	-	387	394	658	390	394	832
Stage 1	-	-	-	-	-	-	605	585	-	794	730	-
Stage 2	-	-	-	-	-	-	788	728	-	604	583	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1361	-	-	1167	-	-	377	388	658	385	388	832
Mov Cap-2 Maneuver	-	-	-	-	-	-	377	388	-	385	388	-
Stage 1	-	-	-	-	-	-	597	577	-	783	730	-
Stage 2	-	-	-	-	-	-	777	728	-	595	575	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	12.6	10.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	479	1361	-	-	1167	-	-	697
HCM Lane V/C Ratio	0.005	0.014	-	-	-	-	-	0.02
HCM Control Delay (s)	12.6	7.7	-	-	0	-	-	10.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	346	185	3	3	21
Future Vol, veh/h	24	346	185	3	3	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	290	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	407	218	4	4	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	222	0	-	0	683	220
Stage 1	-	-	-	-	220	-
Stage 2	-	-	-	-	463	-
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	1347	-	-	-	415	820
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	634	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1347	-	-	-	406	820
Mov Cap-2 Maneuver	-	-	-	-	406	-
Stage 1	-	-	-	-	800	-
Stage 2	-	-	-	-	634	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1347	-	-	-	727
HCM Lane V/C Ratio	0.021	-	-	-	0.039
HCM Control Delay (s)	7.7	-	-	-	10.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	1	1	0	0	8	42	3	0	27	5
Future Vol, veh/h	3	0	1	1	0	0	8	42	3	0	27	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	1	1	0	0	9	49	4	0	32	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	104	106	35	105	107	51	38	0	0	53	0	0
Stage 1	35	35	-	69	69	-	-	-	-	-	-	-
Stage 2	69	71	-	36	38	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	876	784	1038	875	783	1017	1572	-	-	1553	-	-
Stage 1	981	866	-	941	837	-	-	-	-	-	-	-
Stage 2	941	836	-	980	863	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	872	779	1038	870	778	1017	1572	-	-	1553	-	-
Mov Cap-2 Maneuver	872	779	-	870	778	-	-	-	-	-	-	-
Stage 1	975	866	-	935	832	-	-	-	-	-	-	-
Stage 2	935	831	-	979	863	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	9.1	1.1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1572	-	-	908	870	1553	-	-
HCM Lane V/C Ratio	0.006	-	-	0.005	0.001	-	-	-
HCM Control Delay (s)	7.3	0	-	9	9.1	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	53	109	19	200	7	258	17	5	0	26	48
Future Vol, veh/h	5	53	109	19	200	7	258	17	5	0	26	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	280	400	-	-	300	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	56	115	20	211	7	272	18	5	0	27	51

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	218	0	0	56	0	0	359	324	56	332	320	214
Stage 1	-	-	-	-	-	-	66	66	-	254	254	-
Stage 2	-	-	-	-	-	-	293	258	-	78	66	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1352	-	-	1549	-	-	596	594	1011	621	597	826
Stage 1	-	-	-	-	-	-	945	840	-	750	697	-
Stage 2	-	-	-	-	-	-	715	694	-	931	840	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1352	-	-	1549	-	-	533	584	1011	596	587	826
Mov Cap-2 Maneuver	-	-	-	-	-	-	533	584	-	596	587	-
Stage 1	-	-	-	-	-	-	942	837	-	747	688	-
Stage 2	-	-	-	-	-	-	636	685	-	903	837	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.6	18	10.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	533	646	1352	-	-	1549	-	-	723
HCM Lane V/C Ratio	0.51	0.036	0.004	-	-	0.013	-	-	0.108
HCM Control Delay (s)	18.6	10.8	7.7	-	-	7.4	-	-	10.6
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	2.9	0.1	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	183	225	7	75	3	152	27	12	0	32	10
Future Vol, veh/h	36	183	225	7	75	3	152	27	12	0	32	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	280	400	-	-	300	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	193	237	7	79	3	160	28	13	0	34	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	82	0	0	193	0	0	385	365	193	384	363	81
Stage 1	-	-	-	-	-	-	268	268	-	95	95	-
Stage 2	-	-	-	-	-	-	117	97	-	289	268	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1515	-	-	1380	-	-	573	563	849	574	565	979
Stage 1	-	-	-	-	-	-	738	687	-	912	816	-
Stage 2	-	-	-	-	-	-	888	815	-	719	687	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1515	-	-	1380	-	-	528	546	849	531	548	979
Mov Cap-2 Maneuver	-	-	-	-	-	-	528	546	-	531	548	-
Stage 1	-	-	-	-	-	-	719	670	-	889	812	-
Stage 2	-	-	-	-	-	-	838	811	-	661	670	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.6	14.1	11.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	528	613	1515	-	-	1380	-	-	612
HCM Lane V/C Ratio	0.303	0.067	0.025	-	-	0.005	-	-	0.072
HCM Control Delay (s)	14.8	11.3	7.4	-	-	7.6	-	-	11.3
HCM Lane LOS	B	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.3	0.2	0.1	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	56	122	19	203	7	269	18	5	0	27	50
Future Vol, veh/h	10	56	122	19	203	7	269	18	5	0	27	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	280	400	-	-	300	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	59	128	20	214	7	283	19	5	0	28	53

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	221	0	0	187	0	0	379	342	59	415	467	218
Stage 1	-	-	-	-	-	-	81	81	-	258	258	-
Stage 2	-	-	-	-	-	-	298	261	-	157	209	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1348	-	-	1387	-	-	579	580	1007	548	493	822
Stage 1	-	-	-	-	-	-	927	828	-	747	694	-
Stage 2	-	-	-	-	-	-	711	692	-	845	729	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1348	-	-	1387	-	-	509	567	1007	522	482	822
Mov Cap-2 Maneuver	-	-	-	-	-	-	509	567	-	522	482	-
Stage 1	-	-	-	-	-	-	920	821	-	741	684	-
Stage 2	-	-	-	-	-	-	629	682	-	814	723	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.6	19.8	11.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	509	627	1348	-	-	1387	-	-	659
HCM Lane V/C Ratio	0.556	0.039	0.008	-	-	0.014	-	-	0.123
HCM Control Delay (s)	20.6	11	7.7	-	-	7.6	-	-	11.2
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	3.4	0.1	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	71	171	511	11	13	104
Future Vol, veh/h	71	171	511	11	13	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	290	-	-	-	0	-
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	2	2
Mvmt Flow	75	180	538	12	14	109

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	550	0	-	0	874	544
Stage 1	-	-	-	-	544	-
Stage 2	-	-	-	-	330	-
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	1020	-	-	-	320	539
Stage 1	-	-	-	-	582	-
Stage 2	-	-	-	-	728	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1020	-	-	-	296	539
Mov Cap-2 Maneuver	-	-	-	-	296	-
Stage 1	-	-	-	-	539	-
Stage 2	-	-	-	-	728	-

Approach	EB	WB	SB
HCM Control Delay, s	2.6	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1020	-	-	-	494
HCM Lane V/C Ratio	0.073	-	-	-	0.249
HCM Control Delay (s)	8.8	-	-	-	14.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	242	1	0	561	2	2	0	1	4	0	16
Future Vol, veh/h	12	242	1	0	561	2	2	0	1	4	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	290	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	255	1	0	591	2	2	0	1	4	0	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	593	0	0	256	0	0	883	875	256	874	874	592
Stage 1	-	-	-	-	-	-	282	282	-	592	592	-
Stage 2	-	-	-	-	-	-	601	593	-	282	282	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	983	-	-	1309	-	-	266	288	783	270	288	506
Stage 1	-	-	-	-	-	-	725	678	-	493	494	-
Stage 2	-	-	-	-	-	-	487	493	-	725	678	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	983	-	-	1309	-	-	255	284	783	267	284	506
Mov Cap-2 Maneuver	-	-	-	-	-	-	255	284	-	267	284	-
Stage 1	-	-	-	-	-	-	716	669	-	487	494	-
Stage 2	-	-	-	-	-	-	471	493	-	714	669	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	16	13.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	329	983	-	-	1309	-	-	429
HCM Lane V/C Ratio	0.01	0.013	-	-	-	-	-	0.049
HCM Control Delay (s)	16	8.7	-	-	0	-	-	13.8
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	254	577	2	6	38
Future Vol, veh/h	18	254	577	2	6	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	290	-	-	-	0	-
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	2	2
Mvmt Flow	19	267	607	2	6	40

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	609	0	-	0	913	608
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	305	-
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	970	-	-	-	304	496
Stage 1	-	-	-	-	543	-
Stage 2	-	-	-	-	748	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	970	-	-	-	298	496
Mov Cap-2 Maneuver	-	-	-	-	298	-
Stage 1	-	-	-	-	532	-
Stage 2	-	-	-	-	748	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	970	-	-	-	455
HCM Lane V/C Ratio	0.02	-	-	-	0.102
HCM Control Delay (s)	8.8	-	-	-	13.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	6	0	1	4	0	0	5	30	1	0	76	3
Future Vol, veh/h	6	0	1	4	0	0	5	30	1	0	76	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	0	1	4	0	0	5	32	1	0	80	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	125	125	82	125	126	33	83	0	0	33	0	0
Stage 1	82	82	-	43	43	-	-	-	-	-	-	-
Stage 2	43	43	-	82	83	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	849	765	978	849	764	1041	1514	-	-	1579	-	-
Stage 1	926	827	-	971	859	-	-	-	-	-	-	-
Stage 2	971	859	-	926	826	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	847	763	978	846	762	1041	1514	-	-	1579	-	-
Mov Cap-2 Maneuver	847	763	-	846	762	-	-	-	-	-	-	-
Stage 1	923	827	-	968	856	-	-	-	-	-	-	-
Stage 2	968	856	-	925	826	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.2	9.3	1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1514	-	-	864	846	1579	-	-
HCM Lane V/C Ratio	0.003	-	-	0.009	0.005	-	-	-
HCM Control Delay (s)	7.4	0	-	9.2	9.3	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	185	234	7	80	3	166	28	12	0	33	11
Future Vol, veh/h	44	185	234	7	80	3	166	28	12	0	33	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	350	-	280	400	-	-	300	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	46	195	246	7	84	3	175	29	13	0	35	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	87	0	0	441	0	0	410	388	195	531	633	86
Stage 1	-	-	-	-	-	-	287	287	-	100	100	-
Stage 2	-	-	-	-	-	-	123	101	-	431	533	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1509	-	-	1119	-	-	552	547	846	459	397	973
Stage 1	-	-	-	-	-	-	720	674	-	906	812	-
Stage 2	-	-	-	-	-	-	881	811	-	603	525	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1509	-	-	1119	-	-	493	527	846	421	383	973
Mov Cap-2 Maneuver	-	-	-	-	-	-	493	527	-	421	383	-
Stage 1	-	-	-	-	-	-	698	654	-	879	807	-
Stage 2	-	-	-	-	-	-	828	806	-	550	509	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.6	15.4	13.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	493	594	1509	-	-	1119	-	-	451
HCM Lane V/C Ratio	0.354	0.071	0.031	-	-	0.007	-	-	0.103
HCM Control Delay (s)	16.3	11.5	7.5	-	-	8.2	-	-	13.9
HCM Lane LOS	C	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.6	0.2	0.1	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	53	451	243	14	9	50
Future Vol, veh/h	53	451	243	14	9	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	290	-	-	-	0	-
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	2	2
Mvmt Flow	56	475	256	15	9	53

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	271	0	-	0	851	264
Stage 1	-	-	-	-	264	-
Stage 2	-	-	-	-	587	-
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	1292	-	-	-	330	775
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	556	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1292	-	-	-	316	775
Mov Cap-2 Maneuver	-	-	-	-	316	-
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	556	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1292	-	-	-	634
HCM Lane V/C Ratio	0.043	-	-	-	0.098
HCM Control Delay (s)	7.9	-	-	-	11.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	504	3	0	267	3	1	0	1	2	0	10
Future Vol, veh/h	16	504	3	0	267	3	1	0	1	2	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	290	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	531	3	0	281	3	1	0	1	2	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	284	0	0	534	0	0	855	851	533	850	851	283
Stage 1	-	-	-	-	-	-	567	567	-	283	283	-
Stage 2	-	-	-	-	-	-	288	284	-	567	568	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1278	-	-	1034	-	-	278	297	547	280	297	756
Stage 1	-	-	-	-	-	-	508	507	-	724	677	-
Stage 2	-	-	-	-	-	-	720	676	-	508	506	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1278	-	-	1034	-	-	271	293	547	277	293	756
Mov Cap-2 Maneuver	-	-	-	-	-	-	271	293	-	277	293	-
Stage 1	-	-	-	-	-	-	501	500	-	715	677	-
Stage 2	-	-	-	-	-	-	710	676	-	500	499	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	15	11.3
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	362	1278	-	-	1034	-	-	587
HCM Lane V/C Ratio	0.006	0.013	-	-	-	-	-	0.022
HCM Control Delay (s)	15	7.9	-	-	0	-	-	11.3
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	520	277	3	3	21
Future Vol, veh/h	24	520	277	3	3	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	290	-	-	-	0	-
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	2	2
Mvmt Flow	25	547	292	3	3	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	295	0	-	0	891	294
Stage 1	-	-	-	-	294	-
Stage 2	-	-	-	-	597	-
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	1266	-	-	-	313	745
Stage 1	-	-	-	-	756	-
Stage 2	-	-	-	-	550	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1266	-	-	-	307	745
Mov Cap-2 Maneuver	-	-	-	-	307	-
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	550	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1266	-	-	-	632
HCM Lane V/C Ratio	0.02	-	-	-	0.04
HCM Control Delay (s)	7.9	-	-	-	10.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	3	0	1	1	0	0	8	67	3	0	43	5
Future Vol, veh/h	3	0	1	1	0	0	8	67	3	0	43	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	1	1	0	0	8	71	3	0	45	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	137	138	48	137	139	73	50	0	0	74	0	0
Stage 1	48	48	-	89	89	-	-	-	-	-	-	-
Stage 2	89	90	-	48	50	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	834	753	1021	834	752	989	1557	-	-	1526	-	-
Stage 1	965	855	-	918	821	-	-	-	-	-	-	-
Stage 2	918	820	-	965	853	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	831	749	1021	830	748	989	1557	-	-	1526	-	-
Mov Cap-2 Maneuver	831	749	-	830	748	-	-	-	-	-	-	-
Stage 1	960	855	-	913	817	-	-	-	-	-	-	-
Stage 2	913	816	-	964	853	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	9.3	0.8	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1557	-	-	872	830	1526	-	-
HCM Lane V/C Ratio	0.005	-	-	0.005	0.001	-	-	-
HCM Control Delay (s)	7.3	0	-	9.1	9.3	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

KELLAR ENGINEERING

Sean Kellar, PE, PTOE

Principal Engineer

Education
B.S., Civil Engineering, Arizona State University – Tempe, AZ

Registration
Colorado, Professional Engineer (PE)
Wyoming, Professional Engineer (PE)
Idaho, Professional Engineer (PE)
Arizona, Professional Engineer (PE)
Kansas, Professional Engineer (PE)
Missouri, Professional Engineer (PE)
Professional Traffic Operations Engineer (PTOE)

Professional Memberships
Institute of Transportation Engineers (ITE)

Industry Tenure
23 Years

Sean's wide range of expertise includes: transportation planning, traffic modeling roadway design, bike and pedestrian facilities, traffic impact studies, traffic signal warrant analysis, parking studies, corridor planning and access management. Sean's experience in both the private and public sectors; passion for safety and excellence; and strong communication and collaboration skills can bring great value to any project. Prior to starting Kellar Engineering, Sean was employed at the Missouri Department of Transportation (MoDOT) as the District Traffic Engineer for the Kansas City District. Sean also worked for the City of Loveland, CO for over 10 years as a Senior Civil Engineer supervising a division of transportation/traffic engineers. While at the City of Loveland, Sean managed several capital improvement projects, presented several projects to the City Council and Planning Commission in public hearings, and managed the revisions to the City's Street Standards. Sean is also proficient in Highway Capacity Software, Synchro, PT Vissim, Rodel, GIS, and AutoCAD.

WORK EXPERIENCE:

Kellar Engineering, Principal Engineer/President – January 2016 – Present

Missouri Department of Transportation, District Traffic Engineer, Kansas City District – June 2015 – January 2016

City of Loveland, Colorado, Senior Civil Engineer, Public Works Department – February 2005 – June 2015

Kirkham Michael Consulting Engineers, Project Manager - February 2004 – February 2005

Dibble and Associates Consulting Engineers, Project Engineer – August 1999 – February 2004