Add the following signature blocks:

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.

_____ _____

[Name, P.E. #] May 30, 2019 Date

Developer's Statement

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

_____ _____

[Name, Title] Date

[Business Name]

[Address]

Mr. Mark Phelan
KESS Properties, LLC
4955 Austin Bluffs Parkway
Colorado Springs, CO 80918

Re: The Shire at Old Ranch
Traffic Study Deviation Letter
El Paso County, Colorado

Dear Mr. Phelan:

This traffic study letter has been prepared for The Shire at Old Ranch proposed nursery to be located on the northeast corner of the Old Ranch Road and Howells Road intersection in El Paso County, Colorado. A vicinity map illustrating the location of the proposed development is attached as **Figure 1**.

Specifically, this letter has been prepared to provide a deviation request to allow access to the project along Old Ranch Road and Howells Road as directed by El Paso County staff per the El Paso County Engineering Criteria Manual (El Paso ECM), 2016. A deviation is believed to be needed due to County standards identifying that access can only be granted from a lesser category street. Ridgeway Lane to the north is a local roadway whereas Howells Road to the west and Old Ranch Road to the south are collector roadways. It is understood that a deviation is a critical aspect of the review process and needs to be documented to ensure that the deviations granted are applied to a specific development application in conformance with the criteria for approval. It is our hope that this study provides the County the needed information to grant this deviation request.

The project is bound by single family residences in all directions with rural ranch style homes located to the north and the east while typical urban style single family communities are located to the south and the west. Pine Creek High School is located in the extended area further to the west. The site area is shown in attached **Figure 2**. A conceptual site plan for the proposed development is also attached.

This traffic study identifies the amount of project traffic associated with this proposed development and the resultant trip distribution and traffic assignment on the adjacent streets and public roadway intersection. An operational analysis was performed for the intersections of Ridgeway Lane/Howells Road and Old Ranch Road/Howells Road. In addition, the proposed project accesses located along Old Ranch Road and Howells Road were included for evaluation. One project access is proposed along the north side of Old Ranch Road while one project access is proposed along the east side of Howells Road. It is expected that project will be completed by 2020; therefore, analysis was performed for the 2020 short term build out horizon as well as the 2040 long-term twenty-year horizon.

Existing Roadway Network and Traffic Counts
Regional access will be provided by State Highway 21 (SH-21) while primary access will be provided by Old Ranch Road. Direct access to the project is proposed from one full movement access along Old Ranch Road and one full movement access along Howells Road.

Old Ranch Road is a collector street providing one through lane in each direction, eastbound and westbound, with a 45 mile per hour speed limit east of Howells Road and a 35 mile per speed limit west of Howells Road. Howells Road is an unpaved collector street while Ridgeway Lane is an unpaved local street.

The existing T-intersection of Ridgeway Lane and Howells Road is stop controlled in the westbound Ridgeway Lane approach direction. Lane configurations are not defined at this intersection due to both roadways being unpaved. However, this intersection was analyzed with single shared movements lanes on all three approaches.

The T-intersection of Old Ranch Road and Howells Roads is unsignalized with stop control along the southbound Howells Road approach. The eastbound approach of this intersection provides a left turn lane within an existing two-way left turn lane and one through lane. The westbound approach provides one through lane and a right turn lane currently not built to County standards. The southbound approach has a paved section for approximately 50 before transitioning to an unpaved roadway. This southbound approach provides a single shared lane to serve all movements. An existing intersection lane configuration and control figure is attached as **Figure 3**.

Existing weekday afternoon peak hour and Saturday midday peak hour of the generator turning movement counts were conducted at the study key intersections, Ridgeway Lane/Howells Road and Old Ranch Road/Howells Road, on Thursday, March 21, 2019 and on Saturday, March 30, 2019. The weekday counts were conducted in 15-minute intervals during the afternoon peak hours of adjacent street traffic from 4:00 PM to 6:00 PM. Likewise, the Saturday counts were conducted in 15-minute intervals during the peak hour of the generator traffic from 12:00 PM to 2:00 PM. Existing turning movement counts are shown in attached **Figure 4** with count sheets attached as well.

Unspecified Development Traffic Growth
In order to obtain traffic volumes for the future build out and twenty-year study horizons, future traffic volume projections were obtained from surrounding area traffic information, including from traffic projections from the El Paso County Major Transportation Corridor Plan (El Paso MTCP) and from Colorado Department of Transportation (CDOT) traffic information. According to information provided on the CDOT Online Transportation Information System (OTIS) website, the 20-year growth factor along Powers Boulevard (SH-21), south of Old Ranch Boulevard in the vicinity of the project, is 1.56, which equates to an annual growth rate of approximately 2.25 percent.

Additional information provided by the El Paso MTCP was used to determine annual traffic volume growth rates along Burgess Road, Shoup Road, and Black Forest Road. The annual growth rate for Burgess Road, east of Milan Road, was determined to be 1.81 percent while the annual growth rate for Shoup Road, west of Milan Road, was found to be 3.56 percent.

Further, the annual growth rate for Black Forest Road, north of Burgess Road, was found to be 3.88 percent. An overview of both the El Paso MTCP and CDOT traffic growth information for the study area are attached with this letter.

Both El Paso MTCP and CDOT traffic projection estimates were used to calculate an overall average annual growth rate of 2.87 percent. Based on this, an annual growth projection of three percent (3%) was used to calculate future traffic volumes within the project study area. This annual growth rate was used to estimate near term 2020 and long term 2040 traffic volume projections at the key intersections. Background traffic volumes for 2020 and 2040 are shown in attached **Figures 5** and **6**, respectively.

Trip Generation

Provide trip generation numbers for the existing residential lots and provide a section relative to the Road Impact Fee. See the Road Impact Fee Implementation Document. Under the Imposition of Fees it notes for zoning action where the special use or variance of use results in an increase of at least 100 more daily vehicle trips than the property would be expected to generate under the previous zoning, whether or not subdivision, platting or building permit is required, the development would be subject to the road impact fee. The fee would be based on the additional trips generated. Provide the road impact fee estimate.

Project generated traffic volumes are identified on a weekday daily as well as on an afternoon peak hour of the adjacent street and Saturday peak hour of the generator basis. The afternoon peak hour is the highest one-hour time period of adjacent street traffic during four consecutive 15-minute intervals between the hours of 4:00 pm and 6:00 pm. The Saturday peak hour is the highest one-hour time period of site traffic during four consecutive 15-minute intervals between the hours of 12:00 pm and 2:00 pm.

For this study, ITE Trip Generation average rate equations that apply to Nursery Garden Center (ITE Code 817) were used for traffic associated with the proposed development. The following **Table 1** summarizes the anticipated trip generation for the proposed project with the trip generation calculation worksheet attached.

Peak Hour of Generator

Table 1 – The Shire at Old Ranch Project Traffic Generation

Land Use and Size	Weekday Daily Vehicle Trips	Weekday PM Peak Hour			Saturday Peak of Generator		
		In	Out	Total	In	Out	Total
Nursery Garden Center (ITE 817) – 20 Acres	2,162	81	80	161	233	233	466

As summarized in the table, The Shire at Old Ranch project is anticipated to generate approximately 2,162 daily weekday trips with 161 of these trips occurring during the afternoon peak hour. Further, 466 project trips are expected to be generated during the peak hour on a Saturday.

During the Early Assistance the applicant identified other uses planned for the property such as: Cafe, Health & Wellness (holistic doctor office), and other uses. Discuss all the other uses the applicant anticipates to provide and update the traffic generation accordingly.

1 Institute of Transportation Engineers, *Trip Generation Manual*, Tenth Edition, Washington DC, 2017.

Distribution, Assignment, and Total Traffic
Distribution of site traffic was based on the area street system characteristics, existing traffic patterns and volumes, and the proposed access system for the project. The 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. Project traffic originating from either direction can access the site. Two separate trip distributions were developed for the project due to the deviation request for allowing access along Old Ranch Road and Howells Road. Project trip distribution Scenario 1 includes providing access along Old Ranch Road and Howells Road while Scenario 2 includes access only along Ridgeway Lane to meet current County standards. Attached **Figure 7** illustrates the expected trip distribution under Scenario 1 for the proposed project, while **Figure 8** provides the trip distribution for Scenario 2.

Traffic assignment was obtained by applying the project trip distribution to the estimated project traffic generation of the development shown in the trip generation table. The traffic assignment for project traffic Scenario 1 is shown in **Figure 9** while project traffic for Scenario 2 is shown in **Figure 10**. Site traffic volumes were added to the 2020 and 2040 background volumes to represent estimated build-out year and long-term traffic conditions. These total traffic volumes for 2020 are illustrated in **Figure 11** for Scenario 1 and **Figure 12** for Scenario 2. Likewise, the 2040 total traffic volumes are shown in **Figure 13** for Scenario 1 and **Figure 14** for Scenario 2.

Traffic Operations Analysis
Kimley-Horn's analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies at the project key intersections for the 2020 build-out and 2040 long term horizons. The acknowledged source for determining overall capacity is the *Highway Capacity Manual.*

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. It ranges from A (very little delay) to F (long delays and congestion). For intersections and roadways in this study area, typical traffic study practice identifies overall intersection LOS D and movements or approaches LOS E as the minimum thresholds for acceptable operations. The following **Table 2** shows the definition of level of service for signalized and unsignalized intersections. Intersection level of service capacity analysis outputs are attached.

Table 2 – Level of Service Definitions

Level of Service	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

Definitions provided from the Highway Capacity Manual, Sixth Edition, Transportation Research Board, 2016.

Ridgeway Lane and Howells Road

The existing T-intersection of Ridgeway Lane and Howells Road operates with stop control on the westbound Ridgeway Lane approach. All movements at this intersection currently operate acceptably with LOS A during the morning and afternoon peak hours. With addition of project traffic and accesses allowed along Howells Road and Old Ranch Road (Scenario 1), all movements at this intersection are expected to continue to operate acceptably with LOS A during the peak hours throughout the 2040 horizon. With an access only located along Ridgeway Lane (Scenario 2), all movements at this intersection are expected to operate acceptably during the peak hours in 2020 and 2040, however the westbound approach degrades to a LOS B. **Table 3** provides the results of the level of service analysis for this intersection.

Table 3 – Ridgeway Lane and Howells Road LOS Results

Scenario	PM Peak Hour		Saturday Peak	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
2019 Existing				
Westbound Approach	8.8	A	8.8	A
Southbound Left	-	A	-	A
2020 Background				
Westbound Approach	8.8	A	8.8	A
Southbound Left	-	A	-	A
2020 Total Traffic (Scenario 1)				
Westbound Approach	8.9	A	9.0	A
Southbound Left	-	A	-	A
2020 Total Traffic (Scenario 2)				
Westbound Approach	9.9	A	13.3	B
Southbound Left	7.5	A	7.9	A
2040 Background				
Eastbound Left	9.1	A	9.0	A
Southbound Approach	-	A	-	A
2040 Total Traffic (Scenario 1)				
Westbound Approach	9.1	A	9.2	A
Southbound Left	-	A	-	A
2040 Total Traffic (Scenario 2)				
Westbound Approach	10.3	B	13.6	B
Southbound Left	7.7	A	8.0	A

Scenario 1: Includes one access each along Old Ranch Road and Howells Road
Scenario 2: Includes one access along Ridgeway Lane only

Old Ranch Road and Howells Road

The existing T-intersection of Old Ranch Road and Howells Road operates with stop control on the southbound Howells Road approach. All movements at this intersection currently operate acceptably with LOS B or better during the morning and afternoon peak hours. With addition of project traffic and with access along Old Ranch Road and Howells Road (Scenario 1), all movements at this intersection are expected to continue to operate acceptably with LOS B or better during the peak hours throughout the 2040 horizon. With addition of project traffic and with access only along Ridgeway Lane (Scenario 2), all movements are expected to operate acceptably during the peak hours throughout the 2040 horizon; however, the southbound approach degrades to LOS C in 2040. **Table 4** provides the results of the level of service analysis for this intersection.

Table 4 – Old Ranch Road and Howells Road LOS Results

	PM Peak Hour		Saturday Peak	
Scenario	**Delay (sec/veh)**	**LOS**	**Delay (sec/veh)**	**LOS**
2019 Existing				
Eastbound Left	7.8	A	7.6	A
Southbound Approach	10.1	B	9.4	A
2020 Background				
Eastbound Left	7.8	A	7.6	A
Southbound Approach	10.2	B	9.5	A
2020 Total Traffic (Scenario 1)				
Eastbound Left	8.1	A	8.3	A
Southbound Approach	10.8	B	11.4	B
2020 Total Traffic (Scenario 2)				
Eastbound Left	8.0	A	8.2	A
Southbound Approach	12.0	B	14.3	B
2040 Background				
Eastbound Left	8.4	A	8.0	A
Southbound Approach	13.4	B	10.9	B
2040 Total Traffic (Scenario 1)				
Eastbound Left	8.7	A	8.8	A
Southbound Approach	13.4	B	13.1	B
2040 Total Traffic (Scenario 2)				
Eastbound Left	8.7	A	8.7	A
Southbound Approach	18.1	C	24.6	C

Scenario 1: Includes one access each along Old Ranch Road and Howells Road
Scenario 2: Includes one access along Ridgeway Lane only

Project Access Operational Analysis

With completion of The Shire at Old Ranch development, the site proposes two new full movement access locations. One access is proposed along the east side of Howells Road while the second access is proposed along the north side of Old Ranch Road. These two accesses should be stop controlled with the installation of a R1-1 "STOP" sign on the exiting access approaches. The access along Howells Road should include a northbound right turn lane while the access along Old Ranch Road should include an eastbound left turn lane. The lane configuration and control recommendations for these two accesses are shown in **Figure 15**. With the Scenario 1 recommended lane configurations, all movements at the accesses along Howells Road and Old Ranch Road are expected to operate acceptably with LOS B or better during the peak hours throughout the 2040 horizon.

A scenario with one full movement access along the south side of Ridgeway Lane was also evaluated due to El Paso County guidelines of not allowing access along major collectors. An access analysis is discussed and evaluated later in this study to allow access along Old Ranch Road and Howells Road per a deviation request. With access only allowed along Ridgeway Lane, all movements at the Ridgeway Lane access are expected to operate with LOS A during the peak hours in 2020 and 2040.

The operational analysis at the proposed project driveways is summarized in **Table 5** for the short-term 2020 horizon and for the long-term 2040 horizon. Detailed results of the operational analysis are also attached.

Table 5 – Project Access LOS Results

Access and Movement	2020 Total Traffic				2040 Total Traffic			
	PM Peak Hour		Saturday Peak		PM Peak Hour		Saturday Peak	
	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS	Delay (sec/ veh)	LOS
Scenario 1: One Access along Howells Road and One Access along Old Ranch Road Only								
Howells Road Access (Scenario 1)								
Westbound Approach	8.9	A	9.1	A	9.2	A	9.3	A
Southbound Left	7.4	A	7.5	A	7.4	A	7.5	A
Old Ranch Road Access (Scenario 1)								
Eastbound Left	7.7	A	7.8	A	8.0	A	8.2	A
Southbound Approach	10.3	B	11.0	B	12.5	B	12.8	B
Scenario 2: One Access along Ridgeway Lane Only								
Ridgeway Lane Access (Scenario 2)								
Northbound Approach	8.9	A	9.7	A	8.9	A	9.7	A

Deviation Request Access Analysis
A deviation to allow access along Old Ranch Road and Howells Road as directed by El Paso County staff is evaluated in this section per the El Paso ECM. A deviation is a critical aspect of the review process and needs to be documented to ensure that the deviations granted are applied to a specific development application in conformance with the criteria for approval.

Table 2-5 from the El Paso ECM indicates that access along major collectors is not permitted if access from a lower category street is available. According to the El Paso ECM, accesses may be permitted as a deviation if they meet the criteria for sight distances and grades, turn lane requirements, and do not negatively impact traffic operations or safety. The [illegible] queuing or blocking of lane entr[illegible]

Revise. Use ECM criteria for access sight distance (ECM Section 2.4.1.D) and design vehicle selection per Table 2-36.

Sight Distances
It is recommended that sight triangles be provided at all site access points to give drivers exiting the site a clear view of oncoming traffic. Landscaping and objects within sight triangles must not obstruct drivers' views of the adjacent travel lanes. AASHTO design intersection sight distances for left turn from stop and right turn from stop were evaluated at the accesses along Howells Road and Old Ranch Road.

With a speed limit of 45 miles per hour along Old Ranch Road, the intersection sight distance for a vehicle turning left from stop is 500 feet, while the sight distance for a vehicle turning right from stop is 335 feet. Likewise, with a speed limit of 25 miles per hour along Howells Road, the intersection sight distance for a vehicle turning left from stop is 280 feet, while the sight distance for a vehicle turning right from stop is 240 feet.

Vertex is 10 feet per ECM

Therefore, all obstructions for left turning vehicles from stop at the Old Ranch Road access should be clear to the right within the triangle created with a vertex point located 14.5 feet from the edge of the major road traveled way (typical position of the minor road driver's eye when stopped) and a line of sight distance of 500 feet located in the middle of the eastbound Old Ranch Road lane. Likewise, all obstructions for right turning vehicles from stop should be clear to the left within the triangle created with a vertex point located 14.5 feet from the edge of the major road traveled way and a line of sight distance of 335 feet located in the middle of the westbound Old Ranch Road lane.

All obstructions for left turn vehicles from stop at the Howells Road access should be clear to the right within the triangle created from the vertex point and a line of sight distance 280 feet located in the middle of the southbound Howells Road lane. All obstructions for right turning vehicles from stop should be clear to the left within the triangle created with the vertex point and a line of sight distance of 240 feet located in the middle of the northbound Howells Road lane.

Auxiliary Turn Lane Warrants and Length Criteria
A left turn lane is required with a projected peak hour ingress turning volume of 25 vehicles per hour (vph) or greater for any access along a minor arterial or lower classification roadway per the El Paso ECM. A right turn lane is required with a projected peak hour

For Scenario 1, redirect taper criteria and recommendation would be required along Old Ranch Road due to the required left turn lane. However, based on discussion with the engineering review manager, the County Engineer will not approve access from Old Ranch Road. Therefore either revise scenario 1 or provide an analysis for a third scenario such as two access on Howells Road or a single access in Howells and Ridgeway. Bottom line is to provide an analysis with no access from Old Ranch Road.

ingress turning volume of 50 vph or greater for any access along a minor arterial or lower classification roadway. An acceleration lane is generally not required.

An eastbound left turn lane will be required at the project access along Old Ranch Road based on an estimated left turning volume of 105 vph during the Saturday peak hour with a threshold of 25 vph. Further, a northbound right turn lane will be required at the project access along Howells Road based on a projected 93 vph right turn movements during the Saturday peak hour with a threshold of 50 vph.

The eastbound left turn lane at the Old Ranch Road access should be constructed with 235 feet of lane length plus a 200-foot taper based on a design speed of 50 miles per hour per Table 2-25 of the El Paso ECM. Likewise, the northbound right turn lane at the access along Howells Road should provide a lane length of 115 feet plus a 120-foot taper.

Identify the queue at the eastbound approach of the Howells and Old Ranch Road intersection.

Intersection Operations, Vehicle Queuing and Progression

As indicated in the Traffic Operations Analysis section, the intersections of Old Ranch Road/Howells Road and Ridgeway Lane/Howells Road are expected to operate with better LOS and lower vehicle delays when access is proposed along Howells Road and Old Ranch Road compared to only allowing access along Ridgeway Lane. Additionally, all movements at the project accesses along Howells Road and Old Ranch Road are expected to operate acceptably with LOS B or better during the peak hours throughout the 2040 horizon.

As documented in the LOS outputs (attached), all vehicles queues are expected to be one (1) vehicle or less at all study area intersections and access intersections with access allowed along Howells Road and Old Ranch Road. Meanwhile, with access only allowed along Ridgeway Lane, vehicles queues are reported with five (5) vehicles at the southbound approach of the Old Ranch Road and Howells Road intersection, and three (3) vehicles at the westbound approach of the Ridgeway Lane and Howells Road intersection. These are significantly longer queues with this access Scenario 2 condition.

Progression of traffic will not be impacted at the proposed access locations along Howells Road and Old Ranch Road because these access intersections will not warrant or require signalization.

Additional Deviation Request Factors

Access granted only along Ridgeway Lane will change the character of the local street. Ridgeway Lane is classified as a local street and local streets can typically support approximately 750 vehicles per day while maintaining the local character with residential driveways. Based on this project with access only provided along Ridgeway Lane (Scenario 2), weekday and weekend daily project traffic volumes are expected be approximately 2,200 and 3,100 vehicles per day, respectively. These volumes would all have to be directed to Ridgeway Lane if access was only permitted on Ridgeway Lane. These volumes alone would exceed the 750 vehicles per day typical threshold along a local street. Traffic volumes are currently very low along Ridgeway Lane and homeowners along this local street will not desire all traffic from this project routed onto their street.

Additionally, access only along Ridgeway Lane would increase vehicle miles traveled (VMT), travel time, vehicle emissions, and reduce air quality.

It is respectfully being requested that access be allowed along Howells Road and Old Ranch Road. If granted, it is recommended that the access along Howells Road be located a minimum of 330 feet (measured center to center) north of Old Ranch Road based on the deviation request analysis. Likewise, the access along Old Ranch Road should be located a minimum of 500 feet east of Howells Road. These spacing distances have been based on evaluation of minimum spacing, turn lane requirements, and sight distances.

Recommendations and Conclusions
It is respectfully requested that access be allowed along Howells Road and Old Ranch Road to serve The Shire at Old Ranch project. If granted, the following provides recommendations and conclusions based on this requested access condition:

- It is recommended that the access along Howells Road be located a minimum of 330 feet (measured center to center) north of Old Ranch Road based on the deviation request analysis. Likewise, access along Old Ranch Road should be located a minimum of 500 feet east of Howells Road.
- An eastbound left turn lane is recommended at the Old Ranch Road access and should be constructed with 235 feet of lane length plus a 200-foot taper
- A northbound right turn lane should be provided at the access along Howells Road and be constructed with a lane length of 115 feet plus a 120-foot taper.
- The two proposed project accesses, one along Howells Road and one along Old Ranch Road, should be stop controlled with the installation of R1-1 “STOP” signs on the exiting access approaches.

The recommended intersection lane configurations and control for the project intersections and accesses is illustrated in attached **Figure 15**.

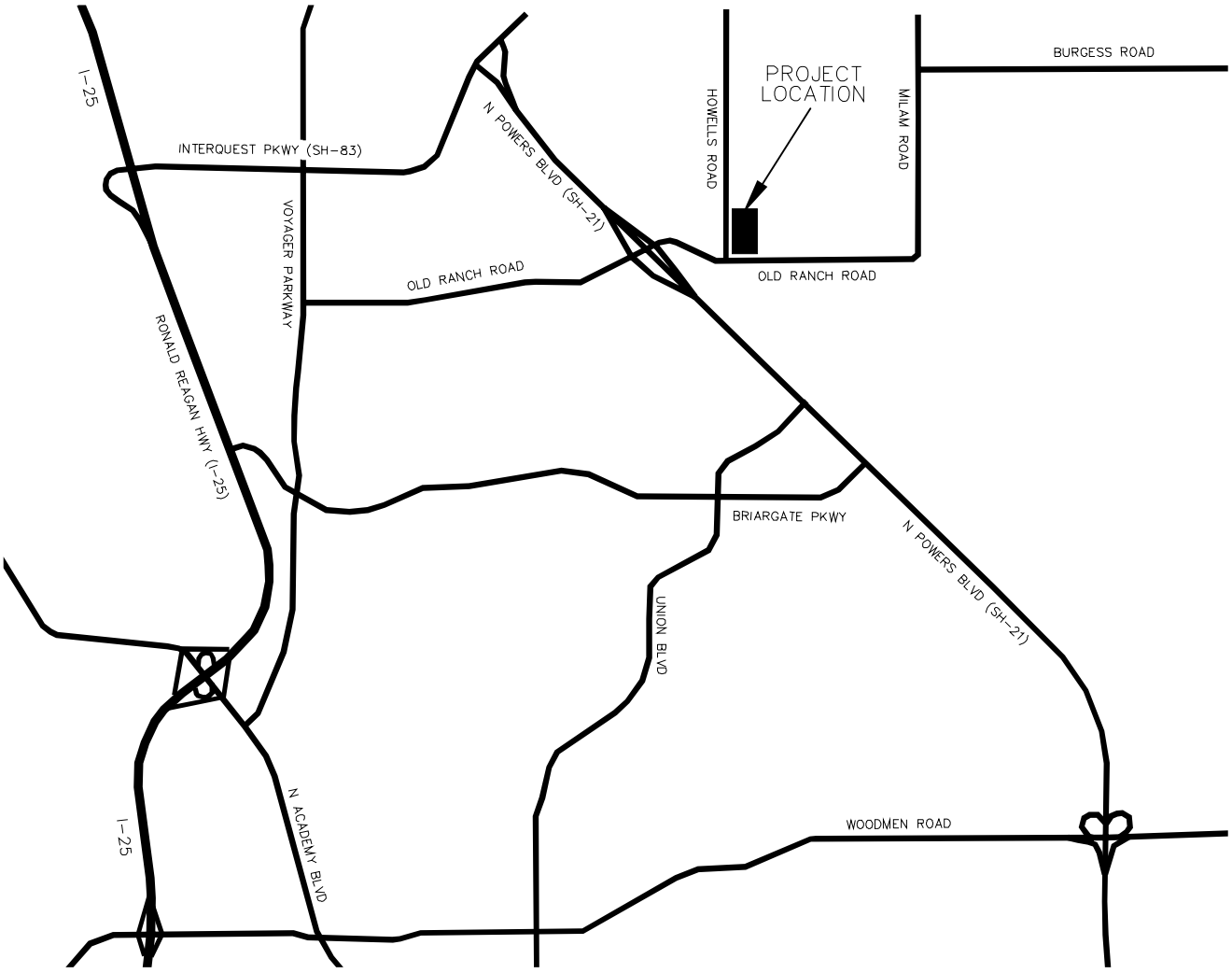
In summary, this traffic study deviation letter provides deviation request to allow access along Old Ranch Road and Howells Road. Kimley-Horn believes The Shire at Old Ranch project will be successfully incorporated into the existing and future roadway network. We respectfully request that El Paso County consider approval of this deviation request to allow access along Old Ranch Road and Howells Road. If you have any questions or require anything further, please feel free to call me at (303) 228-2304.

Sincerely,
KIMLEY-HORN AND ASSOCIATES, INC.

Discuss/provide recommendation regarding ECM Section 2.2.7.B.2 & 2.2.7.B.3. Based on the trip generation, this development will have to pave Howells Road up to the furthest proposed access on Howells Rd or Ridgeway Lane.

Discuss the intent for the existing residential homes and provide conclusion regarding the existing driveways. Per the Early Assistance Meeting it seems that the existing dwellings will be converted from single family residence to care taker, staff office or rental. Staff is anticipating the existing driveways to be removed with this proposed development. Update the site exhibit accordingly.

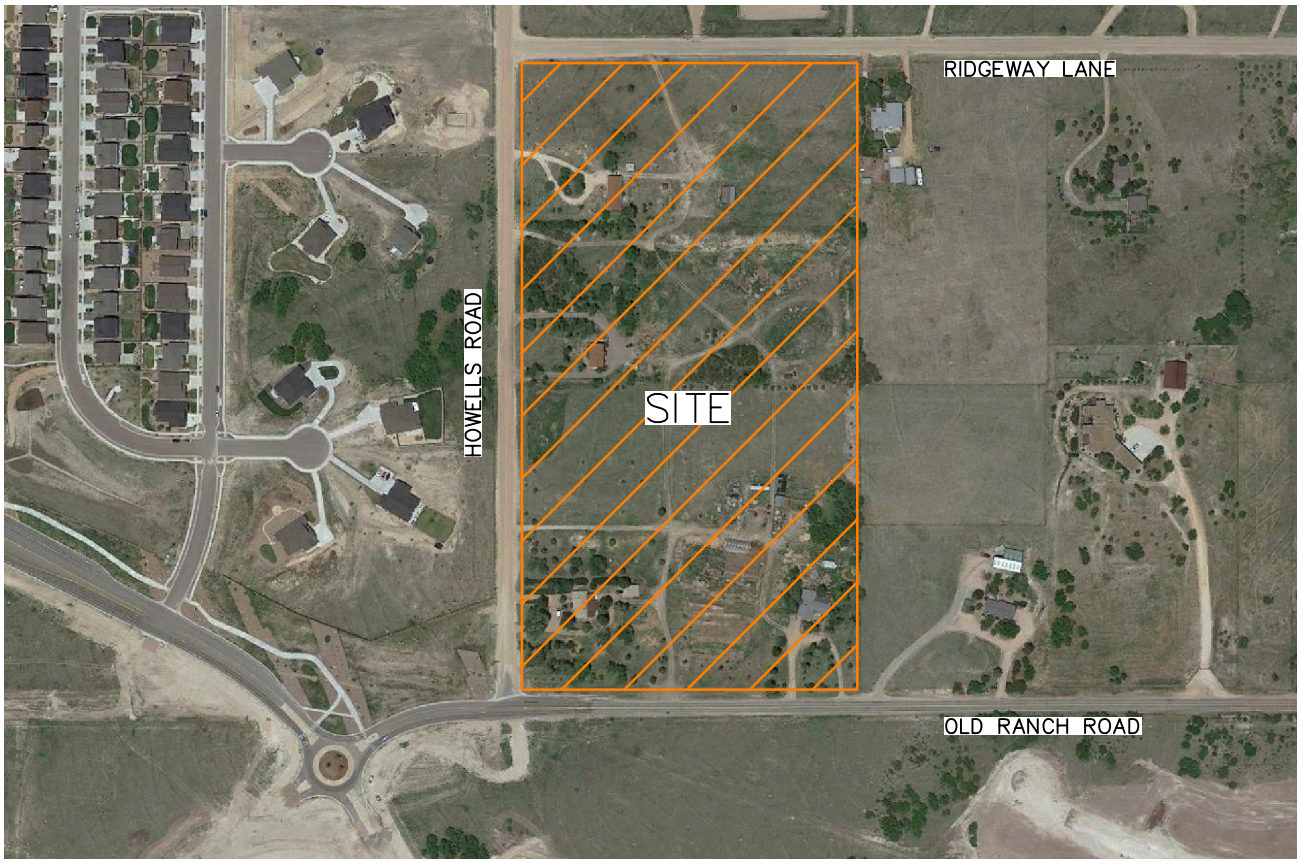
Kimley»Horn
NORTH
NTS 096829000



THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
VICINITY MAP

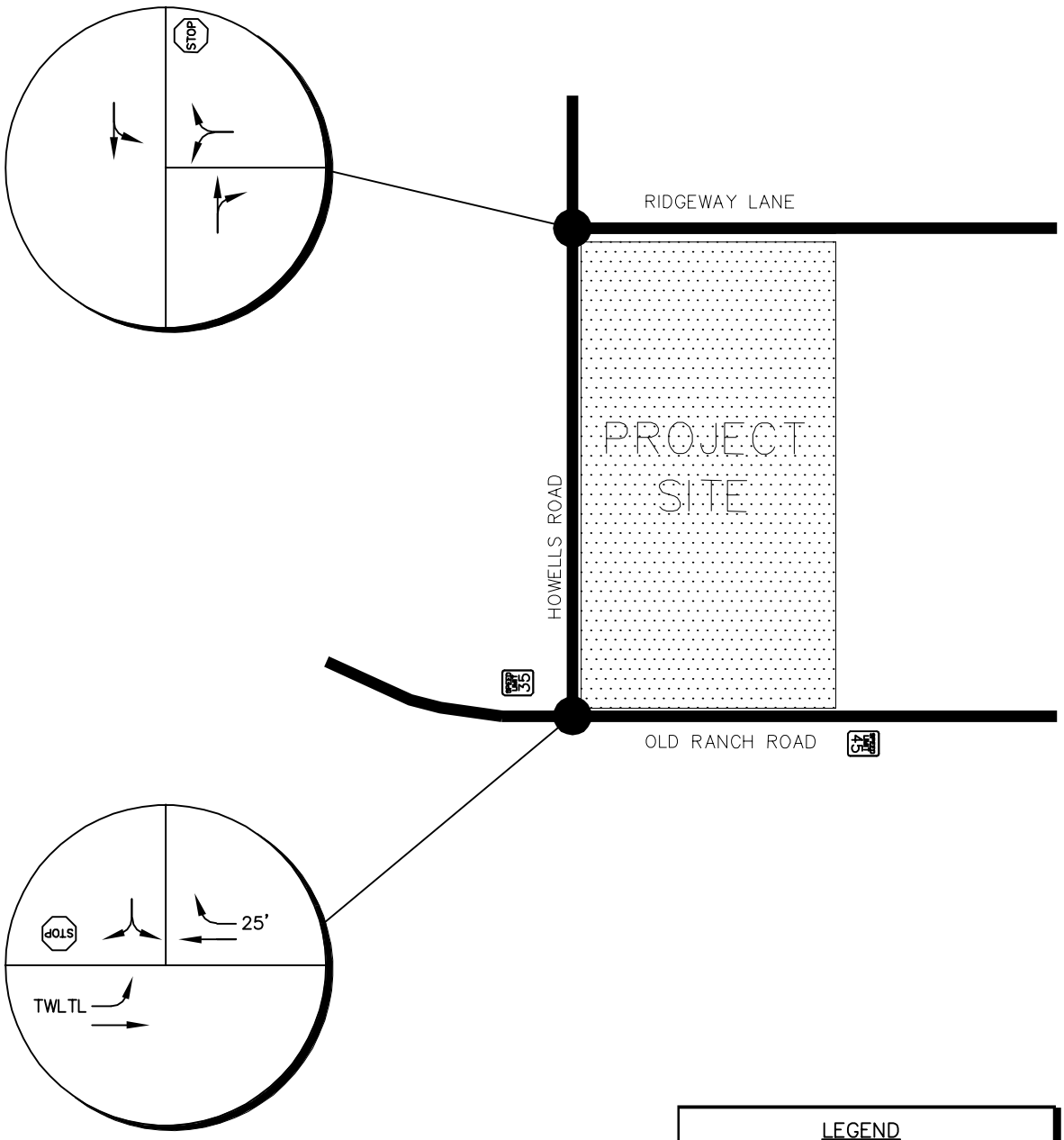
FIGURE 1

Kimley»Horn



THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
SITE AREA

FIGURE 2



LEGEND

- Study Area Key Intersection
- STOP — Stop Controlled Approach
- Roadway Speed Limit
- 100' — Turn Lane Length (feet)
- TWLTL — Two-Way Left Turn Lane

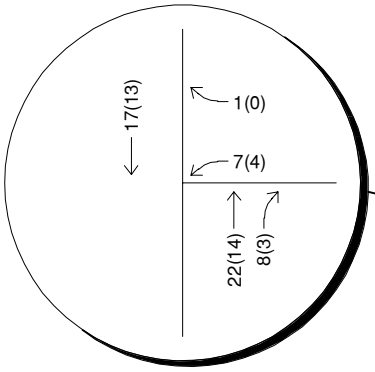
THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
EXISTING LANE CONFIGURATIONS

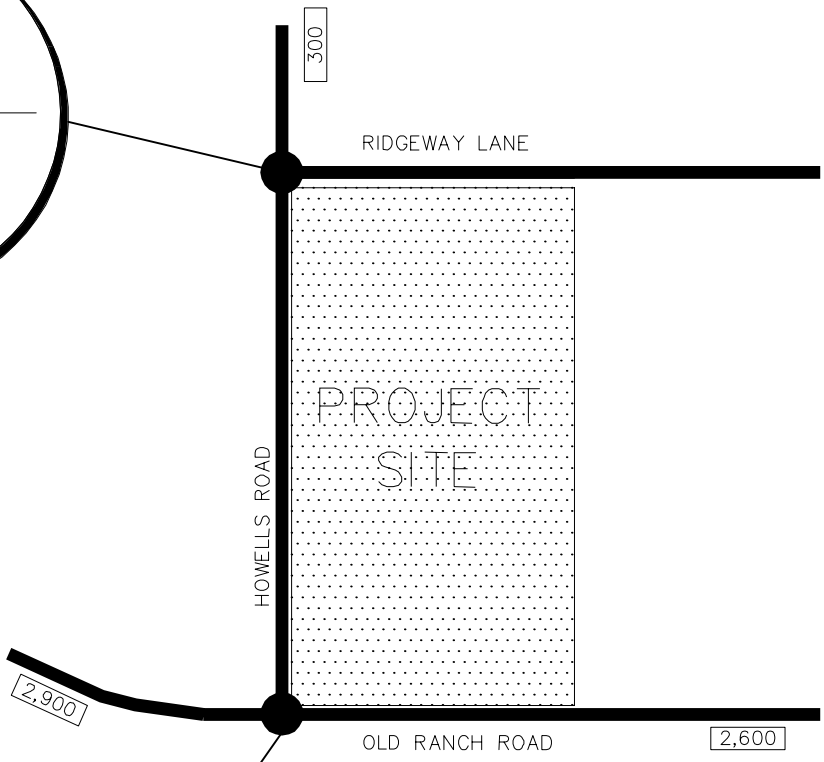
FIGURE 3

Kimley»Horn

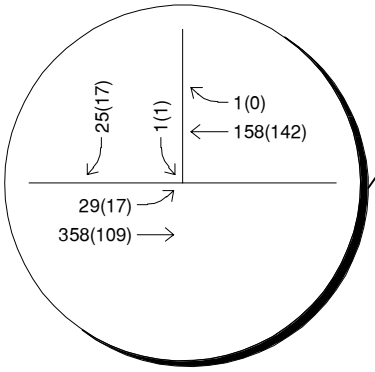
Kimley»Horn NORTH
NTS 096829000

Thursday, March 21, 2019 (Saturday, March 30, 2019)
4:45 to 5:45 AM (12:00 to 1:00 PM)





Thursday, March 21, 2019 (Saturday, March 30, 2019)
5:00 to 6:00 AM (12:00 to 1:00 PM)



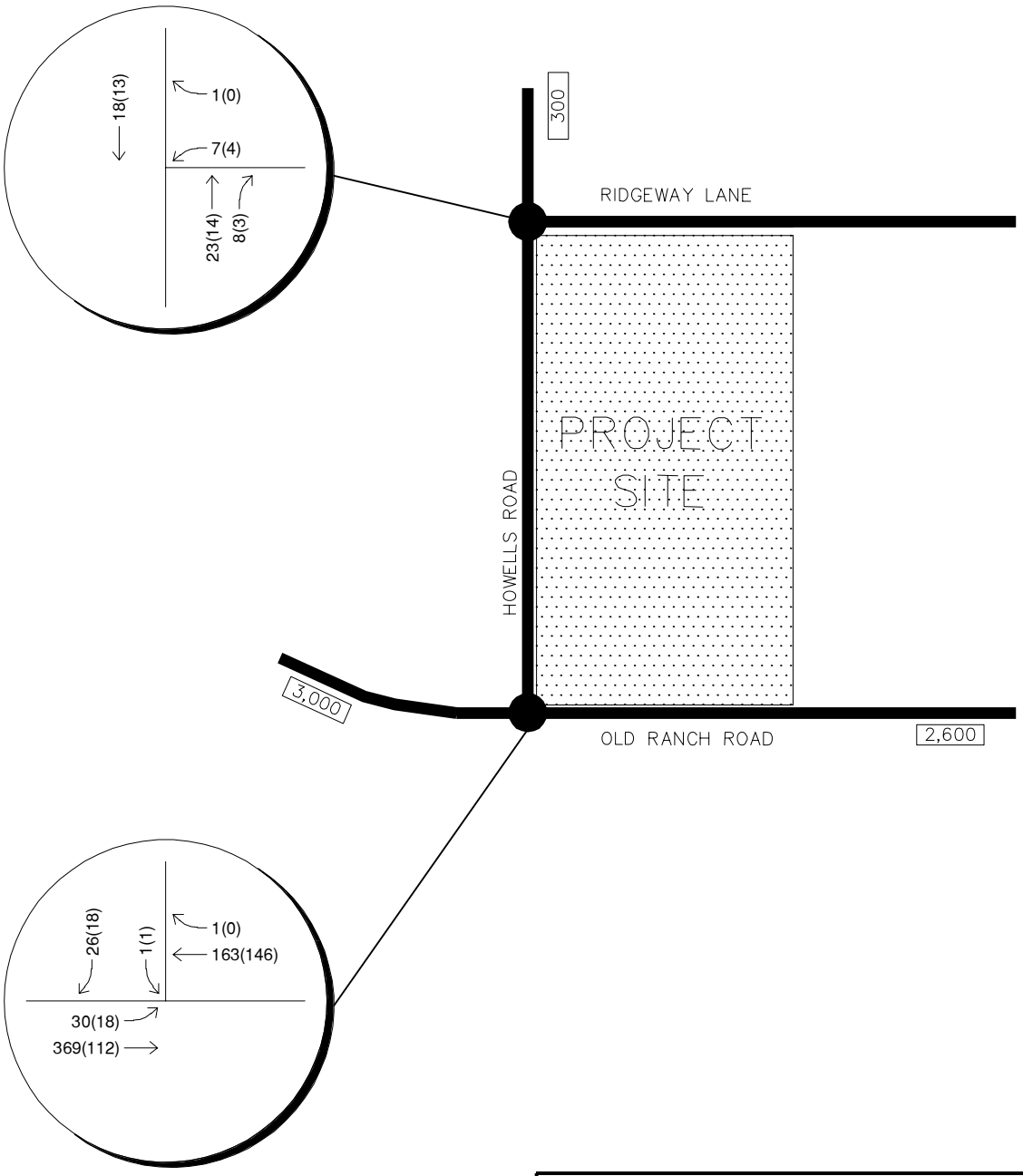
LEGEND

- ● Study Area Key Intersection
- XXX(XXX) Weekday PM(Saturday Midday) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
EXISTING TRAFFIC VOLUMES

FIGURE 4

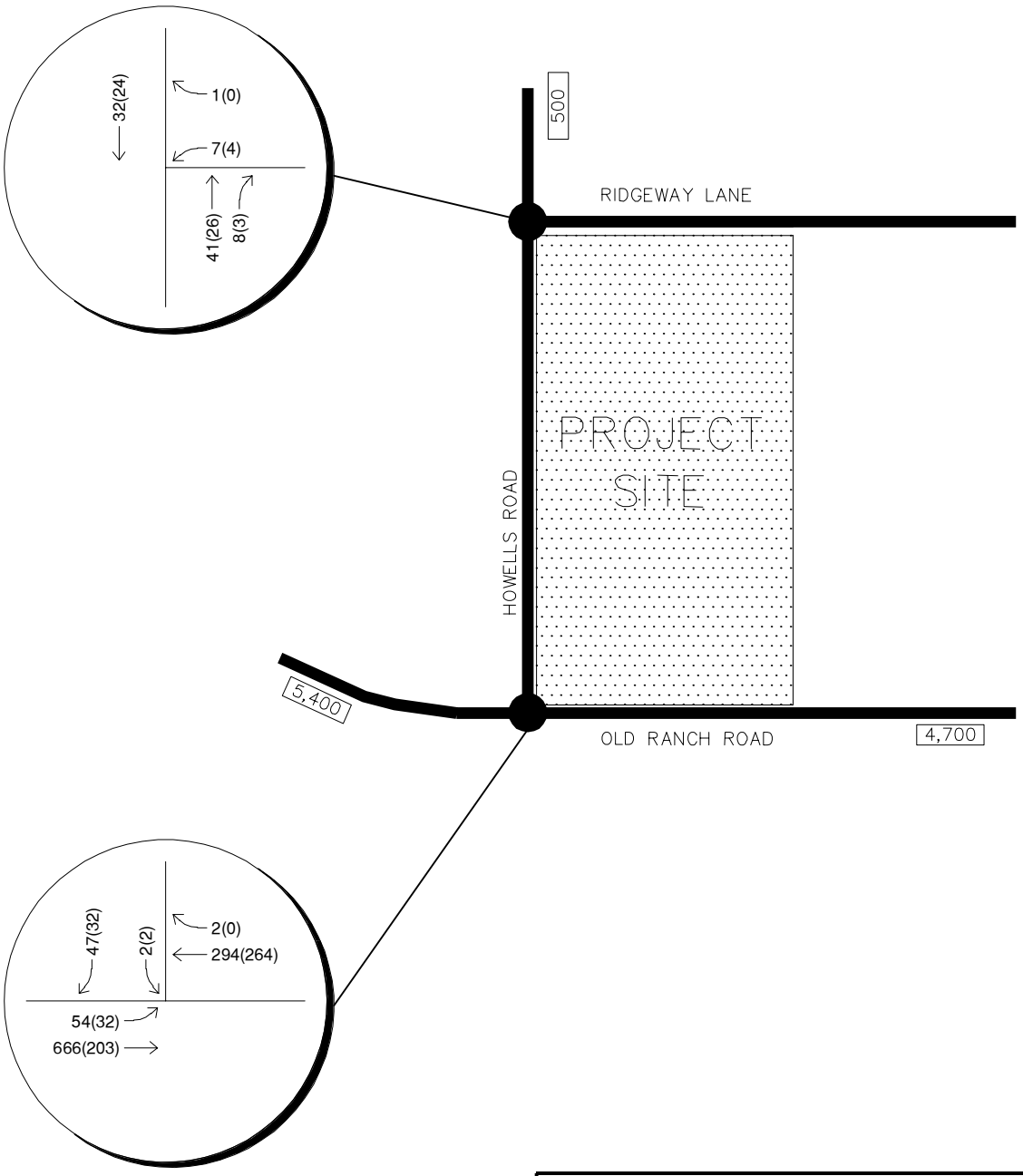
Kimley»Horn



THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
2020 BACKGROUND TRAFFIC VOLUMES

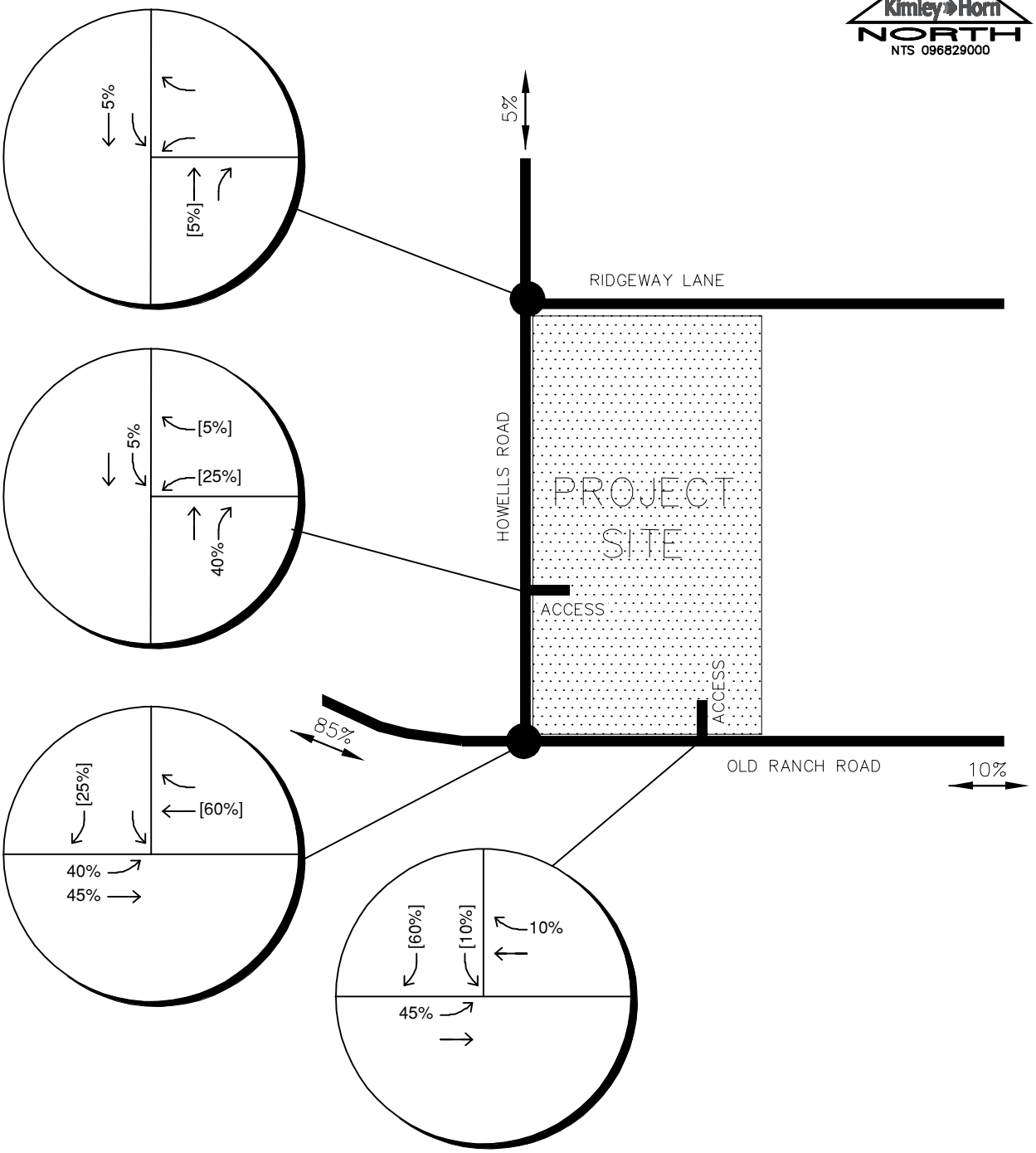
FIGURE 5

Kimley»Horn



THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
2040 BACKGROUND TRAFFIC VOLUMES

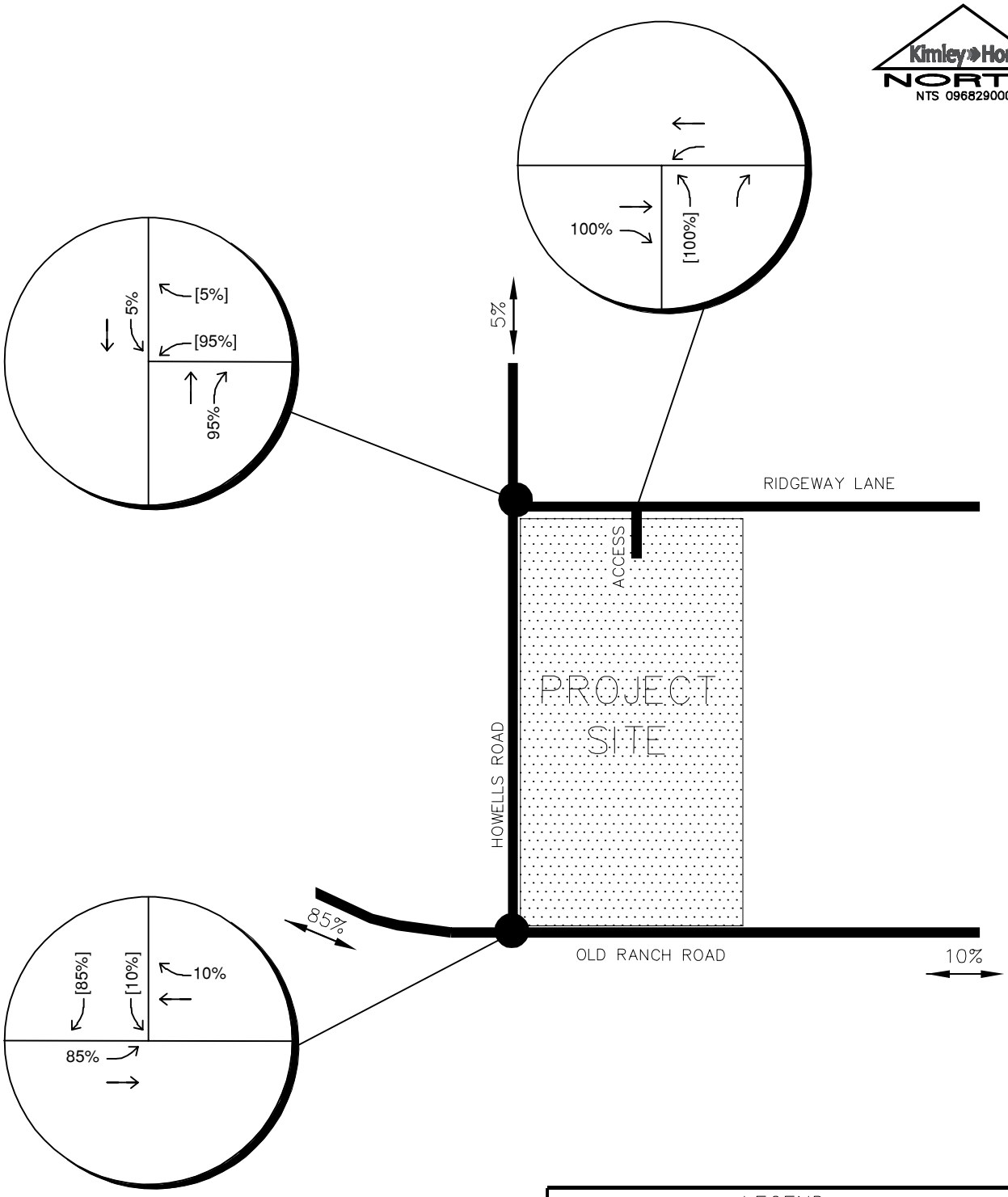
FIGURE 6



THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
PROJECT TRIP DISTRIBUTION
SCENARIO 1

FIGURE 7

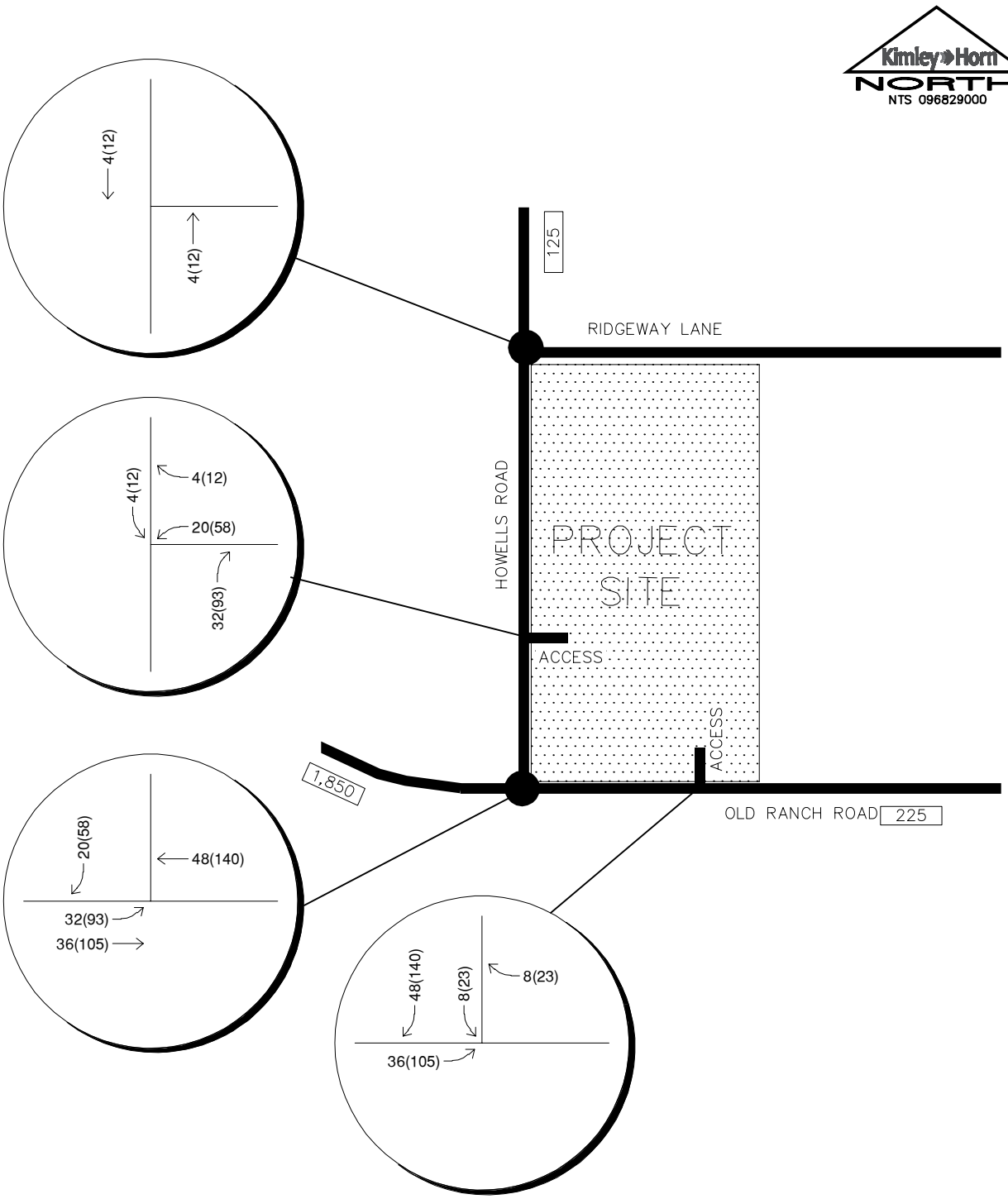
Kimley»Horn



THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
PROJECT TRIP DISTRIBUTION
SCENARIO 2

FIGURE 8

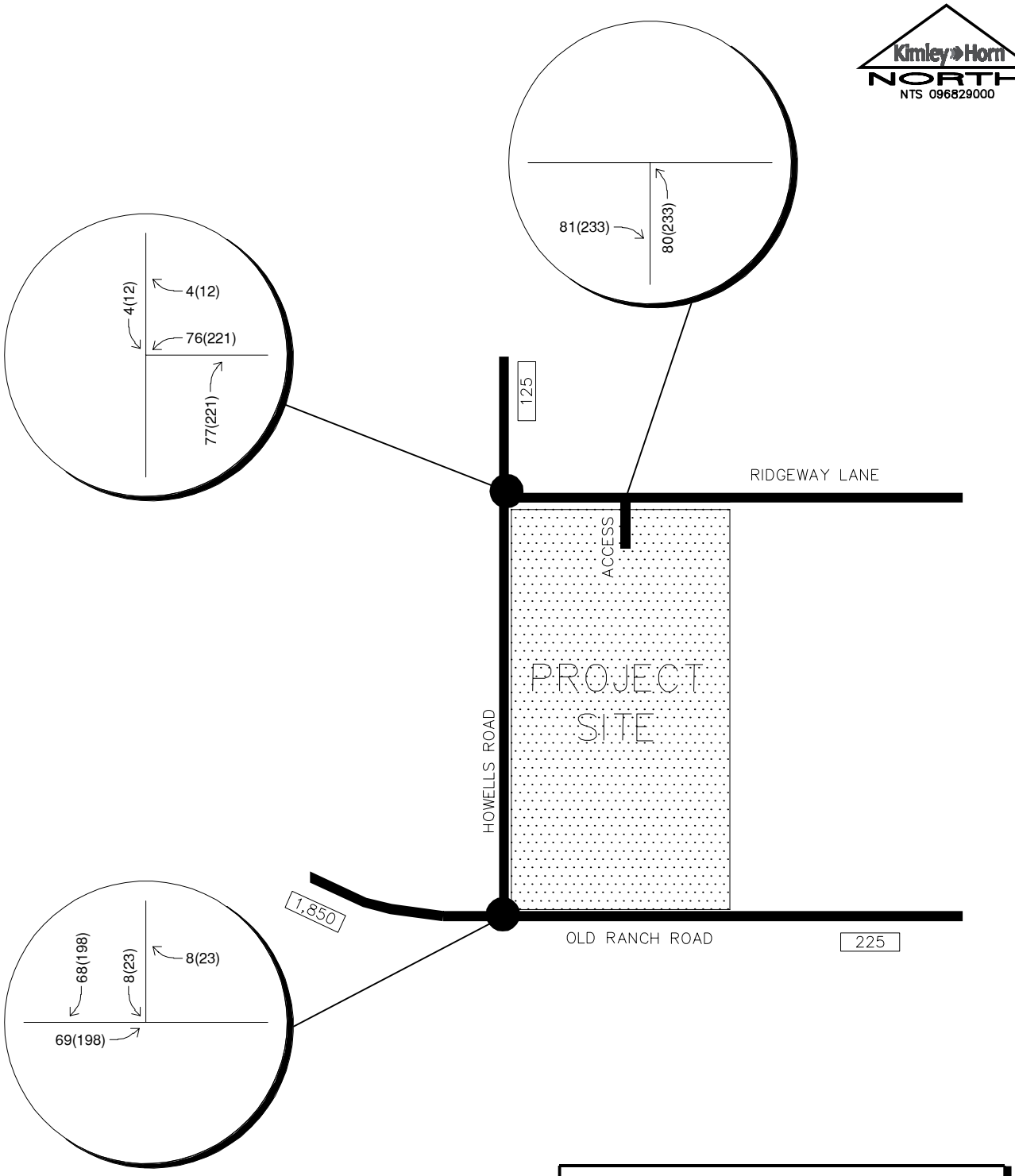
Kimley»Horn



THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
PROJECT TRAFFIC ASSIGNMENT
SCENARIO 1

FIGURE 9

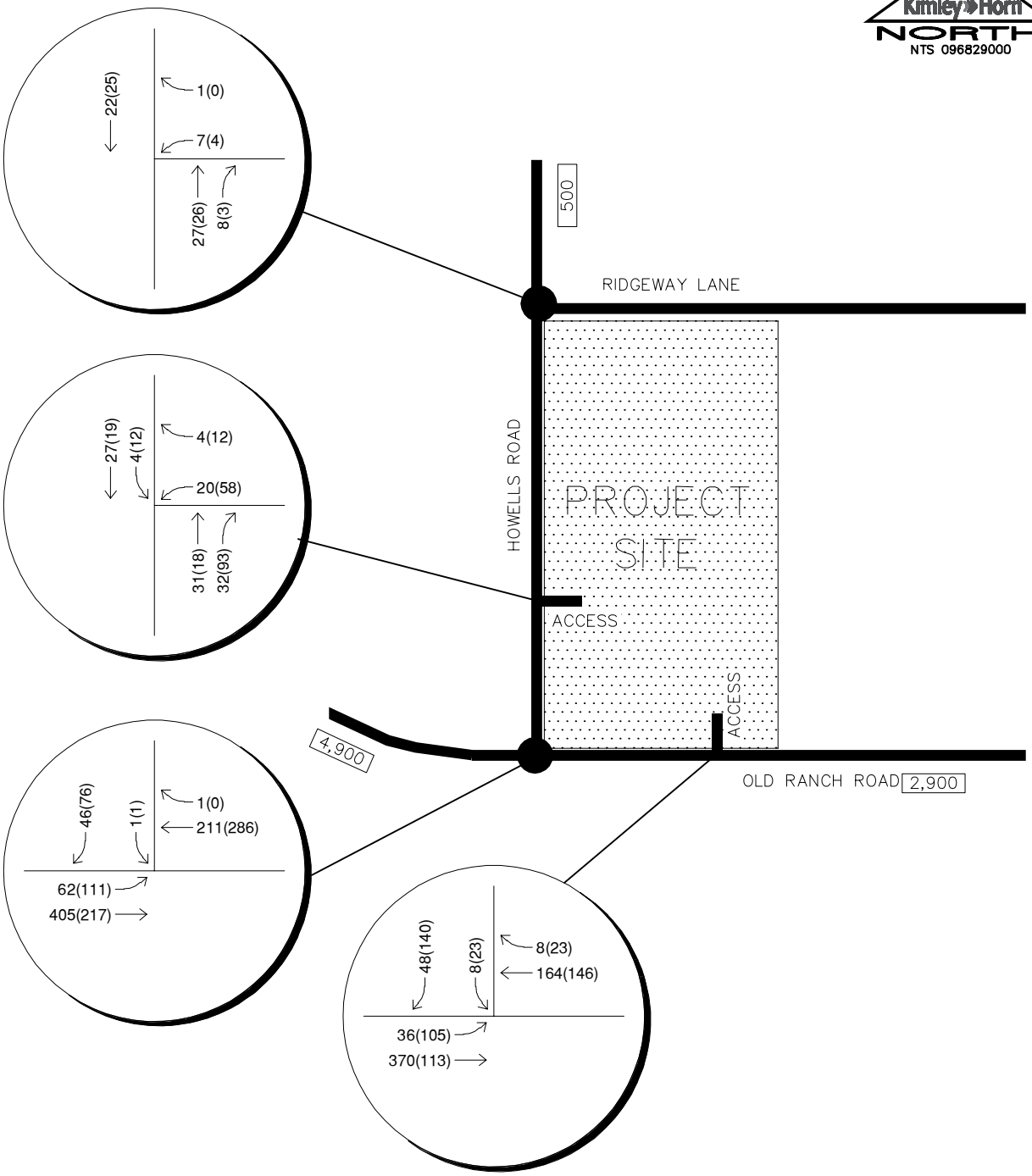
Kimley»Horn



THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
PROJECT TRAFFIC ASSIGNMENT
SCENARIO 2

FIGURE 10

Kimley»Horn



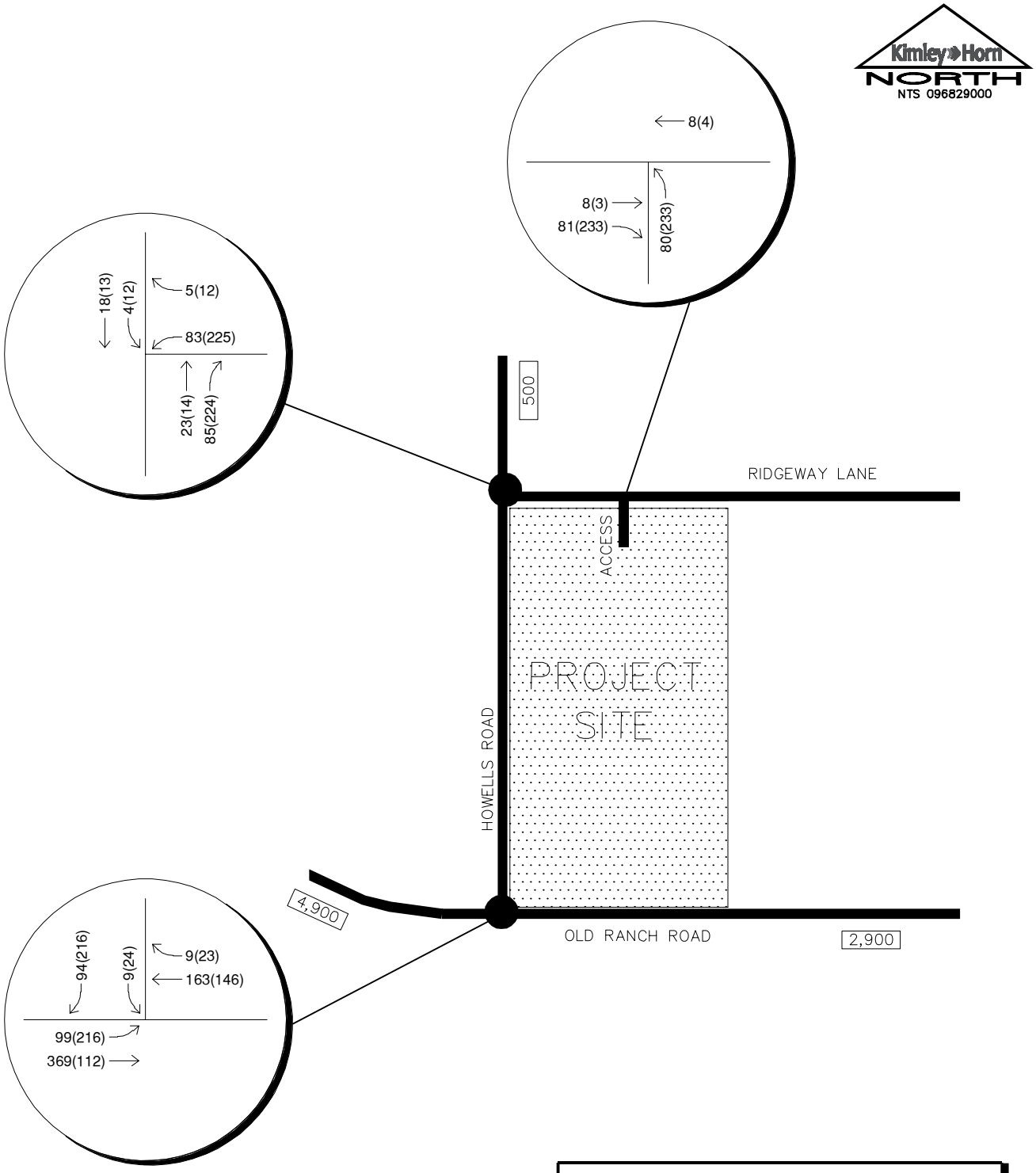
LEGEND

- Study Area Key Intersection
- XXX(XXX) Weekday PM(Saturday Midday) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
2020 BACKGROUND PLUS
PROJECT TRAFFIC VOLUMES
SCENARIO 1

FIGURE 11

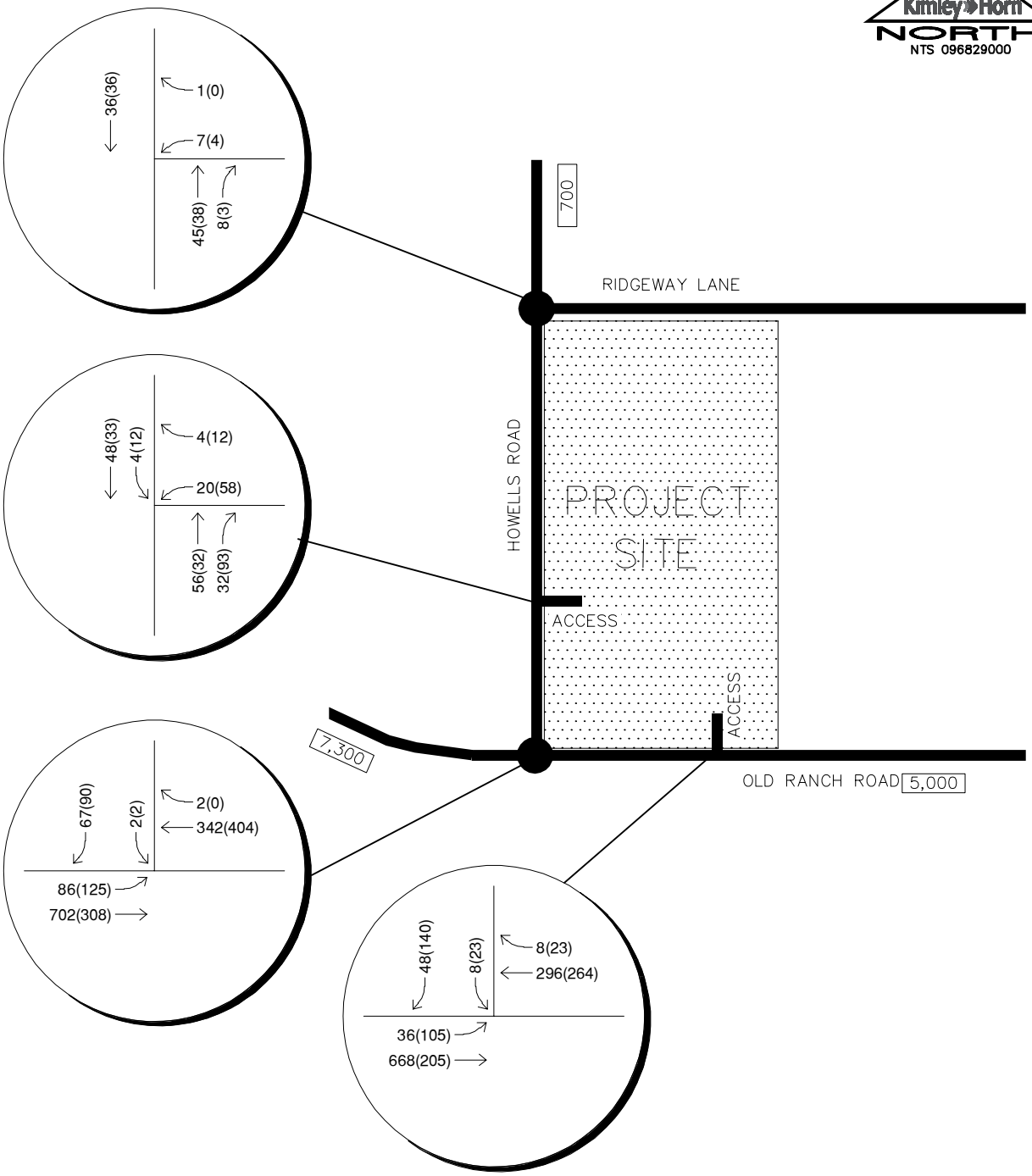
Kimley»Horn



THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
2020 BACKGROUND PLUS
PROJECT TRAFFIC VOLUMES
SCENARIO 2

FIGURE 12

Kimley»Horn



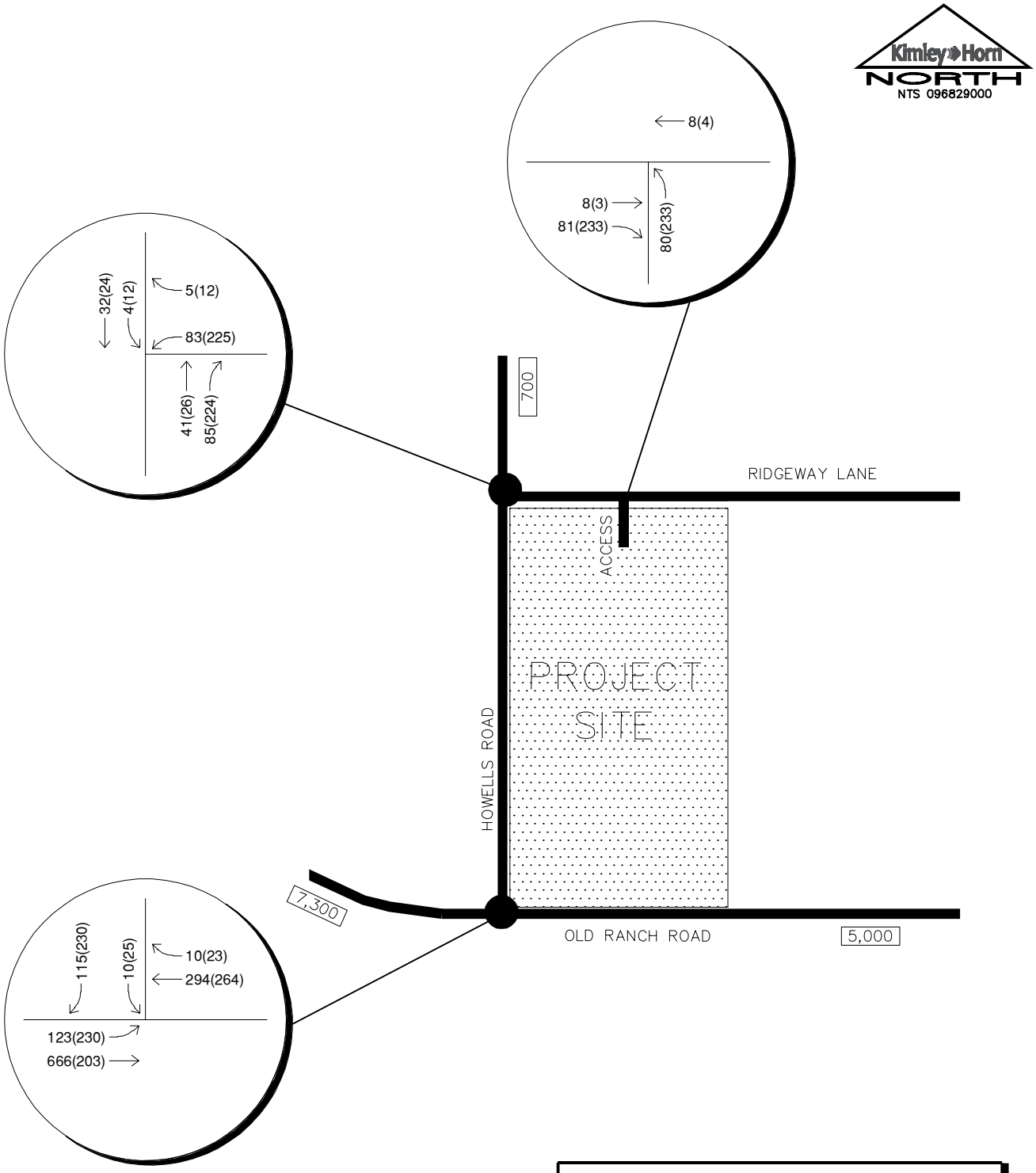
LEGEND

- ● Study Area Key Intersection
- XXX(XXX) Weekday PM(Saturday Midday) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
2040 BACKGROUND PLUS
PROJECT TRAFFIC VOLUMES
SCENARIO 1

FIGURE 13

Kimley»Horn



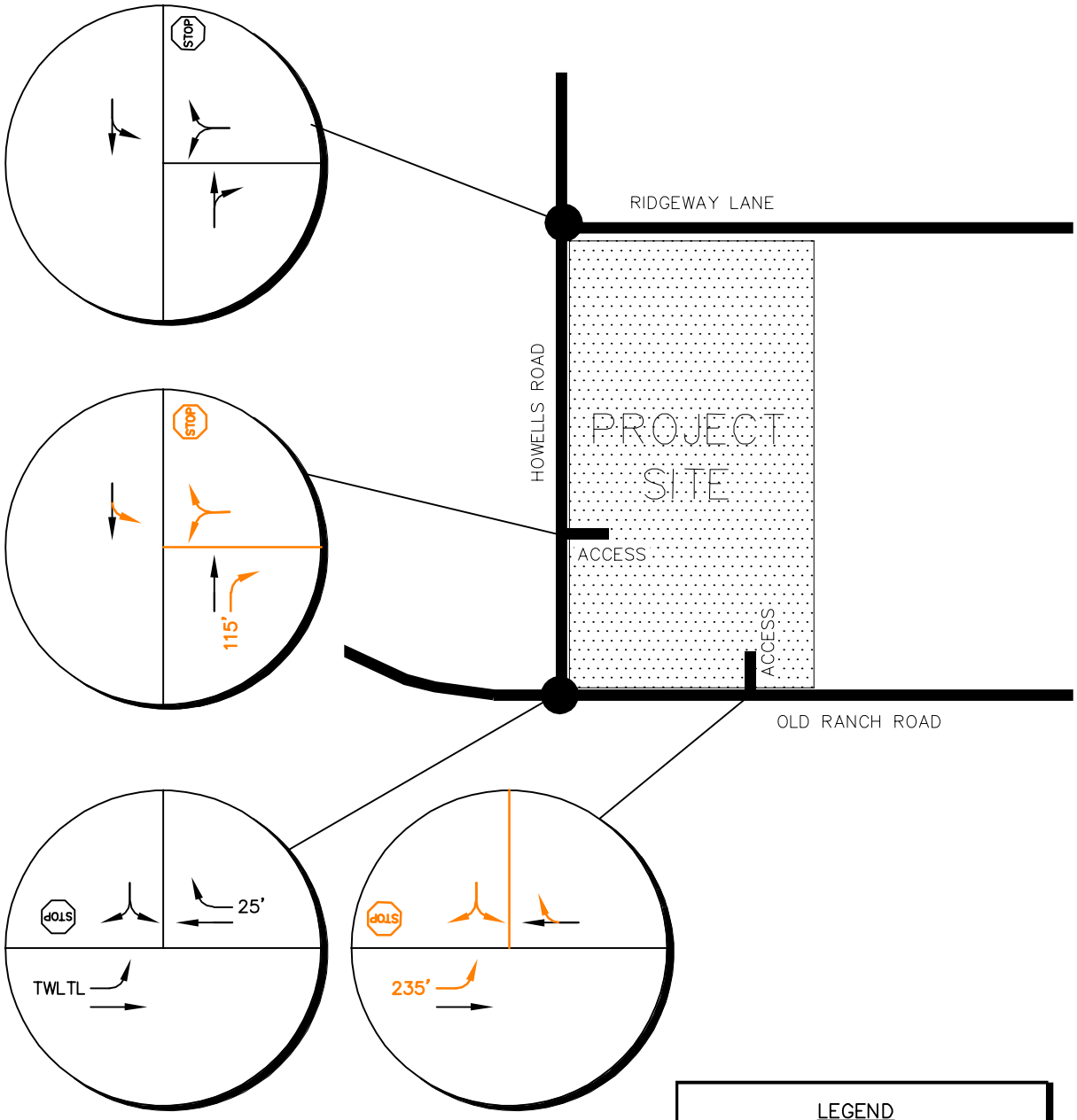
LEGEND

- ● Study Area Key Intersection
- XXX(XXX) Weekday PM(Saturday Midday) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
2040 BACKGROUND PLUS
PROJECT TRAFFIC VOLUMES
SCENARIO 2

FIGURE 14

Kimley»Horn



LEGEND

- Study Area Key Intersection
- STOP Stop Controlled Approach
- 100' Turn Lane Length (feet)
- TWLTL Two-Way Left Turn Lane
- Improvement

THE SHIRE AT OLD RANCH
EL PASO COUNTY, CO
RECOMMENDED
LANE CONFIGURATIONS AND CONTROL
SCENARIO 1

FIGURE 15

Ridgeview Data Collection

El Paso County, CO
The Shire at Old Ranch
PM Peak
Ridgeway Ln and Howells Rd

File Name : Ridgeway and Howells PM
Site Code : IPO 422
Start Date : 3/21/2019
Page No : 1

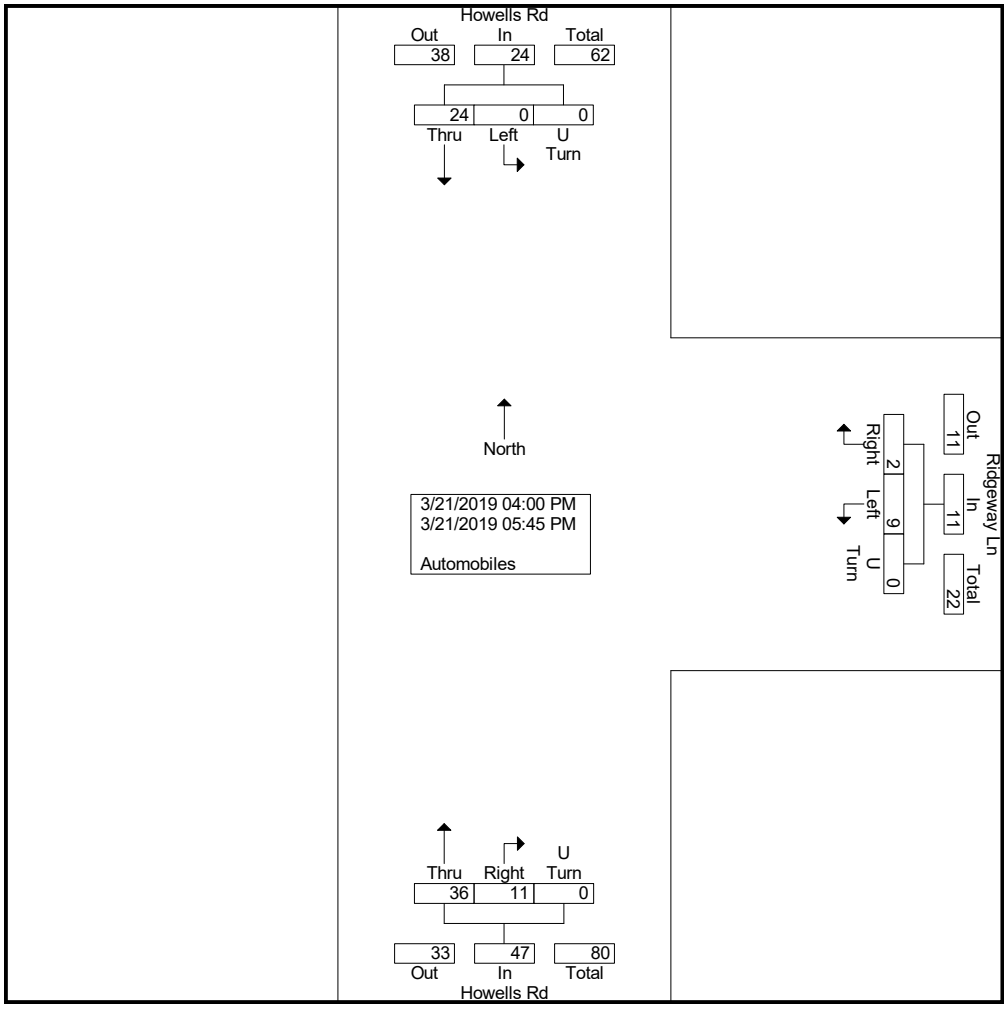
Groups Printed- Automobiles

	Ridgeway Ln Westbound				Howells Rd Northbound				Howells Rd Southbound				
Start Time	Left	Right	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Thru	U Turn	App. Total	Int. Total
04:00 PM	0	0	0	0	7	2	0	9	0	2	0	2	11
04:15 PM	0	0	0	0	1	0	0	1	0	1	0	1	2
04:30 PM	1	0	0	1	2	1	0	3	0	1	0	1	5
04:45 PM	3	1	0	4	4	2	0	6	0	3	0	3	13
Total	4	1	0	5	14	5	0	19	0	7	0	7	31
05:00 PM	1	0	0	1	9	1	0	10	0	6	0	6	17
05:15 PM	1	0	0	1	6	4	0	10	0	3	0	3	14
05:30 PM	2	0	0	2	3	1	0	4	0	5	0	5	11
05:45 PM	1	1	0	2	4	0	0	4	0	3	0	3	9
Total	5	1	0	6	22	6	0	28	0	17	0	17	51
Grand Total	9	2	0	11	36	11	0	47	0	24	0	24	82
Apprch %	81.8	18.2	0		76.6	23.4	0		0	100	0		
Total %	11	2.4	0	13.4	43.9	13.4	0	57.3	0	29.3	0	29.3	

Ridgeview Data Collection

El Paso County, CO
The Shire at Old Ranch
PM Peak
Ridgeway Ln and Howells Rd

File Name : Ridgeway and Howells PM
Site Code : IPO 422
Start Date : 3/21/2019
Page No : 2

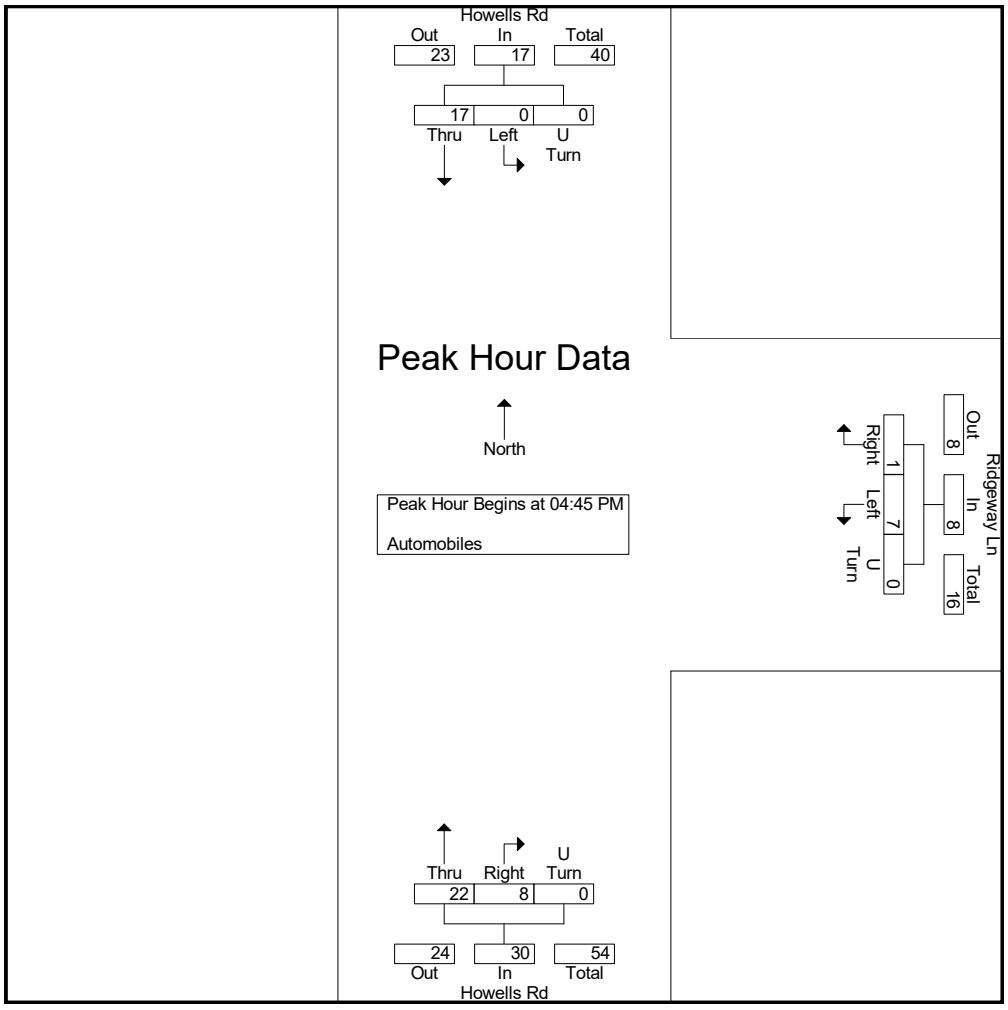


Ridgeview Data Collection

El Paso County, CO
The Shire at Old Ranch
PM Peak
Ridgeway Ln and Howells Rd

File Name : Ridgeway and Howells PM
Site Code : IPO 422
Start Date : 3/21/2019
Page No : 3

	Ridgeway Ln Westbound				Howells Rd Northbound				Howells Rd Southbound				
Start Time	Left	Right	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Thru	U Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	**3**	**1**	0	**4**	4	2	0	6	0	3	0	3	13
05:00 PM	1	0	0	1	**9**	1	0	**10**	0	**6**	0	**6**	**17**
05:15 PM	1	0	0	1	6	**4**	0	10	0	3	0	3	14
05:30 PM	2	0	0	2	3	1	0	4	0	5	0	5	11
Total Volume	7	1	0	8	22	8	0	30	0	17	0	17	55
% App. Total	87.5	12.5	0		73.3	26.7	0		0	100	0		
PHF	.583	.250	.000	.500	.611	.500	.000	.750	.000	.708	.000	.708	.809



Ridgeview Data Collection

El Paso County, CO
The Shire at Old Ranch
Saturday Noon Peak
Ridgeway Ln and Howells Rd

File Name : Ridgeway and Howells Sat Noon
Site Code : IPO 422
Start Date : 3/30/2019
Page No : 1

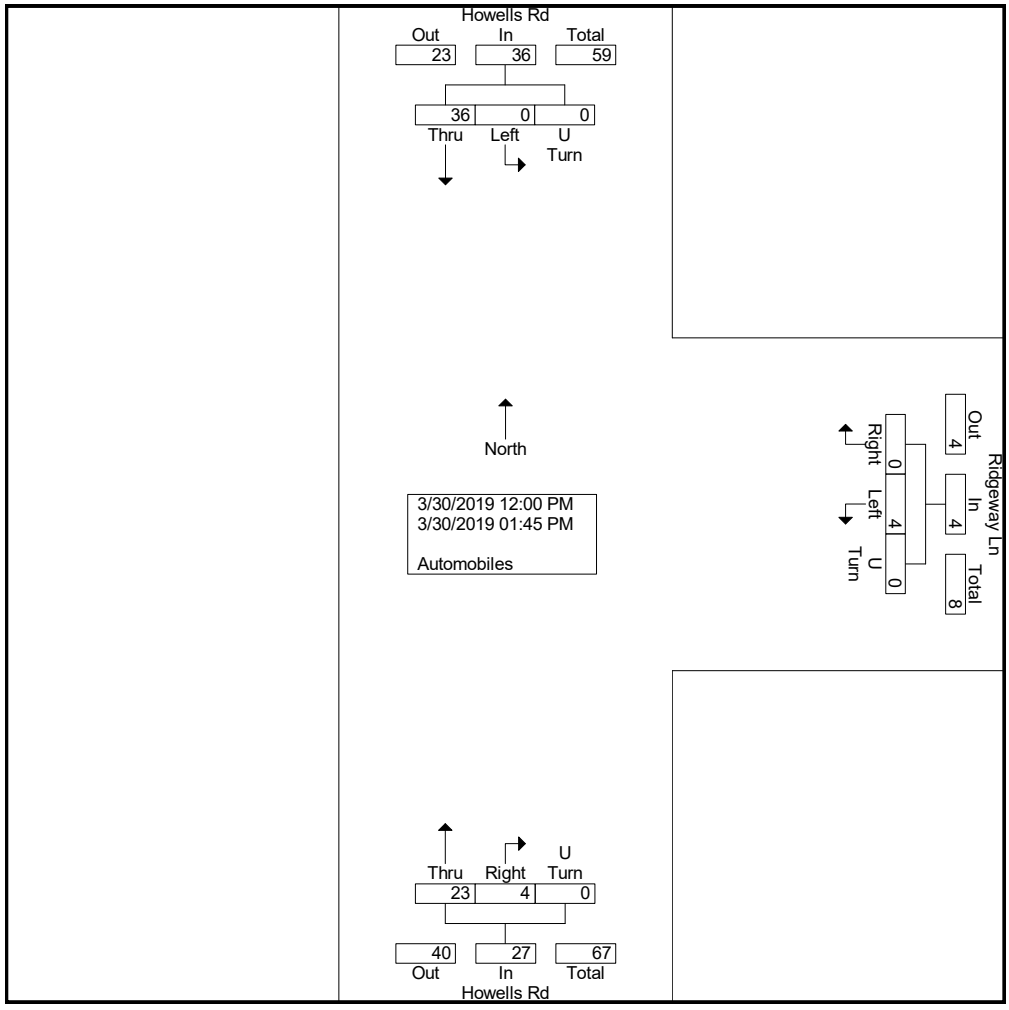
Groups Printed- Automobiles

	Ridgeway Ln Westbound				Howells Rd Northbound				Howells Rd Southbound				
Start Time	Left	Right	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Thru	U Turn	App. Total	Int. Total
12:00 PM	0	0	0	0	4	1	0	5	0	5	0	5	10
12:15 PM	1	0	0	1	2	1	0	3	0	4	0	4	8
12:30 PM	3	0	0	3	6	1	0	7	0	2	0	2	12
12:45 PM	0	0	0	0	2	0	0	2	0	2	0	2	4
Total	4	0	0	4	14	3	0	17	0	13	0	13	34
01:00 PM	0	0	0	0	2	0	0	2	0	5	0	5	7
01:15 PM	0	0	0	0	4	0	0	4	0	6	0	6	10
01:30 PM	0	0	0	0	1	1	0	2	0	6	0	6	8
01:45 PM	0	0	0	0	2	0	0	2	0	6	0	6	8
Total	0	0	0	0	9	1	0	10	0	23	0	23	33
Grand Total	4	0	0	4	23	4	0	27	0	36	0	36	67
Apprch %	100	0	0		85.2	14.8	0		0	100	0		
Total %	6	0	0	6	34.3	6	0	40.3	0	53.7	0	53.7	

Ridgeview Data Collection

El Paso County, CO
The Shire at Old Ranch
Saturday Noon Peak
Ridgeway Ln and Howells Rd

File Name : Ridgeway and Howells Sat Noon
Site Code : IPO 422
Start Date : 3/30/2019
Page No : 2

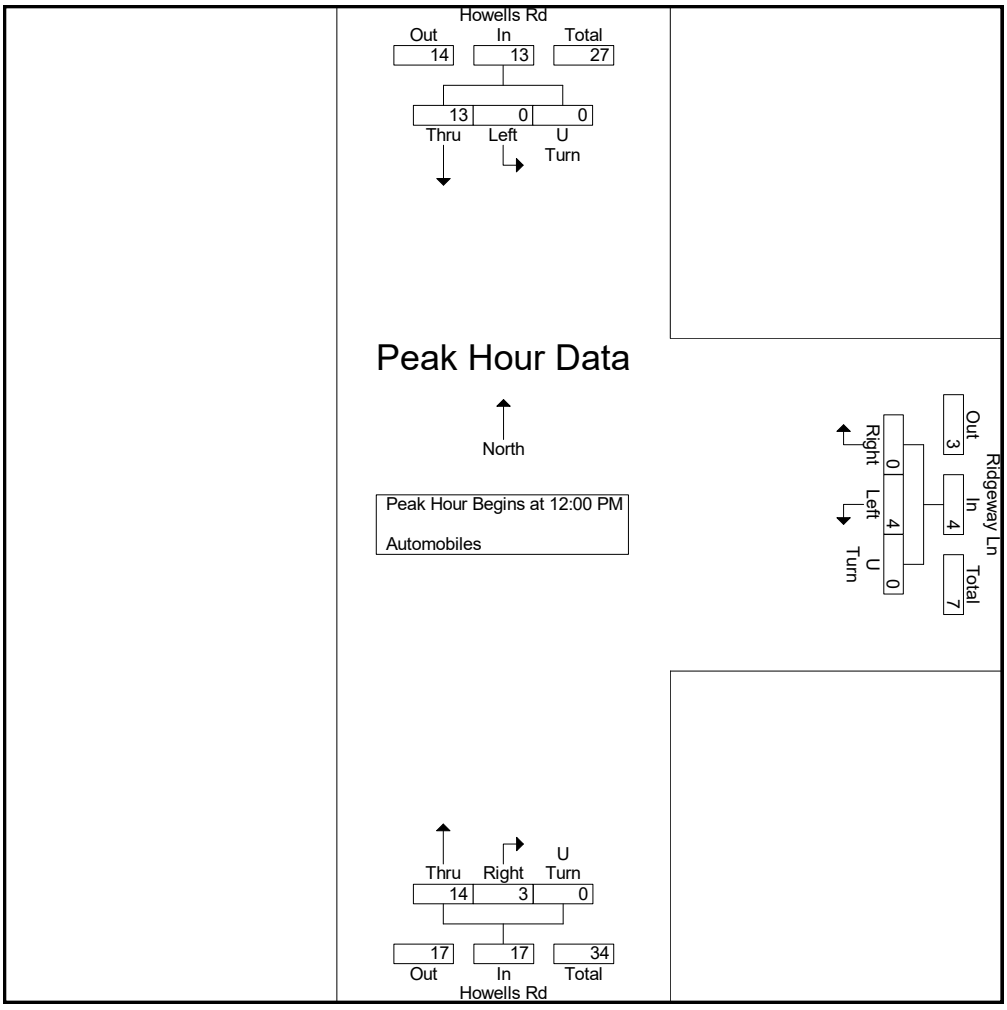


Ridgeview Data Collection

El Paso County, CO
The Shire at Old Ranch
Saturday Noon Peak
Ridgeway Ln and Howells Rd

File Name : Ridgeway and Howells Sat Noon
Site Code : IPO 422
Start Date : 3/30/2019
Page No : 3

	Ridgeway Ln Westbound				Howells Rd Northbound				Howells Rd Southbound				
Start Time	Left	Right	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Thru	U Turn	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 12:00 PM													
12:00 PM	0	0	0	0	4	**1**	0	5	0	**5**	0	**5**	10
12:15 PM	1	0	0	1	2	1	0	3	0	4	0	4	8
12:30 PM	**3**	0	0	**3**	**6**	1	0	**7**	0	2	0	2	**12**
12:45 PM	0	0	0	0	2	0	0	2	0	2	0	2	4
Total Volume	4	0	0	4	14	3	0	17	0	13	0	13	34
% App. Total	100	0	0		82.4	17.6	0		0	100	0		
PHF	.333	.000	.000	.333	.583	.750	.000	.607	.000	.650	.000	.650	.708



Ridgeview Data Collection

El Paso County, CO
The Shire at Old Ranch
PM Peak
Old Ranch Rd and Howells Rd

File Name : Old Ranch and Howells PM
Site Code : IPO 422
Start Date : 3/21/2019

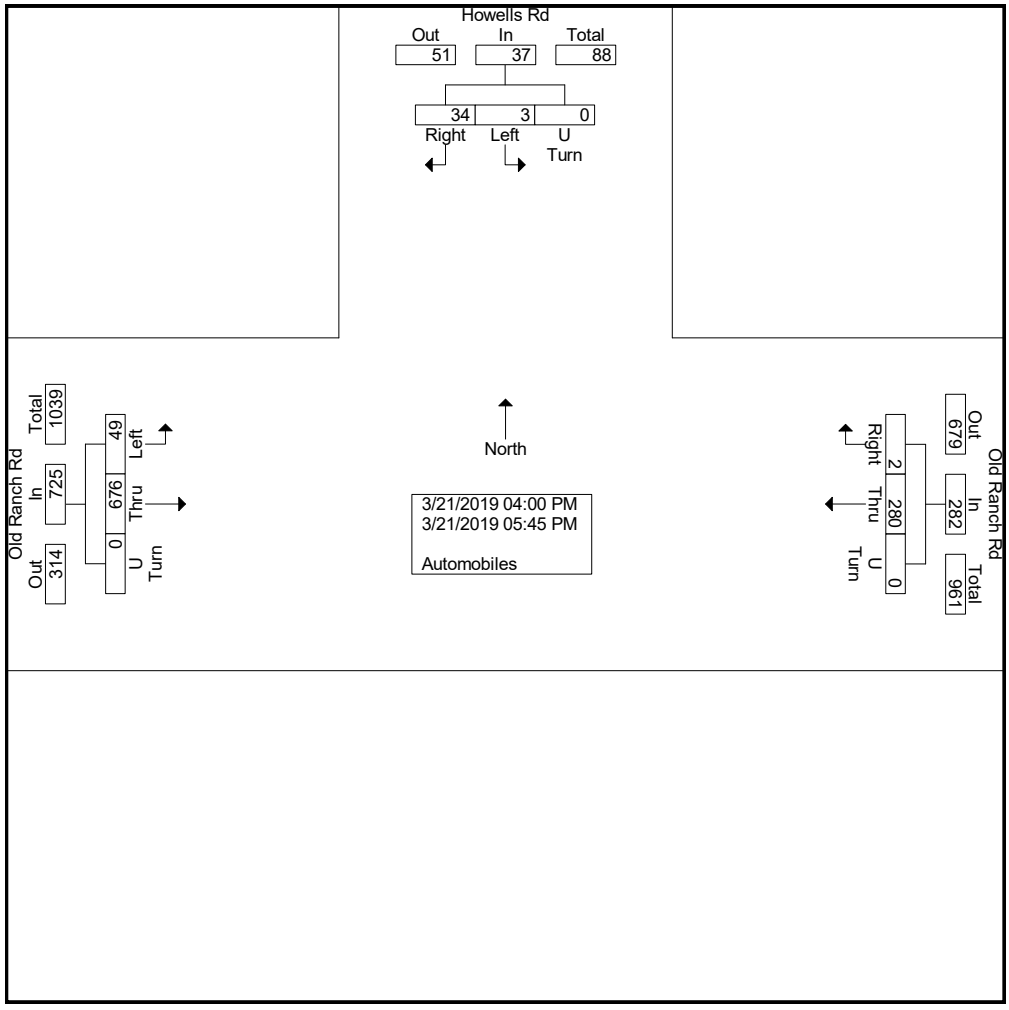
Groups Printed- Automobiles

	Old Ranch Rd Eastbound				Old Ranch Rd Westbound				Howells Rd Southbound				
Start Time	Left	Thru	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Right	U Turn	App. Total	Int. Total
04:00 PM	8	75	0	83	40	1	0	41	1	3	0	4	128
04:15 PM	2	85	0	87	29	0	0	29	0	1	0	1	117
04:30 PM	4	68	0	72	28	0	0	28	1	1	0	2	102
04:45 PM	6	90	0	96	25	0	0	25	0	4	0	4	125
Total	20	318	0	338	122	1	0	123	2	9	0	11	472
05:00 PM	11	94	0	105	54	1	0	55	0	9	0	9	169
05:15 PM	9	92	0	101	40	0	0	40	0	4	0	4	145
05:30 PM	5	91	0	96	30	0	0	30	1	5	0	6	132
05:45 PM	4	81	0	85	34	0	0	34	0	7	0	7	126
Total	29	358	0	387	158	1	0	159	1	25	0	26	572
Grand Total	49	676	0	725	280	2	0	282	3	34	0	37	1044
Apprch %	6.8	93.2	0		99.3	0.7	0		8.1	91.9	0		
Total %	4.7	64.8	0	69.4	26.8	0.2	0	27	0.3	3.3	0	3.5	

Ridgeview Data Collection

El Paso County, CO
The Shire at Old Ranch
PM Peak
Old Ranch Rd and Howells Rd

File Name : Old Ranch and Howells PM
Site Code : IPO 422
Start Date : 3/21/2019
Page No : 2

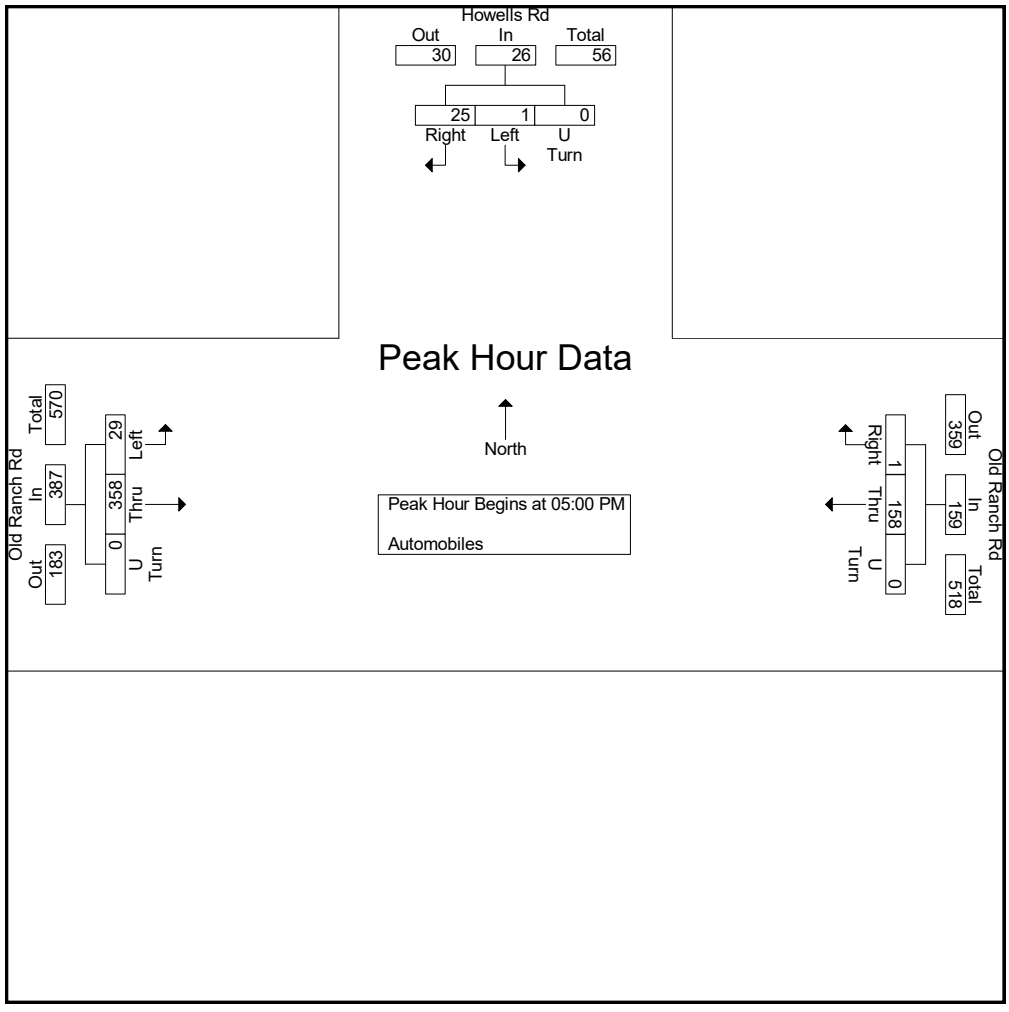


Ridgeview Data Collection

El Paso County, CO
The Shire at Old Ranch
PM Peak
Old Ranch Rd and Howells Rd

File Name : Old Ranch and Howells PM
Site Code : IPO 422
Start Date : 3/21/2019
Page No : 3

	Old Ranch Rd Eastbound				Old Ranch Rd Westbound				Howells Rd Southbound				
Start Time	Left	Thru	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Right	U Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	**11**	**94**	0	**105**	**54**	**1**	0	**55**	0	**9**	0	**9**	**169**
05:15 PM	9	92	0	101	40	0	0	40	0	4	0	4	145
05:30 PM	5	91	0	96	30	0	0	30	**1**	5	0	6	132
05:45 PM	4	81	0	85	34	0	0	34	0	7	0	7	126
Total Volume	29	358	0	387	158	1	0	159	1	25	0	26	572
% App. Total	7.5	92.5	0		99.4	0.6	0		3.8	96.2	0		
PHF	.659	.952	.000	.921	.731	.250	.000	.723	.250	.694	.000	.722	.846



Ridgeview Data Collection

El Paso County, CO
The Shire at Old Ranch
Saturday Noon Peak
Old Ranch Rd and Howells Rd

File Name : Old Ranch and Howells Sat Noon
Site Code : IPO 422
Start Date : 3/30/2019
Page No : 1

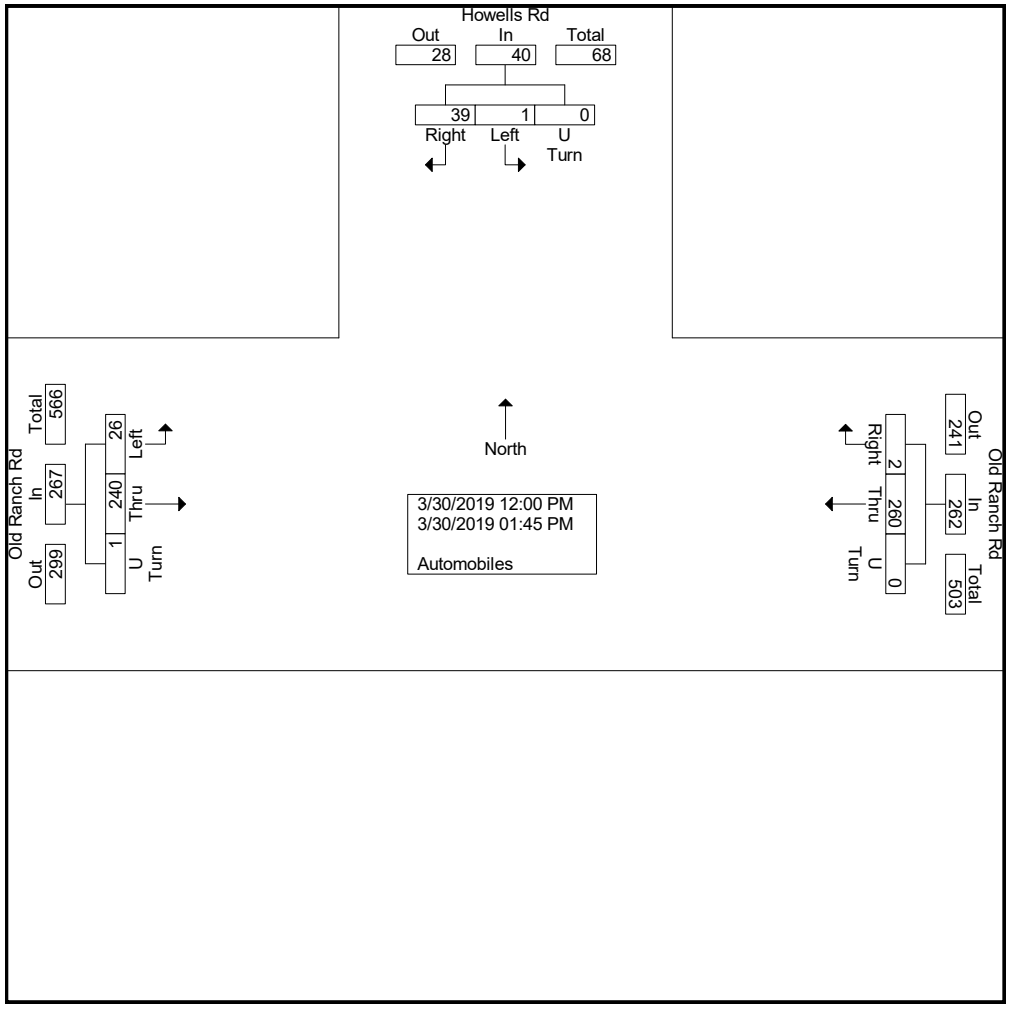
Groups Printed- Automobiles

	Old Ranch Rd Eastbound				Old Ranch Rd Westbound				Howells Rd Southbound				
Start Time	Left	Thru	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Right	U Turn	App. Total	Int. Total
12:00 PM	5	33	0	38	32	0	0	32	0	2	0	2	72
12:15 PM	3	29	0	32	38	0	0	38	0	7	0	7	77
12:30 PM	5	19	0	24	41	0	0	41	1	6	0	7	72
12:45 PM	4	28	0	32	31	0	0	31	0	2	0	2	65
Total	17	109	0	126	142	0	0	142	1	17	0	18	286
01:00 PM	1	29	0	30	32	0	0	32	0	4	0	4	66
01:15 PM	5	26	1	32	24	0	0	24	0	6	0	6	62
01:30 PM	1	43	0	44	31	2	0	33	0	8	0	8	85
01:45 PM	2	33	0	35	31	0	0	31	0	4	0	4	70
Total	9	131	1	141	118	2	0	120	0	22	0	22	283
Grand Total	26	240	1	267	260	2	0	262	1	39	0	40	569
Apprch %	9.7	89.9	0.4		99.2	0.8	0		2.5	97.5	0		
Total %	4.6	42.2	0.2	46.9	45.7	0.4	0	46	0.2	6.9	0	7	

Ridgeview Data Collection

El Paso County, CO
The Shire at Old Ranch
Saturday Noon Peak
Old Ranch Rd and Howells Rd

File Name : Old Ranch and Howells Sat Noon
Site Code : IPO 422
Start Date : 3/30/2019
Page No : 2

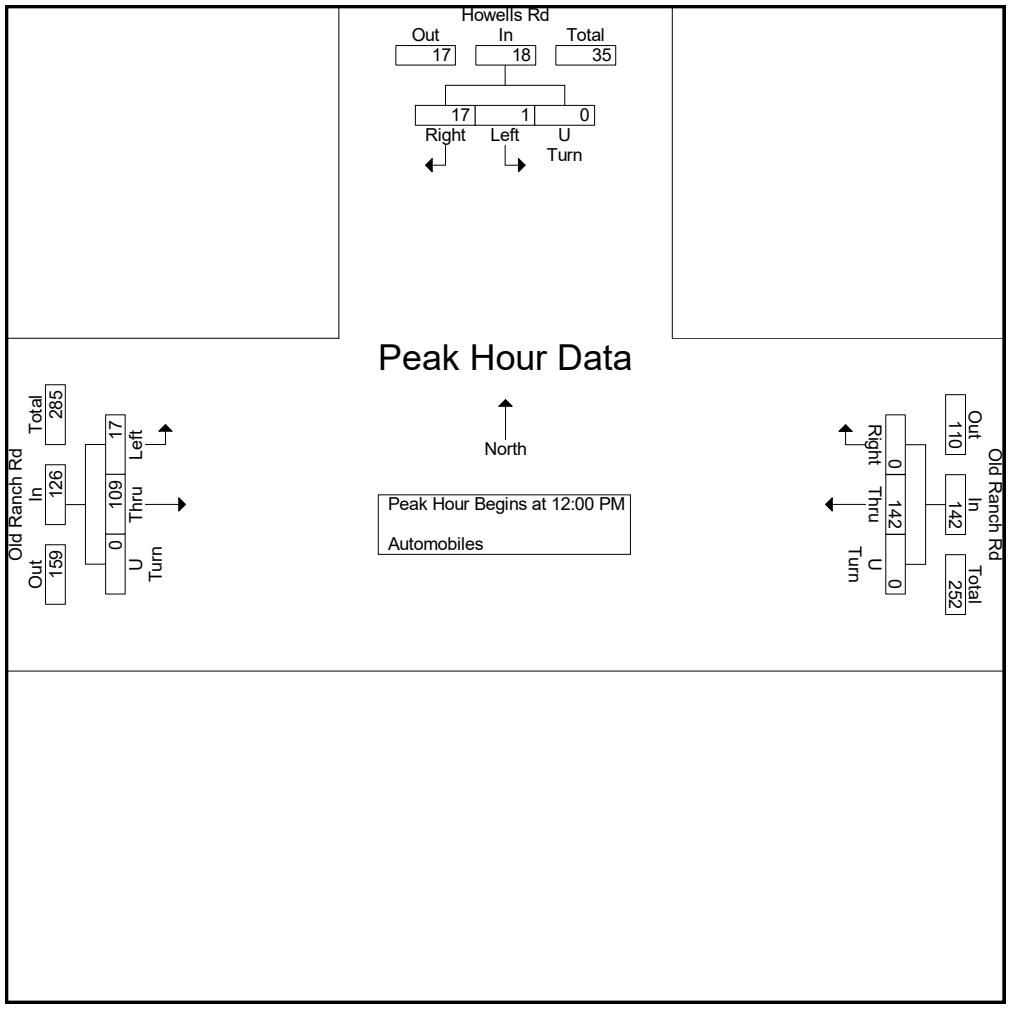


Ridgeview Data Collection

El Paso County, CO
The Shire at Old Ranch
Saturday Noon Peak
Old Ranch Rd and Howells Rd

File Name : Old Ranch and Howells Sat Noon
Site Code : IPO 422
Start Date : 3/30/2019
Page No : 3

	Old Ranch Rd Eastbound				Old Ranch Rd Westbound				Howells Rd Southbound				
Start Time	Left	Thru	U Turn	App. Total	Thru	Right	U Turn	App. Total	Left	Right	U Turn	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 12:00 PM													
12:00 PM	**5**	**33**	0	**38**	32	0	0	32	0	2	0	2	72
12:15 PM	3	29	0	32	38	0	0	38	0	**7**	0	**7**	**77**
12:30 PM	5	19	0	24	**41**	0	0	**41**	**1**	6	0	7	72
12:45 PM	4	28	0	32	31	0	0	31	0	2	0	2	65
Total Volume	17	109	0	126	142	0	0	142	1	17	0	18	286
% App. Total	13.5	86.5	0		100	0	0		5.6	94.4	0		
PHF	.850	.826	.000	.829	.866	.000	.000	.866	.250	.607	.000	.643	.929



The Shire at Old Ranch Project Traffic Projections

Roadway	Source	2013 Volume	2040 Projection	Growth Factor	Annual Growth
Burgess Rd E/O Milan Rd	El Paso County	3,200	5,200	1.63	1.81%
Shoup Rd W/O Milan Rd	El Paso County	4,200	10,800	2.57	3.56%
Black Forest Rd N/O Burgess Rd	El Paso County	4,800	13,400	2.79	3.88%
Powers Blvd (SH-21) S/O Old Ranch Rd	CDOT (20 yr)	-	-	1.56	2.25%
Average					2.87%

Kimley»Horn

Project	The Shire at Old Ranch				
Subject	Trip Generation for Nursery (Garden Center)				
Designed by	Curtis Rowe	*Date*	April 09, 2019	*Job No.*	96829000
Checked by		*Date*		*Sheet No.*	1 of 1

TRIP GENERATION MANUAL TECHNIQUES

ITE Trip Generation Manual 10th Edition, Average Rates
Land Use Code - Nursery (Garden Center) (817)

Independant Variable - Acres (X)
Acres = 20
T = Average Vehicle Trip Ends

Weekday (800 Series Page 91)

Average Weekday — Directional Distribution: 50% ent. 50% exit.
T = 108.10 (X) — T = 2162 Average Vehicle Trip Ends
T = 108.10 * (20.0) — 1081 entering 1081 exiting

1081 + 1081 = 2162

Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m. (800 Series Page 92)

Directional Distribution: 50% ent. 50% exit.
T = 2.82 (X) — T = 56 Average Vehicle Trip Ends
T = 2.82 * (20.0) — 28 entering 28 exiting

28 + 28 = 56

Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. (800 Series Page 93)

Directional Distribution: 50% ent. 50% exit.
T = 8.06 (X) — T = 161 Average Vehicle Trip Ends
T = 8.06 * (20.0) — 81 entering 81 exiting

81 + 80 = 161

Saturday (800 Series Page 96)

Average Saturday — Directional Distribution: 50% ent. 50% exit.
T = 154.82 (X) — T = 3098 Average Vehicle Trip Ends
T = 154.82 * (20.0) — 1549 entering 1549 exiting

1549 + 1549 = 3098

Saturday Peak Hour of Generator (800 Series Page 97)

Directional Distribution: 50% ent. 50% exit.
T = 23.29 (X) — T = 466 Average Vehicle Trip Ends
T = 23.29 * (20.0) — 233 entering 233 exiting

233 + 233 = 466

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	1	22	8	0	17
Future Vol, veh/h	7	1	22	8	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	58	25	61	50	92	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	4	36	16	0	24

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	68	44	0	0	52	0
Stage 1	44	-	-	-	-	-
Stage 2	24	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	937	1026	-	-	1554	-
Stage 1	978	-	-	-	-	-
Stage 2	999	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	937	1026	-	-	1554	-
Mov Cap-2 Maneuver	937	-	-	-	-	-
Stage 1	978	-	-	-	-	-
Stage 2	999	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	958	1554	-
HCM Lane V/C Ratio	-	-	0.017	-	-
HCM Control Delay (s)	-	-	8.8	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	0	14	3	0	13
Future Vol, veh/h	4	0	14	3	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	33	92	58	75	92	65
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	0	24	4	0	20

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	46	26	0	0	28	0
Stage 1	26	-	-	-	-	-
Stage 2	20	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	964	1050	-	-	1585	-
Stage 1	997	-	-	-	-	-
Stage 2	1003	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	964	1050	-	-	1585	-
Mov Cap-2 Maneuver	964	-	-	-	-	-
Stage 1	997	-	-	-	-	-
Stage 2	1003	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	964	1585	-
HCM Lane V/C Ratio	-	-	0.013	-	-
HCM Control Delay (s)	-	-	8.8	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	1	23	8	0	18
Future Vol, veh/h	7	1	23	8	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	58	25	61	50	92	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	4	38	16	0	25

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	71	46	0	0	54	0
Stage 1	46	-	-	-	-	-
Stage 2	25	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	933	1023	-	-	1551	-
Stage 1	976	-	-	-	-	-
Stage 2	998	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	933	1023	-	-	1551	-
Mov Cap-2 Maneuver	933	-	-	-	-	-
Stage 1	976	-	-	-	-	-
Stage 2	998	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	954	1551	-
HCM Lane V/C Ratio	-	-	0.017	-	-
HCM Control Delay (s)	-	-	8.8	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	0	14	3	0	13
Future Vol, veh/h	4	0	14	3	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	33	92	58	75	92	65
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	0	24	4	0	20

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	46	26	0	0	28	0
Stage 1	26	-	-	-	-	-
Stage 2	20	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	964	1050	-	-	1585	-
Stage 1	997	-	-	-	-	-
Stage 2	1003	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	964	1050	-	-	1585	-
Mov Cap-2 Maneuver	964	-	-	-	-	-
Stage 1	997	-	-	-	-	-
Stage 2	1003	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	964	1585	-
HCM Lane V/C Ratio	-	-	0.013	-	-
HCM Control Delay (s)	-	-	8.8	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	1	27	8	0	22
Future Vol, veh/h	7	1	27	8	0	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	58	25	61	50	92	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	4	44	16	0	31

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	83	52	0	0	60	0
Stage 1	52	-	-	-	-	-
Stage 2	31	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	919	1016	-	-	1544	-
Stage 1	970	-	-	-	-	-
Stage 2	992	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	919	1016	-	-	1544	-
Mov Cap-2 Maneuver	919	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	992	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	941	1544	-
HCM Lane V/C Ratio	-	-	0.017	-	-
HCM Control Delay (s)	-	-	8.9	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	0	26	3	0	25
Future Vol, veh/h	4	0	26	3	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	33	92	58	75	92	65
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	0	45	4	0	38

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	85	47	0	0	49	0
Stage 1	47	-	-	-	-	-
Stage 2	38	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	916	1022	-	-	1558	-
Stage 1	975	-	-	-	-	-
Stage 2	984	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	916	1022	-	-	1558	-
Mov Cap-2 Maneuver	916	-	-	-	-	-
Stage 1	975	-	-	-	-	-
Stage 2	984	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	916	1558	-
HCM Lane V/C Ratio	-	-	0.013	-	-
HCM Control Delay (s)	-	-	9	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	83	5	23	85	4	18
Future Vol, veh/h	83	5	23	85	4	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	50	61	70	92	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	119	10	38	121	4	25

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	132	99	0	0	159	0
Stage 1	99	-	-	-	-	-
Stage 2	33	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	862	957	-	-	1420	-
Stage 1	925	-	-	-	-	-
Stage 2	989	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	859	957	-	-	1420	-
Mov Cap-2 Maneuver	859	-	-	-	-	-
Stage 1	922	-	-	-	-	-
Stage 2	989	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	866	1420	-
HCM Lane V/C Ratio	-	-	0.148	0.003	-
HCM Control Delay (s)	-	-	9.9	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0	-

Intersection	
Int Delay, s/veh	6.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	225	12	14	224	12	13
Future Vol, veh/h	225	12	14	224	12	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	92	58	75	92	65
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	321	13	24	299	13	20

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	220	174	0	0	323	0
Stage 1	174	-	-	-	-	-
Stage 2	46	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	768	869	-	-	1237	-
Stage 1	856	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	760	869	-	-	1237	-
Mov Cap-2 Maneuver	760	-	-	-	-	-
Stage 1	847	-	-	-	-	-
Stage 2	976	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	3.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	764	1237	-
HCM Lane V/C Ratio	-	-	0.438	0.011	-
HCM Control Delay (s)	-	-	13.3	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	2.2	0	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	1	41	8	0	32
Future Vol, veh/h	7	1	41	8	0	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	58	25	61	50	92	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	4	67	16	0	45

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	120	75	0	0	83	0
Stage 1	75	-	-	-	-	-
Stage 2	45	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	876	986	-	-	1514	-
Stage 1	948	-	-	-	-	-
Stage 2	977	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	876	986	-	-	1514	-
Mov Cap-2 Maneuver	876	-	-	-	-	-
Stage 1	948	-	-	-	-	-
Stage 2	977	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	901	1514	-
HCM Lane V/C Ratio	-	-	0.018	-	-
HCM Control Delay (s)	-	-	9.1	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	0	26	3	0	24
Future Vol, veh/h	4	0	26	3	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	33	92	58	75	92	65
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	0	45	4	0	37

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	84	47	0	0	49	0
Stage 1	47	-	-	-	-	-
Stage 2	37	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	918	1022	-	-	1558	-
Stage 1	975	-	-	-	-	-
Stage 2	985	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	918	1022	-	-	1558	-
Mov Cap-2 Maneuver	918	-	-	-	-	-
Stage 1	975	-	-	-	-	-
Stage 2	985	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	918	1558	-
HCM Lane V/C Ratio	-	-	0.013	-	-
HCM Control Delay (s)	-	-	9	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	1	45	8	0	36
Future Vol, veh/h	7	1	45	8	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	58	25	61	50	92	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	4	74	16	0	51

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	133	82	0	0	90	0
Stage 1	82	-	-	-	-	-
Stage 2	51	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	861	978	-	-	1505	-
Stage 1	941	-	-	-	-	-
Stage 2	971	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	861	978	-	-	1505	-
Mov Cap-2 Maneuver	861	-	-	-	-	-
Stage 1	941	-	-	-	-	-
Stage 2	971	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	887	1505	-
HCM Lane V/C Ratio	-	-	0.018	-	-
HCM Control Delay (s)	-	-	9.1	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	0	38	3	0	36
Future Vol, veh/h	4	0	38	3	0	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	33	92	58	75	92	65
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	0	66	4	0	55

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	123	68	0	0	70	0
Stage 1	68	-	-	-	-	-
Stage 2	55	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	872	995	-	-	1531	-
Stage 1	955	-	-	-	-	-
Stage 2	968	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	872	995	-	-	1531	-
Mov Cap-2 Maneuver	872	-	-	-	-	-
Stage 1	955	-	-	-	-	-
Stage 2	968	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	872	1531	-
HCM Lane V/C Ratio	-	-	0.014	-	-
HCM Control Delay (s)	-	-	9.2	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	83	5	41	85	4	32
Future Vol, veh/h	83	5	41	85	4	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	70	50	61	70	92	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	119	10	67	121	4	45

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	181	128	0	0	188	0
Stage 1	128	-	-	-	-	-
Stage 2	53	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	808	922	-	-	1386	-
Stage 1	898	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	806	922	-	-	1386	-
Mov Cap-2 Maneuver	806	-	-	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	970	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	814	1386	-
HCM Lane V/C Ratio	-	-	0.158	0.003	-
HCM Control Delay (s)	-	-	10.3	7.6	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.6	0	-

Intersection	
Int Delay, s/veh	6.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	225	12	26	224	12	24
Future Vol, veh/h	225	12	26	224	12	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	92	58	75	92	65
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	300	13	45	299	13	37

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	258	195	0	0	344	0
Stage 1	195	-	-	-	-	-
Stage 2	63	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	731	846	-	-	1215	-
Stage 1	838	-	-	-	-	-
Stage 2	960	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	723	846	-	-	1215	-
Mov Cap-2 Maneuver	723	-	-	-	-	-
Stage 1	829	-	-	-	-	-
Stage 2	960	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	727	1215	-
HCM Lane V/C Ratio	-	-	0.431	0.011	-
HCM Control Delay (s)	-	-	13.6	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	2.2	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	29	358	158	1	1	25
Future Vol, veh/h	29	358	158	1	1	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	66	95	73	25	25	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	377	216	4	4	36

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	220	0	-	0	681	216
Stage 1	-	-	-	-	216	-
Stage 2	-	-	-	-	465	-
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	1349	-	-	-	416	824
Stage 1	-	-	-	-	820	-
Stage 2	-	-	-	-	632	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1349	-	-	-	402	824
Mov Cap-2 Maneuver	-	-	-	-	402	-
Stage 1	-	-	-	-	793	-
Stage 2	-	-	-	-	632	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1349	-	-	-	746
HCM Lane V/C Ratio	0.033	-	-	-	0.054
HCM Control Delay (s)	7.8	-	-	-	10.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	17	109	142	0	1	17
Future Vol, veh/h	17	109	142	0	1	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	83	87	92	25	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	131	163	0	4	28

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	163	0	-	0	334	163
Stage 1	-	-	-	-	163	-
Stage 2	-	-	-	-	171	-
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	1416	-	-	-	661	882
Stage 1	-	-	-	-	866	-
Stage 2	-	-	-	-	859	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1416	-	-	-	652	882
Mov Cap-2 Maneuver	-	-	-	-	652	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	859	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1416	-	-	-	845
HCM Lane V/C Ratio	0.014	-	-	-	0.038
HCM Control Delay (s)	7.6	-	-	-	9.4
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	369	163	1	1	26
Future Vol, veh/h	30	369	163	1	1	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	66	95	73	25	25	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	388	223	4	4	38

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	227	0	-	0	701	223
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	478	-
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	1341	-	-	-	405	817
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	624	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1341	-	-	-	391	817
Mov Cap-2 Maneuver	-	-	-	-	391	-
Stage 1	-	-	-	-	786	-
Stage 2	-	-	-	-	624	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1341	-	-	-	740
HCM Lane V/C Ratio	0.034	-	-	-	0.056
HCM Control Delay (s)	7.8	-	-	-	10.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	112	146	0	1	18
Future Vol, veh/h	18	112	146	0	1	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	83	87	92	25	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	135	168	0	4	30

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	168	0	-	0	345	168
Stage 1	-	-	-	-	168	-
Stage 2	-	-	-	-	177	-
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	1410	-	-	-	652	876
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	854	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1410	-	-	-	642	876
Mov Cap-2 Maneuver	-	-	-	-	642	-
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	854	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1410	-	-	-	839
HCM Lane V/C Ratio	0.015	-	-	-	0.04
HCM Control Delay (s)	7.6	-	-	-	9.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	62	405	211	1	1	46
Future Vol, veh/h	62	405	211	1	1	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	95	73	25	25	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	89	426	289	4	4	66

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	293	0	-	0	893	289
Stage 1	-	-	-	-	289	-
Stage 2	-	-	-	-	604	-
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	1269	-	-	-	312	750
Stage 1	-	-	-	-	760	-
Stage 2	-	-	-	-	546	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1269	-	-	-	290	750
Mov Cap-2 Maneuver	-	-	-	-	290	-
Stage 1	-	-	-	-	707	-
Stage 2	-	-	-	-	546	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1269	-	-	-	687
HCM Lane V/C Ratio	0.07	-	-	-	0.101
HCM Control Delay (s)	8.1	-	-	-	10.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	111	217	286	0	1	76
Future Vol, veh/h	111	217	286	0	1	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	83	87	92	25	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	131	261	329	0	4	109

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	329	0	-	0	852	329
Stage 1	-	-	-	-	329	-
Stage 2	-	-	-	-	523	-
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	1231	-	-	-	330	712
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	595	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1231	-	-	-	295	712
Mov Cap-2 Maneuver	-	-	-	-	295	-
Stage 1	-	-	-	-	652	-
Stage 2	-	-	-	-	595	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1231	-	-	-	678
HCM Lane V/C Ratio	0.106	-	-	-	0.166
HCM Control Delay (s)	8.3	-	-	-	11.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.6

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	99	369	163	9	9	94
Future Vol, veh/h	99	369	163	9	9	94
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	95	73	50	50	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	141	388	223	18	18	134

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	241	0	-	0	893	223
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	670	-
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	1326	-	-	-	312	817
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	509	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1326	-	-	-	279	817
Mov Cap-2 Maneuver	-	-	-	-	279	-
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	509	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1326	-	-	-	665
HCM Lane V/C Ratio	0.107	-	-	-	0.229
HCM Control Delay (s)	8	-	-	-	12
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.9

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	216	112	146	23	24	216
Future Vol, veh/h	216	112	146	23	24	216
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	83	87	92	70	70
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	254	135	168	25	34	309

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	193	0	-	0	811	168
Stage 1	-	-	-	-	168	-
Stage 2	-	-	-	-	643	-
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	1380	-	-	-	349	876
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	523	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1380	-	-	-	285	876
Mov Cap-2 Maneuver	-	-	-	-	285	-
Stage 1	-	-	-	-	703	-
Stage 2	-	-	-	-	523	-

Approach	EB	WB	SB
HCM Control Delay, s	5.4	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1380	-	-	-	726
HCM Lane V/C Ratio	0.184	-	-	-	0.472
HCM Control Delay (s)	8.2	-	-	-	14.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	2.5

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	54	666	294	2	2	47
Future Vol, veh/h	54	666	294	2	2	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	66	95	73	25	25	69
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	701	403	8	8	68

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	411	0	-	0	1268	403
Stage 1	-	-	-	-	403	-
Stage 2	-	-	-	-	865	-
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	1148	-	-	-	186	647
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	412	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1148	-	-	-	173	647
Mov Cap-2 Maneuver	-	-	-	-	173	-
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	412	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1148	-	-	-	502
HCM Lane V/C Ratio	0.071	-	-	-	0.152
HCM Control Delay (s)	8.4	-	-	-	13.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	203	264	0	2	32
Future Vol, veh/h	32	203	264	0	2	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	83	87	92	25	61
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	245	303	0	8	52

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	303	0	-	0	624	303
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	321	-
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	1258	-	-	-	449	737
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	735	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1258	-	-	-	436	737
Mov Cap-2 Maneuver	-	-	-	-	436	-
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	735	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1258	-	-	-	675
HCM Lane V/C Ratio	0.03	-	-	-	0.09
HCM Control Delay (s)	8	-	-	-	10.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	86	702	342	2	2	67
Future Vol, veh/h	86	702	342	2	2	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	95	73	50	50	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	108	739	468	4	4	84

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	472	0	-	0	1423	468
Stage 1	-	-	-	-	468	-
Stage 2	-	-	-	-	955	-
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	1090	-	-	-	150	595
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	374	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1090	-	-	-	135	595
Mov Cap-2 Maneuver	-	-	-	-	135	-
Stage 1	-	-	-	-	568	-
Stage 2	-	-	-	-	374	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1090	-	-	-	515
HCM Lane V/C Ratio	0.099	-	-	-	0.17
HCM Control Delay (s)	8.7	-	-	-	13.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.6

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	125	308	404	0	2	90
Future Vol, veh/h	125	308	404	0	2	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	83	87	92	50	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	147	371	464	0	4	113

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	464	0	-	0	1129	464
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	665	-
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	1097	-	-	-	226	598
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	511	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1097	-	-	-	196	598
Mov Cap-2 Maneuver	-	-	-	-	196	-
Stage 1	-	-	-	-	548	-
Stage 2	-	-	-	-	511	-

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1097	-	-	-	559
HCM Lane V/C Ratio	0.134	-	-	-	0.208
HCM Control Delay (s)	8.8	-	-	-	13.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.8

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	123	666	294	10	10	115
Future Vol, veh/h	123	666	294	10	10	115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	95	73	50	50	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	154	701	403	20	20	144

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	423	0	-	0	1412	403
Stage 1	-	-	-	-	403	-
Stage 2	-	-	-	-	1009	-
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	1136	-	-	-	152	647
Stage 1	-	-	-	-	675	-
Stage 2	-	-	-	-	352	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1136	-	-	-	131	647
Mov Cap-2 Maneuver	-	-	-	-	131	-
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	352	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1136	-	-	-	437
HCM Lane V/C Ratio	0.135	-	-	-	0.375
HCM Control Delay (s)	8.7	-	-	-	18.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.5	-	-	-	1.7

Intersection	
Int Delay, s/veh	9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	230	203	264	23	25	230
Future Vol, veh/h	230	203	264	23	25	230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	50	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	83	87	92	50	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	271	245	303	25	50	288

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	328	0	-	0	1090	303
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	787	-
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	1232	-	-	-	238	737
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	449	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1232	-	-	-	186	737
Mov Cap-2 Maneuver	-	-	-	-	186	-
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	449	-

Approach	EB	WB	SB
HCM Control Delay, s	4.6	0	24.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1232	-	-	-	512
HCM Lane V/C Ratio	0.22	-	-	-	0.659
HCM Control Delay (s)	8.7	-	-	-	24.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.8	-	-	-	4.8

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	4	31	32	4	27
Future Vol, veh/h	20	4	31	32	4	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	100	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	4	34	35	4	29

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	71	34	0	0	69	0
Stage 1	34	-	-	-	-	-
Stage 2	37	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	933	1039	-	-	1532	-
Stage 1	988	-	-	-	-	-
Stage 2	985	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	930	1039	-	-	1532	-
Mov Cap-2 Maneuver	930	-	-	-	-	-
Stage 1	985	-	-	-	-	-
Stage 2	985	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	947	1532	-
HCM Lane V/C Ratio	-	-	0.028	0.003	-
HCM Control Delay (s)	-	-	8.9	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	58	12	18	93	12	19
Future Vol, veh/h	58	12	18	93	12	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	100	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	13	20	101	13	21

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	67	20	0	0	121	0
Stage 1	20	-	-	-	-	-
Stage 2	47	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	938	1058	-	-	1467	-
Stage 1	1003	-	-	-	-	-
Stage 2	975	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	930	1058	-	-	1467	-
Mov Cap-2 Maneuver	930	-	-	-	-	-
Stage 1	994	-	-	-	-	-
Stage 2	975	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	2.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	950	1467	-
HCM Lane V/C Ratio	-	-	0.08	0.009	-
HCM Control Delay (s)	-	-	9.1	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	4	56	32	4	48
Future Vol, veh/h	20	4	56	32	4	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	100	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	4	61	35	4	52

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	121	61	0	0	96	0
Stage 1	61	-	-	-	-	-
Stage 2	60	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	874	1004	-	-	1498	-
Stage 1	962	-	-	-	-	-
Stage 2	963	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	871	1004	-	-	1498	-
Mov Cap-2 Maneuver	871	-	-	-	-	-
Stage 1	959	-	-	-	-	-
Stage 2	963	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	0.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	891	1498	-
HCM Lane V/C Ratio	-	-	0.029	0.003	-
HCM Control Delay (s)	-	-	9.2	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	58	12	32	93	12	33
Future Vol, veh/h	58	12	32	93	12	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	100	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	13	35	101	13	36

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	97	35	0	0	136	0
Stage 1	35	-	-	-	-	-
Stage 2	62	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	902	1038	-	-	1448	-
Stage 1	987	-	-	-	-	-
Stage 2	961	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	894	1038	-	-	1448	-
Mov Cap-2 Maneuver	894	-	-	-	-	-
Stage 1	978	-	-	-	-	-
Stage 2	961	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	916	1448	-
HCM Lane V/C Ratio	-	-	0.083	0.009	-
HCM Control Delay (s)	-	-	9.3	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	36	370	164	8	8	48
Future Vol, veh/h	36	370	164	8	8	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	402	178	9	9	52

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	187	0	-	0	663	183
Stage 1	-	-	-	-	183	-
Stage 2	-	-	-	-	480	-
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	1387	-	-	-	426	859
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	622	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1387	-	-	-	414	859
Mov Cap-2 Maneuver	-	-	-	-	414	-
Stage 1	-	-	-	-	824	-
Stage 2	-	-	-	-	622	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1387	-	-	-	745
HCM Lane V/C Ratio	0.028	-	-	-	0.082
HCM Control Delay (s)	7.7	-	-	-	10.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	105	113	146	23	23	140
Future Vol, veh/h	105	113	146	23	23	140
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	123	159	25	25	152

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	184	0	-	0	523	172
Stage 1	-	-	-	-	172	-
Stage 2	-	-	-	-	351	-
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	1391	-	-	-	514	872
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	713	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1391	-	-	-	472	872
Mov Cap-2 Maneuver	-	-	-	-	472	-
Stage 1	-	-	-	-	788	-
Stage 2	-	-	-	-	713	-

Approach	EB	WB	SB
HCM Control Delay, s	3.8	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1391	-	-	-	779
HCM Lane V/C Ratio	0.082	-	-	-	0.227
HCM Control Delay (s)	7.8	-	-	-	11
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.9

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	36	668	296	8	8	48
Future Vol, veh/h	36	668	296	8	8	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	726	322	9	9	52

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	331	0	-	0	1131	327
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	804	-
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	1228	-	-	-	225	714
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	440	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	1228	-	-	-	218	714
Mov Cap-2 Maneuver	-	-	-	-	218	-
Stage 1	-	-	-	-	708	-
Stage 2	-	-	-	-	440	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1228	-	-	-	539
HCM Lane V/C Ratio	0.032	-	-	-	0.113
HCM Control Delay (s)	8	-	-	-	12.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	105	205	264	23	23	140
Future Vol, veh/h	105	205	264	23	23	140
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	223	287	25	25	152

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	312	0	-	0	751	300
Stage 1	-	-	-	-	300	-
Stage 2	-	-	-	-	451	-
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	1248	-	-	-	378	740
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	642	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1248	-	-	-	344	740
Mov Cap-2 Maneuver	-	-	-	-	344	-
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	642	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1248	-	-	-	637
HCM Lane V/C Ratio	0.091	-	-	-	0.278
HCM Control Delay (s)	8.2	-	-	-	12.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	1.1

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	81	0	8	80	0
Future Vol, veh/h	8	81	0	8	80	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	88	0	9	87	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	97	0	18	9
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	9	-
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	-	-	1496	-	1000	1073
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1014	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1496	-	1000	1073
Mov Cap-2 Maneuver	-	-	-	-	1000	-
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1014	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1000	-	-	1496	-
HCM Lane V/C Ratio	0.087	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	3	233	0	4	233	0
Future Vol, veh/h	3	233	0	4	233	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	253	0	4	253	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	256	0	7	3
Stage 1	-	-	-	-	3	-
Stage 2	-	-	-	-	4	-
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	-	-	1309	-	1014	1081
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	1019	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1309	-	1014	1081
Mov Cap-2 Maneuver	-	-	-	-	1014	-
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	1019	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1014	-	-	1309	-
HCM Lane V/C Ratio	0.25	-	-	-	-
HCM Control Delay (s)	9.7	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	1	-	-	0	-

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	8	81	0	8	80	0
Future Vol, veh/h	8	81	0	8	80	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	88	0	9	87	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	97	0	18	9
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	9	-
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	-	-	1496	-	1000	1073
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1014	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1496	-	1000	1073
Mov Cap-2 Maneuver	-	-	-	-	1000	-
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1014	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1000	-	-	1496	-
HCM Lane V/C Ratio	0.087	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	3	233	0	4	233	0
Future Vol, veh/h	3	233	0	4	233	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	253	0	4	253	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	256	0	7	3
Stage 1	-	-	-	-	3	-
Stage 2	-	-	-	-	4	-
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	-	-	1309	-	1014	1081
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	1019	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1309	-	1014	1081
Mov Cap-2 Maneuver	-	-	-	-	1014	-
Stage 1	-	-	-	-	1020	-
Stage 2	-	-	-	-	1019	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1014	-	-	1309	-
HCM Lane V/C Ratio	0.25	-	-	-	-
HCM Control Delay (s)	9.7	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	1	-	-	0	-

Table 2-3. Roadway Design Criteria Continued

Criteria	Concern	Guideline
Minimize Space Devoted to Road Use	It is desirable to minimize local road mileage, thereby reducing construction and maintenance costs, as well as permitting the most efficient use of land. Roads should also have an appearance commensurate with their function.	Roads should be designed to complement local character.
Relate Road to Topography	Local roads are more attractive and economical if constructed to closely adhere to topography (minimize cut and fill).	The important role that roads play in the overall storm drainage system can be enhanced by closely following existing topography.
Layout Road to Achieve Optimum Subdivision of Land	The arrangement of roads should allow for economical and practical patterns, shapes, and sizes of adjacent lots. Roads as a function of land use must not unduly hinder the development of land.	Distances between roads, number of roads, and related elements all have a bearing on efficient subdivision of an area. Access to adjoining properties should also be encouraged.

2.3.2 Design Standards by Functional Classification

Section 2.2.4 of these standards identifies the Roadway Functional Classifications recognized and used by the County. Table 2-4 through Table 2-7 summarize many of the minimum roadway design standards by category and functional classification. Detailed road Standard Drawings are provided in Appendix F.

Table 2-4. Roadway Design Standards for Rural Expressways and Arterials

	Expressways		Arterials		
Criteria	**6 Lane**	**4 Lane**	**6 Lane Principal**	**4 Lane Principal**	**Minor**
Design Speed / Posted Speed (MPH)	70 / 65	70 / 65	70 / 65	70 / 65	60 / 55
Clear Zone	34’	34’	34’	34’	30’
Minimum Centerline Curve Radius	2,510’[1]	2,510’[1]	2,510’[1]	2,510’[1]	1,505’[1]
Number of Through Lanes	6	4	6	4	2
Lane Width	12’	12’	12’	12’	12’
Right-of-Way	210’	180’	210’	180’	100’
Paved Width	56’[2]	38’[2]	56’[2]	38’[2]	40’
Median Width	24’	24’	24’	24’	n/a
Outside Shoulder Width (paved/gravel)	12’(10’/2’)	12’(10’/2’)	12’(10’/2’)	12’(10’/2’)	10’(8’/2’)
Inside Shoulder Width (paved/gravel)	12’(10’/2’)	6’(4’/2’)	12’(10’/2’)	6’(4’/2’)	n/a
Design ADT		48,000		40,000	10,000
Design Vehicle	WB-67	WB-67	WB-67	WB-67	WB-67
Access Permitted	No	No	No	No	No
Access Spacing	n/a	n/a	n/a	n/a	n/a
Intersection Spacing	1 mile	1 mile	½ mile	½ mile	¼ mile
Parking Permitted	No	No	No	No	No
Minimum Flowline Grade	1%	1%	1%	1%	1%
Centerline Grade (Min.-Max.)	1-5%	1-5%	1-5%	1-5%	1-6%
Intersection Grades (Min.-Max.)	1-2%	1-2%	1-3%	1-3%	1-4%

[1] Assumes 4% superelevation, 6% for 70 MPH design speeds
[2] Pavement width in each direction for divided roadways

Table 2-5. Roadway Design Standards for Rural Collectors and Locals

	Collectors		Local	
Criteria	**Major**	**Minor**	**Local**	**Gravel**
Design Speed / Posted Speed (MPH)	50 / 45	40 / 35	30 / 30	50/45
Clear Zone	20’	14’	7’	12'
Minimum Centerline Curve Radius	930’[2]	565’	300’	As Approved
Number of Through Lanes	2	2	2	2
Lane Width	12’	12’	12’	12'
Right of Way	90’	80’	70’[3]	70'[3]
Paved Width	32’	32’	28’	n/a
Median Width	n/a	n/a	n/a	n/a
Outside Shoulder Width (paved/gravel)	8’(4’/4’)	6’(4’/2’)	4’(2’/2’)	5'(0'/5')
Inside Shoulder Width (paved/gravel)	n/a	n/a	n/a	n/a
Design ADT	3,000	1,500	750	200
Design Vehicle	WB-67	WB-67	WB-50	WB-50
Access Permitted	No	Yes	Yes	Yes
Access Spacing	n/a	Frontage	Frontage	Frontage
Intersection Spacing	¼ mile	660’	330’	330'
Parking Permitted	No	Yes	Yes	No
Minimum Flowline Grade	1%	1%	1%	n/a
Centerline Grade (Min.-Max.)	1-8%[1]	1-8%[1]	1-8%[1]	1-6%
Intersection Grades (Min.-Max.)	1-4%	1-4%	1-4%	1-4%

[1] 10% maximum grade permitted at the discretion of the ECM Administrator
[2] Assumes 4% superelevation, 6% for 70 MPH design speeds
[3] 60-foot right-of-way plus two 5-foot Public Improvements Easements granted to El Paso County

Table 2-6. Roadway Design Standards for Urban Expressways and Arterials

	Expressways		Arterials		
Criteria	**6 Lane**	**4 Lane**	**6 Lane Principal**	**4 Lane Principal**	**Minor**
Design Speed / Posted Speed (MPH)	60 / 55	60 / 55	50 / 45	50 / 45	40 / 35
Clear Zone	30’	30’	20’	20’	14’
Minimum Centerline Curve Radius	1,505’[1]	1,505’[1]	930’[1]	930’[1]	565’
Number of Through Lanes	6	4	6	4	4
Lane Width	12’	12’	12’	12’	12’
Right-of-Way	160’	140’	160’	130’	100’
Paved Width (Excluding Gutter Pan)	48’[2]	36’[2]	48’[2]	36’[2]	62’
Median Width (Including Curb & Gutter)	31’	23’	31’	19’	14’
Shoulder Width (Ext., Excluding Gutter)	8’	8’	8’	8’	n/a
Shoulder Width (Int., Excluding Gutter)	4’	4’	4’	4’	n/a
Required Curb/ Gutter Type (Vertical)	6”	6”	6”	6”	6”
Sidewalk Width (@ FL)	6’ detached	6’ detached	6’ detached	6’ detached	6’ detached
Design ADT		48,000		40,000	20,000
Design Vehicle	WB-67	WB-67	WB-67	WB-67	WB-67
Bike Lanes Permitted	No	No	Yes	Yes	No
Access Permitted	No	No	No	No	No[3]
Access Spacing	n/a	n/a	n/a	n/a	See Table 2-36
Intersection Spacing	1 mile	1 mile	½ mile	½ mile	¼ mile
Parking	No	No	No	No	No
Minimum Flowline Grade of Curb	.50%	.50%	.50%	.50%	.50%
Centerline Grade (Min.-Max.)	0.5-5%	0.5-5%	0.5-6%	0.5-6%	0.5-6%
Intersection Grades (Min.-Max.)	0.5-2%	0.5-2%	0.5-3%	0.5-3%	0.5-4%

[1] Assumes 4% superelevation, 6% for 70 MPH design speeds
[2] Pavement width in each direction for divided roadways
[3] Where no local public or private roadway can provide access, temporary or partial turn movement parcel access may be permitted

Table 2-7. Roadway Design Standards for Urban Collectors and Locals

Criteria	Collectors		Local	
	Non-Residential	Residential	Local	Local[4] (low volume)
Design Speed / Posted Speed (MPH)	40 / 35	40 / 35	25 / 25	20 / 20
Clear Zone	14’	14’	12’	7’
Minimum Centerline Curve Radius	565’	565’	200’	100’
Number of Through Lanes	2	2	2	2
Lane Width	12’	12’	12’	12’
Right-of-Way	80’	60’	60’[3]	60’[3]
Paved Width (Excluding Gutter Pan)	48’	36’	30’	24’
Median Width (Including Curb & Gutter)	12’	n/a	n/a	n/a
Shoulder Width (Ext., Excluding Gutter)	n/a	n/a	n/a	n/a
Shoulder Width (Int., Excluding Gutter)	n/a	n/a	n/a	n/a
Required Curb/ Gutter Type (Vertical)	6”	6”	6” (or ramp)	6” (or ramp)
Sidewalk Width (@ FL)	5’ detached	5’ detached	5’ attached	5’ attached
Design ADT	20,000	10,000	3,000	300
Design Vehicle	WB-50	WB-50	WB-50	SU-30
Bike Lanes Permitted	No	Yes	No	No
Access Permitted	No[5]	No[5]	Yes	Yes
Access Spacing	See Table 2-36	See Table 2-36	Frontage	Frontage
Intersection Spacing	660’[2]	660’[2]	175’	150’
Parking Permitted	No	No	Yes	Yes
Minimum Flowline Grade of Curb	.50%	.50%	.50%	.50%
Centerline Grade (Min.-Max,)	0.5-6%[1]	0.5-8%[1]	0.5-8%[1]	0.5-8%[1]
Intersection Grades (Min.-Max.)	0.5-4%	0.5-4%	0.5-4%	0.5-4%

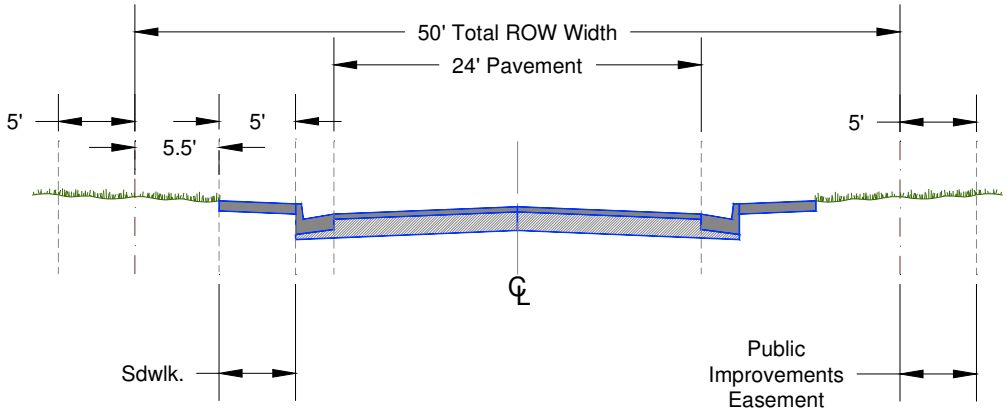
[1] 10% maximum grade permitted at the discretion of the ECM Administrator
[2] 330 feet when intersecting local roadways
[3] 50-foot right-of-way plus two 5-foot Public Improvements Easements granted to El Paso County
[4] Section can be used for cul-de-sacs, or roads with two ways out having a maximum of 300 ADT and a maximum length of 1,200 feet
[5] Where no local public or private roadway can provide access, temporary or partial turn movement parcel access may be permitted

2.3.3 Horizontal Alignment

A. General Criteria

Proper roadway alignment provides for safe and continuous operation at a uniform design speed. Proposed road layouts shall have a logical relationship to existing or platted roads and fit within the overall transportation plan.

Figure 2-17. Typical Urban Local (low volume) Cross Section



2.2.5 Roadway Access Criteria

All new or modified accesses to the County roadways shall meet the requirements of the ECM. Standards and technical criteria not specifically addressed in the ECM shall follow the provisions of the AASHTO, A Policy on Geometric Design of Highways and Roadways ("Green Book") and the Colorado State Highway Access Code. In addition, should any access request fall within the preview of the Major Thoroughfare Task Force (MTTF), per their adopted bylaws, then the request shall be brought before the MTTF for a recommendation.

A. Rural and Urban Expressway Access Criteria

1. Intersection Spacing and General Access Standards

Full movement intersections and major access spacing shall meet the requirements of this section. Right-in/right-out and three quarter movement accesses may be permitted as a deviation only if they meet the criteria presented in this section for sight distances, turn lane requirements, grades and do not negatively impact traffic operations or safety.

2. No Alternative Access to Road System

Where reasonable access can be obtained from the local roadway system, a temporary direct lot or partial turn movement access may be permitted provided the access meets these Standards or as otherwise required by the ECM Administrator.

3. Access and Lot Division

No additional access right shall accrue and no additional access shall be provided when splitting or dividing of existing lots of land. When an alternative is reasonably available in the opinion of the ECM Administrator, all access to the newly created properties shall be

provided internally from the existing access or new access to a roadway of lower functional classification.

4. Relocation of Access when Alternative is Available

All access to an expressway not meeting the minimum one-mile spacing requirement shall be closed in favor of an alternative access when an alternative is reasonably available in the opinion of the ECM Administrator.

B. Rural and Urban Principal Arterial and Rural Minor Arterial Access Criteria

1. Spacing

Spacing of roads accessing a principal arterial or rural minor arterial that will result in a full movement intersection shall be planned at one-half mile (one-quarter mile for rural minor arterials). Should the one-half mile spacing not be "viable or practical" for providing access to the adjacent land, a deviation may be considered and approved by the ECM Administrator. If a deviation is granted, only one additional full movement intersection will be permitted by the ECM Administrator. The Applicant shall have the burden of proof that no other "viable or practical" access is available. A deviation request should be supported by a traffic study or memorandum that provides information to assist the ECM Administrator in determining the proposed deviation minimizes negative safety and other operational impacts. If the development is at the intersection of two major corridors, the full movement access should be located on the lower functional classification roadway. The intersection shall only be approved if the intersection and roadway are shown to operate safely and efficiently with buildout design hour/peak hour projected traffic volumes. The intersection must also show a public benefit. An arterial progression through bandwidth percentage of 35 percent or greater must be achieved or the inclusion of a signal at the access must not degrade the existing signal progression. The intersection must not create any queuing or blocking of lane entries or access points. The intersection must be in a location such that any necessary turn, acceleration and deceleration lanes can be accommodated to maintain safe operations and capacity. The analysis should consider all potential future additional requirements for left turn or other exclusive phasing at a signal for which the need is created by traffic generated by land uses on both sides of the roadway.

2. Topographic and Other Limitations

Where topography or other existing conditions make the required spacing inappropriate or unfeasible, location of the access shall be determined with consideration given to topography, established property ownerships, unique physical limitations, pre-existing historical land use patterns, and physical design constraints, with every attempt to achieve an access spacing of one-half mile. The final location shall serve as

many properties as possible to reduce the need for additional direct access to the principal arterial or rural minor arterial. In selecting locations for full movement intersections, preference shall be given to roads that meet, or may be reasonably expected to meet, signal warrants in the future.

3. Access and Lot Division

No additional access right shall accrue and no additional access shall be provided when splitting or dividing existing lots of land. When an alternative is reasonably available in the opinion of the ECM Administrator, all access to the newly created properties shall be provided internally from the existing access or new access to a roadway of lower functional classification.

C. Urban Minor Arterial Access Criteria

Spacing of roads accessing an urban minor arterial that will result in a full movement intersection shall be planned at one-quarter mile. However, one parcel access shall be granted to each existing lot, if it does not create safety or operational problems. The parcel access will provide for right turns only. The access may allow for left turns in (three-quarters movement) if the addition of left turns will improve the operation at an adjacent full movement intersection and meet appropriate design standards.

D. Collector Access Standards

Collector roadways shall intersect another roadway (centerline to centerline) in accordance with the standards in Section 2.3.7. On minor collector roadways, the closest local roadway intersection to an arterial roadway shall be 330 feet (right-of-way line of arterial to centerline of local roadway). On major collector roadways, the closest local roadway intersection to an arterial roadway shall be 660 feet (right-of-way line of arterial to centerline of local roadway). Single-family residence access to major collector roadways is not permitted (even though existing conditions show otherwise).

E. Rural and Urban Local Roadways

Roads shall not intersect urban local roadways closer than 200 feet from each other (centerline to centerline) and shall not intersect a rural local roadway closer than 330 feet from each other. On an urban local roadway, the closest intersection to a collector roadway shall be at least 200 feet (centerline to centerline). To an arterial roadway, the closest intersection shall be 330 feet (arterial right-of-way line to local roadway centerline).

1. Sight Distance Triangles within Easements

There shall be an unobstructed sight distance along both approaches and both sides at an intersection (within the right-of-way) for distances sufficient to allow the operators of vehicles, approaching simultaneously, to see each other in time to prevent collisions at the intersection.

All sight distance triangles must be within the public right-of-way or a sight distance easement (See Figure 2-24). If the line of sight crosses onto private property, a "Sight Distance Easement" shall be dedicated to provide the required sight distance. The easement or right-of-way shall be dedicated to the County. Maintenance of a sight distance easement shall be the responsibility of the property owner or the homeowners' association unless otherwise approved by the County.

2. Encroachment into Sight distance Triangles or Easements

Any object within the sight distance triangle or easement more than 30 inches above the flowline elevation of the adjacent roadway shall constitute a sight obstruction, and shall be removed or lowered. The objects may include but are not limited to berms, buildings, parked vehicles on private property, cut slopes, hedges, trees, bushes, utility cabinets or tall crops. Trees may be permitted at the discretion of the ECM Administrator if pruned to at least 8 feet above the flowline elevation of the adjacent roadway.

3. On-Roadway Parking within Sight Distance Triangles

The ECM Administrator may limit on-street parking to protect visibility and enhance roadway capacity.

2.3.7 Intersections

A. Intersection Design Guidelines

Intersections shall be designed to provide safe movement for all those using roadways within the County (motorists, pedestrians, and bicyclists). By their nature, intersections are conflict locations. Vehicles, pedestrians, and bicycles all cross paths. Each crossing is a conflict point. The basic design of intersections includes the following objectives:

- Minimize points of conflict
- Simplify areas of conflict
- Limit conflict frequency
- Limit conflict severity

B. Intersection Spacing and General Access Standards

Full movement intersections and major accesses spacing shall meet the requirements in Section 2.2.5. While access to a major roadway should be avoided, right-in/right-out and three quarter movement accesses may be permitted as a deviation if they meet the criteria for sight distances, turn lane

requirements, grades and do not negatively impact traffic operations or safety. The applicant shall have the burden of proof that no other "viable or practical" property access is available. A deviation request should be supported by a traffic study or memorandum that provides information to assist the ECM Administrator in determining the proposed deviation minimizes negative safety and other operational impacts along upstream and downstream roadway segments. The addition of such an access shall minimize impacts to queuing or blocking of lane entries or access points and minimize impacts to progression. The access must be in a location such that any necessary turn lanes and acceleration/deceleration lanes can be accommodated to maintain safe operations and capacity. The analysis should consider all potential future additional requirements for to accommodate traffic generated by adjacent land uses. Buildout design hour/peak hour projected traffic volumes should be used.

C. Intersection Alignment

1. Offset

All lanes traversing an intersection shall be in alignment. A maximum 2-foot lane offset may be approved by the ECM Administrator if no other alternative exists.

2. Angle

Crossing roadways shall intersect at 90 degrees whenever possible. In no case shall roadways be permitted to intersect at less than 80 degrees or more than 100 degrees.

3. Horizontal Alignment

The horizontal alignment of roadways through an intersection shall be designed in conformance with this chapter depending on the classification of the roadways intersecting. Intersections may be placed on horizontal curves, provided the minimum tangent lengths shown in Table 2-11 are provided on the lower functional classification roadway and the required sight distance is met.

4. Vertical Alignment

The roadway profile grade shall not exceed the value presented in Table 2-23 on the approach to the intersection, as measured along the centerline of the roadway for a minimum distance equal to the grade lengths presented in Table 2-24 for each of the roadway functional classifications.

The grade of the roadway with the higher functional classification shall prevail at intersections. Grading of lower functional classifications, adjacent property, private access shall adapt to the higher functional classification roadway grade.

In cases where the natural grade for which a roadway is to be constructed is steeper than 4 percent (hillside areas). A deviation from the presented standards may be requested for to accommodate these conditions up to a maximum of 8 percent.

Table 2-23. Intersection Grades by Roadway Functional Classification

Functional Classification	Maximum Intersection Grade (%)	Minimum Intersection Grade (%)
Expressway (Urban/Rural)	2/2	0.5/1
Arterial (Urban/Rural)	3/3 (4 for minor)	0.5/1
Collector (Urban/Rural)	4/4	0.5/1
Local (Urban/Rural)	4/4	0.5/1

Table 2-24. Intersection Profile Grade Lengths[1]

Higher Classification Roadway (below)	Lower Classification Roadway			
	Local	Collector	Arterial	Expressway
Expressway	n/a	n/a	200	250[1]
Arterial	n/a	120	200[1]	n/a
Collector	100	120[1]	n/a	n/a
Local	100[1]	n/a	n/a	n/a

[1] In the case of where each intersecting roadway is of the same classification, the ECM Administrator will designate which roadway takes precedence and the distance required.

D. Turn Lanes Required

1. Exclusive Left Turn Lane Required

Exclusive left turn lanes shall be provided wherever left turn lanes are specified as being needed by an approved TIS, identified in the MTCP, required by the ECM, or determined to be warranted by the ECM Administrator. Information in the TIS shall be used to determine whether an exclusive left turn lane is warranted. Warrant determinations shall also be based on this chapter, which include:

- Expressways Left Turn Lane (State Highway Access Code Designation - EX): A left turn lane is required for any access that allows left turn ingress movement, except for field approaches. A left turn acceleration lane may be required if the design would be a benefit to safety and operation of the roadway.
- Principal Arterials Left Turn Lane (State Highway Access Code Designation - RA for Rural and NR-A for Urban): A left turn lane is required for an access with a projected peak hour left ingress turning volume of 10 VPH or greater. A left turn acceleration lane

may be required if it would be a benefit to the safety and operation of the roadway.

- Minor Arterials (State Highway Access Code Designation - RB for Rural and NR-B for Urban) and Lower Classifications Left Turn Lane: A left turn lane is required for any access with a projected peak hour ingress turning volume of 25 VPH or greater.

2. Exclusive Right Turn Lanes Required

Exclusive right turn lanes shall be provided wherever right turn lanes are specified as being needed by an approved TIS, identified in the MTCP, required by the ECM or determined to be warranted by the ECM Administrator. Information in the TIS shall be used to determine whether an exclusive right turn lane is warranted. Warrant determinations shall also be based on this chapter, which include:

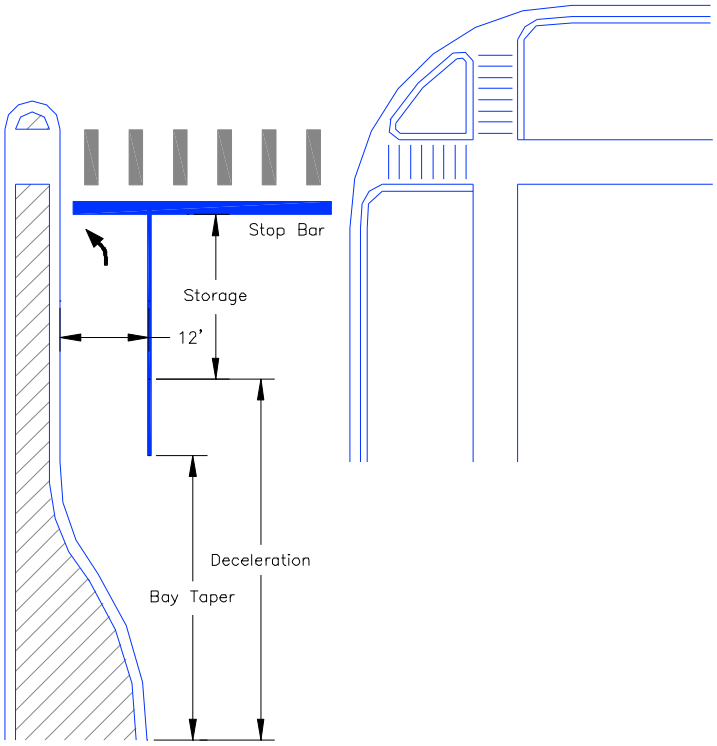
- Expressway Right Turn Lane (State Highway Access Code Designation - EX): A right turn lane is required for any access with a projected peak hour right turn ingress turning volume of 10 VPH or greater. A right turn acceleration lane is required for any access with a projected peak hour right turn egress turning volume of 10 VPH or greater.
- Principal Arterials Right Turn Lane (State Highway Access Code Designation - RA for Rural and NR-A for Urban): A right turn lane is required for any access with a projected peak hour right ingress turning volume of 25 VPH or greater. A right turn acceleration lane is required for any access with a projected peak hour right turning volume of 50 VPH or greater when the posted speed on the roadway is greater than 40 MPH. A right turn acceleration lane may also be required at a signalized intersection if a free right-turn is needed to maintain an appropriate level of service in the intersection.
- Minor Arterials (State Highway Access Code Designation - RB for Rural and NR-B for Urban) and Lower Classifications Right Turn Lane: A right turn lane is required for any access with a projected peak hour right turning volume of 50 VPH or greater. An acceleration lane is generally not required.

3. Acceleration Lanes Required

Acceleration lanes shall be provided wherever acceleration lanes are specified as being needed by an approved TIS, identified in the MTCP, required by the ECM or determined to be warranted by the ECM Administrator. Information in the TIS shall be used to determine whether an acceleration lane is warranted. Warrant determinations shall be based on this chapter.

26. The specific designs for these lanes shall be in accordance with this chapter. For each high volume access and major intersection, both acceleration and deceleration lanes shall be considered in designing an exclusive left turn lane.

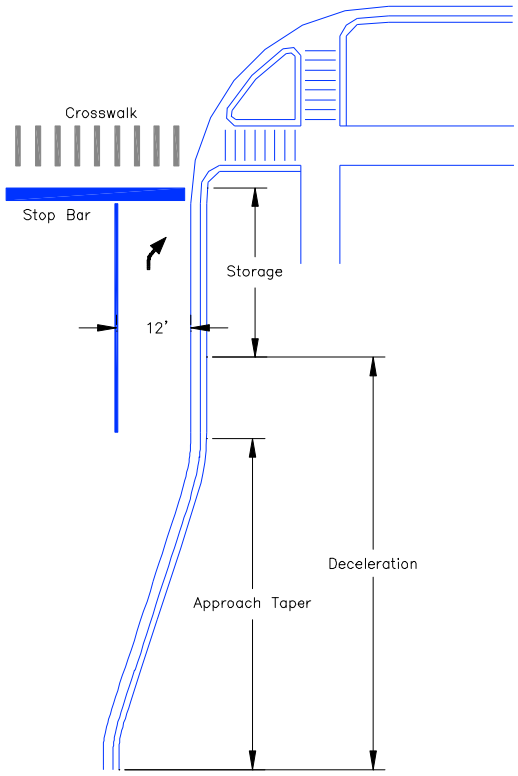
Figure 2-26. Design Elements for Left Turn Lanes



- Right Turn Lane. The design elements for a right turn and deceleration lanes are the approach taper, lane length, storage length, which in combination makes up the right turn lane. The elements are as shown in Figure 2-27. For each high volume access and major intersection, both acceleration and deceleration lanes shall be considered in designing an exclusive right turn lane. The specific designs for these lanes shall be in accordance with this chapter. Specific lane shift and lane drop design criteria can be found in Section 2.3.8J.3.
- Acceleration Lane. The design elements for an acceleration lane are the transition taper and acceleration length. For each high volume access and major intersection, both acceleration and deceleration lanes shall be considered in designing an exclusive right or left turn lane. The specific designs for these lanes shall be in accordance with this chapter.

- Shift or Drop Lane. The design elements for a transition or drop land are the redirect taper, full width auxiliary lane, and storage length. The use and design of these elements varies based on the roadway classification and site-specific conditions.

Figure 2-27. Design Elements for Right Turn Lanes



2. Tapers

- Approach Tapers. The basis for designing a deceleration lane and taper is to provide sufficient length for a vehicle to decelerate and brake primarily outside the through traffic lanes. Table 2-25 provides the required deceleration lane and taper design lengths by design speed. Deceleration lane lengths shall be adjusted for a grade of 3% or more using the factors in Table 2-26. The required length allows a motorist to decelerate in gear for at least 3 seconds followed by safe braking to a complete stop.

Table 2-25. Required Deceleration Lane and Taper Lengths

Design Speed (MPH)	Lane Length (feet)	Approach Taper (feet)	Total Length (feet)
25	115	120	235
30	115	120	235
40	155	160	315
50	235	200	435
60	290	240	530
70	Special Design	Special Design	Special Design

Table 2-26. Deceleration Lane Grade Adjustment Factors

Roadway Grade	Factors
Upgrade	
3% to 4.9%	0.90
5% to 7.5%	0.80
Downgrade	
3% to 4.9%	1.20
5% to 7.5%	1.35

- Bay Tapers. Table 2-27 provides the required bay taper length by lane width. A bay taper is designed to direct left-turning vehicles into the turn lane. A minimum taper ratio of 8:1 may be used for tangent bay tapers in constrained locations. Bay tapers should be used (asymmetrical reverse curves) for deceleration transition tapers. Straight transition tapers should be avoided at design speeds above 40, and where a vertical crest or horizontal curve is present. Under these conditions, an immediate bay taper and lane striping should be substituted for a straight transition taper to reduce drifting of the through vehicles into the deceleration lane. Where horizontal or crest vertical curves exist, the ECM Administrator may require the deceleration transition taper to begin with an immediate asymmetrical reverse curve bay taper of 1/3L then 2/3L with the remaining required transition taper length at full lane width. Partial tangent transition tapers, symmetrical reverse curve tapers or asymmetrical reverse curve tapers may be used for transition taper design provided a radius of at least 150 feet is used in curve calculations.

Table 2-27. Required Bay Taper Lengths

Design Speed (MPH)	Lane Length (feet)	Bay Taper (feet)	Total Length (feet)
25	115	80	195
30	115	120	235
40	155	160	315
50	235	200	435
60	290	Special Design	Special Design
70	Special Design	Special Design	Special Design
Taper = WV/3 where: W = lane width, feet, V = design speed, MPH			

- Transition Tapers. The basis for designing an acceleration lane and transition taper is to provide sufficient length for a vehicle to accelerate to the appropriate speed and merge into the through traffic lanes without disrupting traffic flow. Table 2-28 provides the required acceleration lane and transition taper design lengths by design speed. Acceleration lane lengths in Table 2-28 shall be adjusted for a grade of 3% or more using the factors in Table 2-29. The total length of the acceleration lane includes the values of both the lane and transition taper. The length of a transition taper is calculated by multiplying the width of the lane by a standard ratio. The beginning and ending point of all tapers shall be rounded.

Table 2-28. Design Criteria for Acceleration Lanes

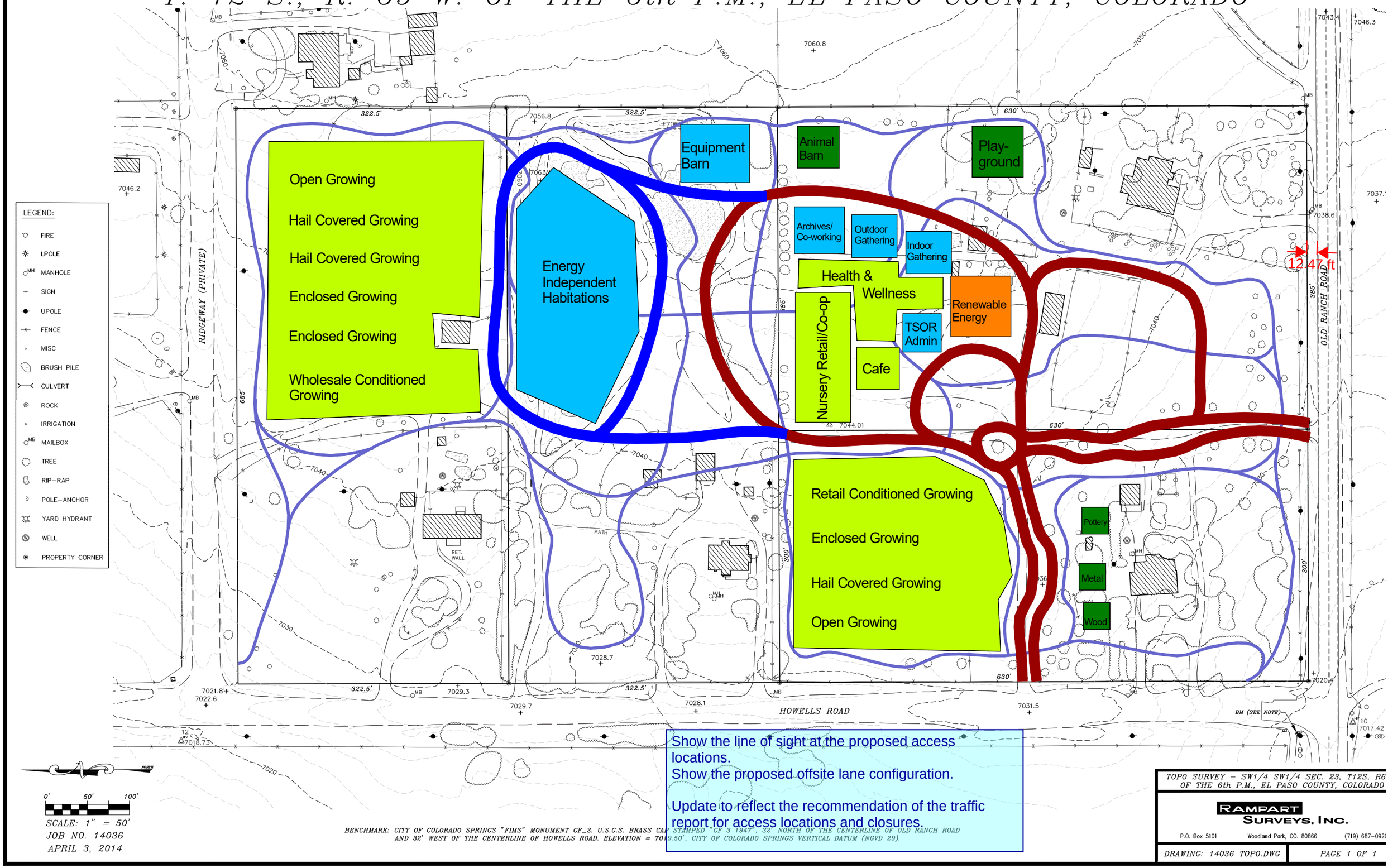
Design Speed (MPH)	Lane Length (feet)	Transition Taper (feet)	Total Length (feet)
40	270	120	390
50	550	162	712
60	960	222	1182
70	1380	300	1680

Table 2-29. Grade Adjustment Factors for Acceleration Lanes

	Design Speed (MPH)		
	40 to 50	60	70
Upgrade			
3 to 4.9%	1.3	1.5	1.7
5 to 7.5%	1.5	2.0	2.5
Downgrade			
3 to 4.9%	0.7	0.65	0.6
5 to 7.5%	0.6	0.55	0.5

- Redirect Tapers. Redirect tapers shall be used where an exclusive turn lane, median or other redirection of vehicles is necessary and where redirection of the flow of traffic is necessary to accommodate the exclusive turn lane or median due to constraints. Redirect tapers required for redirecting

A PARCEL OF LAND LOCATED IN THE SW1/4 OF THE SW1/4 OF SEC. 23 T. 12 S., R. 69 W. OF THE 6th P.M., EL PASO COUNTY, COLORADO



Show the line of sight at the proposed access locations.
Show the proposed offsite lane configuration.

Update to reflect the recommendation of the traffic report for access locations and closures.

BENCHMARK: CITY OF COLORADO SPRINGS "FIMS" MONUMENT CF_3. U.S.G.S. BRASS CAP STAMPED "CF 3 1947", 32' NORTH OF THE CENTERLINE OF OLD RANCH ROAD AND 32' WEST OF THE CENTERLINE OF HOWELLS ROAD. ELEVATION = 7019.50', CITY OF COLORADO SPRINGS VERTICAL DATUM (NGVD 29).

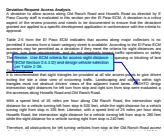
TOPO SURVEY – SW1/4 SW1/4 SEC. 23, T12S, R6
OF THE 6th P.M., EL PASO COUNTY, COLORADO

RAMPART SURVEYS, INC.
P.O. Box 5101 Woodland Park, CO. 80866 (719) 687-0920

DRAWING: 14036 TOPO.DWG PAGE 1 OF 1

Markup Summary

dsdlaforce (11)



Subject: Callout
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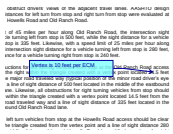
Revise. Use ECM criteria for access sight distance (ECM Section 2.4.1.D) and design vehicle selection per Table 2-36.



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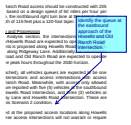
Vertex is 10 feet per ECM



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Identify the queue at the eastbound approach of the Howells and Old Ranch Road intersection.

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Add the following signature blocks:

Traffic Engineer's Statement

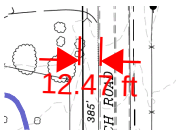
The attached traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.

_____
_____
[Name, P.E. #_____]
Date

Developer's Statement

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

_____
_____
[Name, Title]
Date
[Business Name]
[Address]



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12.47 ft

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Discuss/provide recommendation regarding ECM Section 2.2.7.B.2 & 2.2.7.B.3. Based on the trip generation, this development will have to pave Howells Road up to the furthest proposed access on Howells Rd or Ridgeway Lane.

Discuss the intent for the existing residential homes and provide conclusion regarding the existing driveways. Per the Early Assistance Meeting it seems that the existing dwellings will be converted from single family residence to care taker, staff office or rental. Staff is anticipating the existing driveways to be removed with this proposed development. Update the site exhibit accordingly.

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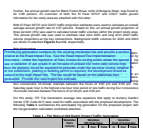
For Scenario 1, redirect taper criteria and recommendation would be required along Old Ranch Road due to the required left turn lane. However, based on discussion with the engineering review manager, the County Engineer will not approve access from Old Ranch Road. Therefore either revise scenario 1 or provide an analysis for a third scenario such as two access on Howells Road or a single access in Howells and Ridgeway. Bottom line is to provide an analysis with no access from Old Ranch Road.



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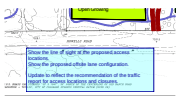
Provide trip generation numbers for the existing residential lots and provide a section relative to the Road Impact Fee. See the Road Impact Fee Implementation Document. Under the Imposition of Fees it notes for zoning action where the special use or variance of use results in an increase of at least 100 more daily vehicle trips than the property would be expected to generate under the previous zoning, whether or not subdivision, platting or building permit is required, the development would be subject to the road impact fee. The fee would be based on the additional trips generated. Provide the road impact fee estimate.



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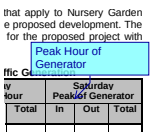
Show the line of sight at the proposed access locations.
Show the proposed offsite lane configuration.

Update to reflect the recommendation of the traffic report for access locations and closures.



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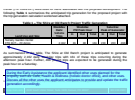
Peak Hour of Generator



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During the Early Assistance the applicant identified other uses planned for the property such as: Cafe, Health & Wellness (holistic doctor office), and other uses. Discuss all the other uses the applicant anticipates to provide and update the traffic generation accordingly.