

CALIBER AT TERRAIN

Traffic Impact Analysis

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I. INTRODUCTION

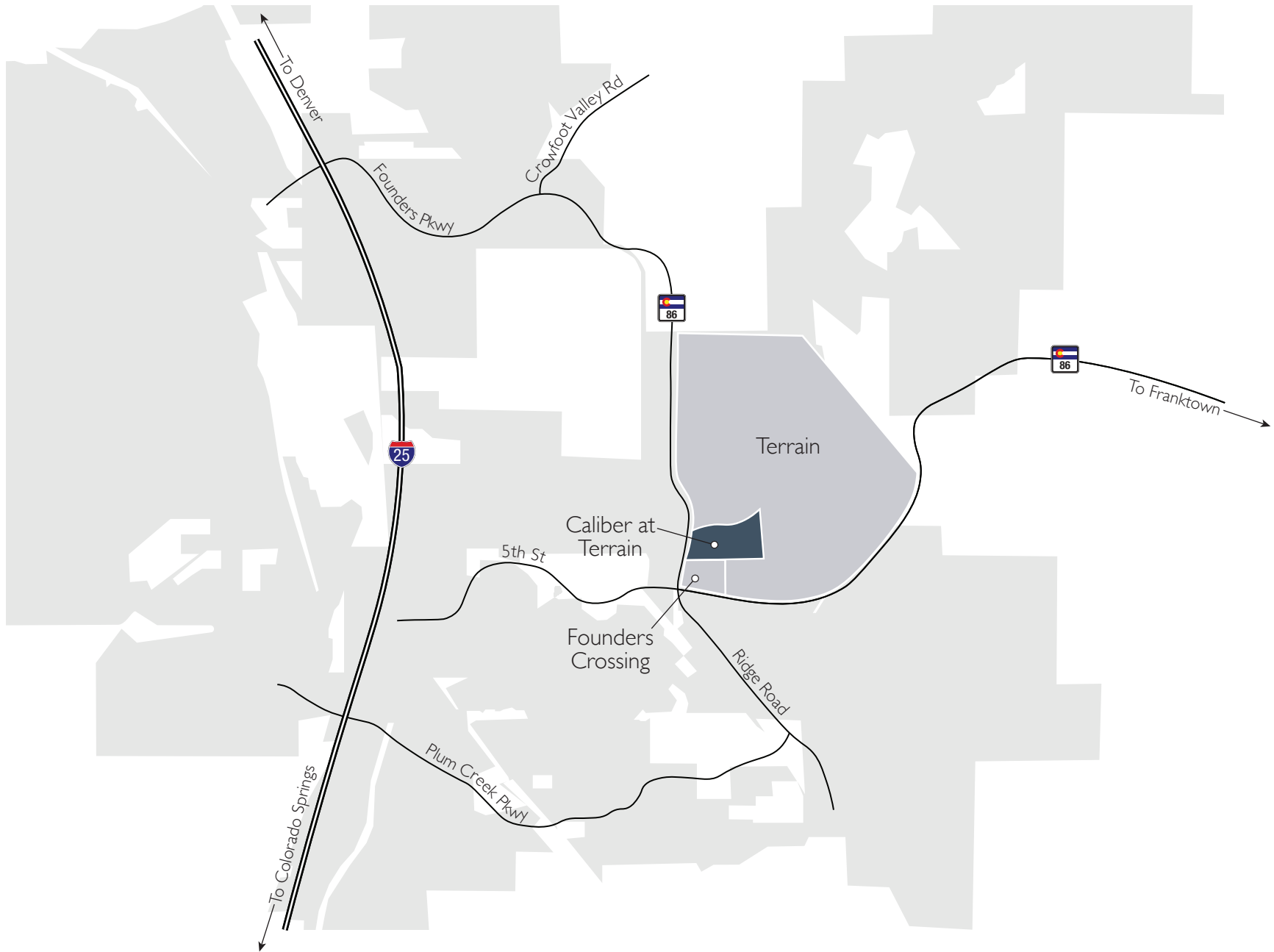
The Garrett Companies are planning to develop a parcel of land in the Town of Castle Rock, Colorado that will include a total of 238 multi-family dwelling units. The project is called Caliber at Terrain and it is located to the east and north of State Highway (SH) 86. Specifically, it is bounded on the west by SH 86 (Founders Parkway), on the north, east and south (partially) by the Terrain residential subdivision, and also by Founders Crossing on the south. The Terrain subdivision is comprised of single-family homes, while Founders Crossing is a retail parcel that currently includes a 7-11 convenience store and a Canvas credit union, but that is developing with other uses. **Figure 1** provides a vicinity map of the project location.

Project access is planned via two routes: 1) through Founders Crossing via Aloha Street for which motorists can access either Founders Parkway (to the west) or SH 86 (to the south), and 2) access towards the east through an existing roundabout at the Autumn Sage Street/Valley View Drive intersection. The Founders Parkway access route can provide all vehicle movements, while the SH 86/Aloha Street access is limited to only right-in/right-out (RIRO) movements. Access through the existing roundabout is into the Terrain subdivision and to SH 86 at a full-movement intersection.

Coordination with Town of Castle Rock staff resulted in the following specific elements for inclusion in this Traffic Impact Analysis:

- Evaluation of existing operational conditions
- Estimates of Background traffic volume projections for the Build-Out and Year 2040 timeframes for Caliber at Terrain
- Trip generation estimates for the proposed land uses
- Analysis of project impacts for Build-Out and Year 2040
- Recommendations for public improvements

The following sections of this report provide specific information on each of these issues. This revised report addresses comments from both the Town of Castle Rock and from the Colorado Department of Transportation (CDOT).



II. EXISTING CONDITIONS

II.A. Land Use

Caliber at Terrain is surrounded by existing or rapidly developing land. The Terrain single-family home subdivision bounds the property to the north and east, while the Escavera residential development is to the west across Founders Parkway. The Founders Village subdivision is to the south of SH 86 and two retail sites exist directly adjacent the proposed site and across SH 86 to the south. Outside of the immediate project vicinity are other residential areas either in the Town of Castle Rock or Douglas County, with some being large acre private parcels, while downtown Castle Rock and its varying amenities is located approximately two miles to the west.

II.B. Roadway System

The Caliber at Terrain site is situated near the junction of a significant Colorado state highway and two major streets. These routes provide both regional access via the state highway network, and also roadway network connections to the Town of Castle Rock and to outlying areas of Douglas County. **Figure 2** provides a representation of the surrounding roadway network, its laneage and speed limit characteristics. Following are more detailed descriptions of the primary roadways adjacent and near the project site.

State Highway 86 (Founders Parkway)

SH 86 provides state highway access for local Castle Rock residents and also for regional travelers. Its origin is at I-25 in Castle Rock and it traverses the west side of Caliber at Terrain in a north/south alignment. At the intersection of SH 86, 5th Street and Ridge Road, it turns to the east where it proceeds towards the towns of Franktown and Elizabeth with continual extension towards its eventual intersection with I-70 near the Town of Limon. SH 86 is classified as a Regional Highway (R-A) along its north/south alignment and as a Non-Rural Principal Highway (NR-A) along its east/west alignment.

Near the project site, SH 86 has two travel lanes in each direction along its north-south alignment, but only one lane in each direction as it proceeds towards Franktown. Several left and/or right turn lanes exist at intersections that provide access for Caliber at Terrain. The posted speed limit on SH 86 is 50 miles per hour (mph) along its north/south alignment and 55 mph along its east/west alignment. Traffic control at public street intersections is primarily via stop signs, but a traffic signal exists at the SH 86/5th Street/Ridge Road intersection.

5th Street

This street provides access from downtown Castle Rock to the SH 86/Ridge Road intersection and the Town's *Transportation Master Plan* identifies 5th Street as a Major Arterial. The posted speed along 5th Street near the project site is 45 mph and there are two lanes for vehicle movements. Auxiliary lanes exist at public street intersections and 5th Street is planned to be widened to a four-lane roadway.

Ridge Road

This street has similar characteristics as 5th Street. It is also classified as a Major Arterial in the Castle Rock *Transportation Master Plan*, while it has a posted speed limit of 45 mph with auxiliary lanes at public street intersections. Ridge Road extends into Douglas County for access to relatively rural, large acre parcels of land. Ridge Road is also planned to be widened to a four-lane street.

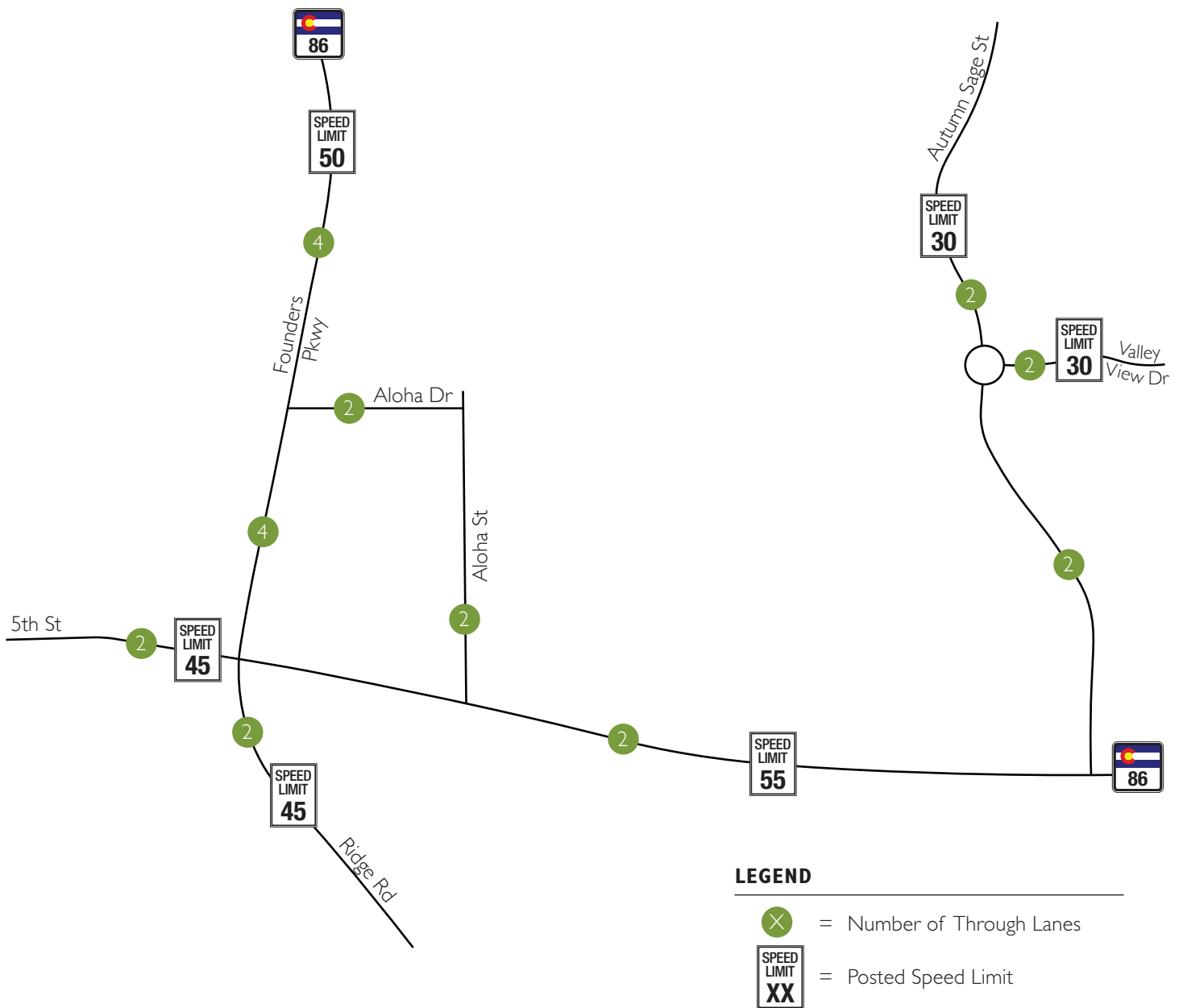


FIGURE 2 | Surrounding Roadway Characteristics

Autumn Sage Street and Valley View Drive

These two streets serve the Terrain subdivision and they provide access internally and to streets that connect to the surrounding access network. Both streets have two lanes for vehicle movements and they are posted with a speed limit of 30 mph. Autumn Sage Street and Valley View Drive intersect at a single lane roundabout and the fourth leg of the intersection currently provides access to a Town of Castle Rock maintenance facility,

Aloha Street and Aloha Drive

These two streets have been constructed within the Founders Crossing commercial site. Aloha Street traverses Founders Crossing with a north/south orientation with connection to the east/west segment of SH 86, while Aloha Drive is a relatively short street segment that connects Founders Parkway to Aloha Street. All vehicle movements are permitted at the Founders Parkway/Aloha Drive intersection, while vehicle movements are restricted to only RIRO movements at the SH 86/Aloha Street intersection.

II.C. Traffic Volumes

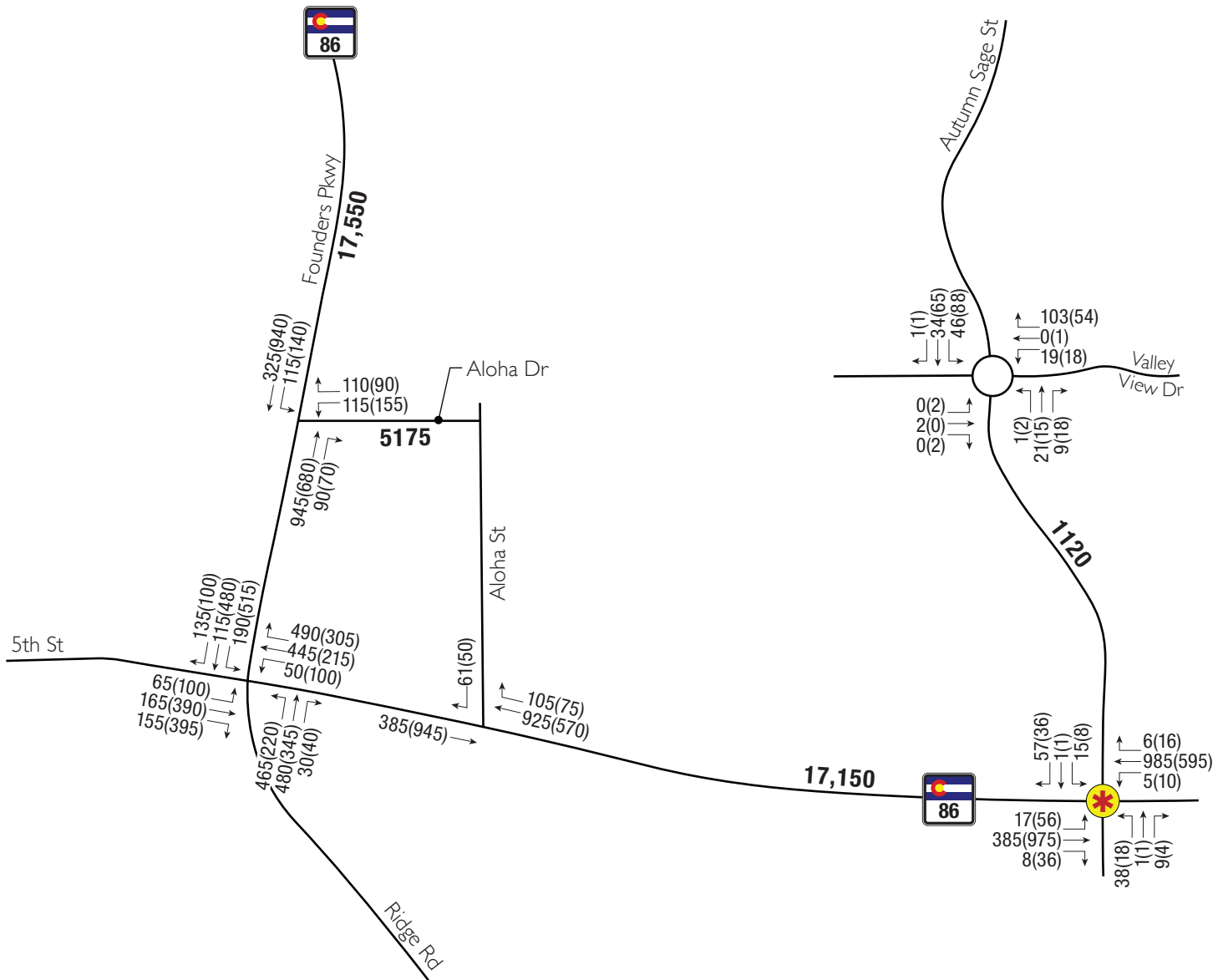
The existing traffic volumes shown on **Figure 3** are a compilation of both recorded and projected data. Town of Castle Rock staff provided three traffic studies for projects near the Caliber at Terrain site, being the Founders Crossing retail project, the Sunstone Village single-family home development, and Terrain Filing No. 3. Traffic volumes at the SH 86/5th Street/Ridge Road and SH 86/Founders Crossing intersections are replicated from these two studies using the summary of projected traffic volumes for their near-term analysis periods when these projects are completed. This approach was agreed to with Town staff and it is likely a conservative estimate of traffic volume for these two intersections. Daily traffic volume estimates are also replicated from these reports.


Traffic volumes at the Autumn Sage Street/Valley View Drive roundabout were recorded for this project. Since there is a reasonable amount of residential lots remaining to be developed in Terrain, these traffic volumes were increased 25% to replicate a more complete development scenario.

As shown on **Figure 3**, individual movements during the AM and PM peak hours can vary considerably depending upon the specific movement or the peak hour. Some movements to note at the SH 86/5th Street/Ridge Road Intersection include:

- Southbound left turn = 515 vehicles per hour (vph) (PM peak hour)
- Westbound right turn = 490 vph (AM peak hour)
- Eastbound right turn = 395 vph (PM peak hour)
- Northbound left turn = 465 vph (AM peak hour)

These traffic volume levels suggest a strong orientation of movements to the west and north during the AM peak hour and the opposite affect during the PM peak hour; both of which indicate a home-to-work relationship to/from downtown Castle Rock and the Denver metropolitan area. **Appendix A** includes the recorded traffic volume data.



 Traffic volumes are replicated from LSC Sunstone Village report for Year 2020.

LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes

II.D. Traffic Control

Control of vehicle movements at the evaluated intersections include a traffic signal at the SH 86/5th Street/Ridge Road intersection, a stop sign on the westbound approach from Aloha Drive onto SH 86, stop signs on the northbound and southbound approaches at the SH 86/Autumn Sage Street intersection, and yield control at the Autumn Sage Street/Valley View Drive roundabout.

The SH 86/5th Street/Ridge Road traffic signal operates with protected-permissive left turn phasing on the east and west approaches, and with split phasing on the north and south approaches due to perceived sight distance issues. Right turn movements on all approaches are separated from the through movement by channelized islands and each movement has their own lane and a corresponding acceleration lane on the acceptance roadway.

II.E. Traffic Operations

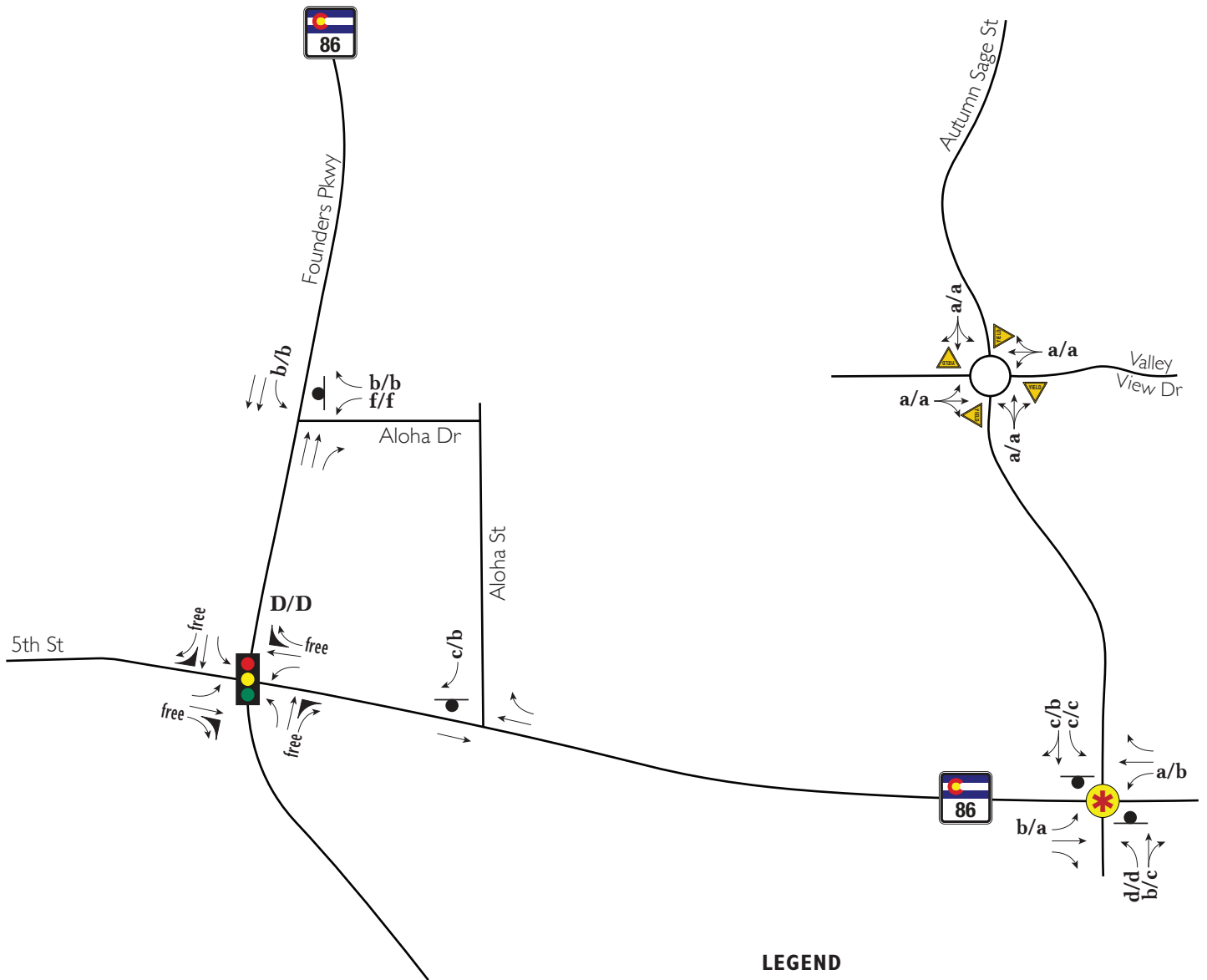
Traffic operations within the study area were evaluated according to techniques documented in the *Highway Capacity Manual*, 6th Edition (Transportation Research Board, 2016) using the existing traffic volumes, intersection geometry, and traffic control. Level of Service (LOS) is a qualitative measure of traffic operational conditions based on roadway capacity and vehicle delay. LOS is described by a letter designation ranging from A to F, with LOS A representing almost free-flow travel, while LOS F represents congested conditions.


For stop-controlled intersections, LOS is calculated for each vehicle movement that must yield the right-of-way to an oncoming or crossing vehicle. Roundabout LOS is calculated based on the number of vehicles circulating within the roundabout versus those motorists attempting to join the circulating roundabout flow. Vehicular movements into a roundabout are controlled by yield signs.

Figure 4 shows the existing traffic control, intersection geometry, and results of the LOS analyses.

Appendix B includes the LOS criteria and **Appendix C** includes the analysis worksheets for existing conditions.

Acceptable operating parameters of LOS D or better are experienced during the AM and PM peak hours except the westbound movement from Aloha Drive onto southbound SH 86. This movement is projected to operate at LOS F during both peak hours. Keep in mind that the traffic volume levels and resultant LOS calculations are based on the complete build-out of Founders Crossing and Sunstone Village, not existing traffic volume levels at the time of report preparation.



 Level of Service information is replicated from LSC Sunstone Village report for Year 2020 traffic with their proposed mitigation.

LEGEND

-  = Lane Assignment
- X/X** = Signalized Intersection Levels of Service
- x/x** = Stop or Yield Controlled Critical Movement Level of Service
-  = Traffic Signal
-  = Stop Sign
-  = Yield Sign

III. BACKGROUND CONDITIONS

III.A. Project Build-Out

Caliber at Terrain projects that the development completion timeframe for construction will be in the fall of 2021, approximately 2-1/2 years from the original creation of this report.

Roadway Network

It is understood that the Town of Castle Rock has received approval from CDOT to reconstruct the SH 86/5th Street/Ridge Road intersection into a two-lane roundabout. Specific design features are preliminary and the final design and construction schedule are not known. As such, for the Build-Out timeframe, this intersection is considered to have the same intersection geometry as currently exists and the traffic control method will still be a traffic signal.

Traffic Volumes

Background traffic volume projections start with the information contained in the Existing Conditions section of this report. But when considering that the Existing Conditions traffic volumes represent the recording of existing traffic volumes along with the trip generation projections for Founders Crossing and Sunstone Village added, the Existing Conditions volume levels are likely a good representation of traffic volume levels for the Build-Out timeframe as well. This approach is specific to the three intersections along SH 86.

However, recent information was provided by representatives of Founders Crossing that provided revised land use and size data that was used to predict any changes in Background traffic volumes. Some land uses have changed and the resultant trip generation estimates are somewhat less than what was shown in the previous version of this report. Build-Out and Year 2040 Background traffic projections reflect these revisions.

With respect to the Autumn Ridge Street/Valley View Drive intersection, it was previously noted that the traffic volumes recorded for this report were increased by 25% to reflect the developing nature of Terrain. To reflect another 2-1/2 years of traffic volume growth, the traffic volumes for this intersection were increased another 10%. The traffic volumes represented on **Figure 5** contain the projected background traffic volumes for the Build-Out timeframe of Caliber at Terrain.

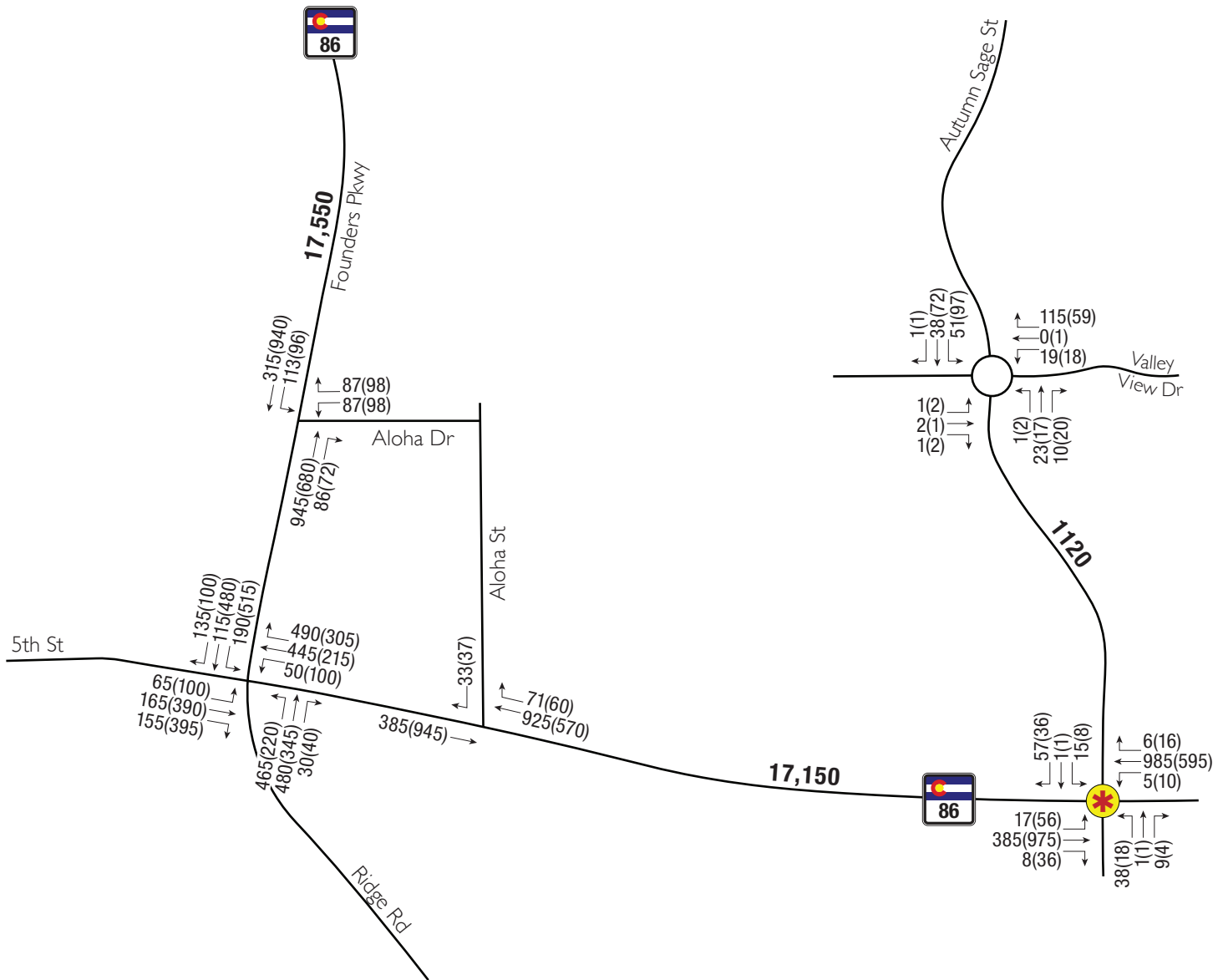
Of note, the Town of Castle Rock requested that the SH 86/Autumn Ridge Street intersection be included in this revised study. The Town noted that information from other traffic studies can be used for this intersection. As such, traffic volume data and operational analysis results for this intersection are reproduced from a traffic study prepared by another firm.


Traffic Control & Intersection Operations

Background traffic volumes for project Build-Out were analyzed using the same HCM methodologies as identified in Section II. Traffic control for the SH 86/Aloha Drive intersection has been changed to traffic signalization for this timeframe based on discussions with Town staff.

Considering the traffic volume and traffic control information contained above, the operational analyses found that LOS D or better can be achieved during the AM and PM peak hours. **Figure 6** represents the LOS analyses; **Appendix D** contains the operational analysis worksheets.

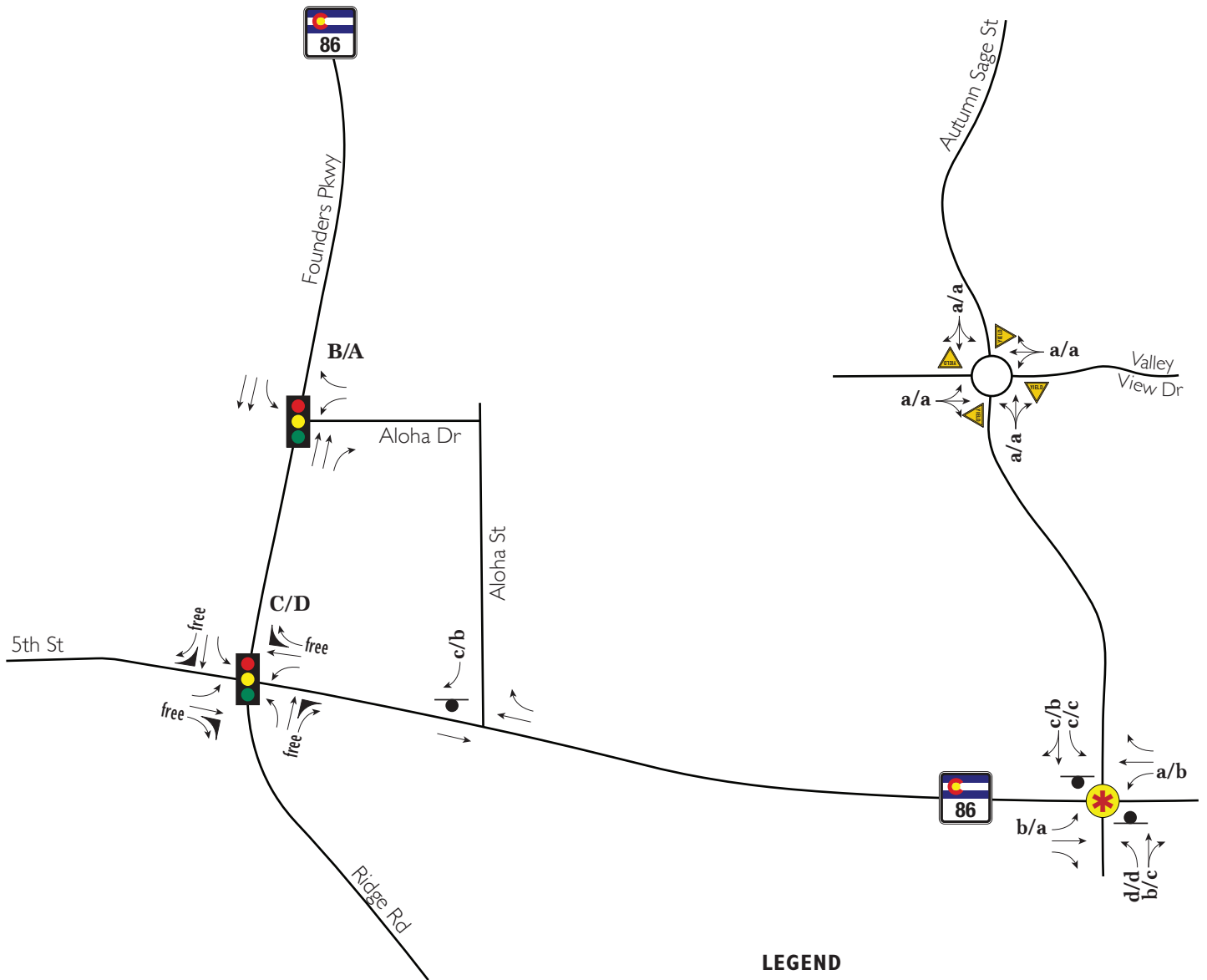
No physical intersection improvements are required. It will be necessary for CDOT (and the Town of Castle Rock) to monitor traffic signal operations to evaluate potential signal timing revisions at the SH 86/5th Street/Ridge Road and SH 86/Aloha Drive intersections, however.




 Traffic volumes are replicated from LSC Sunstone Village report for Year 2020.

LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes
 XXXX = Daily Traffic Volumes



 Level of Service information is replicated from LSC Sunstone Village report for Year 2020 traffic with their proposed mitigation.

LEGEND

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- x/x** = Stop or Yield Controlled Critical Movement Level of Service
-  = Traffic Signal
-  = Stop Sign
-  = Yield Sign

III.B. Year 2040

Roadway Network

The Castle Rock *Transportation Master Plan* includes an evaluation of future traffic volumes and roadway laneage requirements for the Year 2040. In that document, it is identified that SH 86 will to be widened along both its north/south and east/west segments adjacent to the project site. The north/south segment is planned to be widened to six through lanes, while the east/west segment will be widened to four through lanes.

In regard to the type of traffic control for the SH 86/5th Street/Ridge Road intersection, and the identification of the installation of a multi-lane roundabout, Town staff has requested that the analyses for Year 2040 also include a traffic signal option.

Traffic Volumes

Background traffic volume projections for the Year 2040 reflect that anticipated build-out of the entire Town of Castle Rock for which the Caliber at Terrain parcel can be considered a part. The traffic volume projections along SH 86 are 31,700 vehicles per day (vpd) along its north/south alignment and 23,800 vpd along the east/west segment.

These levels of growth equate to about an 81% increase in traffic (3% annually) for the north/south segment of SH 86 and about 39% (1.6% yearly) for the east/west alignment of SH 86. These levels of growth were applied to the existing vehicle movements to create a background condition for the Year 2040. **Figure 7** represents the traffic volume estimates for this timeframe.

Traffic volumes for the Autumn Sage Street/Valley View Drive intersection, a location that is internal to the Terrain subdivision, are not expected to grow beyond the Build-Out timeframe since development surrounding this roundabout will be completed. As such, the Year 2040 traffic volumes at this intersection are the same as for the Build-Out scenario.

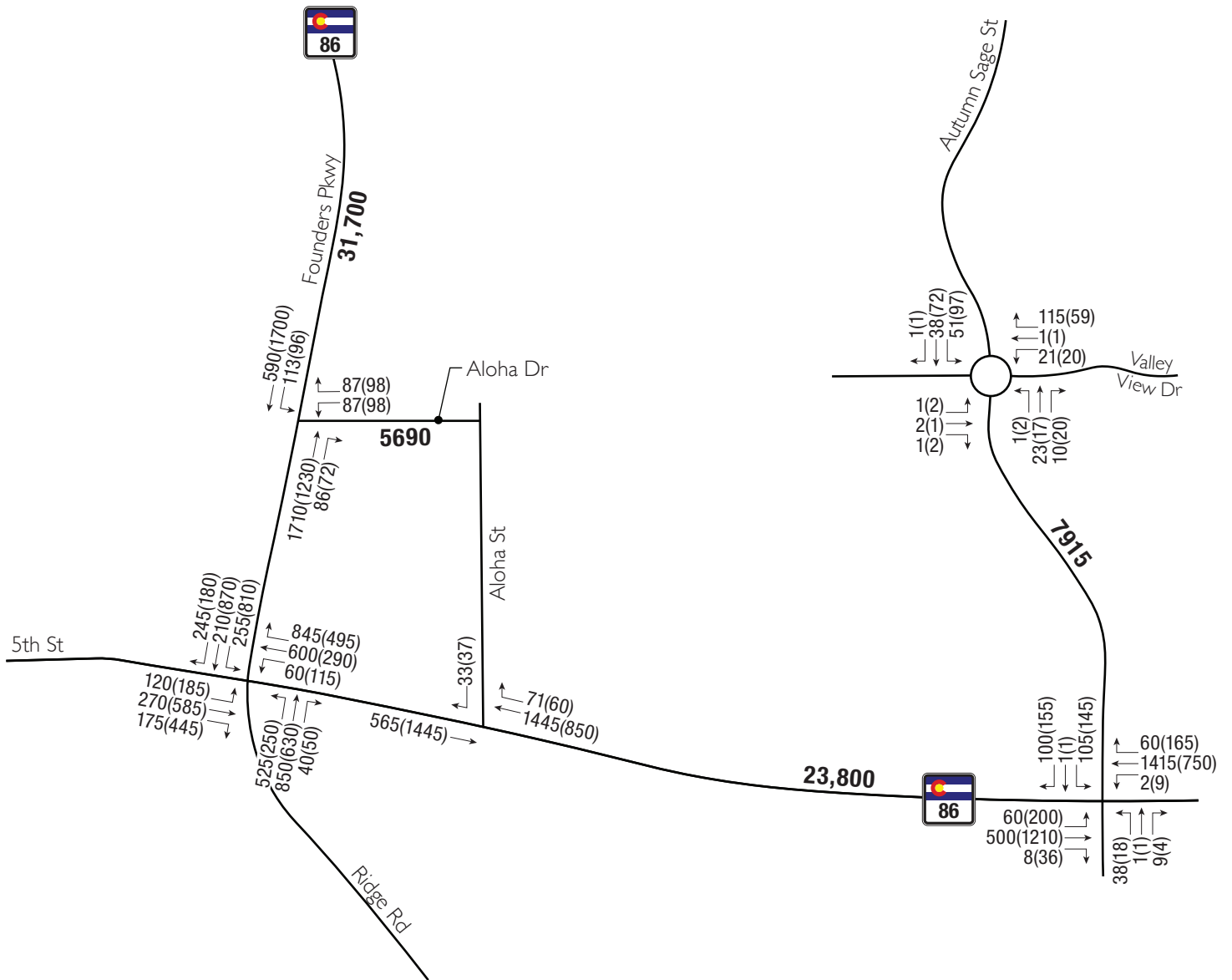
Traffic Control & Intersection Operations

Given the improvements planned along SH 86 and through the intersections along this route, intersection LOS for the Year 2040 Background condition finds that the SH 86/5th Street/Ridge Road intersection will operate better as a signalized intersection versus a roundabout given the geometric assumptions and traffic volumes used for this project. This intersection is projected to operate at LOS C or D during the two peak hours with traffic signal control (no LOS F movements), while a roundabout option is projected to have LOS F conditions for several movements.

The other study intersections are projected to operate acceptably for this time period. LOS results and intersection improvements are shown on **Figure 8** and operational worksheets are included in **Appendix E**.

III.C. Signal Warrant Analysis – SH 86/Autumn Sage Intersection

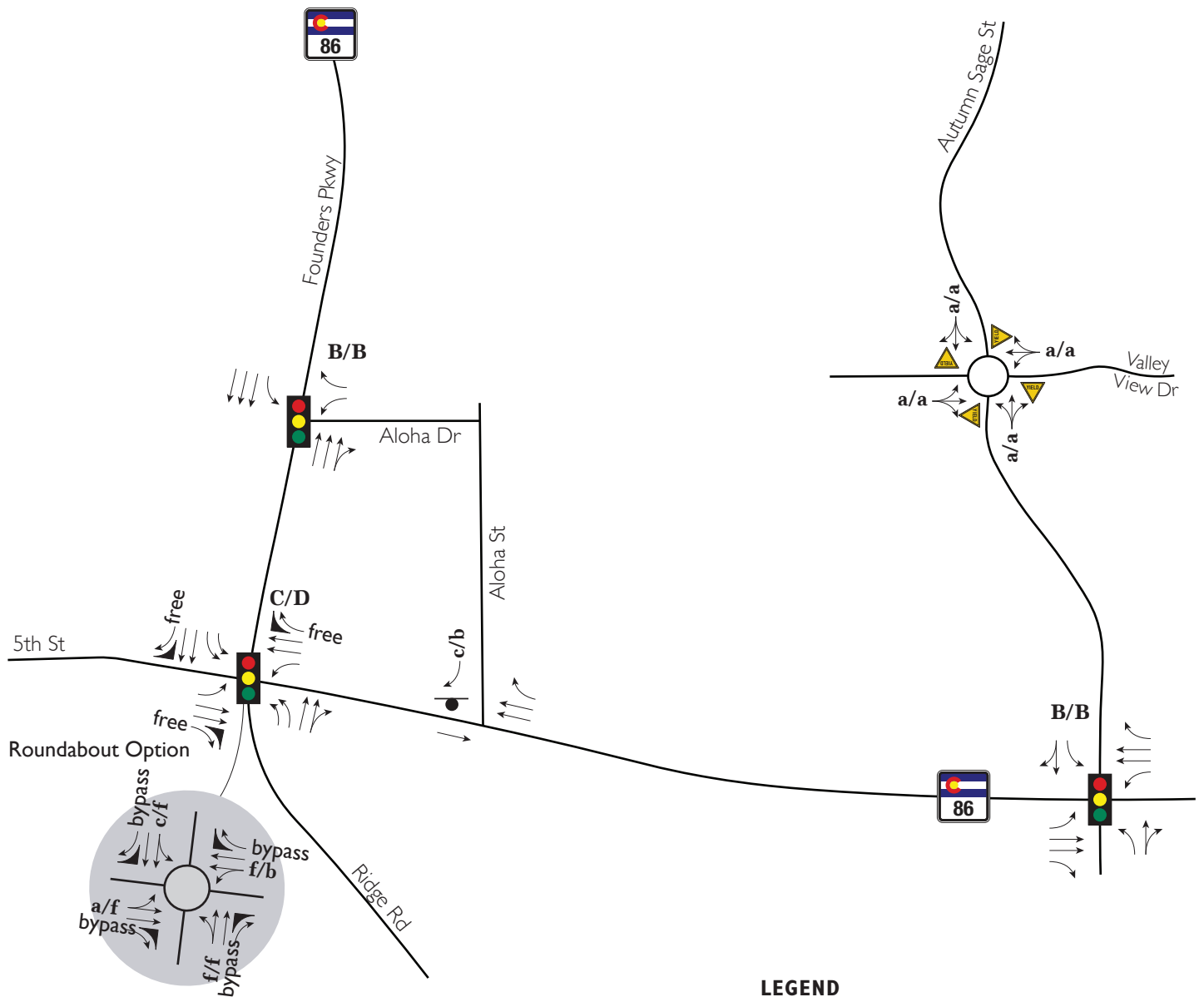
The Town of Castle Rock has specifically requested an analysis of whether this intersection will meet any of the traffic signalization warrants contained in the *Manual on Uniform Traffic Control Devices* (MUTCD). The only warrant that can be evaluated with any confidence is Warrant 3, Peak Hour. While it is recognized that this warrant is not appropriate for a normal public street intersection, it is the best one to use when evaluating peak hour traffic volumes for future timeframes. The results of this analysis find that traffic volume levels for the Build-Out timeframe do not meet Warrant 3 criteria; however, traffic volumes for the Year 2040 will (based on southbound movements). As such, the operational analysis for the Year 2040 Background scenario uses a traffic signal as the traffic control method.



LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes



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- = Traffic Signal
- = Yield Sign

IV. CALIBER AT TERRAIN BUILD-OUT CONDITIONS

This section summarizes the proposed land uses, the daily and peak hour traffic volume projections, the Build-Out and Year 2040 operational analyses, and recommended infrastructure improvements.

IV.A. Land Uses

The Garrett Companies are planning to construct 238 multi-family dwelling units on a vacant parcel of land located in the eastern portion of the Town of Castle Rock. The project site is situated to the south and west of the Terrain residential housing development, to the east of SH 86, and it borders Founders Crossing along its south property line. A school administration building is planned to the east of the Garrett Companies property. That school administration building is not included in this report, however.

Figure 9 represents the proposed site plan for Caliber at Terrain. As shown on this figure, the proposed townhomes will be split to the north and south of an extension of the existing Aloha Street. Connection points for the Aloha Street extension is with Founders Crossing on the south and at the Autumn Sage Street/Valley View Drive roundabout to the east.

IV.B. Trip Generation Estimates & Trip Assignment

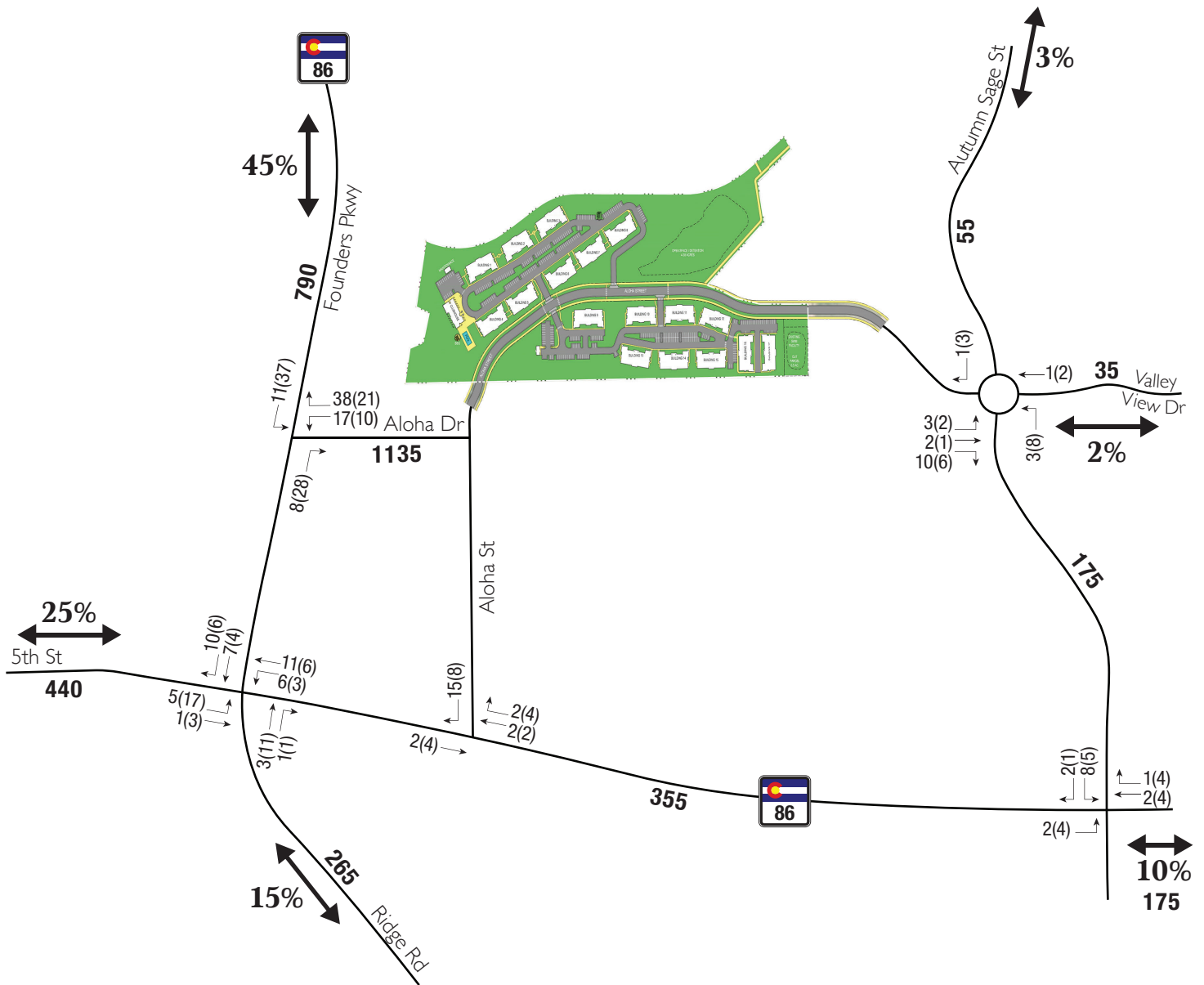
Table I includes the trip generation estimates for the Build-Out of Caliber at Terrain and these estimates are based on information contained in *Trip Generation*, 10th Edition, by the Institute of Transportation Engineers (ITE), 2017.

Table I. Caliber at Terrain Trip Generation Estimates

Land Use	Unit	Size	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Townhomes ¹	DU	238	1,759	25	84	109	81	47	128
¹ Land Use Code 220.									

The assignment of vehicle-trips to the adjacent street network is based on existing travel patterns, on daily traffic volume projections contained in the Town of Castle Rock *Transportation Master Plan*, the orientation of the site, and on engineering judgment. These distribution percentages are included on **Figure 10**, along with the assignment of the projected Caliber at Terrain vehicle-trips. **Figure 11** and **Figure 12** represent the compilation of the site generated traffic volumes and the Build-Out and Year 2040 Background traffic volumes.



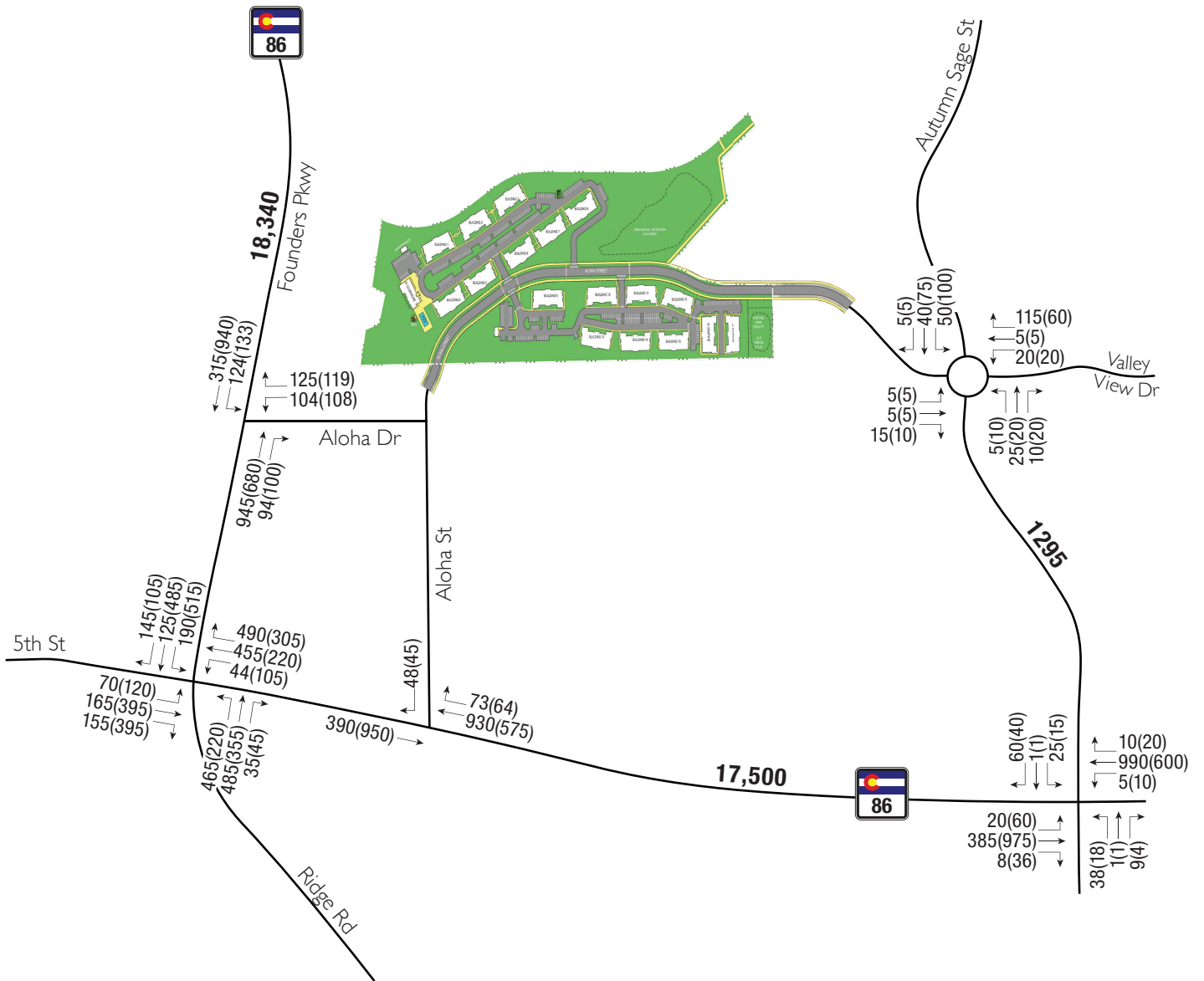


LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes

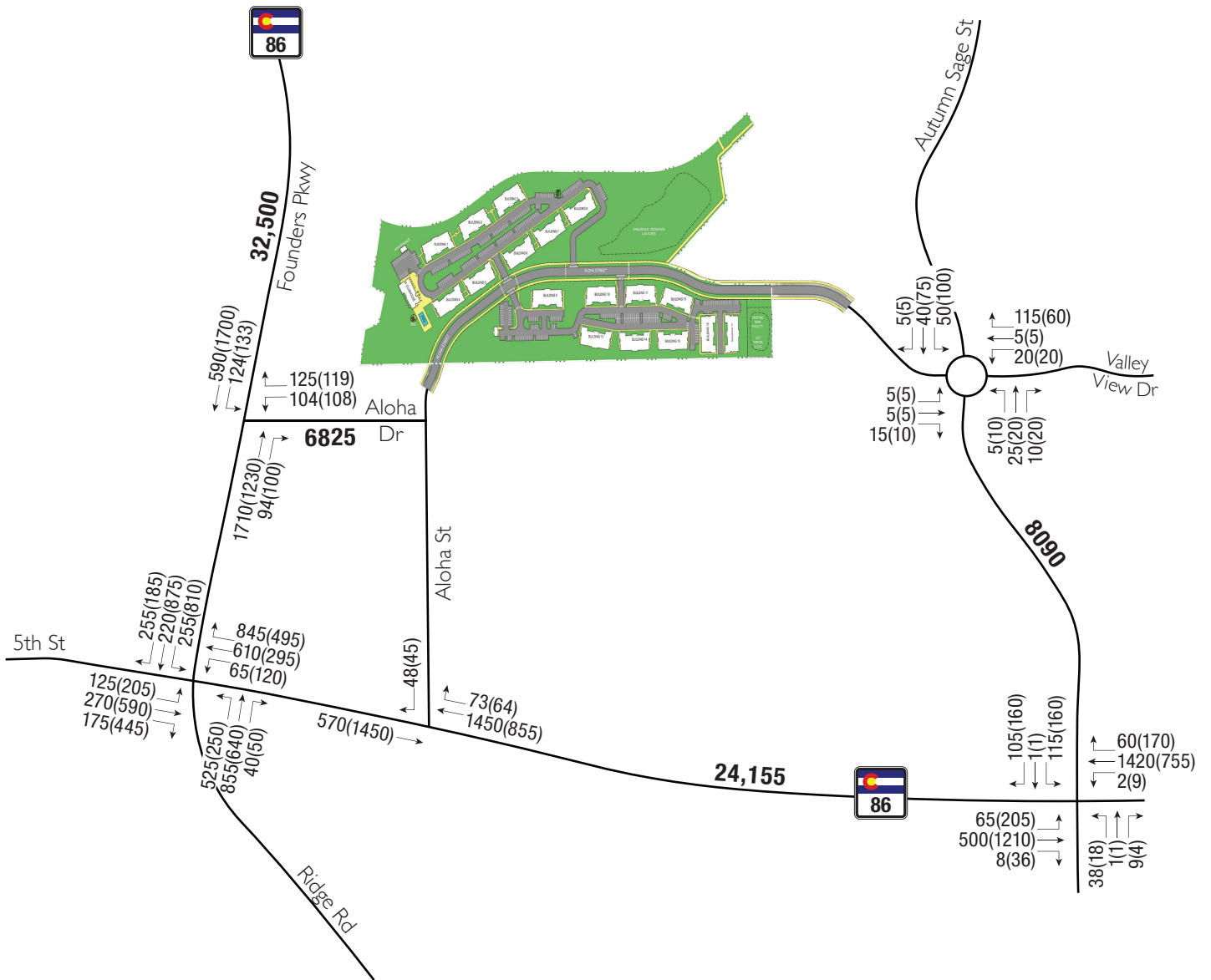
XX% = Site Trip Distribution



LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes



LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

XXXX = Daily Traffic Volumes

IV.C. Traffic Control and Intersection Operations

As shown on **Figure 10**, it is estimated that Caliber at Terrain will add less than 40 vph to any one intersection movement. As such, about one vehicle every 90 seconds on average will affect intersection operations even during the highest trip generation times of the day.

Operational analyses were conducted following the HCM methodologies noted previously in this report. The results of these analyses are included in the following sections.

Project Build-Out

SH 86/5th Street/Ridge Road Intersection – This intersection is not projected to require any physical or operational improvements related to the construction of Caliber at Terrain. LOS estimates are LOS C to D during the AM and PM peak hours (**Figure 13**). CDOT should continue to monitor traffic volume levels and make traffic signal timing adjustments if necessary.

SH 86/Aloha Drive Intersection – It is understood that this intersection is being planned for the installation of a traffic signal by the Town of Castle Rock and it is projected that this traffic signal will be installed by the Build-Out timeframe. Considering that traffic signal timing parameters are not exactly known at this time, some assumptions were made relative to the LOS analyses. These assumptions include using a 90 second traffic signal cycle length and a three-phase operation, allowing for the operational software to optimize the individual phasing allowances. Considering these assumptions, it is projected that the new traffic signal can operate at LOS B or better during the AM and PM peak hours.

SH 86/Autumn Sage Street Intersection – Northbound and southbound left turn movements are projected to operate poorly at LOS F during the AM and PM peak hour. This is a result primarily related to the level of vehicle flow along SH 86 than the side street movements since the northbound and southbound left turn volume level is projected to be about one vehicle every 90 seconds or less. This intersection is not projected to meet criteria for the installation of traffic signalization for this timeframe, however.

SH 86/Aloha Street Intersection – LOS C or better is projected for this intersection with its continued operation with only RIRO movements.

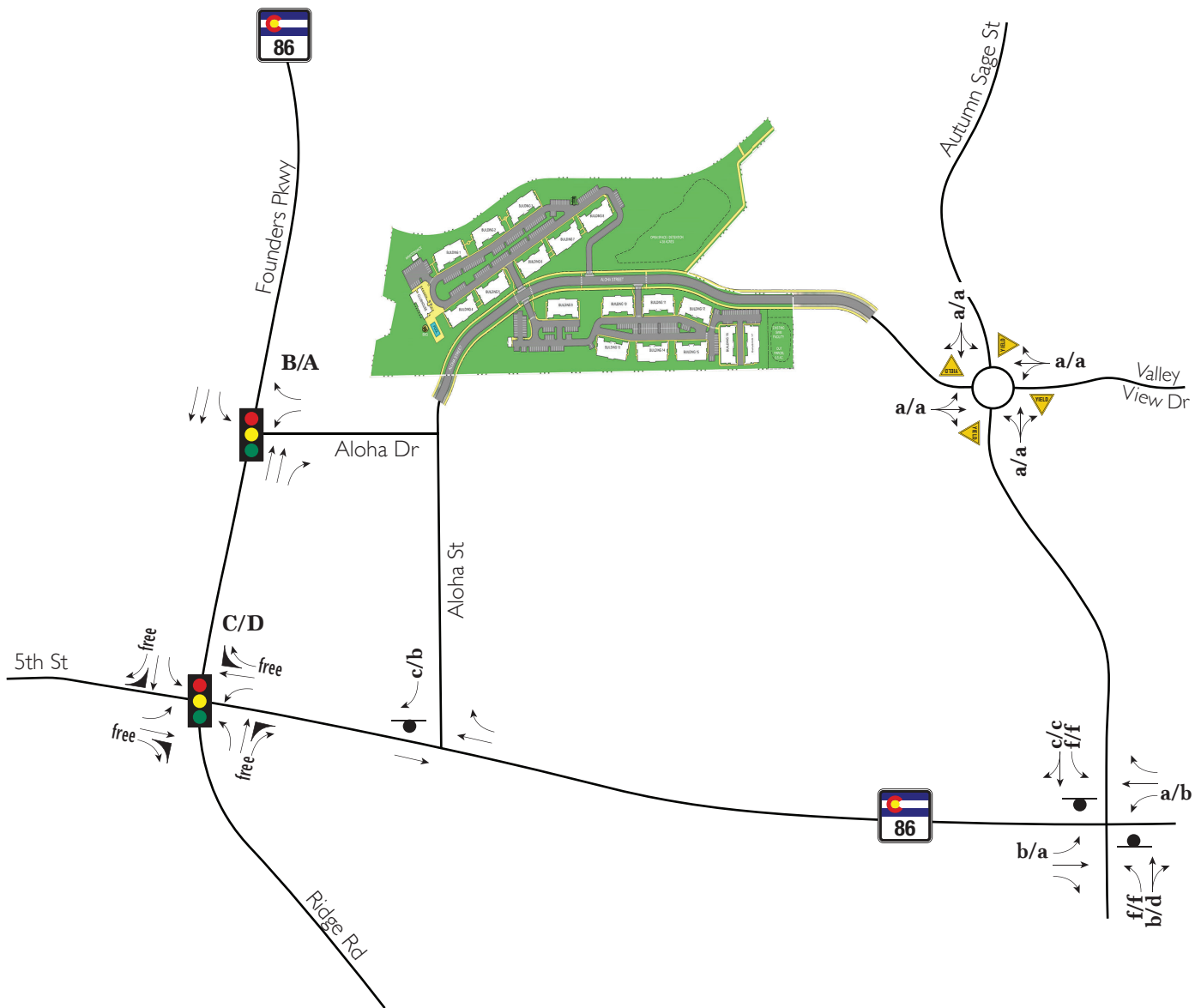
Autumn Sage Street/Valley View Drive Intersection – This intersection is projected to continue to operate at LOS A during the AM and PM peak hours.

Year 2040

SH 86/5th Street/Ridge Road Intersection – As noted previously in this report, the Town has requested that this intersection be evaluated as a roundabout and also as a signalized intersection. Analyses for Year 2040, given the traffic volume projections and geometric laneage found on **Figure 14**, find that a two-lane roundabout, even with right turn bypass lanes on each approach, will operate poorly during the AM or PM peak hours. LOS F is expected for varying movements.

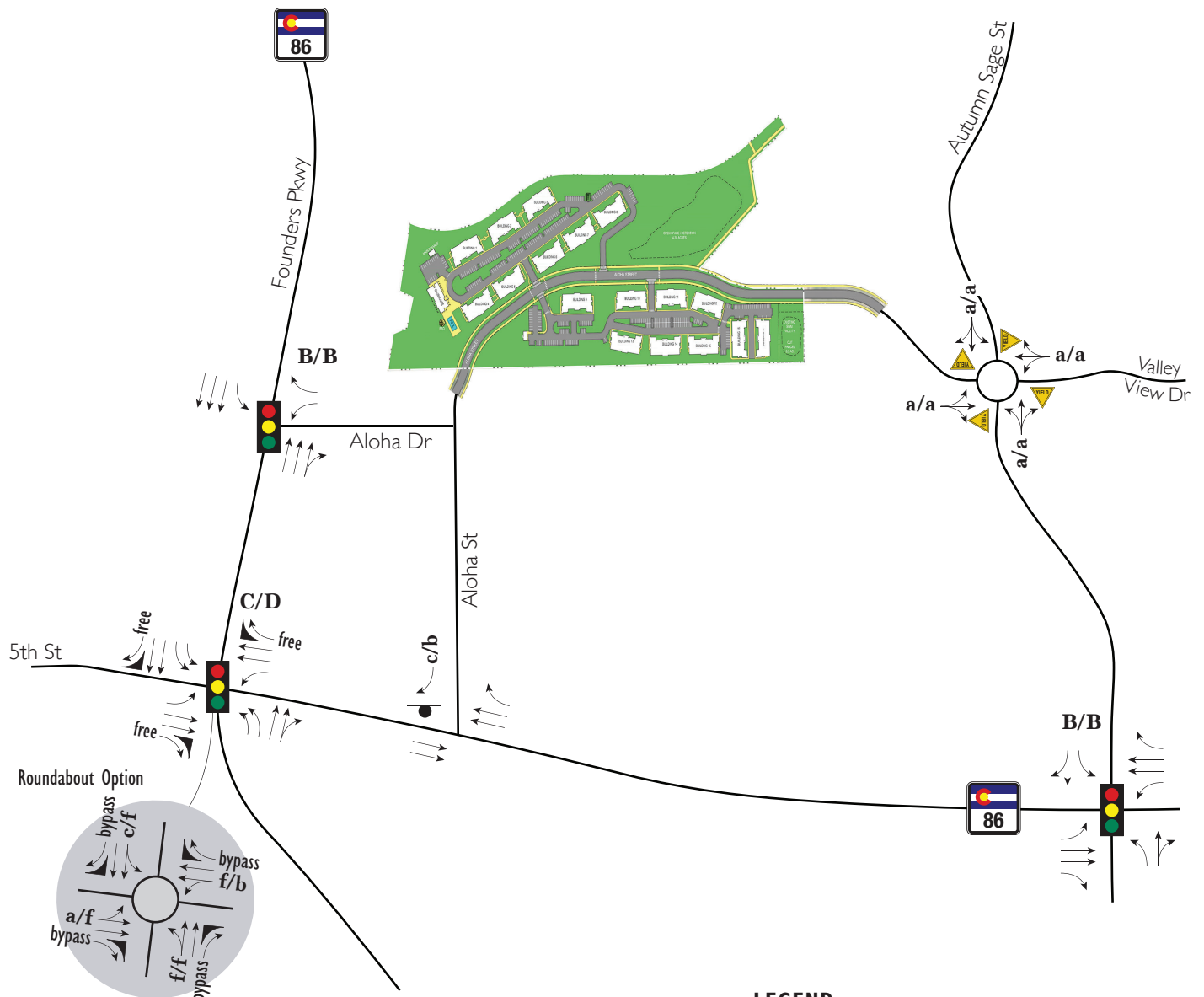
When controlled by a traffic signal, and given the lane geometry on **Figure 14**, this intersection is projected to operate at LOS C and D during the AM and PM peak hours, respectively (no individual movements at LOS F). A 120 second traffic signal cycle length was used for this analysis.

SH 86/Aloha Drive Intersection – Good intersection operations can continue to occur for the Year 2040 timeframe since vehicle movements to/from Founders Crossing are not expected to grow given the built-out nature of the commercial development. LOS B is expected for the AM and PM peak hours given a continued three-phase signal, a 120 second traffic signal cycle length, and the additional through lanes for this timeframe.






LEGEND

- = Lane Assignment
- X/X** = Signalized Intersection Levels of Service
- x/x** = Stop or Yield Controlled Critical Movement Level of Service
- = Traffic Signal
- = Yield Sign



LEGEND

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SH 86/Autumn Sage Street Intersection – As noted previously, this intersection is projected to meet MUTCD criteria for installation of a traffic signal by the Year 2040. With traffic signal control, this intersection is projected to operate at LOS B during the AM and PM peak hours.

SH 86/Aloha Street Intersection – LOS B or better can be achieved for the restricted movements given the additional SH 86 laneage that is projected by Year 2040.

Autumn Sage Street/Valley View Drive Intersection – This intersection is projected to continue to operate at LOS A during the AM and PM peak hours.

IV.D. Intersection Queuing Analysis

A vehicle queuing analysis was conducted to compare projected 95th percentile queue estimates for the Build-Out and Year 2040 timeframes to understand whether or not certain left turn lanes may need be to be lengthened. This analysis focused only on the southbound left turn lane at the SH 86/Founders Crossing intersection and the eastbound left turn lane at the SH 86/Autumn Sage Street intersections since the SH 86/5th Street/Ridge Road intersection is expected to be reconstructed and, therefore, turn lane lengths will be evaluated during that design process.

The results of this analysis at the SH 86/Founders Crossing left turn lane finds that the 95th percentile vehicle queue will be about 150' in the Year 2040. When combined with the CDOT deceleration lane criteria for a 50 mph roadway, it may be necessary in the future to increase the southbound left turn length. However, any increase in left turn lane length should be monitored and evaluated with future recorded traffic volumes and with varying signal timing parameters. Any increase in left turn lane length is not directly related to the development of Caliber at Terrain, however, since the traffic volumes for this project are only a portion of the projected total amount. This intersection should be periodically monitored to more definitively understand whether this deceleration should be lengthened or not.

Vehicle queuing for the eastbound left turn movement at the SH 86/Autumn Sage Street intersection finds that queues lengths will be relatively small. When SH 86 is widened to four through lanes, existing traffic volume at that time should be checked to evaluate any left turn lane revisions.

IV.E. Internal Founders Crossing Intersection

The Town of Castle Rock requested the analysis of a particular situation, one that is not related to the intersection analyses contained in previous sections of this report. This issue relates to the internal "T" intersection within Founders Crossing where Aloha Street and Aloha Drive intersect. Currently, this intersection uses a stop sign to control vehicle movements on the eastbound approach to Aloha Street. Since Caliber at Terrain will have an access connection to Aloha Street, the Town's question was whether or not the traffic control for this intersection should be converted to an all-way stop condition.

An analysis was conducted to evaluate this situation using trip generation data contained in the Founders Crossing TIA (by LSC) and the trip generation predictions for Caliber at Terrain. To be conservative in these analyses, it was assumed that all vehicle-trips for the AM and PM peak hour would travel through this intersection, a condition that would not be the case.

Nevertheless, it was found that stop-sign control on the eastbound approach can operate at LOS C or better during the AM and PM peak hours. Conversion to an all-way stop condition can also provide good vehicle operations; however, it is not necessary to do so.

IV.F. Improvement Recommendations

Caliber at Terrain is projected to have a minimal impact to the surrounding roadway and intersection network as a result of three primary factors:

1. The Town of Castle Rock's *Transportation Master Plan* has identified roadway laneage improvements that provide sufficient capacity to absorb the traffic volume predictions.
2. Three points of access allow for the distribution of traffic through several intersections which reduces the operational impact at any one location or for any one movement.
3. The level of traffic for any one movement at any intersection is about one vehicle per minute during the highest hours of vehicle activity over the course of a typical weekday; other hours will have less of an impact.

As such, the traffic volumes associated with the Caliber at Terrain project can be absorbed into the vehicle travel streams without undue congestion impacts. No roadway or intersection improvements are recommended as part of this project.

V. SUMMARY AND RECOMMENDATIONS

The Garrett Companies is planning to develop a parcel of land in the Town of Castle Rock, Colorado that will include a total of 238 multi-family dwelling units. The project is called Caliber at Terrain and it is located to the east and north of State Highway (SH) 86. Specifically, it is bounded on the west by SH 86 (Founders Parkway), on the north, east and south (partially) by the Terrain residential subdivision, and also by Founders Crossing on the south.

Project access is planned via two routes: 1) through Founders Crossing via Aloha Street for which motorists can access either Founders Parkway (to the west) or SH 86 (to the south), and 2) access towards the east through an existing roundabout at the Autumn Sage Street/Valley View Drive intersection. The Founders Parkway access route can provide full-movement access, while the SH 86/Aloha Street access is limited to only right-in/right-out (RIRO) movements. Access through the existing roundabout is into the Terrain subdivision and to SH 86 at a full-movement intersection also.

Projected vehicle-trips for Caliber at Terrain is about 1,760 vehicles per day with approximately 110 during the AM peak hour and about 130 during the PM peak hour. These traffic volumes will have several access routes that will result in their distribution through several intersections and across several left turn, through or right turn movements. As a result, the traffic increase for any one intersection movement is relatively low, being about one vehicle every 90 seconds on average during the peak hours of vehicle activity.

As a result of this distribution of movements, operational analyses of the study area intersections find that Caliber at Terrain will have a very low impact at any intersection when considering the traffic volumes that will already exist at these intersections and when considering the planned roadway improvements that are identified in the Town of Castle Rock *Transportation Master Plan*.

Good levels of service will result with the traditional intersection configurations shown on **Figure 13** and **Figure 14** in this report, i.e., with traffic signalization at the 5th Street/Ridge Road, Founders Crossing, and Autumn Sage Street intersections along SH 86. Level of service results will be LOS D or better during the Build-Out and Year 2040 timeframes.

It must be noted, however, that a multi-lane roundabout at the SH 86/5th Street/Ridge Road intersection is not projected to operate as well. With the projected roundabout geometry as shown on **Figure 8** or **Figure 14**, several movements are projected to operate poorly at LOS F during the peak hours. Analyses for the roundabout operation as contained in the report are not as exhaustive as what has been conducted for the Town of Castle Rock evaluation of this intersection, however.

When considering the planned roadway improvements and estimated traffic volumes, it is projected that Caliber at Terrain can be absorbed into the roadway and intersection network without causing any undue traffic congestion. As such, roadway and intersection improvements beyond those already planned are not necessary.

APPENDIX A. RECORDED TRAFFIC VOLUMES



(303) 216-2439
www.alltrafficdata.net

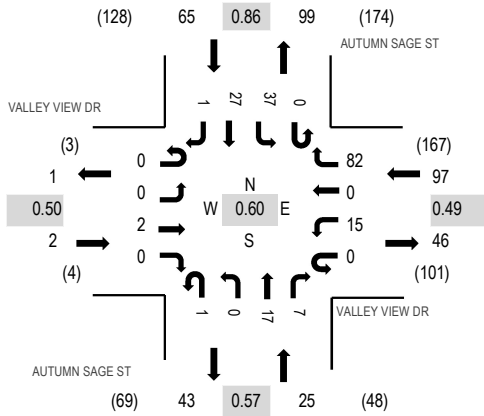
Location: 1 AUTUMN SAGE ST & VALLEY VIEW DR AM

Date: Tuesday, April 16, 2019

Peak Hour: 08:00 AM - 09:00 AM

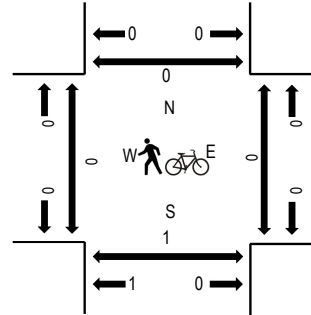
Peak 15-Minutes: 08:45 AM - 09:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	VALLEY VIEW DR Eastbound				VALLEY VIEW DR Westbound				AUTUMN SAGE ST Northbound				AUTUMN SAGE ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	0	0	0	0	4	0	18	0	0	7	3	0	24	6	0	62	158	0	0	0	0
7:15 AM	0	0	0	0	0	1	0	20	0	0	2	3	0	6	4	0	36	139	0	0	0	0
7:30 AM	0	0	0	0	0	1	0	12	0	0	5	1	0	10	4	0	33	145	0	0	0	0
7:45 AM	0	0	1	1	0	3	2	9	0	0	2	0	0	7	2	0	27	137	0	0	0	0
8:00 AM	0	0	0	0	0	8	0	12	0	0	4	0	0	8	10	1	43	189	0	0	0	0
8:15 AM	0	0	2	0	0	2	0	15	0	0	3	2	0	10	8	0	42		0	0	0	0
8:30 AM	0	0	0	0	0	2	0	9	0	0	4	1	0	5	4	0	25		0	0	0	0
8:45 AM	0	0	0	0	0	3	0	46	1	0	6	4	0	14	5	0	79		0	0	1	0
Count Total	0	0	3	1	0	24	2	141	1	0	33	14	0	84	43	1	347		0	0	1	0
Peak Hour	0	0	2	0	0	15	0	82	1	0	17	7	0	37	27	1	189		0	0	1	0



(303) 216-2439
www.alltrafficdata.net

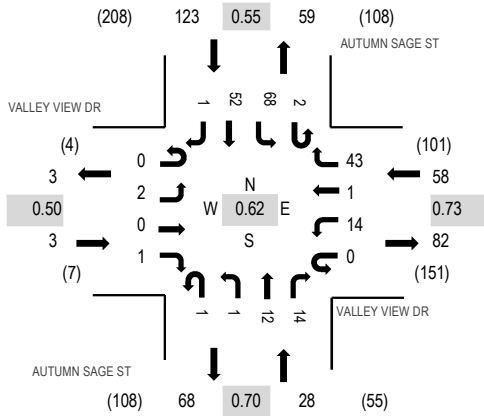
Location: 1 AUTUMN SAGE ST & VALLEY VIEW DR PM

Date: Tuesday, April 16, 2019

Peak Hour: 04:00 PM - 05:00 PM

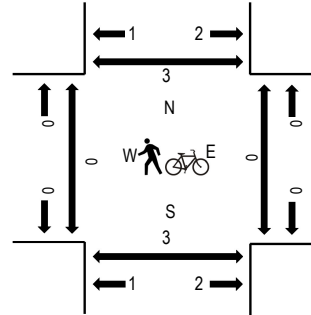
Peak 15-Minutes: 04:00 PM - 04:15 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	VALLEY VIEW DR Eastbound				VALLEY VIEW DR Westbound				AUTUMN SAGE ST Northbound				AUTUMN SAGE ST Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	0	0	0	0	1	0	19	0	1	4	5	0	36	20	0	86	212	0	0	0	0
4:15 PM	0	0	0	1	0	5	0	10	1	0	4	2	1	14	9	0	47	159	0	0	0	0
4:30 PM	0	0	0	0	0	7	0	4	0	0	0	6	1	9	8	1	36	155	0	0	1	1
4:45 PM	0	2	0	0	0	1	1	10	0	0	4	1	0	9	15	0	43	163	0	0	2	2
5:00 PM	0	0	0	0	0	3	0	4	1	0	7	1	1	8	8	0	33	159	0	0	0	3
5:15 PM	0	0	0	0	0	5	0	7	0	0	4	1	0	16	10	0	43		0	0	1	1
5:30 PM	0	0	1	1	0	3	0	13	0	0	3	4	0	15	4	0	44		0	0	0	1
5:45 PM	0	0	2	0	0	0	1	7	0	0	3	3	0	18	5	0	39		0	0	1	0
Count Total	0	2	3	2	0	25	2	74	2	1	29	23	3	125	79	1	371		0	0	5	8
Peak Hour	0	2	0	1	0	14	1	43	1	1	12	14	2	68	52	1	212		0	0	3	3

APPENDIX B. LEVEL OF SERVICE CRITERIA

TABLE B1
LEVEL OF SERVICE CRITERIA FOR
TWO-WAY STOP CONTROLLED (TWSC) INTERSECTIONS

Level of Service	Delay Range (sec/veh)
A	0.0 - 10.0
B	>10.0 - 15.0
C	>15.0 - 25.0
D	>25.0 - 35.0
E	>35.0 - 50.0
F	> 50.0
Adapted from: <i>Highway Capacity Manual</i> , Transportation Research Board, 2010.	

TABLE B2
LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS


Level of Service	Control Delay (sec/veh)	Qualitative Description
A	≤ 10.0	Good progression, short cycles, very few vehicle-stops.
B	>10.0 - 20.0	Good progression, and/or short cycle lengths, more vehicle-stops.
C	>20.0 - 35.0	Fair progression and/or longer cycle lengths, some individual cycle failures, many vehicle-stops
D	>35.0 - 55.0	Noticeable congestion and cycle failures, unfavorable progression, high v/c ratios, several stops.
E	>55.0 - 80.0	Limit of acceptable delay, poor progression, long cycles, high v/c ratios, frequent cycle failures.
F	> 80.0	Delay is unacceptable to most drivers, volume exceeds capacity, breakdown of traffic flow.
Adapted from: <i>Highway Capacity Manual</i> , Transportation Research Board, 2010.		

APPENDIX C. ANALYSIS WORKSHEETS – EXISTING CONDITIONS

SH 86/5th St./Ridge Road
1: Ridge Road/SH 86 & 5th Street

Existing Conditions - AM Peak Hour

04/30/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	165	155	50	445	490	465	480	30	190	115	135
Future Volume (vph)	65	165	155	50	445	490	465	480	30	190	115	135
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.163			0.606			0.950			0.950		
Satd. Flow (perm)	304	1863	1583	1129	1863	1583	1770	1863	1583	1770	1863	1583
Satd. Flow (RTOR)			168			533			135			147
Lane Group Flow (vph)	71	179	168	54	484	533	505	522	33	207	125	147
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Split	NA	Free	Split	NA	Free
Protected Phases	5	2		1	6		4	4		8	8	
Permitted Phases	2		Free	6		Free			Free			Free
Total Split (s)	15.0	30.0		15.0	30.0		40.0	40.0		40.0	40.0	
Total Lost Time (s)	4.0	6.5		4.0	6.5		4.0	4.0		4.0	4.0	
Act Effect Green (s)	33.8	24.5	100.9	32.5	23.8	100.9	35.4	35.4	100.9	17.1	17.1	100.9
Actuated g/C Ratio	0.33	0.24	1.00	0.32	0.24	1.00	0.35	0.35	1.00	0.17	0.17	1.00
v/c Ratio	0.32	0.40	0.11	0.13	1.10	0.34	0.81	0.80	0.02	0.69	0.40	0.09
Control Delay	26.9	37.9	0.1	23.6	111.9	0.6	43.8	42.2	0.0	52.8	42.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.9	37.9	0.1	23.6	111.9	0.6	43.8	42.2	0.0	52.8	42.1	0.1
LOS	C	D	A	C	F	A	D	D	A	D	D	A
Approach Delay		20.8			52.0			41.6			33.8	
Approach LOS		C			D			D			C	
Queue Length 50th (ft)	31	101	0	23	~377	0	302	311	0	131	75	0
Queue Length 95th (ft)	67	185	0	54	#649	0	#551	#557	0	214	134	0
Internal Link Dist (ft)		660			735			640			912	
Turn Bay Length (ft)	350		400	600		465	425			600		
Base Capacity (vph)	268	451	1583	459	440	1583	640	674	1583	640	674	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.40	0.11	0.12	1.10	0.34	0.79	0.77	0.02	0.32	0.19	0.09

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 100.9

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 41.2

Intersection LOS: D

Intersection Capacity Utilization 78.8%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.







Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Ridge Road/SH 86 & 5th Street



Intersection						
Int Delay, s/veh	20.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	115	110	945	90	115	325
Future Vol, veh/h	115	110	945	90	115	325
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	280	330	-
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	125	120	1027	98	125	353
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1454	514	0	0	1125	0
Stage 1	1027	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 121	505	-	-	617	-
Stage 1	306	-	-	-	-	-
Stage 2	626	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 96	505	-	-	617	-
Mov Cap-2 Maneuver	~ 96	-	-	-	-	-
Stage 1	306	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	146.8	0		3.2		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	96	505	617	-
HCM Lane V/C Ratio	-	-	1.302	0.237	0.203	-
HCM Control Delay (s)	-	-	273.5	14.3	12.3	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	8.9	0.9	0.8	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

























Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Vol, veh/h	0	385	925	105	0	61
Future Vol, veh/h	0	385	925	105	0	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	300	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	418	1005	114	0	66
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	1005
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	293
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	293
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		20.8		
HCM LOS	C					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	293		
HCM Lane V/C Ratio	-	-	-	0.226		
HCM Control Delay (s)	-	-	-	20.8		
HCM Lane LOS	-	-	-	C		
HCM 95th %tile Q(veh)	-	-	-	0.9		

Intersection				
Intersection Delay, s/veh	4.2			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	4	134	34	88
Demand Flow Rate, veh/h	4	136	34	90
Vehicles Circulating, veh/h	110	25	54	23
Vehicles Exiting, veh/h	3	63	60	138
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.6	4.4	3.7	4.0
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	4	136	34	90
Cap Entry Lane, veh/h	1012	1102	1071	1104
Entry HV Adj Factor	0.990	0.985	0.987	0.981
Flow Entry, veh/h	4	134	34	88
Cap Entry, veh/h	1002	1086	1056	1083
V/C Ratio	0.004	0.123	0.032	0.082
Control Delay, s/veh	3.6	4.4	3.7	4.0
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

SH 86/5th St./Ridge Rd.
1: Ridge Road/SH 86 & 5th Street

Existing Conditions - PM Peak Hour

04/30/2019

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	390	395	100	215	305	220	345	40	515	480	100
Future Volume (vph)	100	390	395	100	215	305	220	345	40	515	480	100
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.423			0.169			0.950			0.950		
Satd. Flow (perm)	788	1863	1583	315	1863	1583	1770	1863	1583	1770	1863	1583
Satd. Flow (RTOR)			429			332			135			135
Lane Group Flow (vph)	109	424	429	109	234	332	239	375	43	560	522	109
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Split	NA	Free	Split	NA	Free
Protected Phases	5	2		1	6		4	4		8	8	
Permitted Phases	2		Free	6		Free			Free			Free
Total Split (s)	15.0	30.0		15.0	30.0		40.0	40.0		40.0	40.0	
Total Lost Time (s)	4.0	6.5		4.0	6.5		4.0	4.0		4.0	4.0	
Act Effect Green (s)	35.8	23.6	116.1	35.7	23.6	116.1	28.1	28.1	116.1	36.2	36.2	116.1
Actuated g/C Ratio	0.31	0.20	1.00	0.31	0.20	1.00	0.24	0.24	1.00	0.31	0.31	1.00
v/c Ratio	0.34	1.12	0.27	0.50	0.62	0.21	0.56	0.83	0.03	1.02	0.90	0.07
Control Delay	31.4	125.7	0.4	36.7	51.8	0.3	43.7	58.2	0.0	83.3	59.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.4	125.7	0.4	36.7	51.8	0.3	43.7	58.2	0.0	83.3	59.6	0.1
LOS	C	F	A	D	D	A	D	E	A	F	E	A
Approach Delay		59.2			24.0			49.1			65.3	
Approach LOS		E			C			D			E	
Queue Length 50th (ft)	58	~377	0	58	165	0	159	269	0	~460	383	0
Queue Length 95th (ft)	109	#622	0	109	268	0	241	384	0	#735	#645	0
Internal Link Dist (ft)		660			735			640			912	
Turn Bay Length (ft)	350		400	600		465	425			600		
Base Capacity (vph)	345	379	1583	239	379	1583	551	580	1583	551	580	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	1.12	0.27	0.46	0.62	0.21	0.43	0.65	0.03	1.02	0.90	0.07

Intersection Summary

Cycle Length: 125

Actuated Cycle Length: 116.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.12

Intersection Signal Delay: 52.6

Intersection LOS: D

Intersection Capacity Utilization 88.2%

ICU Level of Service E

Analysis Period (min) 15

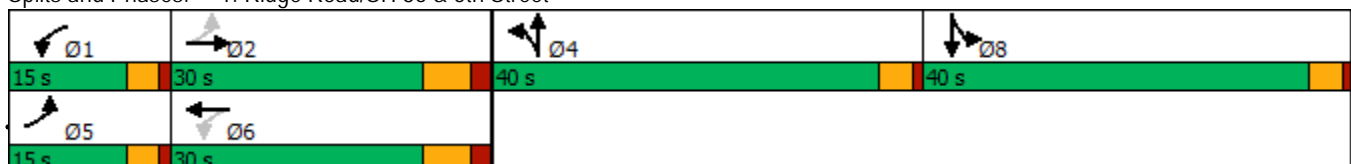
~ Volume exceeds capacity, queue is theoretically infinite.







Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Ridge Road/SH 86 & 5th Street



Intersection						
Int Delay, s/veh	44.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	155	90	680	70	140	940
Future Vol, veh/h	155	90	680	70	140	940
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	280	330	-
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	168	98	739	76	152	1022
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1554	370	0	0	815	0
Stage 1	739	-	-	-	-	-
Stage 2	815	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 104	627	-	-	808	-
Stage 1	433	-	-	-	-	-
Stage 2	396	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 84	627	-	-	808	-
Mov Cap-2 Maneuver	~ 84	-	-	-	-	-
Stage 1	433	-	-	-	-	-
Stage 2	322	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s\$	367.4	0		1.4		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	84	627	808	-
HCM Lane V/C Ratio	-	-	2.006	0.156	0.188	-
HCM Control Delay (s)	-	-\$	573.9	11.8	10.5	-
HCM Lane LOS	-	-	F	B	B	-
HCM 95th %tile Q(veh)	-	-	14.8	0.6	0.7	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Vol, veh/h	0	945	570	75	0	50
Future Vol, veh/h	0	945	570	75	0	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	300	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1027	620	82	0	54
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	620
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	488
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	488
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		13.3		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	488		
HCM Lane V/C Ratio	-	-	-	0.111		
HCM Control Delay (s)	-	-	-	13.3		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.4		

Intersection				
Intersection Delay, s/veh	4.4			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	5	80	38	168
Demand Flow Rate, veh/h	5	81	38	171
Vehicles Circulating, veh/h	190	20	101	23
Vehicles Exiting, veh/h	4	119	94	78
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.9	3.9	3.9	4.7
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	5	81	38	171
Cap Entry Lane, veh/h	934	1108	1021	1104
Entry HV Adj Factor	0.996	0.987	0.992	0.980
Flow Entry, veh/h	5	80	38	168
Cap Entry, veh/h	931	1094	1013	1082
V/C Ratio	0.005	0.073	0.037	0.155
Control Delay, s/veh	3.9	3.9	3.9	4.7
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	1

APPENDIX D. ANALYSIS WORKSHEETS BUILD-OUT BACKGROUND CONDITIONS

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	87	87	945	86	113	315
Future Volume (vph)	87	87	945	86	113	315
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.149	
Satd. Flow (perm)	1770	1583	3539	1583	278	3539
Satd. Flow (RTOR)		95		93		
Lane Group Flow (vph)	95	95	1027	93	123	342
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8	4	
Total Split (s)	31.0	31.0	45.0	45.0	14.0	59.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0
Act Effect Green (s)	26.0	26.0	41.1	41.1	54.0	53.0
Actuated g/C Ratio	0.29	0.29	0.46	0.46	0.60	0.59
v/c Ratio	0.19	0.18	0.64	0.12	0.41	0.16
Control Delay	25.3	6.3	21.1	3.7	12.1	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	6.3	21.1	3.7	12.1	8.7
LOS	C	A	C	A	B	A
Approach Delay	15.8		19.7			9.6
Approach LOS	B		B			A
Queue Length 50th (ft)	40	0	227	0	28	43
Queue Length 95th (ft)	79	34	301	26	51	63
Internal Link Dist (ft)	430		912			419
Turn Bay Length (ft)				280	330	
Base Capacity (vph)	511	524	1615	773	316	2084
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.18	0.64	0.12	0.39	0.16

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 16.6

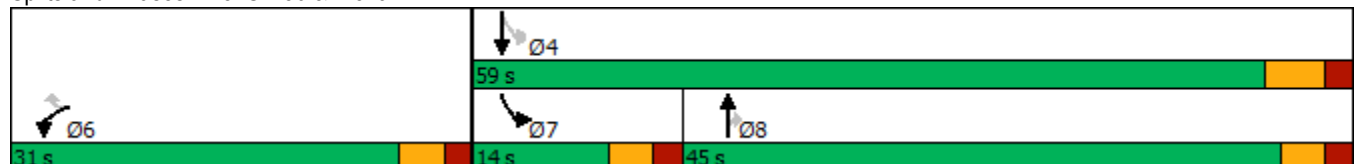
Intersection LOS: B

Intersection Capacity Utilization 49.7%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 5: SH 86 & Aloha Dr.



Autumn Ridge/Valley View
1: Ridge Road/SH 86 & 5th Street

Build-Out Background Conditions - AM Peak Hour

03/11/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	165	155	50	445	490	465	480	30	190	115	135
Future Volume (vph)	65	165	155	50	445	490	465	480	30	190	115	135
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.216			0.642			0.494			0.253		
Satd. Flow (perm)	402	1863	1583	1196	1863	1583	920	1863	1583	471	1863	1583
Satd. Flow (RTOR)			236			533			236			236
Lane Group Flow (vph)	71	179	168	54	484	533	505	522	33	207	125	147
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		Free	6		Free	8		Free	4		Free
Total Split (s)	10.0	34.0		10.0	34.0		21.0	33.0		13.0	25.0	
Total Lost Time (s)	4.0	6.5		4.0	6.5		4.0	4.0		4.0	4.0	
Act Effect Green (s)	34.9	27.8	85.8	34.9	27.8	85.8	39.8	26.6	85.8	24.9	17.5	85.8
Actuated g/C Ratio	0.41	0.32	1.00	0.41	0.32	1.00	0.46	0.31	1.00	0.29	0.20	1.00
v/c Ratio	0.28	0.30	0.11	0.10	0.80	0.34	0.80	0.90	0.02	0.76	0.33	0.09
Control Delay	17.4	25.1	0.1	15.0	40.2	0.6	30.1	49.8	0.0	36.7	31.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	25.1	0.1	15.0	40.2	0.6	30.1	49.8	0.0	36.7	31.4	0.1
LOS	B	C	A	B	D	A	C	D	A	D	C	A
Approach Delay		13.7			19.2			38.8			24.1	
Approach LOS		B			B			D			C	
Queue Length 50th (ft)	23	78	0	17	257	0	206	277	0	68	59	0
Queue Length 95th (ft)	48	133	0	38	#427	0	#377	#459	0	#143	107	0
Internal Link Dist (ft)		660			735			640			912	
Turn Bay Length (ft)	350		400	600		465	425			600		
Base Capacity (vph)	260	603	1583	526	603	1583	633	636	1583	274	460	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.30	0.11	0.10	0.80	0.34	0.80	0.82	0.02	0.76	0.27	0.09

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 85.8

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 26.1

Intersection LOS: C

Intersection Capacity Utilization 78.8%

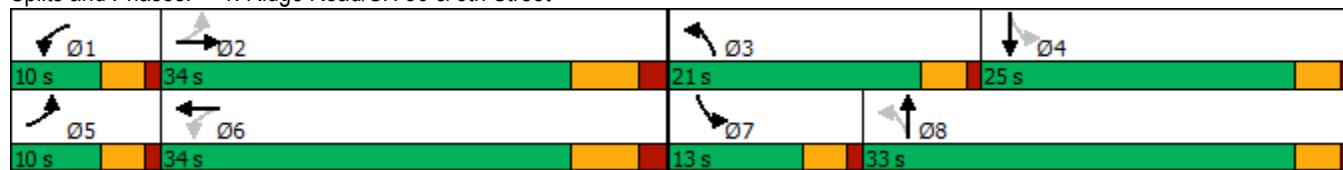
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.












Queue shown is maximum after two cycles.

Splits and Phases: 1: Ridge Road/SH 86 & 5th Street



Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Vol, veh/h	0	385	925	71	0	33
Future Vol, veh/h	0	385	925	71	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	300	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	418	1005	77	0	36
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	1005
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	293
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	293
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		19		
HCM LOS				C		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	293		
HCM Lane V/C Ratio	-	-	-	0.122		
HCM Control Delay (s)	-	-	-	19		
HCM Lane LOS	-	-	-	C		
HCM 95th %tile Q(veh)	-	-	-	0.4		

Intersection				
Intersection Delay, s/veh	4.2			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	4	134	34	88
Demand Flow Rate, veh/h	4	136	34	90
Vehicles Circulating, veh/h	110	25	54	23
Vehicles Exiting, veh/h	3	63	60	138
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.6	4.4	3.7	4.0
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	4	136	34	90
Cap Entry Lane, veh/h	1012	1102	1071	1104
Entry HV Adj Factor	0.990	0.985	0.987	0.981
Flow Entry, veh/h	4	134	34	88
Cap Entry, veh/h	1002	1086	1056	1083
V/C Ratio	0.004	0.123	0.032	0.082
Control Delay, s/veh	3.6	4.4	3.7	4.0
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	98	98	680	72	96	940
Future Volume (vph)	98	98	680	72	96	940
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.283	
Satd. Flow (perm)	1770	1583	3539	1583	527	3539
Satd. Flow (RTOR)		107		78		
Lane Group Flow (vph)	107	107	739	78	104	1022
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Total Split (s)	32.0	32.0	42.0	42.0	16.0	58.0
Total Lost Time (s)	5.0	5.0	6.0	6.0	4.5	6.0
Act Effect Green (s)	8.8	8.8	23.2	23.2	31.7	31.8
Actuated g/C Ratio	0.19	0.19	0.49	0.49	0.67	0.67
v/c Ratio	0.33	0.28	0.43	0.10	0.19	0.43
Control Delay	21.7	7.3	12.7	3.8	4.8	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	7.3	12.7	3.8	4.8	6.0
LOS	C	A	B	A	A	A
Approach Delay	14.5		11.8			5.9
Approach LOS	B		B			A
Queue Length 50th (ft)	26	0	83	0	9	71
Queue Length 95th (ft)	72	34	148	21	27	128
Internal Link Dist (ft)	430		912			419
Turn Bay Length (ft)				280	330	
Base Capacity (vph)	1056	988	2750	1248	669	3434
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.11	0.27	0.06	0.16	0.30

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 47.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 9.0

Intersection LOS: A

Intersection Capacity Utilization 42.5%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 5: SH 86 & Aloha Dr.



SH 86-Autumn Ridge
1: Ridge Road & 5th Street & SH 86

Build-Out Background Conditions - PM Peak Hour

03/11/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	390	395	100	215	305	220	345	40	515	480	100
Future Volume (vph)	100	390	395	100	215	305	220	345	40	515	480	100
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.416			0.192			0.428			0.180		
Satd. Flow (perm)	775	1863	1583	358	1863	1583	797	1863	1583	335	1863	1583
Satd. Flow (RTOR)			429			332			236			236
Lane Group Flow (vph)	109	424	429	109	234	332	239	375	43	560	522	109
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2		Free	6		Free
Total Split (s)	14.0	27.0		12.0	25.0		13.0	24.0		27.0	38.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	6.5		4.0	6.5	
Act Effect Green (s)	28.9	21.8	86.9	26.9	20.8	86.9	29.4	18.1	86.9	47.9	32.5	86.9
Actuated g/C Ratio	0.33	0.25	1.00	0.31	0.24	1.00	0.34	0.21	1.00	0.55	0.37	1.00
v/c Ratio	0.31	0.91	0.27	0.47	0.53	0.21	0.65	0.97	0.03	0.99	0.75	0.07
Control Delay	20.9	57.9	0.4	25.4	34.7	0.3	24.1	75.5	0.0	59.5	33.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.9	57.9	0.4	25.4	34.7	0.3	24.1	75.5	0.0	59.5	33.3	0.1
LOS	C	E	A	C	C	A	C	E	A	E	C	A
Approach Delay		28.1			16.3			51.9			42.6	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	40	235	0	40	116	0	71	~220	0	~292	264	0
Queue Length 95th (ft)	75	#405	0	75	193	0	#117	#400	0	#495	#425	0
Internal Link Dist (ft)		660			735			640			912	
Turn Bay Length (ft)	350		400	600		465	425			600		
Base Capacity (vph)	378	496	1583	242	465	1583	373	388	1583	567	697	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.85	0.27	0.45	0.50	0.21	0.64	0.97	0.03	0.99	0.75	0.07

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 86.9

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 35.2

Intersection LOS: D

Intersection Capacity Utilization 88.2%

ICU Level of Service E

Analysis Period (min) 15

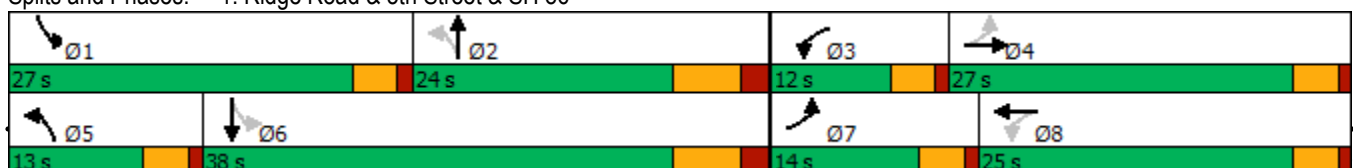
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Ridge Road & 5th Street & SH 86



Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Vol, veh/h	0	945	570	60	0	37
Future Vol, veh/h	0	945	570	60	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	300	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1027	620	65	0	40
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	620
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	488
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	488
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		13		
HCM LOS				B		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	488		
HCM Lane V/C Ratio	-	-	-	0.082		
HCM Control Delay (s)	-	-	-	13		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.3		

Intersection				
Intersection Delay, s/veh	4.4			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	5	80	38	168
Demand Flow Rate, veh/h	5	81	38	171
Vehicles Circulating, veh/h	190	20	101	23
Vehicles Exiting, veh/h	4	119	94	78
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.9	3.9	3.9	4.7
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	5	81	38	171
Cap Entry Lane, veh/h	934	1108	1021	1104
Entry HV Adj Factor	0.996	0.987	0.992	0.980
Flow Entry, veh/h	5	80	38	168
Cap Entry, veh/h	931	1094	1013	1082
V/C Ratio	0.005	0.073	0.037	0.155
Control Delay, s/veh	3.9	3.9	3.9	4.7
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	1

APPENDIX E. ANALYSIS WORKSHEETS – YEAR 2040 BACKGROUND CONDITIONS

	↖	↗	↑	↘	↙	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↑↑↑		↘	↑↑↑
Traffic Volume (vph)	87	87	1710	86	113	590
Future Volume (vph)	87	87	1710	86	113	590
Satd. Flow (prot)	1770	1583	5050	0	1770	5085
Flt Permitted	0.950				0.082	
Satd. Flow (perm)	1770	1583	5050	0	153	5085
Satd. Flow (RTOR)		95	9			
Lane Group Flow (vph)	95	95	1952	0	123	641
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Total Split (s)	36.0	36.0	66.0		18.0	84.0
Total Lost Time (s)	5.0	5.0	6.0		5.0	6.0
Act Effct Green (s)	10.3	10.3	43.5		60.6	59.5
Actuated g/C Ratio	0.13	0.13	0.54		0.75	0.73
v/c Ratio	0.43	0.34	0.72		0.38	0.17
Control Delay	42.8	12.4	15.9		10.2	3.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	42.8	12.4	15.9		10.2	3.4
LOS	D	B	B		B	A
Approach Delay	27.6		15.9			4.5
Approach LOS	C		B			A
Queue Length 50th (ft)	45	0	256		13	28
Queue Length 95th (ft)	108	45	354		58	47
Internal Link Dist (ft)	430		382			419
Turn Bay Length (ft)					330	
Base Capacity (vph)	702	685	3864		383	4642
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.14	0.14	0.51		0.32	0.14

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 81.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 13.7

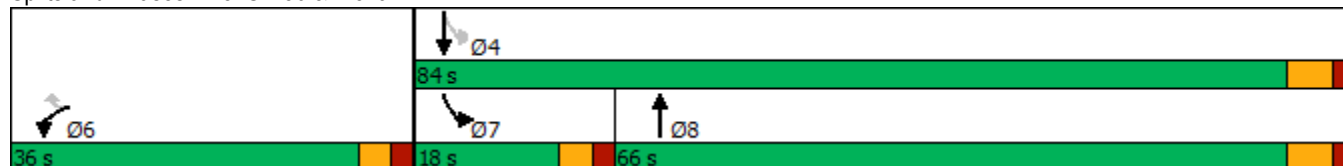
Intersection LOS: B

Intersection Capacity Utilization 59.4%

ICU Level of Service B

Analysis Period (min) 15

























Splits and Phases: 5: SH 86 & Aloha Dr.



Caliber at Terrain
1: Ridge Road/SH 86 & 5th Street

2040 Background Conditions - AM Peak Hour

03/11/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	270	175	60	600	845	525	850	40	255	210	245
Future Volume (vph)	120	270	175	60	600	845	525	850	40	255	210	245
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3514	0	3433	3539	1583
Flt Permitted	0.160			0.573			0.950			0.950		
Satd. Flow (perm)	298	3539	1583	1067	3539	1583	3433	3514	0	3433	3539	1583
Satd. Flow (RTOR)												
Lane Group Flow (vph)	130	293	190	65	652	918	571	967	0	277	228	266
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA		Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		Free	6		Free						Free
Total Split (s)	15.0	29.0		12.0	26.0		22.0	37.0		42.0	57.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Act Effect Green (s)	33.9	25.0	95.5	27.7	20.0	95.5	17.0	31.0		12.9	27.0	95.5
Actuated g/C Ratio	0.35	0.26	1.00	0.29	0.21	1.00	0.18	0.32		0.14	0.28	1.00
v/c Ratio	0.52	0.32	0.12	0.18	0.88	0.58	0.93	0.85		0.60	0.23	0.17
Control Delay	28.7	31.0	0.2	22.0	51.8	1.6	63.5	38.9		44.5	26.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	28.7	31.0	0.2	22.0	51.8	1.6	63.5	38.9		44.5	26.9	0.2
LOS	C	C	A	C	D	A	E	D		D	C	A
Approach Delay		20.9			22.4			48.1			24.0	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	53	78	0	25	204	0	178	287		82	56	0
Queue Length 95th (ft)	100	121	0	56	#321	0	#295	#419		124	86	0
Internal Link Dist (ft)		660			735			640			450	
Turn Bay Length (ft)	350		400	600		465	425			600		
Base Capacity (vph)	260	930	1583	364	742	1583	611	1142		1331	1892	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.50	0.32	0.12	0.18	0.88	0.58	0.93	0.85		0.21	0.12	0.17

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 95.5

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 31.1

Intersection LOS: C

Intersection Capacity Utilization 73.6%

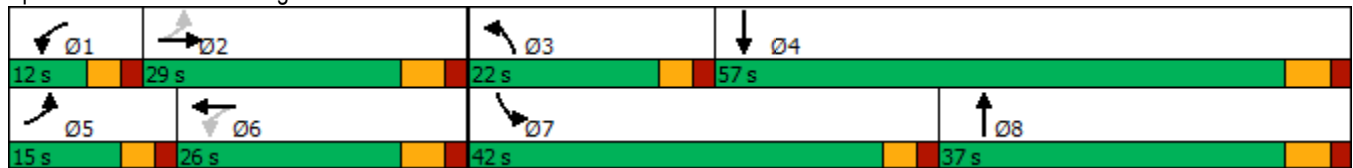
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Ridge Road/SH 86 & 5th Street



Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↑		↑
Traffic Vol, veh/h	0	565	1445	71	0	37
Future Vol, veh/h	0	565	1445	71	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	300	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	614	1571	77	0	40

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 786
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.94
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.32
Pot Cap-1 Maneuver	0	-	- - 0 335
Stage 1	0	-	- - 0 -
Stage 2	0	-	- - 0 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - 335
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -























Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.2
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	335
HCM Lane V/C Ratio	-	-	-	0.12
HCM Control Delay (s)	-	-	-	17.2
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.4

Caliber at Terrain
16: SH 86 & Autumn Sage

2040 Background Conditions - AM Peak Hour

03/11/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	500	8	2	1370	60	38	1	9	105	1	100
Future Volume (vph)	60	500	8	2	1370	60	38	1	9	105	1	100
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1609	0	1770	1585	0
Flt Permitted	0.122			0.449			0.606			0.750		
Satd. Flow (perm)	227	3539	1583	836	3539	1583	1129	1609	0	1397	1585	0
Satd. Flow (RTOR)			64			65		10			109	
Lane Group Flow (vph)	65	543	9	2	1489	65	41	11	0	114	110	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4			8		
Total Split (s)	12.0	81.0	81.0	12.0	81.0	81.0	27.0	27.0		27.0	27.0	
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0		5.0	5.0	
Act Effect Green (s)	87.8	85.5	85.5	83.6	78.2	78.2	14.4	14.4		14.4	14.4	
Actuated g/C Ratio	0.78	0.76	0.76	0.74	0.69	0.69	0.13	0.13		0.13	0.13	
v/c Ratio	0.25	0.20	0.01	0.00	0.61	0.06	0.28	0.05		0.64	0.37	
Control Delay	5.7	5.0	0.0	4.0	11.9	2.1	48.8	22.6		62.9	11.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	5.7	5.0	0.0	4.0	11.9	2.1	48.8	22.6		62.9	11.9	
LOS	A	A	A	A	B	A	D	C		E	B	
Approach Delay		5.0			11.5			43.3			37.9	
Approach LOS		A			B			D			D	
Queue Length 50th (ft)	9	45	0	0	293	0	27	1		79	1	
Queue Length 95th (ft)	23	113	0	2	433	16	62	18		141	51	
Internal Link Dist (ft)		1176			456			340			283	
Turn Bay Length (ft)	580		380	380		390	100			220		
Base Capacity (vph)	272	2678	1213	684	2449	1115	220	321		272	396	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.24	0.20	0.01	0.00	0.61	0.06	0.19	0.03		0.42	0.28	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 113

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 12.9

Intersection LOS: B

Intersection Capacity Utilization 67.9%







ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 16: SH 86 & Autumn Sage



Intersection				
Intersection Delay, s/veh	4.3			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	4	149	37	97
Demand Flow Rate, veh/h	4	152	38	99
Vehicles Circulating, veh/h	121	27	59	25
Vehicles Exiting, veh/h	3	69	66	153
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.7	4.6	3.7	4.1
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	4	152	38	99
Cap Entry Lane, veh/h	1001	1100	1065	1102
Entry HV Adj Factor	0.990	0.980	0.987	0.982
Flow Entry, veh/h	4	149	37	97
Cap Entry, veh/h	991	1078	1051	1082
V/C Ratio	0.004	0.138	0.036	0.090
Control Delay, s/veh	3.7	4.6	3.7	4.1
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	98	98	1230	72	96	1700
Future Volume (vph)	98	98	1230	72	96	1700
Satd. Flow (prot)	1770	1583	5045	0	1770	5085
Flt Permitted	0.950				0.122	
Satd. Flow (perm)	1770	1583	5045	0	227	5085
Satd. Flow (RTOR)		107	11			
Lane Group Flow (vph)	107	107	1415	0	104	1848
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Total Split (s)	36.0	36.0	66.0		18.0	84.0
Total Lost Time (s)	5.0	5.0	6.0		5.0	6.0
Act Effect Green (s)	9.6	9.6	27.7		38.7	37.6
Actuated g/C Ratio	0.16	0.16	0.47		0.66	0.64
v/c Ratio	0.37	0.31	0.59		0.29	0.57
Control Delay	28.8	8.9	13.5		5.8	6.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	28.8	8.9	13.5		5.8	6.6
LOS	C	A	B		A	A
Approach Delay	18.9		13.5			6.6
Approach LOS	B		B			A
Queue Length 50th (ft)	34	0	134		10	106
Queue Length 95th (ft)	89	40	208		27	170
Internal Link Dist (ft)	430		382			419
Turn Bay Length (ft)					330	
Base Capacity (vph)	977	922	4744		506	5085
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.11	0.12	0.30		0.21	0.36

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 58.8

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 10.1

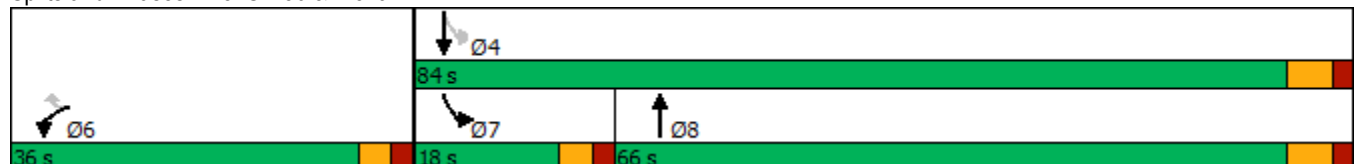
Intersection LOS: B

Intersection Capacity Utilization 49.4%

ICU Level of Service A

Analysis Period (min) 15

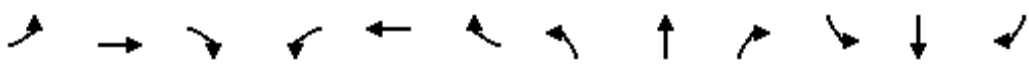
Splits and Phases: 5: SH 86 & Aloha Dr.



Autumn Ridge-Valley View
1: Ridge Road & 5th Street & SH 86

2040 Conditions - AM Peak Hour

03/11/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	585	445	115	290	495	250	630	50	810	870	180
Future Volume (vph)	185	585	445	115	290	495	250	630	50	810	870	180
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3500	0	3433	3539	1583
Flt Permitted	0.419			0.195			0.950			0.950		
Satd. Flow (perm)	780	3539	1583	363	3539	1583	3433	3500	0	3433	3539	1583
Satd. Flow (RTOR)												
Lane Group Flow (vph)	201	636	484	125	315	538	272	739	0	880	946	196
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA		Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		Free	6		Free						Free
Total Split (s)	15.0	33.0		12.0	30.0		24.0	36.0		39.0	51.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Act Effect Green (s)	35.6	24.5	113.6	29.7	21.6	113.6	14.4	27.6		32.1	45.4	113.6
Actuated g/C Ratio	0.31	0.22	1.00	0.26	0.19	1.00	0.13	0.24		0.28	0.40	1.00
v/c Ratio	0.61	0.83	0.31	0.69	0.47	0.34	0.63	0.87		0.91	0.67	0.12
Control Delay	39.0	53.6	0.5	50.8	44.1	0.6	54.6	53.7		53.9	31.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	39.0	53.6	0.5	50.8	44.1	0.6	54.6	53.7		53.9	31.4	0.2
LOS	D	D	A	D	D	A	D	D		D	C	A
Approach Delay		31.9			21.0			53.9			38.2	
Approach LOS		C			C			D			D	
Queue Length 50th (ft)	117	246	0	69	113	0	105	287		339	305	0
Queue Length 95th (ft)	183	316	0	#121	160	0	145	#370		#453	401	0
Internal Link Dist (ft)		660			735			640			450	
Turn Bay Length (ft)	350		400	600		465	425			600		
Base Capacity (vph)	332	849	1583	182	754	1583	579	933		1037	1481	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.61	0.75	0.31	0.69	0.42	0.34	0.47	0.79		0.85	0.64	0.12

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 113.6

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 36.5

Intersection LOS: D

Intersection Capacity Utilization 83.0%

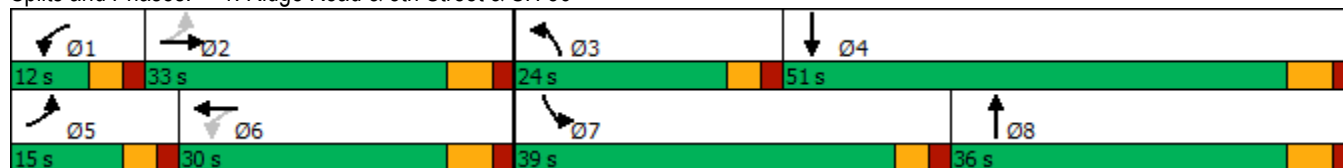
ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Ridge Road & 5th Street & SH 86

























Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Vol, veh/h	0	1445	850	60	0	37
Future Vol, veh/h	0	1445	850	60	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	300	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1571	924	65	0	40
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	462
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	547
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	547
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		12.1		
HCM LOS	B					
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	547		
HCM Lane V/C Ratio	-	-	-	0.074		
HCM Control Delay (s)	-	-	-	12.1		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.2		

Autumn Ridge-Valley View
16: SH 86 & Autumn Sage

2040 Conditions - AM Peak Hour

03/11/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	1210	36	9	700	165	18	1	4	145	1	155
Future Volume (vph)	200	1210	36	9	700	165	18	1	4	145	1	155
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1639	0	1770	1585	0
Flt Permitted	0.950			0.950			0.458			0.754		
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	853	1639	0	1405	1585	0
Satd. Flow (RTOR)			45			179		4			168	
Lane Group Flow (vph)	217	1315	39	10	761	179	20	5	0	158	169	0
Turn Type	custom	NA	Perm	custom	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	5		2	1		6	4			8		
Total Split (s)	34.0	77.0	77.0	10.0	53.0	53.0	33.0	33.0		33.0	33.0	
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Act Effect Green (s)	17.5	72.6	72.6	5.8	52.8	52.8	16.8	16.8		16.8	16.8	
Actuated g/C Ratio	0.17	0.73	0.73	0.06	0.53	0.53	0.17	0.17		0.17	0.17	
v/c Ratio	0.70	0.51	0.03	0.10	0.41	0.19	0.14	0.02		0.67	0.42	
Control Delay	52.0	8.2	2.1	51.1	16.9	3.3	37.8	23.8		53.8	9.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	52.0	8.2	2.1	51.1	16.9	3.3	37.8	23.8		53.8	9.1	
LOS	D	A	A	D	B	A	D	C		D	A	
Approach Delay		14.1			14.7			35.0			30.7	
Approach LOS		B			B			D			C	
Queue Length 50th (ft)	127	145	0	6	142	0	11	1		93	1	
Queue Length 95th (ft)	227	366	12	26	267	40	35	11		176	56	
Internal Link Dist (ft)		1207			419			329			355	
Turn Bay Length (ft)	580		380	380		390	100			220		
Base Capacity (vph)	534	2565	1160	106	1865	919	249	481		410	581	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.41	0.51	0.03	0.09	0.41	0.19	0.08	0.01		0.39	0.29	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 100.1

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 16.4

Intersection LOS: B

Intersection Capacity Utilization 63.4%

ICU Level of Service B








Analysis Period (min) 15

Splits and Phases: 16: SH 86 & Autumn Sage



Intersection				
Intersection Delay, s/veh	4.5			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	5	87	42	184
Demand Flow Rate, veh/h	5	88	42	188
Vehicles Circulating, veh/h	209	22	110	25
Vehicles Exiting, veh/h	4	130	104	85
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.0	4.0	3.9	4.9
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	5	88	42	188
Cap Entry Lane, veh/h	917	1105	1012	1102
Entry HV Adj Factor	0.996	0.988	0.992	0.981
Flow Entry, veh/h	5	87	42	184
Cap Entry, veh/h	913	1093	1004	1081
V/C Ratio	0.005	0.080	0.041	0.171
Control Delay, s/veh	4.0	4.0	3.9	4.9
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	1

APPENDIX F. ANALYSIS WORKSHEETS – BUILD-OUT TOTAL CONDITIONS

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	104	125	945	94	124	315
Future Volume (vph)	104	125	945	94	124	315
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.148	
Satd. Flow (perm)	1770	1583	3539	1583	276	3539
Satd. Flow (RTOR)		136		102		
Lane Group Flow (vph)	113	136	1027	102	135	342
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	6		8		7	4
Permitted Phases		6		8	4	
Total Split (s)	31.0	31.0	45.0	45.0	14.0	59.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	6.0
Act Effect Green (s)	9.7	9.7	24.6	24.6	34.7	33.6
Actuated g/C Ratio	0.18	0.18	0.45	0.45	0.63	0.61
v/c Ratio	0.37	0.35	0.65	0.13	0.33	0.16
Control Delay	27.2	8.3	15.2	3.1	6.1	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.2	8.3	15.2	3.1	6.1	4.5
LOS	C	A	B	A	A	A
Approach Delay	16.9		14.1			5.0
Approach LOS	B		B			A
Queue Length 50th (ft)	35	0	144	0	13	19
Queue Length 95th (ft)	89	43	226	22	35	40
Internal Link Dist (ft)	430		912			419
Turn Bay Length (ft)				280	330	
Base Capacity (vph)	903	874	2599	1189	437	3184
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.16	0.40	0.09	0.31	0.11

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 55.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 12.1

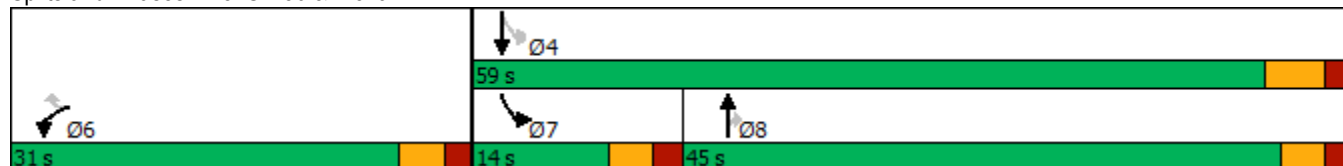
Intersection LOS: B

Intersection Capacity Utilization 51.3%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 5: SH 86 & Aloha Dr.



Caliber at Terrain
1: Ridge Road & 5th Street & SH 86

Build-Out Conditions - AM Peak Hour

03/11/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	165	155	55	455	490	465	485	35	190	125	145
Future Volume (vph)	70	165	155	55	455	490	465	485	35	190	125	145
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.206			0.644			0.468			0.260		
Satd. Flow (perm)	384	1863	1583	1200	1863	1583	872	1863	1583	484	1863	1583
Satd. Flow (RTOR)			236			533			236			236
Lane Group Flow (vph)	76	179	168	60	495	533	505	527	38	207	136	158
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		Free	6		Free	8		Free	4		Free
Total Split (s)	10.0	34.0		10.0	34.0		21.0	34.0		12.0	25.0	
Total Lost Time (s)	4.0	6.5		4.0	6.5		4.0	4.0		4.0	4.0	
Act Effect Green (s)	34.9	27.8	85.1	34.9	27.8	85.1	39.1	26.9	85.1	23.5	17.1	85.1
Actuated g/C Ratio	0.41	0.33	1.00	0.41	0.33	1.00	0.46	0.32	1.00	0.28	0.20	1.00
v/c Ratio	0.30	0.29	0.11	0.11	0.81	0.34	0.82	0.89	0.02	0.81	0.36	0.10
Control Delay	17.7	24.9	0.1	15.0	40.7	0.6	31.8	47.6	0.0	43.7	32.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	24.9	0.1	15.0	40.7	0.6	31.8	47.6	0.0	43.7	32.0	0.1
LOS	B	C	A	B	D	A	C	D	A	D	C	A
Approach Delay		13.8			19.6			38.5			26.8	
Approach LOS		B			B			D			C	
Queue Length 50th (ft)	24	78	0	19	265	0	206	275	0	68	64	0
Queue Length 95th (ft)	50	133	0	42	#440	0	#388	#452	0	#150	115	0
Internal Link Dist (ft)		660			735			640			912	
Turn Bay Length (ft)	350		400	600		465	425			600		
Base Capacity (vph)	256	608	1583	532	608	1583	617	664	1583	256	464	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.29	0.11	0.11	0.81	0.34	0.82	0.79	0.02	0.81	0.29	0.10

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 85.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 26.5

Intersection LOS: C

Intersection Capacity Utilization 79.6%

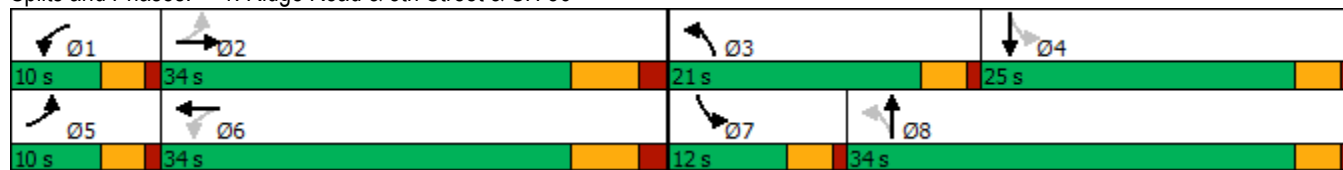
ICU Level of Service D

Analysis Period (min) 15













95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.













Splits and Phases: 1: Ridge Road & 5th Street & SH 86



Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Vol, veh/h	0	390	930	73	0	45
Future Vol, veh/h	0	390	930	73	0	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	300	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	424	1011	79	0	49
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	1011
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	291
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	291
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		19.9		
HCM LOS				C		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	291		
HCM Lane V/C Ratio	-	-	-	0.168		
HCM Control Delay (s)	-	-	-	19.9		
HCM Lane LOS	-	-	-	C		
HCM 95th %tile Q(veh)	-	-	-	0.6		

Intersection												
Int Delay, s/veh	5.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	385	8	5	990	10	38	1	9	25	1	60
Future Vol, veh/h	20	385	8	5	990	10	38	1	9	25	1	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	580	-	380	380	-	390	100	-	-	220	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	418	9	5	1076	11	41	1	10	27	1	65
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1087	0	0	427	0	0	1587	1559	418	1558	1557	1076
Stage 1	-	-	-	-	-	-	462	462	-	1086	1086	-
Stage 2	-	-	-	-	-	-	1125	1097	-	472	471	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	642	-	-	1132	-	-	87	112	635	91	113	267
Stage 1	-	-	-	-	-	-	580	565	-	262	292	-
Stage 2	-	-	-	-	-	-	249	289	-	573	560	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	642	-	-	1132	-	-	63	108	635	86	109	267
Mov Cap-2 Maneuver	-	-	-	-	-	-	63	108	-	86	109	-
Stage 1	-	-	-	-	-	-	560	546	-	253	291	-
Stage 2	-	-	-	-	-	-	187	288	-	544	541	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0			110.4			35.5		
HCM LOS							F			E		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	63	427	642	-	-	1132	-	-	86	261		
HCM Lane V/C Ratio	0.656	0.025	0.034	-	-	0.005	-	-	0.316	0.254		
HCM Control Delay (s)	135.9	13.7	10.8	-	-	8.2	-	-	65.1	23.4		
HCM Lane LOS	F	B	B	-	-	A	-	-	F	C		
HCM 95th %tile Q(veh)	2.8	0.1	0.1	-	-	0	-	-	1.2	1		

Intersection				
Intersection Delay, s/veh	4.3			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	26	152	43	102
Demand Flow Rate, veh/h	26	155	44	104
Vehicles Circulating, veh/h	121	38	65	32
Vehicles Exiting, veh/h	15	71	82	160
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.8	4.6	3.8	4.2
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	26	155	44	104
Cap Entry Lane, veh/h	1001	1088	1059	1094
Entry HV Adj Factor	0.996	0.980	0.988	0.982
Flow Entry, veh/h	26	152	43	102
Cap Entry, veh/h	997	1066	1046	1075
V/C Ratio	0.026	0.142	0.042	0.095
Control Delay, s/veh	3.8	4.6	3.8	4.2
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	108	119	680	100	133	940
Future Volume (vph)	108	119	680	100	133	940
Satd. Flow (prot)	1770	1583	3539	1583	1770	3539
Flt Permitted	0.950				0.269	
Satd. Flow (perm)	1770	1583	3539	1583	501	3539
Satd. Flow (RTOR)		129		109		
Lane Group Flow (vph)	117	129	739	109	145	1022
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		2	6	
Total Split (s)	32.0	32.0	42.0	42.0	16.0	58.0
Total Lost Time (s)	5.0	5.0	6.0	6.0	4.5	6.0
Act Effect Green (s)	9.2	9.2	20.8	20.8	31.8	30.3
Actuated g/C Ratio	0.18	0.18	0.41	0.41	0.63	0.60
v/c Ratio	0.37	0.33	0.51	0.15	0.29	0.48
Control Delay	23.1	7.5	14.1	3.7	5.7	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.1	7.5	14.1	3.7	5.7	6.8
LOS	C	A	B	A	A	A
Approach Delay	14.9		12.7			6.7
Approach LOS	B		B			A
Queue Length 50th (ft)	30	0	87	0	14	73
Queue Length 95th (ft)	80	38	156	25	37	134
Internal Link Dist (ft)	430		912			419
Turn Bay Length (ft)				280	330	
Base Capacity (vph)	963	920	2568	1178	608	3379
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.14	0.29	0.09	0.24	0.30

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 50.7

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 9.8

Intersection LOS: A

Intersection Capacity Utilization 45.1%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 5: SH 86 & Aloha Dr.



Caliber at Terrain
1: Ridge Road & 5th Street & SH 86

Build-Out Conditions - PM Peak Hour

03/11/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	395	395	105	220	305	220	355	45	515	485	105
Future Volume (vph)	120	395	395	105	220	305	220	355	45	515	485	105
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.452			0.197			0.356			0.165		
Satd. Flow (perm)	842	1863	1583	367	1863	1583	663	1863	1583	307	1863	1583
Satd. Flow (RTOR)			429			332			236			236
Lane Group Flow (vph)	130	429	429	114	239	332	239	386	49	560	527	114
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		Free	6		Free	8		Free	4		Free
Total Split (s)	12.0	26.0		12.0	26.0		13.0	25.0		27.0	39.0	
Total Lost Time (s)	4.0	6.5		4.0	6.5		4.0	4.0		4.0	4.0	
Act Effect Green (s)	30.6	21.8	89.1	29.7	19.5	89.1	29.2	20.3	89.1	47.3	34.4	89.1
Actuated g/C Ratio	0.34	0.24	1.00	0.33	0.22	1.00	0.33	0.23	1.00	0.53	0.39	1.00
v/c Ratio	0.35	0.94	0.27	0.47	0.59	0.21	0.73	0.91	0.03	1.04	0.73	0.07
Control Delay	21.8	67.2	0.4	25.5	38.2	0.3	29.4	61.4	0.0	73.5	30.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.8	67.2	0.4	25.5	38.2	0.3	29.4	61.4	0.0	73.5	30.7	0.1
LOS	C	E	A	C	D	A	C	E	A	E	C	A
Approach Delay		32.2			17.7			45.6			47.8	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	49	~272	0	42	123	0	69	213	0	~295	250	0
Queue Length 95th (ft)	89	#452	0	80	200	0	#135	#375	0	#497	372	0
Internal Link Dist (ft)		660			735			640			912	
Turn Bay Length (ft)	350		400	600		465	425			600		
Base Capacity (vph)	372	455	1583	250	407	1583	329	439	1583	540	732	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.94	0.27	0.46	0.59	0.21	0.73	0.88	0.03	1.04	0.72	0.07

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 89.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 37.2

Intersection LOS: D

Intersection Capacity Utilization 89.2%

ICU Level of Service E

Analysis Period (min) 15

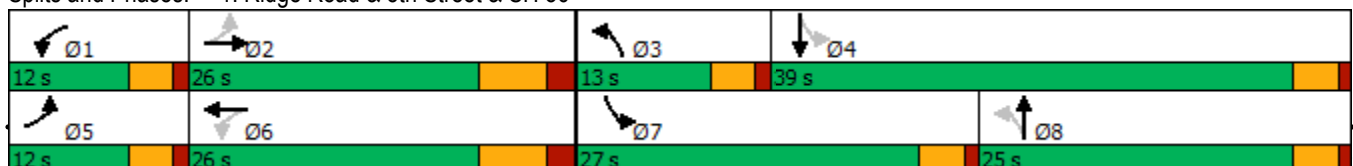
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.











95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Ridge Road & 5th Street & SH 86



Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↗		↗
Traffic Vol, veh/h	0	950	575	64	0	45
Future Vol, veh/h	0	950	575	64	0	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	300	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1033	625	70	0	49
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	625
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	485
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	485
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		13.3		
HCM LOS				B		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	485		
HCM Lane V/C Ratio	-	-	-	0.101		
HCM Control Delay (s)	-	-	-	13.3		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.3		

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	975	36	10	600	20	18	1	4	15	1	40
Future Vol, veh/h	60	975	36	10	600	20	18	1	4	15	1	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	580	-	380	380	-	390	100	-	-	220	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	1060	39	11	652	22	20	1	4	16	1	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	674	0	0	1099	0	0	1897	1886	1060	1886	1903	652
Stage 1	-	-	-	-	-	-	1190	1190	-	674	674	-
Stage 2	-	-	-	-	-	-	707	696	-	1212	1229	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	917	-	-	635	-	-	53	71	272	54	69	468
Stage 1	-	-	-	-	-	-	229	261	-	444	454	-
Stage 2	-	-	-	-	-	-	426	443	-	222	250	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	917	-	-	635	-	-	44	65	272	49	63	468
Mov Cap-2 Maneuver	-	-	-	-	-	-	44	65	-	49	63	-
Stage 1	-	-	-	-	-	-	213	242	-	412	446	-
Stage 2	-	-	-	-	-	-	379	435	-	202	232	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.2			116.1			40.8		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	44	166	917	-	-	635	-	-	49	405
HCM Lane V/C Ratio	0.445	0.033	0.071	-	-	0.017	-	-	0.333	0.11
HCM Control Delay (s)	140.7	27.4	9.2	-	-	10.8	-	-	111.5	15
HCM Lane LOS	F	D	A	-	-	B	-	-	F	C
HCM 95th %tile Q(veh)	1.6	0.1	0.2	-	-	0.1	-	-	1.2	0.4

Intersection				
Intersection Delay, s/veh	4.6			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	92	55	196
Demand Flow Rate, veh/h	21	93	55	200
Vehicles Circulating, veh/h	217	38	121	38
Vehicles Exiting, veh/h	21	138	117	93
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.2	4.1	4.1	5.0
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	21	93	55	200
Cap Entry Lane, veh/h	910	1088	1001	1088
Entry HV Adj Factor	0.995	0.988	0.992	0.982
Flow Entry, veh/h	21	92	55	196
Cap Entry, veh/h	905	1075	993	1068
V/C Ratio	0.023	0.085	0.055	0.184
Control Delay, s/veh	4.2	4.1	4.1	5.0
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	1

APPENDIX G. ANALYSIS WORKSHEETS – YEAR 2040 TOTAL CONDITIONS

	↖	↗	↑	↘	↙	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↑↑↑		↘	↑↑↑
Traffic Volume (vph)	104	125	1710	94	124	590
Future Volume (vph)	104	125	1710	94	124	590
Satd. Flow (prot)	1770	1583	5045	0	1770	5085
Flt Permitted	0.950				0.080	
Satd. Flow (perm)	1770	1583	5045	0	149	5085
Satd. Flow (RTOR)		136	10			
Lane Group Flow (vph)	113	136	1961	0	135	641
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Total Split (s)	36.0	36.0	66.0		18.0	84.0
Total Lost Time (s)	5.0	5.0	6.0		5.0	6.0
Act Effect Green (s)	11.2	11.2	44.4		61.9	60.8
Actuated g/C Ratio	0.13	0.13	0.53		0.74	0.73
v/c Ratio	0.47	0.41	0.73		0.41	0.17
Control Delay	43.9	11.3	16.7		12.9	3.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	43.9	11.3	16.7		12.9	3.7
LOS	D	B	B		B	A
Approach Delay	26.1		16.7			5.3
Approach LOS	C		B			A
Queue Length 50th (ft)	56	0	273		16	30
Queue Length 95th (ft)	126	53	372		74	51
Internal Link Dist (ft)	430		382			419
Turn Bay Length (ft)					330	
Base Capacity (vph)	682	694	3769		372	4636
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.17	0.20	0.52		0.36	0.14

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 83.5

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 14.5

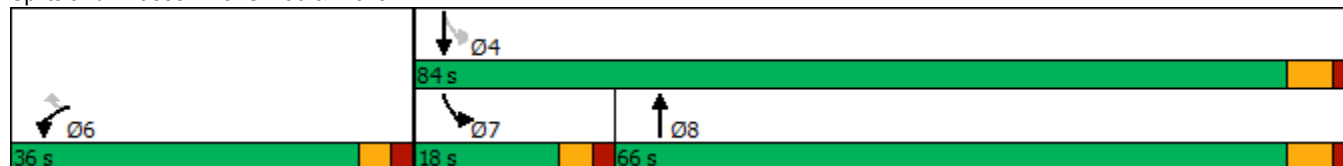
Intersection LOS: B

Intersection Capacity Utilization 61.1%

ICU Level of Service B

Analysis Period (min) 15

























Splits and Phases: 5: SH 86 & Aloha Dr.



Caliber at Terrain
1: Ridge Road & 5th Street & SH 86

2040 Build-Out Conditions - AM Peak Hour

03/11/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	270	175	65	610	845	525	855	40	255	220	255
Future Volume (vph)	125	270	175	65	610	845	525	855	40	255	220	255
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3514	0	3433	3539	1583
Flt Permitted	0.159			0.573			0.950			0.950		
Satd. Flow (perm)	296	3539	1583	1067	3539	1583	3433	3514	0	3433	3539	1583
Satd. Flow (RTOR)												
Lane Group Flow (vph)	136	293	190	71	663	918	571	972	0	277	239	277
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA		Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		Free	6		Free						Free
Total Split (s)	15.0	29.0		12.0	26.0		22.0	37.0		42.0	57.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Act Effect Green (s)	34.0	25.1	95.6	27.8	20.0	95.6	17.0	31.0		12.9	27.0	95.6
Actuated g/C Ratio	0.36	0.26	1.00	0.29	0.21	1.00	0.18	0.32		0.13	0.28	1.00
v/c Ratio	0.54	0.32	0.12	0.20	0.89	0.58	0.93	0.85		0.60	0.24	0.17
Control Delay	29.3	31.0	0.2	22.2	53.7	1.6	63.8	39.4		44.5	27.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	29.3	31.0	0.2	22.2	53.7	1.6	63.8	39.4		44.5	27.1	0.2
LOS	C	C	A	C	D	A	E	D		D	C	A
Approach Delay		21.1			23.4			48.4			23.8	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	55	78	0	28	208	0	178	290		82	58	0
Queue Length 95th (ft)	103	121	0	60	#328	0	#295	#422		124	90	0
Internal Link Dist (ft)		660			735			640			450	
Turn Bay Length (ft)	350		400	600		465	425			600		
Base Capacity (vph)	259	931	1583	364	741	1583	611	1140		1330	1889	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.53	0.31	0.12	0.20	0.89	0.58	0.93	0.85		0.21	0.13	0.17

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 95.6

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 31.5

Intersection LOS: C

Intersection Capacity Utilization 74.3%

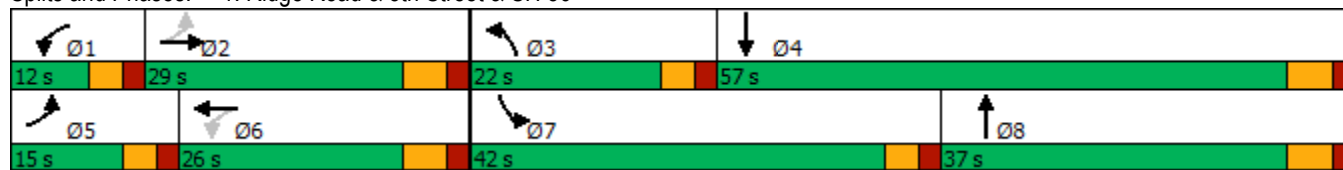
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Ridge Road & 5th Street & SH 86

























Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Vol, veh/h	0	570	1450	73	0	48
Future Vol, veh/h	0	570	1450	73	0	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	-	-	-	300	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	620	1576	79	0	52
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	788
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	334
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	334
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		17.8		
HCM LOS				C		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	334		
HCM Lane V/C Ratio	-	-	-	0.156		
HCM Control Delay (s)	-	-	-	17.8		
HCM Lane LOS	-	-	-	C		
HCM 95th %tile Q(veh)	-	-	-	0.5		

Caliber at Terrain
16: SH 86 & Autumn Sage

2040 Build-Out Conditions - AM Peak Hour

03/11/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	500	8	2	1420	60	38	1	9	115	1	105
Future Volume (vph)	65	500	8	2	1420	60	38	1	9	115	1	105
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1609	0	1770	1585	0
Flt Permitted	0.111			0.449			0.595			0.750		
Satd. Flow (perm)	207	3539	1583	836	3539	1583	1108	1609	0	1397	1585	0
Satd. Flow (RTOR)			64			65		10			114	
Lane Group Flow (vph)	71	543	9	2	1543	65	41	11	0	125	115	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases	2		2	6		6	4			8		
Total Split (s)	12.0	81.0	81.0	12.0	81.0	81.0	27.0	27.0		27.0	27.0	
Total Lost Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	5.0		5.0	5.0	
Act Effect Green (s)	87.3	85.0	85.0	83.1	77.7	77.7	15.2	15.2		15.2	15.2	
Actuated g/C Ratio	0.77	0.75	0.75	0.73	0.69	0.69	0.13	0.13		0.13	0.13	
v/c Ratio	0.28	0.20	0.01	0.00	0.64	0.06	0.28	0.05		0.66	0.37	
Control Delay	6.5	5.3	0.0	4.0	12.8	2.2	48.2	22.4		63.8	11.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	6.5	5.3	0.0	4.0	12.8	2.2	48.2	22.4		63.8	11.4	
LOS	A	A	A	A	B	A	D	C		E	B	
Approach Delay		5.4			12.4			42.7			38.7	
Approach LOS		A			B			D			D	
Queue Length 50th (ft)	10	47	0	0	323	0	27	1		88	1	
Queue Length 95th (ft)	26	115	0	3	470	17	62	18		152	52	
Internal Link Dist (ft)		1176			456			340			283	
Turn Bay Length (ft)	580		380	380		390	100			220		
Base Capacity (vph)	256	2655	1203	679	2426	1105	215	320		271	400	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.28	0.20	0.01	0.00	0.64	0.06	0.19	0.03		0.46	0.29	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 113.3

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 13.8

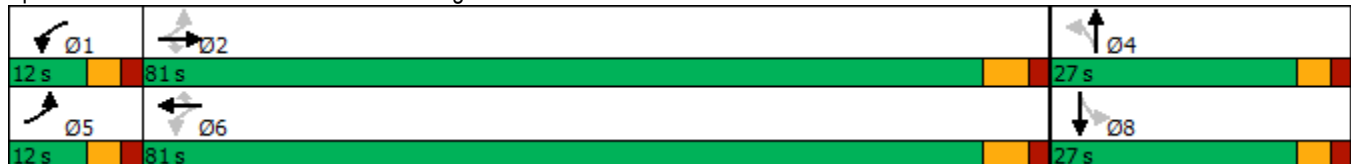
Intersection LOS: B

Intersection Capacity Utilization 69.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 16: SH 86 & Autumn Sage



Intersection				
Intersection Delay, s/veh	4.3			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	26	152	43	102
Demand Flow Rate, veh/h	26	155	44	104
Vehicles Circulating, veh/h	121	38	65	32
Vehicles Exiting, veh/h	15	71	82	160
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.8	4.6	3.8	4.2
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	26	155	44	104
Cap Entry Lane, veh/h	1001	1088	1059	1094
Entry HV Adj Factor	0.996	0.980	0.988	0.982
Flow Entry, veh/h	26	152	43	102
Cap Entry, veh/h	997	1066	1046	1075
V/C Ratio	0.026	0.142	0.042	0.095
Control Delay, s/veh	3.8	4.6	3.8	4.2
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	0

	↖	↗	↑	↘	↙	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↑↑↑		↘	↑↑↑
Traffic Volume (vph)	108	119	1230	100	133	1700
Future Volume (vph)	108	119	1230	100	133	1700
Satd. Flow (prot)	1770	1583	5029	0	1770	5085
Flt Permitted	0.950				0.120	
Satd. Flow (perm)	1770	1583	5029	0	224	5085
Satd. Flow (RTOR)		129	16			
Lane Group Flow (vph)	117	129	1446	0	145	1848
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	6		8		7	4
Permitted Phases		6			4	
Total Split (s)	36.0	36.0	66.0		18.0	84.0
Total Lost Time (s)	5.0	5.0	6.0		5.0	6.0
Act Effect Green (s)	10.2	10.2	28.0		43.4	42.4
Actuated g/C Ratio	0.16	0.16	0.44		0.68	0.66
v/c Ratio	0.42	0.36	0.65		0.39	0.55
Control Delay	31.5	9.2	15.7		7.8	6.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	31.5	9.2	15.7		7.8	6.4
LOS	C	A	B		A	A
Approach Delay	19.8		15.7			6.5
Approach LOS	B		B			A
Queue Length 50th (ft)	41	0	147		15	110
Queue Length 95th (ft)	103	45	237		47	178
Internal Link Dist (ft)	430		382			419
Turn Bay Length (ft)					330	
Base Capacity (vph)	887	857	4584		477	5025
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.13	0.15	0.32		0.30	0.37

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 63.9

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 11.0

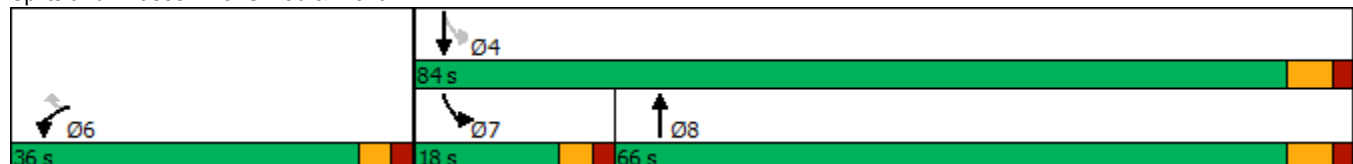
Intersection LOS: B

Intersection Capacity Utilization 52.7%

ICU Level of Service A

Analysis Period (min) 15

























Splits and Phases: 5: SH 86 & Aloha Dr.



Autumn Ridge-Valley View
1: Ridge Road & 5th Street & SH 86

2040 Conditions - PM Peak Hour

03/11/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	590	445	120	295	495	250	640	50	810	875	185
Future Volume (vph)	205	590	445	120	295	495	250	640	50	810	875	185
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	3433	3500	0	3433	3539	1583
Flt Permitted	0.409			0.189			0.950			0.950		
Satd. Flow (perm)	762	3539	1583	352	3539	1583	3433	3500	0	3433	3539	1583
Satd. Flow (RTOR)												
Lane Group Flow (vph)	223	641	484	130	321	538	272	750	0	880	951	201
Turn Type	pm+pt	NA	Free	pm+pt	NA	Free	Prot	NA		Prot	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		Free	6		Free						Free
Total Split (s)	15.0	33.0		12.0	30.0		24.0	36.0		39.0	51.0	
Total Lost Time (s)	5.0	6.0		5.0	6.0		5.0	6.0		5.0	6.0	
Act Effect Green (s)	35.8	24.7	114.3	29.8	21.7	114.3	14.4	28.1		32.2	46.0	114.3
Actuated g/C Ratio	0.31	0.22	1.00	0.26	0.19	1.00	0.13	0.25		0.28	0.40	1.00
v/c Ratio	0.68	0.84	0.31	0.73	0.48	0.34	0.63	0.87		0.91	0.67	0.13
Control Delay	43.0	54.2	0.5	54.8	44.4	0.6	55.0	54.0		54.4	31.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	43.0	54.2	0.5	54.8	44.4	0.6	55.0	54.0		54.4	31.4	0.2
LOS	D	D	A	D	D	A	D	D		D	C	A
Approach Delay		33.1			21.9			54.3			38.3	
Approach LOS		C			C			D			D	
Queue Length 50th (ft)	131	248	0	72	116	0	105	293		339	307	0
Queue Length 95th (ft)	202	318	0	#135	162	0	145	#390		#453	404	0
Internal Link Dist (ft)		660			735			640			450	
Turn Bay Length (ft)	350		400	600		465	425			600		
Base Capacity (vph)	327	842	1583	179	748	1583	575	926		1029	1474	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.68	0.76	0.31	0.73	0.43	0.34	0.47	0.81		0.86	0.65	0.13

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 114.3

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 37.0

Intersection LOS: D

Intersection Capacity Utilization 83.7%

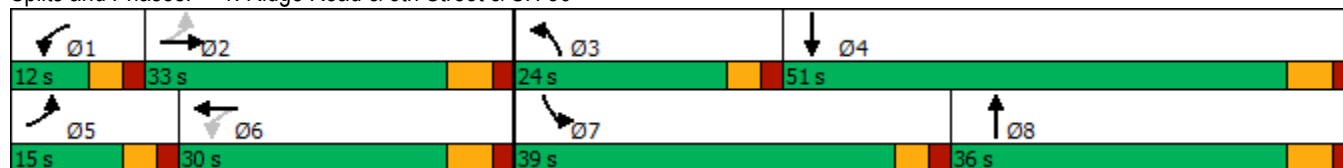
ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Ridge Road & 5th Street & SH 86

























Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Vol, veh/h	0	1450	855	64	0	45
Future Vol, veh/h	0	1450	855	64	0	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	300	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1576	929	70	0	49
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	465
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	544
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	544
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		12.3		
HCM LOS				B		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	544		
HCM Lane V/C Ratio	-	-	-	0.09		
HCM Control Delay (s)	-	-	-	12.3		
HCM Lane LOS	-	-	-	B		
HCM 95th %tile Q(veh)	-	-	-	0.3		

Autumn Ridge-Valley View
16: SH 86 & Autumn Sage

2040 Conditions - PM Peak Hour

03/11/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	1210	36	9	755	170	18	1	4	160	1	160
Future Volume (vph)	205	1210	36	9	755	170	18	1	4	160	1	160
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1639	0	1770	1585	0
Flt Permitted	0.342			0.950			0.456			0.754		
Satd. Flow (perm)	637	3539	1583	1770	3539	1583	849	1639	0	1405	1585	0
Satd. Flow (RTOR)			45			185		4			174	
Lane Group Flow (vph)	223	1315	39	10	821	185	20	5	0	174	175	0
Turn Type	Perm	NA	Perm	custom	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2		2	1		6	4			8		
Total Split (s)	77.0	77.0	77.0	10.0	53.0	53.0	33.0	33.0		33.0	33.0	
Total Lost Time (s)	5.0	5.0	5.0	4.0	5.0	5.0	4.0	4.0		4.0	4.0	
Act Effct Green (s)	73.1	73.1	73.1	5.8	74.8	74.8	18.2	18.2		18.2	18.2	
Actuated g/C Ratio	0.72	0.72	0.72	0.06	0.73	0.73	0.18	0.18		0.18	0.18	
v/c Ratio	0.49	0.52	0.03	0.10	0.32	0.15	0.13	0.02		0.70	0.41	
Control Delay	13.5	8.9	2.2	52.2	5.7	1.2	36.9	23.4		54.3	8.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	13.5	8.9	2.2	52.2	5.7	1.2	36.9	23.4		54.3	8.6	
LOS	B	A	A	D	A	A	D	C		D	A	
Approach Delay		9.4			5.3			34.2			31.4	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	48	155	0	6	79	0	11	1		104	1	
Queue Length 95th (ft)	190	390	12	26	156	22	34	11		192	57	
Internal Link Dist (ft)		1207			419			329			355	
Turn Bay Length (ft)	580		380	380		390	100			220		
Base Capacity (vph)	456	2534	1146	105	2868	1318	243	472		402	578	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.49	0.52	0.03	0.10	0.29	0.14	0.08	0.01		0.43	0.30	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 102

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 10.8

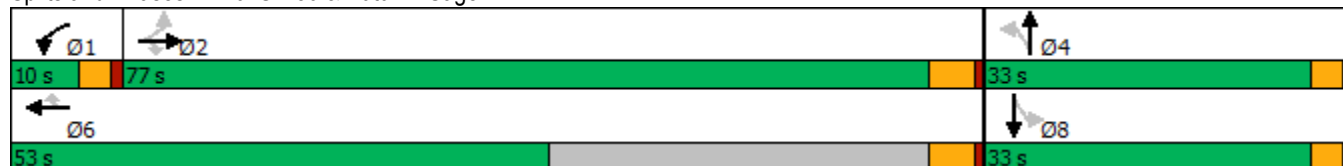
Intersection LOS: B

Intersection Capacity Utilization 64.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 16: SH 86 & Autumn Sage



Intersection				
Intersection Delay, s/veh	4.6			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	21	92	55	196
Demand Flow Rate, veh/h	21	93	55	200
Vehicles Circulating, veh/h	217	38	121	38
Vehicles Exiting, veh/h	21	138	117	93
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	4.2	4.1	4.1	5.0
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	21	93	55	200
Cap Entry Lane, veh/h	910	1088	1001	1088
Entry HV Adj Factor	0.995	0.988	0.992	0.982
Flow Entry, veh/h	21	92	55	196
Cap Entry, veh/h	905	1075	993	1068
V/C Ratio	0.023	0.085	0.055	0.184
Control Delay, s/veh	4.2	4.1	4.1	5.0
LOS	A	A	A	A
95th %tile Queue, veh	0	0	0	1