Transportation Impact Study for the Maverik Gas Station Project

Prepared for the City of Williams

Submitted by
W-Trans

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Executive Summary

The Maverik Gas Station Project would be located on an empty parcel east of I-5 and west of Husted Road in the City of Williams. The proposed project would consist of a 5,982 square foot convenience market, 14 fueling positions for passenger vehicles (seven dispensers), and six fueling positions for commercial vehicles (five dispensers). It would be expected to generate a total of 7,676 daily trips, including 546 trips during the a.m. peak hour and 472 trips during the p.m. peak hour. After taking into consideration the trips that would be diverted from I-5, it is anticipated that the project would generate 229 daily primary trips, with 10 during the a.m. peak hour and 14 during the p.m. peak hour.

Pedestrian, bicycle, and transit facilities within the project study area do not exist but are considered adequate due to the rural location and type of project. Bicycle facilities will be provided within the study area upon completion of the planned Class II bicycle lanes on Husted Road and Frontage Road. The applicant should work with City staff and dedicate right-of-way if necessary to accommodate these planned future improvements.

The project would be expected to have a less-than-significant impact on vehicle miles traveled (VMT) since the project would screen out as a local retail and convenience use.

Vehicles would access the project site via two driveways. One driveway would be located on the west side of Husted Road and the other would be located on the southwest side of Frontage Road, northwest of the existing oil and gas company driveway. Semi-trucks would be required to access the site via the Frontage Road driveway to reach the truck fueling positions. Sight distances along Husted Road and Frontage Road are adequate for entering and exiting drivers. Care should be taken during the design of frontage improvements to ensure that vertical elements are not placed in the vision triangle where they would block sight lines.

Maximum queues are expected to extend beyond existing storage lengths in the southbound left-turn lane at Husted Road/I-5 South Ramps under Future and Future plus Project p.m. peak hour conditions. However, the proposed project would have a less-than-significant impact on queuing since the storage would be exceeded without project traffic.

As part of the project, Frontage Road would be widened, and a left-turn lane would be constructed at the project driveway and the Husted Road intersection along with a center two-way left-turn lane between the driveway and the intersection. While a left-turn lane would not be warranted on Husted Road at the project driveway under Existing plus Project or Baseline plus Project volumes, City staff has indicated that they will monitor access and may decide to limit access to right turns both in and out in the future should conditions warrant it.

Proposed site access and on-site circulation are anticipated to function acceptably with the incorporation of applicable design standards and the project is expected to have a less-than-significant impact on emergency access and emergency response times.

The study intersections are expected to operate at acceptable Levels of Service with and without the addition of project trips. Therefore, the project's effect on operations would be considered acceptable.

Introduction

This report presents an analysis of the potential transportation impacts and operational effects that would be associated with development of a proposed 5,982 square foot gas station and convenience market on a vacant parcel east of I-5 and west of Husted Road in the City of Williams. The transportation study was completed in accordance with the criteria established by the City of Williams, reflects a scope of work approved by City staff, and is consistent with standard traffic engineering techniques.

Prelude

The purpose of a transportation impact study (TIS) is to provide City staff and policy makers with data that they can use to make an informed decision regarding the potential transportation impacts of a proposed project, and any associated improvements that would be required to mitigate these impacts to an acceptable level under the California Environmental Quality Act (CEQA), the City's General Plan, or other policies. This report provides an analysis of those items that are identified as areas of environmental concern under CEQA and that, if significant, require an Environmental Impact Report (EIR). Impacts associated with access for pedestrians, bicyclists, and to transit; the vehicle miles traveled (VMT) generated by the project; potential safety concerns; and emergency access are addressed in the context of the CEQA criteria. While no longer a part of the CEQA review process, vehicular traffic service levels at key intersections were evaluated for consistency with General Plan policies by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on anticipated travel patterns specific to the proposed project, then analyzing the effect the new traffic would be expected to have on the study intersections and need for improvements to maintain acceptable operation. Adequacy of the proposed parking supply was also addressed as a policy issue.

Applied Standards and Criteria

The report is organized to provide background data that supports the various aspects of the analysis, followed by the assessment of CEQA issues and then the evaluation of policy-related issues. The CEQA criteria evaluated are as follows.

Would the project:

a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?
b. Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
d. Result in inadequate emergency access?

Project Profile

The proposed Maverik Gas Station would be located on an empty parcel east of I-5 and west of Husted Road in the City of Williams. The project would consist of a 5,982 square foot convenience market, 14 fueling positions for passenger vehicles (seven dispensers), and six fueling positions for commercial vehicles (five dispensers). As part of the project, two new driveways would be constructed, one each on Frontage Road and Husted Road. The location of the project site is shown in Figure 1.

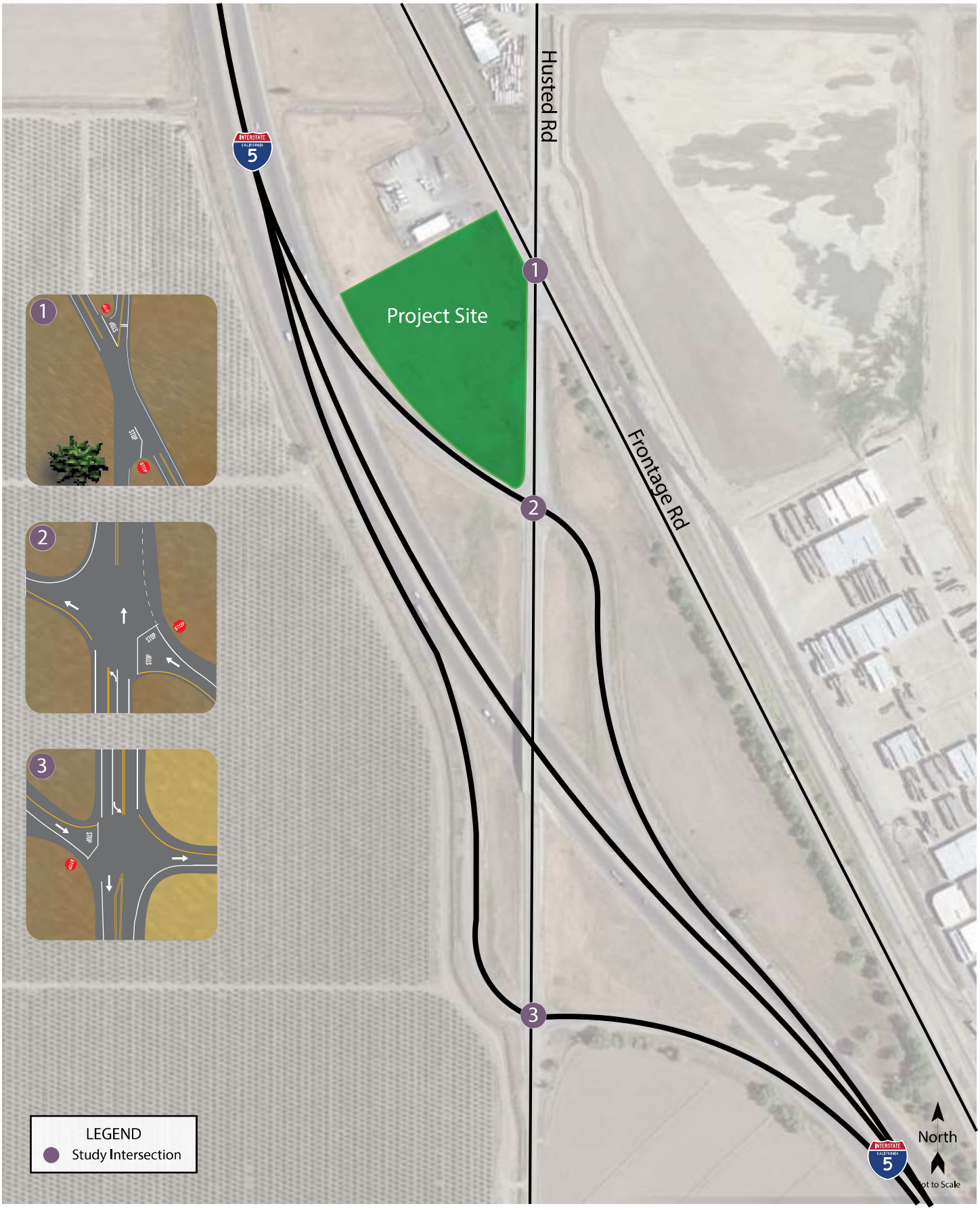

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Figure 1 – Study Area and Existing Lane Configurations

Transportation Setting

Study Area and Periods

The study area varies depending on the topic. For pedestrian trips it consists of all streets within a half-mile of the project site that would lie along primary routes of pedestrian travel, or those leading to nearby generators or attractors. For bicycle trips it consists of all streets within one mile of the project site that would lie along primary routes of bicycle travel. For the safety and operational analyses, the study area was selected with input from City and Caltrans staff and consists of the following three intersections:

1. Husted Road/Frontage Road
2. Husted Road/I-5 North Ramps
3. Husted Road/I-5 South Ramps

Operating conditions during the weekday a.m. and p.m. peak periods were evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute. Multimodal traffic count data was collected at the study intersections on February 22, 2023, during typical traffic conditions and while local schools were in session.

Study Intersections

While I-5 generally runs in a north-south alignment, due to curvature in the study area it intersects Husted Road, which also runs north-south, such that the ramps are oriented east-west. Similarly, Frontage Road runs on a skewed northwest-southeast alignment, and these approaches were considered to be east-west for the purposes of this analysis.

Husted Road/Frontage Road is a four-legged intersection with stop controls on the northbound and southbound Husted Road approaches.

Husted Road/I-5 North Ramps is a four-legged intersection with the west leg being the I-5 northbound on-ramp and the east leg being the off-ramp. The westbound stop-controlled approach is flared and provides adequate space for vehicles turning right queue up adjacent to those waiting to continue straight or turn left.

Husted Road/I-5 South Ramps is stop-controlled on the eastbound I-5 South off-ramp approach, which is flared and provides space for vehicles attempting to make a right turn onto Husted Road queue up beside vehicles turning left. The east leg is an on-ramp to I-5 South, which curves to the south as it merges with I-5.

The locations of the study intersections and the existing lane configurations and controls are shown in Figure 1.

Study Roadways

Husted Road runs north-south and consists of two approximately 15-foot travel lanes near the project site. The roadway is classified as a minor arterial roadway in the City's General Plan and has a posted speed limit of 45 miles per hour (mph). Based on traffic data collected in February 2023, the section of Husted Road between the I-5 North Ramps and Frontage Road has an average daily traffic (ADT) volume of 1,420 vehicles.

Frontage Road is classified as a collector street and runs northwest-southeast between I-5 and the southern City limits. Along the project frontage, this roadway consists of two 12-foot travel lanes, with centerline and edge line

striping. The roadway has a posted speed limit of 55 mph. Based on traffic data collected in February 2023, Frontage Road has an ADT volume of about 1,710 vehicles to the west of Husted Road.

Collision History

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue in the vicinity of the project site. Collision rates were calculated based on records available from the California Highway Patrol (CHP) as published in their Statewide Integrated Traffic Records System (SWITRS) reports. The most current five-year period available is January 1, 2018, through December 31, 2022.

As presented in Table 1, the calculated collision rates for the study intersections were compared to average collision rates for similar facilities statewide, as indicated in *2019 Collision Data on California State Highways*, California Department of Transportation (Caltrans). These average rates statewide are for intersections in the same environment (urban, suburban, or rural), with the same number of approaches (three or four), and the same controls (all-way stop, two-way stop, or traffic signal). The study intersections were compared to statewide average rates for side-street stop-controlled intersections in an urban environment. All three study intersections experienced crash rates above the statewide averages, so the records were further reviewed and detailed below. The collision rate calculations are provided in Appendix A.

Table 1 – Collision Rates for the Study Intersections

Study Intersection	Number of Collisions (2018-2022)	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)
1. Husted Rd/Frontage Rd	1	**0.20**	0.14
2. Husted Rd/I-5 North Ramps	2	**0.84**	0.14
3. Husted Rd/I-5 South Ramps	2	**1.69**	0.14

Note: c/mve = collisions per million vehicles entering; **Bold** text = rate is higher than statewide average

The single collision at Husted Road/Frontage Road involved a fixed object and was attributed to driving under the influence (DUI). Given that only one collision occurred during the five-year period as well as there having been no injuries, no remedial action is recommended.

At Husted Road/1-5 North Ramps, both crashes occurred south of the intersection with all involved parties traveling northbound. One collision was a rear-end crash due to unsafe speed, while the other was a sideswipe collision attributed to (DUI). Given the limited data points available and lack of similarities between the two collisions as well as there having been no injuries, no remedial action is suggested despite the above-average crash rate.

While both collisions that occurred at Husted Road/I-5 South Ramps were hit-object collisions, one occurred on the west leg off-ramp approach and was attributed to improper turning and the other collision occurred on the south leg due to DUI. Again, given the limited data points, no trends could be determined and generally two crashes within a five-year period are not indicative of a safety issue. The primary reason for the crash rate being above the statewide average rate is due to the low vehicle volumes at the intersection so no remedial actions appear necessary.

Project Data

The proposed project consists of a 5,982 square foot convenience market and gas station. Access to the site would be via two driveways, one each on Frontage Road and Husted Road. The project site plan identifies a supply of 65 parking spaces, as shown in Figure 2.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 11th Edition, 2021 for "Convenience Store/Gas Station – VFP (16-24)" (LU #945). This land use is applicable to sites that have between 16 and 24 vehicle fueling positions and uses the total size of the convenience market as the independent variable.

Diverted Trips

A substantial portion of the trips associated with the project would be drawn from existing traffic on I-5. These vehicle trips, known as either pass-by or diverted trips, are not considered new trips since they consist of drivers who are already traveling on the adjacent or nearby streets and choose to make an interim stop. Data published in the *Trip Generation Manual* indicates pass-by and diverted trip percentages for numerous retail uses such as gas stations. Based on a review of data contained in the Manual and in consideration of local circulation patterns specific to the project, no trip reductions were applied for pass-by trips given the relatively low volumes on Husted and Frontage Roads, instead applying the total of pass-by and diverted trips as diverted trips since the vast majority of trips are anticipated to be pulled from I-5.

Data in the *Trip Generation Manual* indicates that an average of 98 percent of the convenience store/gas station trips would be diverted from I-5 during the a.m. peak hour while 97 percent would be diverted during the p.m. peak hour. While pass-by rates for both the a.m. and p.m. peak periods are available, daily pass-by rates are not published in the Manual, so the lower p.m. peak hour rate was used for informational purposes. These rates were applied as deductions to the overall estimated trip generation. It should be noted that while diverted trips are not primary trips, they would be considered "new" trips at the study intersections in the case of the proposed project so although they were quantified no deductions were applied for diverted trips in the operational and safety analyses.

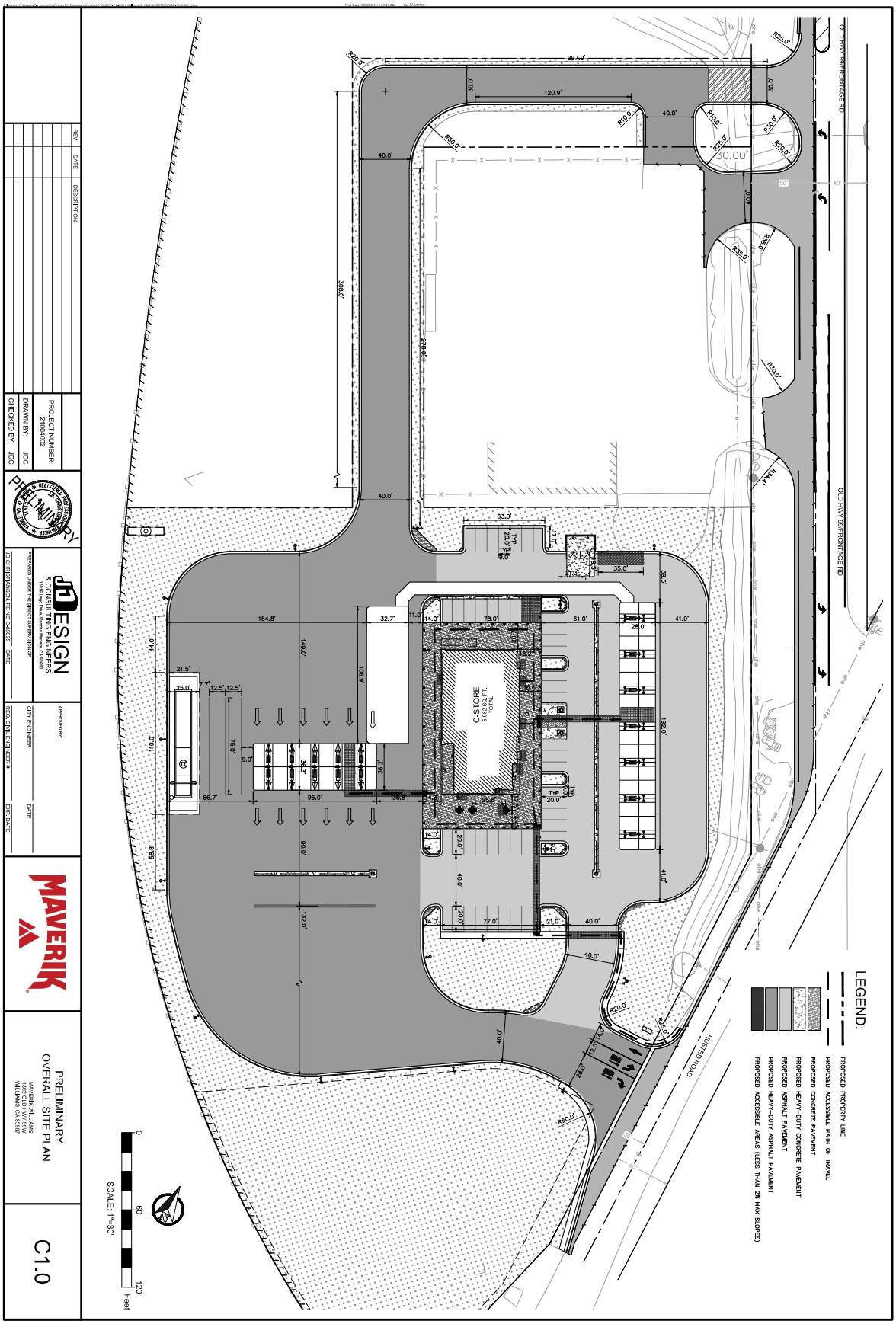
Total Project Trip Generation

The expected trip generation potential for the proposed project is indicated in Table 2. The proposed project is expected to generate an average of 7,676 trips per day at its driveways, including 546 trips during the a.m. peak hour and 472 trips during the p.m. peak hour. After taking into consideration the trips that would be diverted from I-5, it is anticipated that only 229 daily trips would be primary with 10 during the a.m. peak hour and 14 during the p.m. peak hour.

Table 2 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Gas Station/Market	5.982 ksf	1,283.38	7,676	91.35	546	273	273	78.98	472	236	236
Diverted		*-97%*	*-7,448*	*-98%*	*-536*	*-268*	*-268*	*-97%*	*-458*	*-229*	*-229*
Total New Primary Trips			**229**		**10**	**5**	**5**		**14**	**7**	**7**

Note: ksf = 1,000 square feet



Source: JD Christiansen Design and Consulting Engineers 6/14

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Figure 2 – Site Plan

Trip Distribution

The pattern used to allocate project trips to the surrounding street network was determined based on familiarity with travel patterns in the area and likely origins and destinations for patrons of the project. Given the type of project proposed and location along I-5, nearly all project trips are anticipated to be diverted from I-5 so a balanced percentage of trips from both the north and south on I-5 was applied to reflect the nature in which many patrons will exit from I-5 to visit the project site and then reenter I-5 to continue on in the same direction. The pattern used to allocate project trips through the study intersections is shown in Table 3 along with resulting daily and peak hour trips.

Table 3 – Trip Distribution Assumptions

Route	Percent	Daily Trips	AM Trips	PM Trips
To/From I-5 North of Husted Rd	48%	3,684	262	227
To/From I-5 South of Husted Rd	48%	3,684	262	227
To/From Frontage Rd North of Husted Rd	2%	154	10	9
To/From Frontage Rd South of Husted Rd	1%	77	6	5
To/From Husted Rd North of Frontage Rd	1%	77	6	5
Total Trips	**100%**	**7,676**	**546**	**473***
Net New Primary Trips	**100%**	**229**	**10**	**14**

Note: * Trips do not add up to the calculated trip generation due to rounding

Circulation System

This section addresses the first transportation bullet point on the CEQA checklist, which relates to the potential for a project to conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Pedestrian Facilities

Existing and Planned Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. In general, due to the rural location there are no pedestrian facilities in the vicinity of the proposed project site, and none would be expected for this setting.

Finding – The lack of available pedestrian facilities on surrounding roadways is considered adequate since pedestrian trips to and from the site are not expected given not only its location but the type of land use.

Pedestrian Safety

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue for pedestrians. Collision records for the five-year period detailed above indicate that there were no reported collisions involving pedestrians at the study intersections.

Project Impacts on Pedestrian Facilities

The project site plan identifies provision of sidewalks that would connect the proposed vehicle parking spaces to the convenience store; therefore, on-site circulation would be acceptable for pedestrians. While no pedestrian facilities are proposed along the project frontages, the project site is in a rural part of the City surrounded by primarily agricultural and industrial land uses; therefore, pedestrian trips are expected to be limited and the lack of these facilities is considered acceptable for the surrounding context and limited anticipated demand. Being a gas station, all or nearly all trips to and from the site would be made by automobile.

Finding – The limited on-site pedestrian facilities proposed are considered acceptable for the type of project and rural location.

Bicycle Facilities

Existing and Planned Bicycle Facilities

The *Highway Design Manual*, Caltrans, 2020, classifies bikeways into four categories:

- **Class I Multi-Use Path** – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- **Class II Bike Lane** – a striped and signed lane for one-way bike travel on a street or highway.
- **Class III Bike Route** – signing only for shared use with motor vehicles within the same travel lane on a street or highway.
- **Class IV Bikeway** – also known as a separated bikeway, a Class IV Bikeway is for the exclusive use of bicycles and includes a separation between the bikeway and the motor vehicle traffic lane. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

In the project area, there are no existing bike facilities, though Class II bicycle lanes are planned for both Husted Road and Frontage Road within the Williams City limits according to Chapter 8 of the City's *General Plan*.

Bicyclist Safety

Collision records for the study area were reviewed to determine if there had been any bicyclist-involved crashes. During the five-year study period previously noted there were no reported collisions involving a bicyclist at any of the study intersections.

Project Impacts on Bicycle Facilities

The project site plan does not identify provision of any bicycle facilities, nor are bicycle trips anticipated; however, because the City has plans to install bike lanes on both Husted and Frontage Roads, the project's frontage improvements should be coordinated with City staff to determine if any right-of-way needs to be dedicated to the City for implementation of these planned bicycle improvement projects.

Finding – The lack of existing bicycle facilities serving the project site is considered acceptable for the type of project and rural location.

Recommendation – The project's frontage improvements should be coordinated with City staff to determine if any right-of-way needs to be dedicated to the City for the planned installation of Class II bike lanes on both Husted and Frontage Roads.

Transit Facilities

Existing Transit Facilities

As expected for the rural location, there are no transit facilities within the vicinity of the project site. Considering the setting and type of project for which nearly all trips would be diverted from I-5 and for the purpose of fueling vehicles, transit trips are not expected.

Finding – The lack of transit facilities serving the project site is considered acceptable for the rural location and type of project proposed.

Vehicle Miles Traveled (VMT)

The potential for the project to conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b) was evaluated based the project's anticipated Vehicle Miles Traveled (VMT).

Background and Guidance

Senate Bill (SB) 743 established VMT as the metric to be applied for determining transportation impacts associated with development projects. Like many other jurisdictions in California, the City of Williams has not yet adopted a policy or thresholds of significance regarding VMT so the project-related VMT impacts were assessed based on guidance provided by the California Governor's Office of Planning and Research (OPR) in the publication *Transportation Impacts (SB 743) CEQA Guidelines Update and Technical Advisory*, 2018.

Project VMT Impact

The OPR *Technical Advisory* indicates that retail projects should generally be analyzed by examining total VMT, with an increase in total regional VMT being considered a significant impact. In the *Technical Advisory*, OPR also indicates that local-serving retail may generally be presumed by lead agencies to have a less-than-significant VMT impact (see *Technical Advisory* pages 16-17). OPR based this presumption on substantial evidence and research demonstrating that adding local-serving retail uses typically improves destination accessibility to customers. The theory behind this criterion is that while a larger retail project may generate interregional trips that increase a region's total VMT, small retail establishments do not necessarily add new trips to a region, but change where existing customers shop within the region, and often shorten trip lengths. OPR cites a size of 50,000 square feet or greater as being a potential indicator of regional-serving retail (versus local-serving) that would typically require a quantitative VMT analysis. The project includes a total floor area of 5,982 square feet, which is well below the local-serving retail screening threshold of 50,000 square feet; therefore, it is reasonable to conclude that the project would have a less-than-significant transportation impact on VMT.

As part of this assessment, consideration was given to the project type and its potential to draw traffic that is regional, versus local, in nature. Gas stations and their associated retail stores are inherently convenience-based uses; customers of these uses typically choose to stop because they are located along their planned route of travel and are generally unwilling to travel substantially out of their way to visit such outlets, particularly when closer options are available. The proposed project would be expected to attract most of its customers from drivers already passing by on I-5; these customers would result in essentially no new vehicle miles traveled as this would be an interim stop on a trip that was already being made and with a very short diversion from I-5.

Finding – Based on guidance provided by the state of California, the proposed project would screen out from further VMT analysis with a less-than-significant impact as a primarily local-serving retail and convenience-based use.

Safety Issues

The potential for the project to impact safety was evaluated in terms of the adequacy of sight distance and need for turn lanes at the project accesses as well as the adequacy of stacking space in dedicated turn lanes at the study intersections to accommodate additional queuing due to adding project-generated trips. This section addresses the third transportation bullet on the CEQA checklist which is whether or not the project would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

Site Access

The proposed project would be accessible via two new driveways, one each on Frontage Road and Husted Road. The project driveway on Frontage Road would be located northwest of the existing oil and gas company driveway and would extend southwest to the proposed project site. As part of the project, Frontage Road would be widened left-turn lanes constructed at the Frontage Road driveway and the intersection with Husted Road. Further, a center two-way left-turn lane (TWLTL) would be installed between the driveway and the intersection. Trucks would be required to use the Frontage Road driveway to access the truck fueling pumps. While the Husted Road driveway would be full access initially, City staff has indicated that they will monitor access conditions over time to determine if this driveway would need to be restricted to right-turn movements only at a future date.

Sight Distance

At unsignalized intersections and driveways, a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. Adequate time should be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic to radically alter their speed.

Sight distances along Husted Road and Frontage Road at the proposed driveway locations were evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distance at private driveways is based on stopping sight distance and uses the approach travel speed as the basis for determining the recommended sight distance. Additionally, the stopping sight distance needed for a following driver to stop if there is a vehicle waiting to turn into a side street or driveway is evaluated based on stopping sight distance criterion and the approach speed on the major street.

For the posted speed limits of 45 mph on Husted Road and 55 mph on Frontage Road, 360 and 500 feet of stopping sight distance are required, respectively. Field measurements were obtained and sight lines at both driveway locations determined to extend more than 500 feet in both directions, which are adequate for the respective speed limits.

Additionally, adequate sight lines are available for a following motorist to notice and react to a preceding vehicle slowing to turn into the project access points; therefore, existing sight lines are adequate to accommodate all turning movements into both driveways. To preserve existing sight lines, any new signage, monuments, or other structures to be placed near the project entrances should be positioned outside of the vision triangles of a driver waiting on the driveway approaches.

Finding – Sight lines along Husted Road and Frontage Road at the project driveways are adequate to accommodate all turning movements into and out of the project site.

Recommendation – To preserve existing sight lines, any new signage, monuments, or other structures to be placed near the project entrances should be positioned outside of the vision triangles of a driver waiting on the driveway approaches.

Left-Turn Lane Warrants

The site plan shows provision of a left-turn lane at the Frontage Road driveway, though not at the Husted Road driveway. Therefore, the need for a left-turn lane on Husted Road at the project driveway was evaluated based on criteria contained in the *Intersection Channelization Design Guide*, National Cooperative Highway Research Program (NCHRP) Report No. 279, Transportation Research Board, 1985, as well as an update of the methodology developed by the Washington State Department of Transportation and published in the *Method for Prioritizing Intersection Improvements*, January 1997. The NCHRP report references a methodology developed by M. D. Harmelink that includes equations that can be applied to expected or actual traffic volumes to determine the need for a left-turn pocket based on safety issues.

As proposed, the project would be expected to result in 183 left turns into the Husted Road driveway during the a.m. peak hour and 158 left turns during the p.m. peak hour, all of which would be passenger vehicles since semi-trucks would be required to use the Frontage Road driveway to reach the truck fueling positions at the western portion of the site.

Under Existing plus Project and Baseline plus Project volumes, and accounting for a design speed of 35 mph and 30 percent of the total trips being made by trucks (based on the proportion of truck to passenger vehicle fueling positions), a left turn lane would not be warranted on Husted Road. Copies of the turn lane warrant analysis spreadsheets are provided in Appendix B.

Finding – Installation of a left-turn lane would not be warranted on Husted Road at the project driveway under Existing plus Project or Baseline plus Project and volumes.

Queuing

Queuing was evaluated at the study intersections using the 95th percentile queue lengths reported from the Vistro software package. At Husted Road/Frontage Road, the intersection does not have turn lanes, though queuing was evaluated to determine if queues would extend beyond the railroad tracks which pass through the northern Husted Road leg. Additionally, the potential for queueing to spill into the mainline of I-5 at the ramp terminals was determined. Summarized in Table 4 are the predicted queue lengths. Copies of the Vistro queuing reports are contained in Appendix C, along with the Intersection Level of Service (LOS) Calculation reports.

Table 4 – 95th-Percentile Queues

Study Intersection ***Approach***	**Available Storage (feet)**	**95th Percentile Queues**											
		AM Peak Hour						**PM Peak Hour**					
		E	**E+P**	**B**	**B+P**	**F**	**F+P**	**E**	**E+P**	**B**	**B+P**	**F**	**F+P**
1. Husted Rd/Frontage Rd													
SB Approach	75*	6	6	7	7	Signal		3	4	5	5	Signal	
2. Husted Rd/I-5 N Ramps													
NB Left Turn	115	0	0	0	0	0	0	0	0	0	0	0	1
WB Off-Ramp Approach	700	3	22	4	25	60	142	5	19	6	23	43	98
3. Husted Rd/I-5 S Ramps													
SB Left Turn	165	4	13	4	13	90	162	2	10	3	10	**363**	**427**
EB Off-Ramp Approach	680	1	45	7	70	7	56	1	29	2	34	39	123

Notes: Maximum Queue based on 95th-Percentile queues in Vistro; all distances are measured in feet; E = existing conditions; E+P = existing plus project conditions; B = baseline conditions; B+P = baseline plus project conditions; F = future conditions; F+P = future plus project conditions; **Bold** text = queue length exceeds available storage

*Available storage is measured to the point where vehicles could queue before conflicting with the railroad tracks

As shown above, all queues would remain within existing storage space, except for the southbound left-turn lane at Husted Road/I-5 South Ramps under Future and Future plus Project Conditions; however, the intersection is planned to be signalized in the future so geometric modifications would be expected as part of the traffic signal installation and the southbound left-turn lane would be extended at that time based on then-current volumes. Since queues would extend beyond the existing storage space without traffic from the proposed project, the project's impact is considered less than significant. It should also be noted that a traffic signal is planned to be installed at Husted Road/Frontage Road so the signal would be coordinated with the railroad crossing, which would eliminate queuing concerns on the southbound approach.

Finding – The existing turn lanes at the study intersections have sufficient storage length to accommodate the estimated maximum queues under all scenarios except at the southbound left-turn lane under p.m. peak hour Future and Future plus Project volumes. However, the proposed project's impact on queuing would be less-than-significant since the storage would be exceeded without project traffic.

Emergency Access

The final transportation bullet on the CEQA checklist requires an evaluation as to whether the project would result in inadequate emergency access or not.

Adequacy of Site Access

The project site would be accessed via two driveways, one each on Husted Road and Frontage Road. While the site plan is still preliminary, it is anticipated that all aspects of the site, including driveway widths and turning radii, would be designed in accordance with applicable standards and for use by semi-trucks which are larger than emergency response vehicles; therefore, access would also be expected to function acceptably for emergency response vehicles. It should also be noted that the project site would have two access points directly to the street system as well as two through the adjacent site, so should one means of access be compromised during an emergency, responders would be able to use one of the other driveways to reach the site.

Off-Site Impacts

While the project would be expected to result in slight increases in delay at the study intersections, emergency response vehicles can claim the right-of-way by using their lights and sirens; therefore, the project would be expected to have a nominal effect on emergency response times.

Finding – Emergency access and circulation are anticipated to function acceptably with incorporation of applicable design standards into the site layout and traffic from the proposed development would be expected to have a less-than-significant impact on emergency response times.

Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 6th Edition. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The Levels of Service for all three study intersections, which currently have side-street stop controls, were analyzed using the "Two-Way Stop-Controlled" intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection.

The Husted Road/Frontage Road and Husted Road/I-5 South Ramps study intersections are planned to be controlled by traffic signals in the future, as identified in the City's General Plan, so were evaluated using the signalized methodology from the HCM under Future and Future plus Project Conditions. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether the signals are coordinated or not, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. For purposes of this study, delays were calculated using optimized signal timing.

The ranges of delay associated with the various levels of service are indicated in Table 5.

Table 5 – Intersection Level of Service Criteria

LOS	Two-Way Stop-Controlled	Signalized
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Reference: *Highway Capacity Manual,* Transportation Research Board, 2018

Traffic Operation Standards

City of Williams

As stated in Policy 8.p of the *City of Williams General Plan*, the City strives to maintain LOS D or better operation for all roadways and intersections, except within the Downtown area where LOS E is considered acceptable. Exceptions to the LOS standards may be considered by the City Council where a lower LOS would result in clear public benefit. Such circumstances include, but are not limited to, if improvements necessary to achieve the LOS standard result in an impact to a unique historic resource or a highly sensitive environmental area; require infeasible right-of-way acquisition; some other unusual physical constraint exists; or if there are overriding economic or social circumstances.

As clarified in the *City of Williams General Plan Update – Final Environmental Impact Report* (EIR), the City's LOS standard is applied to the overall operation of all-way stop-controlled and signalized intersections and to the worst-case movement on the stop-controlled approach(es) at two-way stop-controlled intersections. A project would have an adverse effect on the surrounding transportation system if it would cause any study intersection to exceed the acceptable threshold for the facility.

Caltrans

While the I-5 ramp terminal intersections are under jurisdiction of the state of California, Caltrans does not have a standard of significance relative to operation as this is no longer a CEQA issue. The *Vehicle Miles Traveled-Focused Transportation Impact Study Guide* (TISG), published in May 2020, replaced the *Guide for the Preparation of Traffic Impact Studies*, 2002. As indicated in the TISG, the Department is transitioning away from requesting LOS or other vehicle operations analyses of land use projects and instead focuses on Vehicle Miles Traveled (VMT). The City's standard of LOS D for the worst-case movement was therefore applied to all three study intersections.

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the weekday a.m. and p.m. peak periods. This condition does not include project-generated traffic volumes. Volume data was collected on Wednesday, February 22, 2023, during typical traffic conditions and while local schools were in session. Peak hour factors (PHFs) were calculated based on the counts obtained and used in the analysis, unless the PHF was calculated to be less than 0.85 in which case this value was used as a "floor" to avoid overly conservative results.

Under Existing Conditions, all three study intersections operate acceptably at LOS A overall and LOS A or B on the minor street approaches during both peak hours. The existing traffic volumes are shown in Figure 3. A summary of the intersection Level of Service calculations is contained in Table 6, and copies of the calculations for all evaluated scenarios are provided in Appendix C.

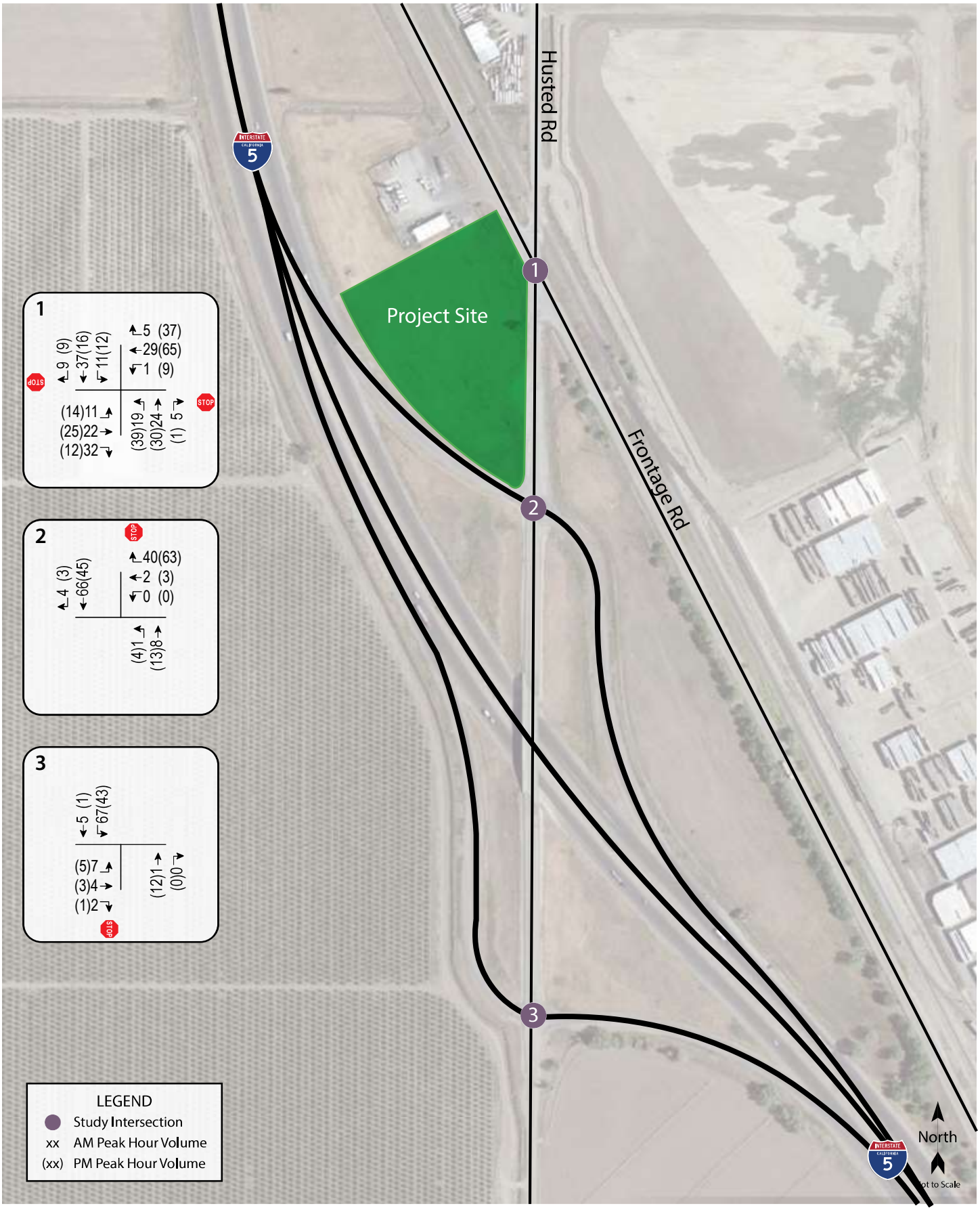

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Figure 3 – Existing Traffic Volumes

Table 6 – Existing Peak Hour Intersection Levels of Service				
Study Intersection	**AM Peak**		**PM Peak**	
Approach	**Delay**	**LOS**	**Delay**	**LOS**
1. Husted Rd/Frontage Rd	5.5	A	4.8	A
Northbound (Husted Rd) Approach	*9.8*	*A*	*10.6*	*B*
Southbound (Husted Rd) Approach	*9.8*	*A*	*9.9*	*A*
2. Husted Rd/I-5 North Ramps	3.0	A	4.6	A
Westbound (I-5 North Off-Ramp)	*8.6*	*A*	*8.6*	*A*
3. Husted Rd/I-5 South Ramps	7.2	A	6.2	A
Eastbound (I-5 South Off-Ramp)	*9.8*	*A*	*9.5*	*A*

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

Baseline Conditions

Baseline (Existing plus Approved) operating conditions were assessed with traffic from approved or pending projects in the study area that could be operational in the next two to five years added to the existing volumes. The following single development project was identified by City staff to be included in the evaluation of Baseline Conditions.

California Renewable Carbon Project is a 49-acre renewable biocarbon production facility to be located at 6229 Meyers Road in unincorporated Colusa County, approximately 1.4 miles south of the City of Williams limits. As evaluated in the project's *Initial Study Evaluation of Environmental Impacts,* Colusa County, 2021, the project would have 50 employees and is expected to generate 125 daily heavy-duty truck trips and 200 daily employee trips. Since the report does not state specific directional distributions or the number of peak hour truck trips, it was assumed that each employee would generate one inbound trip during the a.m. peak hour and one outbound trip during the p.m. peak hour. Additionally, it was assumed that approximately 15 percent of the total daily heavy duty truck trips would occur during each peak hour with an even inbound/ outbound split. A PCE factor of two passenger cars per truck was applied. Therefore, the project is expected to generate a passenger car equivalent of 450 daily trips, including 88 trips during both the a.m. and p.m. peak hours. The trip distribution assumptions applied are summarized in Table 7.

Table 7 – Baseline Trip Distribution Assumptions	
Route	**Percent**
To/From I-5 North of Husted Rd	60%
To/From Frontage Rd South of Myers Rd	20%
To/From I-5 South of Husted Rd	10%
To/From Frontage Rd North of Husted Rd	5%
To/From Husted Rd North of Frontage Rd	5%
TOTAL	**100%**

Baseline operating conditions were determined with traffic associated with the above project added to the existing volumes. Under these conditions, all study intersections are expected to operate at LOS A overall and LOS A or B on the minor street approaches during both peak hours. Baseline volumes are shown in Figure 4 and these results are summarized in Table 8.

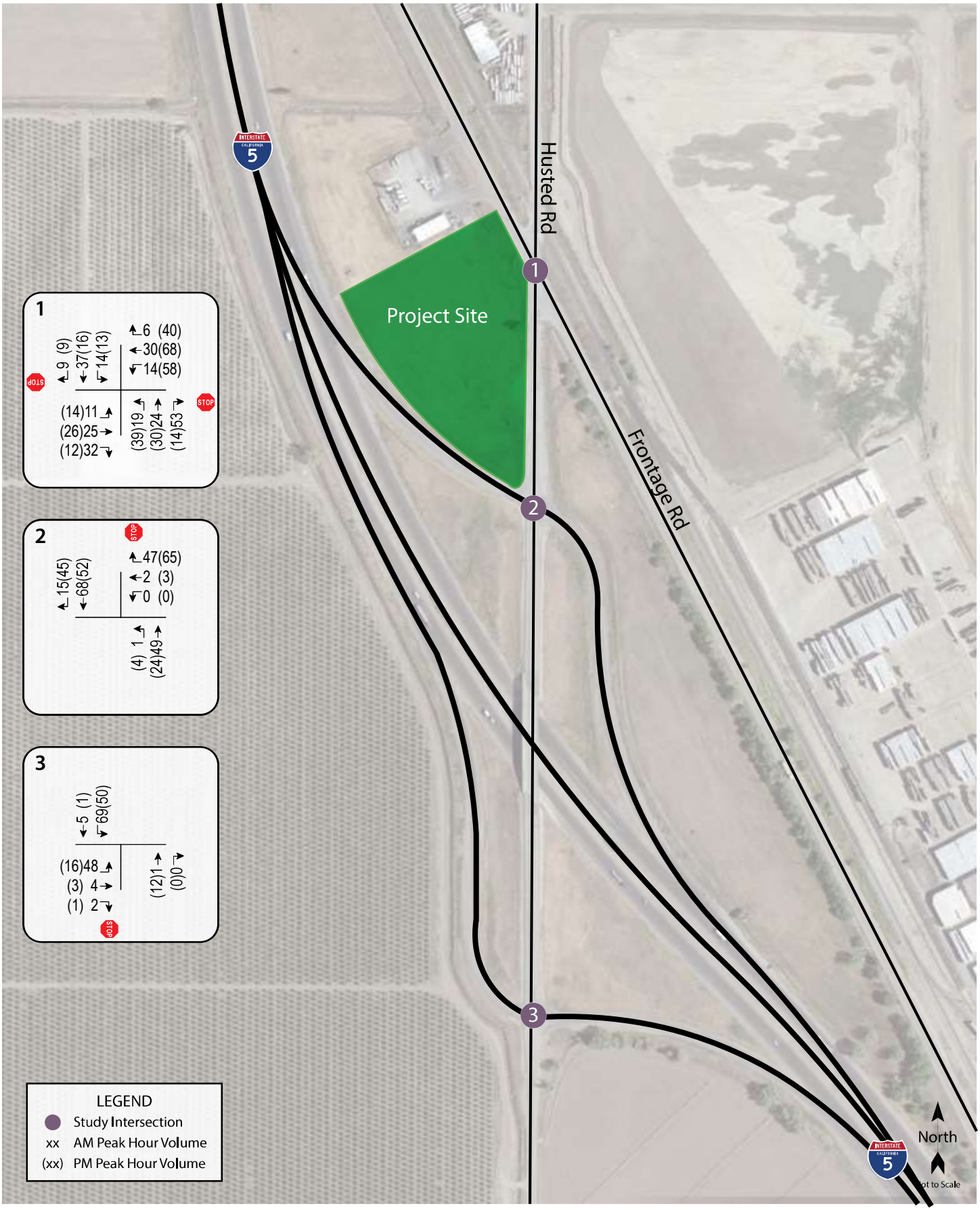

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Figure 4 – Baseline Traffic Volumes

Table 8 – Baseline Peak Hour Intersection Levels of Service				
Study Intersection	**AM Peak**		**PM Peak**	
Approach	**Delay**	**LOS**	**Delay**	**LOS**
1. Husted Rd/Frontage Rd	6.2	A	5.7	A
Northbound (Husted Rd) Approach	*9.3*	*A*	*11.8*	*B*
Southbound (Husted Rd) Approach	*10.2*	*B*	*11.1*	*B*
2. Husted Rd/I-5 North Ramps	2.4	A	3.3	A
Westbound (I-5 North Off-Ramp)	*8.8*	*A*	*8.8*	*A*
3. Husted Rd/I-5 South Ramps	8.2	A	6.8	A
Eastbound (I-5 South Off-Ramp)	*10.2*	*B*	*9.6*	*A*

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

Future Conditions (Without Project)

Future a.m. and p.m. peak hour volume projections were taken from the General Plan Buildout analysis contained in the *City of Williams General Plan Update – Final Environmental Impact Report* (EIR); this scenario represents cumulative traffic conditions that would be expected upon buildout of the land uses identified in the General Plan. Because the proposed project is consistent with the General Plan zoning for the project site, to avoid double-counting project volumes, trips from the proposed uses were subtracted from the anticipated buildout volumes to determine Future (without project) volumes and the resulting operating conditions that would be expected without development of the proposed project. As identified in the General Plan EIR analysis, improvements would be needed at two of the study intersections to support the anticipated buildout volumes. Both Husted Road/Frontage Road and Husted Road/I-5 South Ramps are planned to be signalized and the intersection at Husted Road/Frontage Road would be expanded to include left-turn lanes on all four approaches along with two lanes each direction on Husted Road and one lane in each direction on Frontage Road.

With these planned improvements, all three study intersections would be expected to operate acceptably at LOS C or better during both peak hours Operating conditions are summarized in Table 9 and future volumes are shown in Figure 5.

Table 9 – Future Peak Hour Intersection Levels of Service				
Study Intersection	**AM Peak**		**PM Peak**	
Approach	**Delay**	**LOS**	**Delay**	**LOS**
1. Husted Rd/Frontage Rd (Traffic Signal)	22.8	C	33.8	C
2. Husted Rd/I-5 North Ramps	7.9	A	3.5	A
Westbound (I-5 North Off-Ramp)	*11.2*	*B*	*11.2*	*B*
3. Husted Rd/I-5 South Ramps (Traffic Signal)	18.6	B	25.7	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

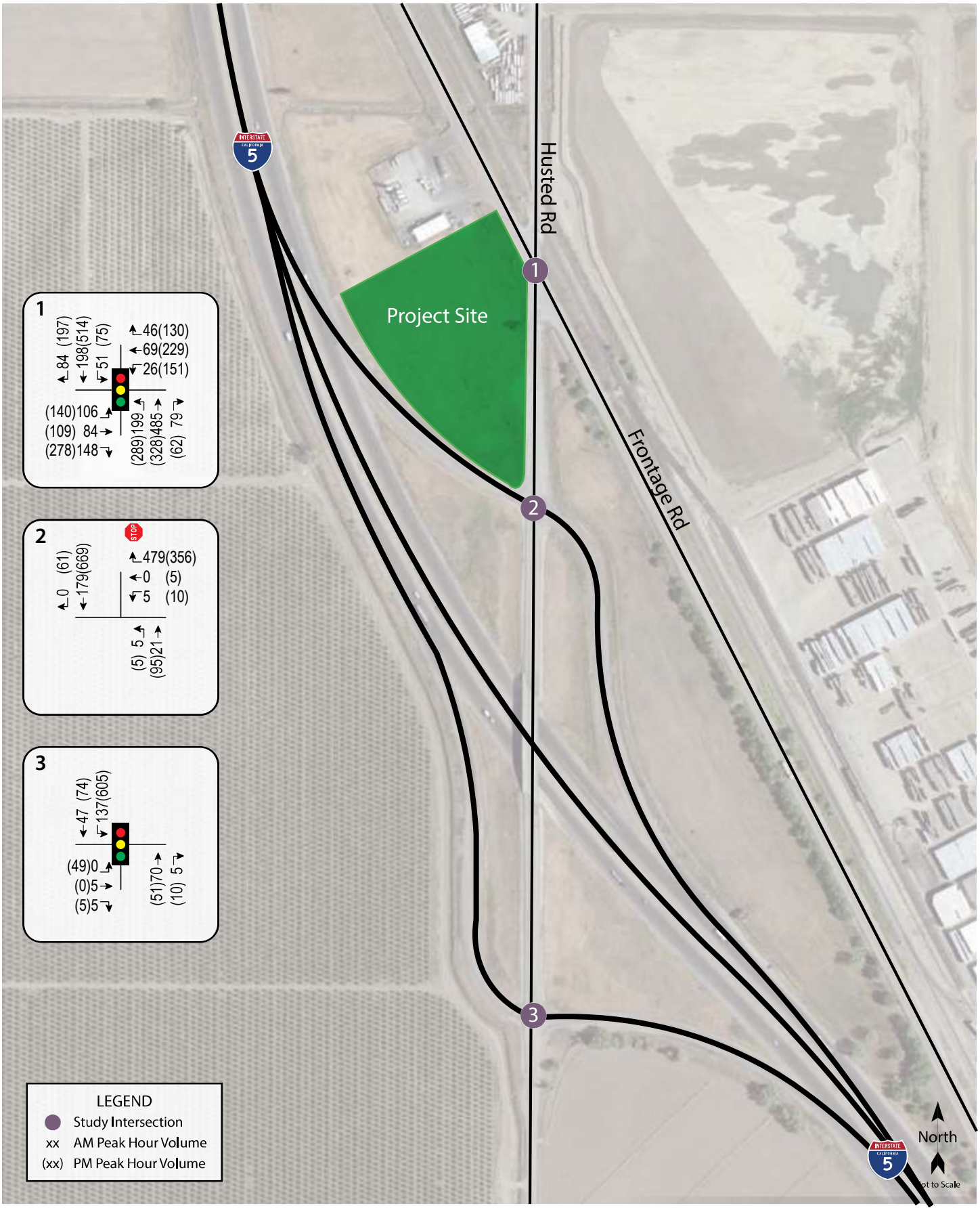

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Figure 5 – Future (Without Project) Traffic Volumes

Alternative Intersection Controls

It should be noted that while the City's General Plan has identified plans for traffic signals to be installed at the intersections of Husted Road with the I-5 South Ramps and Frontage Road, the General Plan was completed prior to the implementation of Caltrans' Traffic Operations Policy Directive 13-02, Intersection Control Evaluation (ICE), in 2013. This policy mandates that before controls can be changed for an intersection located on a State facility, an ICE must be performed to explore and evaluate various control types, such as modern roundabouts and all-way stop controls (AWSC), in addition to traffic signals. Therefore, before traffic signals could be installed at a ramp terminal intersection, an ICE would need to be prepared.

There are no existing traffic signals in the City of Williams so there are no signal technicians on staff or budget for signal maintenance; therefore, staff would prefer to implement roundabouts AWSC wherever feasible. Based on a review of the cumulative volumes anticipated at each of the intersections slated for traffic signals, it is likely that roundabouts would also be able to provide acceptable traffic operations, though an ICE would need to be prepared for the intersection of Husted Road/I-5 South Ramps and a feasibility study should be prepared for Husted Road/Frontage Road. To be consistent with the City's General Plan and the development impact fee program, traffic signals were assumed to be the future control types at the study intersections for the purposes of this analysis, though modern roundabouts or AWSC could also be considered before initiating the design of traffic signals.

Project Conditions

The plus Project Conditions analyses include evaluation of intersection operations with the addition of project-generated trips to the existing, baseline, and future volumes.

Existing plus Project Conditions

Upon the addition of project-related traffic to the existing volumes, the study intersections are expected to continue operating acceptably at LOS A overall and LOS C or better on the minor street approaches; the project's effect on operations would therefore be considered acceptable. These results are summarized in Table 10 and Project traffic volumes are shown in Figure 6.

Table 10 – Existing and Existing plus Project Peak Hour Intersection Levels of Service

Study Intersection	**Existing Conditions**				**Existing plus Project**			
Approach	**AM Peak**		**PM Peak**		**AM Peak**		**PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
1. Husted Rd/Frontage Rd	5.5	A	4.8	A	5.6	A	4.8	A
Northbound (Husted Rd) Approach	*9.8*	*A*	*10.6*	*B*	*9.9*	*A*	*10.7*	*B*
Southbound (Husted Rd) Approach	*9.8*	*A*	*9.9*	*A*	*9.9*	*A*	*9.9*	*A*
2. Husted Rd/I-5 North Ramps	3.0	A	4.6	A	2.8	A	3.1	A
Westbound (I-5 North Off-Ramp)	*8.6*	*A*	*8.6*	*A*	*10.3*	*B*	*9.9*	*A*
3. Husted Rd/I-5 South Ramps	7.2	A	6.2	A	12.0	B	10.3	C
Eastbound (I-5 South Off-Ramp)	*9.8*	*A*	*9.5*	*A*	*18.6*	*C*	*14.8*	*B*

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

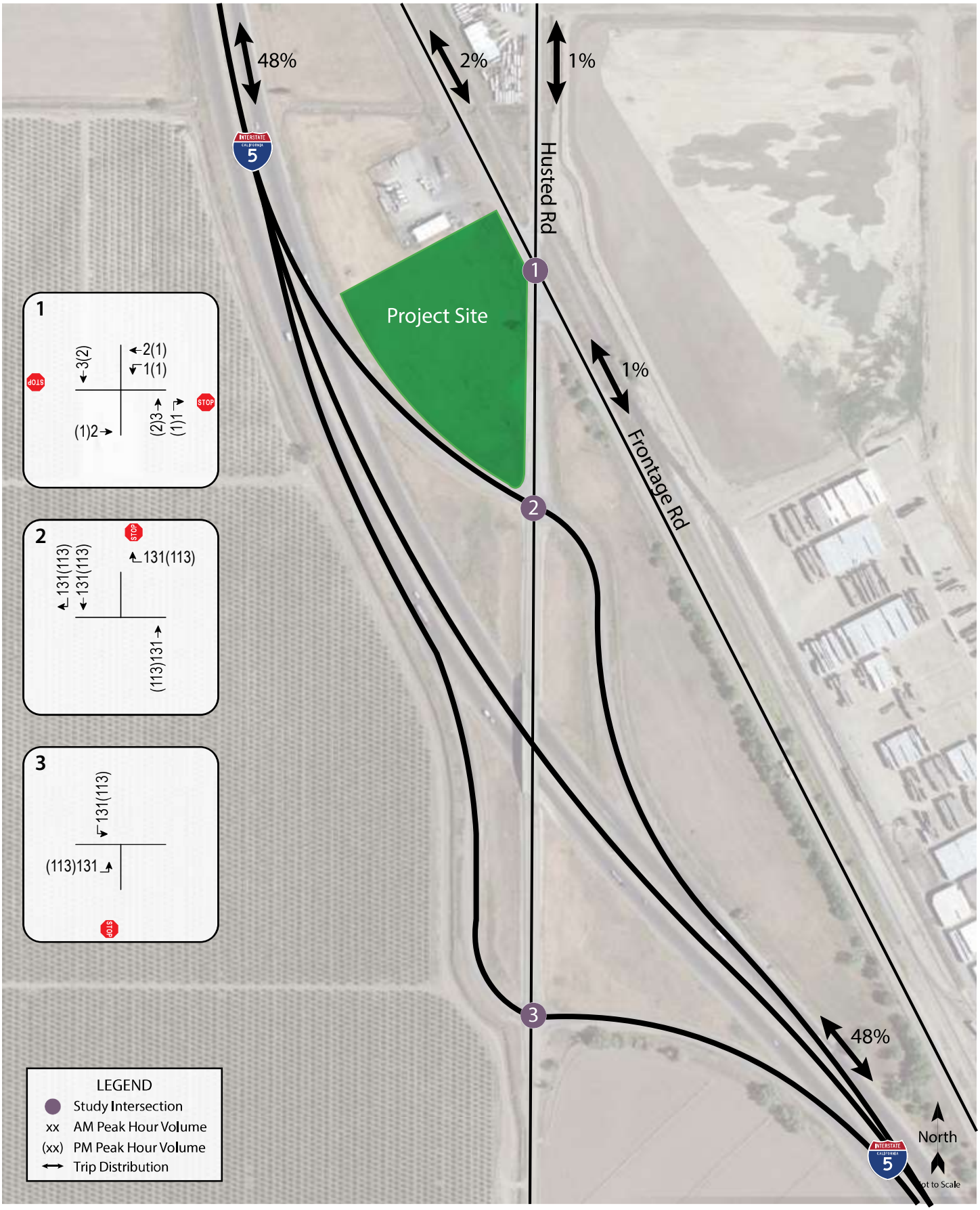

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Figure 6 – Project Traffic Volumes and Trip Distribution

It should be noted that with the addition of project-related traffic volumes, average delay at Husted Road/I-5 North Ramps decreases slightly during the a.m. and p.m. peak hours. While this is counter-intuitive, this condition occurs when a project adds trips to movements that are currently underutilized or have delays that are below the intersection average, resulting in a better balance between approaches and lower overall average delay. At Husted Road/I-5 North Ramps, the project adds traffic predominantly to the southbound through and right-turn movements, which are uncontrolled and have average delays that are lower than the average for the intersection as a whole, resulting in a reduction in the overall average delay. The conclusion could incorrectly be drawn that the project actually improves operation based on this data alone; however, it is more appropriate to conclude that the project trips are expected to make use of excess capacity, so drivers will experience little change in conditions as a result of the project.

Finding – The study intersections are expected to continue operating acceptably upon the addition of project-generated traffic to existing volumes and the project's effect on operation of the surrounding roadway network would therefore be considered acceptable.

Baseline plus Project Conditions

With project-related traffic added to Baseline volumes, the study intersections are expected to continue operating acceptably. These results are summarized in Table 11.

Table 11 – Baseline and Baseline plus Project Peak Hour Intersection Levels of Service

Study Intersection	**Baseline Conditions**				**Baseline plus Project**			
Approach	**AM Peak**		**PM Peak**		**AM Peak**		**PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
1. Husted Rd/Frontage Rd	6.2	A	5.7	A	6.2	A	5.8	A
Northbound (Husted Rd) Approach	*9.3*	*A*	*11.8*	*B*	*9.4*	*A*	*11.8*	*B*
Southbound (Husted Rd) Approach	*10.2*	*B*	*11.1*	*B*	*10.4*	*B*	*11.2*	*B*
2. Husted Rd/I-5 North Ramps	2.4	A	3.3	A	2.8	A	3.0	A
Westbound (I-5 North Off-Ramp)	*8.8*	*A*	*8.8*	*A*	*10.8*	*B*	*10.4*	*B*
3. Husted Rd/I-5 South Ramps	8.2	A	6.8	A	14.2	B	10.7	B
Eastbound (I-5 South Off-Ramp)	*10.2*	*B*	*9.6*	*A*	*21.8*	*C*	*15.6*	*C*

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

Finding – The study intersections are expected to continue operating acceptably upon the addition of project-generated traffic to baseline volumes and the project's near-term effect on operations would be considered acceptable.

Future plus Project (Buildout) Conditions

Under volumes anticipated upon buildout of the City's General Plan, which includes project traffic volumes, and with the planned signalization of Husted Road/Frontage Road and Husted Road/I-5 South Ramps, acceptable operation is expected at all three study intersections. The Future plus Project operating conditions are summarized in Table 12.

Table 12 – Future and Future plus Project Peak Hour Intersection Levels of Service								
Study Intersection	**Future Conditions**				**Future plus Project**			
Approach	**AM Peak**		**PM Peak**		**AM Peak**		**PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
1. Husted Rd/Frontage Rd (Signal)	22.8	C	33.8	C	22.8	C	33.8	C
2. Husted Rd/I-5 North Ramps	7.9	A	3.5	A	9.4	A	4.7	A
Westbound (I-5 North Off-Ramp)	*11.2*	*B*	*11.2*	*B*	*17.4*	*C*	*15.8*	*C*
3. Husted Rd/I-5 South Ramps (Signal)	18.6	B	25.7	C	22.0	C	28.3	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics*

Finding – The study intersections are anticipated to continue operating acceptably with project traffic added to future volumes, at LOS C or better, and the proposed project's long-term effect on operations would be considered acceptable.

Parking

The proposed project was analyzed to determine whether the proposed parking supply would be sufficient to satisfy City parking requirements. The project as proposed would provide a total of 65 parking spaces on-site for passenger vehicles, including 14 fueling spaces, two accessible spaces, and one (future) electric vehicle space.

Jurisdiction parking supply requirements are based on the City of Williams Zoning Ordinance 17.02.100.5; Required Parking and Loading for Institutional Uses. The Code requires "Commercial Retail: Other" land uses to provide parking at a rate at one space per 250 square feet of floor area. Based on this rate and a floor area of 5,982 square feet, a total of 24 parking spaces would be required for the project. The proposed supply would therefore be more than adequate.

Finding – The proposed passenger vehicle parking supply of 65 spaces would exceed City requirements.

Conclusions and Recommendations

Conclusions

- The proposed project is expected to generate a total of 7,676 trips per day, including 546 trips during the a.m. peak hour and 472 trips during the p.m. peak hour. After taking into consideration the trips that would be diverted from I-5, the proposed project would be expected to generate an average of 229 new primary daily trips, including 10 a.m. peak hour trips and 14 p.m. peak hour trips.
- Pedestrian, bicycle, and transit facilities serving the project site are currently nonexistent but are considered adequate due to the rural location of the project site. Bicycle facilities will be enhanced upon completion of the planned Class II bicycle lanes on Husted Road and Frontage Road.
- Based on guidance provided by the state of California, the proposed project would screen out from further VMT analysis with a less-than-significant impact as a local-serving retail and convenience use.
- Sight lines at the proposed locations of the project driveways on Husted and Frontage Road are adequate to accommodate all turns into and out of the project site.
- A left-turn lane would not be warranted on Husted Road at the proposed project driveway under Existing plus Project or Baseline plus Project volumes, though City staff would have the option of limiting access to right turns only in the future, if determined necessary.
- The proposed project would have a less-than-significant impact on queuing.
- Emergency access and on-site circulation are anticipated to function acceptably with incorporation of applicable design standards into the site layout and traffic from the proposed development would be expected to have a less-than-significant impact on emergency response times.
- The study intersections are expected to operate acceptably under Existing, Baseline, and Future Conditions without or with the addition of project-generated trips; therefore, the project's effect on operating conditions would be considered acceptable.

Recommendations

- The project's frontage improvements should be coordinated with City staff to determine if any right-of-way needs to be dedicated to the City for the planned installation of Class II bike lanes on both Husted and Frontage Roads.
- To preserve adequate sight lines at the project driveways, any new signage to be located near the entrances should be placed outside of the vision triangle of a driver waiting on the driveways.

Study Participants and References

Study Participants

Principal in Charge	Dalene J. Whitlock, PE, PTOE
Associate Engineer	Cameron Nye, EIT
Assistant Engineer	Valerie Haines, EIT
Graphics	Cameron Wong
Editing/Formatting	Jessica Bender
Quality Control	Dalene J. Whitlock, PE, PTOE

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Appendix A

Collision Rate Calculations

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Intersection Collision Rate Worksheet

TIS for the Maverik Gas Station Project

Intersection # 1: Husted Road & Frontage Road
Date of Count: Wednesday, February 22, 2023

Number of Collisions: 1
Number of Injuries: 0
Number of Fatalities: 0
Average Daily Traffic (ADT): 2700
Start Date: January 1, 2018
End Date: December 31, 2022
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Stop & Yield Controls
Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions x 1 Million}}{\text{ADT x Days per Year x Number of Years}}$$

$$\text{Collision Rate} = \frac{1 \times 1{,}000{,}000}{2{,}700 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.20 c/mve**	**0.0%**	**0.0%**
Statewide Average*	**0.14 c/mve**	**1.1%**	**46.2%**

Notes
ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2019 Collision Data on California State Highways, Caltrans

Intersection # 2: Husted Road & I-5 North Ramps
Date of Count: Wednesday, February 22, 2023

Number of Collisions: 2
Number of Injuries: 0
Number of Fatalities: 0
Average Daily Traffic (ADT): 1300
Start Date: January 1, 2018
End Date: December 31, 2022
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Stop & Yield Controls
Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions x 1 Million}}{\text{ADT x Days per Year x Number of Years}}$$

$$\text{Collision Rate} = \frac{2 \times 1{,}000{,}000}{1{,}300 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.84 c/mve**	**0.0%**	**0.0%**
Statewide Average*	**0.14 c/mve**	**1.1%**	**46.2%**

Notes
ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2019 Collision Data on California State Highways, Caltrans

Intersection Collision Rate Worksheet

TIS for the Maverik Gas Station Project

Intersection # 3: Husted Road & I-5 South Ramps
Date of Count: Wednesday, February 22, 2023

Number of Collisions: 2
Number of Injuries: 1
Number of Fatalities: 0
Average Daily Traffic (ADT): 650
Start Date: January 1, 2016
End Date: December 31, 2020
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Stop & Yield Controls
Area: Urban

$$\text{Collision Rate} = \frac{\text{Number of Collisions x 1 Million}}{\text{ADT x Days per Year x Number of Years}}$$

$$\text{Collision Rate} = \frac{2 \times 1{,}000{,}000}{650 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**1.69 c/mve**	**0.0%**	**50.0%**
Statewide Average*	**0.14 c/mve**	**1.1%**	**46.2%**

Notes
ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2019 Collision Data on California State Highways, Caltrans

Appendix B

Turn Lane Warrant Spreadsheets

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Turn Lane Warrant Analysis - Tee Intersections

Study Intersection: Husted Road & Project Driveway
Study Scenario: Existing plus Project AM

Direction of Analysis Street: North/South
Cross Street Intersects: From the West

Husted Road

Southbound Volumes (veh/hr)
Through Volume = 57
Right Turn Volume = 5

Southbound Speed Limit: 35 mph
Southbound Configuration: 2 Lanes - Undivided

Project Driveway

Husted Road

Northbound Volumes (veh/hr)
205 = Through Volume
183 = Left Turn Volume

Northbound Speed Limit: 35 mph
Northbound Configuration: 2 Lanes - Undivided

Southbound Right Turn Lane Warrants

1. Check for right turn volume criteria

Thresholds not met, continue to next step

2. Check advance volume threshold criteria for turn lane

Advancing Volume Threshold	AV =	1012.6
Advancing Volume	Va =	62
If AV<Va then warrant is met		No

Right Turn Lane Warranted: **NO**

Southbound Right Turn Taper Warrants
(evaluate if right turn lane is unwarranted)

1. Check taper volume criteria

NOT WARRANTED - Less than 20 vehicles

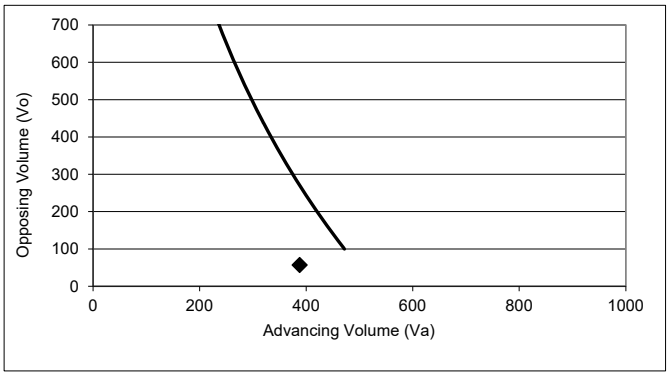
2. Check advance volume threshold criteria for taper

Advancing Volume Threshold	AV =	-
Advancing Volume	Va =	62
If AV<Va then warrant is met		-

Right Turn Taper Warranted: **NO**

Northbound Left Turn Lane Warrants

Percentage Left Turns %lt 47.2 %
Advancing Volume Threshold AV 496 veh/hr
If AV<Va then warrant is met



◆ Study Intersection
Two lane roadway warrant threshold for: 35 mph
Turn lane warranted if point falls to right of warrant threshold line

Left Turn Lane Warranted: **NO**

Methodology based on Washington State Transportation Center Research Report *Method For Prioritizing Intersection Improvements*, January 1997.
The right turn lane and taper analysis is based on work conducted by Cottrell in 1981.
The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

Turn Lane Warrant Analysis - Tee Intersections

Study Intersection: Husted Road & Project Driveway
Study Scenario: Existing plus Project PM

Direction of Analysis Street: North/South
Cross Street Intersects: From the West

Husted Road

Southbound Volumes (veh/hr)
Through Volume = 37
Right Turn Volume = 4

Southbound Speed Limit: 35 mph
Southbound Configuration: 2 Lanes - Undivided

Project Driveway

Husted Road

Northbound Volumes (veh/hr)
206 = Through Volume
158 = Left Turn Volume

Northbound Speed Limit: 35 mph
Northbound Configuration: 2 Lanes - Undivided

Southbound Right Turn Lane Warrants

1. Check for right turn volume criteria

Thresholds not met, continue to next step

2. Check advance volume threshold criteria for turn lane

Advancing Volume Threshold	AV =	1020.1
Advancing Volume	Va =	41
If AV<Va then warrant is met		No

Right Turn Lane Warranted: **NO**

Southbound Right Turn Taper Warrants
(evaluate if right turn lane is unwarranted)

1. Check taper volume criteria

NOT WARRANTED - Less than 20 vehicles

2. Check advance volume threshold criteria for taper

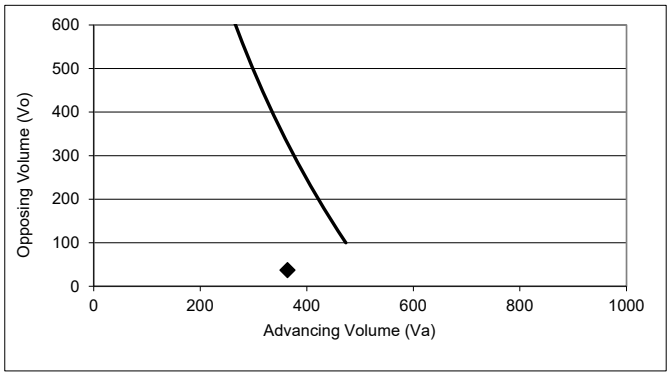
Advancing Volume Threshold	AV =	-
Advancing Volume	Va =	41
If AV<Va then warrant is met		-

Right Turn Taper Warranted: **NO**

Northbound Left Turn Lane Warrants

Percentage Left Turns	%lt	43.4 %
Advancing Volume Threshold	AV	509 veh/hr

If AV<Va then warrant is met



◆ Study Intersection
Two lane roadway warrant threshold for: 35 mph
Turn lane warranted if point falls to right of warrant threshold line

Left Turn Lane Warranted: **NO**

Methodology based on Washington State Transportation Center Research Report *Method For Prioritizing Intersection Improvements*, January 1997.
The right turn lane and taper analysis is based on work conducted by Cottrell in 1981.
The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

Turn Lane Warrant Analysis - Tee Intersections

Study Intersection: Husted Road & Project Driveway
Study Scenario: Baseline plus Project AM

Direction of Analysis Street: North/South
Cross Street Intersects: From the West

Husted Road

Southbound Volumes (veh/hr)
Through Volume = 70
Right Turn Volume = 5

Husted Road

Northbound Volumes (veh/hr)
253 = Through Volume
183 = Left Turn Volume

Project Driveway

Southbound Speed Limit: 35 mph
Southbound Configuration: 2 Lanes - Undivided

Northbound Speed Limit: 35 mph
Northbound Configuration: 2 Lanes - Undivided

Southbound Right Turn Lane Warrants

1. Check for right turn volume criteria

Thresholds not met, continue to next step

2. Check advance volume threshold criteria for turn lane

Advancing Volume Threshold	AV =	1012.6
Advancing Volume	Va =	75
If AV<Va then warrant is met		No

Right Turn Lane Warranted: **NO**

Southbound Right Turn Taper Warrants
(evaluate if right turn lane is unwarranted)

1. Check taper volume criteria

NOT WARRANTED - Less than 20 vehicles

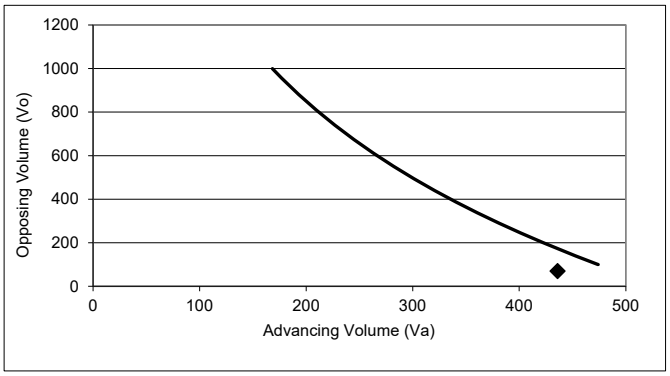
2. Check advance volume threshold criteria for taper

Advancing Volume Threshold	AV =	-
Advancing Volume	Va =	75
If AV<Va then warrant is met		-

Right Turn Taper Warranted: **NO**

Northbound Left Turn Lane Warrants

Percentage Left Turns %lt 42.0 %
Advancing Volume Threshold AV 491 veh/hr
If AV<Va then warrant is met



◆ Study Intersection
Two lane roadway warrant threshold for: 35 mph
Turn lane warranted if point falls to right of warrant threshold line

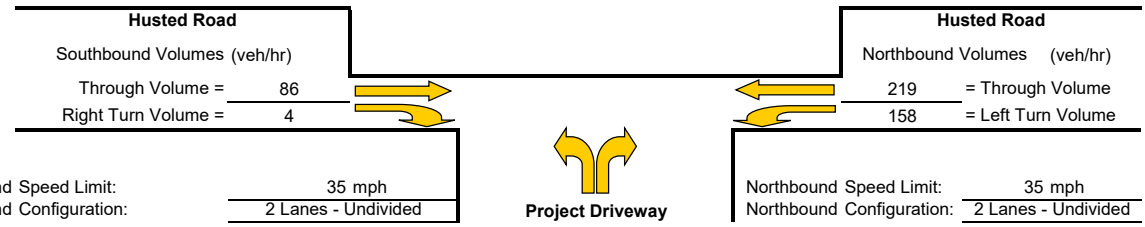
Left Turn Lane Warranted: **NO**

Methodology based on Washington State Transportation Center Research Report *Method For Prioritizing Intersection Improvements*, January 1997.
The right turn lane and taper analysis is based on work conducted by Cottrell in 1981.
The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

Turn Lane Warrant Analysis - Tee Intersections

Study Intersection: Husted Road & Project Driveway
Study Scenario: Baseline plus Project PM

Direction of Analysis Street: North/South
Cross Street Intersects: From the West



Southbound Speed Limit: 35 mph
Southbound Configuration: 2 Lanes - Undivided

Northbound Speed Limit: 35 mph
Northbound Configuration: 2 Lanes - Undivided

Southbound Right Turn Lane Warrants

1. Check for right turn volume criteria

Thresholds not met, continue to next step

2. Check advance volume threshold criteria for turn lane

Advancing Volume Threshold	AV =	1020.1
Advancing Volume	Va =	90
If AV<Va then warrant is met		No

Right Turn Lane Warranted: **NO**

Southbound Right Turn Taper Warrants
(evaluate if right turn lane is unwarranted)

1. Check taper volume criteria

NOT WARRANTED - Less than 20 vehicles

2. Check advance volume threshold criteria for taper

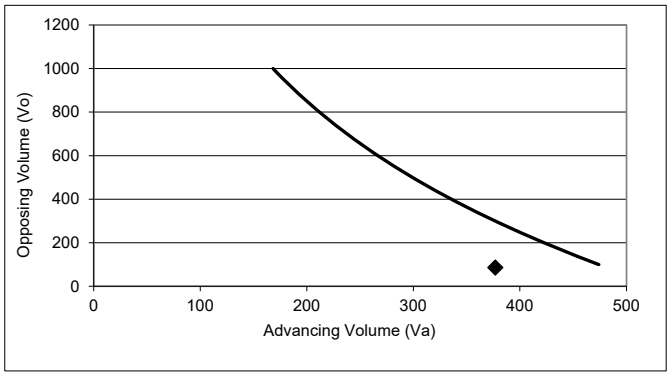
Advancing Volume Threshold	AV =	-
Advancing Volume	Va =	90
If AV<Va then warrant is met		-

Right Turn Taper Warranted: **NO**

Northbound Left Turn Lane Warrants

Percentage Left Turns	%lt	41.9 %
Advancing Volume Threshold	AV	482 veh/hr

If AV<Va then warrant is met



◆ Study Intersection
Two lane roadway warrant threshold for: 35 mph
Turn lane warranted if point falls to right of warrant threshold line

Left Turn Lane Warranted: **NO**

Methodology based on Washington State Transportation Center Research Report *Method For Prioritizing Intersection Improvements*, January 1997.
The right turn lane and taper analysis is based on work conducted by Cottrell in 1981.
The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

Appendix C

Intersection Level of Service and Queueing Calculations

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Intersection Level Of Service Report
Intersection 1: Husted Road/Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.058

Intersection Setup

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	19	24	5	11	37	9	11	22	32	1	29	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	24	5	11	37	9	11	22	32	1	29	5
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	7	1	3	11	3	3	6	9	0	9	1
Total Analysis Volume [veh/h]	22	28	6	13	44	11	13	26	38	1	34	6
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	Yes	Yes		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.04	0.01	0.02	0.06	0.01	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.89	9.96	8.80	9.75	10.09	8.79	7.31	0.00	0.00	7.34	0.00	0.00
Movement LOS	A	A	A	A	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.21	0.21	0.21	0.24	0.24	0.24	0.03	0.03	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	5.16	5.16	5.16	6.01	6.01	6.01	0.63	0.63	0.63	0.05	0.05	0.05
d_A, Approach Delay [s/veh]	9.81			9.81			1.23			0.18		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	5.45											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Husted Road/I-5 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	9.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Husted Road			Husted Road						I-5 North Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	115.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road						I-5 North Ramp		
Base Volume Input [veh/h]	1	8	0	0	66	4	0	0	0	0	2	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	8	0	0	66	4	0	0	0	0	2	40
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	0	0	19	1	0	0	0	0	1	12
Total Analysis Volume [veh/h]	1	9	0	0	78	5	0	0	0	0	2	47
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane										Yes		
Storage Area [veh]	0			0			0			2		
Two-Stage Gap Acceptance										No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
d_M, Delay for Movement [s/veh]	7.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.18	9.67	8.50
Movement LOS	A	A			A	A				A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.14	0.14
95th-Percentile Queue Length [ft/ln]	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.43	3.43	3.43
d_A, Approach Delay [s/veh]	0.74			0.00			0.00			8.55		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	3.00											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 3: Husted Road/I-5 South Ramps

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Husted Road			Husted Road			I-5 South Ramp					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			I-5 South Ramp					
Base Volume Input [veh/h]	0	1	0	67	5	0	7	4	2	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1	0	67	5	0	7	4	2	0	0	0
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	20	1	0	2	1	1	0	0	0
Total Analysis Volume [veh/h]	0	1	0	79	6	0	8	5	2	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes			
Storage Area [veh]	0		0		1		0	
Two-Stage Gap Acceptance					No			
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.33	0.00	0.00	9.81	10.28	8.42	0.00	0.00	0.00
Movement LOS		A	A	A	A		A	B	A			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.15	0.00	0.00	0.05	0.05	0.05	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	3.84	0.00	0.00	1.35	1.35	1.35	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			6.82			9.78			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	7.19											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 1: Husted Road/Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.048

Intersection Setup

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	39	30	1	12	16	9	14	25	12	9	65	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	30	1	12	16	9	14	25	12	9	65	37
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	8	0	3	4	2	4	7	3	2	18	10
Total Analysis Volume [veh/h]	43	33	1	13	18	10	15	27	13	10	71	41
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO
Version 2022 (SP 0-11) 3/13/2023

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	Yes	Yes		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.05	0.00	0.02	0.03	0.01	0.01	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	10.46	10.82	9.05	10.11	10.31	8.90	7.46	0.00	0.00	7.31	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.35	0.35	0.35	0.14	0.14	0.14	0.03	0.03	0.03	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	8.87	8.87	8.87	3.41	3.41	3.41	0.77	0.77	0.77	0.48	0.48	0.48
d_A, Approach Delay [s/veh]	10.60			9.91			2.03			0.60		
Approach LOS	B			A			A			A		
d_I, Intersection Delay [s/veh]	4.77											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Husted Road/I-5 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Husted Road			Husted Road						I-5 North Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	115.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road						I-5 North Ramp		
Base Volume Input [veh/h]	4	13	0	0	45	3	0	0	0	0	3	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	13	0	0	45	3	0	0	0	0	3	63
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	3	0	0	12	1	0	0	0	0	1	17
Total Analysis Volume [veh/h]	4	14	0	0	48	3	0	0	0	0	3	67
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane										Yes		
Storage Area [veh]	0			0			0			2		
Two-Stage Gap Acceptance										No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
d_M, Delay for Movement [s/veh]	7.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.14	9.63	8.59
Movement LOS	A	A			A	A				A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.20	0.20
95th-Percentile Queue Length [ft/ln]	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.02	5.02	5.02
d_A, Approach Delay [s/veh]	1.63			0.00			0.00			8.64		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	4.56											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 3: Husted Road/I-5 South Ramps

Control Type:	Two-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Husted Road			Husted Road			I-5 South Ramp					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			I-5 South Ramp					
Base Volume Input [veh/h]	0	12	0	43	1	0	5	3	1	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	12	0	43	1	0	5	3	1	0	0	0
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	0	13	0	0	1	1	0	0	0	0
Total Analysis Volume [veh/h]	0	14	0	51	1	0	6	4	1	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes			
Storage Area [veh]	0		0		1		0	
Two-Stage Gap Acceptance					No			
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.03	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.32	0.00	0.00	9.38	9.86	8.37	0.00	0.00	0.00
Movement LOS		A	A	A	A		A	A	A			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.10	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	2.46	0.00	0.00	0.95	0.95	0.95	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			7.18			9.46			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	6.20											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 1: Husted Road/Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.023

Intersection Setup

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			55.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	19	24	5	11	37	9	11	22	32	1	29	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	48	3	0	0	0	3	0	13	1	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	24	53	14	37	9	11	25	32	14	30	6
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	7	16	4	11	3	3	7	9	4	9	2
Total Analysis Volume [veh/h]	22	28	62	16	44	11	13	29	38	16	35	7
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	Yes	Yes		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.04	0.06	0.02	0.06	0.01	0.01	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	10.06	10.10	8.69	10.60	10.43	8.88	7.32	0.00	0.00	7.37	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.22	0.22	0.22	0.28	0.28	0.28	0.03	0.03	0.03	0.03	0.03	0.03
95th-Percentile Queue Length [ft/ln]	5.49	5.49	5.49	6.92	6.92	6.92	0.63	0.63	0.63	0.79	0.79	0.79
d_A, Approach Delay [s/veh]	9.31			10.23			1.19			2.03		
Approach LOS	A			B			A			A		
d_I, Intersection Delay [s/veh]	6.17											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Husted Road/I-5 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Husted Road			Husted Road						I-5 North Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	115.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road						I-5 North Ramp		
Base Volume Input [veh/h]	1	8	0	0	66	4	0	0	0	0	2	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	41	0	0	2	11	0	0	0	0	0	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	49	0	0	68	15	0	0	0	0	2	47
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	14	0	0	20	4	0	0	0	0	1	14
Total Analysis Volume [veh/h]	1	58	0	0	80	18	0	0	0	0	2	55
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane							Yes	
Storage Area [veh]	0		0		0		2	
Two-Stage Gap Acceptance							No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
d_M, Delay for Movement [s/veh]	7.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.60	10.11	8.77
Movement LOS	A	A			A	A				A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.17
95th-Percentile Queue Length [ft/ln]	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.32	4.32	4.32
d_A, Approach Delay [s/veh]	0.13			0.00			0.00			8.82		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.38											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 3: Husted Road/I-5 South Ramps

Control Type:	Two-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Husted Road			Husted Road			I-5 South Ramp					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			I-5 South Ramp					
Base Volume Input [veh/h]	0	1	0	67	5	0	7	4	2	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	2	0	0	41	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1	0	69	5	0	48	4	2	0	0	0
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	20	1	0	14	1	1	0	0	0
Total Analysis Volume [veh/h]	0	1	0	81	6	0	56	5	2	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes			
Storage Area [veh]	0		0		1		0	
Two-Stage Gap Acceptance					No			
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.00	0.00	0.07	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.34	0.00	0.00	10.18	10.65	8.76	0.00	0.00	0.00
Movement LOS		A	A	A	A		B	B	A			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.16	0.00	0.00	0.27	0.27	0.27	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	3.94	0.00	0.00	6.63	6.63	6.63	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			6.83			10.17			0.00		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	8.18											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 1: Husted Road/Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.063

Intersection Setup

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			55.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	39	30	1	12	16	9	14	25	12	9	65	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	13	1	0	0	0	1	0	49	3	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	30	14	13	16	9	14	26	12	58	68	40
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	9	4	4	5	3	4	8	4	17	20	12
Total Analysis Volume [veh/h]	46	35	16	15	19	11	16	31	14	68	80	47
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO
Version 2022 (SP 0-11) 4/13/2023

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	Yes	Yes		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.06	0.02	0.03	0.03	0.01	0.01	0.00	0.00	0.04	0.00	0.00
d_M, Delay for Movement [s/veh]	12.10	12.39	9.36	11.81	11.69	9.10	7.49	0.00	0.00	7.41	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.50	0.50	0.50	0.19	0.19	0.19	0.03	0.03	0.03	0.14	0.14	0.14
95th-Percentile Queue Length [ft/ln]	12.41	12.41	12.41	4.84	4.84	4.84	0.83	0.83	0.83	3.41	3.41	3.41
d_A, Approach Delay [s/veh]	11.75			11.09			1.97			2.58		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	5.69											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Husted Road/I-5 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Husted Road			Husted Road						I-5 North Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	115.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road						I-5 North Ramp		
Base Volume Input [veh/h]	4	13	0	0	45	3	0	0	0	0	3	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	0	0	7	42	0	0	0	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	24	0	0	52	45	0	0	0	0	3	65
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	7	0	0	15	13	0	0	0	0	1	19
Total Analysis Volume [veh/h]	5	28	0	0	61	53	0	0	0	0	4	76
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO
Version 2022 (SP 0-11) 4/13/2023

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane										Yes		
Storage Area [veh]	0			0			0			2		
Two-Stage Gap Acceptance										No		
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.07
d_M, Delay for Movement [s/veh]	7.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.51	10.14	8.69
Movement LOS	A	A			A	A				A	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.23	0.23
95th-Percentile Queue Length [ft/ln]	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.86	5.86	5.86
d_A, Approach Delay [s/veh]	1.13			0.00			0.00			8.77		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	3.25											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 3: Husted Road/I-5 South Ramps

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Husted Road			Husted Road			I-5 South Ramp					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			I-5 South Ramp					
Base Volume Input [veh/h]	0	12	0	43	1	0	5	3	1	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	7	0	0	11	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	12	0	50	1	0	16	3	1	0	0	0
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	0	15	0	0	5	1	0	0	0	0
Total Analysis Volume [veh/h]	0	14	0	59	1	0	19	4	1	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes			
Storage Area [veh]	0		0		1		0	
Two-Stage Gap Acceptance					No			
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.33	0.00	0.00	9.59	10.06	8.45	0.00	0.00	0.00
Movement LOS		A	A	A	A		A	B	A			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.11	0.00	0.00	0.09	0.09	0.09	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	2.86	0.00	0.00	2.24	2.24	2.24	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			7.21			9.62			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	6.77											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 1: Husted Road/Frontage Road

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.327

Intersection Setup

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	199	488	80	51	201	84	106	86	148	27	71	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-3	-1	0	-3	0	0	-2	0	-1	-2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	12	0	0	13	0	0	22	0	0	7
Total Hourly Volume [veh/h]	199	485	67	51	198	71	106	84	126	26	69	39
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	121	17	13	50	18	27	21	32	7	17	10
Total Analysis Volume [veh/h]	199	485	67	51	198	71	106	84	126	26	69	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	28	0	9	14	0	9	14	0	9	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Generated with PTV VISTRO
Version 2022 (SP 0-11) 3/30/2023

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	16	16	3	10	10	5	24	2	21
g / C, Green / Cycle	0.14	0.26	0.26	0.05	0.16	0.16	0.08	0.40	0.03	0.35
(v / s)_i Volume / Saturation Flow Rate	0.11	0.15	0.15	0.03	0.07	0.08	0.06	0.12	0.01	0.06
s, saturation flow rate [veh/h]	1781	1870	1792	1781	1870	1707	1781	1691	1781	1758
c, Capacity [veh/h]	254	484	463	87	308	281	138	669	54	613
d1, Uniform Delay [s]	24.88	19.46	19.47	28.00	22.65	22.72	27.21	12.54	28.68	13.59
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.23	1.11	1.17	6.05	1.02	1.20	8.57	1.23	6.34	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.58	0.58	0.58	0.45	0.47	0.77	0.31	0.48	0.18
d, Delay for Lane Group [s/veh]	30.11	20.58	20.64	34.05	23.66	23.92	35.78	13.76	35.02	14.22
Lane Group LOS	C	C	C	C	C	C	D	B	D	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.78	3.07	2.96	0.79	1.63	1.57	1.61	1.68	0.42	0.89
50th-Percentile Queue Length [ft/ln]	69.45	76.77	73.90	19.84	40.80	39.15	40.30	41.92	10.43	22.31
95th-Percentile Queue Length [veh/ln]	5.00	5.53	5.32	1.43	2.94	2.82	2.90	3.02	0.75	1.61
95th-Percentile Queue Length [ft/ln]	125.01	138.18	133.03	35.70	73.43	70.47	72.53	75.46	18.77	40.15

Movement, Approach, & Intersection Results

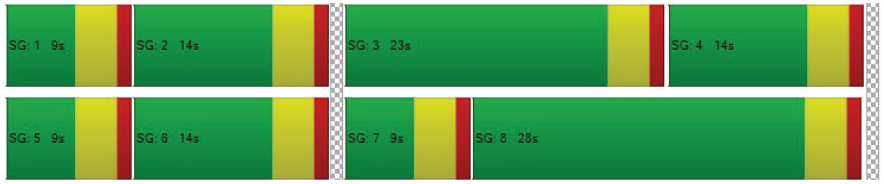
d_M, Delay for Movement [s/veh]	30.11	20.60	20.64	34.05	23.74	23.92	35.78	13.76	13.76	35.02	14.22	14.22
Movement LOS	C	C	C	C	C	C	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	23.12			25.43			21.15			18.25		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	22.77											
Intersection LOS	C											
Intersection V/C	0.327											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	799	333	333	333
d_b, Bicycle Delay [s]	10.83	20.87	20.87	20.87
l_b,int, Bicycle LOS Score for Intersection	2.189	1.834	2.117	1.792
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Husted Road/I-5 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	12.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	Husted Road			Husted Road						I-5 North Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	115.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road						I-5 North Ramp		
Base Volume Input [veh/h]	5	152	0	0	310	61	0	0	0	5	0	610
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-131	0	0	-131	-131	0	0	0	0	0	-131
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	21	0	0	179	0	0	0	0	5	0	479
Peak Hour Factor	1.0000	1.0000	0.8500	0.8500	1.0000	1.0000	0.8500	0.8500	0.8500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	0	0	45	0	0	0	0	1	0	120
Total Analysis Volume [veh/h]	5	21	0	0	179	0	0	0	0	5	0	479
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				Yes
Storage Area [veh]	0	0	0	2
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.45
d_M, Delay for Movement [s/veh]	7.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.60	13.02	11.17
Movement LOS	A	A			A	A				B	B	B
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.41	2.41	2.41
95th-Percentile Queue Length [ft/ln]	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.22	60.22	60.22
d_A, Approach Delay [s/veh]	1.46			0.00			0.00			11.19		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	7.91											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 3: Husted Road/I-5 South Ramps

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.123

Intersection Setup

Name	Husted Road			Husted Road			I-5 South Ramp					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			I-5 South Ramp					
Base Volume Input [veh/h]	0	70	5	268	47	0	87	5	5	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	-131	0	0	-131	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	70	5	137	47	0	0	5	5	0	0	0
Peak Hour Factor	0.8500	1.0000	1.0000	1.0000	1.0000	0.8500	1.0000	1.0000	1.0000	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	18	1	34	12	0	0	1	1	0	0	0
Total Analysis Volume [veh/h]	0	70	5	137	47	0	0	5	5	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permis	Permis	Permis	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	5	10	0	0	10	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	14	0	32	46	0	0	14	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	
C, Cycle Length [s]	60	60	60	60	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	40	6	50	2	
g / C, Green / Cycle	0.67	0.10	0.84	0.03	
(v / s)_i Volume / Saturation Flow Rate	0.04	0.08	0.03	0.01	
s, saturation flow rate [veh/h]	1848	1781	1870	1718	
c, Capacity [veh/h]	1238	184	1569	48	
d1, Uniform Delay [s]	3.42	26.21	0.80	28.60	
k, delay calibration	0.50	0.11	0.50	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.09	5.91	0.04	2.14	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.06	0.75	0.03	0.21	
d, Delay for Lane Group [s/veh]	3.52	32.12	0.83	30.74	
Lane Group LOS	A	C	A	C	
Critical Lane Group	Yes	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	0.18	2.00	0.02	0.16	
50th-Percentile Queue Length [ft/ln]	4.56	49.91	0.39	4.01	
95th-Percentile Queue Length [veh/ln]	0.33	3.59	0.03	0.29	
95th-Percentile Queue Length [ft/ln]	8.20	89.83	0.69	7.22	

Generated with PTV VISTRO
Version 2022 (SP 0-11) 3/30/2023

Movement, Approach, & Intersection Results

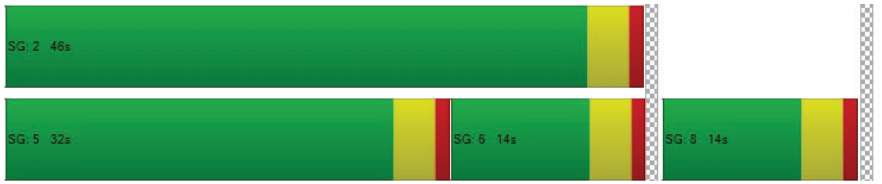
d_M, Delay for Movement [s/veh]	0.00	3.52	3.52	32.12	0.83	0.00	30.74	30.74	30.74	0.00	0.00	0.00
Movement LOS		A	A	C	A		C	C	C			
d_A, Approach Delay [s/veh]	3.52			24.13			30.74			0.00		
Approach LOS	A			C			C			A		
d_I, Intersection Delay [s/veh]	18.63											
Intersection LOS	B											
Intersection V/C	0.123											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	1398	333	0
d_b, Bicycle Delay [s]	20.87	2.72	20.87	30.04
I_b,int, Bicycle LOS Score for Intersection	1.683	1.863	1.576	4.132
Bicycle LOS	A	A	A	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Husted Road/Frontage Road

Control Type:	Signalized	Delay (sec / veh):	33.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.644

Intersection Setup

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	289	330	63	75	516	197	140	110	278	152	230	130
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-2	-1	0	-2	0	0	-1	0	-1	-1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	10	0	0	30	0	0	42	0	0	20
Total Hourly Volume [veh/h]	289	328	52	75	514	167	140	109	236	151	229	110
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	82	13	19	129	42	35	27	59	38	57	28
Total Analysis Volume [veh/h]	289	328	52	75	514	167	140	109	236	151	229	110
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	14	0	32	25	0	20	21	0	13	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Generated with PTV VISTRO
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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	28	28	4	18	18	8	23	8	23
g / C, Green / Cycle	0.19	0.35	0.35	0.06	0.22	0.22	0.10	0.29	0.11	0.29
(v / s)_i Volume / Saturation Flow Rate	0.16	0.10	0.10	0.04	0.19	0.19	0.08	0.21	0.08	0.19
s, saturation flow rate [veh/h]	1781	1870	1782	1781	1870	1715	1781	1669	1781	1769
c, Capacity [veh/h]	332	658	627	101	415	381	180	477	189	515
d1, Uniform Delay [s]	31.69	18.81	18.82	37.24	29.95	29.98	35.19	25.78	35.03	24.94
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.01	0.25	0.26	10.01	5.06	5.62	7.14	9.18	7.60	6.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.30	0.30	0.74	0.85	0.86	0.78	0.72	0.80	0.66
d, Delay for Lane Group [s/veh]	38.69	19.06	19.08	47.25	35.01	35.60	42.33	34.96	42.63	31.41
Lane Group LOS	D	B	B	D	D	D	D	C	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.67	2.40	2.30	1.65	6.60	6.14	2.79	6.36	3.02	5.84
50th-Percentile Queue Length [ft/ln]	141.70	59.99	57.52	41.19	164.98	153.51	69.70	159.07	75.51	145.99
95th-Percentile Queue Length [veh/ln]	9.57	4.32	4.14	2.97	10.81	10.20	5.02	10.50	5.44	9.80
95th-Percentile Queue Length [ft/ln]	239.31	107.98	103.53	74.14	270.31	255.11	125.46	262.49	135.91	245.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.69	19.07	19.08	47.25	35.19	35.60	42.33	34.96	34.96	42.63	31.41	31.41
Movement LOS	D	B	B	D	D	D	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	27.55			36.48			37.08			34.87		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	33.78											
Intersection LOS	C											
Intersection V/C	0.644											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	524	424	250
d_b, Bicycle Delay [s]	30.68	21.81	24.86	30.68
l_b,int, Bicycle LOS Score for Intersection	2.120	2.208	2.429	2.401
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO
Version 2022 (SP 0-11) 3/30/2023

Intersection Level Of Service Report
Intersection 2: Husted Road/I-5 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	19.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.033

Intersection Setup

Name	Husted Road			Husted Road						I-5 North Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	115.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road						I-5 North Ramp		
Base Volume Input [veh/h]	5	208	0	0	782	174	0	0	0	10	5	469
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	-113	0	0	-113	-113	0	0	0	0	0	-113
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	95	0	0	669	61	0	0	0	10	5	356
Peak Hour Factor	1.0000	1.0000	0.9400	0.9400	1.0000	1.0000	0.9400	0.9400	0.9400	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	24	0	0	167	15	0	0	0	3	1	89
Total Analysis Volume [veh/h]	5	95	0	0	669	61	0	0	0	10	5	356
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				Yes
Storage Area [veh]	0	0	0	2
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.37
d_M, Delay for Movement [s/veh]	9.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.12	19.02	10.84
Movement LOS	A	A			A	A				C	C	B
95th-Percentile Queue Length [veh/ln]	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.73	1.73	1.73
95th-Percentile Queue Length [ft/ln]	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.14	43.14	43.14
d_A, Approach Delay [s/veh]	0.46			0.00			0.00			11.17		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	3.49											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 3: Husted Road/I-5 South Ramps

Control Type:	Signalized	Delay (sec / veh):	25.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.404

Intersection Setup

Name	Husted Road			Husted Road			I-5 South Ramp					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			I-5 South Ramp					
Base Volume Input [veh/h]	0	51	10	718	74	0	162	0	5	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	-113	0	0	-113	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	51	10	605	74	0	49	0	5	0	0	0
Peak Hour Factor	0.8500	1.0000	1.0000	1.0000	1.0000	0.8500	1.0000	1.0000	1.0000	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	3	151	19	0	12	0	1	0	0	0
Total Analysis Volume [veh/h]	0	51	10	605	74	0	49	0	5	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permis	Permis	Permis	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	5	10	0	0	10	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	14	0	42	56	0	0	14	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	
C, Cycle Length [s]	70	70	70	70	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	25	26	55	7	
g / C, Green / Cycle	0.36	0.37	0.79	0.09	
(v / s)_i Volume / Saturation Flow Rate	0.03	0.34	0.04	0.03	
s, saturation flow rate [veh/h]	1817	1781	1870	1761	
c, Capacity [veh/h]	657	664	1480	167	
d1, Uniform Delay [s]	14.80	20.89	1.59	29.65	
k, delay calibration	0.50	0.18	0.50	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.28	8.40	0.06	1.11	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.09	0.91	0.05	0.32	
d, Delay for Lane Group [s/veh]	15.08	29.29	1.65	30.76	
Lane Group LOS	B	C	A	C	
Critical Lane Group	Yes	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	0.61	9.48	0.06	0.86	
50th-Percentile Queue Length [ft/ln]	15.23	236.90	1.59	21.52	
95th-Percentile Queue Length [veh/ln]	1.10	14.52	0.11	1.55	
95th-Percentile Queue Length [ft/ln]	27.41	363.11	2.86	38.73	

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Movement, Approach, & Intersection Results

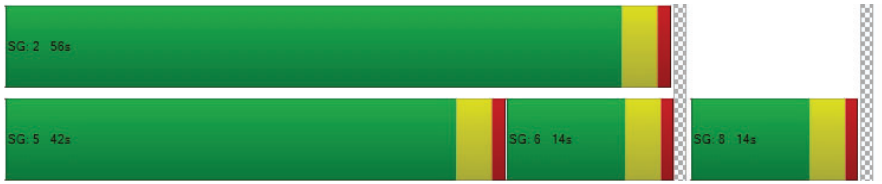
d_M, Delay for Movement [s/veh]	0.00	15.08	15.08	29.29	1.65	0.00	30.76	30.76	30.76	0.00	0.00	0.00
Movement LOS		B	B	C	A		C	C	C			
d_A, Approach Delay [s/veh]	15.08			26.28			30.76			0.00		
Approach LOS	B			C			C			A		
d_I, Intersection Delay [s/veh]	25.72											
Intersection LOS	C											
Intersection V/C	0.404											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	285	1484	285	0
d_b, Bicycle Delay [s]	25.74	2.33	25.74	35.03
I_b,int, Bicycle LOS Score for Intersection	1.660	2.680	1.649	4.132
Bicycle LOS	A	B	A	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Husted Road/Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	10.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.063

Intersection Setup

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	19	24	5	11	37	9	11	22	32	1	29	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	1	0	3	0	0	2	0	1	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	27	6	11	40	9	11	24	32	2	31	5
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	8	2	3	12	3	3	7	9	1	9	1
Total Analysis Volume [veh/h]	22	32	7	13	47	11	13	28	38	2	36	6
Pedestrian Volume [ped/h]	0			0			0			0		

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Intersection Settings

Priority Scheme	Stop		Stop		Free		Free	
Flared Lane	Yes		Yes					
Storage Area [veh]	1		1		0		0	
Two-Stage Gap Acceptance	No		No					
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.04	0.01	0.02	0.06	0.01	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.99	10.03	8.84	9.86	10.16	8.83	7.32	0.00	0.00	7.35	0.00	0.00
Movement LOS	A	B	A	A	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.23	0.23	0.23	0.26	0.26	0.26	0.03	0.03	0.03	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	5.67	5.67	5.67	6.43	6.43	6.43	0.63	0.63	0.63	0.10	0.10	0.10
d_A, Approach Delay [s/veh]	9.88			9.90			1.20			0.33		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	5.55											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Husted Road/I-5 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Husted Road			Husted Road						I-5 North Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	115.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road						I-5 North Ramp		
Base Volume Input [veh/h]	1	8	0	0	66	4	0	0	0	0	2	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	131	0	0	131	131	0	0	0	0	0	131
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	139	0	0	197	135	0	0	0	0	2	171
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	41	0	0	58	40	0	0	0	0	1	50
Total Analysis Volume [veh/h]	1	164	0	0	232	159	0	0	0	0	2	201
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane							Yes	
Storage Area [veh]	0		0		0		2	
Two-Stage Gap Acceptance							No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
d_M, Delay for Movement [s/veh]	8.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.43	14.41	10.28
Movement LOS	A	A			A	A				B	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88	0.88	0.88
95th-Percentile Queue Length [ft/ln]	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.96	21.96	21.96
d_A, Approach Delay [s/veh]	0.05			0.00			0.00			10.32		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	2.77											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 3: Husted Road/I-5 South Ramps

Control Type:	Two-way stop	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Husted Road			Husted Road			I-5 South Ramp					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			I-5 South Ramp					
Base Volume Input [veh/h]	0	1	0	67	5	0	7	4	2	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	131	0	0	131	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1	0	198	5	0	138	4	2	0	0	0
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	58	1	0	41	1	1	0	0	0
Total Analysis Volume [veh/h]	0	1	0	233	6	0	162	5	2	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							Yes					
Storage Area [veh]	0			0			1			0		
Two-Stage Gap Acceptance							No					
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.14	0.00	0.00	0.38	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.59	0.00	0.00	18.60	18.80	13.56	0.00	0.00	0.00
Movement LOS		A	A	A	A		C	C	B			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.50	0.00	0.00	1.82	1.82	1.82	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	12.55	0.00	0.00	45.47	45.47	45.47	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			7.40			18.55			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	11.99											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 1: Husted Road/Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	10.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.051

Intersection Setup

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	39	30	1	12	16	9	14	25	12	9	65	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	1	0	2	0	0	1	0	1	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	32	2	12	18	9	14	26	12	10	66	37
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	9	1	3	5	2	4	7	3	3	18	10
Total Analysis Volume [veh/h]	43	35	2	13	20	10	15	29	13	11	73	41
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO
Version 2022 (SP 0-11) 3/29/2023

Intersection Settings

Priority Scheme	Stop		Stop		Free		Free	
Flared Lane	Yes		Yes					
Storage Area [veh]	1		1		0		0	
Two-Stage Gap Acceptance	No		No					
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.05	0.00	0.02	0.03	0.01	0.01	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	10.56	10.89	9.09	10.21	10.38	8.93	7.47	0.00	0.00	7.31	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.37	0.37	0.37	0.15	0.15	0.15	0.03	0.03	0.03	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	9.26	9.26	9.26	3.69	3.69	3.69	0.77	0.77	0.77	0.53	0.53	0.53
d_A, Approach Delay [s/veh]	10.67			9.99			1.96			0.64		
Approach LOS	B			A			A			A		
d_I, Intersection Delay [s/veh]	4.84											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Husted Road/I-5 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	13.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Husted Road			Husted Road						I-5 North Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	115.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road						I-5 North Ramp		
Base Volume Input [veh/h]	4	13	0	0	45	3	0	0	0	0	3	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	113	0	0	113	113	0	0	0	0	0	113
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	126	0	0	158	116	0	0	0	0	3	176
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	34	0	0	42	31	0	0	0	0	1	47
Total Analysis Volume [veh/h]	4	134	0	0	168	123	0	0	0	0	3	187
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane							Yes	
Storage Area [veh]	0		0		0		2	
Two-Stage Gap Acceptance							No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.20
d_M, Delay for Movement [s/veh]	7.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.16	12.99	9.93
Movement LOS	A	A			A	A				B	B	A
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76	0.76	0.76
95th-Percentile Queue Length [ft/ln]	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.11	19.11	19.11
d_A, Approach Delay [s/veh]	0.23			0.00			0.00			9.97		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	3.11											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 3: Husted Road/I-5 South Ramps

Control Type:	Two-way stop	Delay (sec / veh):	15.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Husted Road			Husted Road			I-5 South Ramp					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			I-5 South Ramp					
Base Volume Input [veh/h]	0	12	0	43	1	0	5	3	1	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	113	0	0	113	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	12	0	156	1	0	118	3	1	0	0	0
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	0	46	0	0	35	1	0	0	0	0
Total Analysis Volume [veh/h]	0	14	0	184	1	0	139	4	1	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO
Version 2022 (SP 0-11) 3/29/2023

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							Yes					
Storage Area [veh]	0			0			1			0		
Two-Stage Gap Acceptance							No					
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.11	0.00	0.00	0.27	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.53	0.00	0.00	14.81	15.13	11.06	0.00	0.00	0.00
Movement LOS		A	A	A	A		B	C	B			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.39	0.00	0.00	1.15	1.15	1.15	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	9.70	0.00	0.00	28.69	28.69	28.69	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			7.49			14.79			0.00		
Approach LOS	A			A			B			A		
d_I, Intersection Delay [s/veh]	10.25											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 1: Husted Road/Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.024

Intersection Setup

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			55.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	19	24	5	11	37	9	11	22	32	1	29	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	3	49	3	3	0	0	5	0	14	3	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	27	54	14	40	9	11	27	32	15	32	6
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	8	16	4	12	3	3	8	9	4	9	2
Total Analysis Volume [veh/h]	22	32	64	16	47	11	13	32	38	18	38	7
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO
Version 2022 (SP 0-11) 4/13/2023

Intersection Settings

Priority Scheme	Stop		Stop		Free		Free	
Flared Lane	Yes		Yes					
Storage Area [veh]	1		1		0		0	
Two-Stage Gap Acceptance	No		No					
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.04	0.06	0.02	0.07	0.01	0.01	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	10.20	10.19	8.73	10.78	10.54	8.93	7.32	0.00	0.00	7.38	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.24	0.24	0.24	0.30	0.30	0.30	0.03	0.03	0.03	0.04	0.04	0.04
95th-Percentile Queue Length [ft/ln]	6.08	6.08	6.08	7.43	7.43	7.43	0.63	0.63	0.63	0.89	0.89	0.89
d_A, Approach Delay [s/veh]	9.40			10.36			1.15			2.11		
Approach LOS	A			B			A			A		
d_I, Intersection Delay [s/veh]	6.22											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Husted Road/I-5 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	15.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Husted Road			Husted Road						I-5 North Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	115.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road						I-5 North Ramp		
Base Volume Input [veh/h]	1	8	0	0	66	4	0	0	0	0	2	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	172	0	0	133	142	0	0	0	0	0	138
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	180	0	0	199	146	0	0	0	0	2	178
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	53	0	0	59	43	0	0	0	0	1	52
Total Analysis Volume [veh/h]	1	212	0	0	234	172	0	0	0	0	2	209
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane							Yes	
Storage Area [veh]	0		0		0		2	
Two-Stage Gap Acceptance							No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
d_M, Delay for Movement [s/veh]	8.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.34	15.37	10.79
Movement LOS	A	A			A	A				B	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00
95th-Percentile Queue Length [ft/ln]	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	25.00	25.00
d_A, Approach Delay [s/veh]	0.04			0.00			0.00			10.84		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	2.76											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 3: Husted Road/I-5 South Ramps

Control Type:	Two-way stop	Delay (sec / veh):	22.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Husted Road			Husted Road			I-5 South Ramp					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			I-5 South Ramp					
Base Volume Input [veh/h]	0	1	0	67	5	0	7	4	2	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	133	0	0	172	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1	0	200	5	0	179	4	2	0	0	0
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	59	1	0	53	1	1	0	0	0
Total Analysis Volume [veh/h]	0	1	0	235	6	0	211	5	2	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO
Version 2022 (SP 0-11) 4/13/2023

Intersection Settings

Priority Scheme	Free			Free			Stop			Stop		
Flared Lane							Yes					
Storage Area [veh]	0			0			1			0		
Two-Stage Gap Acceptance							No					
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.14	0.00	0.00	0.50	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.60	0.00	0.00	21.79	21.99	16.69	0.00	0.00	0.00
Movement LOS		A	A	A	A		C	C	C			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.51	0.00	0.00	2.80	2.80	2.80	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	12.67	0.00	0.00	70.01	70.01	70.01	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			7.41			21.75			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	14.19											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 1: Husted Road/Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	12.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.069

Intersection Setup

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			55.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	39	30	1	12	16	9	14	25	12	9	65	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	14	1	2	0	0	2	0	50	4	3
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	32	15	13	18	9	14	27	12	59	69	40
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	9	4	4	5	3	4	8	4	17	20	12
Total Analysis Volume [veh/h]	46	38	18	15	21	11	16	32	14	69	81	47
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO
Version 2022 (SP 0-11) 4/13/2023

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	Yes	Yes		
Storage Area [veh]	1	1	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.07	0.02	0.03	0.04	0.01	0.01	0.00	0.00	0.04	0.00	0.00
d_M, Delay for Movement [s/veh]	12.22	12.47	9.41	11.95	11.76	9.13	7.50	0.00	0.00	7.41	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.52	0.52	0.52	0.21	0.21	0.21	0.03	0.03	0.03	0.14	0.14	0.14
95th-Percentile Queue Length [ft/ln]	13.09	13.09	13.09	5.20	5.20	5.20	0.83	0.83	0.83	3.46	3.46	3.46
d_A, Approach Delay [s/veh]	11.82			11.21			1.93			2.60		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	5.79											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 2: Husted Road/I-5 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Husted Road			Husted Road						I-5 North Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	115.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road						I-5 North Ramp		
Base Volume Input [veh/h]	4	13	0	0	45	3	0	0	0	0	3	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	124	0	0	120	155	0	0	0	0	0	115
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	137	0	0	165	158	0	0	0	0	3	178
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	40	0	0	49	46	0	0	0	0	1	52
Total Analysis Volume [veh/h]	5	161	0	0	194	186	0	0	0	0	4	209
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO
Version 2022 (SP 0-11) 4/13/2023

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane							Yes	
Storage Area [veh]	0		0		0		2	
Two-Stage Gap Acceptance							No	
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.24
d_M, Delay for Movement [s/veh]	8.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.28	14.41	10.31
Movement LOS	A	A			A	A				B	B	B
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.92	0.92	0.92
95th-Percentile Queue Length [ft/ln]	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.98	22.98	22.98
d_A, Approach Delay [s/veh]	0.24			0.00			0.00			10.38		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	2.97											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 3: Husted Road/I-5 South Ramps

Control Type:	Two-way stop	Delay (sec / veh):	15.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Husted Road			Husted Road			I-5 South Ramp					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			I-5 South Ramp					
Base Volume Input [veh/h]	0	12	0	43	1	0	5	3	1	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	120	0	0	124	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	12	0	163	1	0	129	3	1	0	0	0
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	0	48	0	0	38	1	0	0	0	0
Total Analysis Volume [veh/h]	0	14	0	192	1	0	152	4	1	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free		Free		Stop		Stop	
Flared Lane					Yes			
Storage Area [veh]	0		0		1		0	
Two-Stage Gap Acceptance					No			
Number of Storage Spaces in Median	0		0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.12	0.00	0.00	0.31	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.55	0.00	0.00	15.61	15.91	11.65	0.00	0.00	0.00
Movement LOS		A	A	A	A		C	C	B			
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.41	0.00	0.00	1.35	1.35	1.35	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	10.17	0.00	0.00	33.66	33.66	33.66	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			7.51			15.59			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	10.71											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 1: Husted Road/Frontage Road

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.330

Intersection Setup

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Generated with PTV VISTRO
Version 2022 (SP 0-11) 3/30/2023

Volumes

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	199	488	80	51	201	84	106	86	148	27	71	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	12	0	0	13	0	0	22	0	0	7
Total Hourly Volume [veh/h]	199	488	68	51	201	71	106	86	126	27	71	39
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	122	17	13	50	18	27	22	32	7	18	10
Total Analysis Volume [veh/h]	199	488	68	51	201	71	106	86	126	27	71	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	28	0	9	14	0	9	14	0	9	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Generated with PTV VISTRO
Version 2022 (SP 0-11) 3/30/2023

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	16	16	3	10	10	5	24	2	21
g / C, Green / Cycle	0.14	0.26	0.26	0.05	0.16	0.16	0.08	0.40	0.03	0.35
(v / s)_i Volume / Saturation Flow Rate	0.11	0.15	0.15	0.03	0.07	0.08	0.06	0.13	0.02	0.06
s, saturation flow rate [veh/h]	1781	1870	1791	1781	1870	1708	1781	1692	1781	1760
c, Capacity [veh/h]	254	484	463	87	308	282	138	668	56	614
d1, Uniform Delay [s]	24.88	19.48	19.49	28.00	22.66	22.74	27.21	12.59	28.64	13.61
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.23	1.13	1.19	6.05	1.04	1.22	8.57	1.25	6.27	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.59	0.59	0.58	0.45	0.47	0.77	0.32	0.48	0.18
d, Delay for Lane Group [s/veh]	30.11	20.62	20.68	34.05	23.70	23.96	35.78	13.84	34.91	14.25
Lane Group LOS	C	C	C	C	C	C	D	B	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.78	3.10	2.98	0.79	1.65	1.59	1.61	1.70	0.43	0.91
50th-Percentile Queue Length [ft/ln]	69.45	77.46	74.54	19.84	41.29	39.64	40.30	42.50	10.77	22.76
95th-Percentile Queue Length [veh/ln]	5.00	5.58	5.37	1.43	2.97	2.85	2.90	3.06	0.78	1.64
95th-Percentile Queue Length [ft/ln]	125.01	139.42	134.18	35.70	74.33	71.34	72.53	76.51	19.39	40.96

Movement, Approach, & Intersection Results

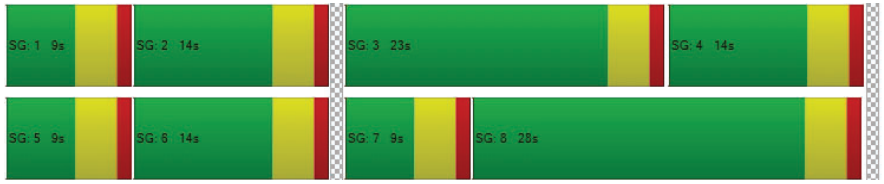
d_M, Delay for Movement [s/veh]	30.11	20.64	20.68	34.05	23.78	23.96	35.78	13.84	13.84	34.91	14.25	14.25
Movement LOS	C	C	C	C	C	C	D	B	B	C	B	B
d_A, Approach Delay [s/veh]	23.14			25.44			21.15			18.32		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	22.78											
Intersection LOS	C											
Intersection V/C	0.330											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	799	333	333	333
d_b, Bicycle Delay [s]	10.83	20.87	20.87	20.87
l_b,int, Bicycle LOS Score for Intersection	2.192	1.837	2.121	1.797
Bicycle LOS	B	A	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Intersection Level Of Service Report
Intersection 2: Husted Road/I-5 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	20.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Husted Road			Husted Road						I-5 North Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	115.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road						I-5 North Ramp		
Base Volume Input [veh/h]	5	152	0	0	310	61	0	0	0	5	0	610
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	152	0	0	310	61	0	0	0	5	0	610
Peak Hour Factor	1.0000	1.0000	0.8500	0.8500	1.0000	1.0000	0.8500	0.8500	0.8500	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	38	0	0	78	15	0	0	0	1	0	153
Total Analysis Volume [veh/h]	5	152	0	0	310	61	0	0	0	5	0	610
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				Yes
Storage Area [veh]	0	0	0	2
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.68
d_M, Delay for Movement [s/veh]	8.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.89	21.34	17.38
Movement LOS	A	A			A	A				C	C	C
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.67	5.67	5.67
95th-Percentile Queue Length [ft/ln]	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	141.87	141.87	141.87
d_A, Approach Delay [s/veh]	0.26			0.00			0.00			17.41		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	9.40											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 3: Husted Road/I-5 South Ramps

Control Type:	Signalized	Delay (sec / veh):	22.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.246

Intersection Setup

Name	Husted Road			Husted Road			I-5 South Ramp					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			I-5 South Ramp					
Base Volume Input [veh/h]	0	70	5	268	47	0	87	5	5	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	70	5	268	47	0	87	5	5	0	0	0
Peak Hour Factor	0.8500	1.0000	1.0000	1.0000	1.0000	0.8500	1.0000	1.0000	1.0000	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	18	1	67	12	0	22	1	1	0	0	0
Total Analysis Volume [veh/h]	0	70	5	268	47	0	87	5	5	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permis	Permis	Permis	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	5	10	0	0	10	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	14	0	32	46	0	0	14	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	
C, Cycle Length [s]	60	60	60	60	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	29	11	44	8	
g / C, Green / Cycle	0.48	0.19	0.73	0.13	
(v / s)_i Volume / Saturation Flow Rate	0.04	0.15	0.03	0.05	
s, saturation flow rate [veh/h]	1848	1781	1870	1774	
c, Capacity [veh/h]	884	332	1368	241	
d1, Uniform Delay [s]	8.53	23.43	2.23	23.78	
k, delay calibration	0.50	0.11	0.50	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.19	4.64	0.05	1.09	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.08	0.81	0.03	0.40	
d, Delay for Lane Group [s/veh]	8.72	28.07	2.27	24.87	
Lane Group LOS	A	C	A	C	
Critical Lane Group	Yes	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	0.45	3.59	0.06	1.24	
50th-Percentile Queue Length [ft/ln]	11.15	89.77	1.53	30.89	
95th-Percentile Queue Length [veh/ln]	0.80	6.46	0.11	2.22	
95th-Percentile Queue Length [ft/ln]	20.07	161.58	2.76	55.59	

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Movement, Approach, & Intersection Results

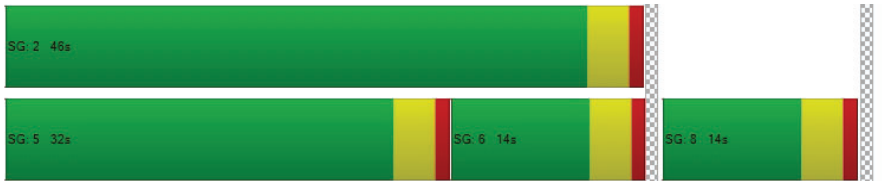
d_M, Delay for Movement [s/veh]	0.00	8.72	8.72	28.07	2.27	0.00	24.87	24.87	24.87	0.00	0.00	0.00
Movement LOS		A	A	C	A		C	C	C			
d_A, Approach Delay [s/veh]	8.72			24.22			24.87			0.00		
Approach LOS	A			C			C			A		
d_I, Intersection Delay [s/veh]	21.96											
Intersection LOS	C											
Intersection V/C	0.246											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	1398	333	0
d_b, Bicycle Delay [s]	20.87	2.72	20.87	30.04
I_b,int, Bicycle LOS Score for Intersection	1.683	2.079	1.720	4.132
Bicycle LOS	A	B	A	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: Husted Road/Frontage Road

Control Type:	Signalized	Delay (sec / veh):	33.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			55.00			55.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

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Volumes

Name	Husted Road			Husted Road			Frontage Road			Frontage Road		
Base Volume Input [veh/h]	289	330	63	75	516	197	140	110	278	152	230	130
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	10	0	0	30	0	0	42	0	0	20
Total Hourly Volume [veh/h]	289	330	53	75	516	167	140	110	236	152	230	110
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	83	13	19	129	42	35	28	59	38	58	28
Total Analysis Volume [veh/h]	289	330	53	75	516	167	140	110	236	152	230	110
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis	Protect	Permis	Permis
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	14	0	32	25	0	20	21	0	13	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
I2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	28	28	4	18	18	8	23	8	23
g / C, Green / Cycle	0.19	0.35	0.35	0.06	0.22	0.22	0.10	0.29	0.11	0.29
(v / s)_i Volume / Saturation Flow Rate	0.16	0.10	0.11	0.04	0.19	0.19	0.08	0.21	0.09	0.19
s, saturation flow rate [veh/h]	1781	1870	1781	1781	1870	1716	1781	1669	1781	1769
c, Capacity [veh/h]	332	659	627	101	416	382	180	475	190	514
d1, Uniform Delay [s]	31.69	18.80	18.81	37.24	29.93	29.96	35.19	25.88	35.00	24.99
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.01	0.25	0.26	10.01	5.07	5.63	7.14	9.40	7.60	6.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.30	0.30	0.74	0.85	0.86	0.78	0.73	0.80	0.66
d, Delay for Lane Group [s/veh]	38.69	19.05	19.08	47.25	35.00	35.59	42.33	35.27	42.60	31.55
Lane Group LOS	D	B	B	D	C	D	D	D	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.67	2.42	2.32	1.65	6.62	6.16	2.79	6.42	3.04	5.87
50th-Percentile Queue Length [ft/ln]	141.70	60.48	57.95	41.19	165.45	153.96	69.70	160.42	75.98	146.84
95th-Percentile Queue Length [veh/ln]	9.57	4.35	4.17	2.97	10.84	10.23	5.02	10.57	5.47	9.85
95th-Percentile Queue Length [ft/ln]	239.31	108.86	104.31	74.14	270.92	255.71	125.46	264.28	136.76	246.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.69	19.06	19.08	47.25	35.18	35.59	42.33	35.27	35.27	42.60	31.55	31.55
Movement LOS	D	B	B	D	D	D	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	27.51			36.47			37.31			34.96		
Approach LOS	C			D			D			C		
d_I, Intersection Delay [s/veh]	33.83											
Intersection LOS	C											
Intersection V/C	0.646											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	250	524	424	250
d_b, Bicycle Delay [s]	30.68	21.81	24.86	30.68
l_b,int, Bicycle LOS Score for Intersection	2.122	2.210	2.431	2.404
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Intersection Level Of Service Report
Intersection 2: Husted Road/I-5 North Ramps

Control Type:	Two-way stop	Delay (sec / veh):	29.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.026

Intersection Setup

Name	Husted Road			Husted Road						I-5 North Ramp		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	115.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road						I-5 North Ramp		
Base Volume Input [veh/h]	5	208	0	0	782	174	0	0	0	10	5	469
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	208	0	0	782	174	0	0	0	10	5	469
Peak Hour Factor	1.0000	1.0000	0.9400	0.9400	1.0000	1.0000	0.9400	0.9400	0.9400	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	52	0	0	196	44	0	0	0	3	1	117
Total Analysis Volume [veh/h]	5	208	0	0	782	174	0	0	0	10	5	469
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				Yes
Storage Area [veh]	0	0	0	2
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.05	0.03	0.56
d_M, Delay for Movement [s/veh]	10.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.75	29.93	15.35
Movement LOS	B	A			A	A				D	D	C
95th-Percentile Queue Length [veh/ln]	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.91	3.91	3.91
95th-Percentile Queue Length [ft/ln]	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.75	97.75	97.75
d_A, Approach Delay [s/veh]	0.24			0.00			0.00			15.80		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	4.66											
Intersection LOS	D											

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Intersection Level Of Service Report
Intersection 3: Husted Road/I-5 South Ramps

Control Type:	Signalized	Delay (sec / veh):	28.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.531

Intersection Setup

Name	Husted Road			Husted Road			I-5 South Ramp					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	140.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	45.00			45.00			35.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No					
Crosswalk	No			No			No			No		

Volumes

Name	Husted Road			Husted Road			I-5 South Ramp					
Base Volume Input [veh/h]	0	51	10	718	74	0	162	0	5	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	51	10	718	74	0	162	0	5	0	0	0
Peak Hour Factor	0.8500	1.0000	1.0000	1.0000	1.0000	0.8500	1.0000	1.0000	1.0000	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	3	180	19	0	41	0	1	0	0	0
Total Analysis Volume [veh/h]	0	51	10	718	74	0	162	0	5	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major stree	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing major street [	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing minor stree	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

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Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permis	Permis	Permis	Protect	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	5	2	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	5	10	0	0	10	0	0	0	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Split [s]	0	14	0	42	56	0	0	14	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	L	C	C	
C, Cycle Length [s]	70	70	70	70	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	18	30	52	10	
g / C, Green / Cycle	0.26	0.43	0.75	0.14	
(v / s)_i Volume / Saturation Flow Rate	0.03	0.40	0.04	0.09	
s, saturation flow rate [veh/h]	1817	1781	1870	1775	
c, Capacity [veh/h]	466	773	1398	246	
d1, Uniform Delay [s]	20.07	18.80	2.33	28.73	
k, delay calibration	0.50	0.27	0.50	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.58	11.90	0.07	3.29	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.13	0.93	0.05	0.68	
d, Delay for Lane Group [s/veh]	20.65	30.71	2.40	32.02	
Lane Group LOS	C	C	A	C	
Critical Lane Group	Yes	Yes	No	Yes	
50th-Percentile Queue Length [veh/ln]	0.76	11.53	0.13	2.74	
50th-Percentile Queue Length [ft/ln]	19.07	288.14	3.28	68.60	
95th-Percentile Queue Length [veh/ln]	1.37	17.09	0.24	4.94	
95th-Percentile Queue Length [ft/ln]	34.33	427.34	5.90	123.48	

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Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	20.65	20.65	30.71	2.40	0.00	32.02	32.02	32.02	0.00	0.00	0.00
Movement LOS		C	C	C	A		C	C	C			
d_A, Approach Delay [s/veh]	20.65			28.06			32.02			0.00		
Approach LOS	C			C			C			A		
d_I, Intersection Delay [s/veh]	28.27											
Intersection LOS	C											
Intersection V/C	0.531											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	285	1484	285	0
d_b, Bicycle Delay [s]	25.74	2.33	25.74	35.03
I_b,int, Bicycle LOS Score for Intersection	1.660	2.866	1.835	4.132
Bicycle LOS	A	C	A	D

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-