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MEMORANDUM #6

Date:	October 5, 2023
To:	Project Management Team
From:	Will Hume, Mingwei Shen, and Camille Alexander, HDR; Jacki Smith, Dan Bowers, and Matt Kittelson, Kittelson & Associates, Inc.
Project:	South Madras Concept Area Refinement Plan
Subject:	Technical Memorandum #6 – Concept Evaluation (Task 6.1)

Project #: 27003.004

This memorandum presents initial concepts to address transportation needs identified within the South Madras Concept Refinement Plan (Refinement Plan) study area. Evaluation of those concepts against the project Goals and Objectives is also included. Transportation needs were previously identified through a comprehensive review of existing and future conditions, including an analysis of the future buildout within the South Madras area. The concepts and evaluation presented within this memorandum will be reviewed by the Project Advisory Committee (PAC) and the public through engagement events scheduled for October 12th. The concept alternatives presented will be refined through advisory committee and public feedback to select a Preferred Concept, which will be shared with and reviewed by the PAC in December.

PURPOSE AND NEED STATEMENT

Based on the existing and future conditions analysis and feedback from the Project Advisory Committee (PAC), Project Management Team (PMT), and Public Open House #1, the following needs (gaps and deficiencies) have been identified to date based on existing conditions and the projected increase in traffic demand and economic development in the South Madras Concept Area:

1. **Insufficient Side Street and Mainline Capacity on US97**

The south end of Madras experiences high traffic volumes on US97 today, particularly in the summertime and on holiday weekends. US97 is a critical regional, recreational, and freight route that bisects the City of Madras. Regional growth is expected to increase traffic volumes on US97 by approximately 0.75% annually. In addition to regional growth, the South Madras Area is a key economic growth area for the City. Buildout of the vacant and development opportunities areas will increase local traffic volumes circulating on both the local and state system. A combination of local and regional growth is anticipated to result in an average cumulative growth rate of 2.6% yearly on the highway system.

Future segment volumes indicate that US97 will operate near capacity in the study area by 2045. However, as Madras continues to urbanize, highway throughput capacities will likely

decrease due to the need to adequately service side street approaches and result in highway breakdowns. Other areas of Madras, as well as communities in Central Oregon, currently experience travel demand similar to what is forecast for the South Madras area.

2. Lack of East-West Connectivity between J Street and US26

Currently there are no east-west routes south of J Street that connect Culver Highway to Adams Drive. This lack of connectivity increases reliance on US97 for local circulation. The TSP identifies future east-west extensions of Hall Road and Fairgrounds Road to help alleviate this condition.

Table 1 documents the segment capacity operations of US97, Culver Highway, and Adams Drive in the future. As shown, US97 is expected to operate near capacity while Culver Highway and Adams Drive are expected to have ample reserve capacity available to support local circulation in South Madras.

Table 1. Study Road Segment Operations

Roadway Segment	Direction	Peak Hour from 2023 Traffic Counts	2045 Peak Hour Traffic Volumes	Capacity Estimate (vphpl*)	Calculated V/C Ratio
US97 approx. 100 ft north of Fairgrounds Rd	NB	3:45-4:45pm	1361	1,750	0.78
	SB	3:15-4:15pm	1530		0.87
Culver Hwy approx. 100 ft south of Fairgrounds Rd	NB	7:15-8:15am	407	1,750	0.23
	SB	4:30-5:30pm	454		0.26
Adams Drive north of Hall Road	NB	3:20-4:20pm	61	750**	0.08
	SB	3:20-4:20pm	68		0.09

*vphpl = vehicle per hour per lane

**Collector roadway capacity from Table 2 in the *Highway Capacity Manual Simplified Highway Capacity Calculation Method for the Highway Performance Monitoring System*

3. Incomplete pedestrian and bicycle network

Both the pedestrian and bicycle network throughout south Madras are incomplete with gaps on the highway and local system. Additionally, the majority of the pedestrian and bicycle facilities operate with moderate to high stress for users. Pedestrian and bicycle facilities are present on US97 north of Fairgrounds Road via separated sidewalks and on street bike lanes; however, not present to the south. No pedestrian or bicycle facilities are located on Culver Highway or Adams Drive.

There are no traffic control devices or median crossings of US97 in the study area with the exception of an existing rectangular rapid flash beach (RRFB) between Fairgrounds Road and Bard Lane. As part of the US97: Earl to Colfax STIP project, two RRFBs are planned to be installed on US97 – one south of Brush Lane and one north of Hall Road.

The gaps and missing segments of pedestrian and bicycle infrastructure create barriers for people walking and biking throughout the study area which will be further exacerbated as available lands begin to develop in south Madras creating additional destinations and attractions.

PLANNING CONTEXT OVERVIEW

The City of Madras TSP includes several planned roadway and intersection improvements in the study area. As the TSP has a 20-year planning horizon, all projects included in the TSP were included in the development concepts included in this memorandum. Exhibit 1 shows the existing and proposed road network within the study area as provided in the TSP. Descriptions of the projects as described in the TSP are also below in Table 2.

As shown, the Madras TSP assumes that highway traffic will continue to be served via the existing US97, Culver Highway, and Adams Drive alignments through the city. This is consistent with the findings of this memorandum that show north-south demand is not expected to exceed capacity through the 2045 horizon year assuming side street capacity and east-west connectivity needs are effectively addressed. Given the availability of north-south capacity, a highway bypass has not been considered through this concept development process. Such an improvement would be prohibitively expensive to implement in the short-term and may require goal exceptions for such a road to travel outside the Urban Growth Boundary to avoid developed areas.

Prior version of the Madras TSP contemplated a truck bypass, that would have diverted west at the US97/US26/Colfax Ln intersection, utilized a portion of the Culver Highway alignment, and then connected back to US97 and US26 in the vicinity of Cedar St. However, development that has been constructed since then has resulted in the prior alignment being unfeasible to implement today.

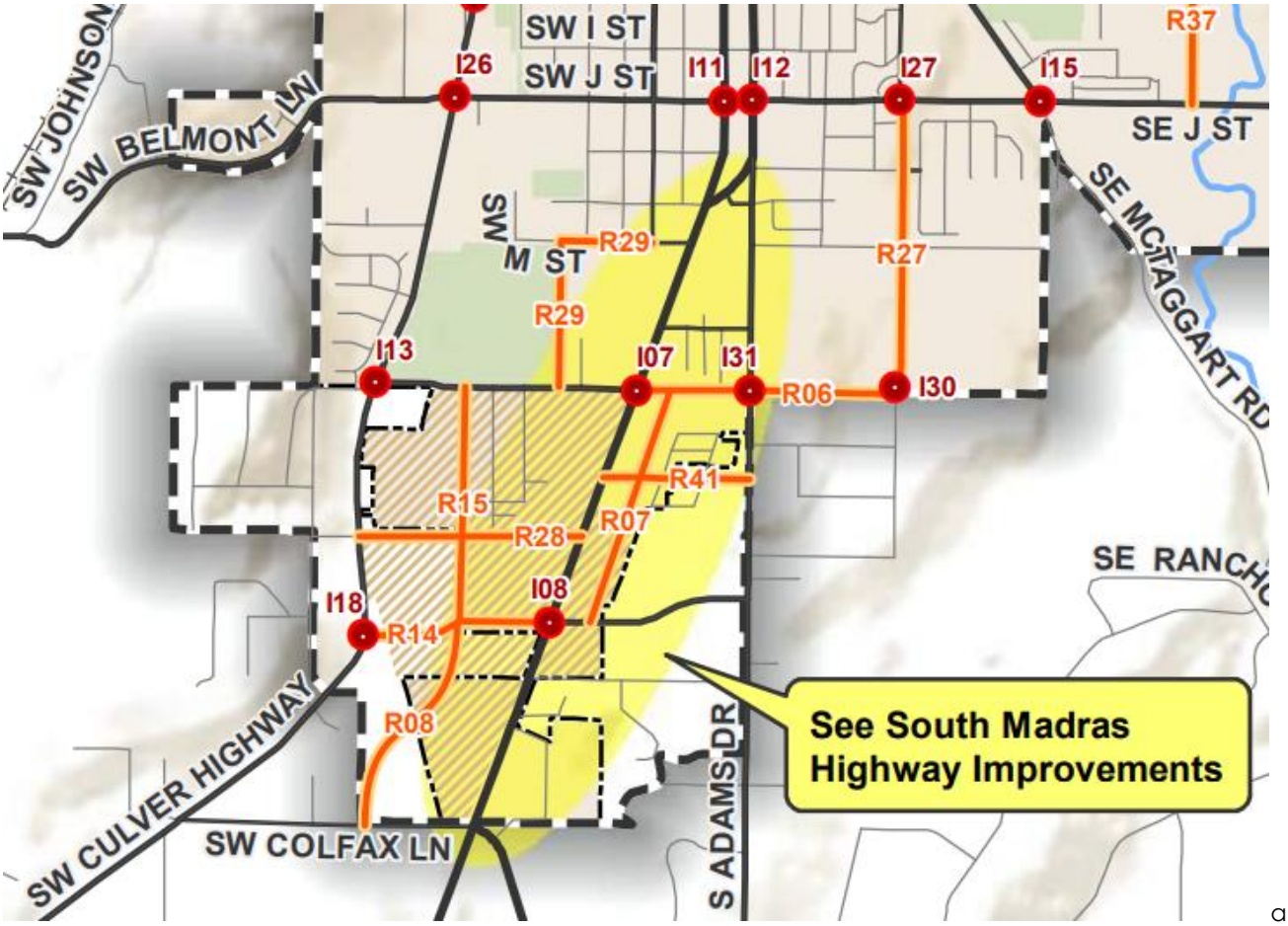


Exhibit 1. Roadway and Intersection Improvement Projects as shown in the City of Madras TSP

Table 2. City of Madras TSP Improvement Project Information

ID	Location	Notes
R06	Fairgrounds Road Eastern Extension	Extend Fairgrounds Road to 10th Street extension
R07	Hall Road to Fairgrounds Road Eastern N/S Connection	Construct new roadway between proposed Fairgrounds Road Extension (R06) and Hall Road
R08	Hall Road to Colfax Lane Connection	Construct new roadway between proposed Hall Road extension to Colfax Lane
R14	Hall Road Extension	Extend Hall Rd to Culver Highway
R15	Hall Street-Fairgrounds Road Connection	Construct new roadway to connect Hall Rd Extension (R14) to Fairgrounds Rd

ID	Location	Notes
R28	E/W connection between Fairgrounds Road and Hall Road	Create new E/W connection between Fairgrounds Road and Hall Road within the South Concept Area
R29	Fairgrounds Road to 2nd Street Connection	Construct a roadway connecting Fairgrounds Road and 2nd Street
I07	US97/Fairgrounds	Construct intersection improvement to address capacity and safety needs for Concept Area
I08	US97/Hall Road	Construct intersection improvement to address capacity and safety needs for Concept Area
I11	J Street/4th Street	Install signals at 4th Street (SB US97) and J Street, and 5th Street (NB US97) and J Street
I12	J Street/5th Street	Install signals at 4th Street (SB US97) and J Street, and 5th Street (NB US97) and J Street
I13	Culver Highway/Fairgrounds Road	Eliminate intersection skew angle
I18	Culver Highway/Hall Road Extension Concept Area Intersection Enhancements	Upgrade intersection to address capacity needs for Concept Area
I26	J Street/Culver Highway	Consider long-term capacity enhancements

CONCEPT DEVELOPMENT

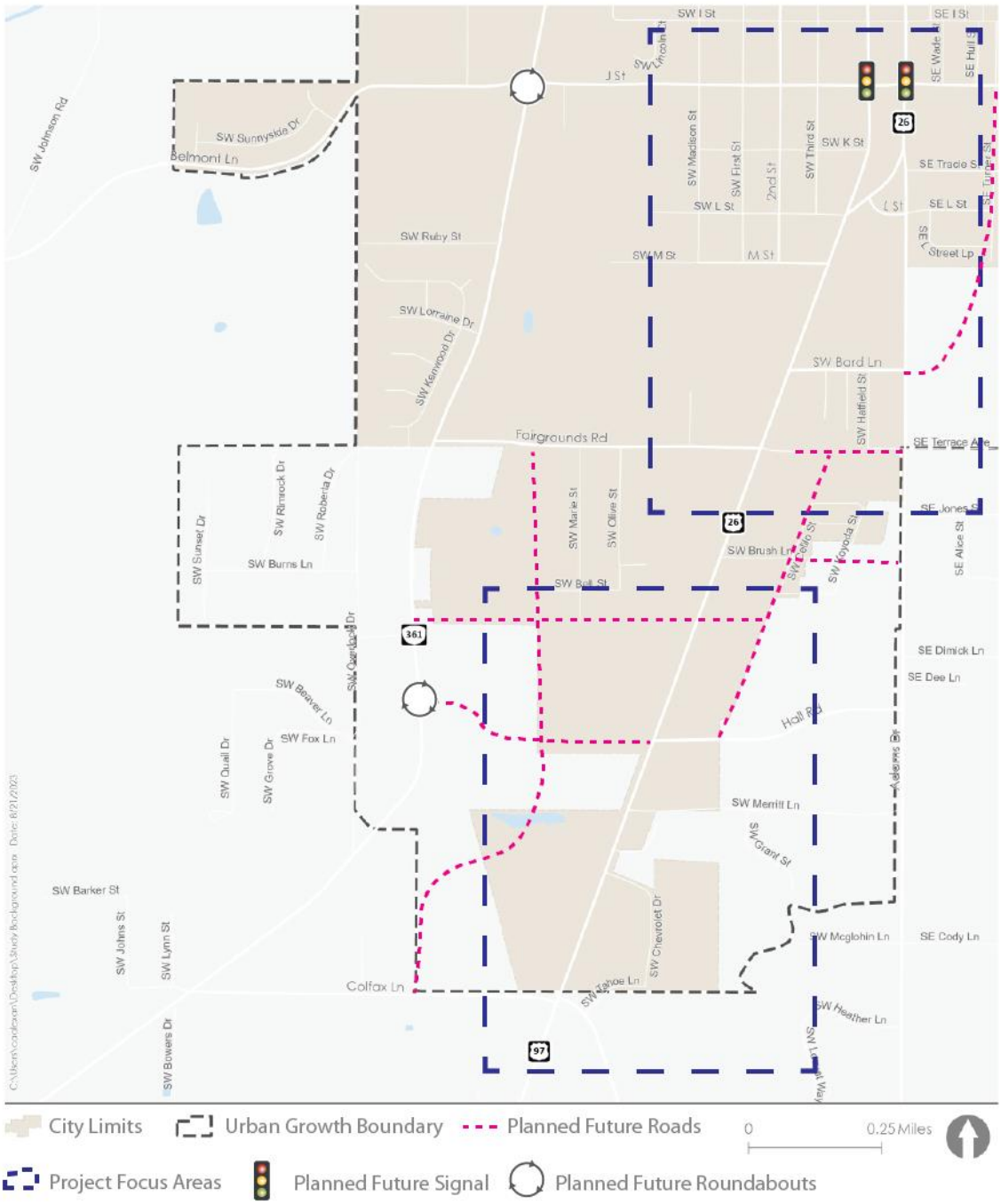
Three high-level concepts were developed and evaluated to address the transportation needs discussed above, including:

- A southern extension of the existing US 97 couplet,
- An interchange at US97/US26/Colfax Lane to provide additional access to Culver Highway, and
- Adding additional travel lanes on the existing US97 alignment.

Each concept is presented in additional detail in the following subsections. Also included is an evaluation of a No-Build alternative.

Full layouts of each concept are included in the Appendix. Figure 1 shows the two primary focus areas for each concept presented within this memo.

Figure 1. Project Focus Area



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With exception to the no-build alternative, all other concepts have been assumed to include the following improvements consistent with the Madras TSP:

- Two roundabouts on Culver Highway at Hall Road and J Street
- Two traffic signals on US97 couplet at J Street
- Additional connections in local road network as shown in the City TSP

Each of the following evaluation elements was developed for each concept to identify key performance and implementation differences between the concepts.

- Expected Construction Impacts
- Study Intersection Operational Performance
- Safety Performance Review
- Multimodal System Integration
- Access Management Review
- Environmental Review
- Cost Opinion

The results of this evaluation are presented later in the memo.

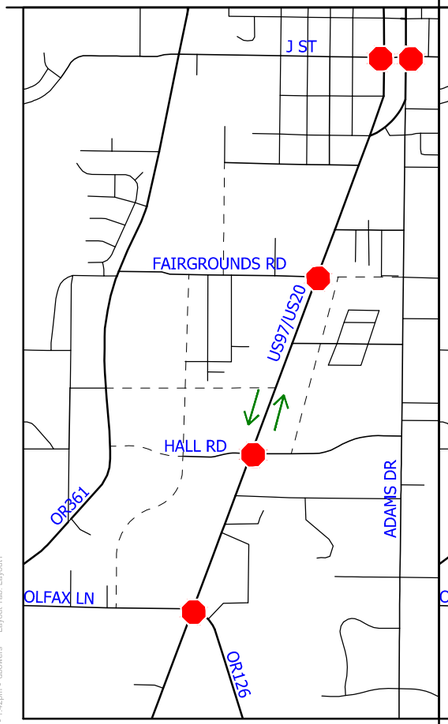
A high level of summary of operational outcomes for various scenarios is presented in Figure 2. The No Build, 5-Lane Signalized concept, Couplet Concept, and two options of the Interchange concept are presented in more detail in the following sections.

2045 Concept Alternative Operations Summary

For conceptual use only
Date: August 2023

NO BUILD

Existing 3-lane section and lane configurations



OPERATIONAL PERFORMANCE

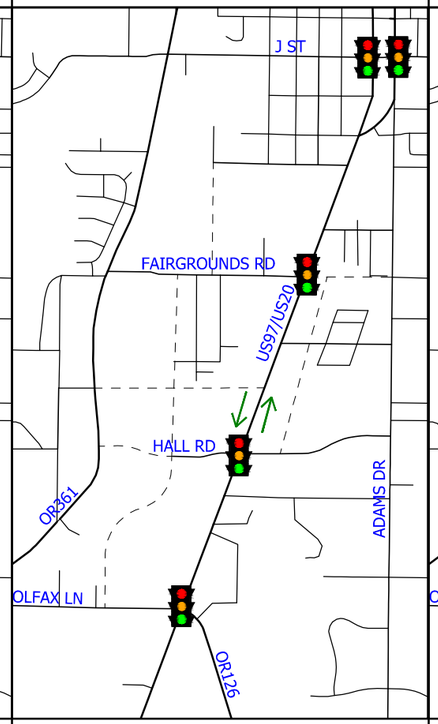
- US97 SB/J ST
- US97 NB/J ST
- US97/FAIRGROUNDS RD
- US97/HALL RD
- US97/COLFAX LN

NOTES:

Side street turning movements over capacity

US97 3-LANES (SIGNALIZED)

US97 3-lane cross section with two-way left turn lane and traffic signals at key intersections



- US97 SB/J ST
- US97 NB/J ST
- US97/FAIRGROUNDS RD
- US97/HALL RD
- US97/COLFAX LN

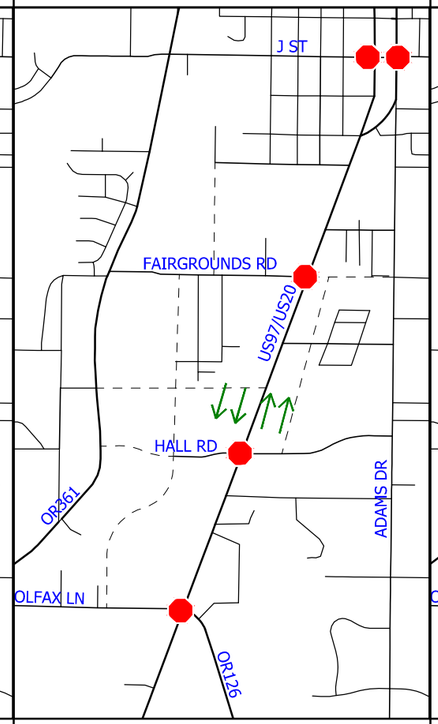
NOTES:

Fairgounds, Hall, and Colfax experience long queues with traffic signal intersection control and 3-lane section

J St signals approaching capacity

US97 5-LANES (UNSIGNALIZED)

US97 5-lane cross section with two-way left turn lane and free-flow through traffic



- US97 SB/J ST
- US97 NB/J ST
- US97/FAIRGROUNDS RD
- US97/HALL RD
- US97/COLFAX LN

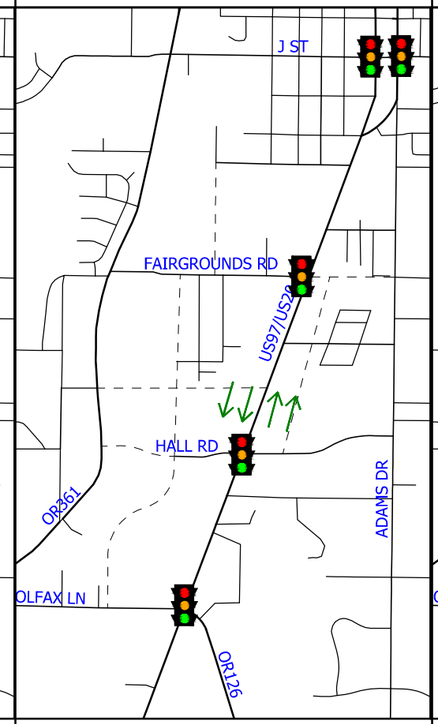
NOTES:

Side street turning movements over capacity

No unsignalized alternative intersection operates below capacity

US97 5-LANES (SIGNALIZED)

US97 5-lane cross section with two-way left turn lane and traffic signals at key intersections



- US97 SB/J ST
- US97 NB/J ST
- US97/FAIRGROUNDS RD
- US97/HALL RD
- US97/COLFAX LN

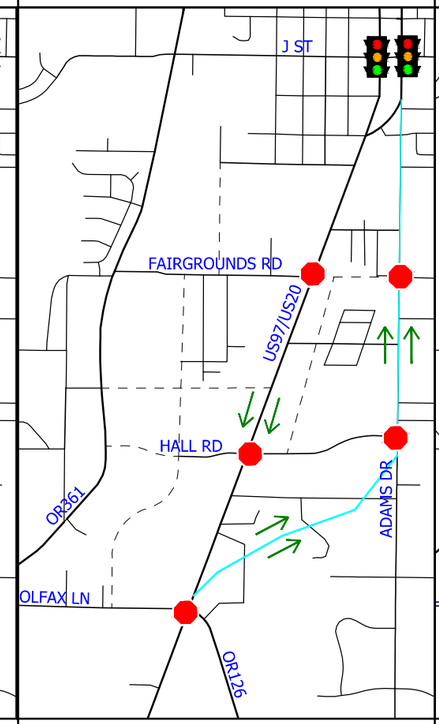
NOTES:

Fairgrounds, Hall, and Colfax signals below HDM=0.7. J St signals approaching capacity.

J St signals approaching capacity

COUPLET

Extension of the couplet south beginning north of Colfax Lane. Two travel lanes in each direction.



- US97 SB/J ST
- US97 NB/J ST
- US97/FAIRGROUNDS RD
- US97/HALL RD
- US97/COLFAX LN

NOTES:

Through movements across US97 prohibited

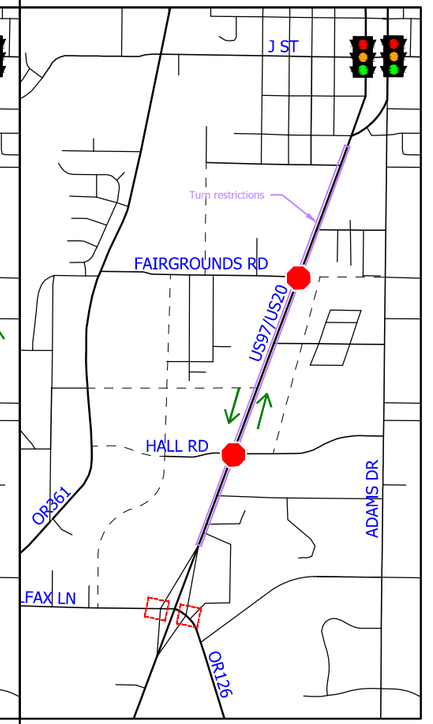
Side street right turn movements over capacity

J St signals approaching capacity

If signalized, Fairgrounds Rd, Hall Rd, and Colfax Ln intersections would operate below capacity

INTERCHANGE

One travel lane in each direction on US97 with an interchange at Colfax Lane and turn restrictions between Colfax Lane and the couplet.



- US97 SB/J ST
- US97 NB/J ST
- US97/FAIRGROUNDS RD
- US97/HALL RD
- US97/COLFAX LN

NOTES:

Turning movements restricted on US97

Advanced intersection control at Colfax Lane. Two potential connections to Culver Hwy (existing Colfax or new road to Culver Hwy)

J St signals approaching capacity

US97/Fairgrounds approaching capacity as stop control

LEGEND

- Two-way stop control
- Traffic signal
- Advanced Intersection Control (Roundabout or Traffic Signal)
- Raised median
- Single lane each direction
- Two lanes each direction
- Two lanes one direction
- Exceeds capacity
- Approaching/At Capacity
- Meets operational target
- New Road for Couplet

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Figure 2 - South Madras Concept Area Refinement Plan

Madras, OR

NO BUILD ALTERNATIVE

This alternative was evaluated as part of the Future Conditions memorandum (Tech Memo #5) and assumes no transportation infrastructure improvements except for current funded projects in the study area.

As indicated previously, expected increases in development-related and regional traffic in the study area are forecast to increase congestion and delay at the study intersections, particularly for side street movements. This condition creates access/circulation barriers and operational challenges for all users. This alternative establishes the baseline for evaluating and understanding the potential impacts of the developing area compared to the goals and objectives of the City's TSP and this study.

Expected Construction Impacts

No projects proposed beyond those currently funded. Thus, no additional construction impacts are anticipated.

Study Intersection Operational Performance

Future year operational conditions were analyzed at all the study intersections outlined in the methodology memorandum (Tech Memo #3). Under the No-Build Alternative, all study intersections are forecast to operate above capacity and adopted mobility standards. This is primarily driven by expected side-street delay due to expected economic growth in the study area. Detailed operational results for this scenario can be found in Tech Memo #5.

Safety Performance Review

In the no build scenario, no improvements are proposed that would affect safety. It is expected that the existing safety conditions may deteriorate as side street demand increases along the corridor and produces more potential conflicts.

Multimodal System Integration

No changes proposed beyond those currently funded or identified within the Madras TSP.

Access Management Review

No changes to intersection or driveway access beyond what is currently identified in adopted plans.

Environmental Review

There are no environmental impacts included with the no-build alternative as no additional non-funded infrastructure improvements are assumed.

Cost Opinion

There is no cost estimate included with the no-build alternative as no additional non-funded infrastructure improvements are assumed.

COUPLET EXTENSION CONCEPT

The couplet extension concept (focus areas shown in Figure3 and Figure 4, full concept shown in Attachment 1) would extend the north-south couplet of US97 from downtown Madras to the US97/US26/Colfax Lane intersection. Southbound US97 would follow the existing US97 alignment while the northbound would be aligned to connect to Adams Drive north of Hall Road. The couplet extension is assumed to have two lanes in each direction, providing continuity with the existing couplet to the north. The expected width of the couplet (e.g., the distance between the northbound lanes and southbound lanes) would be wider than typical in some locations and may require additional wayfinding measures for travelers.

Expected Construction Impacts

The couplet minimizes potential right-of-way impacts at the US97/US26/Colfax Lane intersection and along the existing US97 alignment. During construction, traffic could be maintained on the existing US97 alignment without extensive closures or detours. However, construction of the new proposed northbound connection may require significant earthwork excavation due to the topography in the area.

Study Intersection Operational Performance

All study intersections are forecast to operate above capacity within this alternative assuming intersections operate as side-street stop-controlled. However, compared to the no-build scenario, the queues at the key intersections are lower and movements crossing the highway do not need to be restricted. Changing to one-way traffic on the US 97 mainline would make traffic signals a viable option to improve operations with no need for widening or queue mitigation.

Detailed operational results for this scenario can be found in Appendix A.

Safety Performance Review

The crash reduction factor table provided by ODOT was consulted to select crash reduction factors (CRF's) applicable to each concept alternative. These CRF's indicate the factor by which crashes could change due to roadway network modifications, such as adding lanes, changing intersection control, or installing sidewalk. Some relevant CRF's could apply to all proposed alternatives, and some would apply only to certain scenarios. All selected CRF's are noted in Appendix A. For the couplet scenario, all the typical CRF's were included as well as a reduction factor for one way traffic. Transitioning roads from two-way to one-way has been

shown to reduce the occurrence of crashes at intersections and for people walking and biking.

Multimodal System Integration

The couplet extension would integrate bicycle and pedestrian facilities along the highway alignment by providing bi-directional multi-use paths along the existing US97 alignment (southbound direction) and the future alignment (northbound direction), shown in Figure 3 and Figure 4. Providing robust pedestrian and bicycle facilities along both alignments provides significant network improvements for people walking and biking within the study area, which would increase route options and reduce out of direction travel. The proposed US97 cross-section in this concept would also reduce crossing distances by eliminating the need for a 4 or 5 lane facility.

Given the distance between the northbound and southbound couplet roadway facilities, two-way cycle tracks may be considered to limit the need for out of direction travel for cyclists. Such a design would require modifications to the ROW allocations shown in Figure 5.

Access Management Review

The couplet extension would separate northbound and southbound traffic into two one-way streets and therefore eliminates conflict points at intersections and driveways. However, the distance between northbound and southbound US97 along the couplet extension ranges from 500 feet to 1800 feet, which is a wider distance than a typical couplet. As a result, this concept may require out-of-direction travel for some road users to reach their destinations and make wayfinding challenging for those unfamiliar with the roadway network.

Environmental Review

Based on the preliminary alignment assumed for the new northbound highway alignment, no impacts to identified environmental areas, such as wetlands, are expected. Additional review and analysis are necessary to fully understand potential environmental impacts. Such an analysis would be completed during future project development and project design efforts.

Cost Opinion

The cost opinion for this alternative could range from $20 million to $25 million in 2023 dollars. The opinion includes asphalt pavement, aggregate base, and pedestrian facilities for the couplet streets as well as earthwork excavation required to construct the northbound connector. Other improvements described in the “Concept Development” section are accounted for in this estimate. A high-level cost estimate is provided in Appendix B.

Figure 3. Couplet Extension Alternative (North)

Figure 4. Couplet Extension Alternative (South)

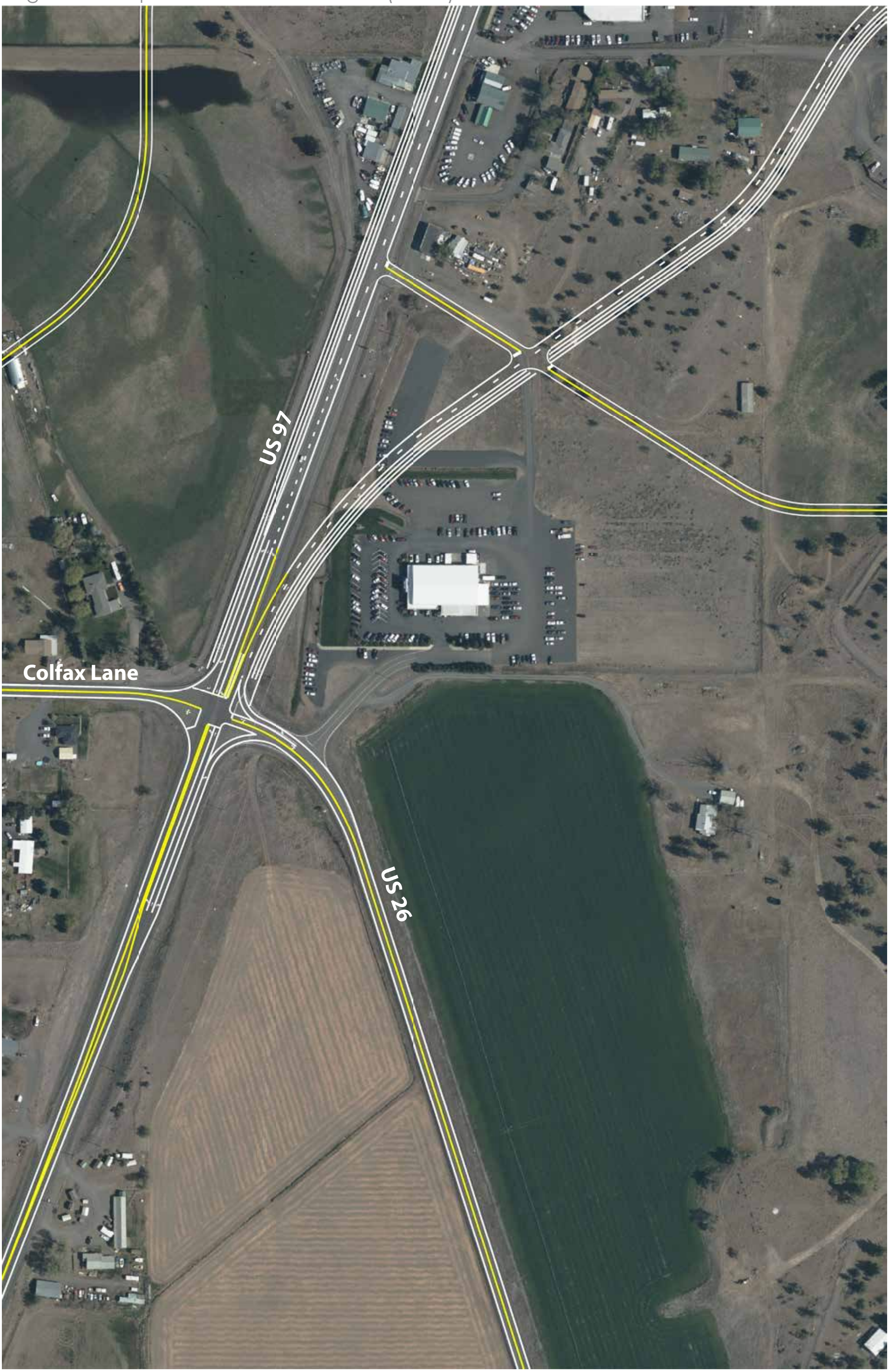
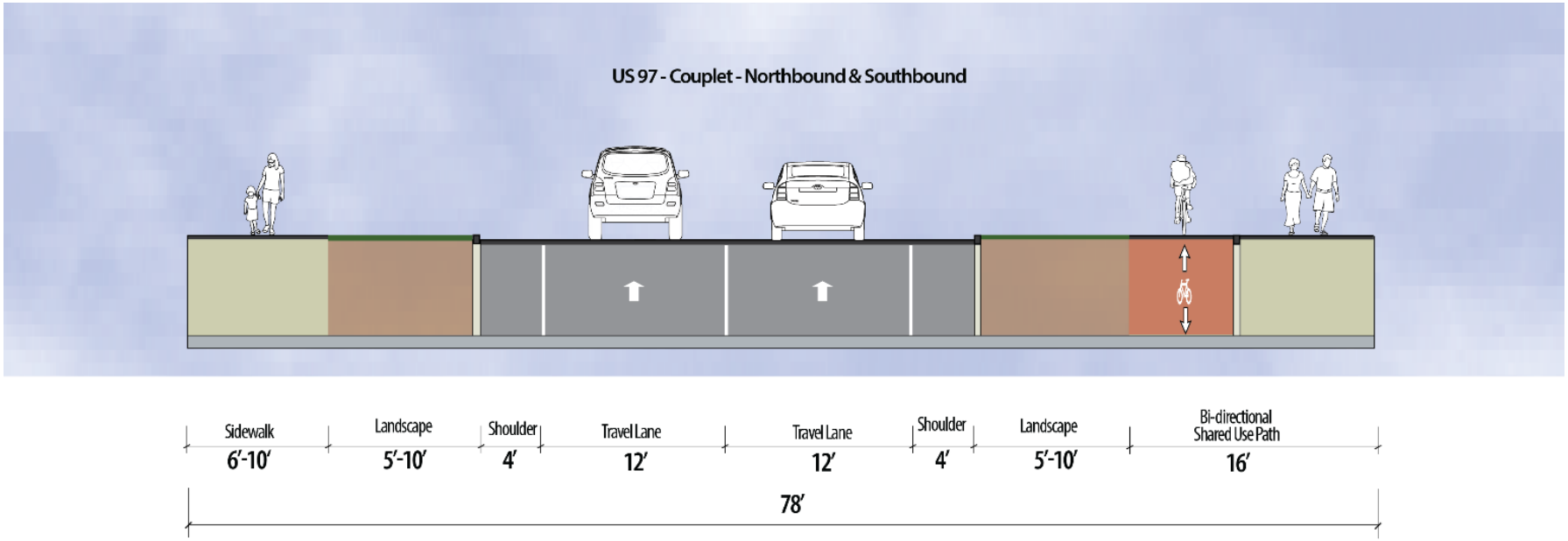


Figure 5. Couplet Alternative Cross Section for US97 Northbound/Southbound Alignment



GRADE SEPERATED INTERCHANGE AT COLFAX LANE

This concept would construct a grade-separated interchange to ODOT standards at the intersection of US97 and US26/Colfax Lane. The interchange would provide for increased connectivity for side-street (i.e., non-highway) movements and improve access to development lands within the study area by creating an efficient connection to Culver Highway from US 97. This would reduce reliance on US97 and better utilize capacity that is expected to exist on Culver Highway through 2045.

Based on preliminary assessment, an interchange at this location would operate most efficiently if US97 were elevated over US26/Colfax Lane due to the potential impacts to adjacent parcels that could results if US26 were elevated over US97 instead. Full northbound and southbound on- and off-ramps would be provided. Specific configuration of the ramps and intersection control at the ramp terminals would be determined through a future ODOT-led study.

The roadway connection between the grade-separated interchange at US97 and US26-Colfax Lane and Culver Highway could rely on the existing Colfax Lane (Interchange Option 1, focus areas shown in Figure 6 and Figure 7, full concept shown in Attachment 2), which would be slightly out of direction for people accessing lands to the north, or construct a new roadway that would provide more direction access (Interchange Option 2, focus areas shown in Figure 8 and Figure 9, full concept shown in Attachment 3). The project team has developed concept alternatives that should both options.

Improved access to Culver Highway would allow for better distribution of traffic between US97 and Culver Highway. This would reduce intersection capacity needs along US97 at key intersections such as Fairgrounds Road and Hall Road.

If selected as the preferred concept, additional planning efforts may be required by ODOT such as an Interchange Area Management Plan (IAMP) and a goal exception.

Expected Construction Impacts

Although the interchange alternative minimizes right of way impacts along US97 by utilizing Culver Highway, construction of this interchange is expected to be extensive and have numerous right-of-way impacts to properties adjacent to the US97 and US26-Colfax Lane intersection. During construction, maintaining traffic along US97 could be challenging due to the large footprint of the interchange construction and the expected need to elevate US97 over US26/Colfax Lane. To alleviate some construction phasing challenges, the interchange ramps could be constructed first to allow north-south traffic to use the ramps during subsequent construction stages. Construction will likely also impact travel along US26 and along Colfax Lane.

Study Intersection Operational Performance

As noted, the interchange concept would reduce reliance on US97 and, thus, intersection capacity needs at key intersections along the highway to serve side-street demand. As a result, intersections along US97 could continue to operate as side-street stop-control with appropriate turn restrictions to limit conflict points. Two different turn-movement restriction scenarios were evaluated for US97 intersections.

The first scenario would construct a continuous median on US97 to limit existing and future driveways to right-in, right-out movements. Openings at key intersections would provide for left turns from the highway but restrict left-turns and through movements from the side-street (right-in, right-out, left-in allowed).

The second scenario would also construct a continuous median on US97 but would limit all intersections to right-in, right-out only (no left-turn movements).

Under the first scenario (right-in, right-out, and left-in as permitted movements for side streets), the US97/Hall Road and US97/Colfax Lane intersections are both are forecast to meet the Highway Design Manual (HDM) mobility target of a volume to capacity ratio at or below 0.7. The US97/Fairgrounds intersection is forecast to exceed the HDM mobility target but still remain below capacity.

Under the second scenario, (right-in, right-out only for side streets), all three key intersections are forecast to meet the HDM mobility target.

Intersections along Culver Highway would operate acceptably under both options.

Detailed operational results for this scenario can be found in Appendix A.

Safety Performance Review

The crash reduction factor table provided by ODOT was consulted to select crash reduction factors (CRF's) for the concept alternatives in the future condition. These CRF's indicate the factor by which crashes would decrease with improvements such as adding lighting or installing sidewalk. Some relevant CRF's would apply to all proposed alternatives, and some would apply only to certain scenarios. All selected CRF's are noted in Appendix A. For the diamond interchange scenario, future analysis will determine the appropriate intersection control at the interchange terminals. The selected typical CRF's indicate that this concept could result in reduced vehicular crashes and reduce crashes involving pedestrians or bicycles.

Multimodal System Integration

The interchange alternative includes bicycle and pedestrian facilities on both sides of US97, shown in Figure 10. Sidewalks and bike lanes would be provided along US97 which would improve system connectivity and access to existing and future businesses. Specific multimodal connections between US97 and Culver Highway would need to be further explored, notably along Interchange Option 2 that would provide a new road between the two highways.

Access Management Review

As noted within the Study Intersection Operational Performance section, a continuous median would be constructed along US97 as part of this concept. This would restrict driveways to right-in, right-out movements, which would limit turning movement conflicts along the corridor. Two different turn-movement restriction alternatives could be considered at the primary intersections (Fairgrounds Road and Hall Road); Right-in, right-out, and left-in movements (restricting left-turns from the minor street) and restrictions to right-in, right-out at all locations. Both options would require further evaluation to determine if U-turn movements along the corridor are needed to support business access.

Environmental Review

The proposed roadway connection between US97 and Culver Highway shown in Interchange Option 2 lies on a floodplain and may require additional drainage treatment to mitigate impacts. Additionally, the interchange at the US97 and US26/Colfax Lane intersection would require additional right-of-way to construct. Additional review and analysis are necessary to fully understand potential environmental impacts. Such an analysis would be completed during future project development and project design efforts.

Cost Opinion

The cost opinion for this alternative could range from $50 million to $55 million in 2023 dollars. The construction cost includes interchange bridge structure, earthwork, asphalt pavement, aggregate base, pedestrian facilities, and traffic control devices. Other improvements described in the "Alternative Development" section are accounted for in this cost opinion. A high-level cost estimate is provided in Appendix B.

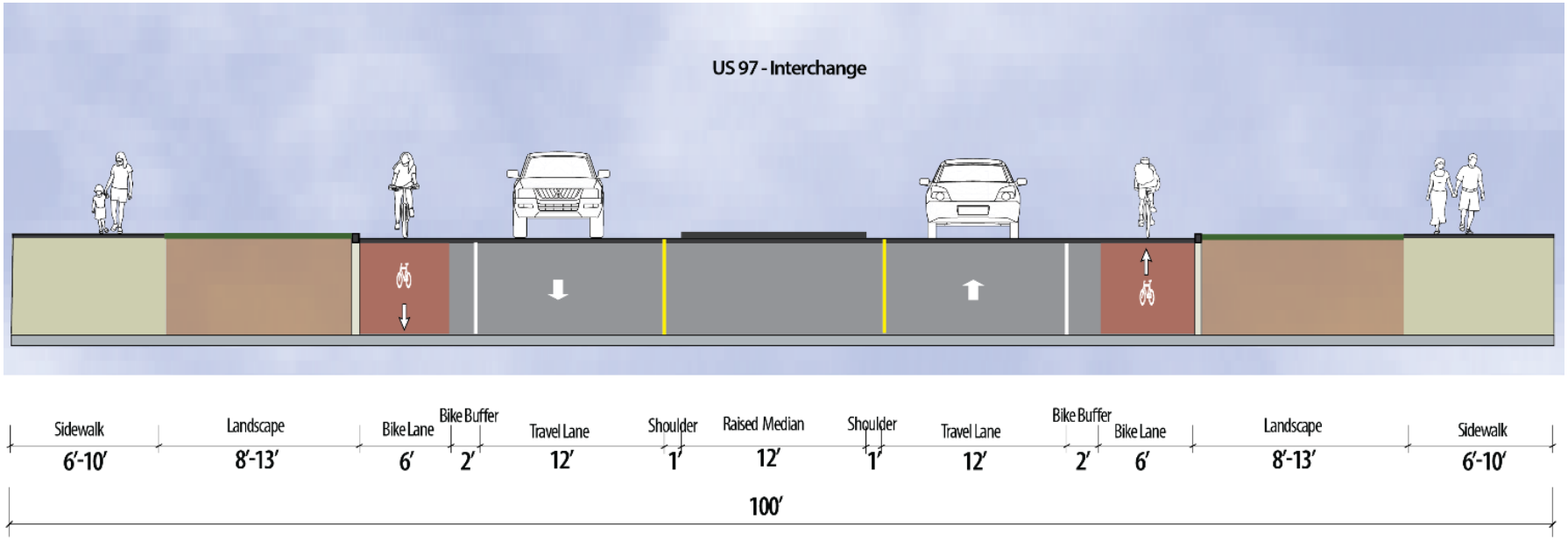
Figure 6. Interchange Option 1 (North)

Figure 7. Interchange Option 1 (South)

Figure **8**. Interchange Option 2 (North)

Figure **9**. Interchange Option 2 (South)

Figure 10. Interchange Alternative US97 Cross Section



US97 MAINLINE ENHANCEMENT

The mainline enhancement alternative widens US97 and includes two lanes in each direction with a continuous median along US97. The existing two-way stop-controlled intersections on US97 at US26/Colfax Lane, Hall Road, and Fairgrounds Road would become signalized.

Focus areas for this concept are shown in Figure 11 and Figure 12, full concept shown in Attachment 4.

Whereas the other concepts assume improvements to parallel roadways to serve future US97 and local demands (Culver Highway or Adams Drive), this concept relies on US97 with minimal changes to those other facilities. As with all concepts, local networks improvements consistent with the Madras TSP are assumed to be completed.

Expected Construction Impacts

The proposed typical section for US97 (Figure 13) is expected to fit within the existing 100-foot right of way along the corridor. Widening US97 would require reconstruction of existing driveways and sidewalks. However, business access could be maintained throughout construction with temporary traffic control measures. Similarly, traffic along US97 may be impacted, but is expected to be maintained with no long-term lane closures or detours anticipated.

Study Intersection Operational Performance

All study intersections are forecast to meet the HDM mobility targets in the US97 mainline enhancement alternative assuming two travel lanes in each direction on US97 and traffic signals with turn lanes at the intersections of Fairgrounds Road and Hall Road. However, the 95th percentile queues along the US97 mainline are forecast to extend beyond some private driveways during 30th highest hour conditions and may be substantial during high seasonal traffic conditions.

Detailed operational results for this scenario can be found in Appendix A.

Safety Performance Review

The crash reduction factor table provided by ODOT was consulted to select crash reduction factors (CRF's) for the concept alternatives in the future condition. These CRF's indicate the factor by which crashes would decrease with improvements such as adding lighting or installing sidewalk. Some relevant CRF's would apply to all proposed alternatives, and some would apply only to certain scenarios. All selected CRF's are noted in Appendix A.

For the mainline enhancement scenario, all of the typical CRF's were included as well as a reduction factor for adding traffic signals at intersections where there previously were none. There are two factors related to adding a traffic signal; one corresponds with a decrease in angle crashes, and the other corresponds with increase in rear end crashes. The number of

total crashes at the signalized intersections is projected to increase, but the reduction in angle crashes typically decreases the likelihood of crashes involving severe injury. Additionally, the selected typical CRF's suggest a broad reduction in vehicle crashes and crashes involving pedestrians.

Multimodal System Integration

The mainline enhancement alternative integrates bicycle and pedestrian facilities on either side of US97 as shown in Figure 13 through construction of the improved roadway cross-section. Continuous walking and biking facilities along US 97 would improve system connectivity and access to existing and future businesses. The resulting wide cross-section would increase pedestrian crossing distances and exposure across US97. Connections to parallel roads would occur via the planned extension of Hall Road and Fairgrounds Road.

Access Management Review

A non-traversable raised median will be constructed on US 97 which would restrict left turns to and from driveways along US 97. Full access movements would be provided at the key signalized intersections along the corridor (Fairgrounds Road and Hall Road). Further evaluation is necessary to determine if U-turn movements along the corridor are needed to support business access.

Environmental Review

No impacts to identified environmental areas, such as wetlands, are expected. Additional review and analysis are necessary to fully understand potential environmental impacts. Such an analysis would be completed during future project development and project design efforts.

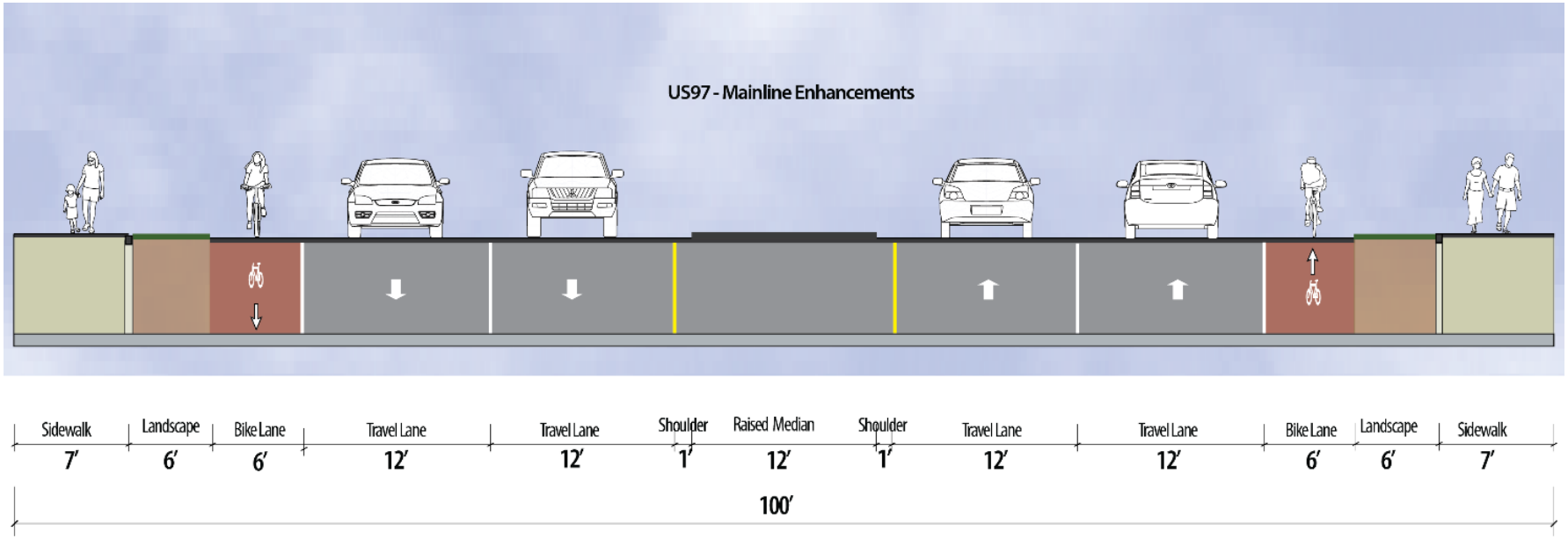
Cost Opinion

The cost opinion for this alternative could range from $20 million to $25 million in 2023 dollars. The base construction cost includes traffic signals, asphalt pavement, aggregate base, and pedestrian facilities. Other improvements described in the "Concept Development" section are accounted for in this estimate. A high-level cost estimate is provided in Appendix B.

Figure 1**1**. Mainline Enhancement Alternative (North)

Figure 12. Mainline Enhancement Alternative (South)

Figure 13. Mainline Enhancement Alternative US97 Cross Section



CONCEPT EVALUATION

The evaluation framework is the application of goals, objectives, and evaluation criteria in the development, screening, evaluation, and refinement of concepts. The purpose of this evaluation is to develop design concepts that achieve the project goals and objectives and screen out the least-performing concepts. Table 3 shows the evaluation of each concept and how it compares against the no-build scenario using project goals and objectives to assign a weighted score ranging from -2 to +2. The no-build scenario is considered the baseline to which all concepts are compared and therefore is given a score of zero for each category.

In the end, this evaluation will result in a preferred concept that responds to the goals, objectives, and evaluation criteria developed and applied by the PAC and public interests.

Table 3. Draft Evaluation Criteria

Goal	Objective	Evaluation Criteria	Weighted Score			
			No Build (Baseline)	Couplet Extension	Interchange	US97 Mainline Enhancements
Mobility and Connectivity: Promote a transportation system that provides efficient connections for all users within Madras and meets existing and future mobility needs.	• Identify the 20-year roadway system needs to accommodate developing or undeveloped areas without straining limited financial resources. Emphasis should be placed on maintenance, operations, management, and service improvements rather than large capital improvements. • Promote a local road system that serves as access to commercial and residential areas. • Preserve the function, operation, capacity, level of service, and safety of state highways and local roads in a manner consistent with adopted State of Oregon and local plans. • Improve traffic circulation within the city while considering the local character of each area. • Ensure that local connections are maintained or enhanced through redevelopment to minimize reliance on major street connections. • Improve roadway connectivity and parallel routes on the local transportation network to redistribute local traffic volumes and reduce traffic demand on state facilities.	Does the project alternative promote the use of the local road system?	0	2	2	2
		Does the project alternative improve traffic circulation within the study area?	0	1	1	1
		Does the project alternative meet mobility targets through 2045?	0	1	2	1
		Does the project alternative represent an investment that works toward the long-term solution for the corridor?	0	2	2	2
Economic Development: Provide a transportation system that supports existing industry and encourages economic development and job creation in Madras, especially within key development areas. Improve short- and long-term transportation infrastructure to support local and regional travel and livability.	• Develop and promote a multimodal transportation network that supports existing industries and economic diversification in the future, especially in the downtown core. • Prioritize improving and maintaining the key freight routes of US26, US97 and OR 361 through Madras. • Support truck access to industrial sites, including turn and acceleration/deceleration lanes where appropriate. • Promote and plan for future industrial, commercial, and residential growth areas.	Does the project alternative at least maintain the carrying and dimensional capacity for statewide freight movement?	0	2	2	2
		Does the project alternative address mobility and serviceability for local and regional freight activity?	0	1	2	2
		Does the project alternative address existing gaps or deficiencies in the vehicular, transit, and/or pedestrian network?	0	2	2	2
		Does the project alternative support business activity in and around the study area?	0	1.5	2	2
Safety: Provide a transportation system that improves safety and multimodal accessibility throughout Madras, especially within the downtown core.	• Promote a transportation system that facilitates safe multimodal corridors in Madras. • Reduce incidence and severity of all crashes.	Does the proposed alternative address an area with an identified crash history?	0	2	2	1

Goal	Objective	Evaluation Criteria	Weighted Score			
			No Build (Baseline)	Couplet Extension	Interchange	US97 Mainline Enhancements
Multimodal Users: Provide a multimodal transportation system that permits the safe and efficient transport of people and goods through active modes.	• Develop and promote an interconnected network of bicycle, pedestrian, and transit facilities within Madras. • Examine the need for specific pedestrian crossing locations.	Does the proposed project alternative provide enhanced crossing opportunities for multimodal users?	0	2	1	1.5
Environmental: Provide a transportation system that balances transportation services with the need to protect the environment.	• Develop a multimodal transportation system that avoids reliance upon one form of transportation and that minimizes energy consumption and air quality impacts. • Develop and upgrade transportation facilities in a manner consistent with the adopted OTP, the OHP, and the TPR, and ensure that valuable soil, water, scenic, historic, and cultural resources are not damaged or impaired.	Does the proposed project element reduce reliance on vehicular traffic?	0	1	1	1
		Is the proposed project alternative consistent with adopted plans?	0	1	2	2
Planning and Funding: Maintain the safety, physical integrity, and function of Madras' multimodal transportation network.	• Maintain long-term funding stability for transportation maintenance projects.	Could the proposed project alternative be considered for Federal RAISE Grant Funding?	0	1	1	1

ATTACHMENT 1: FULL COUPLET CONCEPT

ATTACHMENT 2: INTERCHANGE CONCEPT #1

ATTACHMENT 3: INTERCHANGE CONCEPT #2

ATTACHMENT 4: FULL US97 MAINLINE ENHANCEMENT CONCEPT

APPENDIX A: CONCEPT ANALYSIS MEMORANDUM

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APPENDIX A

Date: September 8, 2023 Project #: 27003.004

To: South Madras Refinement Plan Project Management Team (PMT)

From: Daniel Bowers; Jacqueline Smith, P.E.; Matt Kittelson, P.E.

Project: South Madras Refinement Plan

Subject: Technical Memorandum # 6 – Concept Analysis Methodology & Assumptions Appendix A

This memorandum is an appendix to Technical Memorandum #6 (Task 6.1) – Concept Evaluation and documents the methodologies and assumptions associated with the future transportation system operations analyses. All analysis described in this memorandum is consistent with methodologies described in Technical Memorandum TM #3 (Analysis Methodology and Assumptions). The analysis outcomes presented in this memorandum support the evaluation of the proposed concept improvements.

CONCEPT SCENARIO VOLUME DEVELOPMENT

Per Task 4.3.A of the scope, the baseline year 2045 (20-year planning horizon) was used as the future evaluation year.

Since there is no Travel Demand Model for Jefferson County or the City of Madras, forecast traffic volumes were developed in accordance with the **Zonal Cumulative Analysis** methodology described in the APM and TM #3 and applied to the future conditions analysis area in Technical Memorandum #5 – Future Conditions. The zonal cumulative analysis was used to estimate the growth potential of developable lands within the study areas. For future analysis, the road network was assumed to match the full-build condition the improvements identified in the Madras Transportation System Plan (TSP) within the study area. As many of the concepts involve restricting turning movements to and from US97, existing trips were redistributed and future trips were assigned to the transportation network based on the proposed conditions within each concept.

FUTURE ROAD NETWORK ASSUMPTIONS

An excerpt from the City of Madras Transportation System Plan (TSP) showing the existing and proposed road network within the study area is shown below in Figure 1. Descriptions of each TSP improvement project are also below in Table 1. All of these connections and intersection improvements were assumed to be constructed in 2045 for the concept operational analysis. Roundabouts were assumed to be the intersection control at Culver Highway/Hall Road and Culver Highway/J Street (I18 and I26). All other intersections involving the new roadways from the proposed segment improvements were assumed to be a two-way stop control where the higher classified roadway is free flow unless otherwise stated.

Figure 1 TSP Improvement Projects within the Study Area (City of Madras TSP Figure 2)

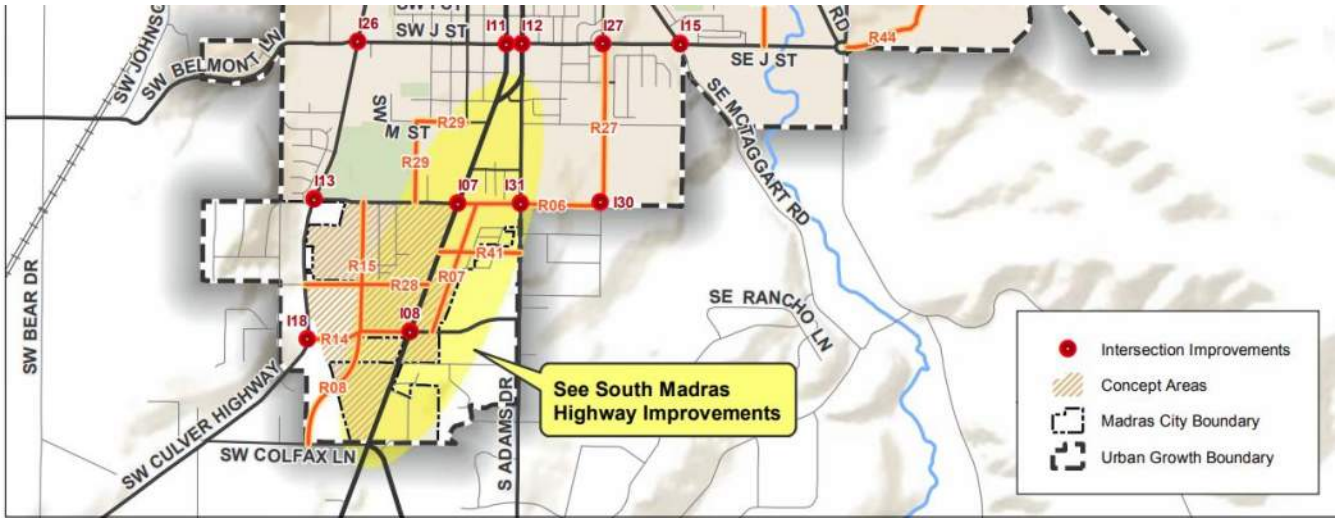


Table 1. TSP Improvement Project Information

ID	Location	Notes
R06	Fairgrounds Road Eastern Extension	Extend Fairgrounds Road to 10th Street extension
R07	Hall Road to Fairgrounds Road Eastern N/S Connection	Construct new roadway between proposed Fairgrounds Road Extension (R06) and Hall Road
R08	Hall Road to Colfax Lane Connection	Construct new roadway between proposed Hall Road extension to Colfax Lane
R14	Hall Road Extension	Extend Hall Rd to Culver Highway
R15	Hall Street-Fairgrounds Road Connection	Construct new roadway to connect Hall Rd Extension (R14) to Fairgrounds Rd
R28	E/W connection between Fairgrounds Road and Hall Road	Create new E/W connection between Fairgrounds Road and Hall Road within the South Concept Area
R29	Fairgrounds Road to 2nd Street Connection	Construct a roadway connecting Fairgrounds Road and 2nd Street
I07	US 97/Fairgrounds	Construct intersection improvement to address capacity and safety needs for Concept Area
I08	US 97/Hall Road	Construct intersection improvement to address capacity and safety needs for Concept Area
I11	J Street/4th Street	Install signals at 4th Street (SB US 97) and J Street, and 5th Street (NB US 97) and J Street

I12	J Street/5th Street	Install signals at 4th Street (SB US 97) and J Street, and 5th Street (NB US 97) and J Street
I13	Culver Highway/Fairgrounds Road	Eliminate intersection skew angle
I18	Culver Highway/Hall Road Extension Concept Area Intersection Enhancements	Upgrade intersection to address capacity needs for Concept Area
I26	J Street/Culver Highway	Consider long-term capacity enhancements

TRIP ASSIGNMENT ASSUMPTIONS

The new trips generated from the zonal cumulative analysis were assigned to the proposed network using Vistro's trip assignment capabilities. Each TAZ and major external connection was assigned a corresponding zone and gate for trips to be generated and attracted. Paths through the proposed network between the zones and gates were automatically generated by Vistro software, taking route length and VMT into account. These paths were then modified, if necessary, to match how reasonable drivers would travel through the study area. Movement restrictions were taken into account by Vistro's automatic generation of paths, and all paths were verified to ensure no route was using illegal movements.

In this analysis, many situations arose where multiple routes would be a reasonable way to get from point A to point B. Vistro's automatic routing defaults to sending 100% of vehicles with the same origin and destination on the same route. To closer match real-world conditions in situations with multiple routes, new paths were created for the alternate routes and the total trips with that origin and destination were split between those routes. To avoid unnecessary complexity, the number of options for each origin/destination pair was limited to 2. Most commonly, the trips were split 50/50 between the two route options; when necessary, different splits were used as well.

Additionally, all TAZ's adjacent to US97 were assumed to use off-highway accesses on the new roads proposed in the TSP improvements (Figure 1). All possible land development in the area does not have specific access plans at this stage, so the most reasonable access scenario for the adjacent roads was assumed for each TAZ.

RE-ASSIGNMENT ASSUMPTIONS

The majority of the proposed 2045 concepts outlined in TM #6 involve restricting movements on the side streets and/or mainline of the US97 corridor. Volumes were re-assigned to the network to reach the same destination using a reasonable route choice when turning movements are restricted.

For example, in the interchange scenario with right-in, right-out, and left-in as allowed movements for the study intersections along US97, the eastbound left turns at the Hall Road/US97 intersection would need to be reassigned as that movement would be restricted. In the analysis, these trips were instead routed west on Hall Road, north on Culver Highway, and east onto J Street to achieve the original left turn objective. Similar usage of alternate routes was applied for each unique scenario.

It is important to note that an origin-destination study or similar was not done as a part of this study. Therefore, the re-assignment analysis does not consider every possible destination the previously restricted movements could have been going to (i.e. trips traveling through vs trips stopping at a local destination). In some cases where there were a significant number of trips rerouted with many possible destinations, even splits were assumed for reasonable alternate routes to the different destinations. In most cases, engineering judgment was used to decide on routes and destination for displaced trips.

Table 2 below identifies any lane restriction additions for each of the concepts where the trips from the 2045 no-build condition would need to be reassigned.

Table 2. Turning Movement Restriction Information

Concept	Turning Movement Restrictions
Couplet	• No southbound traffic on Adams Dr (US97 NB) • No northbound traffic on existing US97 (US97 SB) • No through movements allowed at study intersections on US97
Interchange 1 (US97 RIROLI)	• No left turns or through movements at US97 study intersections from the side street • Right-in, Right-out only at access driveways
Interchange 2 (US97 RIRO)	• Right-in, Right-out only at side streets and access driveways
Signals	• N/A

In addition to the trips at the study intersections that would need to be reassigned, there are numerous existing driveways and accesses along US97 that would also need to adhere to any new movement restrictions. Traffic counts were not taken at each driveway along the corridor. The volumes of trips using these accesses were approximated using the difference between traffic volumes entering or exiting a leg of the study intersections from the same direction. For example, the difference between northbound volumes exiting US97/Hall Road intersection entering US97/Fairgrounds Road (consequently the volumes of vehicles using driveways) was estimated to be approximately 150 vehicles over the weekday PM peak hour. These vehicles were reassigned through the study area based on the assumption that trips could only turn right out of the US97 accesses.

OPERATIONAL ANALYSIS

Lane configurations and approximate signal timings were developed with the volumes developed using the above steps. Using these assumptions, traffic operations analysis was completed for all proposed scenarios according to TM #3. The below table summarizes the operational results for the three key intersections along the corridor. The operations are reported as a full intersection volume to capacity (v/c) ratio for the 5-lane signalized scenario and side street critical movement v/c ratio for all other scenarios. For the interchange scenarios, the values shown for US97/Colfax Lane are assumed to be two signalized interchange terminals[1] instead of the single existing at grade intersection. **Attachment A** includes the operational reports and figures summarizing the operational results for all intersections.

[1] Specific control for interchange ramp terminals would be determined through future analysis. The purpose of this analysis is to show a reasonable example of possible interchange control to assess the feasibility of the interchange alternative.

Table 3: Concept Intersection Operational Analysis Summary

Intersection	Concept Alternative Volume-to-Capacity (v/c) Ratio						
	No-Build	**US97 5-Lane Signalized**	**Interchange (RIROLI)**		**Interchange (RIRO)**		**Couplet**
US97/Fairgrounds Road	**>1.0**	0.69	0.97[1]		0.66		**>1.0**
US97/Hall Road	**>1.0**	0.64	0.52		0.40		**>1.0**
US97/Colfax Lane	**>1.0**	0.55	0.51 (SB Terminal)	0.27 (NB Terminal)	0.64 (SB Terminal)	0.47 (NB Terminal)	**>1.0**

[1]Exceeds HDM Mobility Target and Below Capacity (v/c=1.0)
Bold = Exceeds capacity

MULTIMODAL ANALYSIS

Multimodal level of stress (LTS) was analyzed for each of the concept alternatives presented above. Assumptions for roadway characteristics were based on the previously submitted Urban Design Concurrence memo. A list of these assumptions include:

- 35 mph speed limits on US97 & Culver Hwy anywhere the existing speed limit exceeds 35 mph
- 6 ft bike lane with 2 ft buffer on both sides of Culver Highway
- 6 ft bike lane with 2-5 ft buffer on both sides of US97
- 6 ft sidewalk with 3 ft landscaped buffer with trees on both sides of Culver Highway
- 6 ft sidewalk with 3 ft landscaped buffer with trees on both sides of Culver Highway
- 6-10 ft sidewalk with 5-10 ft landscaped buffer with trees on both sides of US97
- Roadway illumination to be installed on segments where there is currently no illumination

A multimodal analysis was also completed in TM #4 to document the existing conditions of pedestrian and bicycle infrastructure within the study area. The results of this analysis in TM #4 were compared to the analysis results from the concept alternatives presented above to envision how the LTS for multimodal users may have been changed by the concept alternative proposals. Below in Table 4 and 5 are the results for PLTS (pedestrian) and BLTS (bicycle) by concept.

Table 4. Concept Alternatives PLTS

Pedestrian Level of Traffic Stress							
Street	**From**	**To**	**Side**	**Existing**	**Couplet**	**Interchange**	**5-lane Traffic Signals**
US 97	Colfax Ln	SW Hall Rd	Both	4	2	2	3
	SW Hall Rd	Love's Driveway	West	2	2	2	3
	Love's Driveway	Bus Stop	West	4	2	2	3
	SW Hall Rd	Love's Driveway	East	4	2	2	3
	Love's Driveway	Bus Stop	East	2	2	2	3
	Bus Stop	SW Brush Ln	East	4	2	2	3
	SW Brush Ln	SW Fairgrounds Rd	East	1	2	2	3
	Bus Stop	SW Fairgrounds Rd	West	4	2	2	3
	SW Fairgrounds Rd	SW K St	Both	1	2	2	3
US97 SB	SW K St	SW J St	Both	1	2	2	3
	SW K St	SW J St	Both	4	2	2	3
US97 NB	SW K St	SW J St	Both	1	2	2	3
Culver Hwy	Colfax Ln	Fairgrounds Rd	Both	4	2	2	2
	Fairgrounds Rd	J St	Both	4	2	2	2

Table 5. Concept Alternatives BLTS

Bicycle Level of Traffic Stress							
Street	**From**	**To**	**Side**	**Existing**	**Couplet**	**Interchange**	**5-lane Traffic Signals**
US 97	Colfax Ln	SW Hall Rd	Both	4	2	2	2
	Hall Rd	Bus Stop	Both	4	2	2	2
	Bus Stop	SW Brush Ln	East	3	2	2	2
	SW Brush Lane	SW Fairgrounds Rd	East	3	2	2	2
	Bus Stop	SW Fairgrounds Rd	West	3	2	2	2
	SW Fairgrounds Rd	SW L St	Both	3	2	2	2
US97 SB	SW L St	SW J St	West	3	1	1	1
US97 NB	SW L St	SE J St	East	3	1	1	1
Culver Hwy (OR 361)	Colfax Ln	Fairgrounds Rd	Both	4	2	2	2
	Fairgrounds Rd	J St	Both	4	2	2	2

As shown above, both PLTS And BLTS are improved by each concept alternative. The 5-lane roadway cross section does not provide as low of a level of stress for pedestrians compared to the other alternatives due to the increased number of lanes on US97.

SAFETY ANALYSIS

The crash reduction factor (CRF) table provided by ODOT was used to evaluate the safety performance of each of the proposed concept alternatives. The Culver Highway corridor was not analyzed for safety performance, as the improvements on Culver Highway are consistent throughout all of the alternatives. Any relevant unique CRFs from each of the concept alternatives were applied to the three key intersections along US97 in the study area. The CRFs were then converted into crash modification factors. Those CMFs are listed below in Table 6. Additionally, some CRFs typical to the study area based on the assumed improvements in the urban design concurrence memo are listed below:

- **H29** - Install lighting at intersection (CMF = 0.62)
- **H30 -** Install lighting on a roadway segment (CMF = 0.72)
- **H38 -** Provide a raised median, urban multi-lane road (CMF = 0.78)
- **BP24 -** Install buffered bike lanes (CMF = 0.53)
- **BP29 -** Install sidewalk (CMF = 0.8)
- **BP31 -** Install street trees (CMF = 0.9)

Table 6. Applicable Crash Reduction Factors (CRF)

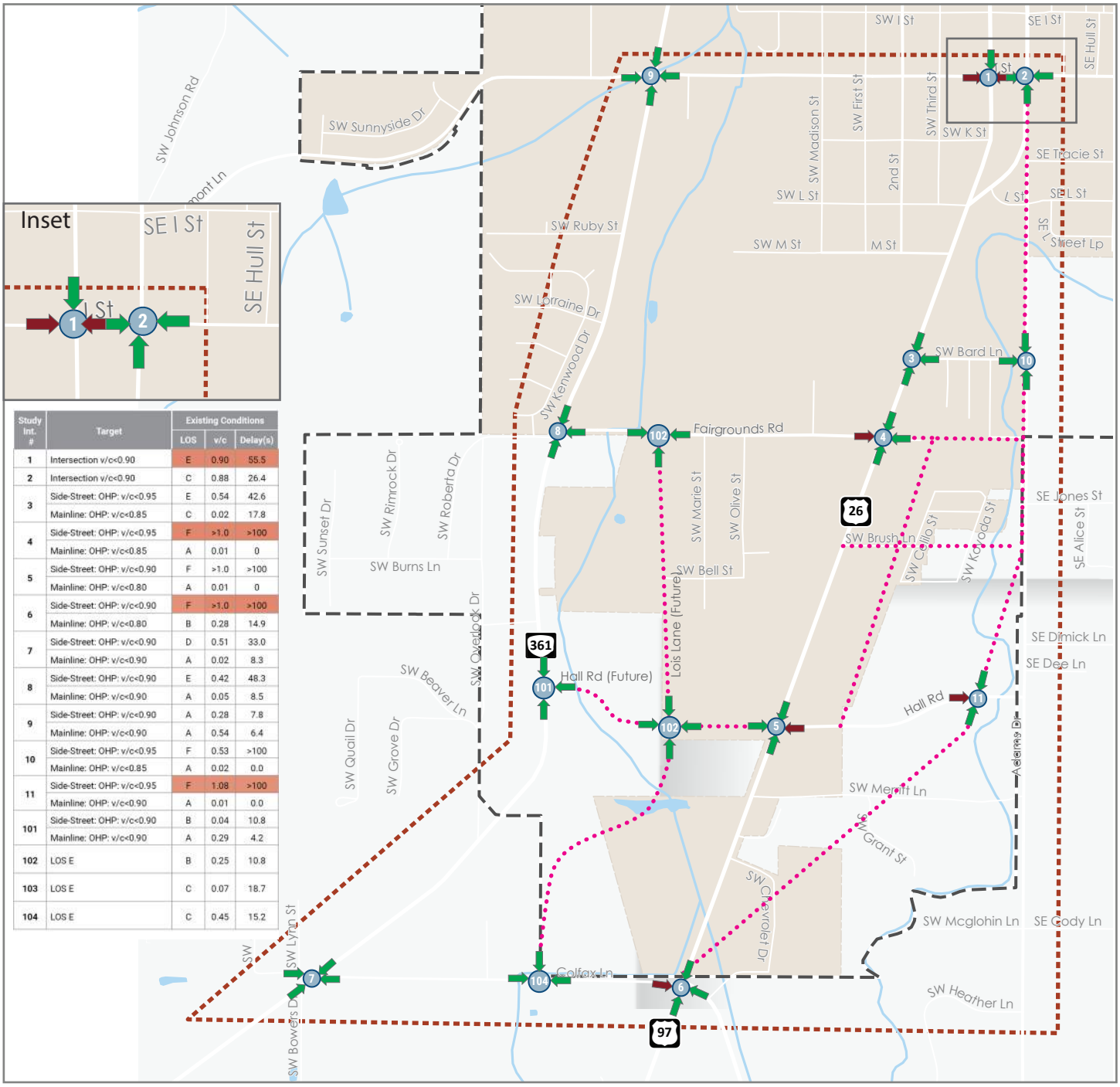
Intersection	Alternative			
	No-Build	**US97 5-Lane Signalized**	**Interchange**	**Couplet**
US97/Fairgrounds Road	-	Traffic Signal **H22**=0.33, **H23**=2.43	No applicable CRF	One Way Traffic **H47** = 0.53
US97/Hall Road	-	Traffic Signal **H22**=0.33, **H23**=2.43	No applicable CRF	One Way Traffic **H47** = 0.53
US97/Colfax Lane	-	Traffic Signal **H22**=0.33, **H23**=2.43	Interchange Terminal Intersection Controls TBD	No applicable CRF

For the 5-lane signalized scenario, all of the key intersections are have assumed to be converted to signals for this evaluation. This conversion from a stop control to a signal comes with two factors, H22 and H23. H22 represents a decrease in angle crashes, and H23 represents an increase in rear end crashes. This scenario also includes the widening from a 3-lane section to a 5-lane section, which does not have a specific factor outlined in the table provided by ODOT. Research and industry best practices suggest that an increase in cross section width can correspond with an increase in crash rate due to an increase in conflict points.

For the interchange scenario, the same roundabout factor can be applied to both of the interchange terminals at Colfax Lane. The CMF in this case is only referencing the decrease in crashes involving an injury. The US97 intersections at Fairgrounds Road and Hall Road are proposed to have movement restrictions in both interchange scenarios (right in, right out, left in vs. right in, right out). However, there is no specific factor outlined in the table provided by ODOT that references these movement restrictions. As a result, the two interchange scenarios were combined into a single column. Research and industry best practices suggest restricting side-street through and left turn movements can correspond with a decrease in crash rate due to a reduction in conflict points.

For the couplet scenario, through movements at Fairgrounds and Hall would be restricted. Similar to the above, there is no specific factor outlined in the table provided by ODOT that references these movement restrictions. Research and industry best practices suggest restricting side street through movements can correspond with a decrease in crash rate due to a reduction in conflict points.

ATTACHMENTS



Study Int. #	Target	Existing Conditions		
		LOS	v/c	Delay(s)
1	Intersection v/c<0.90	E	0.90	55.5
2	Intersection v/c<0.90	C	0.88	26.4
3	Side-Street: OHP: v/c<0.95	E	0.54	42.6
	Mainline: OHP: v/c<0.85	C	0.02	17.8
4	Side-Street: OHP: v/c<0.95	F	>1.0	>100
	Mainline: OHP: v/c<0.85	A	0.01	0
5	Side-Street: OHP: v/c<0.90	F	>1.0	>100
	Mainline: OHP: v/c<0.80	A	0.01	0
6	Side-Street: OHP: v/c<0.90	F	>1.0	>100
	Mainline: OHP: v/c<0.80	B	0.28	14.9
7	Side-Street: OHP: v/c<0.90	D	0.51	33.0
	Mainline: OHP: v/c<0.90	A	0.02	8.3
8	Side-Street: OHP: v/c<0.90	E	0.42	48.3
	Mainline: OHP: v/c<0.90	A	0.05	8.5
9	Side-Street: OHP: v/c<0.90	A	0.28	7.8
	Mainline: OHP: v/c<0.90	A	0.54	6.4
10	Side-Street: OHP: v/c<0.95	F	0.53	>100
	Mainline: OHP: v/c<0.85	A	0.02	0.0
11	Side-Street: OHP: v/c<0.95	F	1.08	>100
	Mainline: OHP: v/c<0.90	A	0.01	0.0
101	Side-Street: OHP: v/c<0.90	B	0.04	10.8
	Mainline: OHP: v/c<0.90	A	0.29	4.2
102	LOS E	B	0.25	10.8
103	LOS E	C	0.07	18.7
104	LOS E	C	0.45	15.2

(#) Study Intersections

Meets Mobility Targets

Exceeds Mobility Targets

Planned Future Road

0 0.25 Miles

Future 2045 Traffic Operations, Couplet Scenario, Weekday PM Peak Hour

Madras,OR

FIGURE A1

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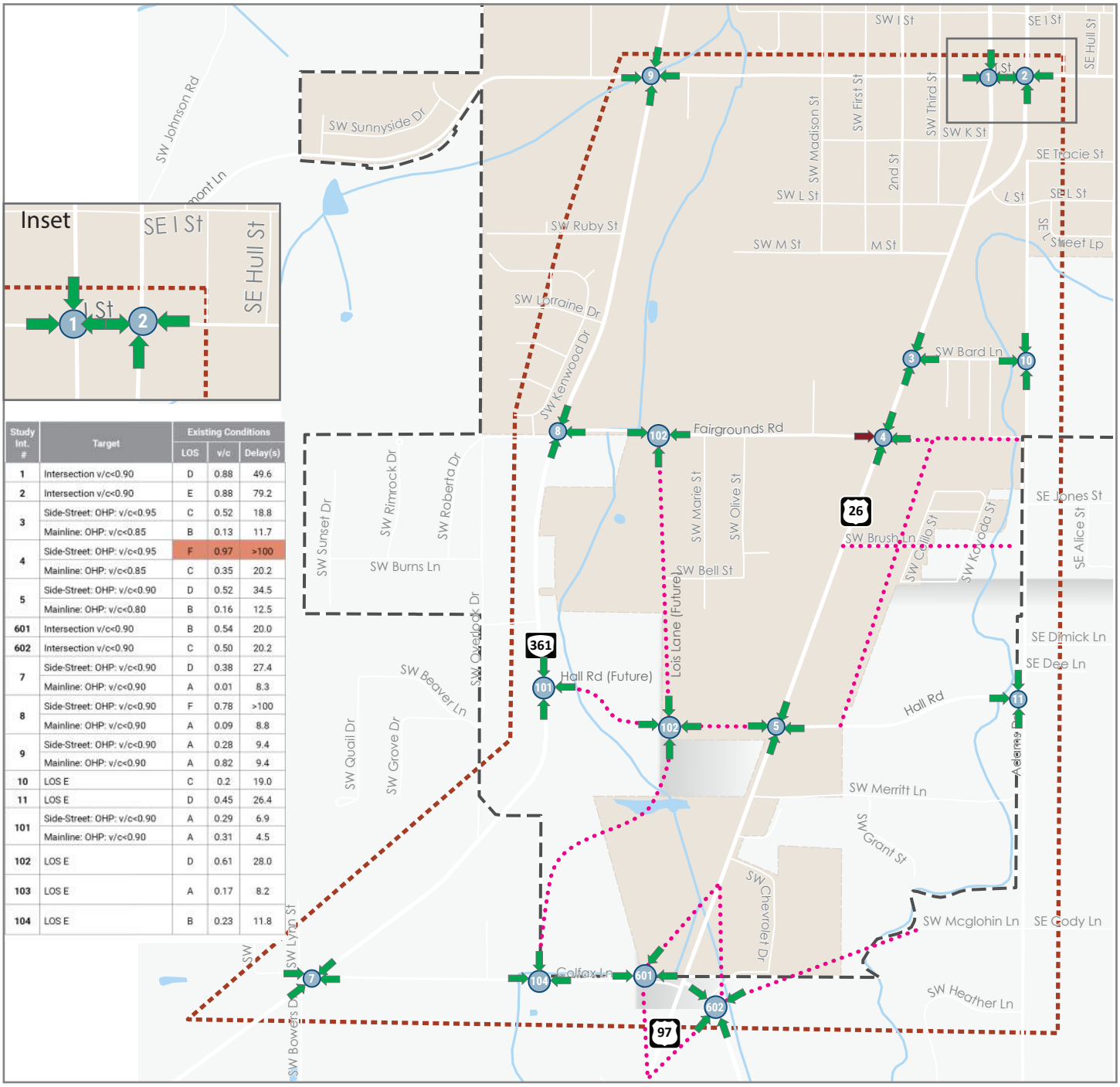

Study Int. #	Target	Existing Conditions		
		LOS	v/c	Delay(s)
1	Intersection v/c<0.90	D	0.88	49.6
2	Intersection v/c<0.90	E	0.88	79.2
3	Side-Street: OHP: v/c<0.95	C	0.52	18.8
	Mainline: OHP: v/c<0.85	B	0.13	11.7
4	Side-Street: OHP: v/c<0.95	F	0.97	>100
	Mainline: OHP: v/c<0.85	C	0.35	20.2
5	Side-Street: OHP: v/c<0.90	D	0.52	34.5
	Mainline: OHP: v/c<0.80	B	0.16	12.5
601	Intersection v/c<0.90	B	0.54	20.0
602	Intersection v/c<0.90	C	0.50	20.2
7	Side-Street: OHP: v/c<0.90	D	0.38	27.4
	Mainline: OHP: v/c<0.90	A	0.01	8.3
8	Side-Street: OHP: v/c<0.90	F	0.78	>100
	Mainline: OHP: v/c<0.90	A	0.09	8.8
9	Side-Street: OHP: v/c<0.90	A	0.28	9.4
	Mainline: OHP: v/c<0.90	A	0.82	9.4
10	LOS E	C	0.2	19.0
11	LOS E	D	0.45	26.4
101	Side-Street: OHP: v/c<0.90	A	0.29	6.9
	Mainline: OHP: v/c<0.90	A	0.31	4.5
102	LOS E	D	0.61	28.0
103	LOS E	A	0.17	8.2
104	LOS E	B	0.23	11.8

0 0.25 Miles

Study Intersections

Meets Mobility Targets

Exceeds Mobility Targets

Planned Future Road

Future 2045 Traffic Operations, Interchange Scenario 1, Weekday PM Peak Hour

Madras,OR

FIGURE A2-1

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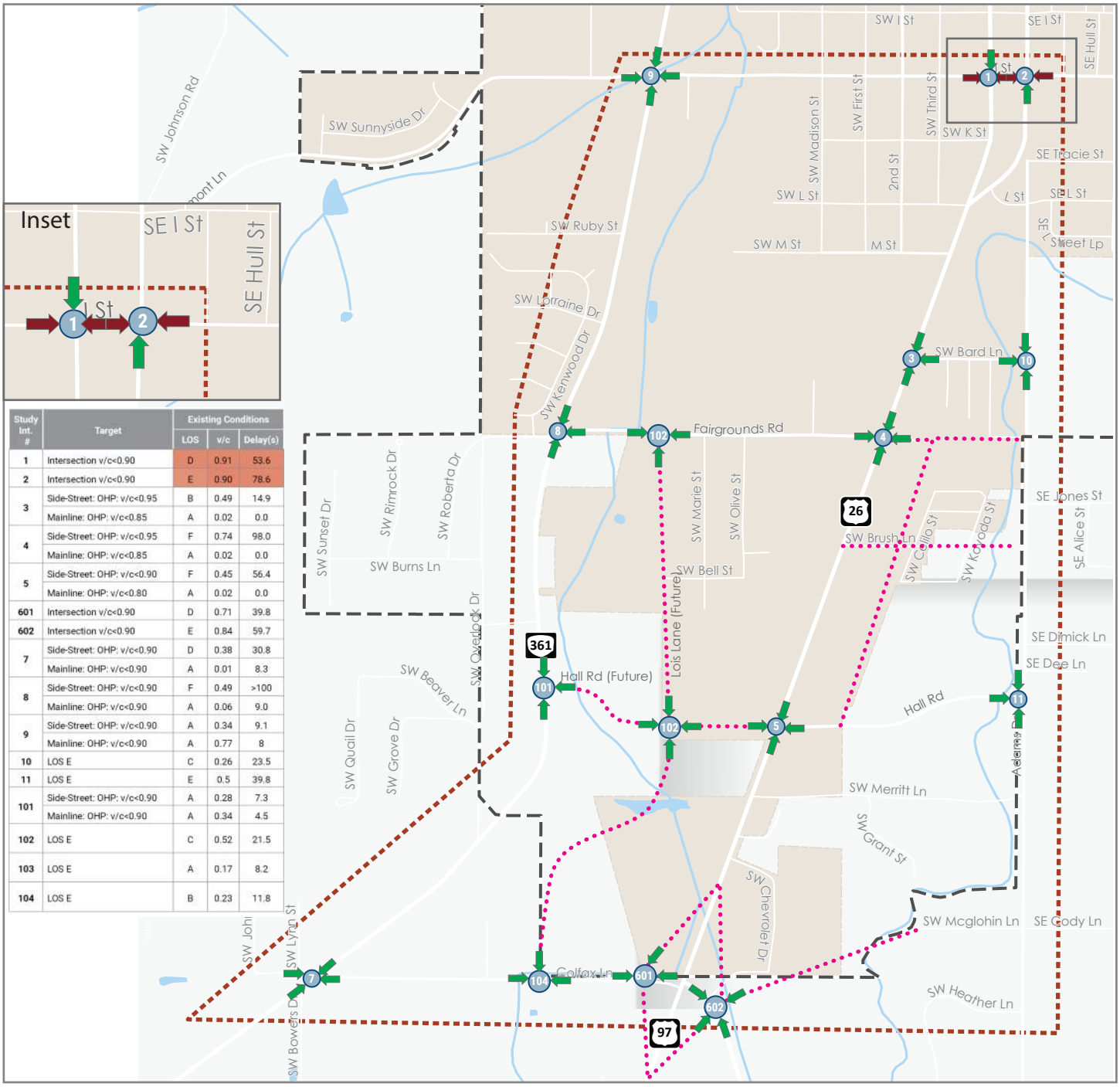


Study Int. #	Target	Existing Conditions		
		LOS	v/c	Delay(s)
1	Intersection v/c<0.90	D	0.91	53.6
2	Intersection v/c<0.90	E	0.90	78.6
3	Side-Street: OHP: v/c<0.95	B	0.49	14.9
	Mainline: OHP: v/c<0.85	A	0.02	0.0
4	Side-Street: OHP: v/c<0.95	F	0.74	98.0
	Mainline: OHP: v/c<0.85	A	0.02	0.0
5	Side-Street: OHP: v/c<0.90	F	0.45	56.4
	Mainline: OHP: v/c<0.80	A	0.02	0.0
601	Intersection v/c<0.90	D	0.71	39.8
602	Intersection v/c<0.90	E	0.84	59.7
7	Side-Street: OHP: v/c<0.90	D	0.38	30.8
	Mainline: OHP: v/c<0.90	A	0.01	8.3
8	Side-Street: OHP: v/c<0.90	F	0.49	>100
	Mainline: OHP: v/c<0.90	A	0.06	9.0
9	Side-Street: OHP: v/c<0.90	A	0.34	9.1
	Mainline: OHP: v/c<0.90	A	0.77	8
10	LOS E	C	0.26	23.5
11	LOS E	E	0.5	39.8
101	Side-Street: OHP: v/c<0.90	A	0.28	7.3
	Mainline: OHP: v/c<0.90	A	0.34	4.5
102	LOS E	C	0.52	21.5
103	LOS E	A	0.17	8.2
104	LOS E	B	0.23	11.8

Study Intersections
Meets Mobility Targets
Exceeds Mobility Targets
Planned Future Road

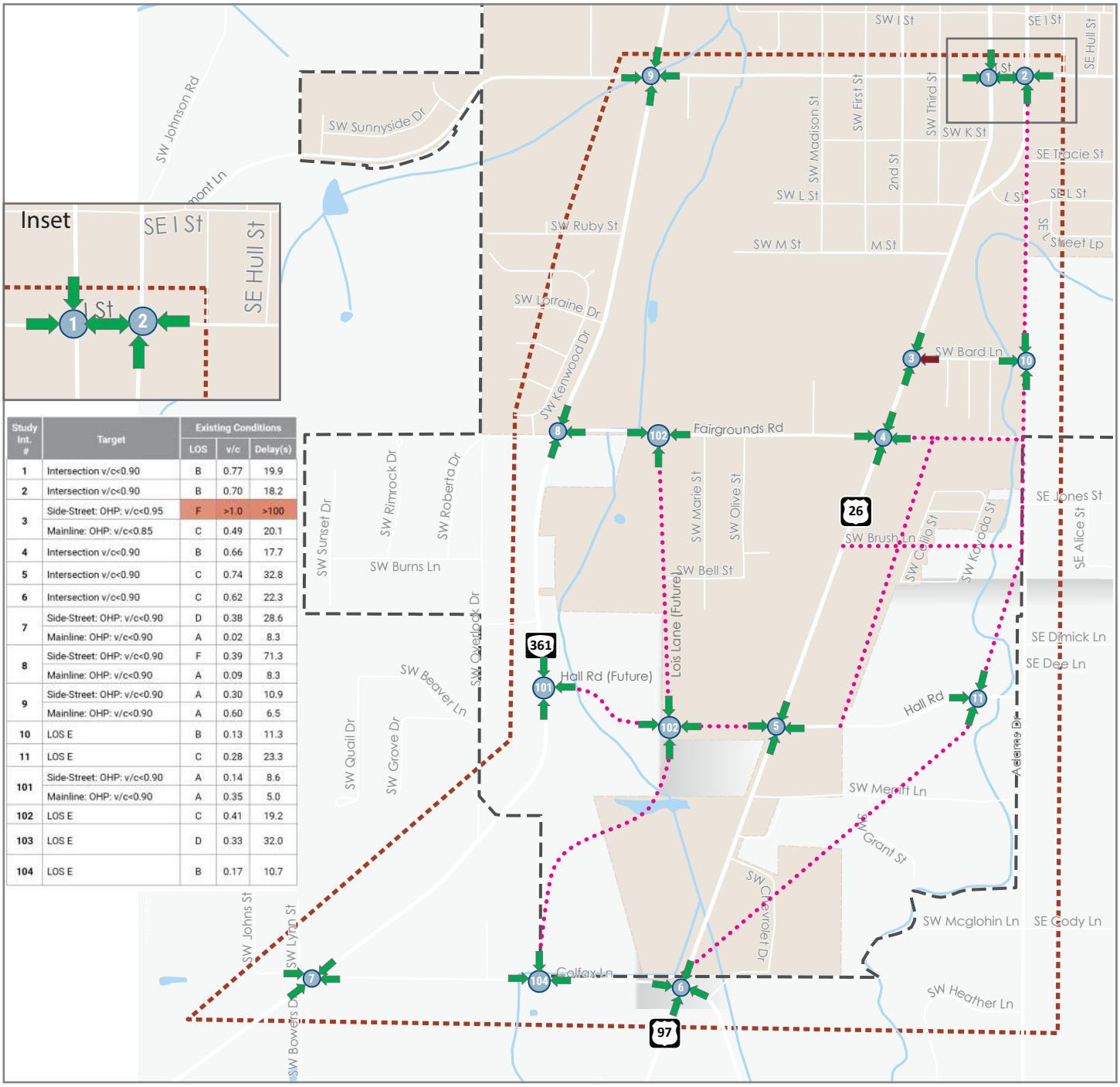
0 0.25 Miles

Future 2045 Traffic Operations, Interchange Scenario 2, Weekday PM Peak Hour

FIGURE A2-2

Madras,OR

KITTELSON & ASSOCIATES



Study Int. #	Target	Existing Conditions		
		LOS	v/c	Delay(s)
1	Intersection v/c<0.90	B	0.77	19.9
2	Intersection v/c<0.90	B	0.70	18.2
3	Side-Street: OHP: v/c<0.95	F	>1.0	>100
	Mainline: OHP: v/c<0.85	C	0.49	20.1
4	Intersection v/c<0.90	B	0.66	17.7
5	Intersection v/c<0.90	C	0.74	32.8
6	Intersection v/c<0.90	C	0.62	22.3
7	Side-Street: OHP: v/c<0.90	D	0.38	28.6
	Mainline: OHP: v/c<0.90	A	0.02	8.3
8	Side-Street: OHP: v/c<0.90	F	0.39	71.3
	Mainline: OHP: v/c<0.90	A	0.09	8.3
9	Side-Street: OHP: v/c<0.90	A	0.30	10.9
	Mainline: OHP: v/c<0.90	A	0.60	6.5
10	LOS E	B	0.13	11.3
11	LOS E	C	0.28	23.3
101	Side-Street: OHP: v/c<0.90	A	0.14	8.6
	Mainline: OHP: v/c<0.90	A	0.35	5.0
102	LOS E	C	0.41	19.2
103	LOS E	D	0.33	32.0
104	LOS E	B	0.17	10.7

(#) Study Intersections

Meets Mobility Targets

Exceeds Mobility Targets

Planned Future Road

0 0.25 Miles

Future 2045 Traffic Operations, Mainline Enhancement Scenario, Weekday PM Peak Hour

Madras,OR

KITTELSON & ASSOCIATES

FIGURE A3

COUPLET

Intersection Level Of Service Report
Intersection 1: US97 SB/J St

Control Type:	Signalized	Delay (sec / veh):	55.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.902

Intersection Setup

Name				US97 SB			J St			J St		
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	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.00	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]	30.00			25.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name				US97 SB			J St			J St		
Base Volume Input [veh/h]	0	0	0	108	1185	122	0	116	71	196	95	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 [%]	0.00	0.00	0.00	1.00	7.00	2.00	2.00	2.00	33.00	6.00	3.00	2.00
Proportion of CAVs [%]	0.00											
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	537	0	0	40	7	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	0	0	108	1722	122	0	156	78	196	95	0
Peak Hour Factor	0.8500	0.8500	0.8500	0.9500	0.9500	0.9500	1.0000	0.9000	0.9000	0.9000	0.9000	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]	0	0	0	28	453	32	0	43	22	54	26	0
Total Analysis Volume [veh/h]	0	0	0	114	1813	128	0	173	87	218	106	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]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-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	Permis	Permis	Permis	Permis	Permis	Permis	ProtPer	Permis	Permis
Signal Group	0	0	0	0	2	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	70	0	0	14	0	16	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	14	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	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	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	C	C	C	L	C
C, Cycle Length [s]		100	100	100	100	100	100
L, Total Lost Time per Cycle [s]		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
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	0.00	2.00
g_i, Effective Green Time [s]		63	63	11	11	29	29
g / C, Green / Cycle		0.63	0.63	0.11	0.11	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate		0.62	0.70	0.08	0.08	0.16	0.06
s, saturation flow rate [veh/h]		1644	1472	1722	1540	1362	1709
c, Capacity [veh/h]		1044	935	185	165	403	487
d1, Uniform Delay [s]		17.75	18.24	43.09	43.51	30.07	27.26
k, delay calibration		0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		24.25	60.31	4.80	7.97	1.14	0.22
d3, Initial Queue Delay [s]		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
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.98	1.10	0.70	0.79	0.54	0.22
d, Delay for Lane Group [s/veh]		42.00	78.55	47.90	51.49	31.20	27.49
Lane Group LOS		D	F	D	D	C	C
Critical Lane Group		No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		27.55	34.85	3.33	3.48	4.47	1.97
50th-Percentile Queue Length [ft/ln]		688.72	871.31	83.18	86.92	111.81	49.33
95th-Percentile Queue Length [veh/ln]		36.16	48.17	5.99	6.26	7.94	3.55
95th-Percentile Queue Length [ft/ln]		903.92	1204.33	149.72	156.45	198.51	88.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	42.00	60.13	78.55	0.00	48.79	51.49	31.20	27.49	0.00
Movement LOS				D	E	E		D	D	C	C	
d_A, Approach Delay [s/veh]	0.00			60.27			49.69			29.99		
Approach LOS	A			E			D			C		
d_I, Intersection Delay [s/veh]	55.51											
Intersection LOS	E											
Intersection V/C	0.902											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	9.0
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	41.41	0.00	41.41
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.503	0.000	2.262
Crosswalk LOS	F	B	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1320	200	520
d_b, Bicycle Delay [s]	50.00	5.78	40.50	27.38
l_b,int, Bicycle LOS Score for Intersection	4.132	3.255	1.774	2.094
Bicycle LOS	D	C	A	B

Sequence

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

Intersection Level Of Service Report
Intersection 2: US97 NB / J St

Control Type:	Signalized	Delay (sec / veh):	26.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.884

Intersection Setup

Name	Adams Dr						J St			J St		
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	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Adams Dr						J St			J St		
Base Volume Input [veh/h]	80	929	57	0	0	0	105	119	0	0	211	66
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 [%]	9.00	11.00	0.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	1.00	2.00
Proportion of CAVs [%]	0.00											
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	606	0	0	0	0	40	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]	80	1535	57	0	0	0	145	119	0	0	211	66
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000
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]	21	404	15	0	0	0	40	33	0	0	59	18
Total Analysis Volume [veh/h]	84	1616	60	0	0	0	161	132	0	0	234	73
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]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-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	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	82	0	0	0	0	0	28	0	0	28	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	7	0	0	7	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	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No						No			No	
Maximum Recall		No						No			No	
Pedestrian Recall		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	C		C	C	C	C
C, Cycle Length [s]	110	110		110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	78	78		24	24	24	24
g / C, Green / Cycle	0.71	0.71		0.22	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.55	0.61		0.27	0.08	0.09	0.10
s, saturation flow rate [veh/h]	1590	1437		591	1567	1736	1599
c, Capacity [veh/h]	1128	1019		194	342	379	349
d1, Uniform Delay [s]	10.44	11.99		49.70	36.71	36.88	37.19
k, delay calibration	0.50	0.50		0.45	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.41	9.61		29.17	0.71	0.70	0.87
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.86		0.83	0.39	0.41	0.44
d, Delay for Lane Group [s/veh]	15.84	21.59		78.87	37.42	37.58	38.06
Lane Group LOS	B	C		E	D	D	D
Critical Lane Group	No	Yes		Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	13.56	16.31		6.07	3.13	3.65	3.69
50th-Percentile Queue Length [ft/ln]	338.93	407.77		151.66	78.20	91.21	92.24
95th-Percentile Queue Length [veh/ln]	19.60	22.93		10.11	5.63	6.57	6.64
95th-Percentile Queue Length [ft/ln]	489.89	573.35		252.65	140.76	164.18	166.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.84	18.76	21.59	0.00	0.00	0.00	78.87	37.42	0.00	0.00	37.74	38.06
Movement LOS	B	B	C				E	D			D	D
d_A, Approach Delay [s/veh]	18.72			0.00			60.20			37.82		
Approach LOS	B			A			E			D		
d_I, Intersection Delay [s/veh]	26.35											
Intersection LOS	C											
Intersection V/C	0.884											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
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	5549.36
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	2.584	2.857	2.266	2.244
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1418	0	436	436
d_b, Bicycle Delay [s]	4.65	55.00	33.62	33.62
l_b,int, Bicycle LOS Score for Intersection	3.012	4.132	1.801	1.813
Bicycle LOS	C	D	A	A

Sequence

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

Intersection Level Of Service Report
Intersection 3: US97/Bard Ln

Control Type:	Two-way stop	Delay (sec / veh):	42.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.537

Intersection Setup

Name										Bard Ln		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Left	Right	Left	Right	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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name										Bard Ln		
Base Volume Input [veh/h]	5	0	12	49	1264	33	1	0	6	68	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	0.9000	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000	1.0000	1.0000
Heavy Vehicles Percentage [%]	25.00	2.00	0.00	3.00	7.00	13.00	2.00	2.00	2.00	0.00	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	34	510	0	0	0	0	34	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	0	12	78	1648	30	1	0	5	95	0	0
Peak Hour Factor	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	0.8500	1.0000	0.8500	0.9000	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	0	3	21	434	8	0	0	1	26	0	0
Total Analysis Volume [veh/h]	5	0	13	82	1735	32	1	0	6	106	0	0
Pedestrian Volume [ped/h]	1			0			0			5		

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.02	0.00	0.00	0.00	0.02	0.54	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	7.35	0.00	0.00	0.00	0.00	17.77	42.61	0.00	0.00
Movement LOS				A	A	A			C	E		
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	2.80	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.59	69.91	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.33			17.77			42.61		
Approach LOS	A			A			C			E		
d_I, Intersection Delay [s/veh]	2.66											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 4: US97/Fairgrounds Rd

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name							Fairgrounds Rd			Fairgrounds Rd		
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	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name							Fairgrounds Rd			Fairgrounds Rd		
Base Volume Input [veh/h]	56	0	5	6	1175	136	0	26	101	41	57	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	0.00	2.00	2.00	2.00	2.00	2.00	5.00	0.00	0.00	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	138	193	213	0	0	248	61	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]	56	0	5	144	1368	349	0	26	349	102	57	0
Peak Hour Factor	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9000	0.9000	0.8500	0.8500	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]	15	0	1	38	360	92	0	7	97	30	17	0
Total Analysis Volume [veh/h]	59	0	5	152	1440	367	0	29	388	120	67	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			Yes	Yes
Number of Storage Spaces in Median	0	0	1	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	1.41	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	242.10	10000.	0.00	0.00
Movement LOS				A	A	A			F	F		
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.11	17.56	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	527.79	439.06	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			242.10			10000.00		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	524.50											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 5: US97/Hall Rd

Control Type:	Two-way stop	Delay (sec / veh):	871.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.749

Intersection Setup

Name	US97			US97			Hall Road (Future)					
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	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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US97			US97			Hall Road (Future)					
Base Volume Input [veh/h]	39	0	8	68	983	63	0	19	50	32	40	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 [%]	66.00	2.00	0.00	2.00	2.00	2.00	2.00	0.00	34.00	0.00	0.00	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	103	193	0	0	0	117	246	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	0	8	171	1176	63	0	19	167	278	40	0
Peak Hour Factor	0.9500	1.0000	0.9500	0.9500	0.9500	0.9500	1.0000	0.9000	0.9000	0.9000	0.9000	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]	10	0	2	45	309	17	0	5	46	77	11	0
Total Analysis Volume [veh/h]	41	0	8	180	1238	66	0	21	186	309	44	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			Yes	Yes
Number of Storage Spaces in Median	0	0	1	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.54	2.75	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.36	871.47	0.00	0.00
Movement LOS				A	A	A			D	F		
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.08	28.62	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	77.11	715.55	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			27.36			871.47		
Approach LOS	A			A			D			F		
d_I, Intersection Delay [s/veh]	138.64											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 6: US97/Colfax Ln

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	45.429

Intersection Setup

Name	US97						Colfax Ln			Colfax Ln		
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	1	1	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	400.00	100.00	400.00	400.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	US97						Colfax Ln			Colfax Ln		
Base Volume Input [veh/h]	4	508	16	216	811	35	27	4	18	0	1	186
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 [%]	0.00	8.00	8.00	5.00	11.00	7.00	0.00	0.00	13.00	0.00	0.00	21.00
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]	131	128	0	0	349	110	149	0	113	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]	135	636	16	216	1160	145	176	4	131	0	1	186
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9000	0.9000	0.9000	0.9500	0.9500	0.9500
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]	36	167	4	57	305	38	49	1	36	0	0	49
Total Analysis Volume [veh/h]	142	669	17	227	1221	153	196	4	146	0	1	196
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	
Storage Area [veh]	0	0	2	1
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	0.28	0.01	0.00	0.25	0.01	0.00	45.43	0.32	0.70	0.00	0.10	0.46
d_M, Delay for Movement [s/veh]	14.87	0.00	0.00	10.39	0.00	0.00	10000.	10000.	10000.	2308.3	388.67	20.45
Movement LOS	B	A	A	B	A	A	F	F	F	F	F	C
95th-Percentile Queue Length [veh/ln]	1.14	0.00	0.00	1.01	0.00	0.00	45.18	45.18	45.18	0.26	0.26	2.36
95th-Percentile Queue Length [ft/ln]	28.56	0.00	0.00	25.23	0.00	0.00	1129.4	1129.4	1129.4	6.57	6.57	59.04
d_A, Approach Delay [s/veh]	2.55			1.47			10000.00			22.31		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	1167.18											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 7: Culver Hwy/Colfax Ln

Control Type:	Two-way stop	Delay (sec / veh):	33.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

Intersection Setup

Name	Culver Hwy			Culver Hwy			Colfax Ln			Colfax Ln		
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]	50.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Culver Hwy			Culver Hwy			Colfax Ln			Colfax Ln		
Base Volume Input [veh/h]	0	294	16	17	334	4	7	1	2	27	2	8
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 [%]	0.00	4.00	8.00	7.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	86	19	0	74	0	0	0	0	92	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	380	35	17	408	4	7	1	2	119	2	8
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.8500	0.8500	0.8500	0.9000	0.9000	0.9000
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	100	9	4	107	1	2	0	1	33	1	2
Total Analysis Volume [veh/h]	0	400	37	18	429	4	8	1	2	132	2	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.00	0.00	0.51	0.01	0.01
d_M, Delay for Movement [s/veh]	8.17	0.00	0.00	8.30	0.00	0.00	19.67	18.69	11.23	33.00	32.02	24.75
Movement LOS	A	A	A	A	A	A	C	C	B	D	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.03	0.03	0.03	0.12	0.12	0.12	2.87	2.87	2.87
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.76	0.76	0.76	2.98	2.98	2.98	71.66	71.66	71.66
d_A, Approach Delay [s/veh]	0.00			0.33			18.04			32.46		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	4.79											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 8: Culver Hwy/Fairgrounds Rd

Control Type:	Two-way stop	Delay (sec / veh):	48.3
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.425

Intersection Setup

Name				Culver Hwy			Fairgrounds Rd			Fairgrounds Rd		
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]	30.00			30.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name				Culver Hwy			Fairgrounds Rd			Fairgrounds Rd		
Base Volume Input [veh/h]	7	288	29	45	308	11	8	1	1	66	8	76
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 [%]	0.00	4.00	0.00	5.00	5.00	0.00	29.00	0.00	0.00	2.00	0.00	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	154	6	8	117	0	0	0	0	4	0	54
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]	7	442	35	53	425	11	8	1	1	70	8	130
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.8500	0.8500	0.8500	0.9000	0.9000	0.9000
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]	2	116	9	14	112	3	2	0	0	19	2	36
Total Analysis Volume [veh/h]	7	465	37	56	447	12	9	1	1	78	9	144
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.01	0.00	0.00	0.05	0.00	0.00	0.09	0.00	0.00	0.42	0.04	0.25
d_M, Delay for Movement [s/veh]	8.24	0.00	0.00	8.50	0.00	0.00	42.32	25.87	13.94	48.28	46.19	34.85
Movement LOS	A	A	A	A	A	A	E	D	B	E	E	D
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.10	0.10	0.10	0.30	0.30	0.30	5.20	5.20	5.20
95th-Percentile Queue Length [ft/ln]	0.30	0.30	0.30	2.42	2.42	2.42	7.46	7.46	7.46	129.88	129.88	129.88
d_A, Approach Delay [s/veh]	0.11			0.92			38.25			39.82		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	8.02											
Intersection LOS	E											

MOVEMENT SUMMARY

Site: 101 [Couplet (Site Folder: Culver/J)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
1	L2	All MCs	83	25.0	83	25.0	0.536	11.0	LOS B	4.5	33.2	0.60	0.55	0.60	50.7
2	T1	All MCs	419	2.0	419	2.0	0.536	5.7	LOS A	4.5	33.2	0.60	0.55	0.60	52.4
3	R2	All MCs	111	12.0	111	12.0	0.536	5.8	LOS A	4.5	33.2	0.60	0.55	0.60	51.7
Approach			613	6.9	613	6.9	0.536	6.4	LOS A	4.5	33.2	0.60	0.55	0.60	52.0
East: RoadName															
4	L2	All MCs	63	8.0	63	8.0	0.254	12.8	LOS B	1.6	11.9	0.73	0.70	0.73	49.9
5	T1	All MCs	94	7.0	94	7.0	0.254	8.1	LOS A	1.6	11.9	0.73	0.70	0.73	50.9
6	R2	All MCs	34	8.0	34	8.0	0.254	8.0	LOS A	1.6	11.9	0.73	0.70	0.73	50.5
Approach			192	7.5	192	7.5	0.254	9.6	LOS A	1.6	11.9	0.73	0.70	0.73	50.5
North: RoadName															
7	L2	All MCs	39	18.0	39	18.0	0.537	11.2	LOS B	4.3	31.5	0.64	0.57	0.64	50.9
8	T1	All MCs	421	6.0	421	6.0	0.537	6.1	LOS A	4.3	31.5	0.64	0.57	0.64	52.3
9	R2	All MCs	131	0.0	131	0.0	0.537	5.8	LOS A	4.3	31.5	0.64	0.57	0.64	52.1
Approach			591	5.5	591	5.5	0.537	6.4	LOS A	4.3	31.5	0.64	0.57	0.64	52.2
West: RoadName															
10	L2	All MCs	88	20.0	88	20.0	0.281	12.8	LOS B	1.8	13.4	0.71	0.69	0.71	49.8
11	T1	All MCs	72	0.0	72	0.0	0.281	7.3	LOS A	1.8	13.4	0.71	0.69	0.71	51.3
12	R2	All MCs	66	0.0	66	0.0	0.281	7.1	LOS A	1.8	13.4	0.71	0.69	0.71	50.9
Approach			226	7.8	226	7.8	0.281	9.4	LOS A	1.8	13.4	0.71	0.69	0.71	50.6
All Vehicles			1621	6.6	1621	6.6	0.537	7.2	LOS A	4.5	33.2	0.64	0.59	0.64	51.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 10: US97 NB (Future)/Bard Ln

Control Type:	Two-way stop	Delay (sec / veh):	175.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.532

Intersection Setup

Name				Adams Dr			Bard Ln					
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]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			Yes		

Volumes

Name				Adams Dr			Bard Ln					
Base Volume Input [veh/h]	81	1003	0	0	0	4	25	0	0	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	0.00	2.00	33.00	17.00	0.00	2.00	2.00	0.00	0.00
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	590	36	0	0	0	0	34	0	0	34	16
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]	81	1593	36	0	0	4	25	34	0	0	34	16
Peak Hour Factor	0.9500	0.9500	0.9500	0.9000	1.0000	0.9000	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000
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]	21	419	9	0	0	1	7	9	0	0	9	4
Total Analysis Volume [veh/h]	85	1677	38	0	0	4	28	38	0	0	38	18
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	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	0.00	0.02	0.00	0.00	0.00	0.00	0.37	0.53	0.00	0.00	0.52	0.06
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	171.77	175.16	0.00	0.00	95.67	58.40
Movement LOS	A	A	A				F	F			F	F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	4.53	4.53	0.00	0.00	2.69	2.69
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	113.25	113.25	0.00	0.00	67.19	67.19
d_A, Approach Delay [s/veh]	0.00			0.00			173.72			83.69		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	8.40											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 11: US97 NB (Future)/Hall Rd

Control Type:	Two-way stop	Delay (sec / veh):	117.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.084

Intersection Setup

Name					Hall Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name					Hall Road	
Base Volume Input [veh/h]	62	810	0	0	56	0
Base Volume Adjustment Factor	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
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	118	159	0	0	219	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	180	969	0	0	275	0
Peak Hour Factor	0.9500	0.9500	1.0000	1.0000	0.9000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	255	0	0	76	0
Total Analysis Volume [veh/h]	189	1020	0	0	306	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	1.08	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	117.61	0.00
Movement LOS	A	A			F	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	12.29	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	307.22	0.00
d_A, Approach Delay [s/veh]	0.00		0.00		117.61	
Approach LOS	A		A		F	
d_I, Intersection Delay [s/veh]	23.76					
Intersection LOS	F					

MOVEMENT SUMMARY

Site: 101 [Couplet (Site Folder: Culver/Hall)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
2	T1	All MCs	373	2.0	373	2.0	0.251	4.1	LOS A	1.5	10.6	0.02	0.41	0.02	55.1
3	R2	All MCs	59	2.0	59	2.0	0.251	3.9	LOS A	1.5	10.6	0.02	0.41	0.02	54.7
Approach			432	2.0	432	2.0	0.251	4.0	LOS A	1.5	10.6	0.02	0.41	0.02	55.1
East: RoadName															
4	L2	All MCs	31	20.0	31	20.0	0.035	11.0	LOS B	0.2	1.3	0.47	0.65	0.47	49.1
6	R2	All MCs	1	2.0	1	2.0	0.035	5.6	LOS A	0.2	1.3	0.47	0.65	0.47	50.1
Approach			32	19.4	32	19.4	0.035	10.8	LOS B	0.2	1.3	0.47	0.65	0.47	49.1
North: RoadName															
7	L2	All MCs	1	0.0	1	0.0	0.291	8.8	LOS A	2.0	14.0	0.17	0.39	0.17	53.5
8	T1	All MCs	443	0.0	443	0.0	0.291	4.2	LOS A	2.0	14.0	0.17	0.39	0.17	54.4
Approach			444	0.0	444	0.0	0.291	4.2	LOS A	2.0	14.0	0.17	0.39	0.17	54.4
All Vehicles			908	1.6	908	1.6	0.291	4.4	LOS A	2.0	14.0	0.11	0.41	0.11	54.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 102: Lois Lane (Future) / Fairgrounds Road

Control Type:	Two-way stop	Delay (sec / veh):	15.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.119

Intersection Setup

Name	Lois Lane (Future)		Fairgrounds Rd		Fairgrounds Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Lois Lane (Future)		Fairgrounds Rd		Fairgrounds Rd	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	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
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	50	242	6	8	205	8
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	242	6	8	205	8
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	67	2	2	57	2
Total Analysis Volume [veh/h]	56	269	7	9	228	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.25	0.00	0.00	0.14	0.00
d_M, Delay for Movement [s/veh]	15.08	10.77	0.00	0.00	7.59	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.73	1.73	0.00	0.00	0.48	0.48
95th-Percentile Queue Length [ft/ln]	43.15	43.15	0.00	0.00	11.94	11.94
d_A, Approach Delay [s/veh]	11.51		0.00		7.31	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	9.47					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 103: Lois Lane (Future) / Hall Road (Future)

Control Type:	Two-way stop	Delay (sec / veh):	18.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.074

Intersection Setup

Name	Lois Lane (Future)			Lois Lane (Future)			Hall Road (Future)			Hall Road (Future)		
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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Lois Lane (Future)			Lois Lane (Future)			Hall Road (Future)			Hall Road (Future)		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	19	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	299	0	117	128	28	18	0	9	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	299	0	117	128	28	18	0	9	19	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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	83	0	33	36	8	5	0	3	5	0	0
Total Analysis Volume [veh/h]	0	332	0	130	142	31	20	0	10	21	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.00	0.00	0.00	0.11	0.00	0.00	0.07	0.00	0.01	0.07	0.00	0.00
d_M, Delay for Movement [s/veh]	7.56	0.00	0.00	8.10	0.00	0.00	18.29	17.83	9.90	18.70	18.25	11.08
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.24	0.24	0.24	0.26	0.26	0.26	0.24	0.24	0.24
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	6.06	6.06	6.06	6.52	6.52	6.52	5.95	5.95	5.95
d_A, Approach Delay [s/veh]	0.00			3.48			15.49			18.70		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	2.78											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 104: Lois Lane (Future) / Colfax Lane

Control Type:	Two-way stop	Delay (sec / veh):	15.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.447

Intersection Setup

Name	Lois Lane (Future)		Colfax Ln		Colfax Ln	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Lois Lane (Future)		Colfax Ln		Colfax Ln	
Base Volume Input [veh/h]	19	0	0	30	40	0
Base Volume Adjustment Factor	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
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	262	45	19	0	47	194
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	281	45	19	30	87	194
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	13	5	8	24	54
Total Analysis Volume [veh/h]	312	50	21	33	97	216
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.45	0.06	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	15.23	14.38	7.91	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.89	2.89	0.04	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	72.37	72.37	0.89	0.89	0.00	0.00
d_A, Approach Delay [s/veh]	15.11		3.08		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	7.73					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 501: US97 NB (Future) / Fairgrounds Rd (Future)

Control Type:	Two-way stop	Delay (sec / veh):	69.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.912

Intersection Setup

Name												
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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	46	926	0	0	0	0	28	0	0	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	378	0	0	0	0	248	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]	46	1304	0	0	0	0	276	0	0	0	0	0
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]	12	326	0	0	0	0	69	0	0	0	0	0
Total Analysis Volume [veh/h]	46	1304	0	0	0	0	276	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	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	0.00	0.01	0.00	0.00	0.00	0.00	0.91	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	69.60	83.45	0.00	0.00	30.74	13.77
Movement LOS	A	A					F	F			D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	8.64	8.64	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	215.91	215.91	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			69.60			22.25		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	11.81											
Intersection LOS	F											

INTERCHANGE: NEW ALIGNMENT, RIROLI ON 97

Intersection Level Of Service Report
Intersection 1: US97 SB/J St

Control Type:	Signalized	Delay (sec / veh):	49.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.878

Intersection Setup

Name				US97 SB			J St			J St		
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	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	1000.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			25.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name				US97 SB			J St			J St		
Base Volume Input [veh/h]	0	0	0	108	1185	122	0	138	71	76	95	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 [%]	0.00	0.00	0.00	1.00	7.00	2.00	2.00	2.00	33.00	6.00	3.00	2.00
Proportion of CAVs [%]	0.00											
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	537	0	0	315	7	0	4	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	0	0	108	1722	122	0	453	78	76	99	0
Peak Hour Factor	0.8500	0.8500	0.8500	0.9500	0.9500	0.9500	1.0000	0.9000	0.9000	0.9000	0.9000	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]	0	0	0	28	453	32	0	126	22	21	28	0
Total Analysis Volume [veh/h]	0	0	0	114	1813	128	0	503	87	84	110	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]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
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	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	0	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	96	0	0	24	0	0	24	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	14	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	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall					No			No			No	
Maximum Recall					No			No			No	
Pedestrian Recall					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	C	C	C	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		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	2.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		92	92	20	20	20	20
g / C, Green / Cycle		0.77	0.77	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate		0.62	0.70	0.17	0.18	0.11	0.06
s, saturation flow rate [veh/h]		1644	1472	1722	1637	800	1709
c, Capacity [veh/h]		1260	1129	287	273	60	285
d1, Uniform Delay [s]		8.71	10.82	50.00	50.00	60.00	44.53
k, delay calibration		0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		5.88	12.40	60.43	77.78	254.32	3.92
d3, Initial Queue Delay [s]		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
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.82	0.91	1.03	1.08	1.40	0.39
d, Delay for Lane Group [s/veh]		14.59	23.21	110.43	127.78	314.32	48.46
Lane Group LOS		B	C	F	F	F	D
Critical Lane Group		No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]		16.09	21.30	13.39	14.05	6.08	3.26
50th-Percentile Queue Length [ft/ln]		402.14	532.62	334.85	351.15	151.98	81.59
95th-Percentile Queue Length [veh/ln]		22.66	28.87	19.67	20.98	10.94	5.87
95th-Percentile Queue Length [ft/ln]		566.58	721.87	491.64	524.49	273.56	146.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	14.59	18.87	23.21	0.00	117.61	127.78	314.32	48.46	0.00
Movement LOS				B	B	C		F	F	F	D	
d_A, Approach Delay [s/veh]	0.00			18.90			119.11			163.57		
Approach LOS	A			B			F			F		
d_I, Intersection Delay [s/veh]	49.61											
Intersection LOS	D											
Intersection V/C	0.878											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	9.0
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	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.512	0.000	2.311
Crosswalk LOS	F	B	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1533	333	333
d_b, Bicycle Delay [s]	60.00	3.27	41.67	41.67
l_b,int, Bicycle LOS Score for Intersection	4.132	3.255	2.046	1.880
Bicycle LOS	D	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: US97 NB / J St

Control Type:	Signalized	Delay (sec / veh):	79.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.877

Intersection Setup

Name							J St			J St		
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	1	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	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							J St			J St		
Base Volume Input [veh/h]	75	831	57	0	0	0	127	119	0	0	96	67
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 [%]	9.00	11.00	0.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	1.00	2.00
Proportion of CAVs [%]	0.00											
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]	4	331	0	0	0	0	315	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]	79	1162	57	0	0	0	442	119	0	0	96	67
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000
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]	21	306	15	0	0	0	123	33	0	0	27	19
Total Analysis Volume [veh/h]	83	1223	60	0	0	0	491	132	0	0	107	74
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]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-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	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	82	0	0	0	0	0	38	0	0	38	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	7	0	0	7	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	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No						No			No	
Maximum Recall		No						No			No	
Pedestrian Recall		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	C		L	C	C	C
C, Cycle Length [s]	120	120		120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	78	78		34	34	34	34
g / C, Green / Cycle	0.65	0.65		0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.43	0.48		0.40	0.08	0.05	0.06
s, saturation flow rate [veh/h]	1588	1432		1221	1722	1736	1515
c, Capacity [veh/h]	1032	931		332	488	492	429
d1, Uniform Delay [s]	12.93	14.00		49.04	33.37	32.51	32.78
k, delay calibration	0.50	0.50		0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.37	5.05		230.66	0.30	0.18	0.24
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.73		1.48	0.27	0.18	0.21
d, Delay for Lane Group [s/veh]	16.31	19.05		279.71	33.67	32.69	33.02
Lane Group LOS	B	B		F	C	C	C
Critical Lane Group	No	Yes		Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	11.56	12.69		31.48	3.08	2.05	2.07
50th-Percentile Queue Length [ft/ln]	289.10	317.22		786.97	76.88	51.28	51.81
95th-Percentile Queue Length [veh/ln]	17.14	18.53		49.31	5.54	3.69	3.73
95th-Percentile Queue Length [ft/ln]	428.53	463.27		1232.85	138.38	92.31	93.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.31	17.70	19.05	0.00	0.00	0.00	279.71	33.67	0.00	0.00	32.74	33.02
Movement LOS	B	B	B				F	C			C	C
d_A, Approach Delay [s/veh]	17.67			0.00			227.58			32.85		
Approach LOS	B			A			F			C		
d_I, Intersection Delay [s/veh]	79.20											
Intersection LOS	E											
Intersection V/C	0.877											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
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	4992.14
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.396	3.300	2.311	2.056
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1300	0	567	567
d_b, Bicycle Delay [s]	7.35	60.00	30.82	30.82
l_b,int, Bicycle LOS Score for Intersection	2.687	4.132	2.588	1.709
Bicycle LOS	B	D	B	A

Sequence

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

Intersection Level Of Service Report
Intersection 3: US97/Bard Ln

Control Type:	Two-way stop	Delay (sec / veh):	42.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.058

Intersection Setup

Name	US97								Bard Ln			
Approach	Northbound				Southbound				Westbound			
Lane Configuration												
Turning Movement	Left	Thru	Thru	Right	Left2	Left	Thru	Right	Left	Right	Right	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	1	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]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	US97								Bard Ln			
Base Volume Input [veh/h]	6	0	910	12	0	45	1153	28	6	0	0	18
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 [%]	25.00	2.00	11.00	0.00	0.00	3.00	7.00	13.00	0.00	2.00	2.00	7.00
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	101	25	0	34	510	0	0	0	0	234
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]	6	0	1011	37	0	79	1663	28	6	0	0	252
Peak Hour Factor	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9000	1.0000	1.0000	0.9000
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]	2	0	266	10	0	21	438	7	2	0	0	70
Total Analysis Volume [veh/h]	6	0	1064	39	0	83	1751	29	7	0	0	280
Pedestrian Volume [ped/h]	1				0				5			

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.01	0.00	0.00	0.13	0.02	0.00	0.00	0.00	0.00	0.52
d_M, Delay for Movement [s/veh]	17.44	0.00	0.00	0.00	0.00	11.66	0.00	0.00	0.00	0.00	0.00	18.80
Movement LOS	C		A	A		B	A	A				C
95th-Percentile Queue Length [veh/ln]	0.06	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.00	0.00	3.00
95th-Percentile Queue Length [ft/ln]	1.55	0.00	0.00	0.00	0.00	11.44	0.00	0.00	0.00	0.00	0.00	74.88
d_A, Approach Delay [s/veh]	0.09				0.52				18.80			
Approach LOS	A				A				C			
d_I, Intersection Delay [s/veh]	2.02											
Intersection LOS	E											

Intersection Setup

Name								
Approach	Southwestbound				Southeastbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right	Left2	Left	Left	Right
Lane Width [ft]	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
Entry Pocket Length [ft]	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
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name								
Base Volume Input [veh/h]	0	0	0	0	0	1	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	1	0	5
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	0.8500	1.0000	0.8500
Other Adjustment Factor	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	0	0	0	0	1
Total Analysis Volume [veh/h]	0	0	0	0	0	1	0	6
Pedestrian Volume [ped/h]	0				2			

Intersection Settings

Priority Scheme	Stop	Stop
Flared Lane		
Storage Area [veh]	0	0
Two-Stage Gap Acceptance		No
Number of Storage Spaces in Median	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	0.06
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.99
Movement LOS								E
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.56
d_A, Approach Delay [s/veh]	0.00				41.99			
Approach LOS	A				E			
d_I, Intersection Delay [s/veh]	2.02							
Intersection LOS	E							

Intersection Level Of Service Report
Intersection 4: US97/Fairgrounds Rd

Control Type:	Two-way stop	Delay (sec / veh):	134.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.965

Intersection Setup

Name				US97			Fairgrounds Rd			Terrace Ave		
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	0	0	0	0	0	0
Entry Pocket Length [ft]	125.00	100.00	100.00	200.00	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]	30.00			35.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				US97			Fairgrounds Rd			Terrace Ave		
Base Volume Input [veh/h]	57	850	156	7	1058	79	25	0	74	1	1	25
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	11.00	0.00	0.00	8.00	3.00	0.00	2.00	5.00	0.00	0.00	38.00
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]	63	126	0	0	304	206	0	0	39	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]	120	976	156	7	1362	285	25	0	113	1	1	25
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9300	1.0000	0.9000	0.9300	0.9300	0.9000
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]	32	257	41	2	358	75	7	0	31	0	0	7
Total Analysis Volume [veh/h]	126	1027	164	7	1434	300	27	0	126	1	1	28
Pedestrian Volume [ped/h]	0			1			3			5		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			Yes	Yes
Number of Storage Spaces in Median	0	0	1	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.35	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.97	0.00	0.00	0.13
d_M, Delay for Movement [s/veh]	20.22	0.00	0.00	11.20	0.00	0.00	0.00	0.00	134.56	0.00	0.00	24.38
Movement LOS	C	A	A	B	A	A			F			C
95th-Percentile Queue Length [veh/ln]	1.53	0.00	0.00	0.04	0.00	0.00	0.00	0.00	6.60	0.00	0.00	0.44
95th-Percentile Queue Length [ft/ln]	38.21	0.00	0.00	0.90	0.00	0.00	0.00	0.00	164.95	0.00	0.00	11.10
d_A, Approach Delay [s/veh]	1.93			0.05			134.56			24.38		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	6.31											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 5: US97/Hall Rd

Control Type:	Two-way stop	Delay (sec / veh):	34.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.520

Intersection Setup

Name	US97			US97			Hall Road (Future)					
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	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	80.00	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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US97			US97			Hall Road (Future)					
Base Volume Input [veh/h]	40	876	8	29	1029	23	19	0	50	4	1	23
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 [%]	66.00	12.00	0.00	4.00	10.00	53.00	56.00	0.00	34.00	0.00	0.00	5.00
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	126	125	61	171	0	0	0	0	0	0	92
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]	40	1002	133	90	1200	23	19	0	50	4	1	115
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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	264	35	24	316	6	5	0	14	1	0	32
Total Analysis Volume [veh/h]	42	1055	140	95	1263	24	21	0	56	4	1	128
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			Yes	Yes
Number of Storage Spaces in Median	0	0	1	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.01	0.00	0.16	0.01	0.00	0.00	0.00	0.32	0.00	0.00	0.52
d_M, Delay for Movement [s/veh]	15.92	0.00	0.00	12.46	0.00	0.00	0.00	0.00	34.39	0.00	0.00	34.47
Movement LOS	C	A	A	B	A	A			D			D
95th-Percentile Queue Length [veh/ln]	0.38	0.00	0.00	0.59	0.00	0.00	0.00	0.00	1.28	0.00	0.00	2.74
95th-Percentile Queue Length [ft/ln]	9.47	0.00	0.00	14.64	0.00	0.00	0.00	0.00	31.91	0.00	0.00	68.56
d_A, Approach Delay [s/veh]	0.54			0.86			34.39			34.47		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	2.92											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 7: Culver Hwy/Colfax Ln

Control Type:	Two-way stop	Delay (sec / veh):	27.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.385

Intersection Setup

Name	Culver Hwy						Colfax Ln			Colfax Ln		
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]	50.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Culver Hwy						Colfax Ln			Colfax Ln		
Base Volume Input [veh/h]	0	294	16	9	334	4	7	1	2	27	2	8
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 [%]	0.00	4.00	8.00	7.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	62	43	0	102	0	0	0	0	64	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	356	59	9	436	4	7	1	2	91	2	8
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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	94	16	2	115	1	2	0	1	25	1	2
Total Analysis Volume [veh/h]	0	375	62	9	459	4	8	1	2	101	2	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.00	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.00	0.38	0.01	0.01
d_M, Delay for Movement [s/veh]	8.25	0.00	0.00	8.29	0.00	0.00	19.50	18.76	11.45	27.36	26.40	19.18
Movement LOS	A	A	A	A	A	A	C	C	B	D	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	0.12	0.12	0.12	1.88	1.88	1.88
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.38	0.38	0.38	2.96	2.96	2.96	46.95	46.95	46.95
d_A, Approach Delay [s/veh]	0.00			0.16			17.97			26.69		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	3.16											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 8: Culver Hwy/Fairgrounds Rd

Control Type:	Two-way stop	Delay (sec / veh):	286.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.462

Intersection Setup

Name				Culver Hwy			Fairgrounds Rd			Fairgrounds Rd		
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]	30.00			30.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name				Culver Hwy			Fairgrounds Rd			Fairgrounds Rd		
Base Volume Input [veh/h]	7	307	29	45	308	11	8	1	1	66	8	102
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 [%]	0.00	4.00	0.00	5.00	5.00	0.00	29.00	0.00	0.00	2.00	0.00	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	216	0	41	84	0	0	0	0	0	0	263
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]	7	523	29	86	392	11	8	1	1	66	8	365
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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]	2	138	8	23	103	3	2	0	0	18	2	101
Total Analysis Volume [veh/h]	7	551	31	91	413	12	9	1	1	73	9	406
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.01	0.01	0.00	0.09	0.00	0.00	0.46	0.01	0.00	0.51	0.05	0.78
d_M, Delay for Movement [s/veh]	8.15	0.00	0.00	8.79	0.00	0.00	286.90	124.05	107.61	214.29	211.05	196.13
Movement LOS	A	A	A	A	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.16	0.16	0.16	1.40	1.40	1.40	23.27	23.27	23.27
95th-Percentile Queue Length [ft/ln]	0.30	0.30	0.30	4.01	4.01	4.01	34.97	34.97	34.97	581.69	581.69	581.69
d_A, Approach Delay [s/veh]	0.10			1.55			255.79			199.12		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	62.87											
Intersection LOS	F											

MOVEMENT SUMMARY

Site: 101 [Interchange 2 (Site Folder: Culver/J)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
1	L2	All MCs	83	25.0	83	25.0	0.816	14.4	LOS B	13.5	101.3	0.91	0.70	1.03	49.4
2	T1	All MCs	439	2.0	439	2.0	0.816	8.9	LOS A	13.5	101.3	0.91	0.70	1.03	51.1
3	R2	All MCs	423	12.0	423	12.0	0.816	9.1	LOS A	13.5	101.3	0.91	0.70	1.03	50.4
Approach			945	8.5	945	8.5	0.816	9.4	LOS A	13.5	101.3	0.91	0.70	1.03	50.6
East: RoadName															
4	L2	All MCs	63	8.0	63	8.0	0.281	13.0	LOS B	1.9	14.0	0.79	0.72	0.79	49.8
5	T1	All MCs	94	7.0	94	7.0	0.281	8.3	LOS A	1.9	14.0	0.79	0.72	0.79	50.7
6	R2	All MCs	39	8.0	39	8.0	0.281	8.2	LOS A	1.9	14.0	0.79	0.72	0.79	50.3
Approach			197	7.5	197	7.5	0.281	9.8	LOS A	1.9	14.0	0.79	0.72	0.79	50.3
North: RoadName															
7	L2	All MCs	39	18.0	39	18.0	0.539	11.2	LOS B	4.3	31.8	0.64	0.57	0.64	50.9
8	T1	All MCs	421	6.0	421	6.0	0.539	6.1	LOS A	4.3	31.8	0.64	0.57	0.64	52.3
9	R2	All MCs	131	0.0	131	0.0	0.539	5.8	LOS A	4.3	31.8	0.64	0.57	0.64	52.1
Approach			591	5.5	591	5.5	0.539	6.4	LOS A	4.3	31.8	0.64	0.57	0.64	52.1
West: RoadName															
10	L2	All MCs	88	20.0	88	20.0	0.283	12.8	LOS B	1.8	13.4	0.71	0.69	0.71	49.7
11	T1	All MCs	72	0.0	72	0.0	0.283	7.3	LOS A	1.8	13.4	0.71	0.69	0.71	51.3
12	R2	All MCs	66	0.0	66	0.0	0.283	7.1	LOS A	1.8	13.4	0.71	0.69	0.71	50.9
Approach			226	7.8	226	7.8	0.283	9.4	LOS A	1.8	13.4	0.71	0.69	0.71	50.6
All Vehicles			1958	7.4	1958	7.4	0.816	8.6	LOS A	13.5	101.3	0.79	0.66	0.85	51.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 10: Adams Dr/Bard Ln

Control Type:	Two-way stop	Delay (sec / veh):	22.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.130

Intersection Setup

Name				Adams Dr			Bard Ln					
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]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name				Adams Dr			Bard Ln					
Base Volume Input [veh/h]	14	65	0	0	34	4	7	0	12	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 [%]	10.00	4.00	0.00	0.00	0.00	33.00	17.00	0.00	0.00	0.00	0.00	0.00
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]	214	0	11	0	0	0	0	59	0	30	20	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]	228	65	11	0	34	4	7	59	12	30	20	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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]	63	18	3	0	9	1	2	16	3	8	6	0
Total Analysis Volume [veh/h]	253	72	12	0	38	4	8	66	13	33	22	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.17	0.00	0.00	0.00	0.00	0.00	0.03	0.20	0.01	0.13	0.07	0.00
d_M, Delay for Movement [s/veh]	7.72	0.00	0.00	7.36	0.00	0.00	20.55	18.98	11.57	22.22	18.91	11.73
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.51	0.51	0.51	0.00	0.00	0.00	0.92	0.92	0.92	0.71	0.71	0.71
95th-Percentile Queue Length [ft/ln]	12.64	12.64	12.64	0.00	0.00	0.00	23.02	23.02	23.02	17.79	17.79	17.79
d_A, Approach Delay [s/veh]	5.80			0.00			18.01			20.89		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.96											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 11: Adams Dr/Hall Rd

Control Type:	Two-way stop	Delay (sec / veh):	26.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.445

Intersection Setup

Name	Adams Dr				Hall Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Adams Dr				Hall Rd	
Base Volume Input [veh/h]	15	68	225	12	5	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	25.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	15	5	219	178
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	68	240	17	224	211
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	19	67	5	62	59
Total Analysis Volume [veh/h]	20	76	267	19	249	234
Pedestrian Volume [ped/h]	0		0		1	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.45	0.31
d_M, Delay for Movement [s/veh]	7.82	0.00	0.00	0.00	26.36	24.62
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.00	0.00	6.77	6.77
95th-Percentile Queue Length [ft/ln]	0.84	0.84	0.00	0.00	169.18	169.18
d_A, Approach Delay [s/veh]	1.63		0.00		25.52	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	14.43					
Intersection LOS	D					

MOVEMENT SUMMARY

Site: 101 [Interchange 2 (Site Folder: Culver/Hall)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
2	T1	All MCs	375	2.0	375	2.0	0.258	4.2	LOS A	1.6	11.1	0.12	0.39	0.12	54.6
3	R2	All MCs	26	2.0	26	2.0	0.258	4.0	LOS A	1.6	11.1	0.12	0.39	0.12	54.3
Approach			401	2.0	401	2.0	0.258	4.2	LOS A	1.6	11.1	0.12	0.39	0.12	54.6
East: RoadName															
4	L2	All MCs	46	2.0	46	2.0	0.292	11.0	LOS B	1.7	12.2	0.56	0.61	0.56	52.0
6	R2	All MCs	251	2.0	251	2.0	0.292	6.2	LOS A	1.7	12.2	0.56	0.61	0.56	52.5
Approach			297	2.0	297	2.0	0.292	6.9	LOS A	1.7	12.2	0.56	0.61	0.56	52.4
North: RoadName															
7	L2	All MCs	23	2.0	23	2.0	0.313	8.9	LOS A	2.2	16.0	0.22	0.41	0.22	53.1
8	T1	All MCs	439	2.0	439	2.0	0.313	4.3	LOS A	2.2	16.0	0.22	0.41	0.22	54.0
Approach			462	2.0	462	2.0	0.313	4.5	LOS A	2.2	16.0	0.22	0.41	0.22	54.0
All Vehicles			1160	2.0	1160	2.0	0.313	5.0	LOS A	2.2	16.0	0.27	0.45	0.27	53.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 102: Lois Lane (Future) / Fairgrounds Road

Control Type:	Two-way stop	Delay (sec / veh):	28.0
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.608

Intersection Setup

Name	Lois Lane (Future)		Fairgrounds Rd		Fairgrounds Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Lois Lane (Future)		Fairgrounds Rd		Fairgrounds Rd	
Base Volume Input [veh/h]	0	0	0	0	1	25
Base Volume Adjustment Factor	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
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	210	6	33	8	216	53
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	210	6	33	8	217	78
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	2	9	2	60	22
Total Analysis Volume [veh/h]	233	7	37	9	241	87
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.61	0.01	0.00	0.00	0.15	0.00
d_M, Delay for Movement [s/veh]	28.04	22.14	0.00	0.00	7.61	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3.96	3.96	0.00	0.00	0.46	0.46
95th-Percentile Queue Length [ft/ln]	98.88	98.88	0.00	0.00	11.57	11.57
d_A, Approach Delay [s/veh]	27.86		0.00		5.59	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	13.88					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 103: Lois Lane (Future) / Hall Road (Future)

Control Type:	Two-way stop	Delay (sec / veh):	24.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.124

Intersection Setup

Name	Lois Lane (Future)			Lois Lane (Future)			Hall Road (Future)			Hall Road (Future)		
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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Lois Lane (Future)			Lois Lane (Future)			Hall Road (Future)			Hall Road (Future)		
Base Volume Input [veh/h]	0	0	0	0	1	0	0	19	0	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]	184	127	0	0	261	37	25	0	22	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]	184	127	0	0	262	37	25	19	22	0	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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]	51	35	0	0	73	10	7	5	6	0	0	0
Total Analysis Volume [veh/h]	204	141	0	0	291	41	28	21	24	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.17	0.00	0.00	0.00	0.00	0.00	0.12	0.09	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.19	0.00	0.00	7.50	0.00	0.00	24.76	23.81	13.78	23.38	20.39	8.97
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	A
95th-Percentile Queue Length [veh/ln]	0.38	0.38	0.38	0.00	0.00	0.00	0.94	0.94	0.94	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	9.57	9.57	9.57	0.00	0.00	0.00	23.44	23.44	23.44	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	4.84			0.00			20.88			17.58		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	4.26											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 104: Lois Lane (Future) / Colfax Lane

Control Type:	Two-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.233

Intersection Setup

Name				Lois Lane (Future)			Colfax Ln			Colfax Lane		
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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Lois Lane (Future)			Colfax Ln			Colfax Lane		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	30	0	0	40	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	147	0	13	8	35	0	0	51	105
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	0	0	147	0	13	8	65	0	0	91	105
Peak Hour Factor	1.0000	1.0000	1.0000	0.9000	1.0000	0.9000	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000
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	41	0	4	2	18	0	0	25	29
Total Analysis Volume [veh/h]	0	0	0	163	0	14	9	72	0	0	101	117
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	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	0.00	0.00	0.00	0.23	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.29	10.98	8.64	11.82	0.00	10.73	7.67	0.00	0.00	0.00	0.00	0.00
Movement LOS	B	B	A	B		B	A	A			A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.98	0.00	0.98	0.02	0.02	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	24.50	0.00	24.50	0.38	0.38	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.97			11.73			0.85			0.00		
Approach LOS	A			B			A			A		
d_I, Intersection Delay [s/veh]	4.51											
Intersection LOS	B											

Intersection Level Of Service Report

Intersection 501: Adams Dr / Fairgrounds Road Extension (Future)

Control Type:	Two-way stop	Delay (sec / veh):	11.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.013

Intersection Setup

Name												
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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	7	0	2	0	152	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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	219	0	0	20	10	6	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	219	0	0	27	10	8	0	152	0	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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	61	0	0	8	3	2	0	42	0	0	0
Total Analysis Volume [veh/h]	0	243	0	0	30	11	9	0	169	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.16	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.28	0.00	0.00	7.70	0.00	0.00	11.06	11.44	9.20	12.20	10.73	9.50
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.63	0.63	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	15.85	15.85	15.85	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			9.30			10.81		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	3.58											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 601: US97 SB Terminal / Colfax Ln

Control Type:	Signalized	Delay (sec / veh):	20.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.539

Intersection Setup

Name	US97 SB On-Ramp			US97 SB Off-Ramp						Colfax Lane		
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	1	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	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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US97 SB On-Ramp			US97 SB Off-Ramp						Colfax Lane		
Base Volume Input [veh/h]	0	0	0	276	0	35	0	5	18	161	1	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	5.00	11.00	7.00	2.00	0.00	0.00	0.00	0.00	2.00
Proportion of CAVs [%]	0.00											
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	38	0	125	203	126	198	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	0	0	276	0	73	0	130	221	287	199	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9000	0.9000	0.9000	0.9000	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]	0	0	0	73	0	19	0	36	61	80	55	0
Total Analysis Volume [veh/h]	0	0	0	291	0	77	0	144	246	319	221	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	Permis	Permis	Permis	Permis	Permis	Permis	Protect	Permis	Permis
Signal Group	0	0	0	0	4	0	0	0	2	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	0	10	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	0	30	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0
Split [s]	0	0	0	0	16	0	0	0	28	16	44	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	0	5	0	5	0
Pedestrian Clearance [s]	0	0	0	0	10	0	0	0	10	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	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall					No					No	No	
Maximum Recall					No					No	No	
Pedestrian Recall					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		L	C	R	L	C
C, Cycle Length [s]		60	60	60	60	60
L, Total Lost Time per Cycle [s]		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
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		13	13	21	14	39
g / C, Green / Cycle		0.22	0.22	0.35	0.23	0.65
(v / s)_i Volume / Saturation Flow Rate		0.18	0.06	0.17	0.19	0.13
s, saturation flow rate [veh/h]		1601	1358	1488	1667	1750
c, Capacity [veh/h]		353	299	524	378	1131
d1, Uniform Delay [s]		22.29	19.33	15.07	22.17	4.30
k, delay calibration		0.11	0.11	0.11	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		4.88	0.45	0.65	5.14	0.39
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.82	0.26	0.47	0.84	0.20
d, Delay for Lane Group [s/veh]		27.16	19.78	15.73	27.31	4.68
Lane Group LOS		C	B	B	C	A
Critical Lane Group		Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		4.07	0.86	2.42	4.49	0.88
50th-Percentile Queue Length [ft/ln]		101.86	21.57	60.62	112.16	22.07
95th-Percentile Queue Length [veh/ln]		7.33	1.55	4.36	7.96	1.59
95th-Percentile Queue Length [ft/ln]		183.35	38.83	109.12	199.01	39.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	27.16	19.78	19.78	0.00	0.00	15.73	27.31	4.68	0.00
Movement LOS				C	B	B			B	C	A	
d_A, Approach Delay [s/veh]	0.00			25.62			15.73			18.05		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	19.97											
Intersection LOS	B											
Intersection V/C	0.539											

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]	0	400	0	1333
d_b, Bicycle Delay [s]	30.00	19.20	30.00	3.34
l_b,int, Bicycle LOS Score for Intersection	4.132	2.167	1.560	2.451
Bicycle LOS	D	B	A	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 602: US97 NB Terminal / US26

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.499

Intersection Setup

Name	US97 NB Off-Ramp			US97 NB On-Ramp			Colfax Lane			US26		
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	1	0	0	0	0	1
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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US97 NB Off-Ramp			US97 NB On-Ramp			Colfax Lane			US26		
Base Volume Input [veh/h]	4	0	16	0	0	0	160	4	0	0	162	189
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 [%]	0.00	8.00	8.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	21.00
Proportion of CAVs [%]	0.00											
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]	131	0	0	0	0	0	123	3	0	0	193	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]	135	0	16	0	0	0	283	7	0	0	355	189
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000
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]	36	0	4	0	0	0	79	2	0	0	99	53
Total Analysis Volume [veh/h]	142	0	17	0	0	0	314	8	0	0	394	210
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	Semi-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	Permis	Permis	Permis	Protect	Permis	Permis	Permis	Permis	Permis
Signal Group	0	8	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	14	0	0	0	0	22	46	0	0	24	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	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	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	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	L	C		L	C	C	R
C, Cycle Length [s]	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
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9		13	43	25	25
g / C, Green / Cycle	0.16	0.16		0.22	0.71	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.09	0.01		0.19	0.00	0.23	0.17
s, saturation flow rate [veh/h]	1667	1393		1667	1750	1750	1241
c, Capacity [veh/h]	259	217		369	1244	740	525
d1, Uniform Delay [s]	23.38	21.65		22.41	2.52	12.89	12.02
k, delay calibration	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.80	0.15		5.56	0.01	2.73	2.27
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.08		0.85	0.01	0.53	0.40
d, Delay for Lane Group [s/veh]	25.18	21.81		27.97	2.53	15.62	14.29
Lane Group LOS	C	C		C	A	B	B
Critical Lane Group	Yes	No		Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.87	0.20		4.48	0.02	3.97	2.03
50th-Percentile Queue Length [ft/ln]	46.68	5.05		112.06	0.47	99.31	50.66
95th-Percentile Queue Length [veh/ln]	3.36	0.36		7.95	0.03	7.15	3.65
95th-Percentile Queue Length [ft/ln]	84.03	9.08		198.86	0.84	178.75	91.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.18	21.81	21.81	0.00	0.00	0.00	27.97	2.53	0.00	0.00	15.62	14.29
Movement LOS	C	C	C				C	A			B	B
d_A, Approach Delay [s/veh]	24.82			0.00			27.34			15.16		
Approach LOS	C			A			C			B		
d_I, Intersection Delay [s/veh]	20.19											
Intersection LOS	C											
Intersection V/C	0.499											

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]	333	0	1400	667
d_b, Bicycle Delay [s]	20.83	30.00	2.70	13.33
l_b,int, Bicycle LOS Score for Intersection	1.822	4.132	2.091	2.556
Bicycle LOS	A	D	B	B

Sequence

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

Intersection Level Of Service Report
Intersection 604: US26 / McGlohin Rd

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.269

Intersection Setup

Name	US26		US26		McGlohin Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	US26		US26		McGlohin Rd	
Base Volume Input [veh/h]	187	0	195	0	0	0
Base Volume Adjustment Factor	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
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	3	0	0	193
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	187	0	198	0	0	193
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	0	52	0	0	57
Total Analysis Volume [veh/h]	197	0	208	0	0	227
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.15	0.00	0.00	0.27
d_M, Delay for Movement [s/veh]	0.00	0.00	8.08	0.00	15.86	10.83
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.53	0.53	1.09	1.09
95th-Percentile Queue Length [ft/ln]	0.00	0.00	13.31	13.31	27.20	27.20
d_A, Approach Delay [s/veh]	0.00		8.08		10.83	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	6.55					
Intersection LOS	B					

INTERCHANGE: NEW ALIGNMENT, RIRO ON 97

Intersection Level Of Service Report
Intersection 1: US97 SB/J St

Control Type:	Signalized	Delay (sec / veh):	53.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.905

Intersection Setup

Name				US97 SB			J St			J St		
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	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	1000.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00			25.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name				US97 SB			J St			J St		
Base Volume Input [veh/h]	0	0	0	108	1263	122	0	138	77	76	95	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 [%]	0.00	0.00	0.00	1.00	7.00	2.00	2.00	2.00	33.00	6.00	3.00	2.00
Proportion of CAVs [%]	0.00											
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	537	0	0	315	0	6	57	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	0	0	108	1800	122	0	453	77	82	152	0
Peak Hour Factor	0.8500	0.8500	0.8500	0.9500	0.9500	0.9500	1.0000	0.9000	0.9000	0.9000	0.9000	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]	0	0	0	28	474	32	0	126	21	23	42	0
Total Analysis Volume [veh/h]	0	0	0	114	1895	128	0	503	86	91	169	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]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
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	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	0	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	96	0	0	24	0	0	24	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	14	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	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall					No			No			No	
Maximum Recall					No			No			No	
Pedestrian Recall					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	C	C	C	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		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	2.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		92	92	20	20	20	20
g / C, Green / Cycle		0.77	0.77	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate		0.65	0.73	0.17	0.18	0.11	0.10
s, saturation flow rate [veh/h]		1644	1473	1722	1638	800	1709
c, Capacity [veh/h]		1261	1130	287	273	60	285
d1, Uniform Delay [s]		9.33	11.89	50.00	50.00	60.00	46.24
k, delay calibration		0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		7.18	16.59	59.95	77.02	300.61	8.81
d3, Initial Queue Delay [s]		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
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.85	0.95	1.03	1.08	1.52	0.59
d, Delay for Lane Group [s/veh]		16.51	28.48	109.95	127.02	360.61	55.05
Lane Group LOS		B	C	F	F	F	E
Critical Lane Group		No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]		18.13	25.11	13.36	14.00	6.85	5.41
50th-Percentile Queue Length [ft/ln]		453.36	627.85	333.89	349.88	171.27	135.19
95th-Percentile Queue Length [veh/ln]		25.12	33.33	19.60	20.89	12.33	9.22
95th-Percentile Queue Length [ft/ln]		627.95	833.32	490.04	522.34	308.28	230.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	16.51	22.45	28.48	0.00	117.03	127.02	360.61	55.05	0.00
Movement LOS				B	C	C		F	F	F	E	
d_A, Approach Delay [s/veh]	0.00			22.49			118.48			161.99		
Approach LOS	A			C			F			F		
d_I, Intersection Delay [s/veh]	53.57											
Intersection LOS	D											
Intersection V/C	0.905											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	9.0
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	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.534	0.000	2.324
Crosswalk LOS	F	B	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1533	333	333
d_b, Bicycle Delay [s]	60.00	3.27	41.67	41.67
l_b,int, Bicycle LOS Score for Intersection	4.132	3.323	2.046	1.989
Bicycle LOS	D	C	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: US97 NB / J St

Control Type:	Signalized	Delay (sec / veh):	78.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.900

Intersection Setup

Name							J St					
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	1	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	1	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	49.21
Speed [mph]	30.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							J St					
Base Volume Input [veh/h]	75	833	57	0	0	0	127	119	0	0	96	66
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 [%]	9.00	11.00	0.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	1.00	2.00
Proportion of CAVs [%]	0.00											
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]	60	331	0	0	0	0	315	0	0	0	3	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]	135	1164	57	0	0	0	442	119	0	0	99	66
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000
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]	36	306	15	0	0	0	123	33	0	0	28	18
Total Analysis Volume [veh/h]	142	1225	60	0	0	0	491	132	0	0	110	73
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]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-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	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	82	0	0	0	0	0	38	0	0	38	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	7	0	0	7	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	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No						No			No	
Maximum Recall		No						No			No	
Pedestrian Recall		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	C		L	C	C	C
C, Cycle Length [s]	120	120		120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	78	78		34	34	34	34
g / C, Green / Cycle	0.65	0.65		0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.45	0.50		0.40	0.08	0.05	0.06
s, saturation flow rate [veh/h]	1582	1433		1219	1722	1736	1519
c, Capacity [veh/h]	1028	931		331	488	492	430
d1, Uniform Delay [s]	13.41	14.61		49.06	33.37	32.53	32.79
k, delay calibration	0.50	0.50		0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.88	5.95		232.31	0.30	0.18	0.24
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.76		1.48	0.27	0.19	0.21
d, Delay for Lane Group [s/veh]	17.29	20.56		281.37	33.67	32.71	33.04
Lane Group LOS	B	C		F	C	C	C
Critical Lane Group	No	Yes		Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	12.56	13.97		31.55	3.08	2.05	2.07
50th-Percentile Queue Length [ft/ln]	314.03	349.34		788.77	76.88	51.34	51.86
95th-Percentile Queue Length [veh/ln]	18.37	20.10		49.46	5.54	3.70	3.73
95th-Percentile Queue Length [ft/ln]	459.35	502.60		1236.41	138.38	92.41	93.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.29	19.03	20.56	0.00	0.00	0.00	281.37	33.67	0.00	0.00	32.77	33.04
Movement LOS	B	B	C				F	C			C	C
d_A, Approach Delay [s/veh]	18.92			0.00			228.89			32.87		
Approach LOS	B			A			F			C		
d_I, Intersection Delay [s/veh]	78.64											
Intersection LOS	E											
Intersection V/C	0.900											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
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	4992.14
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.426	3.301	2.324	2.238
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1300	0	567	567
d_b, Bicycle Delay [s]	7.35	60.00	30.82	30.82
l_b,int, Bicycle LOS Score for Intersection	2.737	4.132	2.588	1.711
Bicycle LOS	B	D	B	A

Sequence

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

Intersection Level Of Service Report
Intersection 3: US97/Bard Ln

Control Type:	Two-way stop	Delay (sec / veh):	49.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.069

Intersection Setup

Name	US97								Bard Ln			
Approach	Northbound				Southbound				Westbound			
Lane Configuration												
Turning Movement	Left	Thru	Thru	Right	Left2	Left	Thru	Right	Left	Right	Right	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]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	US97								Bard Ln			
Base Volume Input [veh/h]	6	0	911	58	0	45	1232	34	6	0	0	18
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 [%]	25.00	2.00	11.00	0.00	0.00	3.00	7.00	13.00	0.00	2.00	2.00	7.00
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	101	65	0	0	543	0	0	0	0	290
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]	6	0	1012	123	0	45	1775	34	6	0	0	308
Peak Hour Factor	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9000	1.0000	1.0000	0.9000
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]	2	0	266	32	0	12	467	9	2	0	0	86
Total Analysis Volume [veh/h]	6	0	1065	129	0	47	1868	36	7	0	0	342
Pedestrian Volume [ped/h]	1				0				5			

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.49
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.93
Movement LOS			A	A			A	A				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	0.00	0.00	2.70
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.42
d_A, Approach Delay [s/veh]	0.00				0.00				14.93			
Approach LOS	A				A				B			
d_I, Intersection Delay [s/veh]	1.57											
Intersection LOS	E											

Intersection Setup

Name								
Approach	Southwestbound				Southeastbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right	Left2	Left	Left	Right
Lane Width [ft]	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
Entry Pocket Length [ft]	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
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name								
Base Volume Input [veh/h]	0	0	0	0	0	1	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	1	0	5
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	0.8500	1.0000	0.8500
Other Adjustment Factor	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	0	0	0	0	1
Total Analysis Volume [veh/h]	0	0	0	0	0	1	0	6
Pedestrian Volume [ped/h]	0				2			

Intersection Settings

Priority Scheme	Stop	Stop
Flared Lane		
Storage Area [veh]	0	0
Two-Stage Gap Acceptance		No
Number of Storage Spaces in Median	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	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.23
Movement LOS								E
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.42
d_A, Approach Delay [s/veh]	0.00				49.23			
Approach LOS	A				E			
d_I, Intersection Delay [s/veh]	1.57							
Intersection LOS	E							

Intersection Level Of Service Report
Intersection 4: US97/Fairgrounds Rd

Control Type:	Two-way stop	Delay (sec / veh):	98.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name				US97			Fairgrounds Rd			Terrace Ave		
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]	30.00			35.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				US97			Fairgrounds Rd			Terrace Ave		
Base Volume Input [veh/h]	57	896	161	7	1140	79	25	0	74	1	1	25
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	11.00	0.00	0.00	8.00	3.00	0.00	2.00	5.00	0.00	0.00	38.00
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	166	0	0	331	212	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]	57	1062	161	7	1471	291	25	0	74	1	1	25
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9300	1.0000	0.9000	0.9300	0.9300	0.9000
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]	15	279	42	2	387	77	7	0	21	0	0	7
Total Analysis Volume [veh/h]	60	1118	169	7	1548	306	27	0	82	1	1	28
Pedestrian Volume [ped/h]	0			1			3			5		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			Yes	Yes
Number of Storage Spaces in Median	0	0	1	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.74	0.00	0.00	0.15
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	98.01	0.00	0.00	27.61
Movement LOS		A	A		A	A			F			D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.02	0.00	0.00	0.51
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.56	0.00	0.00	12.87
d_A, Approach Delay [s/veh]	0.00			0.00			98.01			27.61		
Approach LOS	A			A			F			D		
d_I, Intersection Delay [s/veh]	2.71											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 5: US97/Hall Rd

Control Type:	Two-way stop	Delay (sec / veh):	56.4
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.454

Intersection Setup

Name	US97			US97			Hall Road (Future)					
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	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	80.00	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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US97			US97			Hall Road (Future)					
Base Volume Input [veh/h]	40	926	38	29	1110	23	19	0	50	4	1	23
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 [%]	66.00	12.00	0.00	4.00	10.00	53.00	56.00	0.00	34.00	0.00	0.00	5.00
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	166	342	0	331	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]	40	1092	380	29	1441	23	19	0	50	4	1	23
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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	287	100	8	379	6	5	0	14	1	0	6
Total Analysis Volume [veh/h]	42	1149	400	31	1517	24	21	0	56	4	1	26
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			Yes	Yes
Number of Storage Spaces in Median	0	0	1	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.45	0.00	0.00	0.14
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.39	0.00	0.00	28.12
Movement LOS		A	A		A	A			F			D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.01	0.00	0.00	0.49
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.29	0.00	0.00	12.23
d_A, Approach Delay [s/veh]	0.00			0.00			56.39			28.12		
Approach LOS	A			A			F			D		
d_I, Intersection Delay [s/veh]	1.23											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 7: Culver Hwy/Colfax Ln

Control Type:	Two-way stop	Delay (sec / veh):	30.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.385

Intersection Setup

Name	Culver Hwy						Colfax Ln			Colfax Ln		
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]	50.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Culver Hwy						Colfax Ln			Colfax Ln		
Base Volume Input [veh/h]	0	294	16	9	334	4	7	1	2	27	2	110
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 [%]	0.00	4.00	8.00	7.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	62	43	0	102	0	0	0	0	64	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	356	59	9	436	4	7	1	2	91	2	110
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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	94	16	2	115	1	2	0	1	25	1	31
Total Analysis Volume [veh/h]	0	375	62	9	459	4	8	1	2	101	2	122
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.00	0.00	0.38	0.01	0.19
d_M, Delay for Movement [s/veh]	8.25	0.00	0.00	8.29	0.00	0.00	24.37	19.07	11.75	30.77	29.81	22.59
Movement LOS	A	A	A	A	A	A	C	C	B	D	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	0.15	0.15	0.15	3.53	3.53	3.53
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.38	0.38	0.38	3.78	3.78	3.78	88.26	88.26	88.26
d_A, Approach Delay [s/veh]	0.00			0.16			21.59			26.33		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	5.45											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 8: Culver Hwy/Fairgrounds Rd

Control Type:	Two-way stop	Delay (sec / veh):	175.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.491

Intersection Setup

Name				Culver Hwy			Fairgrounds Rd			Fairgrounds Rd		
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]	30.00			30.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name				Culver Hwy			Fairgrounds Rd			Fairgrounds Rd		
Base Volume Input [veh/h]	7	313	85	45	308	11	8	1	1	66	8	102
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 [%]	0.00	4.00	0.00	5.00	5.00	0.00	29.00	0.00	0.00	2.00	0.00	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	216	0	8	124	0	0	0	0	0	0	210
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]	7	529	85	53	432	11	8	1	1	66	8	312
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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]	2	139	22	14	114	3	2	0	0	18	2	87
Total Analysis Volume [veh/h]	7	557	89	56	455	12	9	1	1	73	9	347
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.01	0.01	0.00	0.06	0.00	0.00	0.31	0.01	0.00	0.49	0.05	0.69
d_M, Delay for Movement [s/veh]	8.27	0.00	0.00	8.96	0.00	0.00	173.38	70.52	54.27	175.87	172.69	158.84
Movement LOS	A	A	A	A	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.10	0.10	0.10	1.04	1.04	1.04	18.85	18.85	18.85
95th-Percentile Queue Length [ft/ln]	0.30	0.30	0.30	2.42	2.42	2.42	26.06	26.06	26.06	471.22	471.22	471.22
d_A, Approach Delay [s/veh]	0.09			0.96			153.20			162.03		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	44.40											
Intersection LOS	F											

MOVEMENT SUMMARY

Site: 101 [Interchange 3 (Site Folder: Culver/J)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
1	L2	All MCs	83	25.0	83	25.0	0.765	12.9	LOS B	10.6	79.7	0.82	0.64	0.89	50.1
2	T1	All MCs	383	2.0	383	2.0	0.765	7.5	LOS A	10.6	79.7	0.82	0.64	0.89	51.8
3	R2	All MCs	423	12.0	423	12.0	0.765	7.6	LOS A	10.6	79.7	0.82	0.64	0.89	51.1
Approach			889	8.9	889	8.9	0.765	8.0	LOS A	10.6	79.7	0.82	0.64	0.89	51.3
East: RoadName															
4	L2	All MCs	63	8.0	63	8.0	0.336	12.7	LOS B	2.3	16.9	0.76	0.70	0.76	50.2
5	T1	All MCs	94	7.0	94	7.0	0.336	8.0	LOS A	2.3	16.9	0.76	0.70	0.76	51.1
6	R2	All MCs	98	8.0	98	8.0	0.336	7.9	LOS A	2.3	16.9	0.76	0.70	0.76	50.7
Approach			256	7.6	256	7.6	0.336	9.1	LOS A	2.3	16.9	0.76	0.70	0.76	50.7
North: RoadName															
7	L2	All MCs	32	18.0	32	18.0	0.537	11.2	LOS B	4.3	31.6	0.64	0.57	0.64	50.9
8	T1	All MCs	428	6.0	428	6.0	0.537	6.1	LOS A	4.3	31.6	0.64	0.57	0.64	52.3
9	R2	All MCs	131	0.0	131	0.0	0.537	5.8	LOS A	4.3	31.6	0.64	0.57	0.64	52.1
Approach			591	5.3	591	5.3	0.537	6.3	LOS A	4.3	31.6	0.64	0.57	0.64	52.2
West: RoadName															
10	L2	All MCs	88	20.0	88	20.0	0.281	12.8	LOS B	1.8	13.4	0.71	0.69	0.71	49.8
11	T1	All MCs	72	0.0	72	0.0	0.281	7.3	LOS A	1.8	13.4	0.71	0.69	0.71	51.3
12	R2	All MCs	66	0.0	66	0.0	0.281	7.1	LOS A	1.8	13.4	0.71	0.69	0.71	50.9
Approach			226	7.8	226	7.8	0.281	9.4	LOS A	1.8	13.4	0.71	0.69	0.71	50.6
All Vehicles			1961	7.5	1961	7.5	0.765	7.8	LOS A	10.6	79.7	0.75	0.63	0.78	51.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 10: Adams Dr/Bard Ln

Control Type:	Two-way stop	Delay (sec / veh):	28.5
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.141

Intersection Setup

Name				Adams Dr			Bard Ln					
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]	30.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name				Adams Dr			Bard Ln					
Base Volume Input [veh/h]	12	64	0	0	34	4	7	0	12	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 [%]	10.00	4.00	0.00	0.00	0.00	33.00	17.00	0.00	0.00	0.00	0.00	0.00
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]	267	0	5	0	0	0	0	65	0	24	23	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]	279	64	5	0	34	4	7	65	12	24	23	3
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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]	78	18	1	0	9	1	2	18	3	7	6	1
Total Analysis Volume [veh/h]	310	71	6	0	38	4	8	72	13	27	26	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.20	0.00	0.00	0.00	0.00	0.00	0.04	0.26	0.01	0.14	0.09	0.00
d_M, Delay for Movement [s/veh]	7.80	0.00	0.00	7.35	0.00	0.00	26.36	23.48	13.81	28.46	22.85	13.35
Movement LOS	A	A	A	A	A	A	D	C	B	D	C	B
95th-Percentile Queue Length [veh/ln]	0.63	0.63	0.63	0.00	0.00	0.00	1.29	1.29	1.29	0.90	0.90	0.90
95th-Percentile Queue Length [ft/ln]	15.84	15.84	15.84	0.00	0.00	0.00	32.23	32.23	32.23	22.56	22.56	22.56
d_A, Approach Delay [s/veh]	6.25			0.00			22.38			25.05		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	10.21											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 11: Adams Dr/Hall Rd

Control Type:	Two-way stop	Delay (sec / veh):	39.8
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.505

Intersection Setup

Name	Adams Dr				Hall Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Adams Dr				Hall Rd	
Base Volume Input [veh/h]	15	68	225	12	5	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	25.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	19	5	272	254
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	68	244	17	277	287
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	18	64	4	73	76
Total Analysis Volume [veh/h]	16	72	257	18	292	302
Pedestrian Volume [ped/h]	0		0		1	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.50	0.39
d_M, Delay for Movement [s/veh]	7.79	0.00	0.00	0.00	39.83	38.24
Movement LOS	A	A	A	A	E	E
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.00	0.00	11.16	11.16
95th-Percentile Queue Length [ft/ln]	0.67	0.67	0.00	0.00	279.09	279.09
d_A, Approach Delay [s/veh]	1.42		0.00		39.02	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	24.35					
Intersection LOS	E					

MOVEMENT SUMMARY

Site: 101 [Interchange 3 (Site Folder: Culver/Hall)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
2	T1	All MCs	440	2.0	440	2.0	0.323	4.2	LOS A	2.1	14.9	0.13	0.40	0.13	54.6
3	R2	All MCs	67	2.0	67	2.0	0.323	4.0	LOS A	2.1	14.9	0.13	0.40	0.13	54.2
Approach			507	2.0	507	2.0	0.323	4.2	LOS A	2.1	14.9	0.13	0.40	0.13	54.6
East: RoadName															
4	L2	All MCs	41	2.0	41	2.0	0.275	11.4	LOS B	1.6	11.5	0.59	0.63	0.59	51.7
6	R2	All MCs	226	2.0	226	2.0	0.275	6.6	LOS A	1.6	11.5	0.59	0.63	0.59	52.2
Approach			267	2.0	267	2.0	0.275	7.3	LOS A	1.6	11.5	0.59	0.63	0.59	52.1
North: RoadName															
7	L2	All MCs	23	2.0	23	2.0	0.338	8.9	LOS A	2.5	17.9	0.21	0.40	0.21	53.1
8	T1	All MCs	482	2.0	482	2.0	0.338	4.3	LOS A	2.5	17.9	0.21	0.40	0.21	54.1
Approach			505	2.0	505	2.0	0.338	4.5	LOS A	2.5	17.9	0.21	0.40	0.21	54.0
All Vehicles			1279	2.0	1279	2.0	0.338	5.0	LOS A	2.5	17.9	0.26	0.45	0.26	53.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 102: Lois Lane (Future) / Fairgrounds Road

Control Type:	Two-way stop	Delay (sec / veh):	21.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.521

Intersection Setup

Name	Lois Lane (Future)		Fairgrounds Rd		Fairgrounds Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Lois Lane (Future)		Fairgrounds Rd		Fairgrounds Rd	
Base Volume Input [veh/h]	0	0	0	0	1	25
Base Volume Adjustment Factor	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
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	210	0	0	8	212	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	210	0	0	8	213	25
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	0	0	2	59	7
Total Analysis Volume [veh/h]	233	0	0	9	237	28
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.52	0.00	0.00	0.00	0.15	0.00
d_M, Delay for Movement [s/veh]	21.48	16.77	0.00	0.00	7.55	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.94	2.94	0.00	0.00	0.46	0.46
95th-Percentile Queue Length [ft/ln]	73.52	73.52	0.00	0.00	11.54	11.54
d_A, Approach Delay [s/veh]	21.48		0.00		6.75	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	13.40					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 103: Lois Lane (Future) / Hall Road (Future)

Control Type:	Two-way stop	Delay (sec / veh):	25.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.128

Intersection Setup

Name	Lois Lane (Future)			Lois Lane (Future)			Hall Road (Future)			Hall Road (Future)		
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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Lois Lane (Future)			Lois Lane (Future)			Hall Road (Future)			Hall Road (Future)		
Base Volume Input [veh/h]	0	0	0	0	1	0	0	19	0	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]	184	143	0	0	264	37	25	0	22	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]	184	143	0	0	265	37	25	19	22	0	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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]	51	40	0	0	74	10	7	5	6	0	0	0
Total Analysis Volume [veh/h]	204	159	0	0	294	41	28	21	24	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.17	0.00	0.00	0.00	0.00	0.00	0.13	0.09	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	8.20	0.00	0.00	7.53	0.00	0.00	25.61	24.56	14.08	24.10	20.88	9.06
Movement LOS	A	A	A	A	A	A	D	C	B	C	C	A
95th-Percentile Queue Length [veh/ln]	0.38	0.38	0.38	0.00	0.00	0.00	0.97	0.97	0.97	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	9.57	9.57	9.57	0.00	0.00	0.00	24.32	24.32	24.32	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	4.61			0.00			21.52			18.01		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	4.21											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 104: Lois Lane (Future) / Colfax Lane

Control Type:	Two-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.233

Intersection Setup

Name				Lois Lane (Future)			Colfax Ln			Colfax Lane		
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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Lois Lane (Future)			Colfax Ln			Colfax Lane		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	30	0	0	40	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	147	0	13	8	35	0	0	51	105
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	0	0	147	0	13	8	65	0	0	91	105
Peak Hour Factor	1.0000	1.0000	1.0000	0.9000	1.0000	0.9000	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000
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	41	0	4	2	18	0	0	25	29
Total Analysis Volume [veh/h]	0	0	0	163	0	14	9	72	0	0	101	117
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	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	0.00	0.00	0.00	0.23	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.29	10.98	8.64	11.82	0.00	10.73	7.67	0.00	0.00	0.00	0.00	0.00
Movement LOS	B	B	A	B		B	A	A			A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.98	0.00	0.98	0.02	0.02	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	24.50	0.00	24.50	0.38	0.38	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.97			11.73			0.85			0.00		
Approach LOS	A			B			A			A		
d_I, Intersection Delay [s/veh]	4.51											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 501: Adams Dr / Fairgrounds Road Extension (Future)

Control Type:	Two-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.162

Intersection Setup

Name												
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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	0	7	0	0	0	152	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 [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	272	0	0	24	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	272	0	0	31	0	0	0	152	0	0	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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	76	0	0	9	0	0	0	42	0	0	0
Total Analysis Volume [veh/h]	0	302	0	0	34	0	0	0	169	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	7.26	0.00	0.00	7.83	0.00	0.00	11.46	11.79	9.11	12.85	11.12	9.85
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.58	0.58	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	14.39	14.39	14.39	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			9.11			11.28		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	3.05											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 601: US97 SB Terminal / Colfax Ln

Control Type:	Signalized	Delay (sec / veh):	39.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.713

Intersection Setup

Name	US97 SB On-Ramp			US97 SB Off-Ramp						Colfax Lane		
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	1	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	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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US97 SB On-Ramp			US97 SB Off-Ramp						Colfax Lane		
Base Volume Input [veh/h]	0	0	0	358	0	35	0	13	18	156	105	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	5.00	11.00	7.00	2.00	0.00	13.00	0.00	0.00	2.00
Proportion of CAVs [%]	0.00											
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	160	0	38	0	232	203	126	275	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	0	0	518	0	73	0	245	221	282	380	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9500	0.9500	0.9500	1.0000	0.9000	0.9000	0.9000	0.9000	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]	0	0	0	136	0	19	0	68	61	78	106	0
Total Analysis Volume [veh/h]	0	0	0	545	0	77	0	272	246	313	422	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]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-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	Permis	Permis	Permis	Permis	Permis	Permis	Protect	Permis	Permis
Signal Group	0	0	0	0	4	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	5	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	69	0	0	14	0	37	51	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	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	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	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		L	C	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		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
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		43	43	40	40	25	69
g / C, Green / Cycle		0.36	0.36	0.33	0.33	0.21	0.57
(v / s)_i Volume / Saturation Flow Rate		0.34	0.06	0.16	0.18	0.19	0.24
s, saturation flow rate [veh/h]		1601	1358	1750	1335	1667	1750
c, Capacity [veh/h]		577	490	584	446	342	1002
d1, Uniform Delay [s]		37.18	26.00	31.53	32.64	46.63	14.44
k, delay calibration		0.19	0.11	0.50	0.50	0.22	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		13.32	0.15	2.66	4.86	17.11	1.30
d3, Initial Queue Delay [s]		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
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.94	0.16	0.47	0.55	0.91	0.42
d, Delay for Lane Group [s/veh]		50.50	26.14	34.18	37.51	63.74	15.74
Lane Group LOS		D	C	C	D	E	B
Critical Lane Group		Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		17.36	1.52	6.65	6.42	10.73	6.68
50th-Percentile Queue Length [ft/ln]		434.12	38.11	166.21	160.60	268.18	166.95
95th-Percentile Queue Length [veh/ln]		24.20	2.74	10.88	10.58	16.10	10.92
95th-Percentile Queue Length [ft/ln]		604.97	68.60	271.92	264.52	402.46	272.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	50.50	26.14	26.14	0.00	34.18	37.51	63.74	15.74	0.00
Movement LOS				D	C	C		C	D	E	B	
d_A, Approach Delay [s/veh]	0.00			47.48			35.76			36.18		
Approach LOS	A			D			D			D		
d_I, Intersection Delay [s/veh]	39.81											
Intersection LOS	D											
Intersection V/C	0.713											

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]	0	1083	167	783
d_b, Bicycle Delay [s]	60.00	12.60	50.42	22.20
I_b,int, Bicycle LOS Score for Intersection	4.132	2.586	2.414	2.772
Bicycle LOS	D	B	B	C

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 602: US97 NB Terminal / US26

Control Type:	Signalized	Delay (sec / veh):	59.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.838

Intersection Setup

Name	US97 NB Off-Ramp			US97 NB On-Ramp			Colfax Lane			US26		
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	1	0	0	0	0	1
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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US97 NB Off-Ramp			US97 NB On-Ramp			Colfax Lane			US26		
Base Volume Input [veh/h]	104	0	16	0	0	0	240	4	0	0	165	186
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 [%]	0.00	8.00	8.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	21.00
Proportion of CAVs [%]	0.00											
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]	131	0	0	0	0	0	380	12	0	0	270	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
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	235	0	16	0	0	0	620	16	0	0	435	189
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9000	0.9000	1.0000	1.0000	0.9000	0.9000
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]	62	0	4	0	0	0	172	4	0	0	121	53
Total Analysis Volume [veh/h]	247	0	17	0	0	0	689	18	0	0	483	210
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]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
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	Permis	Permis	Permis	Protect	Permis	Permis	Permis	Permis	Permis
Signal Group	0	8	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	23	0	0	0	0	57	97	0	0	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	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	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	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	L	C		L	C	C	R
C, Cycle Length [s]	120	120		120	120	120	120
L, Total Lost Time per Cycle [s]	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
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	19		53	93	36	36
g / C, Green / Cycle	0.16	0.16		0.44	0.78	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.15	0.01		0.41	0.01	0.28	0.17
s, saturation flow rate [veh/h]	1667	1393		1667	1750	1750	1241
c, Capacity [veh/h]	264	221		736	1356	525	372
d1, Uniform Delay [s]	49.90	43.03		31.89	3.07	40.61	35.39
k, delay calibration	0.50	0.50		0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	41.10	0.68		20.78	0.02	23.75	6.07
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.08		0.94	0.01	0.92	0.56
d, Delay for Lane Group [s/veh]	91.00	43.71		52.66	3.09	64.36	41.46
Lane Group LOS	F	D		D	A	E	D
Critical Lane Group	Yes	No		Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.31	0.47		22.72	0.09	17.11	5.80
50th-Percentile Queue Length [ft/ln]	257.80	11.87		568.01	2.27	427.66	144.93
95th-Percentile Queue Length [veh/ln]	15.58	0.85		30.54	0.16	23.89	9.75
95th-Percentile Queue Length [ft/ln]	389.46	21.37		763.44	4.08	597.23	243.64

Movement, Approach, & Intersection Results

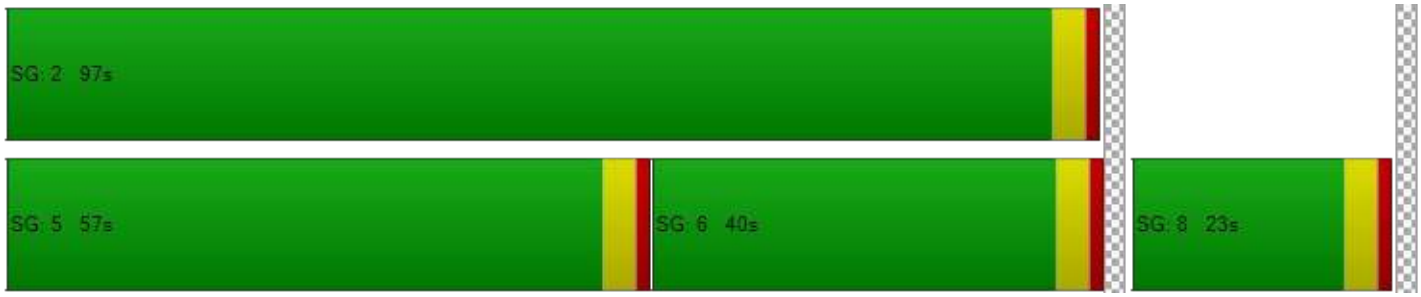
d_M, Delay for Movement [s/veh]	91.00	43.71	43.71	0.00	0.00	0.00	52.66	3.09	0.00	0.00	64.36	41.46
Movement LOS	F	D	D				D	A			E	D
d_A, Approach Delay [s/veh]	87.96			0.00			51.40			57.42		
Approach LOS	F			A			D			E		
d_I, Intersection Delay [s/veh]	59.71											
Intersection LOS	E											
Intersection V/C	0.838											

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]	317	0	1550	600
d_b, Bicycle Delay [s]	42.50	60.00	3.04	29.40
l_b,int, Bicycle LOS Score for Intersection	1.995	4.132	2.726	2.703
Bicycle LOS	A	D	B	B

Sequence

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



Intersection Level Of Service Report
Intersection 604: US26 / McGlohin Rd

Control Type:	Two-way stop	Delay (sec / veh):	11.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.380

Intersection Setup

Name	US26		US26		McGlohin Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	US26		US26		McGlohin Rd	
Base Volume Input [veh/h]	187	0	195	0	0	0
Base Volume Adjustment Factor	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
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	12	0	0	273
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	187	0	207	0	0	273
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	0	54	0	0	80
Total Analysis Volume [veh/h]	197	0	218	0	0	321
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.16	0.00	0.00	0.38
d_M, Delay for Movement [s/veh]	0.00	0.00	8.11	0.00	17.23	11.86
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.56	0.56	1.79	1.79
95th-Percentile Queue Length [ft/ln]	0.00	0.00	14.07	14.07	44.79	44.79
d_A, Approach Delay [s/veh]	0.00		8.11		11.86	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	7.57					
Intersection LOS	B					

US97 5-LANE SECTION WITH TRAFFIC SIGNALS AT COLFAX, HALL, FAIRGROUNDS

Intersection Level Of Service Report
Intersection 1: US97 SB/J St

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.772

Intersection Setup

Name				US97 SB			J St			J St		
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	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	200.00	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	1000.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			Yes		

Volumes

Name				US97 SB			J St			J St		
Base Volume Input [veh/h]	0	0	0	108	1185	122	0	116	71	76	95	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 [%]	0.00	0.00	0.00	1.00	7.00	2.00	2.00	2.00	33.00	6.00	3.00	2.00
Proportion of CAVs [%]	0.00											
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	536	0	0	125	7	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	-125	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	0	0	108	1721	122	0	116	78	76	95	0
Peak Hour Factor	0.8500	0.8500	0.8500	0.9500	0.9500	0.9500	1.0000	0.9000	0.9000	0.9000	0.9000	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]	0	0	0	28	453	32	0	32	22	21	26	0
Total Analysis Volume [veh/h]	0	0	0	114	1812	128	0	129	87	84	106	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]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-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	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	0	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	0	101	0	0	19	0	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	0	0	0	14	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	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall					No			No			No	
Maximum Recall					No			No			No	
Pedestrian Recall					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	C	C	C	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		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	2.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		97	97	15	15	15	15
g / C, Green / Cycle		0.81	0.81	0.13	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate		0.62	0.70	0.06	0.07	0.07	0.06
s, saturation flow rate [veh/h]		1644	1472	1722	1508	1128	1709
c, Capacity [veh/h]		1329	1190	215	188	109	214
d1, Uniform Delay [s]		5.87	7.29	49.01	49.48	58.47	48.98
k, delay calibration		0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		4.42	8.39	1.80	2.73	10.80	1.78
d3, Initial Queue Delay [s]		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
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.77	0.86	0.50	0.57	0.77	0.50
d, Delay for Lane Group [s/veh]		10.29	15.68	50.81	52.21	69.27	50.76
Lane Group LOS		B	B	D	D	E	D
Critical Lane Group		No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]		11.84	15.45	3.14	3.20	2.90	3.10
50th-Percentile Queue Length [ft/ln]		295.95	386.17	78.41	80.01	72.60	77.53
95th-Percentile Queue Length [veh/ln]		17.48	21.89	5.65	5.76	5.23	5.58
95th-Percentile Queue Length [ft/ln]		437.01	547.31	141.13	144.02	130.68	139.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	10.29	12.96	15.68	0.00	51.04	52.21	69.27	50.76	0.00
Movement LOS				B	B	B		D	D	E	D	
d_A, Approach Delay [s/veh]	0.00			12.99			51.51			58.94		
Approach LOS	A			B			D			E		
d_I, Intersection Delay [s/veh]	19.92											
Intersection LOS	B											
Intersection V/C	0.772											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0	9.0
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	51.34	0.00	51.34
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.512	0.000	2.234
Crosswalk LOS	F	B	F	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	1617	250	250
d_b, Bicycle Delay [s]	60.00	2.20	45.94	45.94
l_b,int, Bicycle LOS Score for Intersection	4.132	3.254	1.738	1.873
Bicycle LOS	D	C	A	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: US97 NB / J St

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.700

Intersection Setup

Name							J St			J St		
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	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							J St			J St		
Base Volume Input [veh/h]	75	831	57	0	0	0	105	119	0	0	96	66
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 [%]	9.00	11.00	0.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	1.00	2.00
Proportion of CAVs [%]	0.00											
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	505	0	0	0	0	125	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	-125	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]	75	1336	57	0	0	0	105	119	0	0	96	66
Peak Hour Factor	0.9500	0.9500	0.9500	1.0000	1.0000	1.0000	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200
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]	20	352	15	0	0	0	29	32	0	0	26	18
Total Analysis Volume [veh/h]	79	1406	60	0	0	0	114	129	0	0	104	72
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]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-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	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	0	6	0	0	0	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	0	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	97	0	0	0	0	0	23	0	0	23	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	14	0	0	0	0	0	7	0	0	7	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	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No						No			No	
Maximum Recall		No						No			No	
Pedestrian Recall		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	C		C	C	C	C
C, Cycle Length [s]	120	120		120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	93	93		19	19	19	19
g / C, Green / Cycle	0.78	0.78		0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.49	0.54		0.16	0.08	0.05	0.06
s, saturation flow rate [veh/h]	1590	1434		699	1567	1736	1512
c, Capacity [veh/h]	1232	1112		171	248	275	239
d1, Uniform Delay [s]	5.92	6.56		54.66	46.32	44.77	45.13
k, delay calibration	0.50	0.50		0.20	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.44	3.56		7.88	1.68	0.66	0.94
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.69		0.67	0.52	0.32	0.37
d, Delay for Lane Group [s/veh]	8.36	10.12		62.53	48.00	45.44	46.07
Lane Group LOS	A	B		E	D	D	D
Critical Lane Group	No	Yes		Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	7.81	8.78		3.85	3.69	2.41	2.44
50th-Percentile Queue Length [ft/ln]	195.21	219.52		96.26	92.15	60.13	60.89
95th-Percentile Queue Length [veh/ln]	12.39	13.64		6.93	6.64	4.33	4.38
95th-Percentile Queue Length [ft/ln]	309.78	341.01		173.26	165.88	108.23	109.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.36	9.25	10.12	0.00	0.00	0.00	62.53	48.00	0.00	0.00	45.54	46.07
Movement LOS	A	A	B				E	D			D	D
d_A, Approach Delay [s/veh]	9.24			0.00			54.82			45.75		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	18.15											
Intersection LOS	B											
Intersection V/C	0.700											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
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	4992.14
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.483	2.668	2.233	2.220
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1550	0	317	317
d_b, Bicycle Delay [s]	3.04	60.00	42.50	42.50
l_b,int, Bicycle LOS Score for Intersection	2.834	4.132	1.760	1.705
Bicycle LOS	C	D	A	A

Sequence

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

Intersection Level Of Service Report
Intersection 3: US97/Bard Ln

Control Type:	Two-way stop	Delay (sec / veh):	3,885.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.946

Intersection Setup

Name	US97					Bard Ln					
Approach	Northbound				Southbound				Westbound			
Lane Configuration												
Turning Movement	Left	Thru	Thru	Right	Left2	Left	Thru	Right	Left	Right	Right	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	1	0	0	0	1	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]	30.00				30.00				30.00			
Grade [%]	0.00				0.00				0.00			
Crosswalk	Yes				Yes				Yes			

Volumes

Name	US97					Bard Ln					
Base Volume Input [veh/h]	5	0	910	12	0	45	1153	28	6	0	0	18
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 [%]	25.00	2.00	0.00	0.00	0.00	3.00	7.00	13.00	0.00	2.00	2.00	0.00
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	451	10	0	167	376	0	12	0	0	54
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	0	1361	22	0	212	1529	28	18	0	0	72
Peak Hour Factor	0.9500	1.0000	0.9500	0.9500	1.0000	0.9500	0.9500	0.9500	0.9000	1.0000	1.0000	0.9000
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	0	358	6	0	56	402	7	5	0	0	20
Total Analysis Volume [veh/h]	5	0	1433	23	0	223	1609	29	20	0	0	80
Pedestrian Volume [ped/h]	1				0				5			

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.00	0.00	0.49	0.02	0.00	1.45	0.00	0.00	0.29
d_M, Delay for Movement [s/veh]	15.79	0.00	0.00	0.00	0.00	20.14	0.00	0.00	792.02	0.00	0.00	23.20
Movement LOS	C		A	A		C	A	A	F			C
95th-Percentile Queue Length [veh/ln]	0.04	0.00	0.00	0.00	0.00	2.62	0.00	0.00	3.15	0.00	0.00	1.16
95th-Percentile Queue Length [ft/ln]	1.12	0.00	0.00	0.00	0.00	65.53	0.00	0.00	78.84	0.00	0.00	29.10
d_A, Approach Delay [s/veh]	0.05				2.41				176.96			
Approach LOS	A				A				F			
d_I, Intersection Delay [s/veh]	8.52											
Intersection LOS	F											

Intersection Setup

Name								
Approach	Southwestbound				Southeastbound			
Lane Configuration								
Turning Movement	Left	Thru	Right	Right	Left2	Left	Left	Right
Lane Width [ft]	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
Entry Pocket Length [ft]	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
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00				30.00			
Grade [%]	0.00				0.00			
Crosswalk	Yes				Yes			

Volumes

Name								
Base Volume Input [veh/h]	0	0	0	0	0	1	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	1	0	5
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	0.8500	1.0000	0.8500
Other Adjustment Factor	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	0	0	0	0	1
Total Analysis Volume [veh/h]	0	0	0	0	0	1	0	6
Pedestrian Volume [ped/h]	0				0			

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.95	0.00	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	3885.59	0.00	509.75
Movement LOS						F		F
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	1.62	0.00	1.62
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	40.43	0.00	40.43
d_A, Approach Delay [s/veh]	0.00				992.02			
Approach LOS	A				F			
d_I, Intersection Delay [s/veh]	8.52							
Intersection LOS	F							

Intersection Level Of Service Report
Intersection 4: US97/Fairgrounds Rd

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.664

Intersection Setup

Name	US97			US97			Fairgrounds Rd			Terrace Ave		
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	1	0	0	1	1	0	0
Entry Pocket Length [ft]	125.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	50.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			35.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US97			US97			Fairgrounds Rd			Terrace Ave		
Base Volume Input [veh/h]	56	849	5	5	1058	79	25	0	74	1	1	25
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	11.00	0.00	0.00	8.00	3.00	0.00	2.00	5.00	0.00	0.00	38.00
Proportion of CAVs [%]	0.00											
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]	38	316	0	0	227	161	146	0	12	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]	94	1165	5	5	1285	240	171	0	86	1	1	25
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9300	1.0000	0.9300	0.9300	0.9300	0.9300
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]	25	307	1	1	338	63	46	0	23	0	0	7
Total Analysis Volume [veh/h]	99	1226	5	5	1353	253	184	0	92	1	1	27
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			2			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-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	ProtPer	Permis	Permis	ProtPer	Permis	Permis	Permis	Permis	Permis	Permis	Permis	Permis
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	0	10	0	0	10	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	54	0	9	54	0	0	47	0	0	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	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	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
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	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	81	77	77	81	73	73	21	21	21	21
g / C, Green / Cycle	0.74	0.70	0.70	0.74	0.66	0.66	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.23	0.39	0.39	0.01	0.50	0.51	0.13	0.06	0.00	0.02
s, saturation flow rate [veh/h]	426	1598	1596	500	1639	1540	1404	1464	1325	1496
c, Capacity [veh/h]	299	1111	1110	379	1080	1014	280	277	216	282
d1, Uniform Delay [s]	13.94	8.29	8.30	5.70	12.75	13.15	45.45	38.61	43.24	36.88
k, delay calibration	0.34	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
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]	2.03	1.99	2.00	0.06	4.92	5.90	2.63	0.70	0.01	0.15
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	0.33	0.55	0.55	0.01	0.76	0.78	0.66	0.33	0.00	0.10
d, Delay for Lane Group [s/veh]	15.98	10.29	10.29	5.76	17.67	19.06	48.07	39.31	43.25	37.03
Lane Group LOS	B	B	B	A	B	B	D	D	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.71	7.03	7.02	0.03	13.33	13.51	5.08	2.21	0.02	0.64
50th-Percentile Queue Length [ft/ln]	17.63	175.78	175.61	0.78	333.24	337.87	126.98	55.13	0.62	16.09
95th-Percentile Queue Length [veh/ln]	1.27	11.38	11.37	0.06	19.32	19.54	8.78	3.97	0.04	1.16
95th-Percentile Queue Length [ft/ln]	31.74	284.50	284.28	1.40	482.93	488.60	219.38	99.23	1.12	28.97

Movement, Approach, & Intersection Results

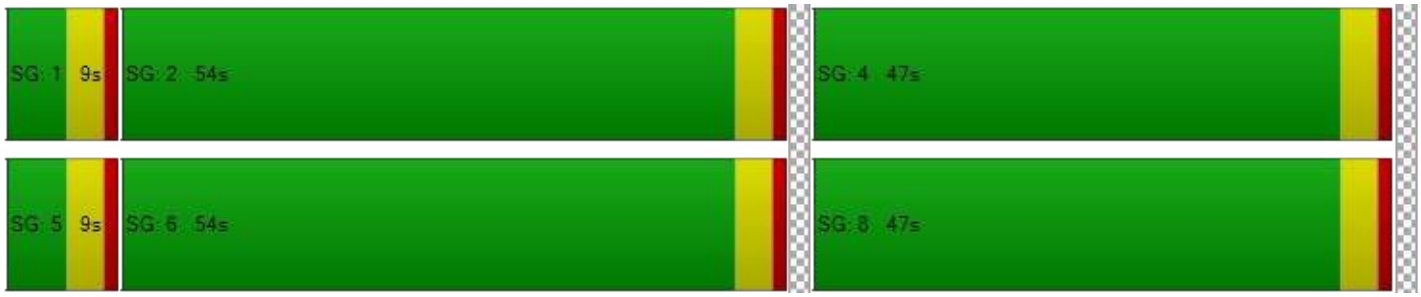
d_M, Delay for Movement [s/veh]	15.98	10.29	10.29	5.76	18.22	19.06	48.07	39.31	39.31	43.25	37.03	37.03
Movement LOS	B	B	B	A	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	10.71			18.31			45.15			37.24		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	17.65											
Intersection LOS	B											
Intersection V/C	0.664											

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]	909	909	782	782
d_b, Bicycle Delay [s]	16.36	16.38	20.40	20.40
l_b,int, Bicycle LOS Score for Intersection	2.657	2.889	2.015	1.607
Bicycle LOS	B	C	B	A

Sequence

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



Intersection Level Of Service Report
Intersection 5: US97/Hall Rd

Control Type:	Signalized	Delay (sec / veh):	32.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.743

Intersection Setup

Name	US97			US97			Hall Road (Future)			Hall Rd		
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	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	80.00	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	US97			US97			Hall Road (Future)			Hall Rd		
Base Volume Input [veh/h]	39	723	8	29	879	23	19	0	50	4	1	23
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 [%]	66.00	12.00	0.00	4.00	10.00	53.00	56.00	0.00	34.00	0.00	0.00	5.00
Proportion of CAVs [%]	0.00											
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]	40	109	88	14	233	14	54	140	117	136	157	175
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]	79	832	96	43	1112	37	73	140	167	140	158	198
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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]	21	219	25	11	293	10	20	39	46	39	44	55
Total Analysis Volume [veh/h]	83	876	101	45	1171	39	81	156	186	156	176	220
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]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-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	ProtPer	Permis	Permis	ProtPer	Permis	Permis	ProtPer	Permis	Permis	ProtPer	Permis	Permis
Signal Group	1	6	0	5	2	0	3	8	0	7	4	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]	10	57	0	9	56	0	10	45	0	9	44	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	17	0	0	17	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

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	L	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
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
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	70	62	62	70	60	60	42	33	42	32
g / C, Green / Cycle	0.58	0.52	0.52	0.58	0.50	0.50	0.35	0.28	0.35	0.27
(v / s)_i Volume / Saturation Flow Rate	0.29	0.31	0.31	0.07	0.38	0.05	0.13	0.21	0.13	0.25
s, saturation flow rate [veh/h]	290	1584	1527	655	3069	865	630	1597	1157	1594
c, Capacity [veh/h]	171	817	788	338	1530	431	165	441	294	427
d1, Uniform Delay [s]	21.39	20.49	20.49	14.21	24.39	15.79	31.52	39.98	32.67	42.78
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.18	0.11	0.27
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]	9.61	3.36	3.48	0.81	3.70	0.41	2.24	4.95	1.49	18.63
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	0.49	0.61	0.61	0.13	0.77	0.09	0.49	0.78	0.53	0.93
d, Delay for Lane Group [s/veh]	31.00	23.85	23.97	15.02	28.09	16.21	33.76	44.93	34.16	61.41
Lane Group LOS	C	C	C	B	C	B	C	D	C	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.48	10.36	10.02	0.59	13.87	0.61	1.77	9.85	3.35	13.55
50th-Percentile Queue Length [ft/ln]	36.95	258.97	250.47	14.69	346.80	15.35	44.15	246.31	83.69	338.78
95th-Percentile Queue Length [veh/ln]	2.66	15.64	15.21	1.06	19.98	1.11	3.18	15.00	6.03	19.59
95th-Percentile Queue Length [ft/ln]	66.52	390.93	380.25	26.45	499.51	27.64	79.47	375.01	150.65	489.71

Movement, Approach, & Intersection Results

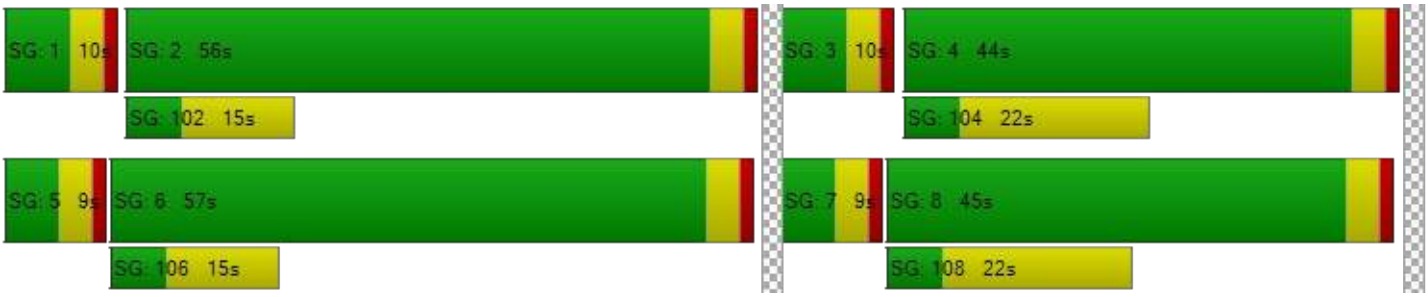
d_M, Delay for Movement [s/veh]	31.00	23.90	23.97	15.02	28.09	16.21	33.76	44.93	44.93	34.16	61.41	61.41
Movement LOS	C	C	C	B	C	B	C	D	D	C	E	E
d_A, Approach Delay [s/veh]	24.46			27.25			42.79			53.71		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	32.79											
Intersection LOS	C											
Intersection V/C	0.743											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
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]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	2.882	2.896	2.251	2.267
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane [bicycles/h]	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	883	867	683	667
d_b, Bicycle Delay [s]	18.70	19.27	26.00	26.67
l_b,int, Bicycle LOS Score for Intersection	2.434	2.595	2.258	2.470
Bicycle LOS	B	B	B	B

Sequence

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



Intersection Level Of Service Report
Intersection 6: US97/Colfax Ln

Control Type:	Signalized	Delay (sec / veh):	22.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.618

Intersection Setup

Name	US97			US97			Colfax Ln			Colfax Ln		
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	1	1	0	1	1	0	0	0	0	1
Entry Pocket Length [ft]	400.00	100.00	400.00	400.00	100.00	400.00	100.00	100.00	100.00	100.00	100.00	150.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			No			No		

Volumes

Name	US97			US97			Colfax Ln			Colfax Ln		
Base Volume Input [veh/h]	4	508	16	126	768	35	8	4	18	0	1	186
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 [%]	0.00	8.00	8.00	5.00	11.00	7.00	0.00	0.00	13.00	0.00	0.00	21.00
Proportion of CAVs [%]	0.00											
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]	69	190	0	0	376	13	47	0	76	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]	73	698	16	126	1144	48	55	4	94	0	1	186
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
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]	19	184	4	33	301	13	15	1	26	0	0	51
Total Analysis Volume [veh/h]	77	735	17	133	1204	51	60	4	102	0	1	202
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]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-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	ProtPer	Permis	Permis	ProtPer	Permis	Permis	ProtPer	Permis	Permis	ProtPer	Permis	Permis
Signal Group	1	6	0	5	2	0	3	8	0	7	4	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	10	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]	9	21	0	9	21	0	9	31	0	9	31	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		Yes	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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	70	70	70	70	70	70	70	70	70	70
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	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	0.00	2.00
g_i, Effective Green Time [s]	41	33	33	41	33	33	21	17	21	13
g / C, Green / Cycle	0.59	0.47	0.47	0.59	0.48	0.48	0.30	0.24	0.30	0.19
(v / s)_i Volume / Saturation Flow Rate	0.12	0.23	0.23	0.16	0.40	0.40	0.05	0.07	0.00	0.16
s, saturation flow rate [veh/h]	624	1639	1626	840	1598	1575	1198	1496	1587	1241
c, Capacity [veh/h]	356	762	756	521	759	748	432	355	544	236
d1, Uniform Delay [s]	11.65	13.04	13.04	7.81	15.93	15.96	19.08	21.91	17.30	27.42
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
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]	0.30	2.30	2.32	1.18	10.29	10.55	0.15	0.47	0.00	8.64
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	0.22	0.50	0.50	0.26	0.83	0.83	0.14	0.30	0.00	0.86
d, Delay for Lane Group [s/veh]	11.95	15.33	15.35	9.00	26.22	26.51	19.22	22.37	17.30	36.06
Lane Group LOS	B	B	B	A	C	C	B	C	B	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.35	3.61	3.58	0.75	8.60	8.56	0.74	1.41	0.01	3.67
50th-Percentile Queue Length [ft/ln]	8.75	90.21	89.61	18.67	214.92	213.91	18.43	35.24	0.27	91.81
95th-Percentile Queue Length [veh/ln]	0.63	6.50	6.45	1.34	13.41	13.35	1.33	2.54	0.02	6.61
95th-Percentile Queue Length [ft/ln]	15.76	162.38	161.30	33.60	335.13	333.84	33.18	63.44	0.49	165.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.95	15.34	15.35	9.00	26.36	26.51	19.22	22.37	22.37	17.30	17.30	36.06
Movement LOS	B	B	B	A	C	C	B	C	C	B	B	D
d_A, Approach Delay [s/veh]	15.03			24.70			21.23			35.97		
Approach LOS	B			C			C			D		
d_I, Intersection Delay [s/veh]	22.26											
Intersection LOS	C											
Intersection V/C	0.618											

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]	486	486	771	1029
d_b, Bicycle Delay [s]	20.06	20.06	13.21	8.26
l_b,int, Bicycle LOS Score for Intersection	2.244	2.705	1.834	1.895
Bicycle LOS	B	B	A	A

Sequence

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

Intersection Level Of Service Report
Intersection 7: Culver Hwy/Colfax Ln

Control Type:	Two-way stop	Delay (sec / veh):	28.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.381

Intersection Setup

Name	Culver Hwy			Culver Hwy			Colfax Ln			Colfax Ln		
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]	50.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Culver Hwy			Culver Hwy			Colfax Ln			Colfax Ln		
Base Volume Input [veh/h]	0	294	16	17	334	4	7	1	2	27	2	8
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 [%]	0.00	4.00	8.00	7.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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	86	19	0	104	0	0	0	0	58	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	380	35	17	438	4	7	1	2	85	2	8
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.8500	0.8500	0.8500	0.9000	0.9000	0.9000
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	100	9	4	115	1	2	0	1	24	1	2
Total Analysis Volume [veh/h]	0	400	37	18	461	4	8	1	2	94	2	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.00	0.00	0.38	0.01	0.01
d_M, Delay for Movement [s/veh]	8.25	0.00	0.00	8.30	0.00	0.00	20.46	19.33	11.52	28.61	27.49	19.65
Movement LOS	A	A	A	A	A	A	C	C	B	D	D	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.03	0.03	0.03	0.13	0.13	0.13	1.85	1.85	1.85
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.76	0.76	0.76	3.13	3.13	3.13	46.20	46.20	46.20
d_A, Approach Delay [s/veh]	0.00			0.31			18.73			27.82		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	3.16											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 8: Culver Hwy/Fairgrounds Rd

Control Type:	Two-way stop	Delay (sec / veh):	72.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.147

Intersection Setup

Name	Culver Hwy			Culver Hwy			Fairgrounds Rd			Fairgrounds Rd		
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]	50.00			30.00			25.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Culver Hwy			Culver Hwy			Fairgrounds Rd			Fairgrounds Rd		
Base Volume Input [veh/h]	7	288	29	45	308	11	8	1	1	66	8	76
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 [%]	0.00	4.00	0.00	5.00	5.00	0.00	29.00	0.00	0.00	2.00	0.00	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	70	13	47	78	0	0	0	0	1	0	219
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]	7	358	42	92	386	11	8	1	1	67	8	295
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.8500	0.8500	0.8500	0.9000	0.9000	0.9000
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]	2	94	11	24	102	3	2	0	0	19	2	82
Total Analysis Volume [veh/h]	7	377	44	97	406	12	9	1	1	74	9	328
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.01	0.00	0.00	0.09	0.00	0.00	0.15	0.00	0.00	0.39	0.04	0.50
d_M, Delay for Movement [s/veh]	8.13	0.00	0.00	8.32	0.00	0.00	72.62	31.52	19.47	71.28	69.42	57.68
Movement LOS	A	A	A	A	A	A	F	D	C	F	F	F
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.17	0.17	0.17	0.51	0.51	0.51	10.89	10.89	10.89
95th-Percentile Queue Length [ft/ln]	0.30	0.30	0.30	4.29	4.29	4.29	12.73	12.73	12.73	272.37	272.37	272.37
d_A, Approach Delay [s/veh]	0.13			1.57			64.05			60.39		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	19.33											
Intersection LOS	F											

MOVEMENT SUMMARY

Site: 101 [Signals (Site Folder: Culver/J)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
1	L2	All MCs	83	25.0	83	25.0	0.603	11.2	LOS B	5.5	40.3	0.65	0.55	0.65	50.5
		LV	62		62		0.603	10.7	LOS B	5.5	40.3	NA	NA	NA	50.8
		HV	21		21		0.603	12.7	LOS B	5.5	40.3	NA	NA	NA	49.5
2	T1	All MCs	546	2.0	546	2.0	0.603	5.8	LOS A	5.5	40.3	0.65	0.55	0.65	52.2
		LV	535		535		0.603	5.8	LOS A	5.5	40.3	NA	NA	NA	52.2
		HV	11		11		0.603	7.8	LOS A	5.5	40.3	NA	NA	NA	50.8
3	R2	All MCs	68	12.0	68	12.0	0.603	5.9	LOS A	5.5	40.3	0.65	0.55	0.65	51.5
		LV	60		60		0.603	5.7	LOS A	5.5	40.3	NA	NA	NA	51.7
		HV	8		8		0.603	7.7	LOS A	5.5	40.3	NA	NA	NA	50.3
Approach			698	5.7	698	5.7	0.603	6.5	LOS A	5.5	40.3	0.65	0.55	0.65	51.9
East: RoadName															
4	L2	All MCs	63	8.0	63	8.0	0.295	14.1	LOS B	2.0	14.6	0.82	0.74	0.82	49.2
		LV	58		58		0.295	13.8	LOS B	2.0	14.6	NA	NA	NA	49.4
		HV	5		5		0.295	18.2	LOS B	2.0	14.6	NA	NA	NA	46.7
5	T1	All MCs	94	7.0	94	7.0	0.295	9.4	LOS A	2.0	14.6	0.82	0.74	0.82	50.1
		LV	88		88		0.295	9.1	LOS A	2.0	14.6	NA	NA	NA	50.3
		HV	7		7		0.295	13.5	LOS B	2.0	14.6	NA	NA	NA	47.4
6	R2	All MCs	34	8.0	34	8.0	0.295	9.3	LOS A	2.0	14.6	0.82	0.74	0.82	49.7
		LV	32		32		0.295	8.9	LOS A	2.0	14.6	NA	NA	NA	49.9
		HV	3		3		0.295	13.3	LOS B	2.0	14.6	NA	NA	NA	47.1
Approach			192	7.5	192	7.5	0.295	10.9	LOS B	2.0	14.6	0.82	0.74	0.82	49.7
North: RoadName															
7	L2	All MCs	39	18.0	39	18.0	0.539	11.2	LOS B	4.4	32.0	0.64	0.57	0.64	50.9
		LV	32		32		0.539	10.8	LOS B	4.4	32.0	NA	NA	NA	51.2
		HV	7		7		0.539	13.0	LOS B	4.4	32.0	NA	NA	NA	49.7
8	T1	All MCs	421	6.0	421	6.0	0.539	6.1	LOS A	4.4	32.0	0.64	0.57	0.64	52.3
		LV	396		396		0.539	6.0	LOS A	4.4	32.0	NA	NA	NA	52.4
		HV	25		25		0.539	8.2	LOS A	4.4	32.0	NA	NA	NA	50.8
9	R2	All MCs	131	0.0	131	0.0	0.539	5.8	LOS A	4.4	32.0	0.64	0.57	0.64	52.1
		LV	131		131		0.539	5.8	LOS A	4.4	32.0	NA	NA	NA	52.1
		HV	0		0		-	-	-	-	-	NA	NA	NA	-
Approach			591	5.5	591	5.5	0.539	6.4	LOS A	4.4	32.0	0.64	0.57	0.64	52.1
West: RoadName															
10	L2	All MCs	88	20.0	88	20.0	0.283	12.8	LOS B	1.8	13.4	0.71	0.69	0.71	49.7
		LV	71		71		0.283	12.2	LOS B	1.8	13.4	NA	NA	NA	50.2
		HV	18		18		0.283	15.5	LOS B	1.8	13.4	NA	NA	NA	48.1
11	T1	All MCs	72	0.0	72	0.0	0.283	7.3	LOS A	1.8	13.4	0.71	0.69	0.71	51.3

		LV	72		72		0.283	7.3	LOS A	1.8	13.4	NA	NA	NA	51.3
		HV	0		0		-	-	-	-	-	NA	NA	NA	-
12	R2	All MCs	66	0.0	66	0.0	0.283	7.1	LOS A	1.8	13.4	0.71	0.69	0.71	50.9
		LV	66		66		0.283	7.1	LOS A	1.8	13.4	NA	NA	NA	50.9
		HV	0		0		-	-	-	-	-	NA	NA	NA	-
Approach			226	7.8	226	7.8	0.283	9.4	LOS A	1.8	13.4	0.71	0.69	0.71	50.6
All Vehicles			1707	6.1	1707	6.1	0.603	7.3	LOS A	5.5	40.3	0.68	0.60	0.68	51.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 10: Adams Dr/Bard Ln

Control Type:	Two-way stop	Delay (sec / veh):	13.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

Intersection Setup

Name	Adams Dr			Adams Dr			Bard Ln					
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]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name	Adams Dr			Adams Dr			Bard Ln					
Base Volume Input [veh/h]	12	64	0	0	34	4	7	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 [%]	10.00	4.00	0.00	0.00	0.00	33.00	17.00	0.00	0.00	0.00	0.00	0.00
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]	54	0	26	0	0	0	0	44	133	5	12	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]	66	64	26	0	34	4	7	44	138	5	12	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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]	18	18	7	0	9	1	2	12	38	1	3	0
Total Analysis Volume [veh/h]	73	71	29	0	38	4	8	49	153	6	13	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.05	0.00	0.00	0.00	0.00	0.00	0.01	0.08	0.15	0.01	0.02	0.00
d_M, Delay for Movement [s/veh]	7.47	0.00	0.00	7.39	0.00	0.00	12.34	12.39	9.81	13.46	11.20	8.92
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.13	0.13	0.13	0.00	0.00	0.00	0.95	0.95	0.95	0.11	0.11	0.11
95th-Percentile Queue Length [ft/ln]	3.36	3.36	3.36	0.00	0.00	0.00	23.83	23.83	23.83	2.73	2.73	2.73
d_A, Approach Delay [s/veh]	3.15			0.00			10.51			11.91		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	6.71											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 11: Adams Dr/Bard Ln

Control Type:	Two-way stop	Delay (sec / veh):	11.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.131

Intersection Setup

Name	Adams Dr		Adams Dr		Hall Rd	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Adams Dr		Adams Dr		Hall Rd	
Base Volume Input [veh/h]	15	68	66	12	5	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	0.00	25.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	138	80	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	68	66	150	85	28
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	18	17	39	22	7
Total Analysis Volume [veh/h]	16	72	69	158	89	29
Pedestrian Volume [ped/h]	0		0		1	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.13	0.03
d_M, Delay for Movement [s/veh]	7.68	0.00	0.00	0.00	11.27	9.96
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.00	0.00	0.58	0.58
95th-Percentile Queue Length [ft/ln]	0.67	0.67	0.00	0.00	14.51	14.51
d_A, Approach Delay [s/veh]	1.40		0.00		10.95	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.27					
Intersection LOS	B					

MOVEMENT SUMMARY

Site: 101 [Signals (Site Folder: Culver/Hall)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: RoadName															
2	T1	All MCs	373	4.0	373	4.0	0.297	4.3	LOS A	1.9	13.7	0.20	0.40	0.20	54.3
		LV	358		358		0.297	4.3	LOS A	1.9	13.7	NA	NA	NA	54.3
		HV	15		15		0.297	4.6	LOS A	1.9	13.7	NA	NA	NA	54.0
3	R2	All MCs	59	0.0	59	0.0	0.297	4.1	LOS A	1.9	13.7	0.20	0.40	0.20	54.0
		LV	59		59		0.297	4.1	LOS A	1.9	13.7	NA	NA	NA	54.0
		HV	0		0		-	-	-	-	-	NA	NA	NA	-
Approach			432	3.5	432	3.5	0.297	4.3	LOS A	1.9	13.7	0.20	0.40	0.20	54.2
East: RoadName															
4	L2	All MCs	78	2.0	78	2.0	0.135	10.7	LOS B	0.7	5.2	0.51	0.64	0.51	50.9
		LV	76		76		0.135	10.6	LOS B	0.7	5.2	NA	NA	NA	50.9
		HV	2		2		0.135	12.8	LOS B	0.7	5.2	NA	NA	NA	49.5
6	R2	All MCs	59	2.0	59	2.0	0.135	5.9	LOS A	0.7	5.2	0.51	0.64	0.51	51.4
		LV	58		58		0.135	5.8	LOS A	0.7	5.2	NA	NA	NA	51.4
		HV	1		1		0.135	7.9	LOS A	0.7	5.2	NA	NA	NA	49.9
Approach			137	2.0	137	2.0	0.135	8.6	LOS A	0.7	5.2	0.51	0.64	0.51	51.1
North: RoadName															
7	L2	All MCs	47	5.0	47	5.0	0.348	9.2	LOS A	2.5	18.2	0.30	0.43	0.30	52.5
		LV	45		45		0.348	9.2	LOS A	2.5	18.2	NA	NA	NA	52.5
		HV	2		2		0.348	9.7	LOS A	2.5	18.2	NA	NA	NA	52.1
8	T1	All MCs	431	5.0	431	5.0	0.348	4.6	LOS A	2.5	18.2	0.30	0.43	0.30	53.5
		LV	409		409		0.348	4.5	LOS A	2.5	18.2	NA	NA	NA	53.5
		HV	22		22		0.348	5.1	LOS A	2.5	18.2	NA	NA	NA	53.1
Approach			478	5.0	478	5.0	0.348	5.0	LOS A	2.5	18.2	0.30	0.43	0.30	53.4
All Vehicles			1046	4.0	1046	4.0	0.348	5.2	LOS A	2.5	18.2	0.29	0.45	0.29	53.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 102: Lois Lane (Future) / Fairgrounds Road

Control Type:	Two-way stop	Delay (sec / veh):	19.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.411

Intersection Setup

Name	Lois Lane (Future)		Fairgrounds Rd		Fairgrounds Rd	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Lois Lane (Future)		Fairgrounds Rd		Fairgrounds Rd	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	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
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	185	142	16	44	164	35
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	185	142	16	44	164	35
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	39	4	12	46	10
Total Analysis Volume [veh/h]	206	158	18	49	182	39
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.41	0.15	0.00	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	19.18	15.50	0.00	0.00	7.57	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3.54	3.54	0.00	0.00	0.34	0.34
95th-Percentile Queue Length [ft/ln]	88.40	88.40	0.00	0.00	8.42	8.42
d_A, Approach Delay [s/veh]	17.58		0.00		6.23	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	11.93					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 103: Lois Lane (Future) / Hall Road (Future)

Control Type:	Two-way stop	Delay (sec / veh):	37.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.201

Intersection Setup

Name	Lois Lane (Future)			Lois Lane (Future)			Hall Road (Future)			Hall Road (Future)		
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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Lois Lane (Future)			Lois Lane (Future)			Hall Road (Future)			Hall Road (Future)		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	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	214	130	98	119	23	9	83	9	40	100	71
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	214	130	98	119	23	9	83	9	40	100	71
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
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	59	36	27	33	6	3	23	3	11	28	20
Total Analysis Volume [veh/h]	0	238	144	109	132	26	10	92	10	44	111	79
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	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	0.00	0.00	0.00	0.09	0.00	0.00	0.06	0.30	0.01	0.20	0.33	0.11
d_M, Delay for Movement [s/veh]	7.53	0.00	0.00	8.20	0.00	0.00	32.15	23.40	15.68	37.64	32.02	26.12
Movement LOS	A	A	A	A	A	A	D	C	C	E	D	D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.20	0.20	0.20	1.63	1.63	1.63	4.28	4.28	4.28
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	5.00	5.00	5.00	40.76	40.76	40.76	106.95	106.95	106.95
d_A, Approach Delay [s/veh]	0.00			3.35			23.49			31.09		
Approach LOS	A			A			C			D		
d_I, Intersection Delay [s/veh]	10.85											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 104: Lois Lane (Future) / Colfax Lane

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.170

Intersection Setup

Name	Lois Lane (Future)		Colfax Ln		Colfax Ln	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Lois Lane (Future)		Colfax Ln		Colfax Ln	
Base Volume Input [veh/h]	0	0	0	30	40	0
Base Volume Adjustment Factor	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
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	123	45	19	0	13	69
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	123	45	19	30	53	69
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	13	5	8	15	19
Total Analysis Volume [veh/h]	137	50	21	33	59	77
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.05	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.69	9.97	7.51	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.85	0.85	0.04	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	21.21	21.21	0.89	0.89	0.00	0.00
d_A, Approach Delay [s/veh]	10.50		2.92		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	5.63					
Intersection LOS	B					

APPENDIX B: HIGH LEVEL COST OPTIONS FOR CONCEPTS

Appendix B – High-level cost estimate

Construction Item	Couplet Extension	Interchange	US97 Mainline Enhancements
US 97 Road Construction	$5,000,000	2,100,000	$4,000,000
US 97 Interchange Construction		$13,000,000	
Access Road Construction	-	-	-
Pedestrian Facilities	$1,500,000	$960,000	$960,000
Raised Medians	$180,000	$860,000	$860,000
Traffic Signal System	$750,000	$1,000,000	$1,200,000
Mobilization	$750,000	$1,800,000	$700,000
Erosion Control	$151,000	$365,000	$141,000
Construction Survey Work	$151,000	$365,000	$141,000
Landscaping	$378,000	$900,000	$352,000
Temporary Traffic Control	$750,000	$1,800,000	$700,000
Illumination System	$750,000	$1,800,000	$700,000
Permanent Striping/Signing	$380,0000	$900,000	$350,000
Design	$2,000,000	$5,200,000	$2,000,000
Construction Engineering	$2,000,000	$5,200,000	$2,000,000
50% Contingency	$5,500,000	$14,000,000	$6,000,000
Total	**$20,000,000-$25,000,000**	**$50,000,000-$55,000,000**	**$20,000,000-$25,000,000**