INTERSECTION CONTROL EVALUATION REPORT

Interstate 5 at Cook Road - Milepost 232.83

September 2023

1. This Intersection Control Evaluation (ICE) Report was prepared by Design Consultant staff working under my direct supervision, consistent with the requirements of WSDOT Design Manual Chapters 300 and 1300.

Date: 09/22/2023

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Introduction

This report summarizes the Intersection Control Evaluation (ICE) completed for the Interstate 5 (I-5) Interchange at Cook Road in Skagit County, Washington. The interchange location and vicinity map is shown in Figure 1. The evaluation was conducted based on the guidelines set in Chapter 1300.05(3) Intersection Control Evaluation Section of the Washington State Department of Transportation (WSDOT) Design Manual M 22-01.21 (September 2022).

Figure 1. Intersection Vicinity Map

As shown in Figure 1, the ICE reviews the Cook Road intersections of the I-5 southbound ramps, I-5 northbound ramps, and Old Highway 99 with consideration for the existing railroad crossing located approximately 75 feet east of the Cook Road/Old Highway 99 N intersection operated by Burlington Northern Santa Fe Corporation (BNSF). This analysis evaluates 4 alternatives for the intersections in addition to the No Action Alternative which are summarized below.

Table 1. Description of Alternatives Evaluated

Intersection	**No Action**	**Alternative 1:** *Roundabout*	**Alternative 2:** *Traffic Signal*	**Alternative 3:** *Traffic Signal with added NBR at Old Highway 99 N*	**Alternative 4:** *Traffic Signal & single controller*
1. I-5 southbound ramps/Cook Rd	Two-Way Stop Controlled	Single Lane Roundabout	Traffic Signal (existing channelization)	Traffic Signal (existing channelization)	Traffic Signal (existing channelization)
2. I-5 northbound ramps/Cook Rd	Two-Way Stop Controlled	Single Lane Roundabout	Traffic Signal with added NBR	Traffic Signal with added NBR	Traffic Signal with added NBR, single controller with Old Highway 99 N
3. Old Highway 99 N /Cook Rd	Traffic Signal	Multilane Roundabout	Added EBT lane	Added EBT and NBR lanes	Added EBT and NBR lanes, single controller with Old Highway 99 N

Note: NBR = northbound right-turn, EB = eastbound, Eastbound Through

Recommendation:

The recommendation for the intersection improvements is the **Alternative 3 traffic signal alternative.** This alternative would include the following:

- Install traffic signals at the 2 ramp intersections,
- Add a northbound right turn lane at the I-5 northbound ramp intersection,
- Widen Cook Road to include an additional eastbound through lane east of the I-5 northbound ramp intersection to east of Green Road, and
- Add a northbound right-turn lane at the Old Highway 99 N intersection.

The following documents the 5-step ICE screening process that was coordinated with WSDOT to evaluate the alternatives and determine the best possible intersection type and design. The steps include:

1. Background and Project Needs
2. Feasibility
3. Operational and Safety Performance Analysis
4. Alternatives Evaluation
5. Selection

Step 1: Background and Project Needs

The following section summarizes the existing conditions of the Cook Road corridor in the vicinity of the I-5 ramps and Old Highway 99 N intersections and the adjacent at-grade railroad crossing as well as the project needs, methodology used for analysis, and comparison of the alternatives.

Existing Conditions

The project area includes the intersections of Cook Road with the I-5 southbound ramps, I-5 northbound ramps, and Old Highway 99 with consideration for the existing BNSF railroad crossing located approximately 75 feet east of the Cook Road/Old Highway 99 N intersection. The primary roadways in the study area are described below.

- **Cook Road** is predominantly a two-lane roadway classified as a Major Collector by Skagit County with an estimated annual average daily traffic (AADT) of approximately 14,500 vehicles in the study area[1].
- **Old Highway 99 N** is a two-lane roadway with a general speed limit of 50 miles per hour (mph), providing an alternative route to I-5. In the vicinity of the project area, the speed limit is reduced to 35 mph.
- **The I-5 Ramps** - The annual average daily traffic (AADT) in the study area was reviewed based on WSDOT's Traffic Count Database for the I-5 ramps showing approximately 3,000 ADT on each of the ramps to/from I-5 north of Cook Road (i.e. the southbound off-ramp and northbound on-ramp). South of Cook Road, the AADT of the I-5 ramps are approximately 5,000 and 6,000 ADT for the southbound on-ramp and northbound off-ramp, respectively. The volumes show the primary travel patterns in the vicinity of the Cook Road study intersections is to/from the south.

Each intersection and the BNSF railroad crossing are described below. The existing weekday AM and PM peak hour traffic volumes as well as the traffic control and channelization are included on Figure 2.

1. **I-5 Southbound Ramps/Cook Road** - This intersection is an existing two-way stop-controlled intersection with the southbound approach being stop controlled and free movements east-west along Cook Road. All approaches are a single shared lane with Cook Road being a two-lane road and the I-5 Ramp being one-lane, one-way southbound. The peak hour total entering volumes (TEV) at this intersection are approximately 900 vehicles in both the AM and PM peak hours. No non-motorized facilities exist at this intersection.
2. **I-5 Northbound Ramps/Cook Road** - This intersection is an existing two-way stop-controlled intersection with the northbound approach being stop controlled and free movements east-west along Cook Road. All approaches are a single shared movement lane with Cook Road being a two-lane road and the I-5 Ramp being one-lane, one-way northbound. The peak hour TEV at this intersection is approximately 1,350 and 1,430 vehicles in the AM and PM peak hours, respectively. No non-motorized facilities exist at this intersection.

[1] Estimated based in the weekday PM peak hour traffic volumes along Cook Road between I-5 NB Ramps and Old Highway 99 S.

3. **Old Highway 99 N/Cook Road** - This intersection is an existing traffic signal. The eastbound and westbound approaches along Cook Road as well as the northbound approach along Old Highway 99 N include a left-turn lane and shared through/right-turn lane. The southbound approach along Old Highway 99 N includes separate left, through, and right-turn lanes. The peak hour TEV at this intersection is approximately 1,740 and 2,035 vehicles in the AM and PM peak hours, respectively. Signalized pedestrian crossings are provided across all legs of the intersection.
4. **At-Grade BNSF Crossing** – The existing at-grade rail crossing is located approximately 75 feet east of the Old Highway 99 N/Cook Road intersection. The crossing consists of one eastbound and two westbound lane. The two westbound lanes consist of the left-turn and shared through/right-turn lanes of the westbound approach to the Old Highway 99 N/Cook Road intersection. No existing pedestrian facilities are present at the rail crossing. The crossing includes overhead warning lights, automatic gates, and a interconnect with the traffic signal at Old Highway 99 N/Cook Road to provide rail preempt at this intersection. The railroad crossing averaged 18 trains per day in the first half of 2023 (4 Amtrak and 14 non-Amtrak). Crossing blockages vary greatly but generally range between 2 to 7 minutes.

No transit facilities are provided within the study area.

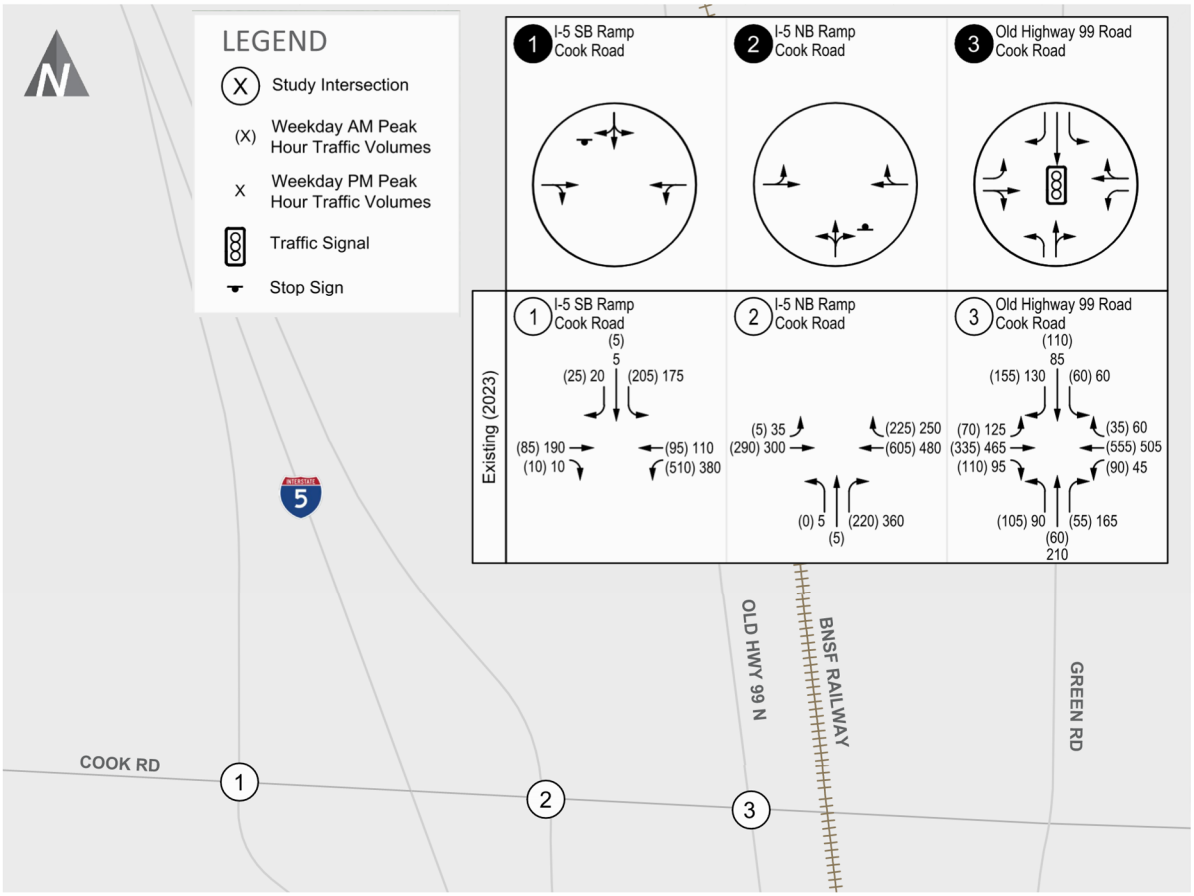


Figure 2: Existing Weekday AM and PM Peak Hour Traffic Volumes and Traffic Control and Channelization at Study Intersections

Project Needs

The project area currently experiences heavy peak hour congestion, largely stemming from the demand to/from I-5. In particular, demand during the PM peak hour often exceeds the capacity of the

system and results in queueing from the Old Highway 99 N/Cook Road intersection, through the I-5 northbound ramps intersection, and occasionally onto I-5 mainline. Gate closures at the railroad crossing increase this congestion. As described previously, the highest demand is to/from the south and east. The Comprehensive Plan indicates the traffic volumes at the study area intersections are forecast to continue to grow along with continued increase in impacts associated with the proximity of the railroad crossing as well as continued growth in train activity. In 2017, the County completed a corridor study for Cook Road that evaluated short- and long-term solutions for the project area. As a result of that study, the County secured a grant through the National Highway Freight Program (NHFP) to design and build improvements matching Alternative 2 in this ICE. Long term solutions for the area have been identified in the Comprehensive Plan to include a grade separated railroad crossing.

After securing the NHFP grant, and in coordination with WSDOT, it was determined that an ICE would be required prior to starting design of any improvements. This ICE reviews interim improvements that can improve operations prior to the installation of the long-term improvement. The interim improvements include 4 Action alternatives (1 roundabout and 3 traffic signal options).

Intersection Traffic Control Alternatives

Four intersection control alternatives have been reviewed. Figure 3 provides a conceptual layout of the different alternatives. The detailed concepts are provided as well in Appendix A. The alternatives are described below in detail as well as previously summarized in Table 1.

Alternative 1: Roundabout

The roundabout alternative assumes the intersections are reconstructed and converted from the current traffic control (either side-street stop-controlled or signal) to roundabouts. Each intersection is described below:

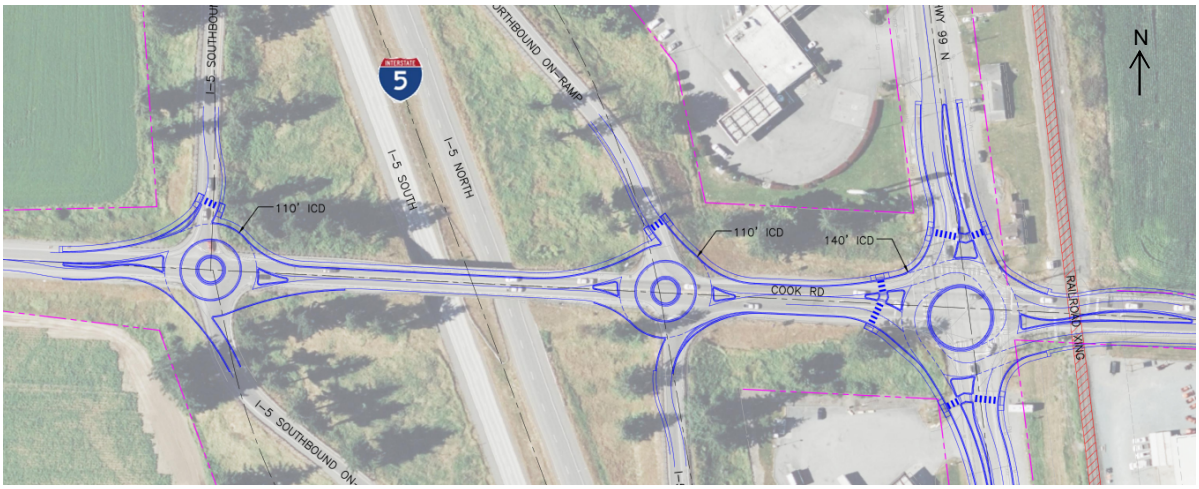
1. **I-5 southbound ramps/Cook Rd:** Single lane roundabout
2. **I-5 northbound ramps/Cook Rd:** Single lane roundabout
3. **Old Highway 99 N /Cook Rd:** Multilane roundabout with 2 circulating lanes and the following lane configurations:
    - Eastbound left/through and through/right turn lanes
    - Westbound, Northbound, and Southbound approaches include a separate left turn lane and shared through/right lane
    - Single receiving lanes on all approaches with the exception of the east leg

Alternative 2: Traffic Signal

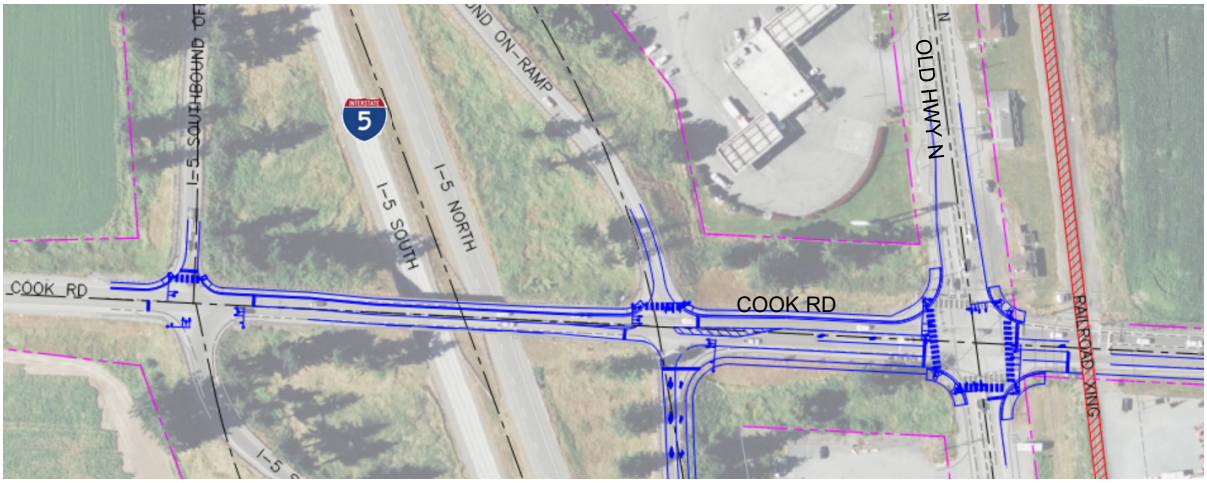
The Alternative 2 traffic signal alternative assumes the two I-5 ramp intersections are converted from side-street stop-controlled to traffic signals. Each intersection is described below:

1. **I-5 southbound ramps/Cook Rd:** Traffic signal maintaining existing channelization.
2. **I-5 northbound ramps/Cook Rd:** Traffic signal with the addition of a northbound right turn lane on the northbound off-ramp resulting in a single shared left/through/right lane and separate right turn lane. Additionally, there is an added eastbound receiving lane east of the intersection along Cook Road.
3. **Old Highway 99 N /Cook Rd:** Traffic signal with the addition of an eastbound through lane and eastbound receiving lane east of the intersection along Cook Road.

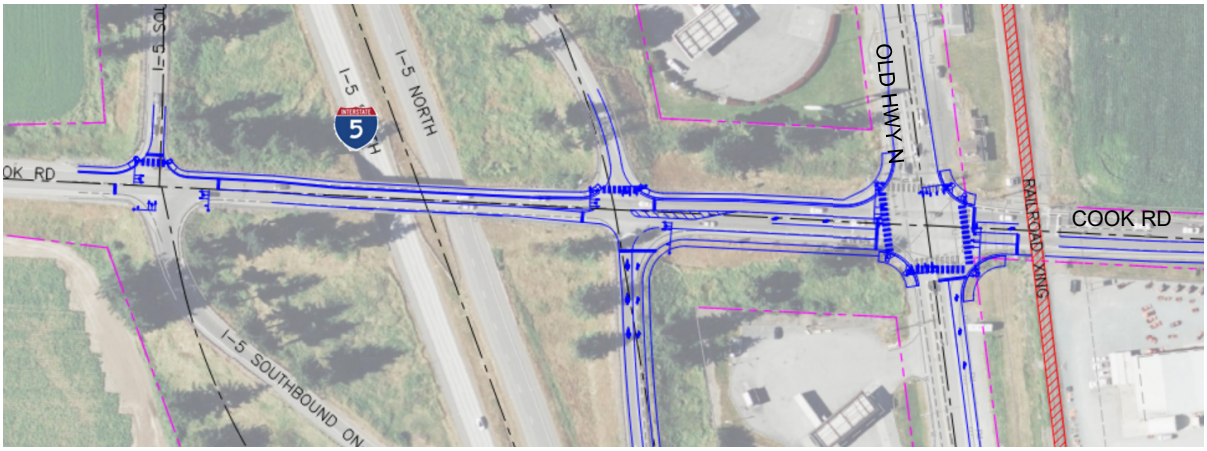
Alternative 1: Roundabout



Alternative 2: Traffic Signal



Alternative 3 and 4*: Traffic Signal & added NBR at Old Hwy 99 N



** Alternative 4 also includes the modification for a single controller for the intersections of Old Highway 99 N and I-5 Northbound Ramps along Cook Road.*

Figure 3: Alternative Concepts

Alternative 3: Traffic Signal & added NBR at Old Hwy 99 N

The Alternative 3 traffic signal alternative is consistent with Alternative 2 which assumes the two I-5 ramp intersections are converted from side-street stop-controlled to traffic signals but includes additional channelization modifications. The additional modifications with Alternative 3 relative to Alternative 2 are described below.

1. **I-5 southbound ramps/Cook Rd:** *Consistent with Alternative 2.*
2. **I-5 northbound ramps/Cook Rd:** *Consistent with Alternative 2.*
3. **Old Highway 99 N /Cook Rd:** Alternative 2 modifications as well as the addition of a northbound right turn lane providing separated northbound left, through, and right turn lanes for the northbound approach. This alternative provides continued movement of northbound left and through vehicles during railroad crossing events.

Alternative 4: Traffic Signal & Single Controller

The Alternative 4 traffic signal alternative is consistent with Alternative 3 which assumes the two I-5 ramp intersections are converted from side-street stop-controlled to traffic signals and channelization modifications. No additional channelization changes are proposed with Alternative 4 relative to Alternative 3; however, the Alternative 4 traffic signals at the intersections of Old Highway 99 N and I-5 northbound ramps along Cook Road would operate on a single controller.

Methodology

The following section provides an overview of the methodology used to analyze the intersection control alternatives.

Horizon Years

The horizon years include an approximate opening year of 2028 and a 2045 design year. The design year is consistent with the County's travel demand model.

Performance Measures

Level of service (LOS), volume to capacity ratio (V/C), and queuing are used as performance measures to compare each alternative. Each alternative is evaluated with and without the impact of the railroad crossing. In addition, a discussion of safety performance was conducted for each alternative. Traffic operation assumptions include:

- **All Alternatives –**
    - For roundabout and traffic signal-controlled intersections, LOS is measured in average delay per vehicle and is reported for the intersection as a whole. At unsignalized side-street, stop-controlled intersections, LOS is measured by the average delay on the worst-movement of the intersection. Traffic operations for an intersection can be described alphabetically with a range of levels of service (LOS A through F), with LOS A indicating free-flowing traffic and LOS F indicating extreme congestion and long vehicle delays. Appendix B contains a detailed explanation of LOS criteria and definitions.
    - Skagit County's Comprehensive Plan (2016) identifies a LOS standard of LOS D at intersections which includes the Old Highway 99 N/Cook Road intersection. WSDOT identifies a LOS C standard along I-5 in the vicinity of the Cook Road ramps.
    - During the Design Year condition, the peak hour factor (PHF) for the design year conditions was set to 1.0 for both the No Action and Action Alternatives per the *WSDOT guidelines*[2]. The existing PHF was maintained for the Opening Year conditions.

[2] *WSDOT Sidra Policy Settings* (October 2020) and *WSDOT Synchro & Simtraffic Protocol – August 2018*

  - To evaluate a train event, a 5-minute gate-down event was assumed for all alternatives (No Action and Action). The train event was evaluated for the signalized and roundabout alternatives as described below.

- **Signalized Alternatives and No Action** – Evaluated based on guidelines found in *WSDOT Synchro & Simtraffic Protocol (August 2018*). Note that operations were reviewed in Synchro 11 (a software program that uses HCM methodology to evaluate intersection LOS and average vehicle delay); however, in order to accurately reflect the differences in operations associated with a train event, the operations and queues were reported using SimTraffic.
- **Roundabout Alternatives** – Evaluated using *Sidra 9.0 network analysis*. Sidra model settings used for the roundabout evaluation were based on the guidelines in the *WSDOT Sidra Policy Settings* (October 2020). Additionally, for roundabouts, a v/c ratio of 1.0 or less for each lane group is recommended. The environmental factor (EF) was set to 1.1 during the Opening Year condition and 1.0 during the Design Year condition.

Traffic Volume Forecasts

Future (2028) Opening Year weekday AM and PM peak hour traffic volumes were forecast by applying an annual growth rate to existing traffic volumes. An annual growth rate of 1.0 percent was applied to existing study intersection traffic volumes to estimate 2028 horizon year traffic growth based on review of historical growth in the area as well as review of growth anticipated between the County's 2018 and 2045 Travel Demand Models.

The future Design Year weekday AM and PM peak hour traffic volume forecasts are based on Skagit County's Travel Demand Model. The model contains estimates of future land use growth in the region. The travel demand models forecast weekday PM peak hour conditions. Weekday AM peak hour traffic volumes are developed through their relationship with the existing weekday PM peak hour traffic counts. Note that adjustments were made for reasonableness.

The Opening and Design Year weekday AM and PM peak hour traffic volumes are shown in Figure 4. The long-term travel demand model anticipates limited growth to/from I-5, but rather the growth is concentrated along the Cook Road and Old Highway 99 N corridors.

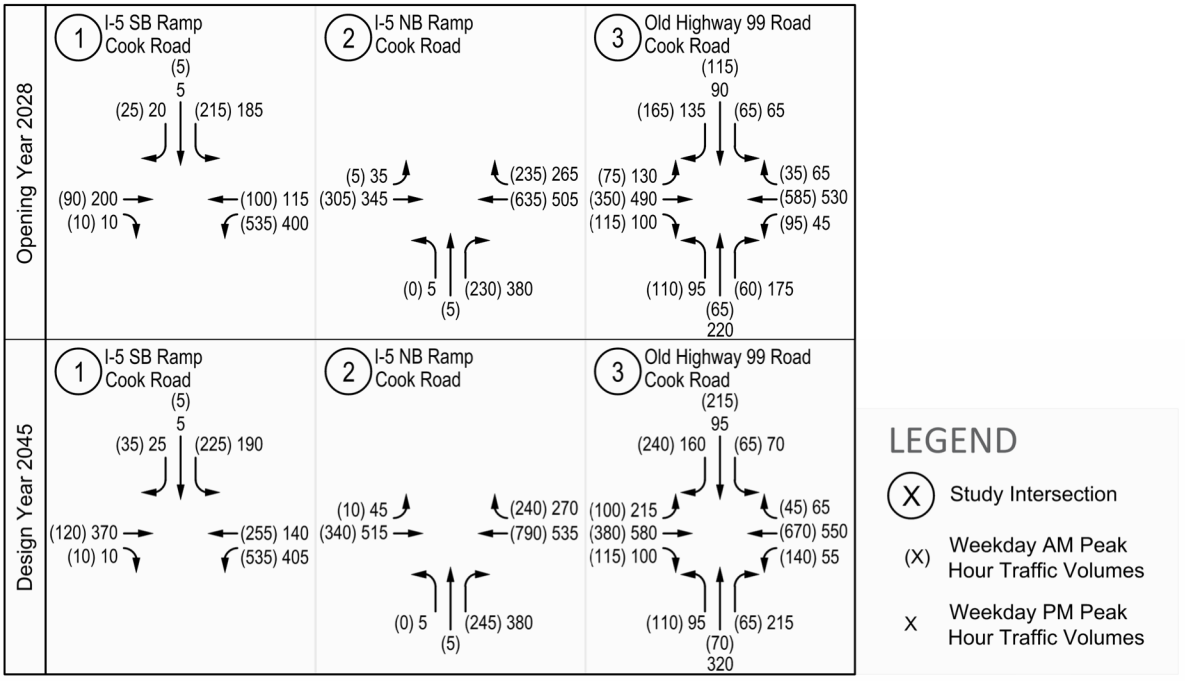


Figure 4: Future Weekday AM and PM Peak Hour Volumes

Roundabout Geometrics

For the roundabout alternative (Alternative 1), key features include:

- Roundabout geometrics developed in accordance with *WSDOT Design Manual*, Section 1320 and NCHRP Report 1043
- Dual 15-foot circulating lanes or 20-foot single circulating lanes.
- Central Island diameter is approximately 80 feet for multilane roundabouts or 75 feet for single lane roundabouts.

Signal Timing Parameters

For the signalized alternatives (Alternatives 2-4), the following signal timing parameters were assumed for the analysis:

- Actuated-coordinated control (coordinated along the Cook Road corridor). The traffic signals under Alternatives 2 and 3 have a 120-second cycle length. The traffic signals under Alternative 4 (including the single controller for the intersections of I-5 northbound ramps and Old Highway 99 N along Cook Road) have a 140-second cycle length.
- Splits and offsets were optimized
- Left-turn movements are flashing yellow

Design Vehicle

For both the traffic signal and roundabout alternatives, design concepts were developed to accommodate WB-67 truck turning movements.

Step 2: Feasibility

The alternatives were analyzed for feasibility based on the factors included in Chapter 1300 of the WSDOT Design Manual as well as consideration of site-specific issues. Table 2 summarizes the feasibility comparison of each alternative. Based on the feasibility review, no alternatives were eliminated, and all Action Alternatives are reviewed further in Step 3 below relative to the No Action condition.

Table 2. Alternative Feasibility Comparison

Factor	**Alternative 1:** *Roundabout*	**Alternative 2:** *Traffic Signal*	**Alternative 3:** *Traffic Signal with added NBR at Old Highway 99 N*	**Alternative 4:** *Traffic Signal & single controller*
Right-of-Way Impacts	Right-of-way acquisition would be necessary at the Old Highway 99 intersection, including the southwest, southeast, and northeast corners. In addition, additional ROW may be required east of the railroad crossing to allow for roadside grading and provide drainage ditches. Due to the larger amounts of added/replaced impervious surface required for Alternative 1, flow control and water quality facilities would likely be more significant, requiring the potential need for additional right-of-way to locate the facilities. Alternative 1 may also impact the north access point of the gas station located on the southwest corner of the Old Highway 99 intersection. It is anticipated the splitter islands of the northbound approach to the roundabout will extend through this access. Impacts could include restricting the access to right-in/right-out only.	Alternative 2 would require a similar Right-of-way acquisition as Alternative 1. It is anticipated that Alternative 2 will have slightly less added/impervious surface and may require slightly smaller stormwater facilities.	Alternative 3 is anticipated to have similar Right-of-way acquisition needs as Alternative 2. However, the added northbound right-turn lane at the Old Highway 99 intersection may require additional ROW as well as increase the amount of new/replaced impervious surfaces. This may increase the size of the needed water quality and flow control facilities and associated Right-of-way needs.	Right-of-way acquisition under Alternative 4 would be similar to that of Alternative 2.
Sensitive Area Impacts	No documented wetlands are present near the project limits. This alternative would have a higher amount of new/replaced impervious surface relative to other alternatives, requiring more substantial detention and treatment of stormwater.	No documented wetlands are present near the project limits. This alternative is anticipated to result in the lowest amount of new/replaced impervious surface that would require detention and treatment of stormwater.	No documented wetlands are present near the project limits. This alternative would result in a higher amount of new/replaced impervious surfaces than Alternative 2, requiring larger water quality and flow control facilities.	No documented wetlands are present near the project limits. This alternative would result in similar amounts of new/replaced impervious surfaces as Alternative 2.
Design Constraints	The major design constraints for Alternative 1 include the topography of the project area, the proximity of the I-5 bridge to the SB and NB ramp terminal intersections, and the proximity of the railroad crossing to the Old Highway 99 intersection. Grades between the I-5 NB ramp terminal intersection and the Old Highway 99 intersection are anticipated to increase from approximately 4% to 5% under Alternative 1. In addition, roundabouts constructed at the two ramp terminal intersections would require significant fill sections and retaining walls at the intersection corners and the off-ramp approaches due to the current roadside slopes. The proximity of the Old Highway 99 intersection to the railroad crossing will also require a shift of the intersection to the east to provide similar separation as existing conditions. While it is a design constraint that influences the design, the bridge over I-5 is not anticipated to be adversely impacted by Alternative 1.	Alternative 2 would result in slightly better grades between the I-5 ramp terminal and Old Highway 99 intersections (4%). In addition, the more compact geometry of the signalized intersections would not require the same level of fill/grading and retaining walls as Alternative 1, particularly at the two I-5 ramp terminal intersections. Alternative 2 is not anticipated to adversely impact the bridge over I-5.	Design Constraints for Alternative 3 are consistent with Alternative 2, with the exception of the existing park and ride area located on the east side of Old Highway 99, south of Cook Road. This alternative would reduce the space available for this facility and likely require the relocation or elimination of the park and ride area.	Design Constraints for Alternative 4 are consistent with Alternative 3.

Factor	**Alternative 1:** *Roundabout*	**Alternative 2:** *Traffic Signal*	**Alternative 3:** *Traffic Signal with added NBR at Old Highway 99 N*	**Alternative 4:** *Traffic Signal & single controller*
Multimodal Accommodation	This alternative would provide pedestrian crossings across the north legs of the two ramp terminal intersections. A 5-foot sidewalk along the north side of the I-5 bridge will also be provided. Two-stage crossings across the north, west, and south legs of the Old Highway 99 roundabout would be provided with medians and Rectangular Rapid Flashing Beacons (RRFBs) provided to improve the crossing safety and experience for pedestrians while they cross multiple lanes of traffic. Due to the proximity of the railroad crossing east of Old Highway 99, a pedestrian crossing would not be provided across the east leg of the Old Highway 99 intersection. Vehicles will also be forced to slow down prior to entering the roundabout due to the design of the intersection.	The signal alternative would maintain curb ramps and signalized crossings across each leg of the Old Highway 99 intersection. install curb ramps and signalized crossings across the north legs of the I-5 ramp terminal intersections. These crossings will provide pedestrian walk phases/signals. A 5-foot sidewalk along the north side of the I-5 bridge will also be provided. Crossing distances would increase across the west and east legs of the Old Highway 99 intersection.	Pedestrian facilities provided for Alternative 3 would be similar to Alternative 2 with the additional effect of an increased pedestrian crossing across the south leg of the Old Highway 99 intersection.	Pedestrian facilities provided for Alternative 4 would be similar to Alternative 3.
Safety	When evaluated as isolated intersections under normal operation, the roundabout alternative is expected to result in measurable decreases in collision frequency and severity. However, the proximity of the railroad crossing to the Old Highway 99 intersection presents a challenge to safety. In preliminary discussions with BNSF, the lack of a clear and efficient way to clear the rail crossing is a major concern. A complex gate system and/or signalization of some, or all the roundabout approaches at that intersection may be required for BNSF concurrence. This added complexity is expected to increase the risk of vehicle/train collisions. Additional discussion regarding railroad safety is included in Step 3.	The ability to interconnect the traffic signal at Old Highway 99 with the railroad crossing gate system is expected to reduce the complexity and risk of vehicle/train collisions relative to Alternative 1. This alternative provides facilities for railroad crossings that are familiar to motorists, promoting predictable behavior. In addition, the interconnect between the rail crossing and traffic signal allows preemption of the traffic signal including dedicated track clearance phases and conditional servicing of phases during train events. This allows traffic that does not conflict with the rail crossing to continue, reducing congestion and related crash types.	Consistent with Alternative 2 with respect to the ability to provide preemption of the traffic signal at the Old Highway 99 intersection. The additional northbound right-turn lane provides the added benefit of queue storage for right-turning vehicles and allows the traffic signal to continue to service northbound thru- and left-turning vehicles during a train event, further reducing congestion and related crash types.	Consistent with Alternative 2 with respect to the ability to provide preemption of the traffic signal at the Old Highway 99 intersection. The benefit of operating the northbound I-5 ramp terminal intersection and Old Highway 99 intersection with the same controller includes greater control of queues during and after a train event. This is anticipated to reduce congestion after the train event faster and minimize the amount of time the project area experiences heavy congestion and associated crash types.
Maintenance/ Operations	The roundabout would require less annual maintenance except for landscaping, if applicable.	The signals would require regular maintenance, service calls, and replacement of parts as needed.	Consistent with Alternative 2.	Consistent with Alternative 2.

Factor	**Alternative 1:** *Roundabout*	**Alternative 2:** *Traffic Signal*	**Alternative 3:** *Traffic Signal with added NBR at Old Highway 99 N*	**Alternative 4:** *Traffic Signal & single controller*
Implementation/ Constructability	Constructing a roundabout at the existing intersections would have significant impacts on existing traffic and would require extensive planning and traffic control. Construction would either require a full closure of the interchange or require complex staging including first constructing improvements outside of the existing roadway and then require multiple stages of traffic control to reroute traffic through a partially constructed roundabout footprint.	The traffic signal would be installed with relatively little disruption to existing traffic. The existing signal at the Old Highway 99 intersection would remain in operation, while new signal equipment is installed outside of the existing roadway. Construction of the new traffic signals at the I-5 ramp terminal intersection would only require minor disruptions to traffic. Implementation of the intersection and roadway improvements would be constructed while maintaining existing lane configurations as much as possible but may require short term closures and detours.	Consistent with Alternative 2.	Consistent with Alternative 2.
Cost	Alternative 1 is estimated to cost $8,000,000.	Alternative 2 is estimated to cost $6,000,000. Reduced relative to Alternative 1.	Alternative 3 is estimated to cost $6,300,000, which is a slight increase relative to Alternative 2 to provide the added northbound right turn lane.	Alternative 4 is estimated to cost $6,300,000, consistent with Alternative 3. This alternative would remove a controller but the need to extend wires would be reduced.

Factor	**Alternative 1:** *Roundabout*	**Alternative 2:** *Traffic Signal*	**Alternative 3:** *Traffic Signal with added NBR at Old Highway 99 N*	**Alternative 4:** *Traffic Signal & single controller*
Other	N/A	Note that a traffic signal warrant analysis was completed for the traffic signal alternatives (Alternatives 2-4) to confirm feasibility of the installation of a traffic signal at the existing unsignalized I-5 ramp intersections along Cook Road. Criteria establishing warrants for installation of traffic signals is outlined in the *Manual on Uniform Traffic Control Devices* (MUTCD). MUTCD Chapter 4C, Section 4C.01. Warrant 1 (Eight-Hour Vehicular Volume) and Warrant 2 (Four-Hour Vehicular Volume) were evaluated, which are the only warrants applicable. Hourly traffic volumes were developed for the analysis using the weekday PM peak hour traffic volumes for the Opening Year (2028) conditions (see Figure 4) and applying the hourly distribution from the National Cooperative Highway Research Program (NCHRP) Report 365 *Travel Estimation Techniques for Urban Planning*. The results of the warrant analysis show that Warrant 1 (Eight-Hour Vehicular Volume) and Warrant 2 (Four-Hour Vehicular Volume) are both met at both intersections under the future (2028) conditions. The traffic signal warrants are provided in Appendix C.	Consistent with Alternative 2.	Consistent with Alternative 2.

Step 3: Operational and Safety Performance Analysis

As described previously, the operations of the intersection traffic control alternatives were evaluated under an opening year of 2028 and a design year of 2045. Forecast traffic operations as well as a safety discussion are discussed in the following sections.

Traffic Operations

The intersection level of service and vehicle queuing analysis has been summarized below to compare the No Action and Action Alternatives.

Intersection Operations

Table 3 shows the overall intersection operations for the Action Alternatives during the weekday AM and PM peak hour under future Opening Year conditions relative to the existing No Action. The analysis considers the operations both with and without a train event. As identified above, a train event assumes a 5 minute closure for all alternatives during both the AM and PM peak hours. Detailed LOS worksheets are provided in Appendix D.

Table 3. Opening Year (2028) Weekday AM and PM Peak Hour Intersection LOS Comparisons

	No Action			Alternative 1: *Roundabout*			Alternative 2: *Traffic Signal*		Alternative 3: *Traffic Signal with added NBR at Old Highway 99 N*		Alternative 4: *Traffic Signal & Single controller*	
Intersection	**LOS[1]**	**Delay[2]**	**WM[3]**	**LOS**	**Delay**	**v/c[4]**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
AM Peak Hour												
Without Train Event												
1. I-5 SB Ramp/Cook Rd	C	22	SB	B	12	0.61	B	17	B	17	B	19
2. I-5 NB Ramp/Cook Rd	A	6	NB	B	13	0.79	A	6	A	6	A	7
3. Old Hwy 99 N/Cook Rd	B	20	-	B	15	0.81	B	20	B	19	C	20
With Train Event												
1. I-5 SB Ramp/Cook Rd	D	33	SB	B	12	0.61	B	18	B	18	B	19
2. I-5 NB Ramp/Cook Rd	C	20	NB	B	17	0.79	A	10	A	10	A	10
3. Old Hwy 99 N/Cook Rd	C	25	-	B	17	0.81	C	26	C	26	C	25
PM Peak Hour												
Without Train Event												
1. I-5 SB Ramp/Cook Rd	B	13	SB	A	8	0.45	B	17	B	15	B	17
2. I-5 NB Ramp/Cook Rd	C	17	NB	B	12	0.73	B	11	A	10	A	9
3. Old Hwy 99 N/Cook Rd	B	53	-	B	10	0.68	C	27	B	20	B	20
With Train Event												
1. I-5 SB Ramp/Cook Rd	C	18	SB	B	12	0.58	C	23	B	17	C	20
2. I-5 NB Ramp/Cook Rd	F	81	NB	C	27	0.97	C	21	B	18	B	20
3. Old Hwy 99 N/Cook Rd	F	92	-	B	15	0.71	D	46	C	27	C	28

Note: Shading indicates the intersection operates below standard.
1. Level of Service (A – F) as defined by the *Highway Capacity Manual* (6th Edition). Operations for non-roundabout alternatives evaluated using SimTraffic and Sidra for the roundabout alternative.
2. Average delay in seconds per vehicle.
3. Worst movement reported for unsignalized intersections. NB = northbound, SB = southbound
4. Volume/capacity (v/c) approach ratio.

As shown in Table 3, all study intersections operate at LOS C or better under future (2028) conditions during both the weekday AM and PM peak hours and meet the respective LOS standards without a train event.

With a train event during the peak AM peak hour under future (2028) conditions, the I-5 Southbound Ramp/Cook Road intersection is forecast to degrade to operate below standard at LOS D under the No Action condition. All study intersections with the Action Alternatives with a train event during the AM peak hour are forecast to meet the respective operational standards. During the PM peak hour with a train event, the I-5 Northbound Ramp and Old Highway 99 N and Cook Road intersections are forecast to degrade to operate below standard at LOS F under the No Action condition. All study intersections with the Action Alternatives with a train event during the PM peak hour are forecast to meet the respective operational standards.

Table 4 shows the overall intersection operations for the Action Alternatives during the weekday AM and PM peak hour under future Design Year conditions relative to the existing No Action both with and without a train event. Note that there were also adjustments to model parameters including the PHF and EF between the opening year and design year as described in the methodology section above.

Table 4. Design Year (2045) Weekday AM and PM Peak Hour Intersection LOS Comparisons

	No Action			Alternative 1: *Roundabout*			Alternative 2: *Traffic Signal*		Alternative 3: *Traffic Signal with added NBR at Old Highway 99 N*		Alternative 4: *Traffic Signal & Single controller*	
Intersection	**LOS[1]**	**Delay[2]**	**WM[3]**	**LOS**	**Delay**	**v/c[4]**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
AM Peak Hour												
Without Train Event												
1. I-5 SB Ramp/Cook Rd	F	111	SB	B	11	0.65	C	24	C	24	C	23
2. I-5 NB Ramp/Cook Rd	A	8	NB	B	14	0.83	A	8	A	8	A	9
3. Old Hwy 99 N/Cook Rd	C	30	-	C	20	0.87	D	49	D	50	C	33
With Train Event												
1. I-5 SB Ramp/Cook Rd	F	99	SB	B	12	0.65	C	24	C	23	C	24
2. I-5 NB Ramp/Cook Rd	E	36	NB	B	17	0.83	B	13	B	12	B	12
3. Old Hwy 99 N/Cook Rd	D	45	-	C	21	0.87	E	71	E	65	D	47
PM Peak Hour												
Without Train Event												
1. I-5 SB Ramp/Cook Rd	C	25	SB	A	8	0.44	C	23	C	24	D	37
2. I-5 NB Ramp/Cook Rd	F	150	NB	A	9	0.63	C	21	B	18	D	37
3. Old Hwy 99 N/Cook Rd	F	156	-	A	10	0.62	F	88	D	37	C	31
With Train Event												
1. I-5 SB Ramp/Cook Rd	F	152	SB	B	20	0.87	E	56	D	45	E	74
2. I-5 NB Ramp/Cook Rd	F	228	NB	C	21	0.85	D	39	C	29	E	59
3. Old Hwy 99 N/Cook Rd	F	180	-	B	16	0.83	F	153	D	55	D	41

Note: Shading indicates the intersection operates below standard.
1. Level of Service (A – F) as defined by the *Highway Capacity Manual* (6th Edition). Operations for non-roundabout alternatives evaluated using SimTraffic and Sidra for the roundabout alternative.
2. Average delay in seconds per vehicle.
3. Worst movement reported for unsignalized intersections. NB = northbound, SB = southbound
4. Volume/capacity (v/c) approach ratio.

As shown in Table 4, all study intersections meet the respective LOS standards without a train event under future (2045) conditions during the weekday AM peak hour with the exception of the I-5 Southbound Ramp/Cook Road intersection which is forecast to operate at LOS F under No Action conditions. With a railroad crossing during the peak AM peak hour under future (2045) conditions, the I-5 Southbound Ramp and Northbound Ramp intersections along Cook Road are forecast to degrade to operate below standard at LOS F under the No Action condition. All study intersections with the Action Alternatives with a train event during the AM peak hour are forecast to meet the respective operational standards with the exception of the Old Highway 99 N/Cook Road intersection under Alternatives 2 and 3 which are forecast to operate at LOS E.

During the PM peak hour, the intersections of I-5 Northbound Ramps and Old Highway 99 N along Cook Road are forecast to operate at LOS F under the No Action conditions, operating below standard. All study intersections under only Alternatives 1 and 3 during the PM peak hour under future (2045) conditions are forecast to meet the operational standards. With a train event, all study intersections during the PM peak hour No Action and Alternative 2 conditions are forecast to operate at LOS F, below the operational standard.

Vehicle Queues

The 95th-percentile vehicle queues for the No Action and Action Alternatives during the weekday AM and PM peak hours are summarized in Tables 5 and 6 under the Opening and Design Years, respectively. The queues are reviewed both with and without the train event. The 95th-percentile queues represent the vehicle queue lengths that would only be exceeded 5 percent of the time during the peak hour. The detailed queueing worksheets are included in Appendix D.

Under 2028 conditions, the 95th percentile queues are generally accommodated within the available storage during both the weekday AM and PM peak hours, without a train event under all alternatives (No Action and Action). With a train event, the greatest queues occur westbound at the Old Highway 99 N/Cook Road intersection in both the AM and PM peak hours, as well as the northbound approach at both the I-5 Northbound Ramps and Old Highway 99 N intersections along Cook Road under the No Action condition. With the traffic signal Action Alternatives, the queues are forecast to be similar or less than the No Action condition whereas the roundabout alternative results in increases in queues in the westbound approach along Cook Road.

Similar to 2028 conditions, under future (2045) conditions, the 95th percentile queues are generally accommodated within the available storage during both the weekday AM and PM peak hours, without a train event under all alternatives (No Action and Action). With a train event, the greatest queues occur westbound and northbound at the Old Highway 99 N/Cook Road intersection, northbound at the I-5 Northbound Ramps/Cook Road, and southbound at the I-5 Southbound Ramps/Cook Road intersection in both the AM and PM peak hours under the No Action condition. With the traffic signal Action Alternatives, the queues are forecast to be similar or less than the No Action condition whereas the roundabout alternative results in increases in queues in the westbound approach along Cook Road.

The reduced queueing of the signalized alternatives with the train event relative to other alternatives, particularly Alternatives 3 and 4 which add a northbound right-turn lane at the Old Highway 99 N/Cook Road intersection, is associated with the added capacity and separation of the movements, allowing for continued processing of vehicles during the train event unlike the other alternatives.

Table 5. Opening Year (2028) Weekday AM and PM Peak Hour 95th-Percentile Vehicle Queue Comparisons

Intersection	Available Storage[1] (ft)	95th Percentile Queue[2] (ft) Without Train Event					95th Percentile Queue[2] (ft) With Train Event				
		No Action	Alt 1: *RAB*	Alt 2: *Traffic Signal*	Alt 3: *Traffic Signal + NBR*	Alt 4: *Traffic Signal + Single Controller*	No Action	Alt 1: *RAB*	Alt 2: *Traffic Signal*	Alt 3: *Traffic Signal + NBR*	Alt 4: *Traffic Signal + Single Controller*
AM Peak Hour											
1. I-5 SB Ramp/Cook Rd											
Eastbound	*>1,000*	0	15	65	60	60	40	15	60	60	65
Westbound	*470*	130	0	320	330	345	140	0	340	325	345
Southbound	*875*	380	25	255	240	280	570	25	260	255	280
2. I-5 NB Ramp/Cook Rd											
Eastbound	*470*	80	0	115	125	150	290	180	235	215	220
Westbound	*225*	20	145	210	195	215	5	145	220	220	205
Northbound Through/Right	*1,180*	180	15	95	90	95	625	140	160	155	135
Northbound Right	*500*	-	-	70	70	70	-	-	130	135	105
3. Old Hwy 99 N/Cook Rd											
Eastbound Left	*150*	140	15	125	120	130	150	**225**	125	140	145
Eastbound Through	*225*	**310**	15	195	200	200	**335**	225	**245**	**250**	**245**
Westbound Left	*275*	285	10	220	215	265	**335**	**325**	**290**	**310**	**300**
Westbound Through	*>8,000[3]*	730	110	540	540	665	2,295	6,030	1,810	2,305	2,070
Northbound Left	*100*	**115**	10	**120**	**120**	**175**	**120**	10	**120**	**120**	**170**
Northbound Through	*>1,000*	215	10	285	205	185	300	195	310	305	180
Northbound Right	*300*	-	10	-	95	75	-	195	-	140	95
Southbound Left	*200*	105	10	105	110	115	110	**210**	115	120	115
Southbound Through	*>2,000*	260	45	290	305	335	345	45	405	425	430
Southbound Right	*100*	**140**	45	**140**	**140**	145	**140**	45	**145**	**145**	**145**
PM Peak Hour											
1. I-5 SB Ramp/Cook Rd											
Eastbound	*>1,000*	5	15	80	85	95	95	25	150	95	130
Westbound	*470*	120	0	260	230	255	120	0	310	265	290
Southbound	*875*	265	15	225	210	235	335	20	290	230	245
2. I-5 NB Ramp/Cook Rd											
Eastbound	*470*	225	0	300	255	230	405	340	470	410	420
Westbound	*225*	10	90	**250**	**255**	200	50	90	**285**	**245**	**230**
Northbound Through/Right	*1,180*	690	35	135	130	150	**1,980**	370	215	200	265
Northbound Right	*500*	-	-	95	85	110	-	-	170	160	230
3. Old Hwy 99 N/Cook Rd											
Eastbound Left	*150*	**180**	20	**165**	150	**165**	**180**	**225**	**170**	**170**	**175**
Eastbound Through	*225*	**335**	20	**270**	215	**265**	**320**	225	**305**	**275**	**305**
Westbound Left	*275*	235	5	210	195	180	255	165	265	245	225
Westbound Through	*>8,000[3]*	835	90	725	540	620	2,385	4,415	3,265	1,840	1,845
Northbound Left	*100*	**125**	10	**115**	**120**	**155**	**130**	10	**130**	**125**	**165**
Northbound Through	*>1,000*	**1,430**	35	525	340	250	**2,310**	465	**1,090**	475	330
Northbound Right	*300*	-	35	-	190	85	-	**465**	-	225	205
Southbound Left	*200*	100	5	85	110	95	110	**260**	100	105	100
Southbound Through	*>2,000*	155	20	155	200	185	210	20	220	230	300
Southbound Right	*100*	**120**	20	**115**	**125**	**125**	**120**	20	**120**	**130**	**120**

Note: RAB = roundabout. **Bold** indicates the queue exceeds the available storage AND shading indicates those locations that also exceed the respective No Action queue.
1. The storage length represents the available lane length for cars to queue, rounded to the nearest 25 feet.
2. 95th Percentile queues are derived from SimTraffic and Sidra, rounded to the nearest 25 feet
3. 50 ft to railroad crossing or 445 ft to Green Road; however, queuing would continue through side street stop-controlled intersections.

Table 6. Design Year (2045) Weekday AM and PM Peak Hour 95th-Percentile Vehicle Queue Comparisons

Intersection	Available Storage[1] (ft)	95th Percentile Queue[2] (ft) Without Train Event					95th Percentile Queue[2] (ft) With Train Event				
		No Action	Alt 1: *RAB*	Alt 2: *Traffic Signal*	Alt 3: *Traffic Signal + NBR*	Alt 4: *Traffic Signal + Single Controller*	No Action	Alt 1: *RAB*	Alt 2: *Traffic Signal*	Alt 3: *Traffic Signal + NBR*	Alt 4: *Traffic Signal + Single Controller*
AM Peak Hour											
1. I-5 SB Ramp/Cook Rd											
Eastbound	*>1,000*	5	15	85	75	75	90	15	85	75	80
Westbound	*470*	150	0	400	420	425	145	0	440	410	420
Southbound	*875*	**1,820**	25	370	350	340	**1,500**	30	345	320	350
2. I-5 NB Ramp/Cook Rd											
Eastbound	*470*	120	0	205	245	215	370	180	320	325	315
Westbound	*225*	10	170	**250**	**255**	**235**	5	170	**275**	**270**	**245**
Northbound Through/Right	*1,180*	230	15	100	115	115	920	135	185	170	150
Northbound Right	*500*	-	-	70	70	85	-	-	150	145	120
3. Old Hwy 99 N/Cook Rd											
Eastbound Left	*150*	**170**	20	145	**165**	**160**	**175**	**225**	**165**	**170**	**160**
Eastbound Through	*225*	**330**	20	**245**	**260**	**240**	**335**	225	**285**	**280**	**255**
Westbound Left	*275*	**390**	15	**370**	**375**	**360**	**375**	**525**	200	**365**	**370**
Westbound Through	*>8,000[3]*	3,400	115	875	860	2,905	5,220	7,625	4,485	5,110	4,860
Northbound Left	*100*	**120**	5	120	120	**185**	**120**	**5**	120	120	**190**
Northbound Through	*>1,000*	250	10	530	395	220	420	190	645	600	270
Northbound Right	*300*	-	-	-	185	85	-	-	-	195	140
Southbound Left	*200*	120	10	120	115	115	120	**215**	120	125	125
Southbound Through	*>2,000*	630	115	1,380	1,330	830	1,120	110	1,735	1,605	1,335
Southbound Right	*100*	**150**	**115**	**150**	**145**	**145**	**155**	**110**	**150**	**150**	**155**
PM Peak Hour											
1. I-5 SB Ramp/Cook Rd											
Eastbound	*>1,000*	30	30	190	220	360	455	80	505	410	560
Westbound	*470*	170	0	330	390	420	235	0	375	405	**520**
Southbound	*875*	470	15	305	265	375	**1,930**	15	630	575	770
2. I-5 NB Ramp/Cook Rd											
Eastbound	*470*	455	0	**515**	**505**	**575**	**590**	**500**	**615**	**600**	**630**
Westbound	*225*	15	60	**320**	**310**	**240**	20	60	**340**	**330**	**280**
Northbound Through/Right	*1,180*	**3,110**	30	185	160	490	**3,235**	370	265	225	700
Northbound Right	*500*	-	-	120	115	450	-	-	215	175	**665**
3. Old Hwy 99 N/Cook Rd											
Eastbound Left	*150*	**175**	20	**175**	**180**	**180**	**195**	**225**	**190**	**190**	**195**
Eastbound Through	*225*	**310**	20	**315**	**310**	**335**	**310**	225	**330**	**330**	**335**
Westbound Left	*275*	**290**	5	**295**	**280**	245	**300**	165	270	**310**	265
Westbound Through	*>8,000[3]*	1,790	90	760	870	980	3,400	4,475	4,950	4,100	2,915
Northbound Left	*100*	130	5	125	125	200	120	**5**	120	120	205
Northbound Through	*>1,000*	**3,280**	50	**2,330**	905	445	**3,050**	575	**3,110**	**1,310**	690
Northbound Right	*300*	-	-	-	290	260	-	-	-	300	**330**
Southbound Left	*200*	110	5	100	110	105	110	**285**	105	120	115
Southbound Through	*>2,000*	195	20	185	210	195	335	20	365	375	375
Southbound Right	*100*	**130**	20	**125**	**130**	**125**	**130**	20	**125**	**135**	**135**

Note: RAB = roundabout. **Bold** indicates the queue exceeds the available storage AND shading indicates those locations that also exceed the respective No Action queue.
1. The storage length represents the available lane length for cars to queue, rounded to the nearest 25 feet.
2. 95th Percentile queues are derived from SimTraffic and Sidra, rounded to the nearest 25 feet
3. 50 ft to railroad crossing or 445 ft to Green Road; however, queuing would continue through side street stop-controlled intersections.

Safety Performance Analysis

This section summarizes the five-year crash history at the study intersections and provides a vehicular safety comparison for the alternatives.

Analysis of Existing Intersection Crashes

Crash records over the most recent complete 5-year period were reviewed at the northbound and southbound I-5 ramps intersections along Cook Road to identify potential safety issues within the vicinity of the study area. Collisions along the I-5 northbound and southbound ramp segments as well as the I-5 mainlines[3] were also reviewed to identify safety issues related to queueing during train events. Reported crash data was provided by WSDOT for the period of January 1, 2018 to December 31, 2022 for the study area. Table 7 provides a summary of the total number, type, and severity of the reported collisions.

Table 7. Five-Year Collision Summary (By Collision Type) – 2018 to 2022

Location	Collision Type						Severity				
	Approach Turn	Rear End	Ped/ Bike	Angle	Sideswipe	Fixed Object	PDO[1]	Injury	Fatality	Total	Average Annual
Intersections											
1. I-5 SB Ramp/Cook Rd	1	4	0	4	0	5	12	2	0	14	**2.8**
2. I-5 NB Ramp/Cook Rd	0	4	0	7	0	3	10	4	0	14	**2.8**
3. Old Hwy 99 N/Cook Rd	6	7	0	7	4	0	19	5	0	24	**4.8**
Roadway Segments											
I-5 Southbound											
Ramp *(Cook Rd to I-5 Mainline)*	0	4	0	0	0	1	3	2	0	5	**1.0**
Total Mainline *(MP 232.98-233.73)*	0	0	0	0	1	8	9	0	0	9	**1.8**
Associated with Train Event[2]	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	***0***
I-5 Northbound											
Ramp *(Cook Rd to I-5 Mainline)*	0	10	0	0	0	1	8	3	0	11	**2.2**
Total Mainline *(MP 231.95 - 232.70)*	0	5	0	0	1	8	13	1	0	14	**2.8**
Associated with Train Event[2]	*0*	*5*	*0*	*0*	*0*	*0*	*4*	*1*	*0*	*5*	***1.0***

Source: WSDOT, 2023.
Note: Under 23 U.S. Code § 409 and 23 U.S. Code § 148, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.
1. PDO = property damage only (i.e. no apparent injury)
2. Train event assumed collision notes slowing or stopped vehicle involved. Note collisions only include respective direction of travel (e.g. northbound only includes vehicles traveling south to north).

The collision history review above shows that there were on average 3 collisions reported per year at the unsignalized southbound and northbound I-5 ramp intersections along Cook Road, respectively. The signalized Old Highway 99 N/Cook Road intersection in the study area showed an average annual of 5 collisions reported per year. Of the total collisions in the study area, the majority were rear-end and entering at an angle collisions and 80 percent of the overall reported collisions resulted in property damage only.

None of the reported collisions in the study area during the 5-year period reviewed (2018-2022) resulted in fatality nor were any reported that involved either a pedestrian or bicyclist. However, following the review period (June 2023) there has been one reported collision involving a bicyclist which occurred at the Old Highway 99 N/Cook Road intersection. The collision was a northbound left-turning vehicle striking a southbound cyclist and resulted in an injury. The cause of the collision was likely driver inattention. The

[3] Mainlines included collisions reported within 0.75 miles (~4,000 feet) of the ramp milepost.

alternatives would provide for modifications at all intersections including the Old Highway 99 N/Cook Road intersection where the recent collision involving a cyclist occurred.

In addition to the study intersections, Northbound I-5 had an average of 2.2 collisions per year along the ramp with an additional 1.0 collisions along the mainline associated with slowing or stopped traffic within the vicinity of the Cook Ramp interchange with nearly all of these collisions being rear-end collisions. Rear-end collision are typical of congested conditions and queueing.

Southbound I-5 had an average of 1.0 collisions per year along the ramp with no collisions identified on the mainline associated with slowing or stopped traffic within the vicinity of the Cook Ramp interchange.

In addition to reviewing the reported collisions, a discussion with a Washington State Patrol (WSP) sergeant[4] provided additional insight into existing safety conditions at the interchange based on daily observations in the vicinity. The interchange was identified to be along a known high collision area such that patrols are there regularly. There are daily weekday occurrences of eastbound queuing that occurs along Cook Road and results in queues extending onto the off-ramps, consistently on the northbound ramp but can also extend onto the southbound ramp as well. Additionally, it is estimated that 2-3 days a week, the northbound queues will extend onto the I-5 northbound mainline. Given the existing stop-controlled traffic control at the ramp intersections, queuing along Cook Road does not provide needed gaps in the flow of traffic to clear the queues. Train events only exacerbate these challenges. The collision summary above supports these observations, with northbound ramp and mainline rear-end collisions (commonly congestion related collisions) identified to be an average of 3 collisions per year.

Additional discussion regarding the different alternatives and the multimodal considerations are provided below.

Expected and Predicted Intersection Crashes Methodology

Analysis of the traffic safety among the two options was coordinated with WSDOT and involves the usage of HSM spreadsheets[5] and Crash Modification Factors (CMFs). Note that this analysis does not consider the train event. Additional discussion of safety with a train event is provided in a subsequent section (Railroad Safety and Operations).

HSM spreadsheets were developed by the TRB Highway Safety Performance Committee and are used to calculate expected and predicted crash rates by severity by inputting intersection parameters such as AADT by approach, number of lanes, lighting availability, and other parameters. HSM spreadsheets were used to analyze the existing signalized study intersection as well as the traffic signal.

For the roundabout intersection control option, Crash Modification Factors Clearinghouse[6] was referenced for a crash modification factor (CMF) as directed by WSDOT to apply to the predicted crash frequency of the signalized option to estimate crash reductions when installing a roundabout. The CMF WSDOT Reference numbers and details used to estimate safety benefits are summarized below:

- **I-5 SB Ramp/Cook Road and I-5 NB Ramp/Cook Road Intersections:**
  - WSDOT Reference #4931 - Convert Unsignalized Intersection to Roundabout
  - Crash Type = Injury and Fatal
  - CMF Value = 0.65
- **Old Highway 99 Road/Cook Road Intersection:**
  - WSDOT Reference #4256 (Convert Signal to Roundabout, AADT exceeds 18,000)
  - Crash Type = All Collision Types – all severities

[4] Sergeant Jon McKee, #165, Washington State Patrol, Field Operations Bureau – Burlington

[5] http://safetyperformance.org/tools/

[6] CMF ID: 4257. Conversion of signalized intersection into single urban or suburban roundabout.

- CMF Value = 1.0 (AADT exceeds 18,000)

Comparison of Crash Reduction

This section summarizes the crash reduction for each alternative based on the predicted fatal and injury crash frequency and crash severity distributions. Full details including calculations and severity distributions are shown in Appendix E. Table 8 below summarizes the findings completed for the Opening Year future condition.

The methodology to estimate the crash reduction for each alternative was consistent with previous similar efforts that were coordinated with WSDOT. This methodology does not consider interactions with the railroad crossing located in close proximity to the Old Highway 99 N/Cook Road intersection. Therefore, this crash reduction analysis reflects conditions without a train event.

Table 8. Injury and Fatal Crash Reduction Summary (Without a train event)

	Opening Year 2028			
	No Action[1,2]	**Alt 1:** *Roundabout*[3]	**Alt 2:** *Traffic Signal*[2]	**Alt 3 & Alt 4:** *Traffic Signal with NBR*[2]
Predicted Crash Frequency for Alternative *(Injury and Fatal)*				
1. I-5 SB Ramp/Cook Rd	0.6	0.4	0.4	0.4
2. I-5 NB Ramp/Cook Rd	0.9	0.6	0.7	0.7
3. Old Hwy 99 N/Cook Rd	0.7	0.7	0.7	0.7
Annual Crash Reduction *(relative to No Action)*				
1. I-5 SB Ramp/Cook Rd	-	-0.2	-0.2	-0.2
2. I-5 NB Ramp/Cook Rd	-	-0.3	-0.2	-0.2
3. Old Hwy 99 N/Cook Rd	-	0	0	0

Note: Collisions reflect predicted injury and fatal crashes per year.
1. Existing assuming the existing intersection channelization.
2. Based on a combined CMF calculated per the HSM spreadsheet.
3. Predicted Crash Frequency estimated for I-5 SB and NB Ramps by No Action Crash Factor x CMF 0.65 and for the Old Hwy 99 by No Action Crash Factor x CMF 1.0

As shown in Table 8, under conditions without a train event, the Action Alternatives are anticipated to reduce the annual injury and fatal crash types at the two ramp intersections relative to the No Action condition which would change the traffic control from the existing side street stop controlled to either a roundabout or traffic signal. No change in annual injury and fatal crash types is predicted at the Old Highway 99 N/Cook Road intersection. Overall, the alternatives result in similar improvement with the roundabout alternative (Alternative 1) having a slightly higher safety improvement at the I-5 Northbound Ramp/Cook Road intersection relative to the signalized alternatives.

In addition to the crash reduction analysis above, it is important to reiterate a project objective is to alleviate any queueing impacts to the I-5 mainline that occurs today and results in safety concerns including identified collisions as shown and discussed above. The signalized alternatives (Alternatives 2-4) allow for signal timing prioritization to minimize northbound queueing which is not a feature of the roundabout alternative (Alternative 1).

Additional discussion of safety with a train event is provided in a subsequent section (Railroad Safety and Operations).

Multimodal Safety and Operations

With the roundabout alternative, drivers would be expected to yield to pedestrians and bicyclists at the crossings. Bicyclists could choose to either ramp up to the sidewalk (where provided) and travel through

the roundabout as a pedestrian or merge into the travel lane and function as a vehicle when entering and exiting the roundabout. Additionally, drivers must slow down prior to entering the roundabout due to the design of the intersection.

For the traffic signal alternative, signalized crossings would be maintained at the Old Highway 99 N/Cook Road intersection with crossing distances ranging between 3 and 4 lanes. Additionally, curb ramps and signalized crossings would be installed across the north legs of the I-5 ramp terminal intersections. These crossings will provide pedestrian walk phases/signals. Finally, a 5-foot sidewalk would be added along the north side of the I-5 bridge.

For the roundabout alternative, pedestrians would be required to cross multiple lanes. A Rectangular Rapid Flashing Beacon (RRFB) system would be installed at these crossings to improve the crossing safety and experience for pedestrians as they cross multiple lanes of traffic. The RRFB systems would likely operate as a single system for each crossing so the RRFB would flash for the entire time for a pedestrian to cross from one side of the roadway to the other.

Railroad Safety and Operations

When evaluated as isolated intersections under normal operation, each alternative is expected to result in measurable decreases in collision frequency and severity. However, the proximity of the railroad crossing to the Old Highway 99 intersection presents a challenge to safety. In preliminary discussions with BNSF, the lack of a clear and efficient way to clear the rail crossing under Alternative 1 is a major concern. In order to ensure no vehicles enter the roundabout during a train event, it is anticipated that a gate system and/or signalization of some, or all of the roundabout approaches at the intersection would be required. Also, extended red times are anticipated also to be necessary to provide sufficient time for all vehicles to circulate through the roundabout prior to gate closures. This added closure time to accommodate roundabout circulation would result in added delay and queueing than reflected in the operational analysis above which did not include added signalization of the roundabout.

Facilities provided for railroad crossings under signalized alternatives are familiar to motorists, promoting predictable behavior. In addition, the interconnect between the rail crossing and traffic signal allows preemption of the traffic signal including dedicated track clearance phases and conditional servicing of phases during train events. This allows traffic that does not conflict with the rail crossing to continue, reducing congestion and related crash types. Further, the interconnect to the signal system provides greater control of queues after a train event. This is anticipated to reduce congestion after the train event faster and minimize the amount of time the project area experiences heavy congestion and associated crash types.

Step 4: Alternative Evaluation

All Action Alternatives will improve operations both with and without a train event. The roundabout alternative (Alternative 1) had the lowest overall delay at the study intersections both with and without a train event; however, Alternative 1 is forecast to have greater queuing following a train event compared to the signalized alternatives. Of the signalized alternatives, Alternative 3 is forecast to generally meet the operational standards with one exception which occurs under 2045 PM peak hour train event conditions at the I-5 Southbound Ramp/Cook Road intersection degrading the LOS D.

Although roundabouts generally include safety benefits relative to signalized intersections, the safety reduction analysis shows the signalized alternatives to be approximately consistent with the roundabout alternative, when considered as isolated intersections. However, the proximity of the at-grade railroad crossing to the Old Highway 99N/Cook Road intersection would most likely require a more complex gate and control system for Alternative 1 to ensure traffic can be cleared from the crossing prior to a train event. Also, signalization of the intersections allows for prioritization of the ramps to minimize queueing impacts to the I-5 mainline which occur today.

Additionally, as noted previously, the improvements are an interim condition until such time a grade separated railroad crossing is installed. Given the temporary nature of the improvements, the less invasive signalization (Alternatives 2-4) are better interim improvements.

Step 5: Selection

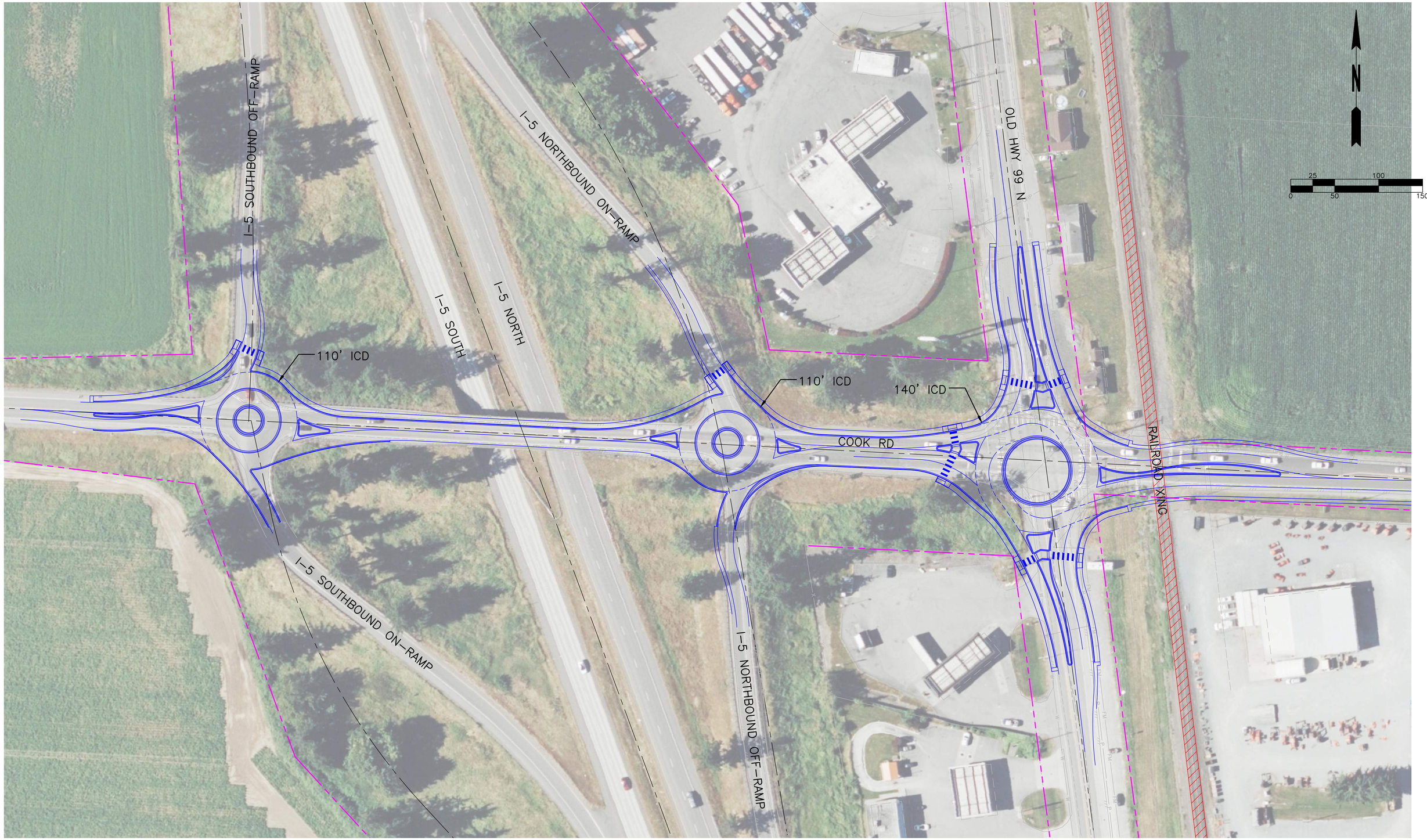
The recommendation for the intersection improvements is the **Alternative 3 traffic signal alternative.** This alternative would include the following:

- Install traffic signals at the 2 ramp intersections,
- Add a northbound right turn lane at the I-5 northbound ramp intersection,
- Widen Cook Road to include an additional eastbound through lane east of the I-5 northbound ramp intersection to east of Green Road, and
- Add a northbound right-turn lane at the Old Highway 99 N intersection.

Alternative 3 meets the operational standards at all study intersections during both future opening and design year conditions in the AM and PM peak hours as well as both with and without a train event with the exception of the I-5 Southbound Ramp/Cook Road intersection operating at LOS D with a train event during the PM peak hour design year condition. The 95th percentile queueing is also improved with this alternative relative to the other alternatives and signalization of the intersections allows for prioritization of the ramps to minimize impacts to the I-5 mainline. Additionally, this alternative is consistent with the grant funding application, is compatible with the train crossing (acceptable by BNSF Railroad operators), is lower cost, lower ROW impact, and eliminates the design constraints that the roundabout alternative would otherwise include with similar anticipated safety reduction relative to the No Action condition.

Finally, as this is an interim condition with long-term plans to include grade separation of the railroad crossing, the selected alternative is a reasonable option for providing lower cost improvements while meeting the project needs as described above.

Appendix A: Intersection Alternatives Concept Illustrations



Alternative 1 - Roundabouts

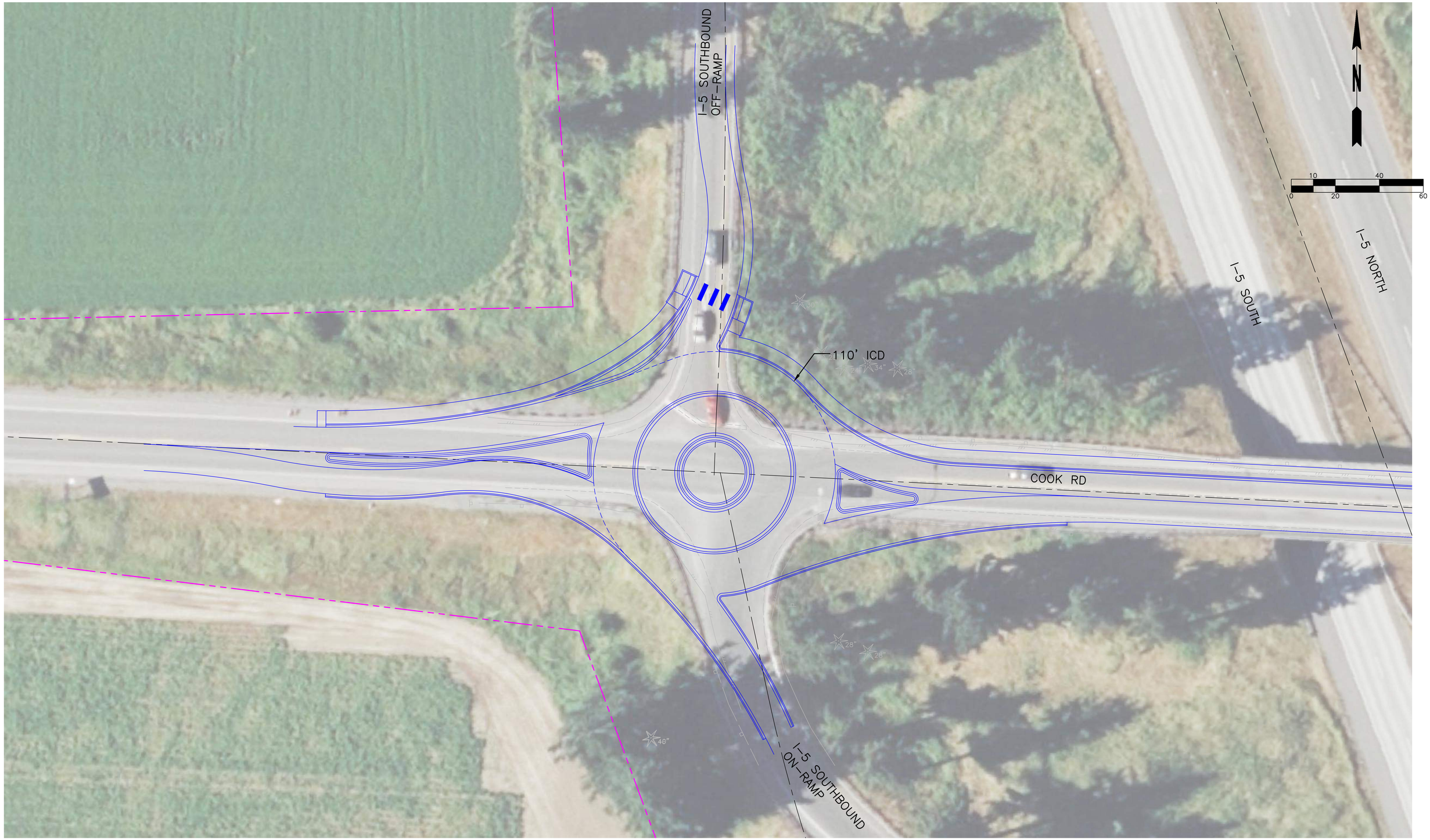
1.23051.00 - Cook Rd and I-5 Interchange Improvements

August 10, 2023

FIGURE
1

transpogroup
WHAT TRANSPORTATION CAN BE.

Aug 10, 2023 – 2:34pm victorm M:\23\1.23051.00 – Cook Rd and I-5 Interchange Improvements\Engineering\CAD\Conceptual\23051-TG-CONCEPT-RAB.dwg Layout: RAB



Cook Rd & I-5 Southbound Ramps - Roundabout Horizontal Layout

August 10, 2023

1.23051.00 - Cook Rd and I-5 Interchange Improvements

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WHAT TRANSPORTATION CAN BE.

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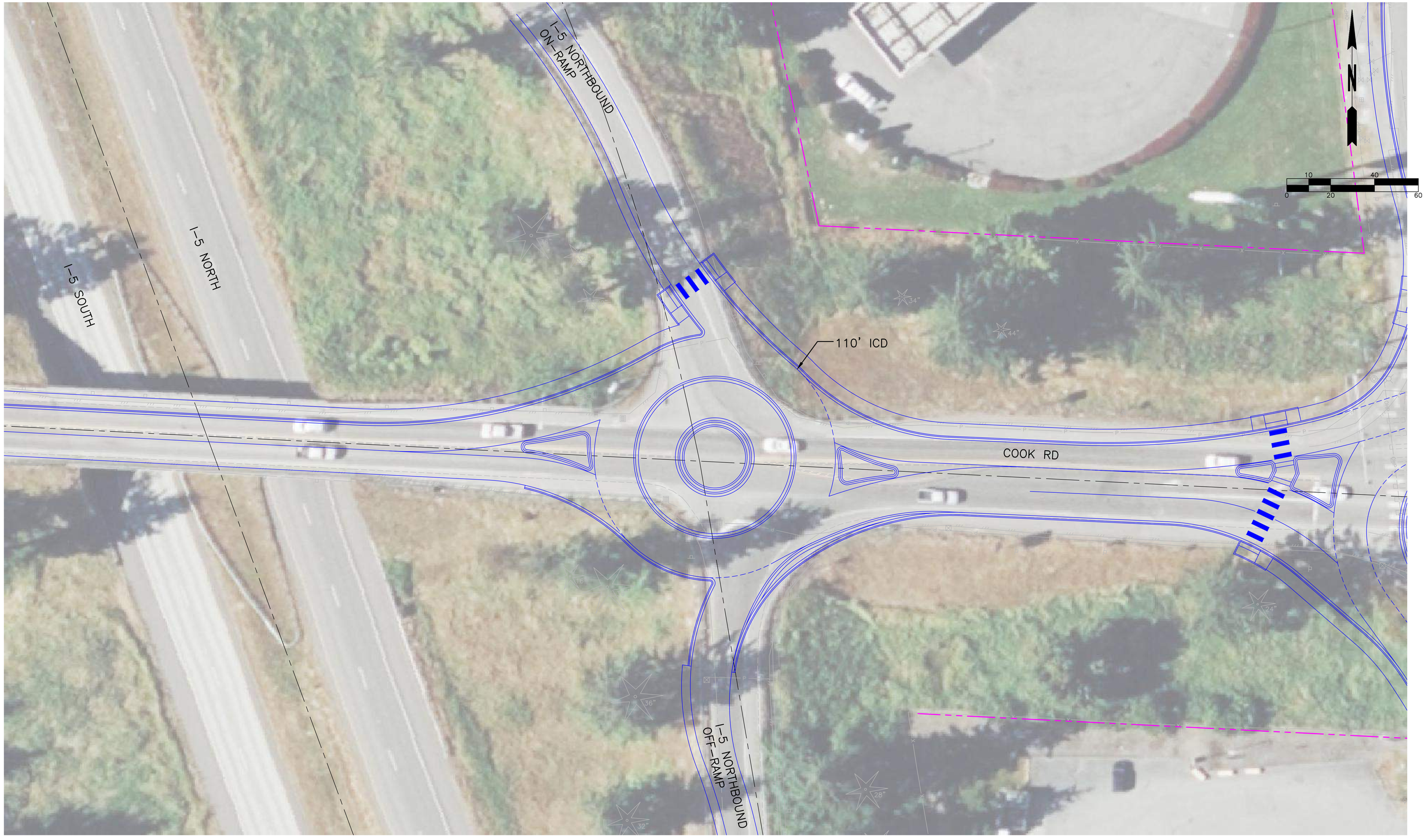

Cook Rd & I-5 Northbound Ramps - Roundabout Horizontal Layout

1.23051.00 - Cook Rd and I-5 Interchange Improvements

August 10, 2023

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WHAT TRANSPORTATION CAN BE.

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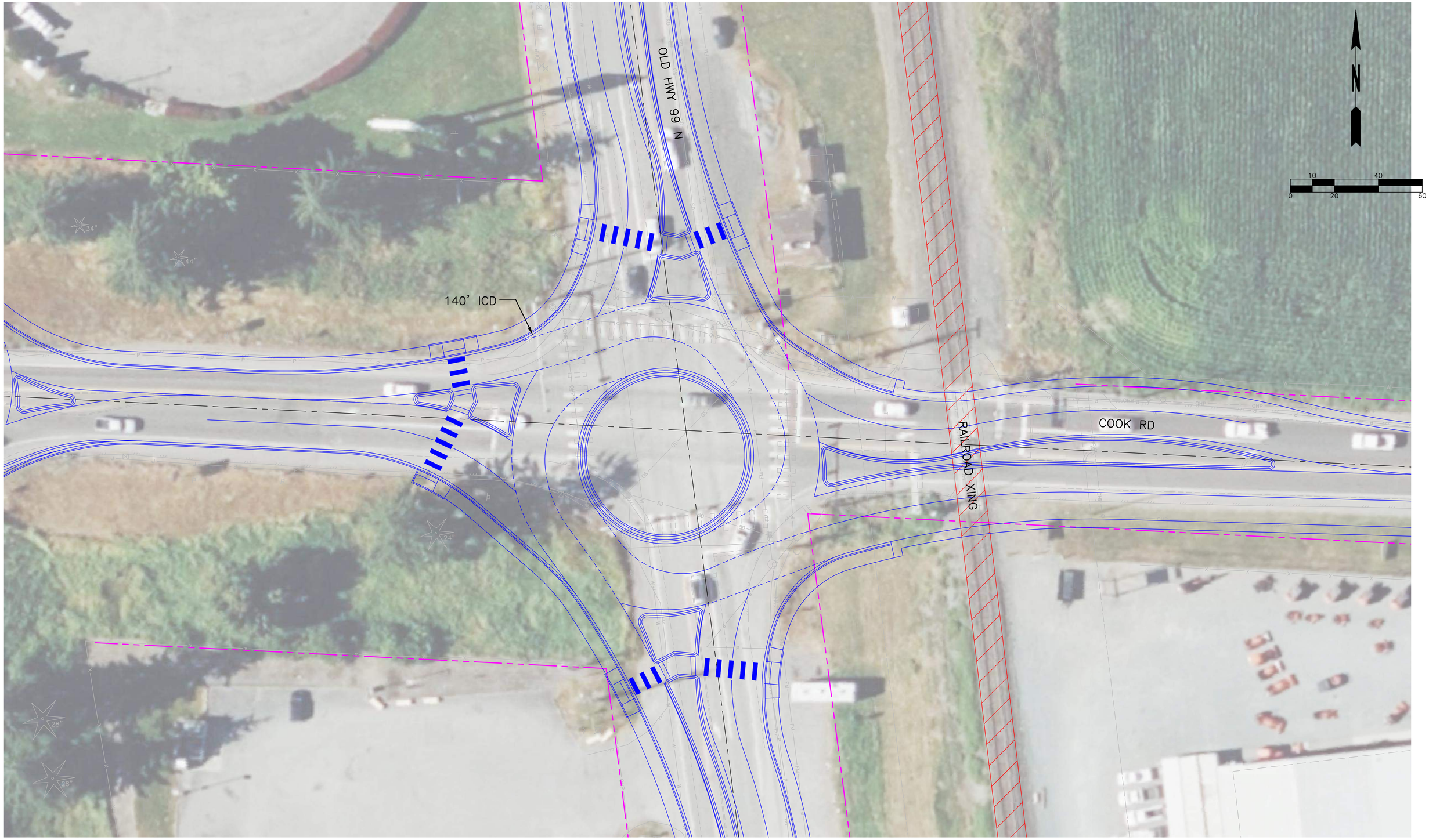


Cook Rd & Old Highway 99 N - Roundabout Horizontal Layout

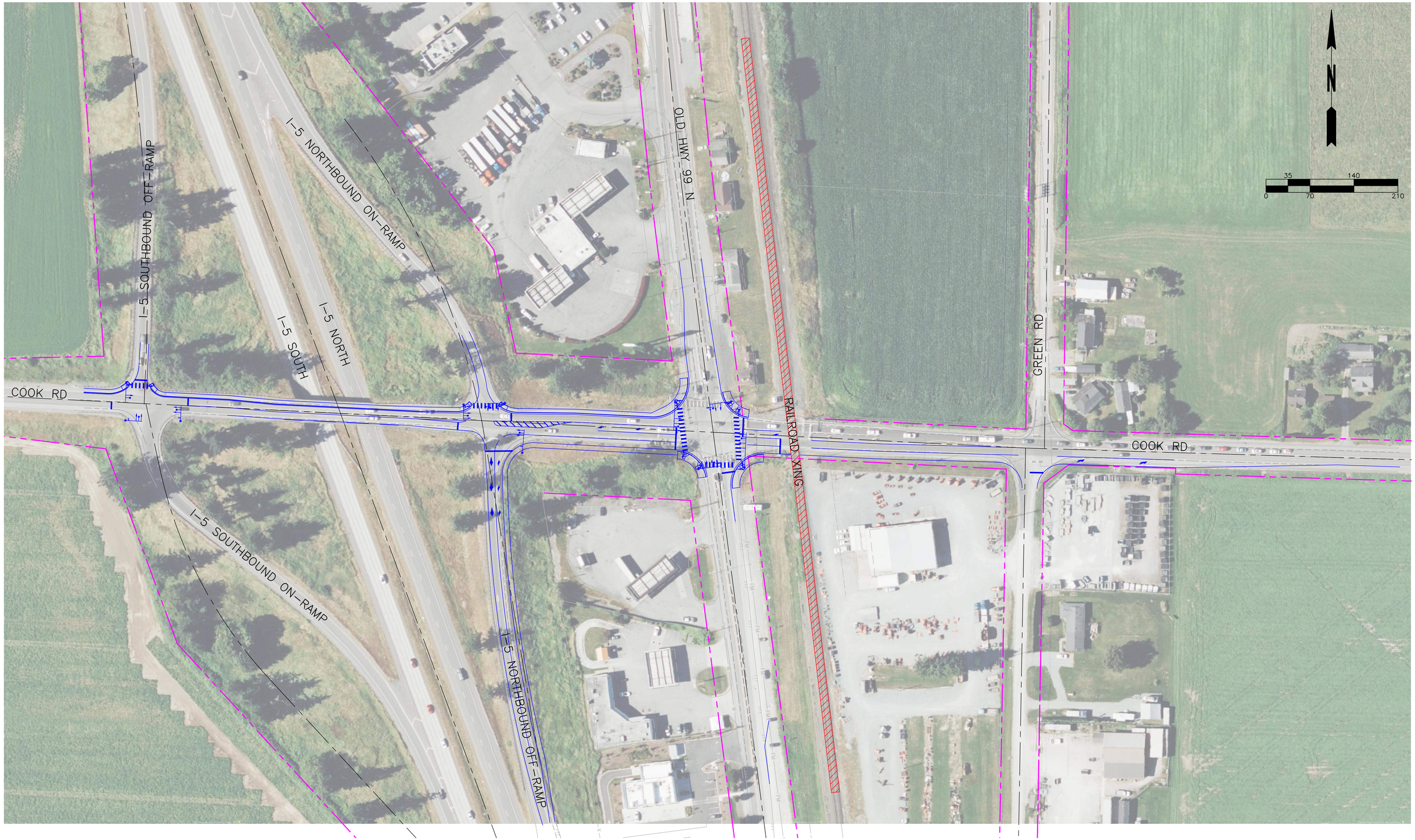
1.23051.00 - Cook Rd and I-5 Interchange Improvements

August 10, 2023

transpogroup
WHAT TRANSPORTATION CAN BE.

FIGURE
4

Aug 10, 2023 - 2:34pm victorm M:\23\1.23051.00 - Cook Rd and I-5 Interchange Improvements\Engineering\CAD\Conceptual\23051-TG-CONCEPT-RAB.dwg Layout: RAB (4)



Alternative 2 - Signalized Intersections

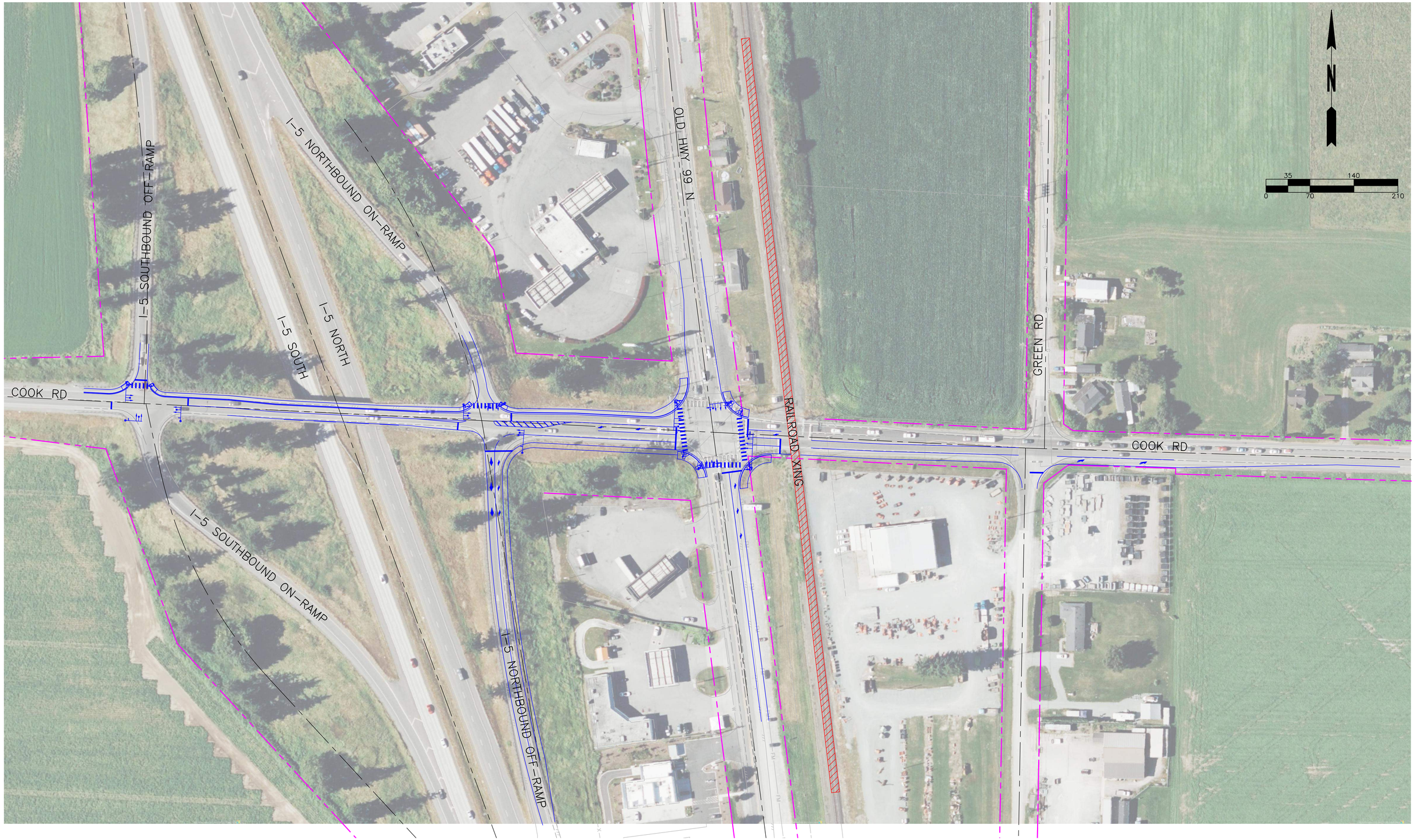
1.23051.00 - Cook Rd and I-5 Interchange Improvements

August 11, 2023

FIGURE
2

transpogroup
WHAT TRANSPORTATION CAN BE.

Aug 11, 2023 - 2:38pm santiagom M:\23\1.23051.00 - Cook Rd and I-5 Interchange Improvements\Engineering\CAD\Conceptual\23051-TG-CONCEPT-SIGNAL.dwg Layout: Alt2



Alternative 3 - Signalized Intersections with NB Right-Turn at Old Hwy 99

1.23051.00 - Cook Rd and I-5 Interchange Improvements

August 11, 2023

transpogroup
WHAT TRANSPORTATION CAN BE.

FIGURE
3

Aug 11, 2023 – 2:38pm santiagom M:\23\1.23051.00 – Cook Rd and I-5 Interchange Improvements\Engineering\CAD\Conceptual\23051-TG-CONCEPT-SIGNAL.dwg Layout: Alt3

Appendix B: LOS Definitions

Highway Capacity Manual 2010/6th Edition

Signalized intersection level of service (LOS) is defined in terms of a weighted average control delay for the entire intersection. Control delay quantifies the increase in travel time that a vehicle experiences due to the traffic signal control as well as provides a surrogate measure for driver discomfort and fuel consumption. Signalized intersection LOS is stated in terms of average control delay per vehicle (in seconds) during a specified time period (e.g., weekday PM peak hour). Control delay is a complex measure based on many variables, including signal phasing and coordination (i.e., progression of movements through the intersection and along the corridor), signal cycle length, and traffic volumes with respect to intersection capacity and resulting queues. Table 1 summarizes the LOS criteria for signalized intersections, as described in the *Highway Capacity Manual 2010* and 6th Edition (Transportation Research Board, 2010 and 2016, respectively).

Table 1. Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)	General Description
A	≤10	Free Flow
B	>10 – 20	Stable Flow (slight delays)
C	>20 – 35	Stable flow (acceptable delays)
D	>35 – 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 – 80	Unstable flow (intolerable delay)
F[1]	>80	Forced flow (congested and queues fail to clear)

Source: *Highway Capacity Manual 2010 and 6th Edition*, Transportation Research Board, 2010 and 2016, respectively.

1. If the volume-to-capacity (v/c) ratio for a lane group exceeds 1.0 LOS F is assigned to the individual lane group. LOS for overall approach or intersection is determined solely by the control delay.

Unsignalized intersection LOS criteria can be further reduced into two intersection types: all-way stop and two-way stop control. All-way stop control intersection LOS is expressed in terms of the weighted average control delay of the overall intersection or by approach. Two-way stop-controlled intersection LOS is defined in terms of the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns. This approach is because major-street through vehicles are assumed to experience zero delay, a weighted average of all movements results in very low overall average delay, and this calculated low delay could mask deficiencies of minor movements. Table 2 shows LOS criteria for unsignalized intersections.

Table 2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)
A	0 – 10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F[1]	>50

Source: *Highway Capacity Manual 2010 and 6th Edition*, Transportation Research Board, 2010 and 2016, respectively.

1. If the volume-to-capacity (v/c) ratio exceeds 1.0, LOS F is assigned an individual lane group for all unsignalized intersections, or minor street approach at two-way stop-controlled intersections. Overall intersection LOS is determined solely by control delay.

Appendix C: Signal Warrants

Warrants Summary

Information			
Analyst	Transpo	Intersection	Cook Rd/I-5 SB Ramps
Agency/Co		Jurisdiction	Skagit/WSDOT
Date Performed	8/9/2023	Units	U.S. Customary
Project ID	Cook Rd ICE	Time Period Analyzed	
East/West Street	Cook Rd	North/South Street	I-5 SB Ramps
File Name	Warrants2	Major Street	East-West

Project Description *Cook Rd ICE*

General				Roadway Network	
Major Street Speed (mph)	50	☑	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	0	☐	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	0

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	1	0	0	1	0	0	0	0	0	1	0
Lane usage		TR			LT						LTR	
Vehicle Volume Averages (vph)	0	147	7	295	84	0	0	0	0	136	3	14
Peds (ped/h) / Gaps (gaps/h)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☑
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☑
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☐
1 (56%) Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☑
Warrant 2: Four-Hour Vehicular Volume	☑
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☑
Warrant 3: Peak Hour	☑
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☐
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☑
Warrant 4: Pedestrian Volume	☐
4 A. Four Hour Volumes --or--	☐
4 B. One-Hour Volumes	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☐
6. Degree of Platooning (Predominant direction or both directions)	☐
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐
7 C. (56%) Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☑

Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐
Warrant 9: Grade Crossing	☐
9 A. Grade Crossing within 140 ft --and--	☐
9 B. Peak-Hour Vehicular Volumes	☐

 HCS7™ Warrants Version 7.2.1 Generated: 8/9/2023 11:36 AM

Warrants Summary

Information			
Analyst	Transpo	Intersection	Cook Rd/I-5 NB Ramps
Agency/Co		Jurisdiction	Skagit/WSDOT
Date Performed	8/9/2023	Units	U.S. Customary
Project ID	Cook Rd ICE	Time Period Analyzed	
East/West Street	Cook Rd	North/South Street	I-5 NB Ramps
File Name	Warrants1	Major Street	East-West

Project Description *Cook Rd ICE*

General				Roadway Network	
Major Street Speed (mph)	50	☑	Population < 10,000	Two Major Routes	☐
Nearest Signal (ft)	250	☐	Coordinated Signal System	Weekend Count	☐
Crashes (per year)	0	☐	Adequate Trials of Alternatives	5-yr Growth Factor	0

Geometry and Traffic	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N	0	1	0	0	1	0	0	1	0	0	0	0
Lane usage		LT			TR			LTR				
Vehicle Volume Averages (vph)	25	254	0	0	372	195	3	0	282	0	0	0
Peds (ped/h) / Gaps (gaps/h)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--
Delay (s/veh) / (veh-hr)	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--	--	0 / 0	--

Warrant 1: Eight-Hour Vehicular Volume	☑
1 A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--	☑
1 B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--	☑
1 (56%) Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)	☑
Warrant 2: Four-Hour Vehicular Volume	☑
2 A. Four-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☑
Warrant 3: Peak Hour	☑
3 A. Peak-Hour Conditions (Minor delay --and-- minor volume --and-- total volume) --or--	☐
3 B. Peak- Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)	☑
Warrant 4: Pedestrian Volume	☐
4 A. Four Hour Volumes --or--	☐
4 B. One-Hour Volumes	☐
Warrant 5: School Crossing	☐
5. Student Volumes --and--	☐
5. Gaps Same Period	☐
Warrant 6: Coordinated Signal System	☐
6. Degree of Platooning (Predominant direction or both directions)	☐
Warrant 7: Crash Experience	☐
7 A. Adequate trials of alternatives, observance and enforcement failed --and--	☐
7 B. Reported crashes susceptible to correction by signal (12-month period) --and--	☐
7 C. (56%) Volumes for Warrants 1A, 1B --or-- 4 are satisfied	☑

Warrant 8: Roadway Network	☐
8 A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2 or 3) --or--	☐
8 B. Weekend Volume (Five hours total)	☐
Warrant 9: Grade Crossing	☐
9 A. Grade Crossing within 140 ft --and--	☐
9 B. Peak-Hour Vehicular Volumes	☐

 HCS7™ Warrants Version 7.2.1 Generated: 8/9/2023 11:03 AM

Appendix D: LOS Worksheets

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1
Total Del/Veh (s)	0.7	0.1	5.6	5.0	75.7	61.3	54.9	21.8

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.3	0.2	0.1
Total Del/Veh (s)	22.4	2.9	4.8	3.0	39.5	14.5	5.9

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.2	0.2	0.0	0.0	0.0	1.0	0.3	0.3	2.7	0.6	2.7
Total Del/Veh (s)	30.5	23.2	16.9	20.0	10.5	6.2	31.3	32.2	16.4	27.7	34.4	19.2

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	19.7

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.6	0.4
Total Del/Veh (s)	1.5	34.5	21.6

Total Network Performance

Denied Del/Veh (s)	0.8
Total Del/Veh (s)	48.3

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	WB	SB
Directions Served	LT	<LR
Maximum Queue (ft)	180	411
Average Queue (ft)	56	190
95th Queue (ft)	132	383
Link Distance (ft)	475	1700
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	150	21	216
Average Queue (ft)	16	1	90
95th Queue (ft)	82	20	182
Link Distance (ft)	475	266	2774
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	150	284	75	108	100	287	109	305	120
Average Queue (ft)	61	196	47	75	69	96	46	124	83
95th Queue (ft)	139	311	80	94	116	216	103	261	140
Link Distance (ft)		266	67	67		2703		1578	
Upstream Blk Time (%)		5	7	41					
Queuing Penalty (veh)		24	25	148					
Storage Bay Dist (ft)	125				75		85		95
Storage Blk Time (%)	1	22			13	11	2	13	6
Queuing Penalty (veh)	2	16			17	12	6	29	11

Intersection: 12: Cook Road

Movement	EB	WB	WB
Directions Served	T	T	T
Maximum Queue (ft)	2	225	680
Average Queue (ft)	0	54	313
95th Queue (ft)	2	204	634
Link Distance (ft)	67		4265
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		200	
Storage Blk Time (%)		0	20
Queuing Penalty (veh)		0	72

Network Summary

Network wide Queuing Penalty: 363

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.2	0.2	0.2	0.1
Total Del/Veh (s)	0.7	0.2	6.0	5.4	42.9	43.5	30.8	13.0

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.3	0.3	0.1
Total Del/Veh (s)	25.9	11.7	5.1	3.1	72.7	76.0	24.8

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.3	0.0	0.0	0.5	1.1	0.4	0.4	2.6	0.6	2.7
Total Del/Veh (s)	46.7	26.2	20.1	26.6	13.5	8.4	152.6	155.1	141.0	36.7	30.7	17.0

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	52.5

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.5	0.2
Total Del/Veh (s)	1.5	47.9	23.4

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	86.4

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	3	164	308
Average Queue (ft)	0	54	123
95th Queue (ft)	3	121	263
Link Distance (ft)	581	475	1700
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	317	25	678
Average Queue (ft)	88	1	304
95th Queue (ft)	225	11	691
Link Distance (ft)	475	266	2774
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	150	286	67	125	100	1135	109	200	119
Average Queue (ft)	100	255	30	78	66	699	50	69	66
95th Queue (ft)	178	333	64	103	125	1431	98	155	122
Link Distance (ft)		266	67	67		2703		1578	
Upstream Blk Time (%)		15	2	50					
Queuing Penalty (veh)		108	6	159					
Storage Bay Dist (ft)	125				75		85		95
Storage Blk Time (%)	4	32			6	66	3	5	4
Queuing Penalty (veh)	24	42			24	63	7	9	7

Intersection: 12: Cook Road

Movement	EB	WB	WB
Directions Served	T	T	T
Maximum Queue (ft)	11	224	831
Average Queue (ft)	0	36	365
95th Queue (ft)	8	171	731
Link Distance (ft)	67		4265
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)		200	
Storage Blk Time (%)		0	28
Queuing Penalty (veh)		0	89

Network Summary

Network wide Queuing Penalty: 537

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	30.0	37.4	34.5	7.1
Total Del/Veh (s)	0.7	0.1	6.1	5.7	475.1	473.4	415.4	111.1

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.3	0.2	0.1
Total Del/Veh (s)	28.4	5.5	4.9	3.0	38.2	21.8	7.7

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.8	0.3	0.4	0.0	0.0	0.0	1.0	0.3	0.3	2.6	0.9	2.6
Total Del/Veh (s)	48.2	31.0	23.6	27.6	13.0	8.5	41.9	33.2	18.1	51.7	55.4	41.5

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	30.2

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	1.2	0.8
Total Del/Veh (s)	1.6	192.4	123.8

Total Network Performance

Denied Del/Veh (s)	4.6
Total Del/Veh (s)	155.9

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	7	206	1318
Average Queue (ft)	0	67	905
95th Queue (ft)	5	149	1821
Link Distance (ft)	581	475	1700
Upstream Blk Time (%)			15
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	184	15	302
Average Queue (ft)	35	1	110
95th Queue (ft)	117	7	232
Link Distance (ft)	475	266	2774
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	150	285	83	126	100	284	109	684	120
Average Queue (ft)	89	234	60	84	77	114	50	341	106
95th Queue (ft)	170	328	88	112	118	247	118	632	147
Link Distance (ft)		266	67	67		2703		1578	
Upstream Blk Time (%)		10	21	55					
Queuing Penalty (veh)		59	91	236					
Storage Bay Dist (ft)	125				75		85		95
Storage Blk Time (%)	1	32			19	14	4	35	18
Queuing Penalty (veh)	7	32			25	15	19	106	52

Intersection: 12: Cook Road

Movement	EB	WB	WB
Directions Served	T	T	T
Maximum Queue (ft)	21	225	2859
Average Queue (ft)	1	132	1606
95th Queue (ft)	11	301	3290
Link Distance (ft)	67		4265
Upstream Blk Time (%)	0		2
Queuing Penalty (veh)	0		0
Storage Bay Dist (ft)		200	
Storage Blk Time (%)		0	53
Queuing Penalty (veh)		1	227

Network Summary

Network wide Queuing Penalty: 871

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.3	0.2	0.0	0.0	0.2	0.1	0.2	0.2
Total Del/Veh (s)	1.3	0.4	8.5	7.9	111.0	103.2	97.7	25.4

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.4	0.3	0.1	0.1	15.8	29.7	6.8
Total Del/Veh (s)	40.2	27.9	5.2	3.3	579.1	597.8	150.1

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	180.7	198.7	190.9	2.7	0.6	2.7
Total Del/Veh (s)	59.8	29.5	23.8	26.8	15.5	9.2	544.6	547.6	540.9	43.8	33.3	16.9

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	51.2
Total Del/Veh (s)	155.5

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.6	0.3
Total Del/Veh (s)	1.4	138.5	67.9

Total Network Performance

Denied Del/Veh (s)	51.0
Total Del/Veh (s)	282.5

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	55	226	499
Average Queue (ft)	4	85	221
95th Queue (ft)	31	169	471
Link Distance (ft)	581	475	1700
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	468	30	2526
Average Queue (ft)	213	2	1748
95th Queue (ft)	453	13	3107
Link Distance (ft)	475	266	2774
Upstream Blk Time (%)	1		18
Queuing Penalty (veh)	6		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	150	288	72	125	100	2759	109	251	120
Average Queue (ft)	132	274	33	83	62	2415	55	86	74
95th Queue (ft)	176	307	67	111	127	3285	109	195	127
Link Distance (ft)		266	67	67		2703		1578	
Upstream Blk Time (%)		24	3	58		62			
Queuing Penalty (veh)		218	10	196		0			
Storage Bay Dist (ft)	125				75		85		95
Storage Blk Time (%)	18	35			6	73	5	6	4
Queuing Penalty (veh)	120	75			31	70	14	14	7

Intersection: 12: Cook Road

Movement	EB	WB	WB
Directions Served	T	T	T
Maximum Queue (ft)	4	225	1540
Average Queue (ft)	0	59	885
95th Queue (ft)	4	221	1676
Link Distance (ft)	67		4265
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		200	
Storage Blk Time (%)		0	55
Queuing Penalty (veh)		0	185

Network Summary

Network wide Queuing Penalty: 945

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1
Total Del/Veh (s)	3.4	0.1	5.9	5.4	118.5	134.6	107.3	33.2

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	7.8	0.7	0.1	0.1	0.3	0.2	0.2
Total Del/Veh (s)	31.8	19.8	5.1	3.2	119.0	77.2	20.2

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	1.4	0.8	1.7	0.0	0.0	0.0	0.9	0.3	0.3	2.6	0.7	2.7
Total Del/Veh (s)	37.0	32.8	27.9	23.4	10.6	4.9	39.1	38.9	28.2	39.1	38.7	24.2

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	24.9

12: Cook Road Performance by movement

Movement	EBT	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.2	0.7	0.1	0.1	0.5
Total Del/Veh (s)	3.3	120.8	867.1	1438.7	78.1

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	101.8

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	75	178	533
Average Queue (ft)	4	60	274
95th Queue (ft)	42	137	570
Link Distance (ft)	581	475	1670
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	459	12	715
Average Queue (ft)	70	0	216
95th Queue (ft)	288	6	625
Link Distance (ft)	475	267	2744
Upstream Blk Time (%)	2		
Queuing Penalty (veh)	7		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	149	284	77	112	100	399	107	432	120
Average Queue (ft)	67	220	48	73	70	122	49	147	86
95th Queue (ft)	149	334	89	110	120	301	110	343	141
Link Distance (ft)		267	67	67		2672		1543	
Upstream Blk Time (%)		17	11	42					
Queuing Penalty (veh)		88	40	149					
Storage Bay Dist (ft)	125				75		85		95
Storage Blk Time (%)	0	33			13	18	5	13	9
Queuing Penalty (veh)	1	25			16	20	15	29	16

Intersection: 12: Cook Road

Movement	EB	WB	WB	NB	SB
Directions Served	T	T	T	T	T
Maximum Queue (ft)	70	225	2179	33	23
Average Queue (ft)	10	78	909	9	7
95th Queue (ft)	48	244	2184	33	24
Link Distance (ft)	67		4280	276	226
Upstream Blk Time (%)	8				
Queuing Penalty (veh)	36				
Storage Bay Dist (ft)		200			
Storage Blk Time (%)		0	38		
Queuing Penalty (veh)		0	135		

Network Summary

Network wide Queuing Penalty: 577

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.2	0.2	0.2	0.1
Total Del/Veh (s)	5.6	4.2	6.3	5.6	62.7	53.2	47.5	18.4

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	1.0	0.2	0.1	0.1	1.2	2.1	0.7
Total Del/Veh (s)	47.6	34.1	5.7	3.7	284.2	261.9	80.7

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.4	0.2	0.0	0.1	0.0	1.0	0.5	0.5	2.7	0.5	2.7
Total Del/Veh (s)	52.8	34.7	26.5	27.6	14.0	9.8	286.6	297.7	287.6	52.7	31.4	17.7

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	92.0

12: Cook Road Performance by movement

Movement	EBT	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.6	0.1	0.1	0.3
Total Del/Veh (s)	2.9	175.4	1010.2	1029.1	90.7

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	192.7

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	190	171	388
Average Queue (ft)	14	54	150
95th Queue (ft)	93	122	335
Link Distance (ft)	581	475	1670
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	486	48	1708
Average Queue (ft)	161	4	870
95th Queue (ft)	405	49	1982
Link Distance (ft)	475	267	2744
Upstream Blk Time (%)	5	0	3
Queuing Penalty (veh)	18	3	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	150	287	70	126	100	1910	109	324	120
Average Queue (ft)	102	268	30	78	63	1254	54	83	64
95th Queue (ft)	181	321	67	121	128	2308	108	211	121
Link Distance (ft)		267	67	67		2672		1543	
Upstream Blk Time (%)		26	3	50		0			
Queuing Penalty (veh)		188	8	162		0			
Storage Bay Dist (ft)	125				75		85		95
Storage Blk Time (%)	4	41			4	73	7	5	3
Queuing Penalty (veh)	23	53			15	69	16	10	5

Intersection: 12: Cook Road

Movement	EB	WB	WB	NB	SB
Directions Served	T	T	T	T	T
Maximum Queue (ft)	78	224	2013	35	21
Average Queue (ft)	10	45	1065	10	6
95th Queue (ft)	52	188	2263	31	24
Link Distance (ft)	67		4280	276	226
Upstream Blk Time (%)	8				
Queuing Penalty (veh)	59				
Storage Bay Dist (ft)		200			
Storage Blk Time (%)		0	53		
Queuing Penalty (veh)		0	167		

Network Summary

Network wide Queuing Penalty: 796

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	8.1	6.2	8.4	2.0
Total Del/Veh (s)	7.2	8.4	5.9	5.5	387.2	361.9	381.1	98.5

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	4.6	0.4	0.1	0.1	0.3	0.2	0.2
Total Del/Veh (s)	55.8	29.7	4.7	3.0	146.3	156.4	36.3

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	2.6	2.6	0.9	0.0	0.0	0.0	0.9	0.3	0.3	4.3	3.2	4.7
Total Del/Veh (s)	53.9	43.8	32.9	30.5	13.3	6.9	61.2	49.0	39.8	93.1	88.0	72.4

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	1.8
Total Del/Veh (s)	45.0

12: Cook Road Performance by movement

Movement	EBT	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.4	112.5	0.1	0.1	71.4
Total Del/Veh (s)	3.3	469.3	769.7	1495.5	300.9

Total Network Performance

Denied Del/Veh (s)	43.3
Total Del/Veh (s)	272.6

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	194	196	1311
Average Queue (ft)	13	62	788
95th Queue (ft)	88	143	1502
Link Distance (ft)	581	475	1670
Upstream Blk Time (%)			5
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	487	8	928
Average Queue (ft)	122	0	398
95th Queue (ft)	371	4	922
Link Distance (ft)	475	267	2744
Upstream Blk Time (%)	5		
Queuing Penalty (veh)	18		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	150	285	82	120	100	535	109	1083	120
Average Queue (ft)	90	256	56	77	75	168	56	520	104
95th Queue (ft)	174	334	94	120	121	419	122	1120	154
Link Distance (ft)		267	67	67		2672		1543	
Upstream Blk Time (%)		28	22	52				3	
Queuing Penalty (veh)		166	96	221				0	
Storage Bay Dist (ft)	125				75		85		95
Storage Blk Time (%)	3	46			20	21	8	40	19
Queuing Penalty (veh)	15	46			27	23	35	121	52

Intersection: 12: Cook Road

Movement	EB	WB	WB	NB	SB
Directions Served	T	T	T	T	T
Maximum Queue (ft)	72	225	4339	37	21
Average Queue (ft)	10	113	3454	9	7
95th Queue (ft)	49	282	5102	31	28
Link Distance (ft)	67		4280	276	226
Upstream Blk Time (%)	8		39		
Queuing Penalty (veh)	41		0		
Storage Bay Dist (ft)		200			
Storage Blk Time (%)		1	61		
Queuing Penalty (veh)		3	260		

Network Summary

Network wide Queuing Penalty: 1123

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	5.4	7.4	0.0	0.0	67.2	83.2	72.8	15.8
Total Del/Veh (s)	30.5	32.0	11.5	10.1	673.1	597.5	641.0	151.9

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.4	2.9	0.1	0.1	168.0	196.9	47.7
Total Del/Veh (s)	85.2	64.9	5.1	3.3	987.6	922.0	228.2

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	349.2	365.4	349.4	2.8	0.6	2.7
Total Del/Veh (s)	65.3	38.1	30.5	31.5	15.9	10.1	649.0	640.0	632.6	60.7	37.6	23.7

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	99.4
Total Del/Veh (s)	180.4

12: Cook Road Performance by movement

Movement	EBT	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.5	0.1		0.3
Total Del/Veh (s)	2.8	292.0	1400.1		151.6

Total Network Performance

Denied Del/Veh (s)	121.8
Total Del/Veh (s)	436.2

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	604	324	1601
Average Queue (ft)	119	101	1054
95th Queue (ft)	457	235	1930
Link Distance (ft)	581	475	1670
Upstream Blk Time (%)	6	0	25
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB
Directions Served	LT	TR	LTR
Maximum Queue (ft)	492	32	2795
Average Queue (ft)	345	2	2313
95th Queue (ft)	589	19	3235
Link Distance (ft)	475	267	2744
Upstream Blk Time (%)	18		45
Queuing Penalty (veh)	99		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	150	288	72	128	100	2733	108	419	120
Average Queue (ft)	118	274	33	80	55	2571	56	108	69
95th Queue (ft)	193	310	68	124	121	3048	108	333	129
Link Distance (ft)		267	67	67		2672		1543	
Upstream Blk Time (%)		34	3	55		76			
Queuing Penalty (veh)		308	11	185		0			
Storage Bay Dist (ft)	125				75		85		95
Storage Blk Time (%)	17	43			6	76	9	6	5
Queuing Penalty (veh)	118	93			33	72	24	13	8

Intersection: 12: Cook Road

Movement	EB	WB	WB	NB	SB
Directions Served	T	T	T	T	T
Maximum Queue (ft)	75	225	2848	22	12
Average Queue (ft)	10	67	1729	7	2
95th Queue (ft)	52	234	3273	29	13
Link Distance (ft)	67		4280	276	226
Upstream Blk Time (%)	8				
Queuing Penalty (veh)	70				
Storage Bay Dist (ft)		200			
Storage Blk Time (%)		0	65		
Queuing Penalty (veh)		0	219		

Network Summary

Network wide Queuing Penalty: 1252

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.1	0.2	0.2	0.1	0.2	0.4	0.2	0.2
Total Del/Veh (s)	5.3	2.3	13.2	11.8	34.4	32.2	25.0	17.2

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	27.5	4.8	7.1	4.5	54.2	7.1	6.3

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	2.1	0.3	0.4	3.3	0.7	3.3
Total Del/Veh (s)	23.6	13.5	5.1	13.6	8.0	4.3	53.9	49.5	23.1	42.1	48.1	22.4

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	19.5

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.0	16.0	10.0

Total Network Performance

Denied Del/Veh (s)	0.9
Total Del/Veh (s)	41.9

MOVEMENT SUMMARY

Site: 101 [Cook Rd/I-5 SB (Site Folder: Roundabout Alternative - 2028 AM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Cook Rd														
1	L2	535	16.0	569	16.0	0.608	9.5	LOS A	0.0	0.0	0.00	0.64	0.00	32.3
6	T1	100	16.0	106	16.0	0.608	4.4	LOS A	0.0	0.0	0.00	0.64	0.00	32.6
Approach		635	16.0	676	16.0	0.608	8.7	LOS A	0.0	0.0	0.00	0.64	0.00	32.3
North: I-5 SB Off Ramp														
7	L2	215	6.0	229	6.0	0.383	15.8	LOS B	2.2	58.7	0.74	0.92	0.78	24.7
4	T1	5	6.0	5	6.0	0.383	10.8	LOS B	2.2	58.7	0.74	0.92	0.78	31.7
14	R2	25	6.0	27	6.0	0.383	10.6	LOS B	2.2	58.7	0.74	0.92	0.78	31.0
Approach		245	6.0	261	6.0	0.383	15.2	LOS B	2.2	58.7	0.74	0.92	0.78	25.6
West: Cook Rd														
2	T1	90	16.0	96	16.0	0.211	12.2	LOS B	1.1	32.0	0.76	0.85	0.76	29.9
12	R2	10	16.0	11	16.0	0.211	12.1	LOS B	1.1	32.0	0.76	0.85	0.76	32.0
Approach		100	16.0	106	16.0	0.211	12.2	LOS B	1.1	32.0	0.76	0.85	0.76	30.2
All Vehicles		980	13.5	1043	13.5	0.608	10.7	LOS B	2.2	58.7	0.26	0.73	0.27	30.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Cook Rd/I-5 NB (Site Folder: Roundabout Alternative - 2028 AM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: I-5 NB Off Ramp														
3	L2	1	15.0	1	15.0	0.290	12.0	LOS B	1.4	40.1	0.51	0.66	0.51	27.8
8	T1	5	15.0	5	15.0	0.290	6.9	LOS A	1.4	40.1	0.51	0.66	0.51	35.6
18	R2	230	15.0	237	15.0	0.290	6.8	LOS A	1.4	40.1	0.51	0.66	0.51	31.4
Approach		236	15.0	243	15.0	0.290	6.8	LOS A	1.4	40.1	0.51	0.66	0.51	31.5
East: Cook Rd														
6	T1	635	12.0	655	12.0	0.789	3.8	LOS A	13.0	357.2	0.28	0.39	0.28	29.7
16	R2	235	12.0	242	12.0	0.789	3.5	LOS A	13.0	357.2	0.28	0.39	0.28	33.4
Approach		870	12.0	897	12.0	0.789	3.7	LOS A	13.0	357.2	0.28	0.39	0.28	31.3
West: Cook Rd														
5	L2	5	8.0	5	8.0	0.268	9.4	LOS A	0.0	0.0	0.00	0.43	0.00	35.7
2	T1	305	8.0	314	8.0	0.268	4.4	LOS A	0.0	0.0	0.00	0.43	0.00	28.5
Approach		310	8.0	320	8.0	0.268	4.5	LOS A	0.0	0.0	0.00	0.43	0.00	28.8
All Vehicles		1416	11.6	1460	11.6	0.789	4.4	LOS A	13.0	357.2	0.26	0.44	0.26	30.9

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [Cook Rd/Old Hwy 99 N (Site Folder: Roundabout Alternative - 2028 AM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Hwy 99														
3	L2	110	22.0	116	22.0	0.173	12.7	LOS B	0.7	20.9	0.55	0.81	0.55	27.8
8	T1	65	22.0	68	22.0	0.182	7.2	LOS A	0.8	22.5	0.55	0.69	0.55	35.3
18	R2	60	22.0	63	22.0	0.182	7.2	LOS A	0.8	22.5	0.55	0.69	0.55	34.1
Approach		235	22.0	247	22.0	0.182	9.8	LOS A	0.8	22.5	0.55	0.75	0.55	31.9
East: Cook Rd														
1	L2	95	9.0	100	9.0	0.172	12.3	LOS B	0.6	17.2	0.46	0.76	0.46	33.2
6	T1	585	9.0	616	9.0	0.652	7.4	LOS A	5.0	135.0	0.63	0.72	0.71	27.2
16	R2	35	9.0	37	9.0	0.652	7.3	LOS A	5.0	135.0	0.63	0.72	0.71	34.1
Approach		715	9.0	753	9.0	0.652	8.0	LOS A	5.0	135.0	0.61	0.73	0.68	28.6
North: Old Hwy 99														
7	L2	65	21.0	68	21.0	0.215	18.2	LOS B	0.8	24.6	0.69	0.89	0.69	30.4
4	T1	115	21.0	121	21.0	0.508	11.5	LOS B	3.1	91.4	0.78	0.95	0.97	33.3
14	R2	165	21.0	174	21.0	0.508	11.5	LOS B	3.1	91.4	0.78	0.95	0.97	25.1
Approach		345	21.0	363	21.0	0.508	12.8	LOS B	3.1	91.4	0.77	0.94	0.92	29.3
West: Cook Rd														
5	L2	75	13.0	79	13.0	0.146	11.5	LOS B	0.6	15.3	0.48	0.77	0.48	30.1
2	T1	350	13.0	368	13.0	0.525	5.8	LOS A	3.2	89.1	0.58	0.68	0.61	33.9
12	R2	115	13.0	121	13.0	0.525	5.7	LOS A	3.2	89.1	0.58	0.68	0.61	32.1
Approach		540	13.0	568	13.0	0.525	6.6	LOS A	3.2	89.1	0.57	0.69	0.59	32.9
All Vehicles		1835	14.1	1932	14.1	0.652	8.7	LOS A	5.0	135.0	0.62	0.76	0.68	30.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Cook Rd/I-5 SB - Copy (2) (Site Folder: Roundabout Alternative - 2028 PM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Cook Rd														
1	L2	400	8.0	417	8.0	0.449	9.4	LOS A	0.0	0.0	0.00	0.64	0.00	32.8
6	T1	115	8.0	120	8.0	0.449	4.4	LOS A	0.0	0.0	0.00	0.64	0.00	33.1
Approach		515	8.0	536	8.0	0.449	8.3	LOS A	0.0	0.0	0.00	0.64	0.00	32.9
North: I-5 SB Off Ramp														
7	L2	185	6.0	193	6.0	0.276	13.2	LOS B	1.4	37.0	0.61	0.81	0.61	25.8
4	T1	5	6.0	5	6.0	0.276	8.1	LOS A	1.4	37.0	0.61	0.81	0.61	32.9
14	R2	20	6.0	21	6.0	0.276	8.0	LOS A	1.4	37.0	0.61	0.81	0.61	32.1
Approach		210	6.0	219	6.0	0.276	12.6	LOS B	1.4	37.0	0.61	0.81	0.61	26.7
West: Cook Rd														
2	T1	200	4.0	208	4.0	0.295	8.7	LOS A	1.6	42.4	0.68	0.77	0.68	32.7
12	R2	10	4.0	10	4.0	0.295	8.6	LOS A	1.6	42.4	0.68	0.77	0.68	33.9
Approach		210	4.0	219	4.0	0.295	8.7	LOS A	1.6	42.4	0.68	0.77	0.68	32.7
All Vehicles		935	6.7	974	6.7	0.449	9.3	LOS A	1.6	42.4	0.29	0.71	0.29	31.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Cook Rd/I-5 NB - Copy (2) (Site Folder: Roundabout Alternative - 2028 PM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: I-5 NB Off Ramp														
3	L2	5	6.0	5	6.0	0.476	12.7	LOS B	2.9	76.9	0.62	0.74	0.64	27.6
8	T1	1	6.0	1	6.0	0.476	7.7	LOS A	2.9	76.9	0.62	0.74	0.64	35.3
18	R2	380	6.0	418	6.0	0.476	7.5	LOS A	2.9	76.9	0.62	0.74	0.64	30.9
Approach		386	6.0	424	6.0	0.476	7.6	LOS A	2.9	76.9	0.62	0.74	0.64	30.8
East: Cook Rd														
6	T1	505	7.0	555	7.0	0.733	4.2	LOS A	8.5	224.8	0.41	0.44	0.41	29.3
16	R2	265	7.0	291	7.0	0.733	4.0	LOS A	8.5	224.8	0.41	0.44	0.41	33.2
Approach		770	7.0	846	7.0	0.733	4.2	LOS A	8.5	224.8	0.41	0.44	0.41	31.3
West: Cook Rd														
5	L2	35	6.0	38	6.0	0.316	9.4	LOS A	0.0	0.0	0.00	0.46	0.00	35.4
2	T1	315	6.0	346	6.0	0.316	4.4	LOS A	0.0	0.0	0.00	0.46	0.00	28.1
Approach		350	6.0	385	6.0	0.316	4.9	LOS A	0.0	0.0	0.00	0.46	0.00	29.4
All Vehicles		1506	6.5	1655	6.5	0.733	5.2	LOS A	8.5	224.8	0.37	0.52	0.38	30.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [Cook Rd/Old Hwy 99 N - Copy (2) (Site Folder: Roundabout Alternative - 2028 PM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Hwy 99														
3	L2	95	6.0	99	6.0	0.216	14.9	LOS B	0.8	22.2	0.62	0.88	0.62	26.7
8	T1	220	6.0	229	6.0	0.504	8.6	LOS A	3.1	81.3	0.71	0.86	0.82	35.0
18	R2	175	6.0	182	6.0	0.504	8.6	LOS A	3.1	81.3	0.71	0.86	0.82	33.9
Approach		490	6.0	510	6.0	0.504	9.8	LOS A	3.1	81.3	0.69	0.87	0.78	33.3
East: Cook Rd														
1	L2	45	4.0	47	4.0	0.086	12.8	LOS B	0.3	8.1	0.51	0.78	0.51	33.1
6	T1	530	4.0	552	4.0	0.650	8.3	LOS A	5.2	133.5	0.72	0.84	0.86	26.9
16	R2	65	4.0	68	4.0	0.650	8.3	LOS A	5.2	133.5	0.72	0.84	0.86	33.9
Approach		640	4.0	667	4.0	0.650	8.7	LOS A	5.2	133.5	0.70	0.84	0.84	28.4
North: Old Hwy 99														
7	L2	65	10.0	68	10.0	0.150	14.8	LOS B	0.6	16.7	0.64	0.88	0.64	32.0
4	T1	90	10.0	94	10.0	0.317	7.9	LOS A	1.6	44.5	0.67	0.78	0.67	35.2
14	R2	135	10.0	141	10.0	0.317	7.8	LOS A	1.6	44.5	0.67	0.78	0.67	26.9
Approach		290	10.0	302	10.0	0.317	9.4	LOS A	1.6	44.5	0.67	0.80	0.67	31.1
West: Cook Rd														
5	L2	130	3.0	135	3.0	0.202	10.4	LOS B	0.8	21.2	0.42	0.72	0.42	31.3
2	T1	490	3.0	510	3.0	0.550	4.8	LOS A	3.5	90.3	0.51	0.55	0.51	34.5
12	R2	100	3.0	104	3.0	0.550	4.7	LOS A	3.5	90.3	0.51	0.55	0.51	32.8
Approach		720	3.0	750	3.0	0.550	5.8	LOS A	3.5	90.3	0.49	0.58	0.49	33.6
All Vehicles		2140	4.9	2229	4.9	0.650	8.1	LOS A	5.2	133.5	0.63	0.75	0.69	31.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Cook Rd/I-5 SB - Copy (Site Folder: Roundabout Alternative - 2045 AM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Cook Rd														
1	L2	535	16.0	535	16.0	0.646	9.5	LOS A	0.0	0.0	0.00	0.61	0.00	32.8
6	T1	255	16.0	255	16.0	0.646	4.4	LOS A	0.0	0.0	0.00	0.61	0.00	33.2
Approach		790	16.0	790	16.0	0.646	7.9	LOS A	0.0	0.0	0.00	0.61	0.00	32.9
North: I-5 SB Off Ramp														
7	L2	225	6.0	225	6.0	0.373	16.5	LOS B	2.3	60.8	0.79	0.92	0.81	24.4
4	T1	5	6.0	5	6.0	0.373	11.5	LOS B	2.3	60.8	0.79	0.92	0.81	31.5
14	R2	35	6.0	35	6.0	0.373	11.3	LOS B	2.3	60.8	0.79	0.92	0.81	30.8
Approach		265	6.0	265	6.0	0.373	15.7	LOS B	2.3	60.8	0.79	0.92	0.81	25.6
West: Cook Rd														
2	T1	120	16.0	120	16.0	0.212	10.6	LOS B	1.2	33.9	0.75	0.81	0.75	30.9
12	R2	10	16.0	10	16.0	0.212	10.5	LOS B	1.2	33.9	0.75	0.81	0.75	32.7
Approach		130	16.0	130	16.0	0.212	10.6	LOS B	1.2	33.9	0.75	0.81	0.75	31.1
All Vehicles		1185	13.8	1185	13.8	0.646	9.9	LOS A	2.3	60.8	0.26	0.70	0.26	30.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Cook Rd/I-5 NB - Copy (Site Folder: Roundabout Alternative - 2045 AM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: I-5 NB Off Ramp														
3	L2	1	15.0	1	15.0	0.269	11.8	LOS B	1.3	37.5	0.50	0.65	0.50	28.0
8	T1	5	15.0	5	15.0	0.269	6.7	LOS A	1.3	37.5	0.50	0.65	0.50	35.7
18	R2	245	15.0	245	15.0	0.269	6.6	LOS A	1.3	37.5	0.50	0.65	0.50	31.6
Approach		251	15.0	251	15.0	0.269	6.6	LOS A	1.3	37.5	0.50	0.65	0.50	31.7
East: Cook Rd														
6	T1	790	12.0	790	12.0	0.826	3.9	LOS A	15.2	417.0	0.35	0.38	0.35	29.1
16	R2	240	12.0	240	12.0	0.826	3.7	LOS A	15.2	417.0	0.35	0.38	0.35	33.1
Approach		1030	12.0	1030	12.0	0.826	3.8	LOS A	15.2	417.0	0.35	0.38	0.35	30.7
West: Cook Rd														
5	L2	10	8.0	10	8.0	0.266	9.4	LOS A	0.0	0.0	0.00	0.43	0.00	35.6
2	T1	340	8.0	340	8.0	0.266	4.4	LOS A	0.0	0.0	0.00	0.43	0.00	28.5
Approach		350	8.0	350	8.0	0.266	4.5	LOS A	0.0	0.0	0.00	0.43	0.00	28.9
All Vehicles		1631	11.6	1631	11.6	0.826	4.4	LOS A	15.2	417.0	0.30	0.44	0.30	30.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [Cook Rd/Old Hwy 99 N - Copy (Site Folder: Roundabout Alternative - 2045 AM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Hwy 99														
3	L2	110	22.0	110	22.0	0.158	12.6	LOS B	0.7	19.4	0.56	0.80	0.56	27.8
8	T1	70	22.0	70	22.0	0.166	6.8	LOS A	0.7	21.3	0.55	0.67	0.55	35.4
18	R2	65	22.0	65	22.0	0.166	6.9	LOS A	0.7	21.3	0.55	0.67	0.55	34.1
Approach		245	22.0	245	22.0	0.166	9.4	LOS A	0.7	21.3	0.56	0.73	0.56	32.1
East: Cook Rd														
1	L2	140	9.0	140	9.0	0.202	11.8	LOS B	0.8	21.1	0.45	0.75	0.45	33.4
6	T1	670	9.0	670	9.0	0.638	6.9	LOS A	4.8	128.2	0.61	0.67	0.67	27.3
16	R2	45	9.0	45	9.0	0.638	6.8	LOS A	4.8	128.2	0.61	0.67	0.67	34.2
Approach		855	9.0	855	9.0	0.638	7.7	LOS A	4.8	128.2	0.58	0.68	0.64	29.0
North: Old Hwy 99														
7	L2	65	21.0	65	21.0	0.165	16.4	LOS B	0.7	19.8	0.69	0.89	0.69	31.1
4	T1	215	21.0	215	21.0	0.703	14.4	LOS B	6.0	174.9	0.89	1.10	1.32	31.9
14	R2	240	21.0	240	21.0	0.703	14.4	LOS B	6.0	174.9	0.89	1.10	1.32	23.8
Approach		520	21.0	520	21.0	0.703	14.7	LOS B	6.0	174.9	0.86	1.07	1.24	28.6
West: Cook Rd														
5	L2	100	13.0	100	13.0	0.171	11.7	LOS B	0.7	19.0	0.54	0.81	0.54	30.0
2	T1	380	13.0	380	13.0	0.516	6.3	LOS A	3.3	91.4	0.65	0.74	0.71	33.5
12	R2	115	13.0	115	13.0	0.516	6.1	LOS A	3.3	91.4	0.65	0.74	0.71	31.8
Approach		595	13.0	595	13.0	0.516	7.2	LOS A	3.3	91.4	0.63	0.75	0.68	32.5
All Vehicles		2215	14.3	2215	14.3	0.703	9.4	LOS A	6.0	174.9	0.66	0.80	0.78	30.0

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Cook Rd/I-5 SB (Site Folder: Roundabout Alternative - 2045 PM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Cook Rd														
1	L2	405	8.0	405	8.0	0.415	9.4	LOS A	0.0	0.0	0.00	0.63	0.00	33.0
6	T1	140	8.0	140	8.0	0.415	4.4	LOS A	0.0	0.0	0.00	0.63	0.00	33.2
Approach		545	8.0	545	8.0	0.415	8.1	LOS A	0.0	0.0	0.00	0.63	0.00	33.0
North: I-5 SB Off Ramp														
7	L2	190	6.0	190	6.0	0.243	12.6	LOS B	1.3	33.2	0.59	0.78	0.59	26.0
4	T1	5	6.0	5	6.0	0.243	7.6	LOS A	1.3	33.2	0.59	0.78	0.59	33.2
14	R2	25	6.0	25	6.0	0.243	7.4	LOS A	1.3	33.2	0.59	0.78	0.59	32.4
Approach		220	6.0	220	6.0	0.243	11.9	LOS B	1.3	33.2	0.59	0.78	0.59	27.1
West: Cook Rd														
2	T1	370	4.0	370	4.0	0.437	8.7	LOS A	2.9	75.3	0.73	0.81	0.77	32.6
12	R2	10	4.0	10	4.0	0.437	8.6	LOS A	2.9	75.3	0.73	0.81	0.77	33.9
Approach		380	4.0	380	4.0	0.437	8.7	LOS A	2.9	75.3	0.73	0.81	0.77	32.7
All Vehicles		1145	6.3	1145	6.3	0.437	9.1	LOS A	2.9	75.3	0.36	0.72	0.37	31.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Cook Rd/I-5 NB (Site Folder: Roundabout Alternative - 2045 PM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: I-5 NB Off Ramp														
3	L2	5	6.0	5	6.0	0.419	13.0	LOS B	2.5	64.4	0.65	0.76	0.65	27.5
8	T1	1	6.0	1	6.0	0.419	7.9	LOS A	2.5	64.4	0.65	0.76	0.65	35.2
18	R2	380	6.0	380	6.0	0.419	7.8	LOS A	2.5	64.4	0.65	0.76	0.65	30.7
Approach		386	6.0	386	6.0	0.419	7.9	LOS A	2.5	64.4	0.65	0.76	0.65	30.6
East: Cook Rd														
6	T1	535	7.0	535	7.0	0.634	4.0	LOS A	5.7	149.3	0.32	0.44	0.32	29.9
16	R2	270	7.0	270	7.0	0.634	3.8	LOS A	5.7	149.3	0.32	0.44	0.32	33.5
Approach		805	7.0	805	7.0	0.634	3.9	LOS A	5.7	149.3	0.32	0.44	0.32	31.8
West: Cook Rd														
5	L2	45	6.0	45	6.0	0.396	9.4	LOS A	0.0	0.0	0.00	0.45	0.00	35.5
2	T1	485	6.0	485	6.0	0.396	4.4	LOS A	0.0	0.0	0.00	0.45	0.00	28.2
Approach		530	6.0	530	6.0	0.396	4.8	LOS A	0.0	0.0	0.00	0.45	0.00	29.3
All Vehicles		1721	6.5	1721	6.5	0.634	5.1	LOS A	5.7	149.3	0.30	0.52	0.30	30.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [Cook Rd/Old Hwy 99 N (Site Folder: Roundabout Alternative - 2045 PM Peak Hour)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Hwy 99														
3	L2	95	6.0	95	6.0	0.179	14.1	LOS B	0.7	19.0	0.64	0.88	0.64	27.1
8	T1	320	6.0	320	6.0	0.617	9.8	LOS A	4.6	121.3	0.79	0.97	1.03	34.5
18	R2	215	6.0	215	6.0	0.617	9.8	LOS A	4.6	121.3	0.79	0.97	1.03	33.4
Approach		630	6.0	630	6.0	0.617	10.4	LOS B	4.6	121.3	0.77	0.96	0.97	33.2
East: Cook Rd														
1	L2	55	4.0	60	4.0	0.100	12.9	LOS B	0.4	10.3	0.57	0.81	0.57	33.1
6	T1	550	4.0	598	4.0	0.679	9.3	LOS A	6.0	154.8	0.80	0.96	1.02	26.6
16	R2	65	4.0	65	4.0	0.679	9.3	LOS A	6.0	154.8	0.80	0.96	1.02	33.7
Approach		670	4.0	723	4.0	0.679	9.6	LOS A	6.0	154.8	0.78	0.95	0.98	28.1
North: Old Hwy 99														
7	L2	70	10.0	70	10.0	0.137	14.1	LOS B	0.6	16.1	0.65	0.87	0.65	32.4
4	T1	95	10.0	95	10.0	0.316	7.6	LOS A	1.8	47.4	0.70	0.77	0.70	35.3
14	R2	160	10.0	160	10.0	0.316	7.6	LOS A	1.8	47.4	0.70	0.77	0.70	26.9
Approach		325	10.0	325	10.0	0.316	9.0	LOS A	1.8	47.4	0.69	0.79	0.69	31.0
West: Cook Rd														
5	L2	215	6.0	215	6.0	0.258	10.0	LOS B	1.1	29.8	0.42	0.71	0.42	31.3
2	T1	580	6.0	580	6.0	0.567	4.8	LOS A	3.7	97.7	0.52	0.55	0.52	34.3
12	R2	100	6.0	100	6.0	0.567	4.6	LOS A	3.7	97.7	0.52	0.55	0.52	32.6
Approach		895	6.0	895	6.0	0.567	6.0	LOS A	3.7	97.7	0.50	0.59	0.50	33.3
All Vehicles		2520	6.0	2573	5.9	0.679	8.5	LOS A	6.0	154.8	0.67	0.80	0.77	31.5

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [Cook Rd/I-5 SB (Site Folder: Roundabout Alternative - 2028 AM Peak Hour)]

Network: N101 [2028 AM Network (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Cook Rd														
1	L2	569	16.0	569	16.0	0.608	11.2	LOS B	0.0	0.0	0.00	0.00	0.00	32.3
6	T1	106	16.0	106	16.0	0.608	11.2	LOS B	0.0	0.0	0.00	0.00	0.00	32.6
Approach		676	16.0	676	16.0	0.608	11.2	LOS B	0.0	0.0	0.00	0.00	0.00	32.3
North: I-5 SB Off Ramp														
7	L2	229	6.0	229	6.0	0.464	13.0	LOS B	1.0	27.0	0.74	0.81	0.93	23.2
4	T1	5	6.0	5	6.0	0.464	13.0	LOS B	1.0	27.0	0.74	0.81	0.93	29.1
14	R2	27	6.0	27	6.0	0.464	13.0	LOS B	1.0	27.0	0.74	0.81	0.93	28.4
Approach		261	6.0	261	6.0	0.464	13.0	LOS B	1.0	27.0	0.74	0.81	0.93	24.2
West: Cook Rd														
2	T1	96	16.0	96	16.0	0.259	11.5	LOS B	0.5	12.9	0.76	0.76	0.76	25.9
12	R2	11	16.0	11	16.0	0.259	11.5	LOS B	0.5	12.9	0.76	0.76	0.76	30.4
Approach		106	16.0	106	16.0	0.259	11.5	LOS B	0.5	12.9	0.76	0.76	0.76	26.6
All Vehicles		1043	13.5	1043	13.5	0.608	11.7	LOS B	1.0	27.0	0.26	0.28	0.31	29.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Cook Rd/I-5 NB (Site Folder: Roundabout Alternative - 2028 AM Peak Hour)]

Network: N101 [2028 AM Network (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: I-5 NB Off Ramp														
3	L2	1	15.0	1	15.0	0.572	17.9	LOS B	5.0	140.8	0.51	0.55	0.74	22.4
8	T1	5	15.0	5	15.0	0.572	17.9	LOS B	5.0	140.8	0.51	0.55	0.74	28.5
18	R2	237	15.0	237	15.0	0.572	17.9	LOS B	5.0	140.8	0.51	0.55	0.74	22.4
Approach		243	15.0	243	15.0	0.572	17.9	LOS B	5.0	140.8	0.51	0.55	0.74	22.6
East: Cook Rd														
6	T1	655	12.0	655	12.0	0.790	17.8	LOS B	5.2	143.6	0.28	0.08	0.28	8.2
16	R2	242	12.0	242	12.0	0.790	17.8	LOS B	5.2	143.6	0.28	0.08	0.28	23.5
Approach		897	12.0	897	12.0	0.790	17.8	LOS B	5.2	143.6	0.28	0.08	0.28	14.9
West: Cook Rd														
5	L2	5	8.0	5	8.0	0.530	12.2	LOS B	6.7	177.5	0.00	0.00	0.00	35.7
2	T1	314	8.0	314	8.0	0.530	12.2	LOS B	6.7	177.5	0.00	0.00	0.00	28.1
Approach		320	8.0	320	8.0	0.530	12.2	LOS B	6.7	177.5	0.00	0.00	0.00	28.5
All Vehicles		1460	11.6	1460	11.6	0.790	16.6	LOS B	6.7	177.5	0.26	0.14	0.29	18.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [Cook Rd/Old Hwy 99 N (Site Folder: Roundabout Alternative - 2028 AM Peak Hour)]

Network: N101 [2028 AM Network (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Hwy 99														
3	L2	116	22.0	116	22.0	0.213	8.1	LOS A	0.3	7.7	0.53	0.51	0.53	25.4
8	T1	68	22.0	68	22.0	0.262	8.7	LOS A	6.7	196.3	0.52	0.50	0.52	32.5
18	R2	63	22.0	63	22.0	0.262	8.7	LOS A	6.7	196.3	0.52	0.50	0.52	27.6
Approach		247	22.0	247	22.0	0.262	8.4	LOS A	6.7	196.3	0.52	0.50	0.52	28.4
East: Cook Rd														
1	L2	100	9.0	100	9.0	0.171	8.3	LOS A	0.2	6.3	0.41	0.36	0.41	27.5
6	T1	616	9.0	616	9.0	0.814	24.1	LOS C	1.9	50.0	0.56	0.86	1.36	4.1
16	R2	37	9.0	37	9.0	0.814	24.1	LOS C	1.9	50.0	0.56	0.86	1.36	20.9
Approach		753	9.0	753	9.0	0.814	22.0	LOS C	1.9	50.0	0.54	0.79	1.23	9.9
North: Old Hwy 99														
7	L2	68	21.0	68	21.0	0.405	26.4	LOS C	7.2	208.9	0.69	0.77	0.92	18.4
4	T1	121	21.0	121	21.0	0.566	17.4	LOS B	1.5	44.4	0.79	0.94	1.20	28.8
14	R2	174	21.0	174	21.0	0.566	17.4	LOS B	1.5	44.4	0.79	0.94	1.20	22.8
Approach		363	21.0	363	21.0	0.566	19.1	LOS B	7.2	208.9	0.77	0.91	1.15	24.4
West: Cook Rd														
5	L2	79	13.0	79	13.0	0.511	13.5	LOS B	8.2	225.0	0.48	0.46	0.58	25.9
2	T1	368	13.0	368	13.0	0.511	13.1	LOS B	8.2	225.0	0.48	0.45	0.57	10.4
12	R2	121	13.0	121	13.0	0.511	12.6	LOS B	8.2	225.0	0.48	0.45	0.57	26.0
Approach		568	13.0	568	13.0	0.511	13.1	LOS B	8.2	225.0	0.48	0.45	0.57	18.8
All Vehicles		1932	14.1	1932	14.1	0.814	17.1	LOS B	8.2	225.0	0.56	0.68	0.93	19.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [RR Crossing (Site Folder: Roundabout Alternative - 2028 AM Peak Hour)]

Network: N101 [2028 AM Network (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Pretimed) Isolated Cycle Time = 2900 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: RoadName														
8	T1	1	3.0	1	3.0	* 0.006	1169.8	LOS F	0.8	20.1	0.92	0.59	0.92	1.8
Approach		1	3.0	1	3.0	0.006	1169.8	LOS F	0.8	20.1	0.92	0.59	0.92	1.8
East: RoadName														
6	T1	753	9.0	753	9.0	* 0.857	60.7	LOS E	223.1	5979.1	0.39	0.39	0.39	14.6
Approach		753	9.0	753	9.0	0.857	60.7	LOS E	223.1	5979.1	0.39	0.39	0.39	14.6
North: RoadName														
4	T1	1	3.0	1	3.0	0.006	1169.8	LOS F	0.8	20.1	0.92	0.59	0.92	1.8
Approach		1	3.0	1	3.0	0.006	1169.8	LOS F	0.8	20.1	0.92	0.59	0.92	1.8
West: RoadName														
2	T1	500	13.0	500	13.0	0.170	20.4	LOS C	1.8	50.0	0.13	0.12	0.13	26.2
Approach		500	13.0	500	13.0	0.170	20.4	LOS C	1.8	50.0	0.13	0.12	0.13	26.2
All Vehicles		1255	10.6	1255	10.6	0.857	46.5	LOS D	223.1	5979.1	0.29	0.28	0.29	17.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Cook Rd/I-5 SB_no RR (Site Folder: Roundabout Alternative - 2028 AM Peak Hour)]

Network: N101 [2028 AM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Cook Rd														
1	L2	569	16.0	569	16.0	0.608	11.2	LOS B	0.0	0.0	0.00	0.00	0.00	32.3
6	T1	106	16.0	106	16.0	0.608	11.2	LOS B	0.0	0.0	0.00	0.00	0.00	32.6
Approach		676	16.0	676	16.0	0.608	11.2	LOS B	0.0	0.0	0.00	0.00	0.00	32.3
North: I-5 SB Off Ramp														
7	L2	229	6.0	229	6.0	0.383	10.4	LOS B	0.9	23.8	0.74	0.75	0.79	24.4
4	T1	5	6.0	5	6.0	0.383	10.4	LOS B	0.9	23.8	0.74	0.75	0.79	30.1
14	R2	27	6.0	27	6.0	0.383	10.4	LOS B	0.9	23.8	0.74	0.75	0.79	29.4
Approach		261	6.0	261	6.0	0.383	10.4	LOS B	0.9	23.8	0.74	0.75	0.79	25.3
West: Cook Rd														
2	T1	96	16.0	96	16.0	0.213	10.2	LOS B	0.5	12.9	0.76	0.75	0.76	26.7
12	R2	11	16.0	11	16.0	0.213	10.2	LOS B	0.5	12.9	0.76	0.75	0.76	30.9
Approach		106	16.0	106	16.0	0.213	10.2	LOS B	0.5	12.9	0.76	0.75	0.76	27.3
All Vehicles		1043	13.5	1043	13.5	0.608	10.9	LOS B	0.9	23.8	0.26	0.26	0.27	30.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Cook Rd/I-5 NB_no RR (Site Folder: Roundabout Alternative - 2028 AM Peak Hour)]

Network: N101 [2028 AM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: I-5 NB Off Ramp														
3	L2	1	15.0	1	15.0	0.290	7.5	LOS A	0.6	16.1	0.51	0.42	0.51	28.3
8	T1	5	15.0	5	15.0	0.290	7.5	LOS A	0.6	16.1	0.51	0.42	0.51	32.9
18	R2	237	15.0	237	15.0	0.290	7.5	LOS A	0.6	16.1	0.51	0.42	0.51	28.3
Approach		243	15.0	243	15.0	0.290	7.5	LOS A	0.6	16.1	0.51	0.42	0.51	28.4
East: Cook Rd														
6	T1	655	12.0	655	12.0	0.790	17.8	LOS B	5.2	143.6	0.28	0.08	0.28	8.2
16	R2	242	12.0	242	12.0	0.790	17.8	LOS B	5.2	143.6	0.28	0.08	0.28	23.5
Approach		897	12.0	897	12.0	0.790	17.8	LOS B	5.2	143.6	0.28	0.08	0.28	14.9
West: Cook Rd														
5	L2	5	8.0	5	8.0	0.268	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	35.7
2	T1	314	8.0	314	8.0	0.268	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	28.1
Approach		320	8.0	320	8.0	0.268	5.5	LOS A	0.0	0.0	0.00	0.00	0.00	28.5
All Vehicles		1460	11.6	1460	11.6	0.790	13.4	LOS B	5.2	143.6	0.26	0.12	0.26	19.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [Cook Rd/Old Hwy 99 N _no RR (Site Folder: Roundabout Alternative - 2028 AM Peak Hour)]

Network: N101 [2028 AM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Hwy 99														
3	L2	116	22.0	116	22.0	0.213	8.1	LOS A	0.3	7.7	0.53	0.51	0.53	25.4
8	T1	68	22.0	68	22.0	0.177	6.8	LOS A	0.3	8.3	0.52	0.48	0.52	33.4
18	R2	63	22.0	63	22.0	0.177	6.8	LOS A	0.3	8.3	0.52	0.48	0.52	28.9
Approach		247	22.0	247	22.0	0.213	7.4	LOS A	0.3	8.3	0.53	0.50	0.53	29.0
East: Cook Rd														
1	L2	100	9.0	100	9.0	0.171	8.3	LOS A	0.3	6.9	0.46	0.40	0.46	27.5
6	T1	616	9.0	616	9.0	0.814	24.1	LOS C	1.9	50.0	0.63	0.96	1.52	4.1
16	R2	37	9.0	37	9.0	0.814	24.1	LOS C	1.9	50.0	0.63	0.96	1.52	20.9
Approach		753	9.0	753	9.0	0.814	22.0	LOS C	1.9	50.0	0.61	0.89	1.38	9.9
North: Old Hwy 99														
7	L2	68	21.0	68	21.0	0.215	15.4	LOS B	0.3	9.9	0.69	0.69	0.69	22.1
4	T1	121	21.0	121	21.0	0.585	18.7	LOS B	1.5	44.5	0.78	0.95	1.26	28.4
14	R2	174	21.0	174	21.0	0.585	18.7	LOS B	1.5	44.5	0.78	0.95	1.26	22.2
Approach		363	21.0	363	21.0	0.585	18.1	LOS B	1.5	44.5	0.77	0.90	1.15	24.8
West: Cook Rd														
5	L2	79	13.0	79	13.0	0.308	7.2	LOS A	0.6	16.0	0.48	0.39	0.48	29.5
2	T1	368	13.0	368	13.0	0.308	7.2	LOS A	0.6	16.0	0.48	0.39	0.48	13.9
12	R2	121	13.0	121	13.0	0.308	7.1	LOS A	0.6	16.0	0.47	0.39	0.47	29.2
Approach		568	13.0	568	13.0	0.308	7.2	LOS A	0.6	16.0	0.48	0.39	0.48	22.9
All Vehicles		1932	14.1	1932	14.1	0.814	15.0	LOS B	1.9	50.0	0.59	0.69	0.96	20.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [RR Crossing_no RR (Site Folder: Roundabout Alternative - 2028 AM Peak Hour)]

Network: N101 [2028 AM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Pretimed) Isolated Cycle Time = 61 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: RoadName														
8	T1	1	3.0	1	3.0	* 0.035	29.9	LOS C	0.0	0.5	1.00	0.57	1.00	26.0
Approach		1	3.0	1	3.0	0.035	29.9	LOS C	0.0	0.5	1.00	0.57	1.00	26.0
East: RoadName														
6	T1	753	9.0	753	9.0	* 0.719	2.3	LOS A	2.2	58.6	0.00	0.00	0.00	40.0
Approach		753	9.0	753	9.0	0.719	2.3	LOS A	2.2	58.6	0.00	0.00	0.00	40.0
North: RoadName														
4	T1	1	3.0	1	3.0	0.035	29.9	LOS C	0.0	0.5	1.00	0.57	1.00	26.0
Approach		1	3.0	1	3.0	0.035	29.9	LOS C	0.0	0.5	1.00	0.57	1.00	26.0
West: RoadName														
2	T1	500	13.0	500	13.0	0.152	1.8	LOS A	0.2	6.2	0.00	0.00	0.00	40.0
Approach		500	13.0	500	13.0	0.152	1.8	LOS A	0.2	6.2	0.00	0.00	0.00	40.0
All Vehicles		1255	10.6	1255	10.6	0.719	2.1	LOS A	2.2	58.6	0.00	0.00	0.00	39.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Cook Rd/I-5 SB (Site Folder: Roundabout Alternative - 2028 PM Peak Hour)]

Network: N102 [2028 PM Network (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Cook Rd														
1	L2	417	8.0	417	8.0	0.449	7.7	LOS A	0.0	0.0	0.00	0.00	0.00	32.8
6	T1	120	8.0	120	8.0	0.449	7.7	LOS A	0.0	0.0	0.00	0.00	0.00	33.1
Approach		536	8.0	536	8.0	0.449	7.7	LOS A	0.0	0.0	0.00	0.00	0.00	32.9
North: I-5 SB Off Ramp														
7	L2	193	6.0	193	6.0	0.519	16.0	LOS B	0.7	19.2	0.61	0.68	0.85	21.9
4	T1	5	6.0	5	6.0	0.519	16.0	LOS B	0.7	19.2	0.61	0.68	0.85	28.0
14	R2	21	6.0	21	6.0	0.519	16.0	LOS B	0.7	19.2	0.61	0.68	0.85	27.4
Approach		219	6.0	219	6.0	0.519	16.0	LOS B	0.7	19.2	0.61	0.68	0.85	22.9
West: Cook Rd														
2	T1	208	4.0	208	4.0	0.579	20.1	LOS C	0.9	23.7	0.68	0.82	1.06	21.8
12	R2	10	4.0	10	4.0	0.579	20.1	LOS C	0.9	23.7	0.68	0.82	1.06	27.4
Approach		219	4.0	219	4.0	0.579	20.1	LOS C	0.9	23.7	0.68	0.82	1.06	22.2
All Vehicles		974	6.7	974	6.7	0.579	12.3	LOS B	0.9	23.7	0.29	0.34	0.43	27.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Cook Rd/I-5 NB (Site Folder: Roundabout Alternative - 2028 PM Peak Hour)]

Network: N102 [2028 PM Network (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: I-5 NB Off Ramp														
3	L2	5	6.0	5	6.0	0.966	61.4	LOS E	14.2	372.0	0.64	1.56	2.85	12.0
8	T1	1	6.0	1	6.0	0.966	61.4	LOS E	14.2	372.0	0.64	1.56	2.85	18.3
18	R2	418	6.0	418	6.0	0.966	61.4	LOS E	14.2	372.0	0.64	1.56	2.85	12.0
Approach		424	6.0	424	6.0	0.966	61.4	LOS E	14.2	372.0	0.64	1.56	2.85	12.0
East: Cook Rd														
6	T1	555	7.0	555	7.0	0.734	14.8	LOS B	3.4	90.5	0.41	0.18	0.41	9.1
16	R2	291	7.0	291	7.0	0.734	14.8	LOS B	3.4	90.5	0.41	0.18	0.41	25.0
Approach		846	7.0	846	7.0	0.734	14.8	LOS B	3.4	90.5	0.41	0.18	0.41	17.7
West: Cook Rd														
5	L2	38	6.0	38	6.0	0.654	16.3	LOS B	12.9	337.9	0.00	0.00	0.00	35.5
2	T1	379	6.0	379	6.0	0.654	16.3	LOS B	12.9	337.9	0.00	0.00	0.00	27.5
Approach		418	6.0	418	6.0	0.654	16.3	LOS B	12.9	337.9	0.00	0.00	0.00	29.3
All Vehicles		1688	6.5	1688	6.5	0.966	26.9	LOS C	14.2	372.0	0.37	0.48	0.92	15.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [Cook Rd/Old Hwy 99 N (Site Folder: Roundabout Alternative - 2028 PM Peak Hour)]

Network: N102 [2028 PM Network (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Hwy 99														
3	L2	99	6.0	99	6.0	0.223	11.1	LOS B	0.3	8.2	0.60	0.60	0.60	23.9
8	T1	229	6.0	229	6.0	0.707	21.3	LOS C	17.7	464.0	0.67	0.94	1.40	27.7
18	R2	182	6.0	182	6.0	0.707	21.3	LOS C	17.7	464.0	0.67	0.94	1.40	21.2
Approach		510	6.0	510	6.0	0.707	19.4	LOS B	17.7	464.0	0.66	0.87	1.25	25.2
East: Cook Rd														
1	L2	47	4.0	47	4.0	0.086	7.6	LOS A	0.1	3.0	0.46	0.41	0.46	28.1
6	T1	552	4.0	552	4.0	0.680	15.1	LOS B	1.9	50.0	0.65	0.81	1.13	5.9
16	R2	68	4.0	68	4.0	0.680	15.1	LOS B	1.9	50.0	0.65	0.81	1.13	24.8
Approach		667	4.0	667	4.0	0.680	14.6	LOS B	1.9	50.0	0.63	0.78	1.08	12.5
North: Old Hwy 99														
7	L2	68	10.0	68	10.0	0.292	15.4	LOS B	9.6	260.2	0.63	0.63	0.63	22.1
4	T1	94	10.0	94	10.0	0.321	8.7	LOS A	0.7	18.1	0.67	0.64	0.67	32.7
14	R2	141	10.0	141	10.0	0.321	8.7	LOS A	0.7	18.1	0.67	0.64	0.67	27.5
Approach		302	10.0	302	10.0	0.321	10.2	LOS B	9.6	260.2	0.66	0.64	0.66	28.3
West: Cook Rd														
5	L2	135	6.0	135	6.0	0.588	13.8	LOS B	8.6	225.0	0.41	0.32	0.44	25.9
2	T1	510	6.0	510	6.0	0.588	14.0	LOS B	8.6	225.0	0.41	0.33	0.44	10.0
12	R2	104	6.0	104	6.0	0.588	14.3	LOS B	8.6	225.0	0.41	0.33	0.45	25.4
Approach		750	6.0	750	6.0	0.588	14.0	LOS B	8.6	225.0	0.41	0.33	0.44	17.9
All Vehicles		2229	5.9	2229	5.9	0.707	14.9	LOS B	17.7	464.0	0.57	0.63	0.85	21.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [RR Crossing (Site Folder: Roundabout Alternative - 2028 PM Peak Hour)]

Network: N102 [2028 PM Network (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Pretimed) Isolated Cycle Time = 2900 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: RoadName														
8	T1	1	3.0	1	3.0	* 0.006	1169.8	LOS F	0.8	19.9	0.92	0.59	0.92	1.8
Approach		1	3.0	1	3.0	0.006	1169.8	LOS F	0.8	19.9	0.92	0.59	0.92	1.8
East: RoadName														
6	T1	667	4.0	667	4.0	* 0.774	47.9	LOS D	169.1	4362.3	0.32	0.32	0.32	16.8
Approach		667	4.0	667	4.0	0.774	47.9	LOS D	169.1	4362.3	0.32	0.32	0.32	16.8
North: RoadName														
4	T1	1	3.0	1	3.0	0.006	1169.8	LOS F	0.8	19.9	0.92	0.59	0.92	1.8
Approach		1	3.0	1	3.0	0.006	1169.8	LOS F	0.8	19.9	0.92	0.59	0.92	1.8
West: RoadName														
2	T1	760	6.0	760	6.0	0.242	22.5	LOS C	1.9	50.0	0.15	0.14	0.15	25.5
Approach		760	6.0	760	6.0	0.242	22.5	LOS C	1.9	50.0	0.15	0.14	0.15	25.5
All Vehicles		1429	5.1	1429	5.1	0.774	36.0	LOS D	169.1	4362.3	0.23	0.22	0.23	20.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Cook Rd/I-5 SB_no RR (Site Folder: Roundabout Alternative - 2028 PM Peak Hour)]

Network: N102 [2028 PM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Cook Rd														
1	L2	417	8.0	417	8.0	0.449	7.7	LOS A	0.0	0.0	0.00	0.00	0.00	32.8
6	T1	120	8.0	120	8.0	0.449	7.7	LOS A	0.0	0.0	0.00	0.00	0.00	33.1
Approach		536	8.0	536	8.0	0.449	7.7	LOS A	0.0	0.0	0.00	0.00	0.00	32.9
North: I-5 SB Off Ramp														
7	L2	193	6.0	193	6.0	0.276	7.6	LOS A	0.6	14.9	0.61	0.55	0.61	25.9
4	T1	5	6.0	5	6.0	0.276	7.6	LOS A	0.6	14.9	0.61	0.55	0.61	31.2
14	R2	21	6.0	21	6.0	0.276	7.6	LOS A	0.6	14.9	0.61	0.55	0.61	30.5
Approach		219	6.0	219	6.0	0.276	7.6	LOS A	0.6	14.9	0.61	0.55	0.61	26.7
West: Cook Rd														
2	T1	208	4.0	208	4.0	0.297	8.4	LOS A	0.7	17.0	0.68	0.63	0.68	27.8
12	R2	10	4.0	10	4.0	0.297	8.4	LOS A	0.7	17.0	0.68	0.63	0.68	32.0
Approach		219	4.0	219	4.0	0.297	8.4	LOS A	0.7	17.0	0.68	0.63	0.68	28.2
All Vehicles		974	6.7	974	6.7	0.449	7.8	LOS A	0.7	17.0	0.29	0.27	0.29	30.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Cook Rd/I-5 NB_no RR (Site Folder: Roundabout Alternative - 2028 PM Peak Hour)]

Network: N102 [2028 PM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: I-5 NB Off Ramp														
3	L2	5	6.0	5	6.0	0.487	10.4	LOS B	1.4	35.9	0.64	0.62	0.75	26.3
8	T1	1	6.0	1	6.0	0.487	10.4	LOS B	1.4	35.9	0.64	0.62	0.75	31.7
18	R2	418	6.0	418	6.0	0.487	10.4	LOS B	1.4	35.9	0.64	0.62	0.75	26.3
Approach		424	6.0	424	6.0	0.487	10.4	LOS B	1.4	35.9	0.64	0.62	0.75	26.3
East: Cook Rd														
6	T1	555	7.0	555	7.0	0.734	14.8	LOS B	3.4	90.5	0.41	0.18	0.41	9.1
16	R2	291	7.0	291	7.0	0.734	14.8	LOS B	3.4	90.5	0.41	0.18	0.41	25.0
Approach		846	7.0	846	7.0	0.734	14.8	LOS B	3.4	90.5	0.41	0.18	0.41	17.7
West: Cook Rd														
5	L2	38	6.0	38	6.0	0.343	6.2	LOS A	0.0	0.0	0.00	0.00	0.00	35.5
2	T1	379	6.0	379	6.0	0.343	6.2	LOS A	0.0	0.0	0.00	0.00	0.00	27.5
Approach		418	6.0	418	6.0	0.343	6.2	LOS A	0.0	0.0	0.00	0.00	0.00	29.3
All Vehicles		1688	6.5	1688	6.5	0.734	11.6	LOS B	3.4	90.5	0.37	0.25	0.39	22.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [Cook Rd/Old Hwy 99 N_no RR (Site Folder: Roundabout Alternative - 2028 PM Peak Hour)]

Network: N102 [2028 PM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Hwy 99														
3	L2	99	6.0	99	6.0	0.223	11.1	LOS B	0.3	8.2	0.60	0.60	0.60	23.9
8	T1	229	6.0	229	6.0	0.489	10.7	LOS B	1.3	33.1	0.66	0.76	0.92	31.8
18	R2	182	6.0	182	6.0	0.489	10.7	LOS B	1.3	33.1	0.66	0.76	0.92	26.3
Approach		510	6.0	510	6.0	0.489	10.8	LOS B	1.3	33.1	0.65	0.73	0.86	28.9
East: Cook Rd														
1	L2	47	4.0	47	4.0	0.086	7.6	LOS A	0.1	3.2	0.51	0.45	0.51	28.1
6	T1	552	4.0	552	4.0	0.680	15.1	LOS B	1.9	50.0	0.72	0.90	1.25	5.9
16	R2	68	4.0	68	4.0	0.680	15.1	LOS B	1.9	50.0	0.72	0.90	1.25	24.8
Approach		667	4.0	667	4.0	0.680	14.6	LOS B	1.9	50.0	0.70	0.87	1.20	12.5
North: Old Hwy 99														
7	L2	68	10.0	68	10.0	0.150	10.1	LOS B	0.2	6.7	0.63	0.63	0.63	24.4
4	T1	94	10.0	94	10.0	0.328	8.9	LOS A	0.7	17.8	0.67	0.66	0.67	32.6
14	R2	141	10.0	141	10.0	0.328	8.9	LOS A	0.7	17.8	0.67	0.66	0.67	27.3
Approach		302	10.0	302	10.0	0.328	9.2	LOS A	0.7	17.8	0.66	0.65	0.66	28.8
West: Cook Rd														
5	L2	135	6.0	135	6.0	0.349	6.9	LOS A	0.7	18.5	0.41	0.30	0.41	29.8
2	T1	510	6.0	510	6.0	0.349	6.9	LOS A	0.7	18.5	0.41	0.29	0.41	14.2
12	R2	104	6.0	104	6.0	0.349	6.8	LOS A	0.7	18.5	0.41	0.29	0.41	29.6
Approach		750	6.0	750	6.0	0.349	6.9	LOS A	0.7	18.5	0.41	0.29	0.41	22.8
All Vehicles		2229	5.9	2229	5.9	0.680	10.4	LOS B	1.9	50.0	0.59	0.61	0.78	24.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [RR Crossing_no RR (Site Folder: Roundabout Alternative - 2028 PM Peak Hour)]

Network: N102 [2028 PM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Pretimed) Isolated Cycle Time = 61 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: RoadName														
8	T1	1	3.0	1	3.0	* 0.034	29.9	LOS C	0.0	0.5	1.00	0.57	1.00	26.0
Approach		1	3.0	1	3.0	0.034	29.9	LOS C	0.0	0.5	1.00	0.57	1.00	26.0
East: RoadName														
6	T1	667	4.0	667	4.0	* 0.663	1.5	LOS A	1.5	39.8	0.00	0.00	0.00	40.0
Approach		667	4.0	667	4.0	0.663	1.5	LOS A	1.5	39.8	0.00	0.00	0.00	40.0
North: RoadName														
4	T1	1	3.0	1	3.0	0.034	29.9	LOS C	0.0	0.5	1.00	0.57	1.00	26.0
Approach		1	3.0	1	3.0	0.034	29.9	LOS C	0.0	0.5	1.00	0.57	1.00	26.0
West: RoadName														
2	T1	760	6.0	760	6.0	0.217	2.3	LOS A	0.4	9.5	0.00	0.00	0.00	40.0
Approach		760	6.0	760	6.0	0.217	2.3	LOS A	0.4	9.5	0.00	0.00	0.00	40.0
All Vehicles		1429	5.1	1429	5.1	0.663	2.0	LOS A	1.5	39.8	0.00	0.00	0.00	40.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Cook Rd/I-5 SB (Site Folder: Roundabout Alternative - 2045 AM Peak Hour)]

Network: N103 [2045 AM Network (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Cook Rd														
1	L2	535	16.0	535	16.0	0.646	11.4	LOS B	0.0	0.0	0.00	0.00	0.00	32.8
6	T1	255	16.0	255	16.0	0.646	11.4	LOS B	0.0	0.0	0.00	0.00	0.00	33.2
Approach		790	16.0	790	16.0	0.646	11.4	LOS B	0.0	0.0	0.00	0.00	0.00	32.9
North: I-5 SB Off Ramp														
7	L2	225	6.0	225	6.0	0.482	13.4	LOS B	1.1	28.6	0.79	0.87	1.01	23.1
4	T1	5	6.0	5	6.0	0.482	13.4	LOS B	1.1	28.6	0.79	0.87	1.01	29.0
14	R2	35	6.0	35	6.0	0.482	13.4	LOS B	1.1	28.6	0.79	0.87	1.01	28.4
Approach		265	6.0	265	6.0	0.482	13.4	LOS B	1.1	28.6	0.79	0.87	1.01	24.2
West: Cook Rd														
2	T1	120	16.0	120	16.0	0.281	10.3	LOS B	0.5	13.6	0.75	0.73	0.75	26.6
12	R2	10	16.0	10	16.0	0.281	10.3	LOS B	0.5	13.6	0.75	0.73	0.75	30.8
Approach		130	16.0	130	16.0	0.281	10.3	LOS B	0.5	13.6	0.75	0.73	0.75	27.1
All Vehicles		1185	13.8	1185	13.8	0.646	11.7	LOS B	1.1	28.6	0.26	0.27	0.31	30.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Cook Rd/I-5 NB (Site Folder: Roundabout Alternative - 2045 AM Peak Hour)]

Network: N103 [2045 AM Network (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: I-5 NB Off Ramp														
3	L2	1	15.0	1	15.0	0.531	14.8	LOS B	4.9	136.8	0.50	0.50	0.64	23.8
8	T1	5	15.0	5	15.0	0.531	14.8	LOS B	4.9	136.8	0.50	0.50	0.64	29.7
18	R2	245	15.0	245	15.0	0.531	14.8	LOS B	4.9	136.8	0.50	0.50	0.64	23.8
Approach		251	15.0	251	15.0	0.531	14.8	LOS B	4.9	136.8	0.50	0.50	0.64	24.0
East: Cook Rd														
6	T1	790	12.0	790	12.0	0.827	19.0	LOS B	6.1	167.7	0.35	0.11	0.35	7.9
16	R2	240	12.0	240	12.0	0.827	19.0	LOS B	6.1	167.7	0.35	0.11	0.35	23.1
Approach		1030	12.0	1030	12.0	0.827	19.0	LOS B	6.1	167.7	0.35	0.11	0.35	13.7
West: Cook Rd														
5	L2	10	8.0	10	8.0	0.525	11.2	LOS B	6.8	180.5	0.00	0.00	0.00	35.6
2	T1	340	8.0	340	8.0	0.525	11.2	LOS B	6.8	180.5	0.00	0.00	0.00	28.0
Approach		350	8.0	350	8.0	0.525	11.2	LOS B	6.8	180.5	0.00	0.00	0.00	28.6
All Vehicles		1631	11.6	1631	11.6	0.827	16.6	LOS B	6.8	180.5	0.30	0.14	0.32	17.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [Cook Rd/Old Hwy 99 N (Site Folder: Roundabout Alternative - 2045 AM Peak Hour)]

Network: N103 [2045 AM Network (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Hwy 99														
3	L2	110	22.0	110	22.0	0.215	8.0	LOS A	0.2	7.1	0.53	0.51	0.53	25.5
8	T1	70	22.0	70	22.0	0.239	7.5	LOS A	6.4	188.3	0.52	0.49	0.52	33.0
18	R2	65	22.0	65	22.0	0.239	7.5	LOS A	6.4	188.3	0.52	0.49	0.52	28.4
Approach		245	22.0	245	22.0	0.239	7.7	LOS A	6.4	188.3	0.53	0.50	0.53	28.9
East: Cook Rd														
1	L2	140	9.0	140	9.0	0.202	7.5	LOS A	0.3	7.6	0.40	0.34	0.40	28.0
6	T1	670	9.0	670	9.0	0.870	29.0	LOS C	1.9	50.0	0.53	0.95	1.58	3.5
16	R2	45	9.0	45	9.0	0.870	29.0	LOS C	1.9	50.0	0.53	0.95	1.58	19.3
Approach		855	9.0	855	9.0	0.870	25.5	LOS C	1.9	50.0	0.51	0.85	1.39	9.8
North: Old Hwy 99														
7	L2	65	21.0	65	21.0	0.309	17.5	LOS B	7.4	215.2	0.69	0.70	0.72	21.3
4	T1	215	21.0	215	21.0	0.814	31.6	LOS C	3.8	110.8	0.90	1.34	2.04	24.4
14	R2	240	21.0	240	21.0	0.814	31.6	LOS C	3.8	110.8	0.90	1.34	2.04	17.8
Approach		520	21.0	520	21.0	0.814	29.8	LOS C	7.4	215.2	0.87	1.26	1.88	21.5
West: Cook Rd														
5	L2	100	13.0	100	13.0	0.537	14.7	LOS B	8.2	225.0	0.57	0.64	0.82	25.2
2	T1	380	13.0	380	13.0	0.537	14.0	LOS B	8.2	225.0	0.57	0.62	0.79	10.0
12	R2	115	13.0	115	13.0	0.537	13.3	LOS B	8.2	225.0	0.56	0.60	0.77	25.7
Approach		595	13.0	595	13.0	0.537	13.9	LOS B	8.2	225.0	0.57	0.62	0.79	18.5
All Vehicles		2215	14.3	2215	14.3	0.870	21.4	LOS C	8.2	225.0	0.61	0.85	1.25	18.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [RR Crossing (Site Folder: Roundabout Alternative - 2045 AM Peak Hour)]

Network: N103 [2045 AM Network (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Pretimed) Isolated Cycle Time = 2900 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: RoadName														
8	T1	1	3.0	1	3.0	* 0.005	1169.7	LOS F	0.7	19.1	0.92	0.58	0.92	1.8
Approach		1	3.0	1	3.0	0.005	1169.7	LOS F	0.7	19.1	0.92	0.58	0.92	1.8
East: RoadName														
6	T1	855	9.0	855	9.0	* 0.924	73.7	LOS E	282.7	7575.9	0.45	0.44	0.45	12.8
Approach		855	9.0	855	9.0	0.924	73.7	LOS E	282.7	7575.9	0.45	0.44	0.45	12.8
North: RoadName														
4	T1	1	3.0	1	3.0	0.005	1169.7	LOS F	0.7	19.1	0.92	0.58	0.92	1.8
Approach		1	3.0	1	3.0	0.005	1169.7	LOS F	0.7	19.1	0.92	0.58	0.92	1.8
West: RoadName														
2	T1	510	13.0	510	13.0	0.173	20.5	LOS C	1.8	50.0	0.14	0.13	0.14	26.2
Approach		510	13.0	510	13.0	0.173	20.5	LOS C	1.8	50.0	0.14	0.13	0.14	26.2
All Vehicles		1367	10.5	1367	10.5	0.924	55.5	LOS E	282.7	7575.9	0.33	0.32	0.33	15.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Cook Rd/I-5 SB_no RR (Site Folder: Roundabout Alternative - 2045 AM Peak Hour)]

Network: N103 [2045 AM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Cook Rd														
1	L2	535	16.0	535	16.0	0.646	11.4	LOS B	0.0	0.0	0.00	0.00	0.00	32.8
6	T1	255	16.0	255	16.0	0.646	11.4	LOS B	0.0	0.0	0.00	0.00	0.00	33.2
Approach		790	16.0	790	16.0	0.646	11.4	LOS B	0.0	0.0	0.00	0.00	0.00	32.9
North: I-5 SB Off Ramp														
7	L2	225	6.0	225	6.0	0.373	9.9	LOS A	0.9	24.5	0.79	0.78	0.81	24.7
4	T1	5	6.0	5	6.0	0.373	9.9	LOS A	0.9	24.5	0.79	0.78	0.81	30.3
14	R2	35	6.0	35	6.0	0.373	9.9	LOS A	0.9	24.5	0.79	0.78	0.81	29.6
Approach		265	6.0	265	6.0	0.373	9.9	LOS A	0.9	24.5	0.79	0.78	0.81	25.8
West: Cook Rd														
2	T1	120	16.0	120	16.0	0.214	8.6	LOS A	0.5	13.6	0.75	0.71	0.75	27.7
12	R2	10	16.0	10	16.0	0.214	8.6	LOS A	0.5	13.6	0.75	0.71	0.75	31.6
Approach		130	16.0	130	16.0	0.214	8.6	LOS A	0.5	13.6	0.75	0.71	0.75	28.2
All Vehicles		1185	13.8	1185	13.8	0.646	10.7	LOS B	0.9	24.5	0.26	0.25	0.26	30.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Cook Rd/I-5 NB_no RR (Site Folder: Roundabout Alternative - 2045 AM Peak Hour)]

Network: N103 [2045 AM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: I-5 NB Off Ramp														
3	L2	1	15.0	1	15.0	0.269	6.6	LOS A	0.5	15.1	0.50	0.40	0.50	28.9
8	T1	5	15.0	5	15.0	0.269	6.6	LOS A	0.5	15.1	0.50	0.40	0.50	33.4
18	R2	245	15.0	245	15.0	0.269	6.6	LOS A	0.5	15.1	0.50	0.40	0.50	28.9
Approach		251	15.0	251	15.0	0.269	6.6	LOS A	0.5	15.1	0.50	0.40	0.50	29.0
East: Cook Rd														
6	T1	790	12.0	790	12.0	0.827	19.0	LOS B	6.1	167.7	0.35	0.11	0.35	7.9
16	R2	240	12.0	240	12.0	0.827	19.0	LOS B	6.1	167.7	0.35	0.11	0.35	23.1
Approach		1030	12.0	1030	12.0	0.827	19.0	LOS B	6.1	167.7	0.35	0.11	0.35	13.7
West: Cook Rd														
5	L2	10	8.0	10	8.0	0.266	5.1	LOS A	0.0	0.0	0.00	0.00	0.00	35.6
2	T1	340	8.0	340	8.0	0.266	5.1	LOS A	0.0	0.0	0.00	0.00	0.00	28.0
Approach		350	8.0	350	8.0	0.266	5.1	LOS A	0.0	0.0	0.00	0.00	0.00	28.6
All Vehicles		1631	11.6	1631	11.6	0.827	14.1	LOS B	6.1	167.7	0.30	0.13	0.30	18.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [Cook Rd/Old Hwy 99 N_no RR (Site Folder: Roundabout Alternative - 2045 AM Peak Hour)]

Network: N103 [2045 AM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Hwy 99														
3	L2	110	22.0	110	22.0	0.215	8.0	LOS A	0.2	7.1	0.53	0.51	0.53	25.5
8	T1	70	22.0	70	22.0	0.161	5.9	LOS A	0.3	7.7	0.52	0.47	0.52	33.8
18	R2	65	22.0	65	22.0	0.161	5.9	LOS A	0.3	7.7	0.52	0.47	0.52	29.5
Approach		245	22.0	245	22.0	0.215	6.9	LOS A	0.3	7.7	0.53	0.49	0.53	29.4
East: Cook Rd														
1	L2	140	9.0	140	9.0	0.202	7.5	LOS A	0.3	8.4	0.45	0.39	0.45	28.0
6	T1	670	9.0	670	9.0	0.870	29.0	LOS C	1.9	50.0	0.60	1.08	1.78	3.5
16	R2	45	9.0	45	9.0	0.870	29.0	LOS C	1.9	50.0	0.60	1.08	1.78	19.3
Approach		855	9.0	855	9.0	0.870	25.5	LOS C	1.9	50.0	0.58	0.97	1.56	9.8
North: Old Hwy 99														
7	L2	65	21.0	65	21.0	0.165	11.7	LOS B	0.3	7.9	0.69	0.69	0.69	23.7
4	T1	215	21.0	215	21.0	0.844	36.1	LOS D	3.9	113.4	0.88	1.38	2.26	23.3
14	R2	240	21.0	240	21.0	0.844	36.1	LOS D	3.9	113.4	0.88	1.38	2.26	16.6
Approach		520	21.0	520	21.0	0.844	33.0	LOS C	3.9	113.4	0.86	1.30	2.06	20.6
West: Cook Rd														
5	L2	100	13.0	100	13.0	0.328	7.9	LOS A	0.6	17.8	0.57	0.51	0.57	28.9
2	T1	380	13.0	380	13.0	0.328	7.5	LOS A	0.7	18.4	0.56	0.50	0.56	13.6
12	R2	115	13.0	115	13.0	0.328	7.2	LOS A	0.7	18.4	0.56	0.49	0.56	29.1
Approach		595	13.0	595	13.0	0.328	7.5	LOS A	0.7	18.4	0.56	0.50	0.56	22.8
All Vehicles		2215	14.3	2215	14.3	0.870	20.4	LOS C	3.9	113.4	0.63	0.87	1.30	18.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [RR Crossing _no RR (Site Folder: Roundabout Alternative - 2045 AM Peak Hour)]

Network: N103 [2045 AM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Pretimed) Isolated Cycle Time = 61 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: RoadName														
8	T1	1	3.0	1	3.0	* 0.033	29.9	LOS C	0.0	0.5	1.00	0.56	1.00	26.0
Approach		1	3.0	1	3.0	0.033	29.9	LOS C	0.0	0.5	1.00	0.56	1.00	26.0
East: RoadName														
6	T1	855	9.0	855	9.0	* 0.766	3.1	LOS A	2.4	64.8	0.00	0.00	0.00	40.0
Approach		855	9.0	855	9.0	0.766	3.1	LOS A	2.4	64.8	0.00	0.00	0.00	40.0
North: RoadName														
4	T1	1	3.0	1	3.0	0.033	29.9	LOS C	0.0	0.5	1.00	0.56	1.00	26.0
Approach		1	3.0	1	3.0	0.033	29.9	LOS C	0.0	0.5	1.00	0.56	1.00	26.0
West: RoadName														
2	T1	510	13.0	510	13.0	0.155	1.8	LOS A	0.2	6.3	0.00	0.00	0.00	40.0
Approach		510	13.0	510	13.0	0.155	1.8	LOS A	0.2	6.3	0.00	0.00	0.00	40.0
All Vehicles		1367	10.5	1367	10.5	0.766	2.6	LOS A	2.4	64.8	0.00	0.00	0.00	40.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Cook Rd/I-5 SB (Site Folder: Roundabout Alternative - 2045 PM Peak Hour)]

Network: N101 [2045 PM Network (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Cook Rd														
1	L2	405	8.0	405	8.0	0.415	6.7	LOS A	0.0	0.0	0.00	0.00	0.00	33.0
6	T1	140	8.0	140	8.0	0.415	6.7	LOS A	0.0	0.0	0.00	0.00	0.00	33.2
Approach		545	8.0	545	8.0	0.415	6.7	LOS A	0.0	0.0	0.00	0.00	0.00	33.0
North: I-5 SB Off Ramp														
7	L2	190	6.0	190	6.0	0.453	12.2	LOS B	0.6	14.7	0.59	0.58	0.67	23.6
4	T1	5	6.0	5	6.0	0.453	12.2	LOS B	0.6	14.7	0.59	0.58	0.67	29.4
14	R2	25	6.0	25	6.0	0.453	12.2	LOS B	0.6	14.7	0.59	0.58	0.67	28.8
Approach		220	6.0	220	6.0	0.453	12.2	LOS B	0.6	14.7	0.59	0.58	0.67	24.6
West: Cook Rd														
2	T1	370	4.0	370	4.0	0.870	43.2	LOS D	3.2	81.8	0.73	1.30	2.17	15.2
12	R2	10	4.0	10	4.0	0.870	43.2	LOS D	3.2	81.8	0.73	1.30	2.17	21.4
Approach		380	4.0	380	4.0	0.870	43.2	LOS D	3.2	81.8	0.73	1.30	2.17	15.4
All Vehicles		1145	6.3	1145	6.3	0.870	19.9	LOS B	3.2	81.8	0.36	0.54	0.85	23.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Cook Rd/I-5 NB (Site Folder: Roundabout Alternative - 2045 PM Peak Hour)]

Network: N101 [2045 PM Network (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: I-5 NB Off Ramp														
3	L2	5	6.0	5	6.0	0.848	38.7	LOS D	14.1	370.4	0.67	1.18	1.95	15.8
8	T1	1	6.0	1	6.0	0.848	38.7	LOS D	14.1	370.4	0.67	1.18	1.95	22.6
18	R2	380	6.0	380	6.0	0.848	38.7	LOS D	14.1	370.4	0.67	1.18	1.95	15.8
Approach		386	6.0	386	6.0	0.848	38.7	LOS D	14.1	370.4	0.67	1.18	1.95	15.8
East: Cook Rd														
6	T1	535	7.0	535	7.0	0.634	10.8	LOS B	2.3	60.1	0.32	0.14	0.32	11.0
16	R2	270	7.0	270	7.0	0.634	10.8	LOS B	2.3	60.1	0.32	0.14	0.32	27.1
Approach		805	7.0	805	7.0	0.634	10.8	LOS B	2.3	60.1	0.32	0.14	0.32	20.0
West: Cook Rd														
5	L2	45	6.0	45	6.0	0.802	24.2	LOS C	19.1	500.0	0.00	0.00	0.00	35.5
2	T1	515	6.0	515	6.0	0.802	24.2	LOS C	19.1	500.0	0.00	0.00	0.00	27.6
Approach		560	6.0	560	6.0	0.802	24.2	LOS C	19.1	500.0	0.00	0.00	0.00	29.2
All Vehicles		1751	6.5	1751	6.5	0.848	21.2	LOS C	19.1	500.0	0.30	0.33	0.58	19.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [Cook Rd/Old Hwy 99 N (Site Folder: Roundabout Alternative - 2045 PM Peak Hour)]

Network: N101 [2045 PM Network (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Hwy 99														
3	L2	95	6.0	95	6.0	0.171	8.6	LOS A	0.3	7.0	0.61	0.61	0.61	25.1
8	T1	320	6.0	320	6.0	0.826	28.9	LOS C	21.9	575.1	0.75	1.21	2.00	25.3
18	R2	215	6.0	215	6.0	0.826	28.9	LOS C	21.9	575.1	0.75	1.21	2.00	18.6
Approach		630	6.0	630	6.0	0.826	25.9	LOS C	21.9	575.1	0.73	1.12	1.79	23.4
East: Cook Rd														
1	L2	55	4.0	55	4.0	0.091	7.0	LOS A	0.1	3.5	0.51	0.46	0.51	28.5
6	T1	550	4.0	550	4.0	0.624	12.6	LOS B	1.9	50.0	0.68	0.82	1.07	6.7
16	R2	65	4.0	65	4.0	0.624	12.6	LOS B	1.9	50.0	0.68	0.82	1.07	26.2
Approach		670	4.0	670	4.0	0.624	12.2	LOS B	1.9	50.0	0.67	0.79	1.02	14.1
North: Old Hwy 99														
7	L2	70	10.0	70	10.0	0.253	12.1	LOS B	10.5	282.5	0.62	0.62	0.62	23.5
4	T1	95	10.0	95	10.0	0.295	7.4	LOS A	0.7	17.8	0.67	0.61	0.67	33.3
14	R2	160	10.0	160	10.0	0.295	7.4	LOS A	0.7	17.8	0.67	0.61	0.67	28.4
Approach		325	10.0	325	10.0	0.295	8.4	LOS A	10.5	282.5	0.66	0.61	0.66	29.2
West: Cook Rd														
5	L2	215	6.0	215	6.0	0.639	14.0	LOS B	8.6	225.0	0.43	0.37	0.52	25.6
2	T1	580	6.0	580	6.0	0.639	15.0	LOS B	8.6	225.0	0.43	0.39	0.55	9.6
12	R2	100	6.0	100	6.0	0.639	16.0	LOS B	8.6	225.0	0.42	0.41	0.58	24.6
Approach		895	6.0	895	6.0	0.639	14.9	LOS B	8.6	225.0	0.43	0.39	0.55	17.9
All Vehicles		2520	6.0	2520	6.0	0.826	16.1	LOS B	21.9	575.1	0.60	0.70	1.00	21.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [RR Crossing (Site Folder: Roundabout Alternative - 2045 PM Peak Hour)]

Network: N101 [2045 PM Network (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Pretimed) Isolated Cycle Time = 2900 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: RoadName														
8	T1	1	3.0	1	3.0	* 0.005	1169.7	LOS F	0.7	19.1	0.92	0.58	0.92	1.8
Approach		1	3.0	1	3.0	0.005	1169.7	LOS F	0.7	19.1	0.92	0.58	0.92	1.8
East: RoadName														
6	T1	670	4.0	670	4.0	* 0.778	48.5	LOS D	171.5	4424.4	0.33	0.32	0.33	16.7
Approach		670	4.0	670	4.0	0.778	48.5	LOS D	171.5	4424.4	0.33	0.32	0.33	16.7
North: RoadName														
4	T1	1	3.0	1	3.0	0.005	1169.7	LOS F	0.7	19.1	0.92	0.58	0.92	1.8
Approach		1	3.0	1	3.0	0.005	1169.7	LOS F	0.7	19.1	0.92	0.58	0.92	1.8
West: RoadName														
2	T1	865	6.0	865	6.0	0.270	20.9	LOS C	1.9	50.0	0.15	0.15	0.15	25.2
Approach		865	6.0	865	6.0	0.270	20.9	LOS C	1.9	50.0	0.15	0.15	0.15	25.2
All Vehicles		1537	5.1	1537	5.1	0.778	34.4	LOS C	171.5	4424.4	0.23	0.22	0.23	20.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

MOVEMENT SUMMARY

Site: 101 [Cook Rd/I-5 SB_no RR (Site Folder: Roundabout Alternative - 2045 PM Peak Hour)]

Network: N101 [2045 PM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
East: Cook Rd														
1	L2	405	8.0	405	8.0	0.415	6.7	LOS A	0.0	0.0	0.00	0.00	0.00	33.0
6	T1	140	8.0	140	8.0	0.415	6.7	LOS A	0.0	0.0	0.00	0.00	0.00	33.2
Approach		545	8.0	545	8.0	0.415	6.7	LOS A	0.0	0.0	0.00	0.00	0.00	33.0
North: I-5 SB Off Ramp														
7	L2	190	6.0	190	6.0	0.243	6.5	LOS A	0.5	13.3	0.59	0.51	0.59	26.6
4	T1	5	6.0	5	6.0	0.243	6.5	LOS A	0.5	13.3	0.59	0.51	0.59	31.7
14	R2	25	6.0	25	6.0	0.243	6.5	LOS A	0.5	13.3	0.59	0.51	0.59	31.0
Approach		220	6.0	220	6.0	0.243	6.5	LOS A	0.5	13.3	0.59	0.51	0.59	27.5
West: Cook Rd														
2	T1	370	4.0	370	4.0	0.441	9.6	LOS A	1.2	31.4	0.73	0.70	0.80	27.1
12	R2	10	4.0	10	4.0	0.441	9.6	LOS A	1.2	31.4	0.73	0.70	0.80	31.4
Approach		380	4.0	380	4.0	0.441	9.6	LOS A	1.2	31.4	0.73	0.70	0.80	27.2
All Vehicles		1145	6.3	1145	6.3	0.441	7.6	LOS A	1.2	31.4	0.36	0.33	0.38	30.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Cook Rd/I-5 NB_no RR (Site Folder: Roundabout Alternative - 2045 PM Peak Hour)]

Network: N101 [2045 PM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: I-5 NB Off Ramp														
3	L2	5	6.0	5	6.0	0.428	9.1	LOS A	1.1	27.9	0.67	0.63	0.71	27.1
8	T1	1	6.0	1	6.0	0.428	9.1	LOS A	1.1	27.9	0.67	0.63	0.71	32.3
18	R2	380	6.0	380	6.0	0.428	9.1	LOS A	1.1	27.9	0.67	0.63	0.71	27.1
Approach		386	6.0	386	6.0	0.428	9.1	LOS A	1.1	27.9	0.67	0.63	0.71	27.2
East: Cook Rd														
6	T1	535	7.0	535	7.0	0.634	10.8	LOS B	2.3	60.1	0.32	0.14	0.32	11.0
16	R2	270	7.0	270	7.0	0.634	10.8	LOS B	2.3	60.1	0.32	0.14	0.32	27.1
Approach		805	7.0	805	7.0	0.634	10.8	LOS B	2.3	60.1	0.32	0.14	0.32	20.0
West: Cook Rd														
5	L2	45	6.0	45	6.0	0.418	6.7	LOS A	0.0	0.0	0.00	0.00	0.00	35.5
2	T1	515	6.0	515	6.0	0.418	6.7	LOS A	0.0	0.0	0.00	0.00	0.00	27.6
Approach		560	6.0	560	6.0	0.418	6.7	LOS A	0.0	0.0	0.00	0.00	0.00	29.2
All Vehicles		1751	6.5	1751	6.5	0.634	9.1	LOS A	2.3	60.1	0.30	0.20	0.30	24.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [Cook Rd/Old Hwy 99 N_no RR (Site Folder: Roundabout Alternative - 2045 PM Peak Hour)]

Network: N101 [2045 PM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Hwy 99														
3	L2	95	6.0	95	6.0	0.170	8.6	LOS A	0.3	6.7	0.60	0.60	0.60	25.2
8	T1	320	6.0	320	6.0	0.582	12.1	LOS B	1.9	48.8	0.73	0.88	1.15	31.2
18	R2	215	6.0	215	6.0	0.582	12.1	LOS B	1.9	48.8	0.73	0.88	1.15	25.5
Approach		630	6.0	630	6.0	0.582	11.6	LOS B	1.9	48.8	0.71	0.84	1.07	29.0
East: Cook Rd														
1	L2	55	4.0	55	4.0	0.091	7.0	LOS A	0.1	3.7	0.56	0.51	0.56	28.5
6	T1	550	4.0	550	4.0	0.624	12.6	LOS B	1.9	50.0	0.76	0.91	1.18	6.7
16	R2	65	4.0	65	4.0	0.624	12.6	LOS B	1.9	50.0	0.76	0.91	1.18	26.2
Approach		670	4.0	670	4.0	0.624	12.1	LOS B	1.9	50.0	0.74	0.87	1.13	14.1
North: Old Hwy 99														
7	L2	70	10.0	70	10.0	0.130	8.3	LOS A	0.2	6.0	0.62	0.60	0.62	25.3
4	T1	95	10.0	95	10.0	0.300	7.5	LOS A	0.7	17.6	0.67	0.62	0.67	33.2
14	R2	160	10.0	160	10.0	0.300	7.5	LOS A	0.7	17.6	0.67	0.62	0.67	28.3
Approach		325	10.0	325	10.0	0.300	7.7	LOS A	0.7	17.6	0.66	0.62	0.66	29.6
West: Cook Rd														
5	L2	215	6.0	215	6.0	0.386	7.2	LOS A	0.8	21.2	0.43	0.31	0.43	29.2
2	T1	580	6.0	580	6.0	0.386	6.9	LOS A	0.8	21.5	0.42	0.30	0.42	14.1
12	R2	100	6.0	100	6.0	0.386	6.8	LOS A	0.8	21.5	0.42	0.30	0.42	29.7
Approach		895	6.0	895	6.0	0.386	7.0	LOS A	0.8	21.5	0.42	0.30	0.42	23.1
All Vehicles		2520	6.0	2520	6.0	0.624	9.6	LOS A	1.9	50.0	0.61	0.63	0.80	25.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [RR Crossing_no RR (Site Folder: Roundabout Alternative - 2045 PM Peak Hour)]

Network: N101 [2045 PM Network - No Railroad (Network Folder: General)]

New Site
Site Category: (None)
Signals - EQUISAT (Pretimed) Isolated Cycle Time = 61 seconds (Site User-Given Phase Times)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: RoadName														
8	T1	1	3.0	1	3.0	* 0.033	29.9	LOS C	0.0	0.5	1.00	0.56	1.00	26.0
Approach		1	3.0	1	3.0	0.033	29.9	LOS C	0.0	0.5	1.00	0.56	1.00	26.0
East: RoadName														
6	T1	670	4.0	670	4.0	* 0.666	1.6	LOS A	1.6	40.4	0.00	0.00	0.00	40.0
Approach		670	4.0	670	4.0	0.666	1.6	LOS A	1.6	40.4	0.00	0.00	0.00	40.0
North: RoadName														
4	T1	1	3.0	1	3.0	0.033	29.9	LOS C	0.0	0.5	1.00	0.56	1.00	26.0
Approach		1	3.0	1	3.0	0.033	29.9	LOS C	0.0	0.5	1.00	0.56	1.00	26.0
West: RoadName														
2	T1	865	6.0	865	6.0	0.246	2.6	LOS A	0.4	11.2	0.00	0.00	0.00	40.0
Approach		865	6.0	865	6.0	0.246	2.6	LOS A	0.4	11.2	0.00	0.00	0.00	40.0
All Vehicles		1537	5.1	1537	5.1	0.666	2.2	LOS A	1.6	40.4	0.00	0.00	0.00	40.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	92	402	320
Average Queue (ft)	22	170	141
95th Queue (ft)	63	322	256
Link Distance (ft)	581	475	1700
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	189	254	114	81
Average Queue (ft)	33	80	53	36
95th Queue (ft)	113	209	94	68
Link Distance (ft)	475	251	2711	2711
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		3		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	149	233	217	71	94	100	354	109	355	120
Average Queue (ft)	57	100	58	38	68	79	131	47	146	87
95th Queue (ft)	127	194	147	72	85	118	285	105	291	141
Link Distance (ft)		251	251	66	66		2642		1578	
Upstream Blk Time (%)		0	0	4	30					
Queuing Penalty (veh)		1	0	14	107					
Storage Bay Dist (ft)	125					75		85		95
Storage Blk Time (%)	0	6				24	17	3	16	7
Queuing Penalty (veh)	0	4				30	19	9	36	12

Intersection: 12: Cook Road

Movement	EB	WB	WB	B15
Directions Served	T	T	T	T
Maximum Queue (ft)	21	224	548	16
Average Queue (ft)	1	30	216	1
95th Queue (ft)	11	147	454	12
Link Distance (ft)	66		560	3647
Upstream Blk Time (%)	0		0	
Queuing Penalty (veh)	0		0	
Storage Bay Dist (ft)		200		
Storage Blk Time (%)		0	10	
Queuing Penalty (veh)		0	36	

Network Summary

Network wide Queuing Penalty: 273

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.2	0.2	0.3	0.1
Total Del/Veh (s)	4.9	2.7	14.4	13.9	33.6	28.9	25.2	16.6

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.1	0.1	0.1	0.1
Total Del/Veh (s)	35.2	17.8	9.3	6.1	36.6	9.4	11.4

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.5	0.5	3.3	0.6	3.4
Total Del/Veh (s)	40.6	17.6	7.2	19.6	13.1	7.6	56.6	59.6	47.5	33.4	33.3	17.9

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.5
Total Del/Veh (s)	26.9

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.1	42.5	20.6

Total Network Performance

Denied Del/Veh (s)	0.8
Total Del/Veh (s)	56.4

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	107	322	287
Average Queue (ft)	35	137	121
95th Queue (ft)	81	261	226
Link Distance (ft)	581	475	1700
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	385	260	178	147
Average Queue (ft)	126	101	74	44
95th Queue (ft)	301	249	133	94
Link Distance (ft)	475	251	2711	2711
Upstream Blk Time (%)	1	1		
Queuing Penalty (veh)	2	8		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	150	277	256	67	108	100	594	104	209	118
Average Queue (ft)	94	158	112	22	74	59	308	40	67	61
95th Queue (ft)	166	269	237	53	96	117	527	86	156	114
Link Distance (ft)		251	251	66	66		2642		1578	
Upstream Blk Time (%)		1	0	1	49					
Queuing Penalty (veh)		4	1	4	157					
Storage Bay Dist (ft)	125					75		85		95
Storage Blk Time (%)	3	11				6	52	1	5	4
Queuing Penalty (veh)	8	15				24	49	3	9	6

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15
Directions Served	T	T	T	T	T
Maximum Queue (ft)	25	6	225	596	103
Average Queue (ft)	0	0	31	364	17
95th Queue (ft)	8	6	158	627	109
Link Distance (ft)	66	66		560	3647
Upstream Blk Time (%)	0	0		6	
Queuing Penalty (veh)	0	0		0	
Storage Bay Dist (ft)			200		
Storage Blk Time (%)				30	
Queuing Penalty (veh)				97	

Network Summary

Network wide Queuing Penalty: 387

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.1	0.3	0.2	0.3	0.2	0.2	0.3
Total Del/Veh (s)	5.9	1.9	16.7	16.0	56.6	50.3	46.3	24.1

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	36.8	8.6	7.7	5.0	51.0	8.8	7.9

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	2.2	0.4	0.4	4.1	2.4	4.2
Total Del/Veh (s)	40.5	18.6	9.1	18.3	10.3	6.8	110.4	85.3	61.4	114.9	133.3	110.7

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	1.0
Total Del/Veh (s)	48.8

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.2	51.9	32.6

Total Network Performance

Denied Del/Veh (s)	1.4
Total Del/Veh (s)	94.7

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	127	440	445
Average Queue (ft)	29	223	202
95th Queue (ft)	83	398	371
Link Distance (ft)	581	475	1700
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	307	258	121	82
Average Queue (ft)	57	94	58	37
95th Queue (ft)	204	251	101	70
Link Distance (ft)	475	251	2711	2711
Upstream Blk Time (%)	0	1		
Queuing Penalty (veh)	1	7		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	149	262	244	76	116	100	553	110	1124	120
Average Queue (ft)	72	141	100	52	74	85	229	47	648	106
95th Queue (ft)	144	243	217	86	94	119	528	119	1380	147
Link Distance (ft)		251	251	66	66		2642		1578	
Upstream Blk Time (%)		1	0	13	47				5	
Queuing Penalty (veh)		2	1	55	200				0	
Storage Bay Dist (ft)	125					75		85		95
Storage Blk Time (%)	1	9				44	26	3	46	23
Queuing Penalty (veh)	2	9				59	29	11	141	63

Intersection: 12: Cook Road

Movement	EB	WB	WB	B15
Directions Served	T	T	T	T
Maximum Queue (ft)	13	225	672	749
Average Queue (ft)	1	108	540	281
95th Queue (ft)	8	285	779	891
Link Distance (ft)	66		560	3647
Upstream Blk Time (%)	0		27	
Queuing Penalty (veh)	0		0	
Storage Bay Dist (ft)		200		
Storage Blk Time (%)		0	41	
Queuing Penalty (veh)		1	176	

Network Summary

Network wide Queuing Penalty: 759

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.3	0.3	0.0	0.0	0.2	0.2	0.2	0.2
Total Del/Veh (s)	9.7	7.2	22.4	21.2	47.7	41.6	42.7	22.7

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.3	0.9	0.1	0.1	0.1	0.1	0.4
Total Del/Veh (s)	52.4	35.0	11.7	8.5	46.6	17.5	21.0

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.6	0.7	3.2	0.7	3.3
Total Del/Veh (s)	61.2	24.0	11.0	32.2	17.8	10.6	258.2	261.7	248.6	38.1	33.1	17.2

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	87.9

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.3	136.3	56.5

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	214.5

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	238	370	356
Average Queue (ft)	79	189	147
95th Queue (ft)	192	331	306
Link Distance (ft)	581	475	1700
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	491	261	221	169
Average Queue (ft)	267	156	99	54
95th Queue (ft)	512	318	184	122
Link Distance (ft)	475	251	2711	2711
Upstream Blk Time (%)	5	3		
Queuing Penalty (veh)	25	23		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	150	290	285	70	113	100	1980	109	250	119
Average Queue (ft)	139	229	186	32	77	60	1364	47	77	67
95th Queue (ft)	174	315	316	69	99	123	2332	98	183	123
Link Distance (ft)		251	251	66	66		2642		1578	
Upstream Blk Time (%)		9	2	5	64		0			
Queuing Penalty (veh)		43	9	16	216		0			
Storage Bay Dist (ft)	125					75		85		95
Storage Blk Time (%)	27	19				5	66	4	5	4
Queuing Penalty (veh)	78	41				29	62	10	12	7

Intersection: 12: Cook Road

Movement	EB	WB	WB	B15
Directions Served	T	T	T	T
Maximum Queue (ft)	9	225	673	3206
Average Queue (ft)	0	63	639	1844
95th Queue (ft)	7	227	660	3357
Link Distance (ft)	66		560	3647
Upstream Blk Time (%)	0		75	2
Queuing Penalty (veh)	0		0	0
Storage Bay Dist (ft)		200		
Storage Blk Time (%)		0	71	
Queuing Penalty (veh)		0	236	

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	60
Average Queue (ft)	2
95th Queue (ft)	52
Link Distance (ft)	560
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 809

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.2	0.1	0.2	0.2	0.3	0.2
Total Del/Veh (s)	4.5	1.8	13.6	12.3	37.6	37.7	28.9	17.9

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	2.3	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	36.6	13.1	7.7	5.0	57.4	16.7	10.1

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.2	0.3	0.0	0.0	0.0	2.1	0.4	0.3	3.7	0.8	3.6
Total Del/Veh (s)	30.9	26.0	14.5	15.2	8.8	4.5	57.8	54.4	31.2	56.2	55.1	31.3

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	25.7

12: Cook Road Performance by movement

Movement	EBT	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.4	0.0	0.1	0.1	0.2
Total Del/Veh (s)	4.0	44.8	642.1	1571.5	30.4

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	73.4

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	83	404	308
Average Queue (ft)	19	177	141
95th Queue (ft)	58	341	258
Link Distance (ft)	581	475	1670
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	376	256	212	177
Average Queue (ft)	65	84	64	48
95th Queue (ft)	233	221	159	132
Link Distance (ft)	475	251	2718	2718
Upstream Blk Time (%)	0	1		
Queuing Penalty (veh)	0	5		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	149	272	260	73	102	100	392	109	520	120
Average Queue (ft)	53	122	89	39	66	77	143	53	182	88
95th Queue (ft)	125	243	217	78	101	121	312	115	405	145
Link Distance (ft)		251	251	66	66		2666		1543	
Upstream Blk Time (%)		5	4	6	33					
Queuing Penalty (veh)		14	11	20	117					
Storage Bay Dist (ft)	125					75		85		95
Storage Blk Time (%)	0	13				23	24	9	18	10
Queuing Penalty (veh)	0	10				28	26	24	42	17

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15	NB	SB
Directions Served	T	T	T	T	T	T	T
Maximum Queue (ft)	71	70	225	661	1224	27	26
Average Queue (ft)	9	8	59	392	255	4	8
95th Queue (ft)	48	44	214	754	952	18	29
Link Distance (ft)	66	66		552	3670	262	226
Upstream Blk Time (%)	8	7		20			
Queuing Penalty (veh)	18	16		0			
Storage Bay Dist (ft)			200				
Storage Blk Time (%)			0	29			
Queuing Penalty (veh)			0	103			

Network Summary

Network wide Queuing Penalty: 453

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.2	0.2	0.2	0.1
Total Del/Veh (s)	12.3	11.1	18.1	16.7	45.0	35.7	35.1	22.6

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.9	0.2	0.2	0.1	0.1	0.4
Total Del/Veh (s)	57.0	41.0	10.1	7.1	67.6	21.6	21.1

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.2	0.2	0.0	0.0	0.0	1.7	0.5	0.5	3.8	0.7	3.6
Total Del/Veh (s)	51.9	28.3	16.4	25.0	14.5	9.6	115.7	120.4	105.7	50.9	37.6	19.9

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	46.4

12: Cook Road Performance by movement

Movement	EBT	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1	0.0
Total Del/Veh (s)	3.4	105.3	1436.1	714.2	51.6

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	140.0

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	216	390	332
Average Queue (ft)	54	158	145
95th Queue (ft)	148	309	290
Link Distance (ft)	581	475	1670
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	494	264	302	267
Average Queue (ft)	198	115	100	62
95th Queue (ft)	467	284	214	171
Link Distance (ft)	475	251	2718	2718
Upstream Blk Time (%)	7	1		
Queuing Penalty (veh)	25	11		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	150	282	272	66	116	100	1127	109	308	120
Average Queue (ft)	92	183	140	22	73	65	539	46	82	63
95th Queue (ft)	172	303	287	57	110	127	1089	100	219	121
Link Distance (ft)		251	251	66	66		2666		1543	
Upstream Blk Time (%)		10	6	2	53					
Queuing Penalty (veh)		35	20	6	171					
Storage Bay Dist (ft)	125					75		85		95
Storage Blk Time (%)	7	20				7	61	6	5	4
Queuing Penalty (veh)	18	26				29	58	12	10	5

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15	NB	SB
Directions Served	T	T	T	T	T	T	T
Maximum Queue (ft)	70	77	225	656	2029	28	20
Average Queue (ft)	9	10	53	570	898	7	4
95th Queue (ft)	47	50	208	786	2370	26	21
Link Distance (ft)	66	66		552	3670	262	226
Upstream Blk Time (%)	6	8		54			
Queuing Penalty (veh)	23	28		0			
Storage Bay Dist (ft)			200				
Storage Blk Time (%)			0	62			
Queuing Penalty (veh)			0	196			

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	45
Average Queue (ft)	2
95th Queue (ft)	45
Link Distance (ft)	552
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 674

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.4	0.3	0.3	0.2	0.3	0.3
Total Del/Veh (s)	6.0	3.8	17.9	17.1	50.5	54.1	40.6	23.5

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.1	0.1	0.1	0.1
Total Del/Veh (s)	46.1	18.7	8.2	5.5	96.5	22.2	12.8

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.1	0.1	0.0	0.0	0.0	2.1	0.4	0.4	23.3	19.8	23.3
Total Del/Veh (s)	53.6	29.2	17.8	19.0	10.9	6.9	132.7	102.6	85.4	201.2	196.0	173.4

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	5.4
Total Del/Veh (s)	70.9

12: Cook Road Performance by movement

Movement	EBT	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.3	0.0	0.1	0.1	0.1
Total Del/Veh (s)	4.0	77.6	1444.4	1076.6	51.1

Total Network Performance

Denied Del/Veh (s)	10.1
Total Del/Veh (s)	187.5

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	124	476	420
Average Queue (ft)	28	242	187
95th Queue (ft)	84	438	346
Link Distance (ft)	581	475	1670
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		4	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	467	260	280	242
Average Queue (ft)	99	112	79	55
95th Queue (ft)	320	273	187	152
Link Distance (ft)	475	251	2718	2718
Upstream Blk Time (%)	1	1		
Queuing Penalty (veh)	3	9		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	150	287	280	72	115	100	600	109	1437	120
Average Queue (ft)	84	168	131	48	75	86	277	47	940	109
95th Queue (ft)	167	287	266	87	111	122	643	117	1733	151
Link Distance (ft)		251	251	66	66		2666		1543	
Upstream Blk Time (%)		8	4	14	45				17	
Queuing Penalty (veh)		23	13	61	194				0	
Storage Bay Dist (ft)	125					75		85		95
Storage Blk Time (%)	5	19				45	30	5	54	24
Queuing Penalty (veh)	9	19				60	33	24	165	66

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15	NB	SB
Directions Served	T	T	T	T	T	T	T
Maximum Queue (ft)	77	69	225	663	3250	24	20
Average Queue (ft)	10	8	115	630	1797	7	5
95th Queue (ft)	52	43	288	680	3693	32	21
Link Distance (ft)	66	66		552	3670	262	226
Upstream Blk Time (%)	8	7		55	9		
Queuing Penalty (veh)	20	18		0	0		
Storage Bay Dist (ft)			200				
Storage Blk Time (%)			0	55			
Queuing Penalty (veh)			1	233			

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	53
Average Queue (ft)	2
95th Queue (ft)	53
Link Distance (ft)	552
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 954

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	3.5	2.6	0.1	0.2	0.2	0.2	0.3	1.3
Total Del/Veh (s)	49.7	48.7	29.0	28.3	123.1	98.3	104.7	56.0

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	3.0	4.7	0.3	0.2	0.2	0.1	1.7
Total Del/Veh (s)	87.8	74.2	13.7	10.5	64.0	34.1	39.4

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	106.4	101.8	96.5	3.6	0.7	3.7
Total Del/Veh (s)	77.7	32.7	19.3	31.2	17.7	10.8	470.7	483.2	477.8	63.1	41.2	25.4

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	27.0
Total Del/Veh (s)	152.8

12: Cook Road Performance by movement

Movement	EBT	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1	0.0
Total Del/Veh (s)	3.2	146.6	770.9	805.5	63.0

Total Network Performance

Denied Del/Veh (s)	32.1
Total Del/Veh (s)	322.7

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	583	424	676
Average Queue (ft)	201	195	273
95th Queue (ft)	505	375	630
Link Distance (ft)	581	475	1670
Upstream Blk Time (%)	6	0	
Queuing Penalty (veh)	0	1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	497	266	342	300
Average Queue (ft)	400	187	139	88
95th Queue (ft)	615	340	264	213
Link Distance (ft)	475	251	2718	2718
Upstream Blk Time (%)	22	5		
Queuing Penalty (veh)	122	38		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	TR	L	T	R
Maximum Queue (ft)	150	296	290	67	120	100	2723	109	567	119
Average Queue (ft)	136	250	216	29	73	55	2309	54	116	64
95th Queue (ft)	188	329	332	63	104	119	3108	107	365	123
Link Distance (ft)		251	251	66	66		2666		1543	
Upstream Blk Time (%)		24	7	3	62		46			
Queuing Penalty (veh)		108	33	9	206		0			
Storage Bay Dist (ft)	125					75		85		95
Storage Blk Time (%)	41	24				5	70	11	6	4
Queuing Penalty (veh)	119	51				25	66	28	15	7

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15	NB	SB
Directions Served	T	T	T	T	T	T	T
Maximum Queue (ft)	82	80	224	666	3721	35	27
Average Queue (ft)	12	10	52	628	2374	8	8
95th Queue (ft)	55	52	207	656	4191	27	28
Link Distance (ft)	66	66		552	3670	262	226
Upstream Blk Time (%)	8	8		76	23		
Queuing Penalty (veh)	35	33		0	0		
Storage Bay Dist (ft)			200				
Storage Blk Time (%)			0	72			
Queuing Penalty (veh)			0	242			

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	170
Average Queue (ft)	12
95th Queue (ft)	145
Link Distance (ft)	552
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 1137

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.1	0.2	0.2	0.3	0.2	0.2
Total Del/Veh (s)	5.1	2.2	13.3	11.6	33.8	41.2	26.7	17.3

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.2	0.1	0.1
Total Del/Veh (s)	23.6	4.8	6.8	4.2	54.3	7.1	6.2

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.6	3.4	3.2	0.7	3.3
Total Del/Veh (s)	25.0	13.5	5.2	13.3	7.5	3.4	52.9	48.7	6.5	40.2	48.2	22.2

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	18.7

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.0	16.8	10.4

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	41.2

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	89	396	291
Average Queue (ft)	21	170	136
95th Queue (ft)	62	327	240
Link Distance (ft)	581	475	1700
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	176	236	114	84
Average Queue (ft)	39	76	53	35
95th Queue (ft)	125	195	92	68
Link Distance (ft)	475	250	1722	1722
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		1		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	143	249	226	70	74	100	244	135	109	393	120
Average Queue (ft)	54	98	64	36	64	75	90	34	51	141	83
95th Queue (ft)	121	202	164	69	75	118	204	93	110	303	137
Link Distance (ft)		250	250	53	53		1639			1578	
Upstream Blk Time (%)		0	0	6	30						
Queuing Penalty (veh)		0	0	22	109						
Storage Bay Dist (ft)	125					75		200	85		95
Storage Blk Time (%)	0	6				22	8	0	3	15	7
Queuing Penalty (veh)	0	4				28	14	0	10	35	12

Intersection: 12: Cook Road

Movement	EB	WB	WB	B15
Directions Served	T	T	T	T
Maximum Queue (ft)	11	224	510	18
Average Queue (ft)	1	29	220	1
95th Queue (ft)	9	145	462	16
Link Distance (ft)	53		560	3647
Upstream Blk Time (%)	0		0	
Queuing Penalty (veh)	0		0	
Storage Bay Dist (ft)		200		
Storage Blk Time (%)		0	10	
Queuing Penalty (veh)		0	37	

Network Summary

Network wide Queuing Penalty: 273

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.3	0.0	0.1	0.2	0.3	0.2	0.1
Total Del/Veh (s)	4.6	3.4	12.5	12.2	31.1	26.8	19.1	14.6

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.1	0.2	0.2	0.2	0.1	0.2
Total Del/Veh (s)	34.1	14.4	8.9	6.0	40.9	8.9	10.3

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.8	3.1	3.4	0.6	3.3
Total Del/Veh (s)	30.0	12.3	4.6	13.9	9.3	4.9	46.3	48.2	9.7	50.4	45.9	19.8

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	20.1

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.0	21.9	10.8

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	43.4

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	114	318	249
Average Queue (ft)	35	117	112
95th Queue (ft)	84	227	210
Link Distance (ft)	581	475	1700
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	340	259	157	131
Average Queue (ft)	109	108	72	40
95th Queue (ft)	256	255	127	84
Link Distance (ft)	475	250	1722	1722
Upstream Blk Time (%)	0	1		
Queuing Penalty (veh)	0	7		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	149	257	233	58	92	100	459	225	109	256	119
Average Queue (ft)	79	115	67	23	66	67	178	74	53	89	69
95th Queue (ft)	148	215	173	52	79	122	338	187	107	197	126
Link Distance (ft)		250	250	53	53		1639			1578	
Upstream Blk Time (%)		0	0	2	35						
Queuing Penalty (veh)		1	1	6	112						
Storage Bay Dist (ft)	125					75		200	85		95
Storage Blk Time (%)	2	6				8	37	0	5	9	4
Queuing Penalty (veh)	5	7				33	100	0	11	18	6

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15
Directions Served	T	T	T	T	T
Maximum Queue (ft)	24	3	202	510	59
Average Queue (ft)	1	0	25	236	5
95th Queue (ft)	10	3	142	463	69
Link Distance (ft)	53	53		560	3647
Upstream Blk Time (%)	0			1	
Queuing Penalty (veh)	0			0	
Storage Bay Dist (ft)			200		
Storage Blk Time (%)				13	
Queuing Penalty (veh)				43	

Network Summary

Network wide Queuing Penalty: 350

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.1	0.4	0.3	0.3	0.2	0.2	0.3
Total Del/Veh (s)	5.3	2.4	17.1	16.5	53.5	61.9	41.9	23.5

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1	0.2	0.1	0.1
Total Del/Veh (s)	44.0	10.8	7.6	5.1	62.4	9.0	8.4

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.6	3.5	3.2	1.1	3.2
Total Del/Veh (s)	50.6	19.9	9.2	18.4	9.7	5.3	96.7	73.5	17.5	123.7	141.2	120.7

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.9
Total Del/Veh (s)	49.7

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.3	63.6	40.0

Total Network Performance

Denied Del/Veh (s)	1.3
Total Del/Veh (s)	104.3

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	107	461	411
Average Queue (ft)	27	237	195
95th Queue (ft)	74	418	348
Link Distance (ft)	581	475	1700
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		2	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	343	258	136	93
Average Queue (ft)	72	98	62	36
95th Queue (ft)	243	254	113	69
Link Distance (ft)	475	250	1722	1722
Upstream Blk Time (%)	0	1		
Queuing Penalty (veh)	1	6		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	150	273	255	74	95	100	430	224	110	1255	120
Average Queue (ft)	88	153	108	50	68	83	152	62	43	712	109
95th Queue (ft)	165	260	227	83	83	118	394	186	113	1327	146
Link Distance (ft)		250	250	53	53		1639			1578	
Upstream Blk Time (%)		1	0	20	47					1	
Queuing Penalty (veh)		3	1	84	202					0	
Storage Bay Dist (ft)	125					75		200	85		95
Storage Blk Time (%)	5	11				44	11	0	2	51	24
Queuing Penalty (veh)	9	11				59	20	0	11	156	67

Intersection: 12: Cook Road

Movement	EB	WB	WB	B15
Directions Served	T	T	T	T
Maximum Queue (ft)	20	225	669	1087
Average Queue (ft)	1	118	584	420
95th Queue (ft)	10	292	779	1096
Link Distance (ft)	53		560	3647
Upstream Blk Time (%)	0		37	
Queuing Penalty (veh)	0		0	
Storage Bay Dist (ft)		200		
Storage Blk Time (%)		0	47	
Queuing Penalty (veh)		0	200	

Network Summary

Network wide Queuing Penalty: 831

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.4	0.4	0.1	0.1	0.2	0.2	0.2	0.2
Total Del/Veh (s)	10.0	8.4	26.2	25.8	45.9	45.2	33.1	24.3

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.3	0.1	0.2	0.2	0.1	0.2
Total Del/Veh (s)	50.1	30.9	10.8	7.5	33.9	13.9	18.0

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.1	1.0	3.0	3.3	0.7	3.3
Total Del/Veh (s)	46.4	16.8	7.3	18.5	12.7	7.6	90.5	100.1	50.0	57.8	44.7	22.2

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	36.7

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.3	79.2	35.6

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	90.8

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	285	438	294
Average Queue (ft)	82	218	151
95th Queue (ft)	221	391	266
Link Distance (ft)	581	475	1700
Upstream Blk Time (%)	0	1	
Queuing Penalty (veh)	0	4	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	480	262	206	173
Average Queue (ft)	257	145	92	51
95th Queue (ft)	505	308	161	115
Link Distance (ft)	475	250	1722	1722
Upstream Blk Time (%)	3	2		
Queuing Penalty (veh)	19	17		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	150	286	265	68	94	100	863	225	109	257	120
Average Queue (ft)	125	186	137	29	68	64	475	157	55	89	73
95th Queue (ft)	178	310	283	61	81	126	906	292	110	209	128
Link Distance (ft)		250	250	53	53		1639			1578	
Upstream Blk Time (%)		4	1	4	52						
Queuing Penalty (veh)		17	3	14	175						
Storage Bay Dist (ft)	125					75		200	85		95
Storage Blk Time (%)	16	12				8	63	0	6	8	6
Queuing Penalty (veh)	47	26				44	195	1	16	19	11

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15
Directions Served	T	T	T	T	T
Maximum Queue (ft)	33	6	225	646	795
Average Queue (ft)	1	0	58	515	275
95th Queue (ft)	12	4	219	786	933
Link Distance (ft)	53	53		560	3647
Upstream Blk Time (%)	0			35	
Queuing Penalty (veh)	0			0	
Storage Bay Dist (ft)			200		
Storage Blk Time (%)			0	51	
Queuing Penalty (veh)			0	171	

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	99
Average Queue (ft)	2
95th Queue (ft)	47
Link Distance (ft)	560
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 781

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2
Total Del/Veh (s)	4.3	2.6	13.3	11.9	37.9	42.4	27.2	17.9

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	2.0	0.0	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	39.1	11.7	7.5	5.1	54.5	15.9	9.6

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.3	0.2	0.0	0.0	0.0	2.1	0.5	2.0	3.6	0.8	3.6
Total Del/Veh (s)	34.9	26.5	14.8	15.4	8.3	3.9	61.6	51.7	18.6	56.4	55.7	32.7

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	25.8

12: Cook Road Performance by movement

Movement	EBT	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.3	0.0	0.1	0.1	0.1
Total Del/Veh (s)	3.9	50.6	910.0	1420.2	34.2

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	84.0

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	78	386	319
Average Queue (ft)	19	170	139
95th Queue (ft)	57	326	255
Link Distance (ft)	581	475	1670
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	330	252	227	206
Average Queue (ft)	59	79	66	48
95th Queue (ft)	214	218	156	136
Link Distance (ft)	475	251	2727	2727
Upstream Blk Time (%)	0	1		
Queuing Penalty (veh)	1	5		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	149	272	269	70	84	100	337	209	109	540	120
Average Queue (ft)	59	131	96	37	61	74	103	47	53	190	90
95th Queue (ft)	137	252	227	74	90	118	306	139	117	425	145
Link Distance (ft)		251	251	54	54		2642			1543	
Upstream Blk Time (%)		6	4	9	34						
Queuing Penalty (veh)		15	12	31	123						
Storage Bay Dist (ft)	125					75		200	85		95
Storage Blk Time (%)	0	14				26	9	0	7	19	11
Queuing Penalty (veh)	0	10				32	15	0	19	44	19

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15	NB	SB
Directions Served	T	T	T	T	T	T	T
Maximum Queue (ft)	64	64	225	660	1641	20	22
Average Queue (ft)	8	7	70	429	434	5	7
95th Queue (ft)	41	38	234	786	1427	19	25
Link Distance (ft)	54	54		552	3670	262	226
Upstream Blk Time (%)	7	6		25			
Queuing Penalty (veh)	17	15		0			
Storage Bay Dist (ft)			200				
Storage Blk Time (%)			0	34			
Queuing Penalty (veh)			0	119			

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	98
Average Queue (ft)	3
95th Queue (ft)	70
Link Distance (ft)	552
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 479

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.2	0.2	0.2	0.1
Total Del/Veh (s)	6.7	4.4	14.8	13.6	34.2	33.4	23.4	17.0

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.2	0.1	0.1	0.1
Total Del/Veh (s)	52.4	33.3	9.0	6.1	51.0	19.4	17.7

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.2	0.0	0.0	0.0	2.0	0.6	2.0	3.7	0.6	3.6
Total Del/Veh (s)	42.6	21.9	10.1	15.4	9.7	6.0	54.1	56.6	26.8	61.8	46.0	24.2

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	26.7

12: Cook Road Performance by movement

Movement	EBT	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1	0.0
Total Del/Veh (s)	3.5	61.8	1499.2	1079.4	33.1

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	80.4

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	130	350	263
Average Queue (ft)	40	136	119
95th Queue (ft)	96	264	228
Link Distance (ft)	581	475	1670
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	459	255	273	233
Average Queue (ft)	171	96	95	59
95th Queue (ft)	408	243	201	159
Link Distance (ft)	475	251	2727	2727
Upstream Blk Time (%)	3	1		
Queuing Penalty (veh)	13	6		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	149	286	270	60	85	100	595	225	109	321	120
Average Queue (ft)	88	147	98	21	61	66	217	95	51	92	68
95th Queue (ft)	169	276	240	51	93	123	474	224	104	231	128
Link Distance (ft)		251	251	54	54		2642			1543	
Upstream Blk Time (%)		7	5	2	37						
Queuing Penalty (veh)		25	17	7	120						
Storage Bay Dist (ft)	125					75		200	85		95
Storage Blk Time (%)	4	15				8	40	4	7	7	6
Queuing Penalty (veh)	10	19				33	107	12	17	15	9

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15	NB	SB
Directions Served	T	T	T	T	T	T	T
Maximum Queue (ft)	72	68	225	649	1099	29	27
Average Queue (ft)	11	8	46	419	299	7	6
95th Queue (ft)	48	41	193	774	975	24	23
Link Distance (ft)	54	54		552	3670	262	226
Upstream Blk Time (%)	8	7		28			
Queuing Penalty (veh)	29	26		0			
Storage Bay Dist (ft)			200				
Storage Blk Time (%)			0	37			
Queuing Penalty (veh)			0	117			

Intersection: 15: Bend

Movement	EB	EB
Directions Served	T	
Maximum Queue (ft)	344	52
Average Queue (ft)	14	2
95th Queue (ft)	158	50
Link Distance (ft)	552	552
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	1	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 582

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	0.2	0.1	0.3	0.2	0.3	0.2	0.2	0.3
Total Del/Veh (s)	5.5	3.2	16.8	16.1	48.9	63.0	40.3	22.5

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	1.5	0.1	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	54.7	19.1	7.7	5.2	62.3	19.5	12.2

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.5	0.1	0.1	0.0	0.0	0.0	2.1	0.4	2.1	9.6	8.8	10.8
Total Del/Veh (s)	53.8	28.9	16.9	18.6	9.7	4.9	125.5	97.6	47.0	167.6	176.0	154.5

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	2.6
Total Del/Veh (s)	64.8

12: Cook Road Performance by movement

Movement	EBT	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.3	0.0	0.1	0.1	0.1
Total Del/Veh (s)	4.1	82.3	854.7	733.9	52.5

Total Network Performance

Denied Del/Veh (s)	16.4
Total Del/Veh (s)	204.8

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	100	448	379
Average Queue (ft)	28	221	180
95th Queue (ft)	76	409	320
Link Distance (ft)	581	475	1670
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		2	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	435	261	237	211
Average Queue (ft)	103	107	74	53
95th Queue (ft)	325	268	170	144
Link Distance (ft)	475	251	2727	2727
Upstream Blk Time (%)	1	1		
Queuing Penalty (veh)	4	7		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	150	277	268	71	97	100	575	209	109	1396	120
Average Queue (ft)	86	160	126	44	65	82	209	66	53	851	107
95th Queue (ft)	170	277	255	84	93	122	598	196	125	1604	150
Link Distance (ft)		251	251	54	54		2642			1543	
Upstream Blk Time (%)		6	3	17	45					11	
Queuing Penalty (veh)		19	10	72	192					0	
Storage Bay Dist (ft)	125					75		200	85		95
Storage Blk Time (%)	5	17				44	15	1	7	50	21
Queuing Penalty (veh)	9	17				59	26	1	32	154	60

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15	NB	SB
Directions Served	T	T	T	T	T	T	T
Maximum Queue (ft)	68	74	225	668	3518	21	19
Average Queue (ft)	8	8	106	630	2270	4	4
95th Queue (ft)	40	44	281	699	4320	23	16
Link Distance (ft)	54	54		552	3670	262	226
Upstream Blk Time (%)	7	7		57	27		
Queuing Penalty (veh)	19	18		0	0		
Storage Bay Dist (ft)			200				
Storage Blk Time (%)			0	56			
Queuing Penalty (veh)			0	239			

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	101
Average Queue (ft)	3
95th Queue (ft)	73
Link Distance (ft)	552
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 939

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL2	SBL	SBR	All
Denied Del/Veh (s)	1.3	2.5	0.1	0.1	0.2	0.2	0.2	0.6
Total Del/Veh (s)	30.1	25.9	31.2	31.1	106.0	85.4	80.2	45.3

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.3	1.7	0.1	0.2	0.1	0.1	0.6
Total Del/Veh (s)	72.5	53.9	11.9	8.8	56.9	23.3	28.8

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.7	1.9	3.6	0.7	3.7
Total Del/Veh (s)	49.9	24.7	14.7	21.2	14.0	8.5	134.1	142.7	103.4	90.6	56.6	28.6

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	54.7

12: Cook Road Performance by movement

Movement	EBT	WBT	NBT	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	3.1	127.6	1029.9	981.5	55.9

Total Network Performance

Denied Del/Veh (s)	1.9
Total Del/Veh (s)	187.7

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	<LR
Maximum Queue (ft)	521	432	633
Average Queue (ft)	149	223	250
95th Queue (ft)	411	404	574
Link Distance (ft)	581	475	1670
Upstream Blk Time (%)	3	1	
Queuing Penalty (veh)	0	3	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	496	268	315	286
Average Queue (ft)	340	168	112	69
95th Queue (ft)	597	328	223	174
Link Distance (ft)	475	251	2727	2727
Upstream Blk Time (%)	14	3		
Queuing Penalty (veh)	78	22		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	150	292	275	65	90	100	1221	225	109	505	120
Average Queue (ft)	127	215	170	28	64	59	729	185	62	138	72
95th Queue (ft)	188	330	322	60	88	122	1311	299	119	373	134
Link Distance (ft)		251	251	54	54		2642			1543	
Upstream Blk Time (%)		12	6	4	53						
Queuing Penalty (veh)		53	27	14	178						
Storage Bay Dist (ft)	125					75		200	85		95
Storage Blk Time (%)	19	19				7	66	5	17	11	6
Queuing Penalty (veh)	54	42				35	205	22	43	25	9

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15	NB	SB
Directions Served	T	T	T	T	T	T	T
Maximum Queue (ft)	69	65	225	660	3021	22	16
Average Queue (ft)	11	7	77	625	1582	5	5
95th Queue (ft)	48	39	251	686	3325	19	28
Link Distance (ft)	54	54		552	3670	262	226
Upstream Blk Time (%)	8	7		71	5		
Queuing Penalty (veh)	34	31		0	0		
Storage Bay Dist (ft)			200				
Storage Blk Time (%)			0	69			
Queuing Penalty (veh)			0	232			

Intersection: 15: Bend

Movement	EB	EB
Directions Served	T	
Maximum Queue (ft)	226	55
Average Queue (ft)	10	2
95th Queue (ft)	128	55
Link Distance (ft)	552	552
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 1107

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.2	0.1	0.2	0.4	0.3	0.2
Total Del/Veh (s)	5.0	2.5	14.2	12.8	38.8	31.8	27.5	18.9

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.2	0.1	0.1
Total Del/Veh (s)	34.8	6.0	8.1	5.2	66.5	7.7	7.3

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.6	3.4	3.4	0.7	3.3
Total Del/Veh (s)	29.2	14.8	6.5	13.8	8.5	4.7	57.9	43.6	4.6	42.8	50.4	25.1

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	20.2

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.1	22.8	14.1

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	46.4

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	LTR
Maximum Queue (ft)	91	401	332
Average Queue (ft)	20	181	155
95th Queue (ft)	62	346	278
Link Distance (ft)	574	474	1699
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	238	253	129	101
Average Queue (ft)	38	84	55	37
95th Queue (ft)	150	217	96	72
Link Distance (ft)	474	250	1722	1722
Upstream Blk Time (%)		1		
Queuing Penalty (veh)		12		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	147	244	222	71	89	174	277	103	109	436	120
Average Queue (ft)	60	100	68	39	66	100	70	26	51	160	85
95th Queue (ft)	128	201	162	73	79	177	185	74	114	333	143
Link Distance (ft)		250	250	53	53		1639			1578	
Upstream Blk Time (%)		0	0	7	35						
Queuing Penalty (veh)		1	0	24	127						
Storage Bay Dist (ft)	125					150		350	85		95
Storage Blk Time (%)	1	5				7	0		4	16	8
Queuing Penalty (veh)	1	4				8	1		12	38	14

Intersection: 12: Cook Road

Movement	EB	WB	WB	B15
Directions Served	T	T	T	T
Maximum Queue (ft)	24	224	601	79
Average Queue (ft)	1	47	263	4
95th Queue (ft)	11	191	533	54
Link Distance (ft)	53		560	3647
Upstream Blk Time (%)	0		2	
Queuing Penalty (veh)	0		0	
Storage Bay Dist (ft)		200		
Storage Blk Time (%)		0	16	
Queuing Penalty (veh)		0	56	

Network Summary

Network wide Queuing Penalty: 298

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.3	0.0	0.1	0.2	0.1	0.2	0.1
Total Del/Veh (s)	5.1	2.1	14.0	13.7	38.5	43.5	28.6	17.3

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	23.5	10.1	7.8	5.1	64.2	11.8	9.4

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.0	3.2	0.8	3.1	3.3	0.6	3.4
Total Del/Veh (s)	36.9	15.6	6.5	15.2	10.3	5.8	39.4	42.3	6.4	37.1	41.9	18.4

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	19.7

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.2	24.4	12.2

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	44.1

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	LTR
Maximum Queue (ft)	130	327	281
Average Queue (ft)	36	136	128
95th Queue (ft)	93	256	234
Link Distance (ft)	574	474	1699
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	292	243	190	165
Average Queue (ft)	95	86	83	49
95th Queue (ft)	231	200	148	109
Link Distance (ft)	474	250	1722	1722
Upstream Blk Time (%)	0	0		
Queuing Penalty (veh)	1	1		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	149	270	260	62	94	174	312	144	109	263	119
Average Queue (ft)	91	153	105	22	67	70	139	45	45	77	66
95th Queue (ft)	163	264	225	52	81	153	251	87	95	186	125
Link Distance (ft)		250	250	53	53		1639			1578	
Upstream Blk Time (%)		1	0	2	40						
Queuing Penalty (veh)		3	1	6	127						
Storage Bay Dist (ft)	125					150		350	85		95
Storage Blk Time (%)	4	9				0	9	0	3	6	4
Queuing Penalty (veh)	10	12				0	23	0	6	13	7

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15
Directions Served	T	T	T	T	T
Maximum Queue (ft)	19	6	204	512	45
Average Queue (ft)	1	0	22	278	4
95th Queue (ft)	12	4	130	469	70
Link Distance (ft)	53	53		560	3647
Upstream Blk Time (%)	0			1	
Queuing Penalty (veh)	0			0	
Storage Bay Dist (ft)			200		
Storage Blk Time (%)				16	
Queuing Penalty (veh)				50	

Network Summary

Network wide Queuing Penalty: 261

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.1	0.3	0.3	0.2	0.2	0.2	0.3
Total Del/Veh (s)	5.0	2.1	17.0	16.5	54.2	52.9	39.2	23.3

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1	0.1	0.1	0.1
Total Del/Veh (s)	47.4	10.0	8.5	5.4	61.0	9.7	8.9

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.5	3.5	3.1	0.9	3.2
Total Del/Veh (s)	52.9	19.3	8.3	21.1	10.2	5.5	73.7	38.1	4.9	68.7	83.9	62.4

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	33.3

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.2	73.1	45.3

Total Network Performance

Denied Del/Veh (s)	1.3
Total Del/Veh (s)	109.5

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	LTR
Maximum Queue (ft)	115	469	393
Average Queue (ft)	24	227	194
95th Queue (ft)	72	426	338
Link Distance (ft)	574	474	1699
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		2	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	330	260	147	127
Average Queue (ft)	66	114	63	41
95th Queue (ft)	216	237	116	84
Link Distance (ft)	474	250	1722	1722
Upstream Blk Time (%)	0	1		
Queuing Penalty (veh)	0	9		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	154	261	249	74	91	174	300	103	109	815	120
Average Queue (ft)	87	134	95	51	67	107	80	29	46	431	107
95th Queue (ft)	160	241	211	83	79	185	218	87	117	828	146
Link Distance (ft)		250	250	53	53		1639			1578	
Upstream Blk Time (%)		1	0	21	50						
Queuing Penalty (veh)		4	1	91	213						
Storage Bay Dist (ft)	125					150		350	85		95
Storage Blk Time (%)	6	9				11	1		3	41	19
Queuing Penalty (veh)	12	9				15	1		14	125	54

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15
Directions Served	T	T	T	T	T
Maximum Queue (ft)	20	3	225	672	1821
Average Queue (ft)	1	0	103	610	845
95th Queue (ft)	14	3	276	768	2057
Link Distance (ft)	53	53		560	3647
Upstream Blk Time (%)	0			47	
Queuing Penalty (veh)	0			0	
Storage Bay Dist (ft)			200		
Storage Blk Time (%)			0	52	
Queuing Penalty (veh)			0	220	

Network Summary

Network wide Queuing Penalty: 770

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	6.4	12.0	0.3	0.2	0.2	0.2	0.2	2.4
Total Del/Veh (s)	25.7	28.0	30.6	30.2	71.7	85.2	63.7	36.5

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.0	2.0	0.2	0.1	0.2	0.2	0.7
Total Del/Veh (s)	56.3	47.1	10.1	7.2	167.8	77.0	36.9

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.1	1.0	3.1	3.4	0.7	3.3
Total Del/Veh (s)	88.5	23.8	11.7	19.4	11.2	6.5	58.2	56.5	11.1	45.8	39.1	19.8

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	30.8

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.3	35.2	16.3

Total Network Performance

Denied Del/Veh (s)	2.4
Total Del/Veh (s)	83.8

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	LTR
Maximum Queue (ft)	332	450	372
Average Queue (ft)	126	223	181
95th Queue (ft)	359	421	375
Link Distance (ft)	574	474	1699
Upstream Blk Time (%)	4	2	
Queuing Penalty (veh)	0	10	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	479	248	425	397
Average Queue (ft)	289	128	212	172
95th Queue (ft)	575	239	491	449
Link Distance (ft)	474	250	1722	1722
Upstream Blk Time (%)	12	1		
Queuing Penalty (veh)	65	12		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	150	295	282	68	94	174	569	349	109	255	120
Average Queue (ft)	139	239	206	27	68	98	252	90	54	86	70
95th Queue (ft)	178	331	334	58	82	202	446	262	104	194	126
Link Distance (ft)		250	250	53	53		1639			1578	
Upstream Blk Time (%)		23	6	4	44						
Queuing Penalty (veh)		102	26	14	147						
Storage Bay Dist (ft)	125					150		350	85		95
Storage Blk Time (%)	49	15				1	30	0	4	7	5
Queuing Penalty (veh)	143	31				6	94	0	10	15	9

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15
Directions Served	T	T	T	T	T
Maximum Queue (ft)	31	10	225	560	149
Average Queue (ft)	2	0	44	331	45
95th Queue (ft)	14	7	189	582	315
Link Distance (ft)	53	53		560	3647
Upstream Blk Time (%)	0	0		6	
Queuing Penalty (veh)	0	0		0	
Storage Bay Dist (ft)			200		
Storage Blk Time (%)			0	23	
Queuing Penalty (veh)			0	77	

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	114
Average Queue (ft)	7
95th Queue (ft)	110
Link Distance (ft)	560
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 763

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.2
Total Del/Veh (s)	5.6	2.2	14.1	12.7	40.9	36.4	28.6	19.4

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1	0.2	0.1	0.1
Total Del/Veh (s)	36.3	12.7	8.2	5.2	72.0	13.9	9.8

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.2	0.0	0.0	0.0	3.4	0.6	3.3	3.3	0.7	3.3
Total Del/Veh (s)	39.5	25.5	11.9	16.2	8.8	4.0	54.9	42.7	16.1	61.8	57.1	32.5

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	25.1

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.4	0.0	0.2
Total Del/Veh (s)	3.9	50.9	32.2

Total Network Performance

Denied Del/Veh (s)	1.3
Total Del/Veh (s)	79.0

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	LTR
Maximum Queue (ft)	100	428	315
Average Queue (ft)	22	176	161
95th Queue (ft)	66	347	278
Link Distance (ft)	574	474	1699
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	412	256	189	162
Average Queue (ft)	54	83	64	45
95th Queue (ft)	220	207	133	107
Link Distance (ft)	474	250	1722	1722
Upstream Blk Time (%)	0	1		
Queuing Penalty (veh)	1	10		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	149	276	262	71	96	174	255	152	109	558	120
Average Queue (ft)	68	121	86	39	62	96	68	32	54	185	85
95th Queue (ft)	147	244	209	74	94	172	179	93	117	430	143
Link Distance (ft)		250	250	53	53		1639			1578	
Upstream Blk Time (%)		5	3	9	36						
Queuing Penalty (veh)		14	7	33	130						
Storage Bay Dist (ft)	125					150		350	85		95
Storage Blk Time (%)	2	14				6	1		9	18	9
Queuing Penalty (veh)	3	10				7	1		25	41	15

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15
Directions Served	T	T	T	T	T
Maximum Queue (ft)	67	64	224	664	1407
Average Queue (ft)	8	5	66	418	341
95th Queue (ft)	39	31	227	763	1212
Link Distance (ft)	53	53		560	3647
Upstream Blk Time (%)	8	7		22	
Queuing Penalty (veh)	19	16		0	
Storage Bay Dist (ft)			200		
Storage Blk Time (%)			0	34	
Queuing Penalty (veh)			0	121	

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	58
Average Queue (ft)	2
95th Queue (ft)	58
Link Distance (ft)	560
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 454

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.3	0.1	0.1	0.2	0.1	0.2	0.2
Total Del/Veh (s)	8.8	4.2	15.9	15.6	41.6	38.8	32.5	20.0

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1	0.2	0.1	0.1
Total Del/Veh (s)	44.3	31.5	8.6	5.7	77.3	30.7	19.8

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.1	0.2	0.0	0.0	0.1	3.2	0.8	3.1	3.3	0.6	3.4
Total Del/Veh (s)	60.5	26.5	15.9	17.9	10.2	7.0	45.4	46.2	24.4	67.0	46.3	25.0

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.9
Total Del/Veh (s)	27.9

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	3.6	60.1	30.1

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	82.0

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	LTR
Maximum Queue (ft)	185	360	287
Average Queue (ft)	45	146	136
95th Queue (ft)	128	289	247
Link Distance (ft)	574	474	1699
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	480	254	343	318
Average Queue (ft)	167	109	119	84
95th Queue (ft)	420	231	263	228
Link Distance (ft)	474	250	1722	1722
Upstream Blk Time (%)	4	0		
Queuing Penalty (veh)	15	1		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	150	289	282	67	101	174	493	344	109	397	120
Average Queue (ft)	96	178	140	22	67	77	155	70	49	102	62
95th Queue (ft)	176	304	288	55	94	165	329	204	102	299	118
Link Distance (ft)		250	250	53	53		1639			1578	
Upstream Blk Time (%)		11	7	3	40						
Queuing Penalty (veh)		40	24	9	127						
Storage Bay Dist (ft)	125					150		350	85		95
Storage Blk Time (%)	13	18				0	10	1	9	7	4
Queuing Penalty (veh)	32	24				1	28	5	21	14	6

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15
Directions Served	T	T	T	T	T
Maximum Queue (ft)	74	66	224	668	1198
Average Queue (ft)	9	6	37	420	282
95th Queue (ft)	45	34	171	742	1009
Link Distance (ft)	53	53		560	3647
Upstream Blk Time (%)	8	7		24	
Queuing Penalty (veh)	30	27		0	
Storage Bay Dist (ft)			200		
Storage Blk Time (%)			0	36	
Queuing Penalty (veh)			0	115	

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	226
Average Queue (ft)	12
95th Queue (ft)	144
Link Distance (ft)	560
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 519

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.1	0.4	0.3	0.2	0.2	0.2	0.3
Total Del/Veh (s)	6.5	2.8	16.8	16.8	55.6	62.6	41.0	23.8

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBT	NBR	All
Denied Del/Veh (s)	0.1	0.2	0.1	0.1	0.2	0.1	0.1
Total Del/Veh (s)	56.3	18.3	8.8	5.7	67.1	16.1	12.0

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.3	0.2	0.0	0.0	0.0	3.5	0.6	3.4	6.3	5.0	7.2
Total Del/Veh (s)	56.9	28.4	15.6	22.6	10.1	6.2	76.9	43.7	15.9	125.8	120.9	97.7

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	1.9
Total Del/Veh (s)	46.6

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.4	0.0	0.2
Total Del/Veh (s)	3.8	84.0	51.9

Total Network Performance

Denied Del/Veh (s)	5.4
Total Del/Veh (s)	165.9

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	LTR
Maximum Queue (ft)	125	459	417
Average Queue (ft)	27	221	194
95th Queue (ft)	80	422	348
Link Distance (ft)	574	474	1699
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	443	260	194	181
Average Queue (ft)	96	122	72	49
95th Queue (ft)	315	245	148	119
Link Distance (ft)	474	250	1722	1722
Upstream Blk Time (%)	2	1		
Queuing Penalty (veh)	6	10		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	156	265	264	73	96	173	324	161	109	1207	120
Average Queue (ft)	85	142	105	50	62	110	95	41	52	602	104
95th Queue (ft)	162	257	234	84	93	190	269	142	125	1336	153
Link Distance (ft)		250	250	53	53		1639			1578	
Upstream Blk Time (%)		7	4	21	45					7	
Queuing Penalty (veh)		20	12	91	192					0	
Storage Bay Dist (ft)	125					150		350	85		95
Storage Blk Time (%)	7	16				14	1	0	9	42	19
Queuing Penalty (veh)	14	16				19	2	0	42	127	53

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15
Directions Served	T	T	T	T	T
Maximum Queue (ft)	71	65	225	673	3391
Average Queue (ft)	7	5	115	615	1724
95th Queue (ft)	40	31	286	768	3999
Link Distance (ft)	53	53		560	3647
Upstream Blk Time (%)	8	6		53	14
Queuing Penalty (veh)	19	15		0	0
Storage Bay Dist (ft)			200		
Storage Blk Time (%)			0	55	
Queuing Penalty (veh)			1	236	

Intersection: 15: Bend

Movement	EB
Directions Served	T
Maximum Queue (ft)	165
Average Queue (ft)	6
95th Queue (ft)	98
Link Distance (ft)	560
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 878

1: I-5 SB Ramp & Cook Road Performance by movement

Movement	EBT	EBR	WBL	WBT	SBL	SBT	SBR	All
Denied Del/Veh (s)	13.9	8.2	0.5	0.7	0.3	0.1	0.2	5.0
Total Del/Veh (s)	58.0	61.0	46.4	42.8	166.8	167.3	144.7	73.6

2: I-5 NB Ramp & Cook Road Performance by movement

Movement	EBL	EBT	WBT	WBR	NBL	NBR	All
Denied Del/Veh (s)	0.9	5.2	0.4	0.3	0.3	0.2	1.8
Total Del/Veh (s)	71.9	67.3	13.8	10.3	367.2	135.1	59.1

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	3.0	1.0	3.0	3.2	0.7	3.3
Total Del/Veh (s)	93.8	33.1	19.2	23.0	11.9	5.8	79.0	67.7	30.7	72.6	54.6	33.7

3: Old Highway 99 Road & Cook Road Performance by movement

Movement	All
Denied Del/Veh (s)	0.9
Total Del/Veh (s)	40.5

12: Cook Road Performance by movement

Movement	EBT	WBT	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	3.3	79.1	35.9

Total Network Performance

Denied Del/Veh (s)	4.2
Total Del/Veh (s)	155.2

Intersection: 1: I-5 SB Ramp & Cook Road

Movement	EB	WB	SB
Directions Served	TR	LT	LTR
Maximum Queue (ft)	540	490	726
Average Queue (ft)	224	267	336
95th Queue (ft)	559	521	769
Link Distance (ft)	574	474	1699
Upstream Blk Time (%)	12	6	
Queuing Penalty (veh)	0	32	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: I-5 NB Ramp & Cook Road

Movement	EB	WB	NB	NB
Directions Served	LT	TR	LTR	R
Maximum Queue (ft)	497	267	598	578
Average Queue (ft)	360	151	305	266
95th Queue (ft)	628	282	702	667
Link Distance (ft)	474	250	1722	1722
Upstream Blk Time (%)	23	5		
Queuing Penalty (veh)	128	40		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Old Highway 99 Road & Cook Road

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	TR	L	T	R	L	T	R
Maximum Queue (ft)	150	301	297	71	89	174	679	374	109	444	120
Average Queue (ft)	132	249	222	27	65	99	311	119	57	134	76
95th Queue (ft)	197	332	336	62	89	203	692	328	112	375	134
Link Distance (ft)		250	250	53	53		1639			1578	
Upstream Blk Time (%)		32	13	5	44						
Queuing Penalty (veh)		144	58	18	149						
Storage Bay Dist (ft)	125					150		350	85		95
Storage Blk Time (%)	47	23				3	34	1	10	10	9
Queuing Penalty (veh)	137	49				17	104	4	25	22	15

Intersection: 12: Cook Road

Movement	EB	EB	WB	WB	B15
Directions Served	T	T	T	T	T
Maximum Queue (ft)	81	67	224	661	1922
Average Queue (ft)	10	6	50	469	693
95th Queue (ft)	49	33	202	786	2039
Link Distance (ft)	53	53		560	3647
Upstream Blk Time (%)	8	8		37	
Queuing Penalty (veh)	36	33		0	
Storage Bay Dist (ft)			200		
Storage Blk Time (%)			0	46	
Queuing Penalty (veh)			0	153	

Intersection: 15: Bend

Movement	EB	EB
Directions Served	T	
Maximum Queue (ft)	230	56
Average Queue (ft)	10	2
95th Queue (ft)	133	56
Link Distance (ft)	560	560
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

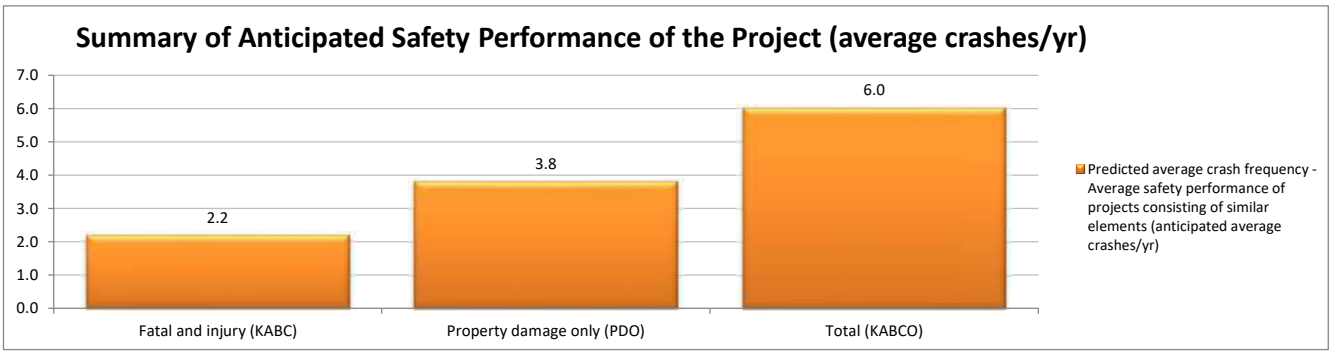
Network wide Queuing Penalty: 1164

Appendix E: Safety Analysis

PROJECT SAFETY PERFORMANCE SUMMARY REPORT

General Information	
Project Name	Cook Road ICE
Project Description	ICE - No Action
Reference Number	Cook Road
Analyst	Transpo Group
Agency/Company	WSDOT
Contact Email	0
Contact Phone	-
Date Completed	01/00/00

PROJECT SUMMARY



Project Element	Total Crashes/yr (KABCO)	Fatal and Injury Crashes/yr (KABC)	Property Damage Only Crashes/yr (PDO)
	Predicted average crash frequency $N_{predicted\ (KABCO)}$	Predicted average crash frequency $N_{predicted\ (KABC)}$	Predicted average crash frequency $N_{predicted\ (O)}$
INDIVIDUAL INTERSECTIONS			
Intersection 1	1.5	0.6	0.9
Intersection 2	2.4	0.9	1.5
Intersection 3	2.1	0.7	1.4
COMBINED (sum of column)	6.0	2.2	3.8

PROJECT SUMMARY -- Site-Specific EB Method Summary Results for Urban and Suburban Arterial Project

Crash severity level	$N_{predicted(PROJECT)}$ Predicted average crash frequency - Average safety performance of projects consisting of similar elements (anticipated average crashes/yr)
Fatal and injury (KABC)	2.2
Property damage only (PDO)	3.8
Total (KABCO)	6.0

HSM1 Extended Spreadsheet for Part C Chapter 12 v.9

Discussion of Results

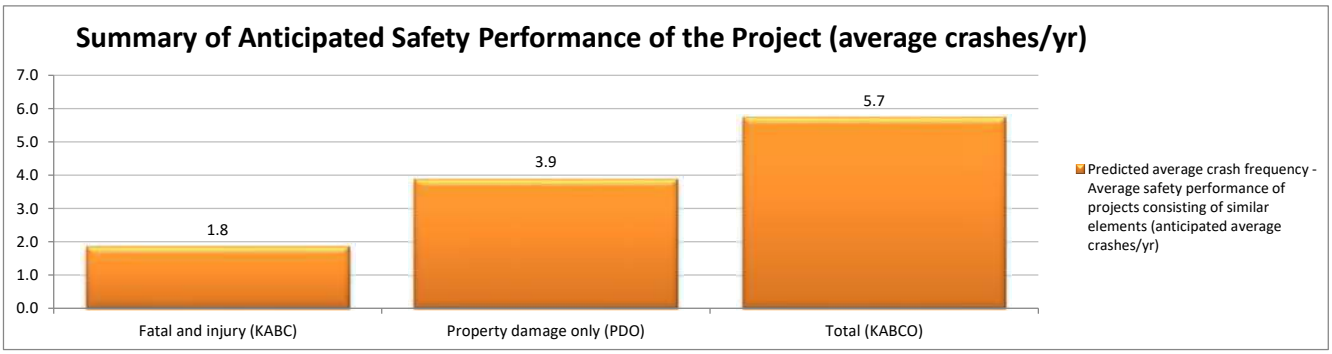
Given the potential effects of project characteristics on safety performance, results indicate that:

1. It is anticipated that a typical project such as this will, on average, experience 6 crashes per year (2.2 fatal and injury crashes per year; and 3.8 property damage only crashes per year).

PROJECT SAFETY PERFORMANCE SUMMARY REPORT

General Information	
Project Name	Cook Road ICE
Project Description	ICE - Alt 2 (Traffic Signal)
Reference Number	Cook Road
Analyst	Transpo Group
Agency/Company	WSDOT
Contact Email	0
Contact Phone	-
Date Completed	01/00/00

PROJECT SUMMARY



Project Element	Total Crashes/yr (KABCO)	Fatal and Injury Crashes/yr (KABC)	Property Damage Only Crashes/yr (PDO)
	Predicted average crash frequency $N_{predicted\ (KABCO)}$	Predicted average crash frequency $N_{predicted\ (KABC)}$	Predicted average crash frequency $N_{predicted\ (O)}$
INDIVIDUAL INTERSECTIONS			
Intersection 1	1.3	0.4	0.9
Intersection 2	2.3	0.7	1.5
Intersection 3	2.1	0.7	1.4
COMBINED (sum of column)	5.7	1.8	3.9

PROJECT SUMMARY -- Site-Specific EB Method Summary Results for Urban and Suburban Arterial Project

Crash severity level	$N_{predicted(PROJECT)}$ Predicted average crash frequency - Average safety performance of projects consisting of similar elements (anticipated average crashes/yr)
Fatal and injury (KABC)	1.8
Property damage only (PDO)	3.9
Total (KABCO)	5.7

HSM1 Extended Spreadsheet for Part C Chapter 12 v.9

Discussion of Results

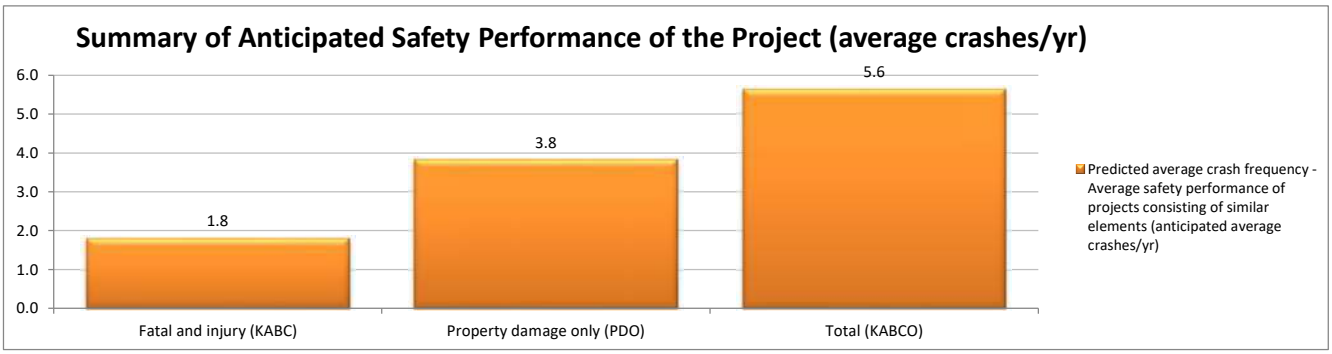
Given the potential effects of project characteristics on safety performance, results indicate that:

1. It is anticipated that a typical project such as this will, on average, experience 5.7 crashes per year (1.8 fatal and injury crashes per year; and 3.9 property damage only crashes per year).

PROJECT SAFETY PERFORMANCE SUMMARY REPORT

General Information	
Project Name	Cook Road ICE
Project Description	ICE - Alt 3/4 (Traffic Signal)
Reference Number	Cook Road
Analyst	Transpo Group
Agency/Company	WSDOT
Contact Email	0
Contact Phone	-
Date Completed	01/00/00

PROJECT SUMMARY



Project Element	Total Crashes/yr (KABCO)	Fatal and Injury Crashes/yr (KABC)	Property Damage Only Crashes/yr (PDO)
	Predicted average crash frequency $N_{predicted\ (KABCO)}$	Predicted average crash frequency $N_{predicted\ (KABC)}$	Predicted average crash frequency $N_{predicted\ (O)}$
INDIVIDUAL INTERSECTIONS			
Intersection 1	1.3	0.4	0.9
Intersection 2	2.3	0.7	1.5
Intersection 3	2.0	0.7	1.4
COMBINED (sum of column)	5.6	1.8	3.8

PROJECT SUMMARY -- Site-Specific EB Method Summary Results for Urban and Suburban Arterial Project

Crash severity level	$N_{predicted(PROJECT)}$ Predicted average crash frequency - Average safety performance of projects consisting of similar elements (anticipated average crashes/yr)
Fatal and injury (KABC)	1.8
Property damage only (PDO)	3.8
Total (KABCO)	5.6

HSM1 Extended Spreadsheet for Part C Chapter 12 v.9

Discussion of Results

Given the potential effects of project characteristics on safety performance, results indicate that:

1. It is anticipated that a typical project such as this will, on average, experience 5.6 crashes per year (1.8 fatal and injury crashes per year; and 3.8 property damage only crashes per year).