

Gold Flat Road Corridor Study

Prepared for:

**Nevada County Transportation
Commission**

Prepared by:



Gold Flat Road Corridor Study

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Nevada County Transportation Commission

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TABLE OF CONTENTS

1.0 Introduction	1
2.0 Screening Criteria	2
2.1 Traffic Operations Analysis.....	3
2.2 Analysis Criteria	5
3.0 Screening Objectives	5
3.1 Project Analysis Conditions.....	5
3.1.1 Existing Conditions (2015).....	5
3.1.2 Opening Year (2020).....	6
3.1.3 Interim Year (2030)	7
3.1.4 Design Year (2040)	7
3.2 Project Design Alternatives	7
3.2.1 Stop-Control Improvements.....	8
3.2.2 6-Leg Roundabout Alternative	8
3.2.3 4-Leg Roundabout Alternative	8
3.2.4 Signal Alternative	9
4.0 Capacity Assessment/Analysis.....	9
4.1 Stop-Control Improvements.....	9
4.1.1 Interim Year (2030)	9
4.2 6-Leg Roundabout Alternative.....	10
4.2.1 Design Year	10
4.3 4-Leg Roundabout Alternative Analysis.....	12
4.4 Signal Alternative	12
5.0 Safety Considerations	12
5.1 Historic Collision Data	12
5.2 Safety Analysis.....	13
5.2.1 Crash Modification Factors.....	13
5.2.2 Reduced Speed Potential and Crash Severity Potential	14
6.0 Roundabout Design Checks.....	14

6.1 Design Vehicle	14
6.2 Fastest Path and Vehicle Speed Checks.....	15
7.0 Considerations/Potential Impacts	16
7.1 Stop-Control Improvements.....	16
7.2 6-Leg Roundabout Alternative.....	16
8.0 Pedestrian Connectivity.....	17
9.0 Recommendations	17

LIST OF FIGURES

Figure 1 - Project Study Limits	2
Figure 2 - Fast Path Critical Speed Locations	15

LIST OF TABLES

Table 1 - Level-of-Service Criteria.....	4
Table 2 - Existing Conditions Peak Hour Operations.....	6
Table 3 - Travel Time Comparison.....	6
Table 4 - Opening Year Peak Hour Operations	6
Table 5 - Interim Year Peak Hour Operations	7
Table 6 - Design Year Peak Hour Operations	7
Table 7 - Interim Year Peak Hour Stop-Control Improvement Alternative.....	9
Table 8 - Design Year Peak Hour Stop-Control Improvement Alternative.....	10
Table 9 - Design Year AM Peak Hour 6-Leg Roundabout Alternative	11
Table 10 - Design Year PM Peak Hour 6-Leg Roundabout Alternative	11
Table 11 - Design Year School PM Peak Hour 6-Leg Roundabout Alternative.....	12

Table 12 - Collision Data.....13
Table 13 - Fast Path Analysis for 6-Leg Roundabout at SB Ramps16
Table 14 - Fast Path Analysis for 6-Leg Roundabout at NB Ramps16

APPENDIX

Appendix A - Southbound Off-Ramp Turn Pocket Layout and Cost Estimate
Appendix B - 6-Leg Roundabout Alternative Layout, Preliminary Design Checks, and Cost Estimate
Appendix C - 4-Leg Roundabout Alternative Layout
Appendix D - SimTraffic and Sidra Outputs
Appendix E - Sidewalk Relocation Costs Memorandum

1.0 Introduction

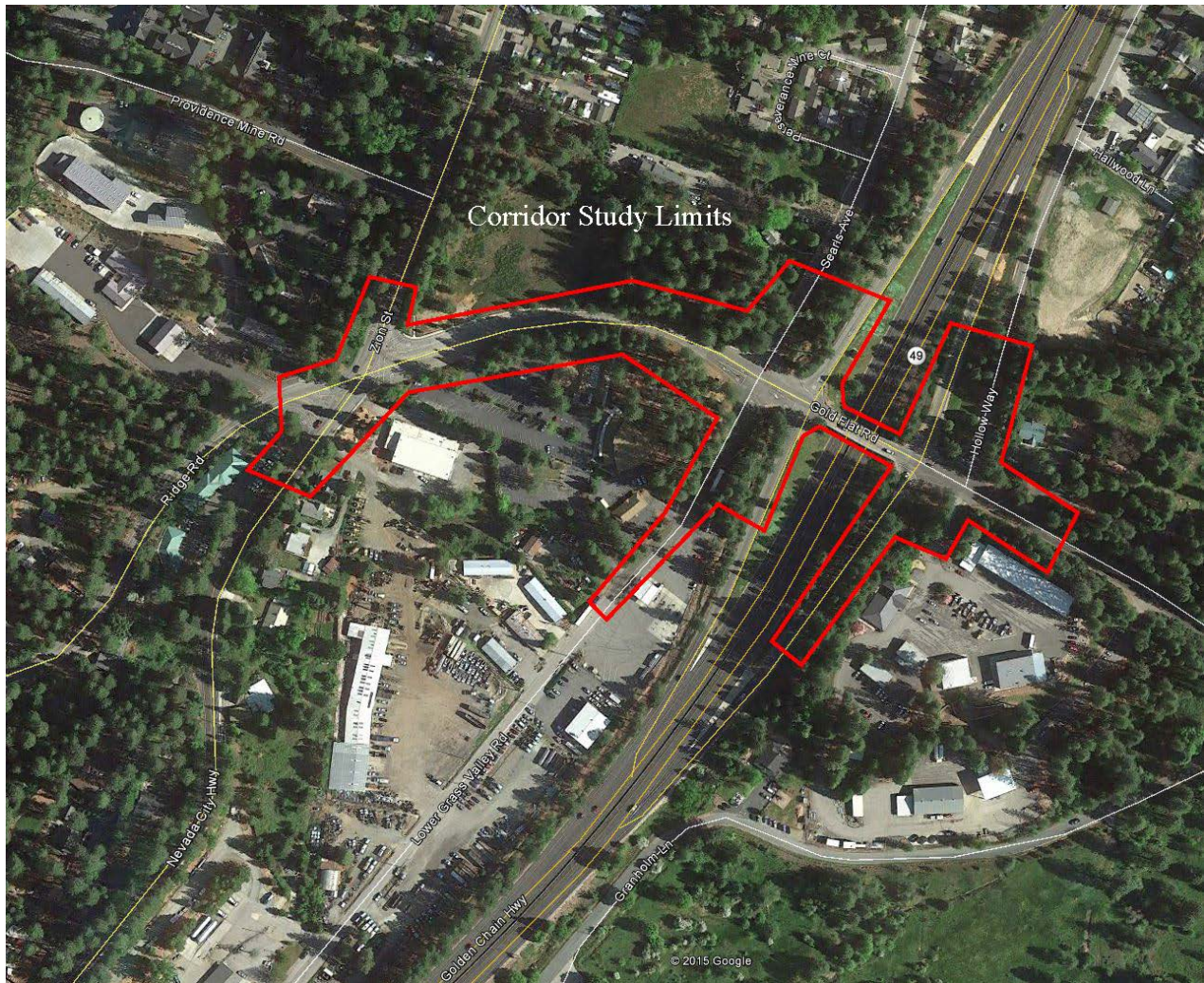
This document has been prepared to present the results of a corridor study performed by Omni-Means for the Nevada County Transportation Commission (NCTC). The preparation of this report has been financed, in part, through a grant from the U.S. Department of Transportation, Federal Highway Administration, under the authority of Moving Ahead for Progress in the 21st Century Act (MAP-21), with Congestion Mitigation and Air Quality Improvement Program funding. The purpose of this report is to assess conceptual alternatives along Gold Flat Road to address future travel demands through the corridor.

The Gold Flat Road Interchange with State Route 20/49 (SR 20/49) is located in the southern end of the City of Nevada City. The corridor between Hollow Way and Zion Street currently experiences congested conditions for short durations during peak commute periods due to close intersection spacing. The intersections analyzed as part of this study are the following:

1. Ridge Road/Nevada City Highway/Zion Street
2. Ridge Road/Zion Street
3. Ridge Road/Gold Flat Road/Lower Grass Valley Road/Searls Avenue
4. Gold Flat Road/SR 49 Southbound Ramps
5. Gold Flat Road/SR 49 Northbound Ramps
6. Gold Flat Road/Hollow Way

Improvement alternatives focus on reducing congestion and improving safety conditions along the Gold Flat Road corridor to address future traffic volumes, while providing improved safety and operations for all traffic modes, including bicycle and pedestrian, traveling through the corridor. This study analyzes the volumes for Opening Year (2020) conditions, Interim Year (2030) and Design Year (2040) using design software SIDRA and SimTraffic using growth models described in Section 2.0 of this report. This 0.3 mile long corridor serves as a major thoroughfare in Nevada County and serves many land uses such as: residential, commercial, industrial, and educational destinations. An aerial view of the study area is shown in Figure 1 below.

FIGURE 1 - PROJECT STUDY LIMITS



2.0 Screening Criteria

The conceptual alternatives assessed in this study include unsignalized, signalized, and roundabout intersection controls. Traffic operations for the alternatives were analyzed for AM, PM, and School PM peak hours in the Opening, Interim, and Design Years.

Unsignalized and signalized alternatives were analyzed using SimTraffic 9 software. The roundabout alternatives were analyzed using SIDRA 6 analysis software. The level-of-service (LOS) and delay were reported as per the Highway Capacity Manual (HCM) 2010 methodologies. As accepted by Caltrans, the SIDRA analysis methodology was used for roundabouts to determine the LOS, V/C, delay and the 95th percentile queues.

2.1 Traffic Operations Analysis

Traffic operations have been quantified through the determination of Level of Service (LOS). LOS is a qualitative measure of traffic measuring conditions, whereby a letter grade "A" through "F" is assigned to an intersection or roadway segment representing progressively worsening traffic conditions. LOS was calculated for different intersection control types using the methods documented in the *Highway Capacity Manual 2010 (HCM 2010)*. LOS definitions for different types of intersection controls are outlined in Table 1.

Although Caltrans has not designated a LOS standard, Caltrans' *Guide for the Preparation of Traffic Impact Studies* (December 2002) indicates that Caltrans endeavors to maintain a target LOS at the transition between "C" and "D", however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS.

Consistent with the previously approved studies, LOS "D" was identified as the appropriate target LOS for state facilities in the study area.

TABLE 1 - LEVEL-OF-SERVICE CRITERIA

Level of Service	Type of Flow	Delay	Maneuverability	Stopped Delay/Vehicle		
				Signalized & Roundabouts	Un signalized	All-Way Stop
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	< 10.0	< 10.0	< 10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10.0 and < 20.0	>10.0 and < 15.0	>10.0 and < 15.0
C	Stable Flow	Higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	Back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted	>20.0 and < 35.0	>15.0 and < 25.0	>15.0 and < 25.0
D	Approaching Unstable Flow	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35.0 and < 55.0	>25.0 and < 35.0	>25.0 and < 35.0
E	Unstable Flow	Generally considered to be the limit of acceptable delay. Indicative of poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	There are typically long queues of vehicles waiting upstream of the intersection.	>55.0 and < 80.0	>35.0 and < 50.0	>35.0 and < 50.0
F	Forced Flow	Generally considered to be unacceptable to most drivers. Often occurs with over saturation. May also occur at high volume-to-capacity ratios. There are many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.	Jammed conditions. Back-ups from other locations restrict or prevent movement. Volumes may vary widely, depending principally on the downstream back-up conditions.	> 80.0	> 50.0	> 50.0

2.2 Analysis Criteria

The following criteria are incorporated in the analysis in order to most accurately reflect intersection operating conditions.

- PHF: 0.88 or higher was used for all intersections for Design Years
- Truck Percentages: Data Counts from September 2015
- 1.10 Environmental Factor for Opening Year roundabout analysis
- 1.05 Environmental Factor for Interim Year roundabout analysis
- 1.02 Environmental Factor for Design Year roundabout analysis

3.0 Screening Objectives

3.1 Project Analysis Conditions

This section contains a brief description of the approximate time frames for which the traffic operations analysis was conducted. The project design alternatives (discussed within the next section) were analyzed for Opening Year, Interim Year, and Design Year conditions. The study analyzed various time frames to understand if and when capacity improvements will be needed to accommodate future traffic needs.

The traffic operations were conducted for AM, PM, and School PM peak hours. Comparison of traffic data shows that the School PM peak hour volumes were higher than the AM peak hour and PM peak hour volumes collected for this study. Traffic volumes for the various time periods and scenarios is presented in Appendix D.

3.1.1 Existing Conditions (2015)

The vehicular, bicycle, and pedestrian turning movement counts as well as truck percentages and peak hour factors were collected, by Omni-Means, on September 17, 2015 (while schools were in session) for weekday AM, PM, and School PM peak hours. Average Daily Traffic (ADT) counts were conducted from September 15 to September 17, 2015 on Gold Flat Road and Lower Grass Valley Road. The data collected by Omni-Means was then compared to the 2008 Gold Flat Road Corridor Study, ADT data, and NCTC Travel Demand Model (TDM) baseline forecasts.

The counts collected show a high percentage of large trucks/heavy vehicles on Lower Grass Valley Road. ADT counts were consistent with the Omni-Means peak hour intersection counts. The volumes from the 2008 Study were higher than the Omni-Means volumes, likely due to the recent construction of the nearby Dorsey Drive interchange, which rerouted traffic away from the Gold Flat Road interchange.

Table 2 presents the existing conditions service levels.

TABLE 2 - EXISTING CONDITIONS PEAK HOUR OPERATIONS

#	Intersection	Control Type ^{1,2}	Target LOS	AM Peak Hour		PM Peak Hour		School PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS
1	Nevada City Hwy/Zion Street and Ridge Road	AWSC	D	6.0	A	5.9	A	7.0	A
2	Ridge Road and Zion Street	AWSC	D	7.3	A	6.7	A	9.0	A
3	Gold Flat Rd/Lower Grass Valley Rd/Searls Ave	3WSC	D	11.1	B	13.1	B	13.3	B
4	Gold Flat Road and SR 49 SB Ramps	1WSC	D	11.8	B	14.7	B	11.7	B
5	Gold Flat Road and SR 49 NB Ramps	3WSC	D	6.7	A	6.3	A	7.1	A
6	Gold Flat Road and Hollow Way	TWSC	D	3.4	A	7.3	A	6.3	A

Notes:

1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control; 3WSC = Three Way Stop Control; 1WSC = One Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC and 3WSC intersections, average of all approaches for AWSC

As shown in Table 2, all study intersections currently operate at acceptable LOS.

Consistent with the methods outlined in the Federal Highway Administration *Travel Time Data Collection Handbook*, travel time runs were conducted through the corridor. For the eastbound direction, travel times were started after crossing the stop bar at the intersection of Ridge Road/Zion Street and concluded after entering the intersection of Gold Flat Road/Hollow Way. For the westbound direction, travel times were started after entering the intersection of Gold Flat Road/Hollow Way and crossing the stop bar at the intersection of Ridge Road/Zion Street.

Table 3 presents the average of five travel time runs through the corridor compared to results obtained in SimTraffic. As shown in Table 3, the results from the SimTraffic model closely simulate the observed conditions. Since the SimTraffic model is able to simulate the field conditions, the SimTraffic model was used in the operations analysis.

TABLE 3 - TRAVEL TIME COMPARISON

Direction	Travel Time	
	Observed	SimTraffic
Eastbound	61.5	62.0
Westbound	46.4	49.6

3.1.2 Opening Year (2020)

For the purposes of this study, year 2020 was assumed to represent the Opening Year. Peak hour volumes were derived for the Opening Year at the study intersections by applying a 1% uniform growth rate over five years. Table 4 presents the Opening Year conditions service levels.

TABLE 4 - OPENING YEAR PEAK HOUR OPERATIONS

#	Intersection	Control Type ^{1,2}	Target LOS	AM Peak Hour		PM Peak Hour		School PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS
1	Nevada City Hwy/Zion Street and Ridge Road	AWSC	D	6.2	A	6.2	A	8.0	A
2	Ridge Road/Zion Street	AWSC	D	7.5	A	6.8	A	8.2	A
3	Gold Flat Rd/Lower Grass Valley Rd/Searls Ave	3WSC	D	11.2	B	14.1	B	12.7	B
4	Gold Flat Road/SR 49 SB Ramps	1WSC	D	12.2	B	19.5	C	15.1	C
5	Gold Flat Road/SR 49 NB Ramps	3WSC	D	6.9	A	6.8	A	6.9	A
6	Gold Flat Road/Hollow Way	TWSC	D	4.7	A	6.8	A	5.8	A

Notes:

1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control; 3WSC = Three Way Stop Control; 1WSC = One Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC and 3WSC intersections, average of all approaches for AWSC

As shown in Table 4, all study locations are projected to operate acceptably.

3.1.3 Interim Year (2030)

A straight line methodology was utilized to interpolate Interim Year (Year 2030) volumes between the Opening Year (Year 2020) and the Design Year (Year 2040) volumes. Table 5 presents the Interim Year conditions service levels.

TABLE 5 - INTERIM YEAR PEAK HOUR OPERATIONS

#	Intersection	Control Type ^{1,2}	Target LOS	AM Peak Hour		PM Peak Hour		School PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS
1	Nevada City Hwy/Zion Street and Ridge Road	AWSC	D	6.4	A	7.3	A	9.4	A
2	Ridge Road/Zion Street	AWSC	D	8.5	A	7.5	A	9.5	A
3	Gold Flat Rd/Lower Grass Valley Rd/Searls Ave	3WSC	D	14.1	B	32.5	D	28.4	D
4	Gold Flat Road/SR 49 SB Ramps	1WSC	D	16.7	C	35.5	E	39.9	E
5	Gold Flat Road/SR 49 NB Ramps	3WSC	D	7.5	A	8.5	A	9.8	A
6	Gold Flat Road/Hollow Way	TWSC	D	4.7	A	9.6	A	7.2	A

Notes:
 1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control; 3WSC = Three Way Stop Control; 1WSC = One Way Stop Control
 2. LOS = Delay based on worst minor street approach for TWSC and 3WSC intersections, average of all approaches for AWSC

As shown in Table 5, the intersection of Gold Flat Road and State Route 49 Southbound ramps is projected to operate at unacceptable LOS.

3.1.4 Design Year (2040)

The Nevada County Transportation Commission has updated the Nevada County's and City's Travel Demand Models (November 2014). Within the updated version of the Nevada County Transportation Commission TDM, the forecast year is 2035. For the purpose of this report, year 2040 volumes were derived by applying a 20% linear growth increase from the existing counts, based on the growth presented in the NCTC TDM. The forecasts also includes growth from the development of anticipated projects, retail uses in the northwest portion of the interchange and recreational uses in the northeast area of the interchange. Table 6 presents the Design Year conditions service levels.

TABLE 6 - DESIGN YEAR PEAK HOUR OPERATIONS

#	Intersection	Control Type ^{1,2}	Target LOS	AM Peak Hour		PM Peak Hour		School PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS
1	Nevada City Hwy/Zion Street and Ridge Road	AWSC	D	8.8	A	8.5	A	27.6	D
2	Ridge Road and Zion Street	AWSC	D	11.3	B	9.4	A	12.7	B
3	Gold Flat Rd/Lower Grass Valley Rd/Searls Ave	3WSC	D	23.5	C	133.5	F	125.0	F
4	Gold Flat Road and SR 49 SB Ramps	1WSC	D	42.5	E	123.2	F	163.4	F
5	Gold Flat Road and SR 49 NB Ramps	3WSC	D	9.6	A	11.7	B	13.5	B
6	Gold Flat Road and Hollow Way	TWSC	D	5.1	A	13.7	B	11.2	B

Notes:
 1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control; 3WSC = Three Way Stop Control; 1WSC = One Way Stop Control
 2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC

As shown in Table 6, the intersection of Gold Flat Road and State Route 49 Southbound Ramps and Gold Flat Road and Lower Grass Valley Road/Searls Avenue are projected to operate at unacceptable LOS.

3.2 Project Design Alternatives

Nevada City provided Omni-Means with CAD files containing existing right of way, curb lines, and topography of the Gold Flat Road Interchange along with plans that include the sidewalk improvements along Zion Street, Ridge Road, and Searls Avenue. This information was used in

generating the various design alternatives and cost estimates. Aerial images were extracted from Google Earth and were used as a guide to aid the design in areas where existing mapping was not included.

This study included analysis of four potential improvement alternatives for the study corridor.

- Stop-Control Improvements
- 6-Leg Roundabout Alternative
- 4-Leg Roundabout Alternative
- Signal Alternative

3.2.1 Stop-Control Improvements

This alternative utilizes the existing stop-controlled intersections and lane geometrics with the addition of a dedicated right-turn lane to SR 49 Southbound Off-Ramp to accommodate future volumes.

3.2.2 6-Leg Roundabout Alternative

This alternative features the construction of two six-leg roundabouts, where the closely spaced intersections along the Gold Flat Road corridor would be combined into a single roundabout on either side of the interchange. The 6-Leg Roundabout Alternative layout can be found in the Appendix B of this report.

At both of the roundabout intersections, the roundabouts include single lane entries and exits at all approaches. The diameter of the central island is 120 feet with a uniform truck apron width of 16 feet. The circulatory roadway is a constant 20 feet wide.

This alternative features a sidewalk on the south side of the overcrossing, however it is feasible to move the sidewalk on the north side of the overcrossing. Further discussion is provided in the Pedestrian Connectivity section.

3.2.3 4-Leg Roundabout Alternative

This alternative features the construction of roundabouts at Gold Flat Road and the two frontage roads (Searls Avenue/Lower Grass Valley Road and Hollow Way), while allowing only right turns at the SR 49 on and off ramps. The 4-Leg Roundabout Alternative layout can be found in the Appendix C of this report.

At the southbound ramps, the roundabout includes single lane entries at all approaches except for eastbound Ridge/Gold Flat Road. At the eastbound approach, the left lane directs through and left turning traffic through the roundabout intersection and the right lane directs traffic to southbound Lower Grass Valley Road and terminates at the southbound SR 49 On-Ramp. Multi-lane approaches consist of 12 feet (minimum) wide travel lanes that flare out near the yield line. This approach has been designed for a shorter flare to two lanes and does not require a vane island (per NCHRP Report 672, Section 6.5.2). The central island is circular in shape with a diameter of 90 feet and a uniform truck apron width of 23 feet. The circulatory road varies in width between 20 and 31 feet.

The intersection of Gold Flat Road and Hollow Way includes single lane approaches for all legs. The central island is circular in shape with a diameter of 90 feet and a uniform truck apron width of 17 feet. The circulatory road varies in width between 17 and 20 feet.

3.2.4 Signal Alternative

This alternative features the construction of signals at the intersections of Gold Flat Road/Lower Grass Valley Road/Searls Avenue, Gold Flat Road/SR 49 Southbound Ramps, Gold Flat Road/SR 49 Northbound Ramps, and Gold Flat Road/Hollow Way. The signals at Gold Flat Road/Lower Grass Valley Road/Searls Avenue and Gold Flat Road/SR 49 Southbound Ramps would operate as a single signal. Similarly, the signals at Gold Flat Road/SR 49 Northbound Ramps and Gold Flat Road/Hollow Way would operate as a single signal. The two signals would require coordination due to the close proximity.

Additionally, while the roundabouts can be constructed without widening the overcrossing structure, the signal option would require doubling the width of the overcrossing structure to provide turn lanes.

4.0 Capacity Assessment/Analysis

4.1 Stop-Control Improvements

This section provides a summary of the intersection operations associated with the Unsignalized Alternative for AM, PM, and School PM peak hours. This alternative analyzes the intersection of SR 49 Southbound Ramps with a dedicated right-turn pocket. Opening Year is projected to operate at acceptable service levels and was not analyzed within this alternative.

Per project team discussion, this section on stop control does not address the option of converting intersection 3 from 3WSC to AWSC, or intersection 4 from TWSC to AWSC, as those changes would disrupt overall corridor operations.

4.1.1 Interim Year (2030)

Interim Year conditions were analyzed using a straight line growth from Opening Year to Design Year. Table 7 shows the delay and LOS for Interim Year conditions during AM, PM, and School PM peak hour conditions. Appendix D contains the SimTraffic outputs.

TABLE 7 - INTERIM YEAR PEAK HOUR STOP-CONTROL IMPROVEMENT ALTERNATIVE

#	Intersection	Control Type ^{1,2}	Target LOS	AM Peak Hour		PM Peak Hour		School PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS
1	Nevada City Hwy/Zion Street and Ridge Road	AWSC	D	6.9	A	7.2	A	9.7	A
2	Ridge Road/Zion Street	AWSC	D	8.8	A	7.4	A	9.2	A
3	Gold Flat Rd/Lower Grass Valley Rd/Searls Ave	3WSC	D	14.0	B	32.2	D	21.5	C
4	Gold Flat Road/SR 49 SB Ramps	1WSC	D	15.5	C	19.2	C	21.1	C
5	Gold Flat Road/SR 49 NB Ramps	3WSC	D	8.0	A	8.6	A	9.5	A
6	Gold Flat Road/Hollow Way	TWSC	D	4.7	A	9.0	A	7.1	A

Notes:

1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control; 3WSC = Three Way Stop Control; 1WSC = One Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC and 3WSC intersections, average of all approaches for AWSC
3. Warrant = Based on California MUTCD Warrant 3

As shown in Table 7, the Unsignalized Alternative is projected to provide acceptable LOS and delay for the study intersections of Gold Flat Road and SR 49 Southbound Ramps. A dedicated right-turn pocket to SR 49 Southbound Off-Ramp to accommodate the future “Interim volumes”. Appendix A shows the mitigation of a southbound right turn pocket for the intersection of Gold Flat Road/SR 49 Southbound Ramps.

However, the stop-control improvement alternative does not yield acceptable operations for Design Year conditions. Table 8 shows the delay and LOS for Design Year conditions during AM, PM, and School PM peak hour conditions. Appendix D contains the SimTraffic outputs.

TABLE 8 - DESIGN YEAR PEAK HOUR STOP-CONTROL IMPROVEMENT ALTERNATIVE

#	Intersection	Control Type ^{1,2}	Target LOS	AM Peak Hour		PM Peak Hour		School PM Peak Hour	
				Delay	LOS	Delay	LOS	Delay	LOS
1	Nevada City Hwy/Zion Street and Ridge Road	AWSC	D	7.2	A	8.1	A	20.5	C
2	Ridge Road and Zion Street	AWSC	D	11.3	B	10.0	A	6.4	A
3	Gold Flat Rd/Lower Grass Valley Rd/Searls Ave	3WSC	D	14.0	B	58.5	F	36.2	E
4	Gold Flat Road and SR 49 SB Ramps	1WSC	D	23.6	C	20.3	C	3.4	A
5	Gold Flat Road and SR 49 NB Ramps	3WSC	D	8.9	A	9.4	A	9.9	A
6	Gold Flat Road and Hollow Way	TWSC	D	5.3	A	10.9	B	8.6	A

Notes:

1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control; 3WSC = Three Way Stop Control; 1WSC = One Way Stop Control

2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC

As shown in Table 8, the Unsignalized Alternative is projected to have unacceptable LOS and delay for the study intersection of Gold Flat Road and Lower Grass Valley Road/Searls Avenue.

4.2 6-Leg Roundabout Alternative

This section provides a summary of the intersection operations associated with the 6-Leg Roundabout Alternative for AM, PM, and School PM peak hours. The 6-Leg Roundabout Alternative lane geometrics layout will be included in a subsequent section. Opening Year is projected to operate at acceptable service levels and was not analyzed within this alternative. Interim Year is projected to operate acceptably with the stop-control improvement and was not analyzed within this alternative. Based on a straight line growth, unacceptable operations are projected approximately after Year 2032/33 with the stop-control improvement alternative.

4.2.1 Design Year

Tables 9, 10, and 11 show the delays, LOS, and 95th percentile queues for Design Year conditions during AM, PM, and School PM peak hour conditions. The Sidra outputs are included in Appendix D.

TABLE 9 - DESIGN YEAR AM PEAK HOUR 6-LEG ROUNDABOUT ALTERNATIVE

Roundabout Alternative - 6 Leg Approach					
Int. #	Intersection/Approach	V/C Ratio	Delay (sec)	Level Of Service	95 th Percentile Queue (ft)
3 & 4	Gold Flat Rd/Ridge Rd & SR 49 Ramps/Searls Rd/Lower Grass Valley Rd	-	8.3	A	-
	Lower Grass Valley Road (Northbound)	0.15	10.7	B	25.4
	Gold Flat Road (Westbound)	0.56	4.8	A	138.7
	SR 49 SB Off Ramp (Southwestbound)	0.50	14.0	B	111.8
	Searls Road (Southbound)	0.28	12.7	B	47.6
	Ridge Road (Eastbound)	0.53	7.6	A	111.4
5 & 6	Gold Flat Rd & Caltrans Access Rd/Hollow Way/SR 49 NB Ramps	-	11.9	B	-
	Caltrans Access Rd (Northbound)	0.05	13.5	B	9.1
	Gold Flat Road (Westbound)	0.36	10.0	A	68.3
	Hollow Way (Southbound)	0.16	11.8	B	28.7
	Gold Flat Road (Eastbound)	0.25	7.4	A	46.9
	SR 49 NB Off Ramp (Northeastbound)	0.66	14.7	B	178

1. Traffic Operation outputs calculated using SIDRA 6 methodology for Roundabouts.
2. 95% Vehicle Queue based on Worst lane movement (of the approach) value stated.

TABLE 10 - DESIGN YEAR PM PEAK HOUR 6-LEG ROUNDABOUT ALTERNATIVE

Roundabout Alternative - 6 Leg Approach					
Int. #	Intersection/Approach	V/C Ratio	Delay (sec)	Level Of Service	95 th Percentile Queue (ft)
3 & 4	Gold Flat Rd/Ridge Rd & SR 49 Ramps/Searls Rd/Lower Grass Valley Rd	-	16.2	B	-
	Lower Grass Valley Road (Northbound)	0.36	21.6	C	74.2
	Gold Flat Road (Westbound)	0.61	5.8	A	157.9
	SR 49 SB Off Ramp (Southwestbound)	0.71	23.8	C	230
	Searls Road (Southbound)	0.62	19.8	B	172.1
	Ridge Road (Eastbound)	0.78	20.3	C	301.2
5 & 6	Gold Flat Rd & Caltrans Access Rd/Hollow Way/SR 49 NB Ramps	-	12.8	B	-
	Caltrans Access Rd (Northbound)	0.13	15.7	B	23.6
	Gold Flat Road (Westbound)	0.47	13.2	B	104.1
	Hollow Way (Southbound)	0.28	14.9	B	53.8
	Gold Flat Road (Eastbound)	0.35	8.1	A	76.4
	SR 49 NB Off Ramp (Northeastbound)	0.60	15.9	B	154.6

1. Traffic Operation outputs calculated using SIDRA 6 methodology for Roundabouts.
2. 95% Vehicle Queue based on Worst lane movement (of the approach) value stated.

TABLE 11 - DESIGN YEAR SCHOOL PM PEAK HOUR 6-LEG ROUNDABOUT ALTERNATIVE

Int. #	Roundabout Alternative - 6 Leg Approach				
	Intersection/Approach	V/C Ratio	Delay (sec)	Level Of Service	95 th Percentile Queue (ft)
3 & 4	Gold Flat Rd/Ridge Rd & SR 49 Ramps/Searls Rd/Lower Grass Valley Rd	-	15.7	B	-
	Lower Grass Valley Road (Northbound)	0.30	19.6	B	59.1
	Gold Flat Road (Westbound)	0.62	5.5	A	163.4
	SR 49 SB Off Ramp (Southwestbound)	0.75	26.5	C	266
	Searls Road (Southbound)	0.58	19.5	B	150.9
	Ridge Road (Eastbound)	0.78	18.0	B	295.7
5 & 6	Gold Flat Rd & Caltrans Access Rd/Hollow Way/SR 49 NB Ramps	-	14.6	B	-
	Caltrans Access Rd (Northbound)	0.09	18.6	B	17.5
	Gold Flat Road (Westbound)	0.42	13.9	B	90.6
	Hollow Way (Southbound)	0.36	14.5	B	71.3
	Gold Flat Road (Eastbound)	0.37	8.0	A	83.6
	SR 49 NB Off Ramp (Northeastbound)	0.72	19.8	B	247.3

1. Traffic Operation outputs calculated using SIDRA 6 methodology for Roundabouts.
2. 95% Vehicle Queue based on Worst lane movement (of the approach) value stated.

As shown in Tables 9, 10, and 11 the 6-Leg Roundabout Alternative is projected to provide acceptable LOS, delay, and queues for all study intersections.

The 6-leg roundabout alternative is projected to operate beyond Design Year.

4.3 4-Leg Roundabout Alternative Analysis

This section analyzed a four leg roundabout alternative at the intersections of Gold Flat Road/Lower Grass Valley Road/Searls Avenue and Gold Flat Road/Hollow Way. As noted previously, under this alternative, the intersections of Gold Flat Road/State Route 49 Southbound Ramps and Gold Flat Road/State Route 49 Northbound Ramps would operate as side street stop control intersections. These side street stops are projected to operate at unacceptable LOS for Design Year volumes. As such, this alternative is not expected to accommodate future traffic demands. Appendix C shows this alternative.

4.4 Signal Alternative

This section analyzed a signalized corridor alternative at the intersections of Gold Flat Road/Lower Grass Valley Road/Searls Avenue, Gold Flat Road/State Route 49 Southbound Ramps, Gold Flat Road/State Route 49 Northbound Ramps, and Gold Flat Road/Hollow Way. The signals are projected to operate at unacceptable LOS for Design Year volumes due to extensive queuing and spillback onto the Southbound and Northbound Off-Ramps. As such, this alternative is not expected to accommodate future traffic demands.

5.0 Safety Considerations

5.1 Historic Collision Data

Historical collision data for a five year interval (from June 2009 to June 2014) was obtained from the Statewide Integrated Traffic Records System (SWITRS). Table 12 provides the summary of the type of collisions that happened in that time period at the study intersections.

TABLE 12 - COLLISION DATA

#	Intersection	Property Damage Only	Fatal	Injury (Severe)	Injury (Complaint of Pain)
1	Nevada City Hwy/Zion Street and Ridge Road	1	0	0	1
2	Ridge Road and Zion Street	2	0	0	0
3	Gold Flat Rd/Lower Grass Valley Rd/Searls Ave	3	0	0	0
4	Gold Flat Road and SR 49 SB Ramps	1	0	0	0
5	Gold Flat Road and SR 49 NB Ramps	2	0	0	0
6	Gold Flat Road and Hollow Way	2	0	0	0

As shown in Table 12, there were a total of 11 property damage accidents and 1 complaint of pain injury accident at the study locations.

5.2 Safety Analysis

5.2.1 Crash Modification Factors

The technical report publication titled “Desktop Reference for Crash Reduction Factor” by the Federal Highway Administration (FHWA) documents Crash Modification Factors (CMF). The publication contains a CMF for converting an all-way stop control and two-way stop control to a roundabout and traffic signal. The existing conditions at study intersections are as follows:

1. Ridge Road/Nevada City Hwy/Zion Street – All-Way Stop Control
2. Ridge Road/Zion Street – All-Way Stop Control
3. Gold Flat Road/Lower Grass Valley Road/Searls Ave – Three-Way Stop Control
4. Gold Flat Road/SR 49 SB Ramps – One-Way Stop Control
5. Gold Flat Road/SR 49 NB Ramps – Three-Way Stop Control
6. Gold Flat Road/Hollow Way – Two-Way Stop Controls

The CMF factors for both - total accidents and fatal/severe injury types are provided below:

CMF for Total Crashes

- CMF for converting two-way stop control to roundabout is 56% with +/- 6% standard error
- CMF for converting all-way stop control to a roundabout is 72% with +/- 6% standard error

CMF for Fatal/Severe Injury Crashes

- CMF for converting two-stop control to roundabout is 78% with +/- 7% standard error
- CMF for converting all-way stop control to a roundabout 88% with +/- 8% standard error

As noted above, the CMF for converting the existing study intersections to a roundabout is higher when compared to converting it to a traffic signal. The higher CMF directly correlates to a significant reduction in accident rates.

5.2.2 Reduced Speed Potential and Crash Severity Potential

Typically, the roundabout design forces the driver to reduce the speed in the intersection to 25 MPH. However, drivers can travel an intersection with traffic signal control at speeds higher than posted speed limits due to lack of geometric constraints. Due to reduced travel speeds through the intersection and expected reduction in crashes, the roundabout alternative is likely to eliminate most severe crash types.

6.0 Roundabout Design Checks

Due to the complexity in the design of modern roundabouts, several performance checks must be conducted to verify the Roundabout's feasibility. These performance checks meet current Caltrans TOPD 13-02 and HDM 405.10 which mandates conformance with the National Cooperative Highway Research Program (NCHRP) Report 672 entitled "Roundabouts An Informational Guide, 2nd edition". Performance measures listed in the NCHRP Report 672 are described below.

- Criteria and methodologies to be consistent with Caltrans DIB 80-01, Caltrans Highway Design Manual, and Report 672 of the National Cooperative Highway Research Program (NCHRP) titled *Roundabouts: An Informational Guide (Second Edition)*. This document supersedes the original roundabout guide published by the FHWA in 2000.
- The "STAA-STD-56" design vehicle from the Caltrans Highway Design Manual, 6th Edition (update September 2014) shall be accommodated on all through movements. This vehicle shall be accommodated such that the tractor portion of the vehicle does not need to mount any truck aprons.
- The "Bus-45, motor coach" design vehicle from the Caltrans Highway Design Manual, 6th Edition (update September 2014) shall be accommodated on all movements. This vehicle shall be accommodated such that it does not need to mount any truck aprons.
- Fast path entry speeds on single lane roundabout approaches should be 25 mph or less.
- Fast path entry speeds on multi-lane approaches should be 30 mph or less.
- Minimum stopping sight distance for posted speed limits should be provided for vehicles approaching roundabout entrances and pedestrian crosswalks.
- View angles for all legs of the roundabout should be no more than 15 degrees.

Due to the preliminary nature of the proposed improvements, only design vehicle (STAA STD-56) accommodations and fast path analysis were performed. These two factors have the largest impact to the roundabout size and approach geometry. Further analysis of the other roundabout design checks will be needed as the designs are refined and the project progresses.

6.1 Design Vehicle

In conformance with Caltrans Highway Design Manual (HDM) Chapter 400 "Intersections at Grade" vehicle turning paths were analyzed for all proposed alternatives. Design vehicles used in the analysis for the purpose of this report include "STAA STD-56" from Caltrans HDM, 6th Edition (update September 2014).

There is a business located on Lower Grass Valley Road (Robinson Enterprises) that services vehicles that are larger than the STAA design vehicle, particularly a double drop "Lowboy" trailer. Special accommodations, in addition to roadway width, will be needed to ensure the trailer will not drag/impact curbs as these vehicle tend to have very low clearances from the roadway. These accommodations will be achieved by the use of lower curb heights at truck

apron and blister locations and restricting the cross slope of the roadway and aprons to two percent maximum.

For all alternatives, the study intersections must be able to accommodate the design vehicles without mounting any raised curb areas, with the exception for allowing the trailer portion of trucks to mount the truck apron area within the central island and any truck blister locations on the outer edge of the approach roadways.

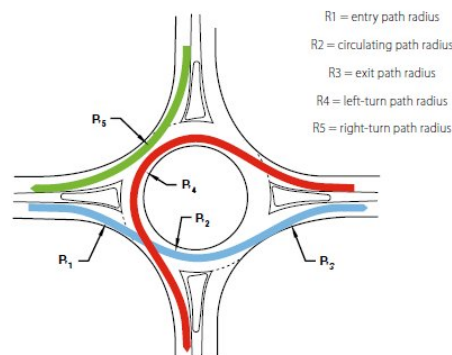
See Figures B-3 to B-8 and C-3 to C-8 for design vehicle turning templates in the Appendix of this report.

6.2 Fastest Path and Vehicle Speed Checks

The "Fastest Path" represents the path that the most aggressive drivers could take through the roundabout and assumes no other traffic to be within the intersection. NCHRP Report 672 indicates that the recommended maximum vehicle entry speed along the fastest path should be less than 25 mph at single-lane and 30 mph at multi-lane roundabout entries. NCHRP Report 672 also indicates that the differential speed between consecutive or conflicting projected fast path speeds should be less than 15 mph.

Fast path speeds are determined for five locations per approach. These include entry speeds (referred to as V1); through movement speeds (V2); exiting speeds (V3); left turn movement circulating speeds (V4); and right turn speeds (V5). A diagram of the described locations are shown in Figure 2.

FIGURE 2 - FAST PATH CRITICAL SPEED LOCATIONS



Fastest-path speeds for the 6-leg roundabout alternative are provided below in Tables 13 and 14, values and diagram of fast-path alignments are shown in Figures B-2 and C-2 in the Appendix of this report.

TABLE 13 - FAST PATH ANALYSIS FOR 6-LEG ROUNDABOUT AT SB RAMPS

Movement	Northbound Grass Valley Rd (N#)	Southbound Searls Ave (S#)	SR 49 SB Off-Ramp (S#)	Eastbound Gold Flat Rd (E#)	Westbound Gold Flat Rd (W#)
Entering (V1)	22.2	24.4	20.4	24.2	24.8
Circulating (V2)	15.4	22.0	22.7	24.0	16.4
Exiting (V3)	22.6	33.5	30.5	21.3	30.1
Left Turn (V4)	16.4	15.8	16.5	16.3	17.0
Right Turn (V5)	21.8	19.7	18.4	19.9	22.5

Notes:

All values are in miles per hour

V3 exiting speeds are derived from vehicle acceleration formulas in NCHRP 672

V3 fast path speed measured at exit crosswalk or 100 feet downstream from V2.

N/A = Fastest path speed does not exist for this approach

2% cross-slope assumed for determining Fastest path

TABLE 14 - FAST PATH ANALYSIS FOR 6-LEG ROUNDABOUT AT NB RAMPS

Movement	Northbound Caltrans Dwy (N#)	Southbound Hollow Way (S#)	SR 49 NB Off-Ramp (S#)	Eastbound Gold Flat Rd (E#)	Westbound Gold Flat Rd (W#)
Entering (V1)	24.0	20.8	21.9	24.5	24.2
Circulating (V2)	16.9	14.4	36.3	17.6	19.9
Exiting (V3)	30.4	25.2	34.8	30.8	18.0
Left Turn (V4)	16.2	16.3	16.0	16.3	16.5
Right Turn (V5)	19.9	22.5	15.0	24.4	21.5

Notes:

All values are in miles per hour

V3 exiting speeds are derived from vehicle acceleration formulas in NCHRP 672

V3 fast path speed measured at exit crosswalk or 100 feet downstream from V2.

N/A = Fastest path speed does not exist for this approach

2% cross-slope assumed for determining Fastest path

The results of the preliminary fast path analysis for both roundabout alternatives are found to be acceptable as vehicle entry speeds and consecutive differential speeds are below the design requirements.

7.0 Considerations/Potential Impacts

7.1 Stop-Control Improvements

Impacts of this alternative will be very minimal. The proposed work includes widening of the southbound Off-Ramp to provide an additional lane. Minor adjustments to the slope and roadside ditch will be required to accommodate the widening. Right of way is not expected to need adjustment for this alternative.

7.2 6-Leg Roundabout Alternative

This alternative requires adjustment of the roadway approaches to achieve required entry speeds set forth in NCHRP Report 672. Right of way will need to be acquired to accommodate the shifted approaches and the larger intersection. This alternative does not require

replacement of the Gold Flat Road Overcrossing as would be required of stop controlled and signalized alternatives in the Design Year.

Placement of retaining walls and large slopes will need to be considered in future phases of this project to reduce impacts and construction costs. Operations and safety for pedestrians and cyclists will be dramatically improved due the inclusion of a shared use path along the corridor and reduced vehicle speeds at the intersections.

6-Leg roundabouts operate effectively and give equal preference to all approaches at the intersection. Single lane roundabouts greatly reduce the number of conflict points at intersections and simplify movements increasing safety through the corridor. Due to the number of approaches/exits, view angles tend to be lower than suggested in NCHRP Report 672. Special consideration for view angles and guide signing will be needed as this alternative is studied further.

8.0 Pedestrian Connectivity

The City has recently improved pedestrian infrastructure on the north side of Ridge Road by adding a sidewalk from Zion Street to Searls Avenue. To continue with the City's pedestrian connectivity initiative, the existing sidewalk across the Gold Flat Road overcrossing would require relocation to the north side of the structure. This would allow safer pedestrian circulation through the corridor and be consistent with the City's recent improvements.

From a cursory inspection of the existing structure, the bridge soffit (box girder) appears to be symmetrical. The width of the structure is, approximately, 37 feet wide including the existing barriers.

Without widening the structure, the proposed cross section will include barriers on both sides, 2-11 foot lanes, 2-4 foot shoulders, and a 4.5' sidewalk. If a wider cross section is desired, the additional cost to widening the bridge deck should be assumed to be \$200 per square foot of widening.

The work involved to relocate the sidewalk includes:

- Temporary striping and traffic control
- Removal of the existing striping, sidewalk, and barriers
- Concrete overlay to adjust bridge crown
- Installing a new barriers and sidewalks (drill and bond dowel)
- Restriping the roadway

The total estimated construction cost of relocating the sidewalk to the north side of Gold Flat Road Overcrossing is \$250,000 (rounded up for programming purposes).

See Appendix E for an itemized estimate of the costs.

9.0 Recommendations

The Stop-Control Alternative will provide improved operations through the corridor for the next 15 years, approximately. This alternative would require substantially less cost to construct than the roundabout alternative and may result in fewer right-of-way impacts to adjacent property.

However, it will not meet demands for the Design Year and further improvements will be necessary at that time. This alternative is recommended only as an interim improvement.

The 6-Leg Roundabout Alternative is projected provide acceptable operations beyond the Design Year. Factors to consider in when selecting the preferred project alternative should include construction cost, right of way impacts, and public input. Further analysis will be needed to determine exact roundabout configuration and location based on the criteria stated above.

The 4-Leg Roundabout Alternative is not projected to provide acceptable operations under Design Year conditions and therefore is not recommended.

The Signal Alternative is not projected to provide acceptable operations under Design Year conditions and therefore is not recommended.

The City has recently improved pedestrian infrastructure on the north side of Ridge Road by adding a sidewalk from Zion Street to Searls Avenue. To continue with the City's pedestrian connectivity initiative, the existing sidewalk across the Gold Flat Road overcrossing would require relocation to the north side of the structure.

Appendix

Appendix A - Southbound Off-Ramp Turn Pocket Layout and Cost Estimate

Appendix B - 6-Leg Roundabout Alternative Layout, Preliminary Design Checks, and Cost Estimate

Appendix C - 4-Leg Roundabout Alternative Layout

Appendix D – Traffic Volumes, SimTraffic and Sidra Outputs

Appendix E - Sidewalk Relocation Costs Memorandum

**Appendix A - Southbound Off-Ramp Turn Pocket Layout and
Cost Estimate**



GOLD FLAT ROAD CORRIDOR STUDY

SCALE 1"=50'

SB OFF-RAMP WIDENING

FIGURE A-1



Preliminary Cost Estimate

Project ID: Gold Flat Road/Route 20

Type of Estimate : Alternative Study
Program Code :
Project Limits : Route 20 (PM R15.94-R16.08)
Description: Ramp Widening
Scope : Widen Single Lane SB Off-Ramp to Two Lanes at Gold Flat Road
Alternative :

	Current Cost	Escalated Cost
ROADWAY ITEMS	\$ 499,500	\$ 499,500
STRUCTURE ITEMS	\$ -	\$ -
SUBTOTAL CONSTRUCTION COST	<u>\$ 499,500</u>	<u>\$ 499,500</u>
RIGHT OF WAY	<u>\$ -</u>	<u>\$ -</u>
TOTAL CAPITAL OUTLAY COST	<u>\$ 500,000</u>	<u>\$ 500,000</u>
PR/ED SUPPORT	\$ 80,000	\$ 80,000
PS&E SUPPORT	\$ 55,000	\$ 55,000
RIGHT OF WAY SUPPORT	\$ -	\$ -
CONSTRUCTION SUPPORT	<u>\$ 35,000</u>	<u>\$ 35,000</u>
TOTAL CAPITAL OUTLAY SUPPORT COST*	<u>\$ 170,000</u>	<u>\$ 170,000</u>
TOTAL PROJECT COST	<u>\$ 670,000</u>	<u>\$ 670,000</u>

If Project has been programmed enter Programmed Amount \$ -

Date of Estimate (Month/Year) Month / Year /

Estimated Date of Construction Start (Month/Year) /

Number of Working Days Working Days

Estimated Mid-Point of Construction (Month/Year) Month / Year

Number of Plant Establishment Days Days

Estimated Project Schedule

PID Approval

PA/ED Approval

PS&E

RTL

Begin Construction

Approved by Project
Manager

(xxx) xxx-xxxx

Project Manager

Date

Phone

I. ROADWAY ITEMS SUMMARY

Section	Cost
1 Earthwork	\$ 211,300
2 Pavement Structural Section	\$ 68,500
3 Drainage	\$ 14,700
4 Specialty Items	\$ 8,400
5 Environmental	\$ 19,500
6 Traffic Items	\$ 43,500
7 Detours	\$ -
8 Minor Items	\$ -
9 Roadway Mobilization	\$ -
10 Supplemental Work	\$ 18,300
11 State Furnished	\$ -
12 Contingencies	\$ 115,300
13 Overhead	\$ -
TOTAL ROADWAY ITEMS	
	\$ 499,500

Estimate Prepared By _____
Name and Title
Date
Phone

Estimate Reviewed By _____
Name and Title
Date
Phone

By signing this estimate you are attesting that you have discussed your project with all functional units and have incorporated all their comments or have discussed with them why they will not be incorporated.

PRELIMINARY
PROJECT COST ESTIMATE

SECTION 1: EARTHWORK

Item code	Unit	Quantity		Unit Price (\$)		Cost
160101	Clearing & Grubbing	LS	1	x	\$15,000.00	= \$ 15,000
170101	Develop Water Supply	LS		x		= \$ -
190101	Roadway Excavation	CY	560	x	80.00	= \$ 44,800
190103	Roadway Excavation (Type Y) ADL	CY		x		= \$ -
190105	Roadway Excavation (Type Z-2) ADL	CY		x		= \$ -
192037	Structure Excavation (Retaining Wall)	CY		x		= \$ -
193013	Structure Backfill (Retaining Wall)	CY		x		= \$ -
193031	Pervious Backfill Material (Retaining Wall)	CY		x		= \$ -
194001	Ditch Excavation	CY		x		= \$ -
198001	Imported Borrow	CY	1,515	x	100.00	= \$ 151,500
198007	Imported Material (Shoulder Backing)	TON		x		= \$ -

TOTAL EARTHWORK SECTION ITEMS	\$ 211,300
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SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code	Unit	Quantity		Unit Price (\$)		Cost
150771	Remove Asphalt Concrete Dike	LF	365	x	3.00	= \$ 1,095
150860	Remove Base and Surfacing	CY		x		= \$ -
153103	Cold Plane Asphalt Concrete Pavement	SQYD	670	x	15.00	= \$ 10,050
1532XX	Remove Concrete (type)	CY		x		= \$ -
250401	Class 4 Aggregate Subbase	CY		x		= \$ -
260201	Class 2 Aggregate Base	CY	300	x	100.00	= \$ 30,000
290201	Asphalt Treated Permeable Base	CY		x		= \$ -
365001	Sand Cover	TON		x		= \$ -
374002	Asphaltic Emulsion (Fog Seal Coat)	TON		x		= \$ -
374492	Asphaltic Emulsion (Polymer Modified)	TON		x		= \$ -
3750XX	Screenings (Type XX)	TON		x		= \$ -
377501	Slurry Seal	TON		x		= \$ -
390095	Replace Asphalt Concrete Surfacing	CY		x		= \$ -
390132	Hot Mix Asphalt (Type A)	TON	308	x	80.00	= \$ 24,640
390136	Minor Hot Mix Asphalt	TON		x		= \$ -
390137	Rubberized Hot Mix Asphalt (Gap Graded)	TON		x		= \$ -
393003	Geosynthetic Pavement Interlayer	SQYD		x		= \$ -
39405X	Shoulder Rumber Strip (HMA, Type XX Inden	STA		x		= \$ -
394071	Place Hot Mix Asphalt Dike	LF	365	x	5.00	= \$ 1,825
394090	Place Hot Mix Asphalt (Misc. Area)	SQYD		x		= \$ -
397005	Tack Coat	TON	1	x	800.00	= \$ 800
401000	Concrete Pavement	CY		x		= \$ -
401108	Replace Concrete Pavement (Rapid Strength	CY		x		= \$ -
404092	Seal Pavement Joint	LF		x		= \$ -
404094	Seal Longitudinal Isolation Joint	LF		x		= \$ -
413112A	Repair Spalled Joints (Polyester Grout)	SQYD		x		= \$ -
413115	Seal Existing Concrete Pavement Joint	LF		x		= \$ -
420102	Groove Existing Concrete Pavement	SQYD		x		= \$ -
420201	Grind Existing Concrete Pavement	SQYD		x		= \$ -
731502	Minor Concrete (Misc. Const)	CY		x		= \$ -
731530	Minor Concrete (Textured Paving)	SQFT		x		= \$ -

TOTAL STRUCTURAL SECTION ITEMS	\$ 68,500
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SECTION 3: DRAINAGE

Item code		Unit	Quantity	Unit Price (\$)	Cost
150206	Abandon Culvert	LF	x	= \$	-
150805	Remove Culvert	LF	x	= \$	-
150820	Modify Inlet	EA	x	= \$	-
152430	Adjust Inlet	LF	x	= \$	-
155003	Cap Inlet	EA	x	= \$	-
193114	Sand Backfill	CY	x	= \$	-
510502	Minor Concrete (Minor Structure)	CY	x	= \$	-
510512	Minor Concrete (Box Culvert)	CY	x	= \$	-
62XXXX	XXX" APC Pipe	LF	x	= \$	-
64XXXX	XXX" Plastic Pipe	LF	x	= \$	-
650026	36" RCP Pipe	LF	20	x 280.00	= \$ 5,600
66XXXX	XXX" CSP Pipe	LF	x	= \$	-
68XXXX	Edge Drain	LF	x	= \$	-
690110	12" Corrugated Steel Pipe Downdrain	LF	25	x 55.00	= \$ 1,375
70XXXX	XXX" Pipe Inlet	LF	x	= \$	-
70XXXX	XXX" Pipe Riser	LF	x	= \$	-
705210	36" Concrete Flared End Section	EA	1	x 2,200.00	= \$ 2,200
703233	Grated Line Drain	LF	x	= \$	-
721013	Rock Slope Protection (1/4T Method B)	CY	19	x 250.00	= \$ 4,750
721420	Concrete (Ditch Lining)	CY	x	= \$	-
721430	Concrete (Channel Lining)	CY	x	= \$	-
729010	Rock Slope Protection Fabric	SQYD	40	x 18.00	= \$ 720
750001	Miscellaneous Iron and Steel	LB	x	= \$	-
XXXXXX	Additional Drainage	LS	x	= \$	-

TOTAL DRAINAGE ITEMS	\$	14,700
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SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity	Unit Price (\$)	Cost
070012	Progress Schedule (Critical Path Method)	LS	x	= \$	-
150662	Remove Metal Beam Guard Railing	LF	x	= \$	-
150668	Remove Terminal Systems	EA	x	= \$	-
1532XX	Remove Barrier (<i>Insert Type</i>)	LF	x	= \$	-
153250	Remove Sound Wall	SQFT	x	= \$	-
190110	Lead Compliance Plan	LS	x	= \$	-
49XXXX	CIDH Concrete Piling (<i>Insert Diameter</i>)	LF	x	= \$	-
510060	Structural Concrete (Retaining Wall)	CY	x	= \$	-
510133	Class 2 Concrete (Retaining Wall)	CY	x	= \$	-
510524	Minor Concrete (Sound Wall)	CY	x	= \$	-
5110XX	Architectural Treatment (<i>Insert Type</i>)	SQFT	x	= \$	-
511048	Apply Anti-Graffiti Coating	SQFT	x	= \$	-
5136XX	Reinforced Concrete Crib Wall (<i>Insert Type</i>)	SQFT	x	= \$	-
518002	Sound Wall (Masonry Block)	SQFT	x	= \$	-
520103	Bar Reinf. Steel (Retaining Wall)	LB	x	= \$	-
800360	Chain Link Fence (Type CL-6)	LF	240	x 35.00	= \$ 8,400
832001	Metal Beam Guard Railing	LF	x	= \$	-
839310	Double Thrie Beam Barrier	LF	x	= \$	-
839521	Cable Railing	LF	x	= \$	-
83954X	Transition Railing (<i>Insert Type</i>)	EA	x	= \$	-
8395XX	Terminal System (Type CAT)	EA	x	= \$	-
8395XX	Alternative Flared Terminal System	EA	x	= \$	-
8395XX	End Anchor Assembly (<i>Insert Type</i>)	EA	x	= \$	-
839561	Rail Tensioning Assembly	EA	x	= \$	-
839XXX	Crash Cushion (<i>Insert Type</i>)	EA	x	= \$	-
83XXXX	Concrete Barrier (<i>Insert Type</i>)	LF	x	= \$	-

TOTAL SPECIALTY ITEMS	\$	8,400
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SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code	Unit	Quantity	Unit Price (\$)	Cost
Biological Mitigation	LS	1	x	= \$ -
071325 TEMPORARY REINFORCED SILT FENCE	LF	250	x 5.00	= \$ 1,250
071325 Temporary Fence (Type ESA)	LF	250	x 5.00	= \$ 1,250
<i>Subtotal Environmental</i>				<u>\$ 2,500</u>

5B - LANDSCAPE AND IRRIGATION

Item code	Unit	Quantity	Unit Price (\$)	Cost
200001 Highway Planting	LS		x	= \$ -
20XXXX XXX" (Insert Type) Conduit (Use for	LF		x	= \$ -
20XXXX Extend XXX" (Insert Type) Conduit	LF		x	= \$ -
201700 Imported Topsoil	CY		x	= \$ -
2030XX Erosion Control (Type __)	SQYD		x	= \$ -
203021 Fiber Rolls	LF		x	= \$ -
203026 Move In/ Move Out (Erosion Control)	EA		x	= \$ -
204099 Plant Establishment Work	LS		x	= \$ -
204101 Extend Plant Establishment (X Years)	LS		x	= \$ -
208000 Irrigation System	LS		x	= \$ -
208304 Water Meter	EA		x	= \$ -
209801 Maintenance Vehicle Pullout	EA		x	= \$ -
<i>Subtotal Landscape and Irrigation</i>				<u>\$ -</u>

5C - NPDES

Item code	Unit	Quantity	Unit Price (\$)	Cost
074016 Construction Site Management	LS	1	x 5,000.00	= \$ 5,000
074017 Prepare WPCP	LS	1	x 2,200.00	= \$ 2,200
074019 Prepare SWPPP	LS		x	= \$ -
074023 Temporary Erosion Control	SQYD		x	= \$ -
074027 Temporary Erosion Control Blanket	SQYD	1,220	x 5.00	= \$ 6,100
074028 Temporary Fiber Roll	LF	900	x 3.00	= \$ 2,700
074032 Temporary Concrete Washout Facility	EA		x	= \$ -
074033 Temporary Construction Entrance	EA		x	= \$ -
074035 Temporary Check Dam	LF	80	x 12.00	= \$ 960
074037 Move In/ Move Out (Temporary Erosion Cont	EA		x	= \$ -
074038 Temp. Drainage Inlet Protection	EA		x	= \$ -
074041 Street Sweeping	LS		x	= \$ -
074042 Temporary Concrete Washout (Portable)	LS		x	= \$ -

Supplemental Work for NPDES

(These costs are not accounted in total here but under Supplemental Work on sheet 7 of 11).

066595 Water Pollution Control Maintenance Sharing	LS		x	= \$ -
066596 Additional Water Pollution Control**	LS		x	= \$ -
066597 Storm Water Sampling and Analysis***	LS		x	= \$ -

Subtotal NPDES (Without Supplemental Work) \$ 16,960

*Applies to all SWPPPs and those WPCPs with sediment control or soil stabilization BMPs.

**Applies to both SWPPPs and WPCP projects.

*** Applies only to project with SWPPPs.

TOTAL ENVIRONMENTAL	\$ 19,500
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SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Item code	Unit	Quantity	Unit Price (\$)	Cost
150760 Remove Sign Structure	EA	x	= \$	-
151581 Reconstruct Sign Structure	EA	x	= \$	-
152641 Modify Sign Structure	EA	x	= \$	-
5602XX Furnish Sign Structure	LB	x	= \$	-
5602XX Install Sign Structure	LB	x	= \$	-
56XXXX XXX" CIDHC Pile (Sign Foundation)	LF	x	= \$	-
860090 Maintain Existing Traffic Management	LS	x	= \$	-
860810 Inductive Loop Detectors	EA	x	= \$	-
86055X Lighting & Sign Illumination	LS	x	= \$	-
8607XX Interconnection Facilities	LS	x	= \$	-
8609XX Traffic Monitoring Stations	LS	x	= \$	-
860XXX Signals & Lighting	LS	1	x 4,000.00 = \$	4,000
8611XX Ramp Metering System (Location X)	LS	x	= \$	-
8611XX Ramp Metering System (Location X)	LS	x	= \$	-
86XXXX Fiber Optic Conduit System	LS	x	= \$	-
<u>Subtotal Traffic Electrical</u>				<u>\$ 4,000</u>

6B - Traffic Signing and Striping

Item code	Unit	Quantity	Unit Price (\$)	Cost
120090 Construction Area Signs	LS	1	x 2,500.00 = \$	2,500
150701 Remove Yellow Painted Traffic Stripe	LF	310	x 1.30 = \$	403
150710 Remove Traffic Stripe	LF	300	x 1.10 = \$	330
150713 Remove Pavement Marking	SQFT	144	x 5.00 = \$	720
150742 Remove Roadside Sign	EA	x	= \$	-
152320 Reset Roadside Sign	EA	x	= \$	-
152390 Relocate Roadside Sign	EA	4	x 250.00 = \$	1,000
566011 Roadside Sign (One Post)	EA	2	x 330.00 = \$	660
566012 Roadside Sign (Two Post)	EA	x	= \$	-
560XXX Furnish Sign Panels	SQFT	18	x 24.00 = \$	432
560XXX Install Sign Panels	SQFT	18	x 11.00 = \$	198
82010X Delineator (Class X)	EA	x	= \$	-
84XXXX Permanent Pavement Delineation	LS	1	x 2,000.00 = \$	2,000
<u>Subtotal Traffic Signing and Striping</u>				<u>\$ 8,243</u>

6C - Stage Construction and Traffic Handling

Item code	Unit	Quantity	Unit Price (\$)	Cost
120100 Traffic Control System	LS	x	= \$	-
120120 Type III Barricade	EA	x	= \$	-
120143 Temporary Pavement Delineation	LF	x	= \$	-
12016X Channelizer	EA	x	= \$	-
128650 Portable Changeable Message Signs	EA	1	x 4,000.00 = \$	4,000
129000 Temporary Railing (Type K)	LF	560	x 40.00 = \$	22,400
129100 Temp. Crash Cushion Module	EA	24	x 200.00 = \$	4,800
129099A Traffic Plastic Drum	EA	x	= \$	-
839603A Temporary Crash Cushion (ADIEM)	EA	x	= \$	-
<u>Subtotal Stage Construction and Traffic Handling</u>				<u>\$ 31,200</u>

TOTAL TRAFFIC ITEMS	\$ 43,500
----------------------------	------------------

SECTION 7: DETOURS

Include constructing, maintaining, and removal

Item code	Unit	Quantity	Unit Price (\$)	Cost
0713XX Temporary Fence (Type X)	LF	x	= \$	-
07XXXX Temporary Drainage	LS	x	= \$	-
120143 Temporary Pavement Delineation	LF	x	= \$	-
1286XX Temporary Signals	EA	x	= \$	-
129000 Temporary Railing (Type K)	LF	x	= \$	-
190101 Roadway Excavation	CY	x	= \$	-
198001 Imported Borrow	CY	x	= \$	-
198050 Embankment	CY	x	= \$	-
250401 Class 4 Aggregate Subbase	CY	x	= \$	-
260201 Class 2 Aggregate Base	CY	x	= \$	-
390132 Hot Mix Asphalt (Type A)	TON	x	= \$	-

TOTAL DETOURS	\$	-
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SUBTOTAL SECTIONS 1-7 \$ 365,900

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items

ADA Items	0.0%	\$	-
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8B - Bike Path Items

Bike Path Items	0.0%	\$	-
-----------------	------	----	---

8C - Other Minor Items

Other Minor Items	0.0%	\$	-
-------------------	------	----	---

Total of Section 1-7 \$ 365,900 x 0.0% = \$ -

TOTAL MINOR ITEMS	\$	-
--------------------------	-----------	----------

SECTIONS 9: MOBILIZATION

Item

999990 Total Section 1-8	\$	365,900	x	10%	= \$	-
--------------------------	----	---------	---	-----	------	---

TOTAL MOBILIZATION	\$	-
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SECTION 10: SUPPLEMENTAL WORK

Item code	Unit	Quantity	Unit Price (\$)	Cost
066015 Federal Trainee Program	LS	x	= \$	-
066063 Traffic Management Plan - Public Informati	LS	x	= \$	-
066090 Maintain Traffic	LS	x	= \$	-
066094 Value Analysis	LS	x	= \$	-
066204 Remove Rock & Debris	LS	x	= \$	-
066222 Locate Existing Cross-Over	LS	x	= \$	-
066670 Payment Adjustments For Price Index Fluct	LS	x	= \$	-
066700 Partnering	LS	x	= \$	-
066866 Operation of Existing Traffic Management &	LS	x	= \$	-
066920 Dispute Review Board	LS	x	= \$	-

Cost of NPDES Supplemental Work specified in Section 5C = \$ -

Total Section 1-8 \$ 365,900 5% = \$ 18,295

TOTAL SUPPLEMENTAL WORK	\$	18,300
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SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code	Unit	Quantity	Unit Price (\$)	Cost
066063 Public Information	LS	x	=	\$0
066105 RE Office	LS	x	=	\$0
066803 Padlocks	LS	x	=	\$0
066838 Reflective Numbers and Edge Sealer	LS	x	=	\$0
066901 Water Expenses	LS	x	=	\$0
066062A COZEEP Expenses	LS	x	=	\$0
06684X Ramp Meter Controller Assembly	LS	x	=	\$0
06684X TMS Controller Assembly	LS	x	=	\$0
06684X Traffic Signal Controller Assembly	LS	x	=	\$0

Total Section 1-8 \$ 365,900 0% = \$ -

TOTAL STATE FURNISHED	\$0
------------------------------	------------

SECTION 12: TIME-RELATED OVERHEAD

Estimated Time-Related Overhead (TRO) Percentage (0% to 10%) = 5%

Item code	Unit	Quantity	Unit Price (\$)	Cost
070018 Time-Related Overhead	WD	0	X #DIV/0!	= \$0

TOTAL TIME-RELATED OVERHEAD	\$0
------------------------------------	------------

SECTION 13: CONTINGENCY

(Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Total Section 1-11 \$ 384,200 x 30% = \$115,260

TOTAL CONTINGENCY	\$115,300
--------------------------	------------------

II. STRUCTURE ITEMS

DATE OF ESTIMATE	00/00/00	00/00/00	00/00/00
Name	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Bridge Number	57-XXX	57-XXX	57-XXX
Structure Type	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Width (Feet) [out to out]	0.00 LF	0.00 LF	0.00 LF
Total Length (Feet)	0.00 LF	0.00 LF	0.00 LF
Total Area (Square Feet)	0 SQFT	0 SQFT	0 SQFT
Structure Depth (Feet)	0.00 LF	0.00 LF	0.00 LF
Footing Type (pile or spread)	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Cost Per Square Foot	\$0.00	\$0.00	\$0.00

COST OF EACH STRUCTURE	\$0.00	\$0.00	\$0.00
-------------------------------	---------------	---------------	---------------

DATE OF ESTIMATE	00/00/00	00/00/00	00/00/00
Name	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Bridge Number	57-XXX	57-XXX	57-XXX
Structure Type	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Width (Feet) [out to out]	0.00 LF	0.00 LF	0.00 LF
Total Length (Feet)	0.00 LF	0.00 LF	0.00 LF
Total Area (Square Feet)	0 SQFT	0.00 SQFT	0.0 SQFT
Structure Depth (Feet)	0.00 LF	0.00 LF	0.00 LF
Footing Type (pile or spread)	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX
Cost Per Square Foot	\$0.00	\$0.00	\$0.00

COST OF EACH STRUCTURE	\$0.00	\$0.00	\$0.00
-------------------------------	---------------	---------------	---------------

TOTAL COST OF BRIDGES	\$0.00
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TOTAL COST OF BUILDINGS	\$0.00
--------------------------------	---------------

TOTAL COST OF STRUCTURES¹	\$0.00
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Estimate Prepared By: _____ Date: _____
XXXXXXXXXXXXXXXXXXXX ----- Division of Structures

¹Structure's Estimate includes Overhead and Mobilization.
Add more sheets if needed. Call them 9a, 9b, 9c, ..., etc

DO NOT PRINT THIS SHEET AS PART OF COST ESTIMATE ATTACHMENT TO PROJECT INITIATION OR APPROVAL DOCUMENTS.

III. RIGHT OF WAY

Fill in all of the available information from the Right of Way data sheet.

A)	A1) Acquisition, including Excess Land Purchases, Damages & Goodwill,		\$	0
	A2) SB-1210		\$	0
B)	Acquisition of Offsite Mitigation		\$	0
C)	C1) Utility Relocation (State Share)		\$	2,500
	C2) Potholing (Design Phase)		\$	5,000
D)	Railroad Acquisition		\$	0
E)	Clearance / Demolition		\$	0
F)	Relocation Assistance (RAP and/or Last Resort Housing Costs)		\$	0
G)	Title and Escrow		\$	0
H)	Environmental Review		\$	0
I)	Condemnation Settlements	<u>0%</u>	\$	0
	(Items G & H applied to items A + B)			
J)	Design Appreciation Factor	0%	\$	0
K)	Utility Relocation (Construction Cost)		\$	5,000

L)

TOTAL RIGHT OF WAY ESTIMATE	\$0
------------------------------------	------------

(Excluding Item #8 - Hazardous Waste)

M)

TOTAL R/W ESTIMATE: Escalated	\$0
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N)

Right of Way Support	\$ 0
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Support Cost
Estimate Prepared By _____ Project Coordinator¹ _____ Phone _____

Utility Estimate
Prepared By _____ Utility Coordinator² _____ Phone _____

R/W Acquisition
Estimate Prepared By _____ Right of Way Estimator³ _____ Phone _____

¹ When estimate has Support Costs only ² When estimate has Utility Relocation ³ When R/W Acquisition is required

DO NOT PRINT THIS SHEET AS PART OF COST ESTIMATE ATTACHMENT TO PROJECT INITIATION OR APPROVAL DOCUMENTS.

IV. SUPPORT COST ESTIMATE SUMMARY

Please obtain a P3 report (CL#3) from PPM to fill in the support cost for these categories.

SB-45 CATEGORY SUPPORT COST	PREVIOUS	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17	FY 17/18	FUTURE	P3 Total	Support Ratio
PR/ED (PD,PE,PM)										\$ 80,000	\$ 80,000	16.00%
PS&E (PS)										\$ 55,000	\$ 55,000	11.00%
R/W (RW)											\$ -	0.00%
CONSTRUCTION (CM)										\$ 35,000	\$ 35,000	7.00%
Total Support Cost:	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		\$ 170,000	34.00%

Note: It is assumed that the Support Costs are already escalated by Programming to the year of expenditure. Use project Programming Sheet data

Total Capital Cost:	\$500,000
Total Capital Outlay Support Cost:	\$170,000
Overall Percent Support Cost:	34.00%

V. ESCALATED CONSTRUCTION COST ESTIMATE SUMMARY

Note: Right of way escalated cost are accounted for on sheet 10 of 11.

Date of Estimate (Month/Year) Month / Year
 Estimated Date of Construction Start (Month/Year) 0 / 0
 Number of Working Days 0 WD
 Estimated Mid-Point of Construction (Month/Year) 0 / 0

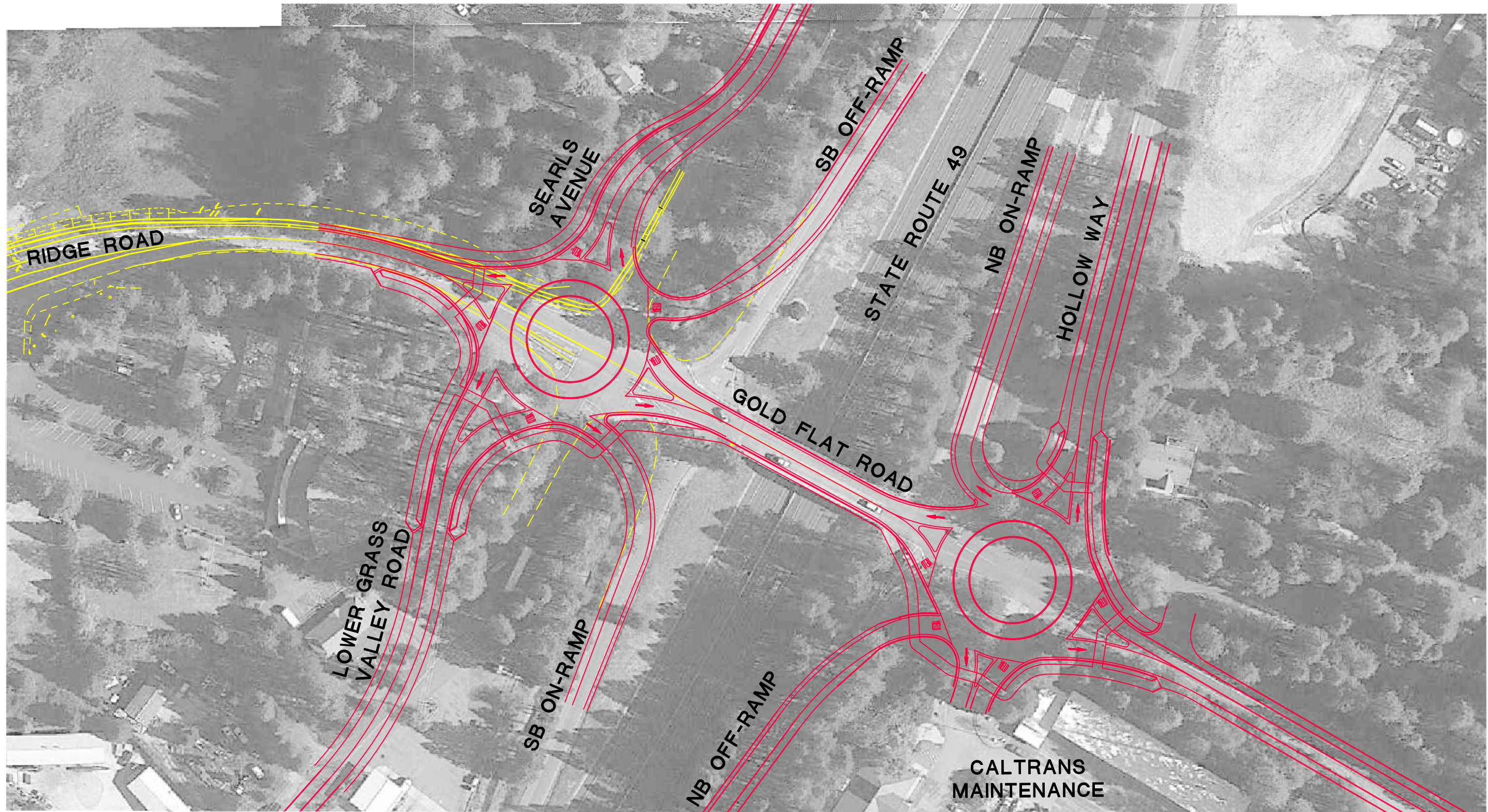
YEAR FORECASTED ESCALATION	0	1	2	3	4	5	6	7	8	9	FUTURE

ESCALATED CONSTRUCTION COSTS	0	1	2	3	4	5	6	7	8	9	FUTURE	TOTAL ESCALATED COSTS
ROADWAY ITEMS	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500
STRUCTURE ITEMS	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
SUBTOTAL	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500	\$ 499,500

Approved by: _____
Project Control Engineer

_____ Date

**Appendix B - 6-Leg Roundabout Alternative Layout,
Preliminary Design Checks, and Cost Estimate**

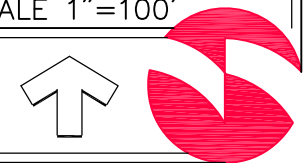


GOLD FLAT ROAD CORRIDOR STUDY

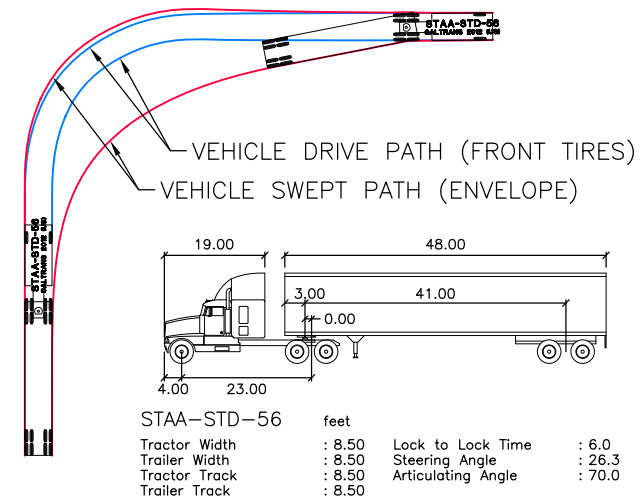
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6-LEG ROUNDABOUT ALTERNATIVE

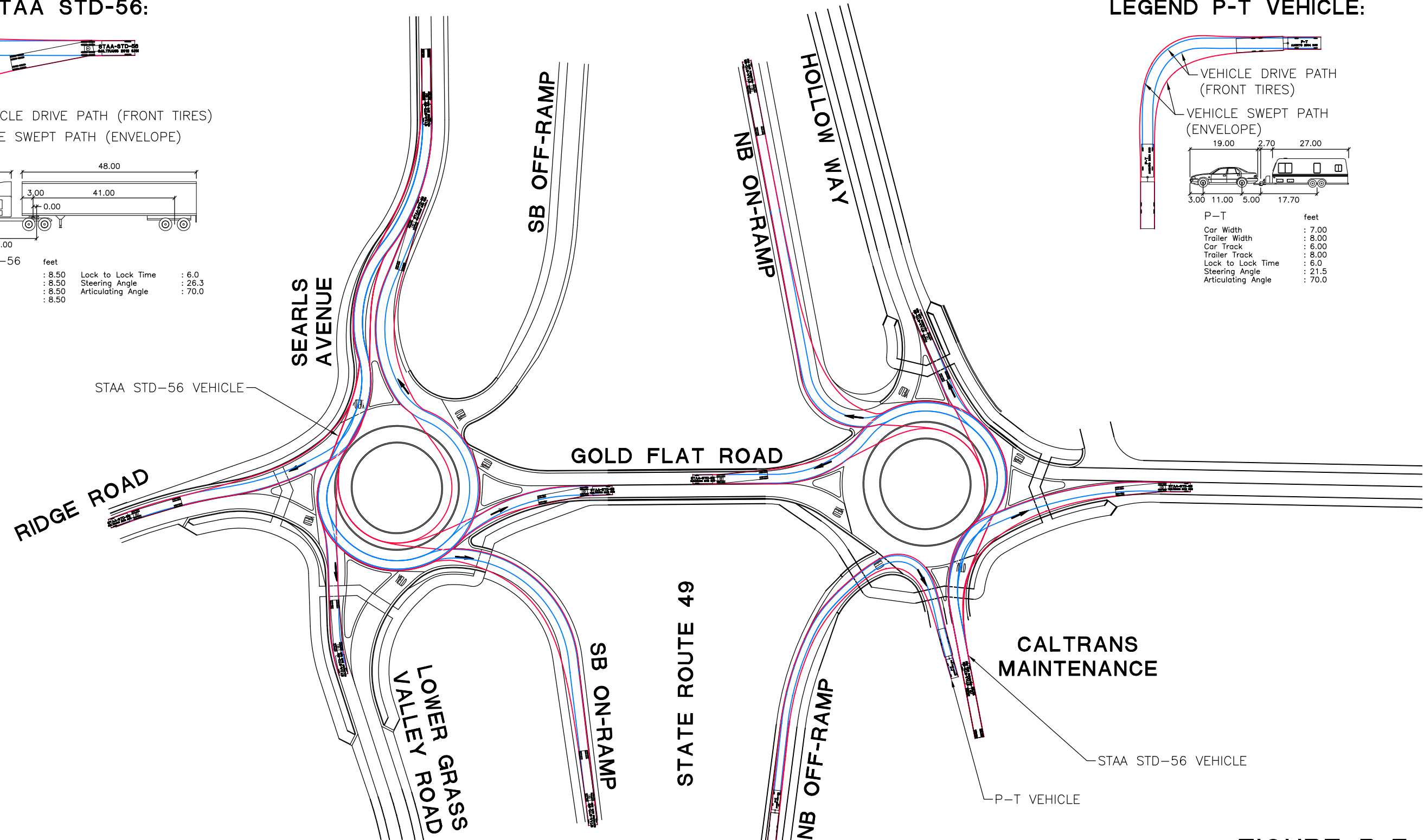
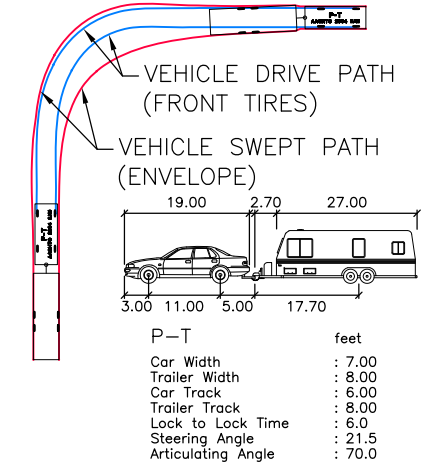
FIGURE B-1



LEGEND STAA STD-56:



LEGEND P-T VEHICLE:



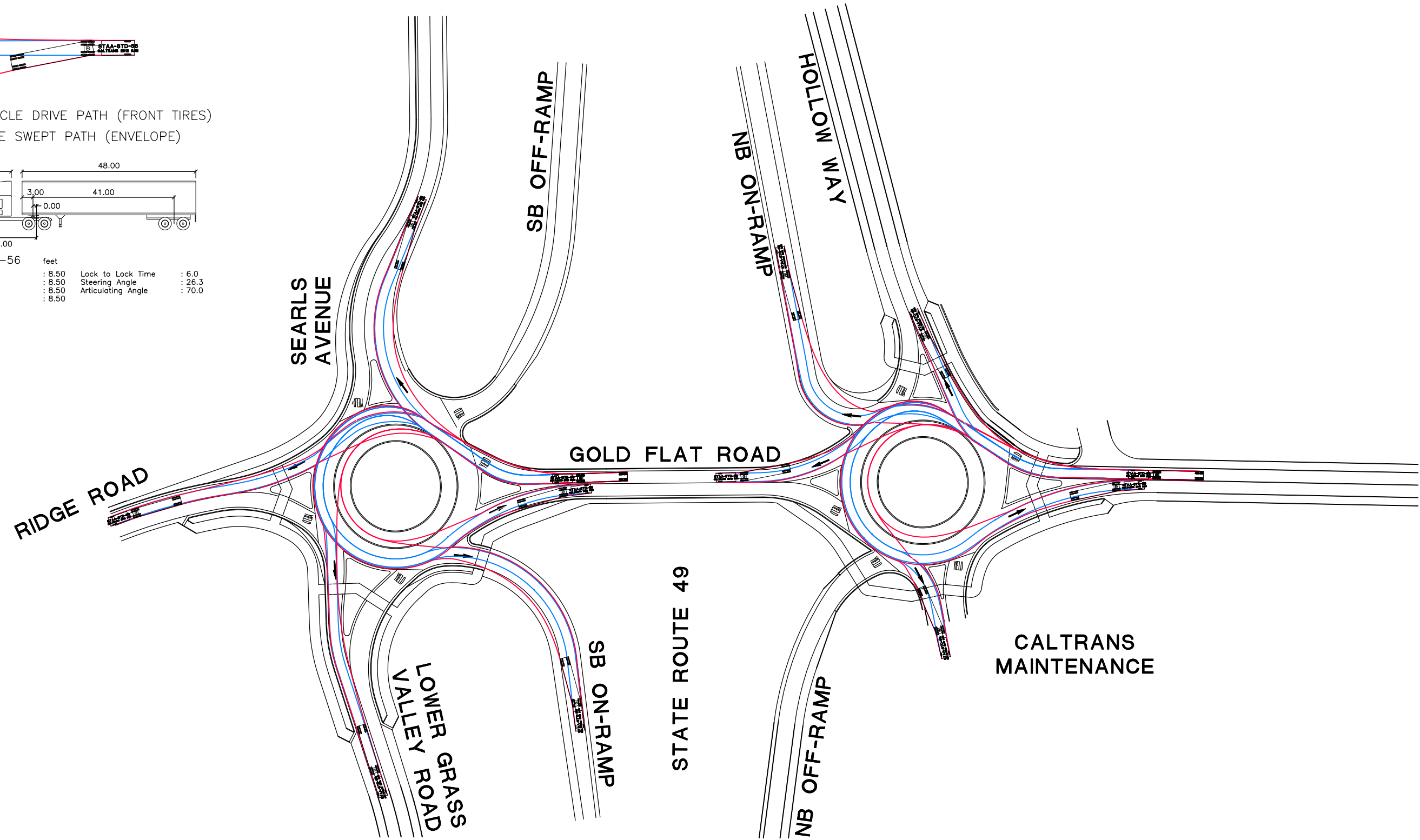
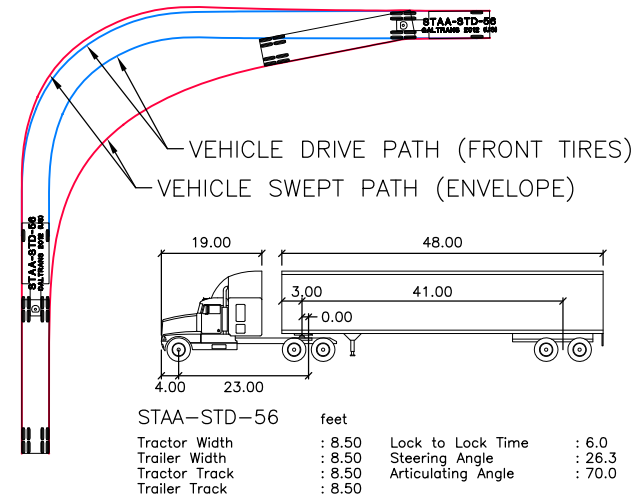
GOLD FLAT ROAD CORRIDOR STUDY

FIGURE B-7

SCALE 1"=100'

6-LEG ROUNDABOUT TRUCK TURNS (SEARLS AVENUE & CALTRANS MAINTENANCE DRIVEWAY)

LEGEND:

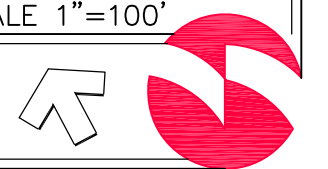


GOLD FLAT ROAD CORRIDOR STUDY

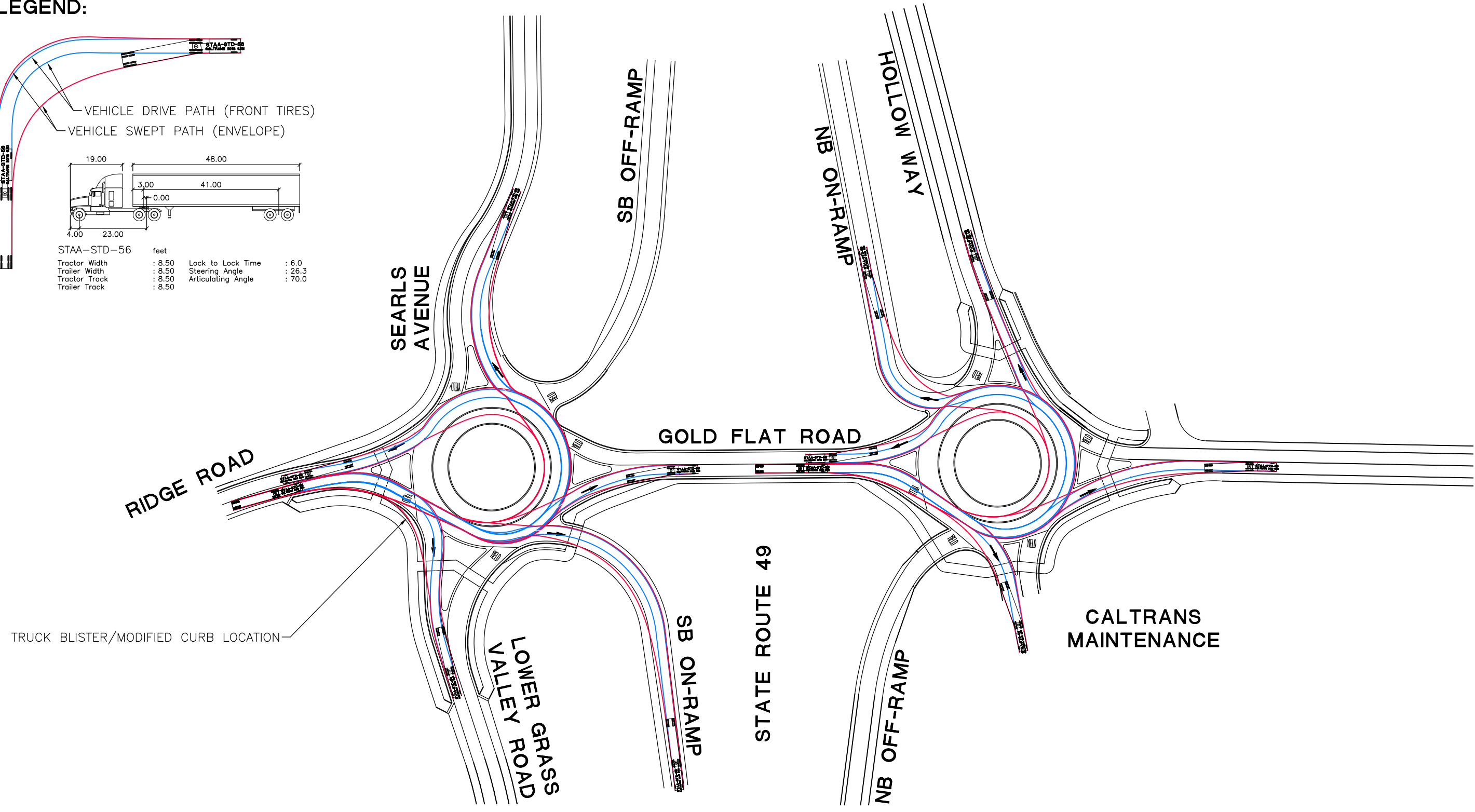
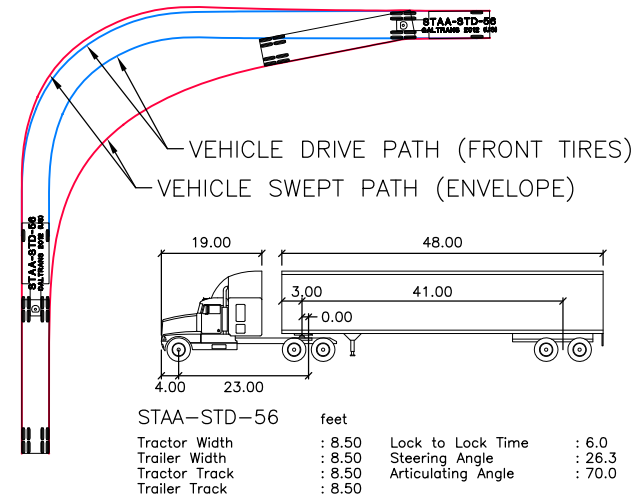
SCALE 1"=100'

6-LEG ROUNDABOUT STAA-56 TRUCK TURNS (WESTBOUND)

FIGURE B-6



LEGEND:

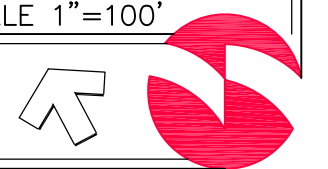


GOLD FLAT ROAD CORRIDOR STUDY

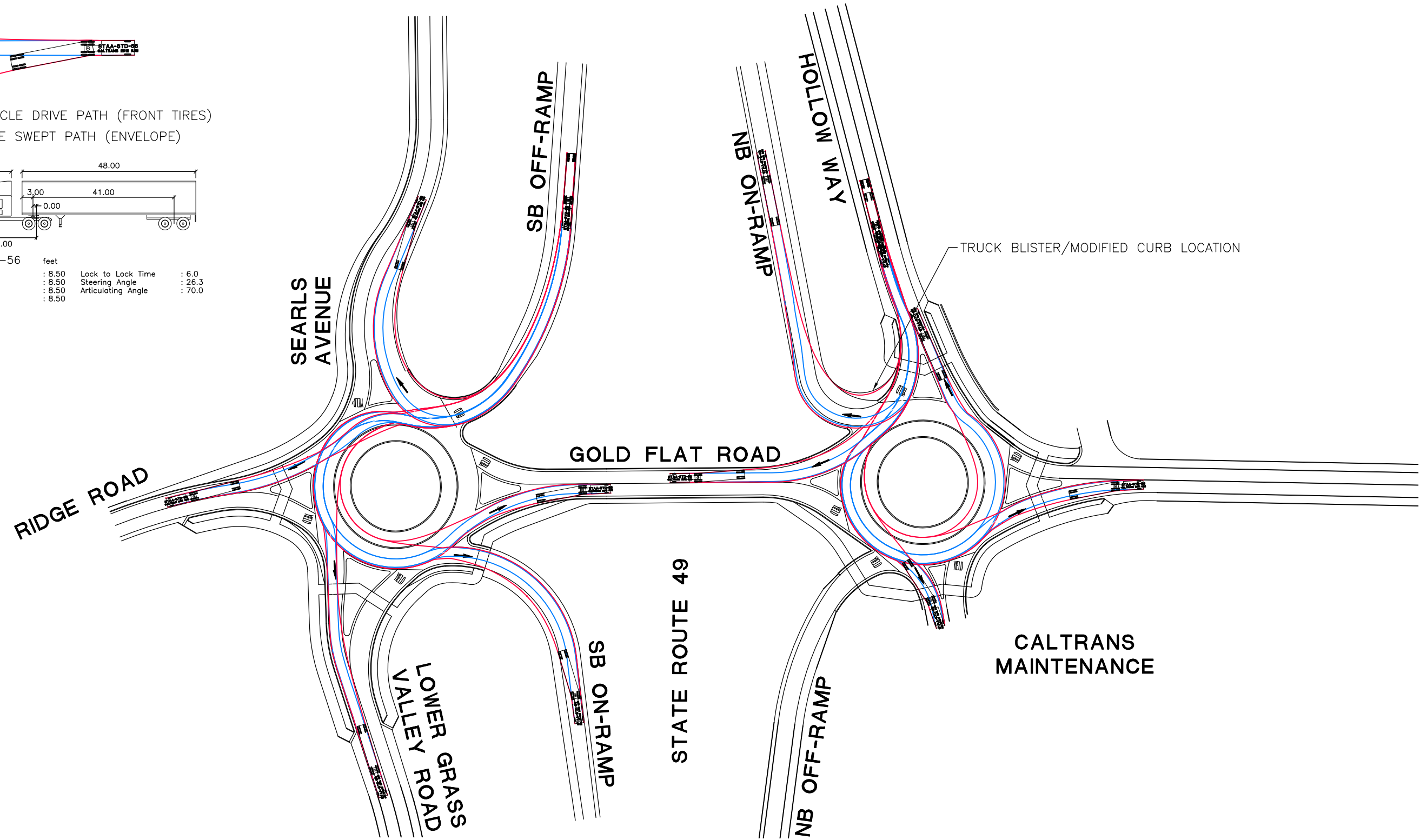
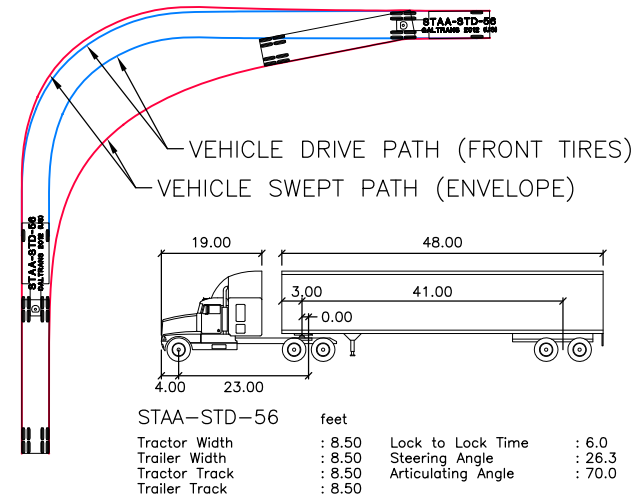
SCALE 1"=100'

6-LEG ROUNDABOUT STAA-56 TRUCK TURNS (EASTBOUND)

FIGURE B-5



LEGEND:

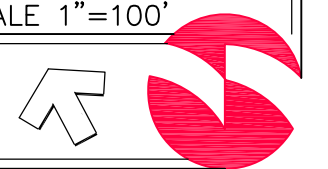


GOLD FLAT ROAD CORRIDOR STUDY

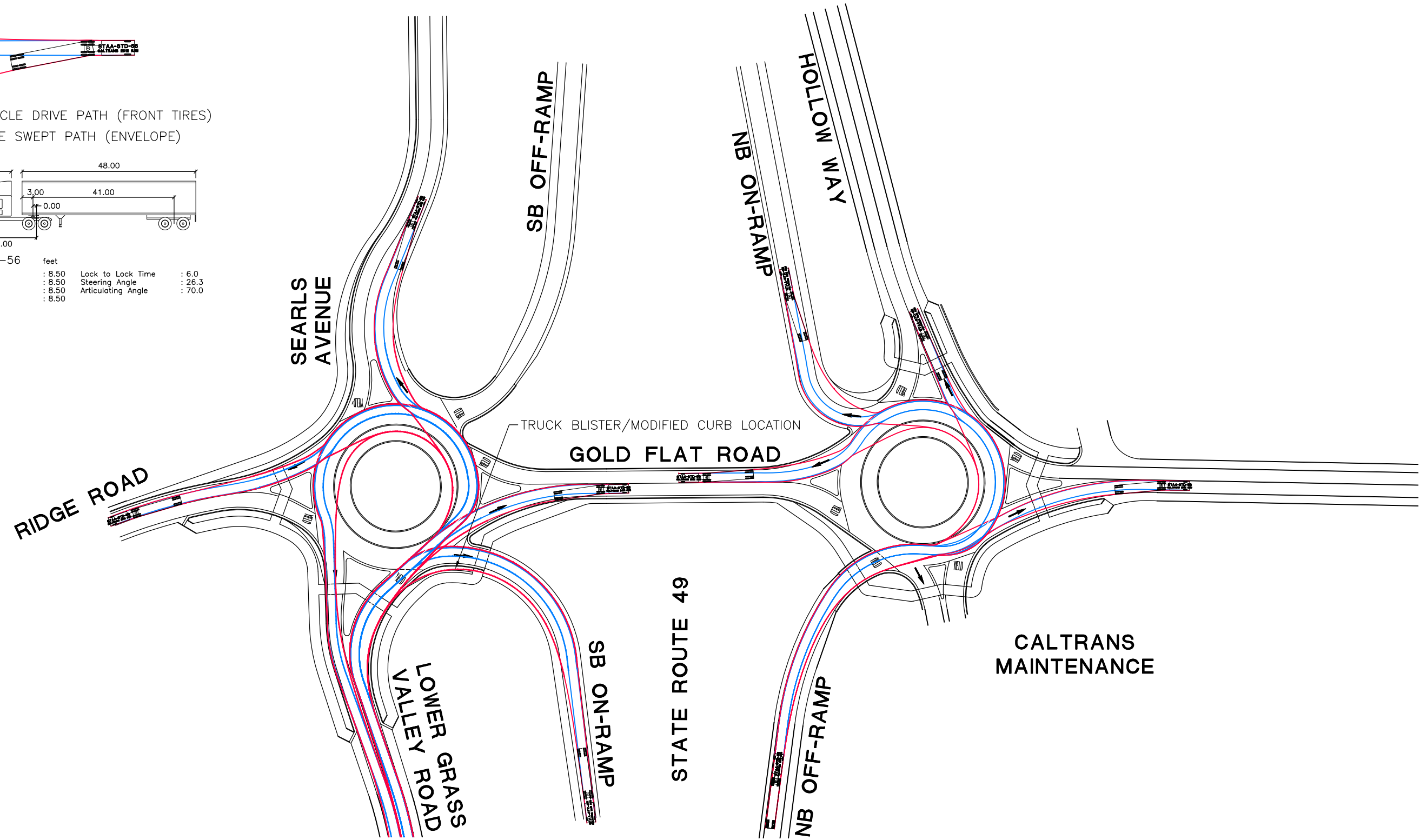
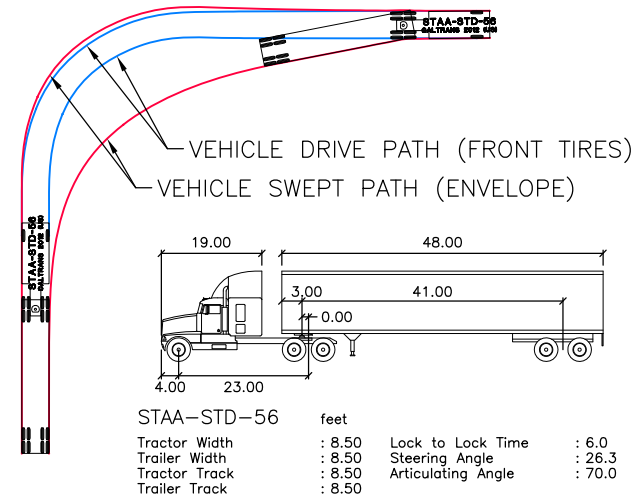
SCALE 1"=100'

6-LEG ROUNDABOUT STAA-56 TRUCK TURNS (SOUTHBOUND)

FIGURE B-4



LEGEND:

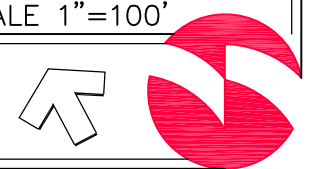


GOLD FLAT ROAD CORRIDOR STUDY

SCALE 1"=100'

6-LEG ROUNDABOUT STAA-56 TRUCK TURNS (NORTHBOUND)

FIGURE B-3

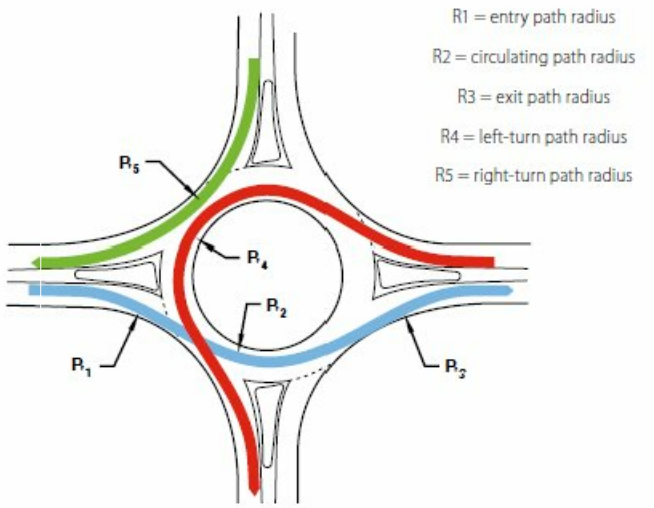
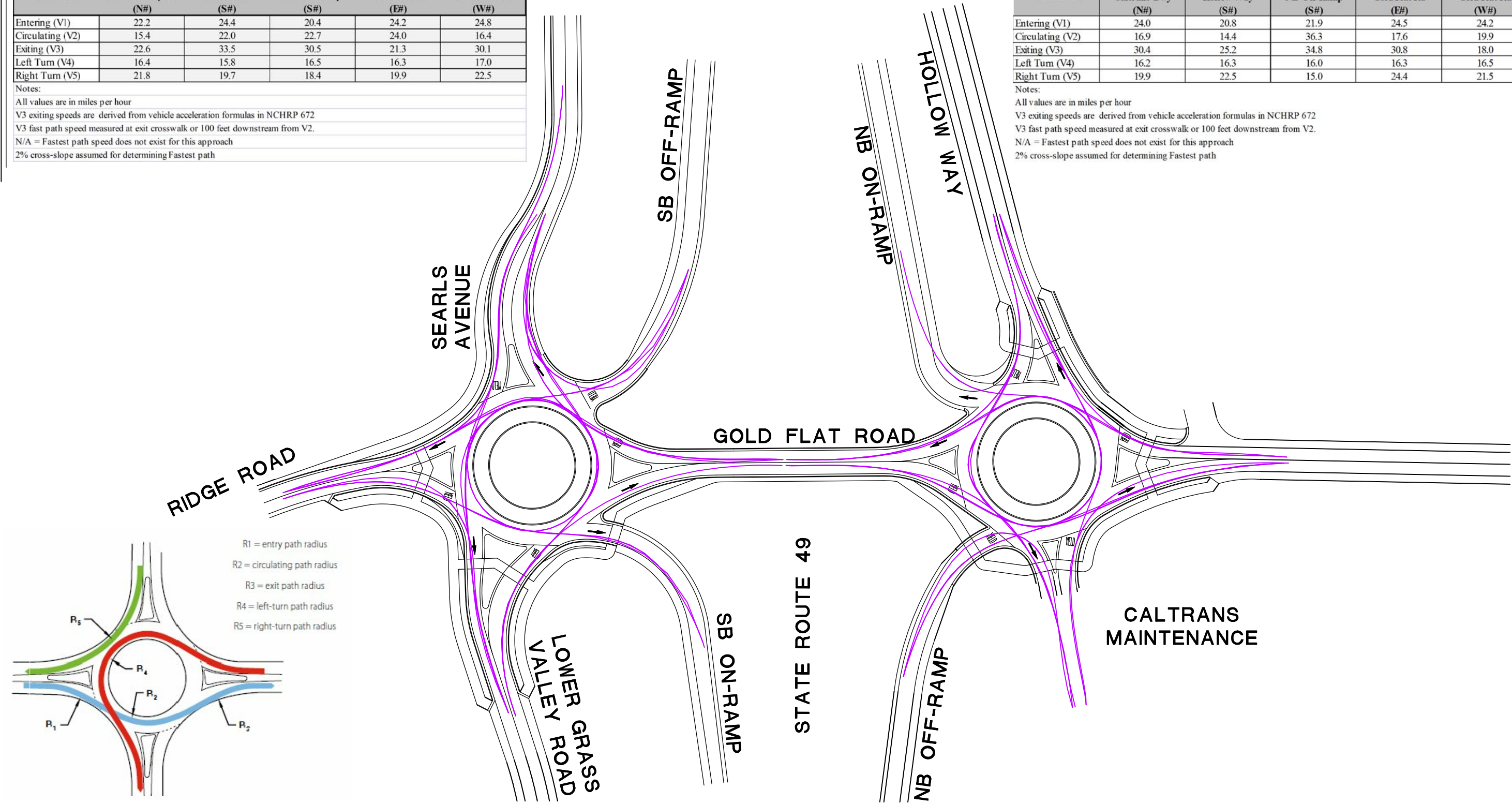


Movement	Northbound Grass Valley Rd (N#)	Southbound Searls Ave (S#)	SR 49 SB Off-Ramp (S#)	Eastbound Gold Flat Rd (E#)	Westbound Gold Flat Rd (W#)
Entering (V1)	22.2	24.4	20.4	24.2	24.8
Circulating (V2)	15.4	22.0	22.7	24.0	16.4
Exiting (V3)	22.6	33.5	30.5	21.3	30.1
Left Turn (V4)	16.4	15.8	16.5	16.3	17.0
Right Turn (V5)	21.8	19.7	18.4	19.9	22.5

Notes:
 All values are in miles per hour
 V3 exiting speeds are derived from vehicle acceleration formulas in NCHRP 672
 V3 fast path speed measured at exit crosswalk or 100 feet downstream from V2.
 N/A = Fastest path speed does not exist for this approach
 2% cross-slope assumed for determining Fastest path

Movement	Northbound Caltrans Dwy (N#)	Southbound Hollow Way (S#)	SR 49 NB Off-Ramp (S#)	Eastbound Gold Flat Rd (E#)	Westbound Gold Flat Rd (W#)
Entering (V1)	24.0	20.8	21.9	24.5	24.2
Circulating (V2)	16.9	14.4	36.3	17.6	19.9
Exiting (V3)	30.4	25.2	34.8	30.8	18.0
Left Turn (V4)	16.2	16.3	16.0	16.3	16.5
Right Turn (V5)	19.9	22.5	15.0	24.4	21.5

Notes:
 All values are in miles per hour
 V3 exiting speeds are derived from vehicle acceleration formulas in NCHRP 672
 V3 fast path speed measured at exit crosswalk or 100 feet downstream from V2.
 N/A = Fastest path speed does not exist for this approach
 2% cross-slope assumed for determining Fastest path

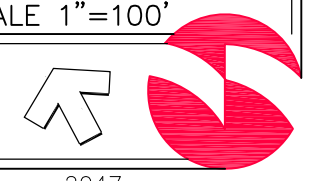


GOLD FLAT ROAD CORRIDOR STUDY

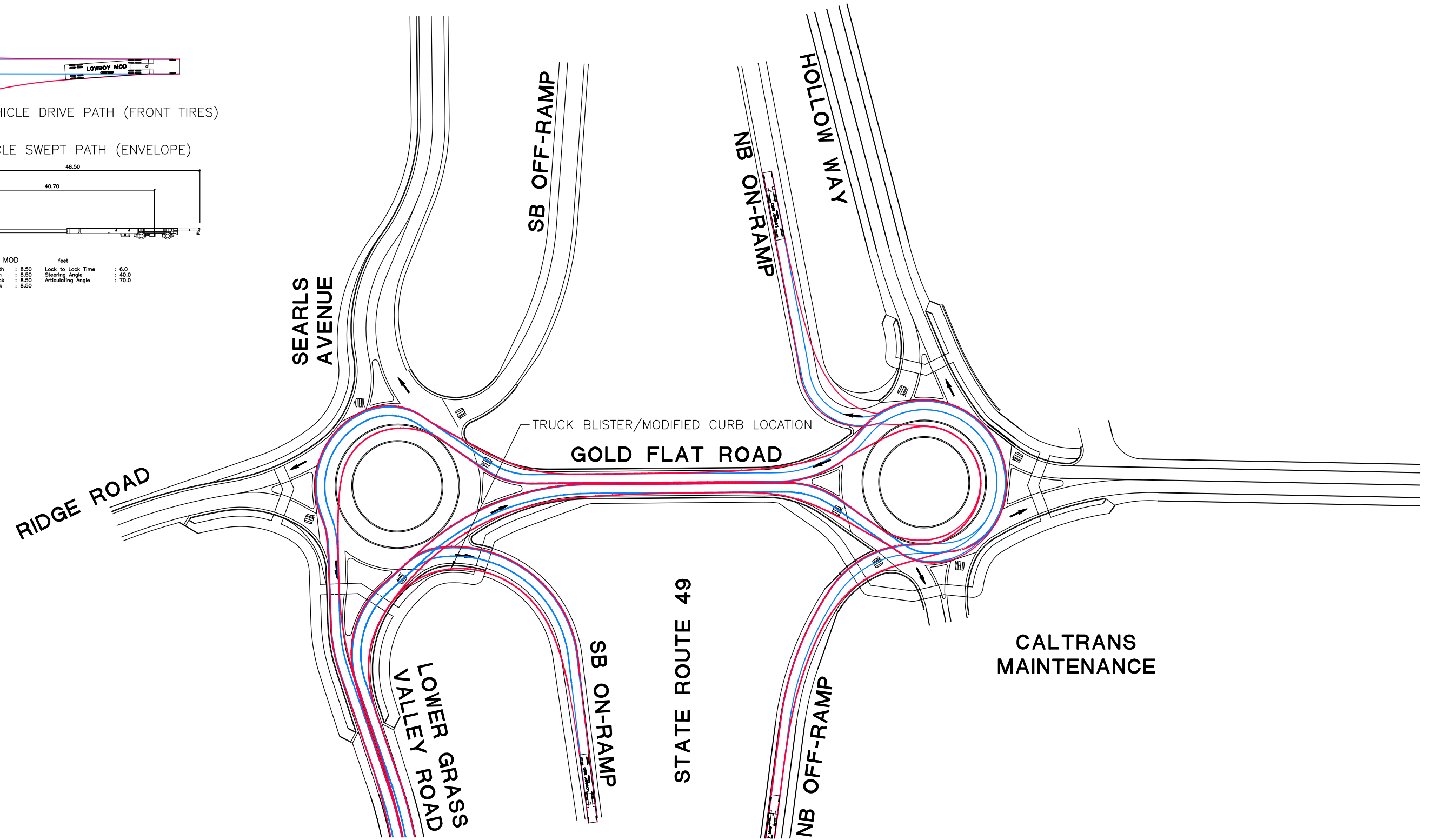
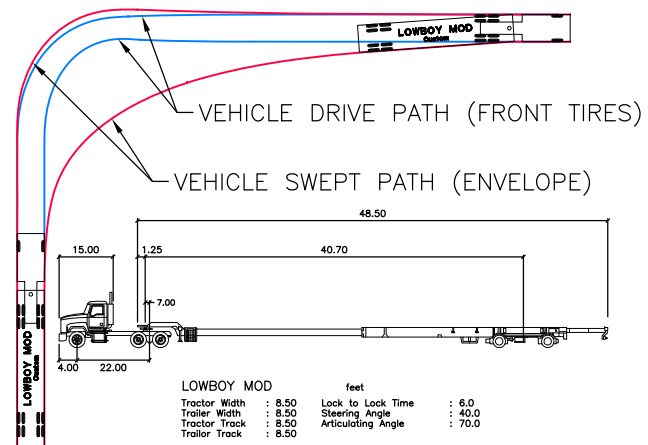
SCALE 1"=100'

6-LEG ROUNDABOUT (FASTEST PATH ANALYSIS)

FIGURE B-2



LEGEND:

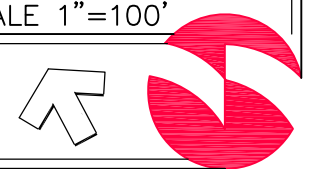


GOLD FLAT ROAD CORRIDOR STUDY

SCALE 1"=100'

6-LEG ROUNDABOUT OSOW TRUCK TURNS (LOWBOY DESIGN VEHICLE)

FIGURE B-8



Preliminary Cost Estimate

Project ID: Gold Flat Road/Route 20

Type of Estimate : Alternative Study
 Program Code :
 Project Limits : Route 20 (PM R15.94-R16.08)
 Description: Dual 6-Leg Roundabout Interchange
 Scope : Dual 6-Leg Roundabout Interchange
 Alternative : 6-Leg Roundabout Alternative

	Current Cost	Escalated Cost
ROADWAY ITEMS	\$ 7,235,300	\$ 7,235,300
STRUCTURE ITEMS	\$ -	\$ -
SUBTOTAL CONSTRUCTION COST	\$ 7,235,300	\$ 7,235,300
RIGHT OF WAY	\$ -	\$ -
TOTAL CAPITAL OUTLAY COST	\$ 7,236,000	\$ 7,236,000
PR/ED SUPPORT	\$ 750,000	\$ 750,000
PS&E SUPPORT	\$ 1,400,000	\$ 1,400,000
RIGHT OF WAY SUPPORT	\$ 200,000	\$ 200,000
CONSTRUCTION SUPPORT	\$ 1,000,000	\$ 1,000,000
TOTAL CAPITAL OUTLAY SUPPORT COST*	\$ 3,350,000	\$ 3,350,000
TOTAL PROJECT COST	\$ 10,600,000	\$ 10,600,000

If Project has been programmed enter Programmed Amount \$ -

Date of Estimate (Month/Year) Month / Year /
 Estimated Date of Construction Start (Month/Year) /
 Number of Working Days 200 Working Days
 Estimated Mid-Point of Construction (Month/Year) Month / Year
 Number of Plant Establishment Days Days

Estimated Project Schedule

PID Approval
 PA/ED Approval
 PS&E
 RTL
 Begin Construction

Approved by Project
Manager

(xxx) xxx-xxxx

Project Manager

Date

Phone

I. ROADWAY ITEMS SUMMARY

	Section	Cost
1	Earthwork	\$ 628,500
2	Pavement Structural Section	\$ 2,074,500
3	Drainage	\$ 219,700
4	Specialty Items	\$ 266,200
5	Environmental	\$ 312,400
6	Traffic Items	\$ 927,600
7	Detours	\$ -
8	Minor Items	\$ 132,900
9	Roadway Mobilization	\$ 365,000
10	Supplemental Work	\$ 136,900
11	State Furnished	\$ 273,800
12	Contingencies	\$ 1,669,700
13	Overhead	\$ 228,100
TOTAL ROADWAY ITEMS		\$ 7,235,300

Estimate Prepared By _____
Name and Title Date Phone

Estimate Reviewed By _____
Name and Title Date Phone

By signing this estimate you are attesting that you have discussed your project with all functional units and have incorporated all their comments or have discussed with them why they will not be incorporated.

SECTION 1: EARTHWORK

Item code	Unit	Quantity		Unit Price (\$)		Cost
160101	Clearing & Grubbing	LS	1	x	\$50,000.00	= \$ 50,000
170101	Develop Water Supply	LS		x		= \$ -
190101	Roadway Excavation	CY	17,000	x	30.00	= \$ 510,000
190103	Roadway Excavation (Type Y) ADL	CY		x		= \$ -
190105	Roadway Excavation (Type Z-2) ADL	CY		x		= \$ -
192037	Structure Excavation (Retaining Wall)	CY	500	x	65.00	= \$ 32,500
193013	Structure Backfill (Retaining Wall)	CY	400	x	40.00	= \$ 16,000
193031	Pervious Backfill Material (Retaining Wall)	CY		x		= \$ -
194001	Ditch Excavation	CY		x		= \$ -
198001	Imported Borrow	CY	400	x	50.00	= \$ 20,000
198007	Imported Material (Shoulder Backing)	TON		x		= \$ -

TOTAL EARTHWORK SECTION ITEMS	\$	628,500
--------------------------------------	-----------	----------------

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code	Unit	Quantity		Unit Price (\$)		Cost
150771	Remove Asphalt Concrete Dike	LF	3,350	x	2.50	= \$ 8,375
150860	Remove Base and Surfacing	CY		x		= \$ -
153103	Cold Plane Asphalt Concrete Pavement	SQYD	300	x	15.00	= \$ 4,500
1532XX	Remove Concrete (type)	CY		x		= \$ -
250401	Class 4 Aggregate Subbase	CY		x		= \$ -
260201	Class 2 Aggregate Base	CY	10,100	x	50.00	= \$ 505,000
290201	Asphalt Treated Permeable Base	CY		x		= \$ -
365001	Sand Cover	TON		x		= \$ -
374002	Asphaltic Emulsion (Fog Seal Coat)	TON		x		= \$ -
374492	Asphaltic Emulsion (Polymer Modified)	TON		x		= \$ -
3750XX	Screenings (Type XX)	TON		x		= \$ -
377501	Slurry Seal	TON		x		= \$ -
390095	Replace Asphalt Concrete Surfacing	CY		x		= \$ -
390132	Hot Mix Asphalt (Type A)	TON	8,800	x	95.00	= \$ 836,000
390136	Minor Hot Mix Asphalt	TON		x		= \$ -
390137	Rubberized Hot Mix Asphalt (Gap Graded)	TON		x		= \$ -
393003	Geosynthetic Pavement Interlayer	SQYD		x		= \$ -
39405X	Shoulder Rumber Strip (HMA, Type XX Indem)	STA		x		= \$ -
394071	Place Hot Mix Asphalt Dike	LF	3,700	x	5.00	= \$ 18,500
394090	Place Hot Mix Asphalt (Misc. Area)	SQYD		x		= \$ -
397005	Tack Coat	TON	8	x	700.00	= \$ 5,600
401000	Concrete Pavement	CY		x		= \$ -
401108	Replace Concrete Pavement (Rapid Strength	CY		x		= \$ -
404092	Seal Pavement Joint	LF		x		= \$ -
404094	Seal Longitudinal Isolation Joint	LF		x		= \$ -
413112A	Repair Spalled Joints (Polyester Grout)	SQYD		x		= \$ -
413115	Seal Existing Concrete Pavement Joint	LF		x		= \$ -
420102	Groove Existing Concrete Pavement	SQYD		x		= \$ -
420201	Grind Existing Concrete Pavement	SQYD		x		= \$ -
73XXXX	Minor Concrete (Misc Construction)	CY	380	x	800.00	= \$ 304,000
731504	Minor Concrete (Curb and Gutter)	CY	240	x	600.00	= \$ 144,000
731521	Minor Concrete (Sidewalk)	CY	240	x	400.00	= \$ 96,000
731530	Minor Concrete (Textured Paving)	SQFT	15,250	x	10.00	= \$ 152,500

TOTAL STRUCTURAL SECTION ITEMS	\$	2,074,500
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PRELIMINARY
PROJECT COST ESTIMATE

SECTION 3: DRAINAGE

Item code		Unit	Quantity		Unit Price (\$)		Cost
150206	Abandon Culvert	LF		x	= \$		-
150805	Remove Culvert	LF		x	= \$		-
150820	Modify Inlet	EA		x	= \$		-
152430	Adjust Inlet	LF		x	= \$		-
155003	Cap Inlet	EA		x	= \$		-
193114	Sand Backfill	CY		x	= \$		-
510502	Minor Concrete (Minor Structure)	CY	20	x	1,200.00	= \$	24,000
510512	Minor Concrete (Box Culvert)	CY		x	= \$		-
62XXXX	XXX" APC Pipe	LF		x	= \$		-
64XXXX	XXX" Plastic Pipe	LF		x	= \$		-
650026	24" RCP Pipe	LF	1,400	x	120.00	= \$	168,000
66XXXX	XXX" CSP Pipe	LF		x	= \$		-
68XXXX	Edge Drain	LF		x	= \$		-
690110	12" Corrugated Steel Pipe Downdrain	LF	200	x	55.00	= \$	11,000
70XXXX	XXX" Pipe Inlet	LF		x	= \$		-
70XXXX	XXX" Pipe Riser	LF		x	= \$		-
705210	36" Concrete Flared End Section	EA	1	x	2,200.00	= \$	2,200
703233	Grated Line Drain	LF		x	= \$		-
721013	Rock Slope Protection (1/4T Method B)	CY	40	x	250.00	= \$	10,000
721420	Concrete (Ditch Lining)	CY		x	= \$		-
721430	Concrete (Channel Lining)	CY		x	= \$		-
729010	Rock Slope Protection Fabric	SQYD	80	x	18.00	= \$	1,440
750001	Miscellaneous Iron and Steel	LB	3,000	x	1.00	= \$	3,000
XXXXXX	Additional Drainage	LS		x	= \$		-

TOTAL DRAINAGE ITEMS	\$ 219,700
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SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price (\$)		Cost
070012	Progress Schedule (Critical Path Method)	LS	1	x	5,000.00	= \$	5,000
150662	Remove Metal Beam Guard Railing	LF		x	= \$		-
150668	Remove Terminal Systems	EA		x	= \$		-
1532XX	Remove Barrier (<i>Insert Type</i>)	LF		x	= \$		-
153250	Remove Sound Wall	SQFT		x	= \$		-
190110	Lead Compliance Plan	LS		x	= \$		-
49XXXX	CIDH Concrete Piling (<i>Insert Diameter</i>)	LF		x	= \$		-
510060	Structural Concrete (Retaining Wall)	CY		x	= \$		-
510133	Class 2 Concrete (Retaining Wall)	CY	100	x	1,000.00	= \$	100,000
510524	Minor Concrete (Sound Wall)	CY		x	= \$		-
5110XX	Architectural Treatment (<i>Insert Type</i>)	SQFT	1,200	x	40.00	= \$	48,000
511048	Apply Anti-Graffiti Coating	SQFT		x	= \$		-
5136XX	Reinforced Concrete Crib Wall (<i>Insert Type</i>)	SQFT		x	= \$		-
518002	Sound Wall (Masonry Block)	SQFT		x	= \$		-
520103	Bar Reinf. Steel (Retaining Wall)	LB	7,500	x	1.30	= \$	9,750
800360	Chain Link Fence (Type CL-6)	LF	800	x	35.00	= \$	28,000
832001	Metal Beam Guard Railing	LF	160	x	40.00	= \$	6,400
839310	Double Thrie Beam Barrier	LF		x	= \$		-
839521	Cable Railing	LF	200	x	50.00	= \$	10,000
83954X	Transition Railing (<i>WB</i>)	EA	4	x	4,000.00	= \$	16,000
8395XX	Terminal System (Type CAT)	EA		x	= \$		-
8395XX	Alternative Flared Terminal System	EA	4	x	2,500.00	= \$	10,000
8395XX	End Anchor Assembly (<i>Insert Type</i>)	EA		x	= \$		-
839561	Rail Tensioning Assembly	EA		x	= \$		-
839XXX	Crash Cushion (<i>Insert Type</i>)	EA		x	= \$		-
83XXXX	Concrete Barrier (<i>Type 732 MOD</i>)	LF	220	x	150.00	= \$	33,000
				x			

TOTAL SPECIALTY ITEMS	\$ 266,200
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SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code	Unit	Quantity	Unit Price (\$)	=	\$	Cost
Biological Mitigation	LS	1		x		-
071325 TEMPORARY REINFORCED SILT FENCE	LF	1,000	5.00	x		5,000
071325 Temporary Fence (Type ESA)	LF	1,500	5.00			7,500
<u>Subtotal Environmental</u>						<u>\$ 12,500</u>

5B - LANDSCAPE AND IRRIGATION

Item code	Unit	Quantity	Unit Price (\$)	=	\$	Cost
200001 Highway Planting	LS	1	75,000.00	x		75,000
20XXXX 8" (HDPE) Conduit (Use for Irrigation x-	LF	400	20.00	x		8,000
20XXXX Extend XXX" (Insert Type) Conduit	LF			x		-
201700 Imported Topsoil	CY	300	40.00	x		12,000
2030XX Erosion Control (Type __)	SQYD	100	5.00	x		500
203021 Fiber Rolls	LF			x		-
203026 Move In/ Move Out (Erosion Control)	EA			x		-
204099 Plant Establishment Work	LS	1	7,500.00	x		7,500
204101 Extend Plant Establishment (4 Years)	LS	1	30,000.00	x		30,000
208000 Irrigation System	LS	1	20,000.00	x		20,000
208304 Water Meter	EA	1	5,000.00	x		5,000
209801 Maintenance Vehicle Pullout	EA	2	15,000.00	x		30,000
<u>Subtotal Landscape and Irrigation</u>						<u>\$ 188,000</u>

5C - NPDES

Item code	Unit	Quantity	Unit Price (\$)	=	\$	Cost
074016 Construction Site Management	LS	1	50,000.00	x		50,000
074017 Prepare WPCP	LS			x		-
074019 Prepare SWPPP	LS	1	5,000.00	x		5,000
074023 Temporary Erosion Control	SQYD			x		-
074027 Temporary Erosion Control Blanket	SQYD	2,000	5.00	x		10,000
074028 Temporary Fiber Roll	LF	2,500	3.00	x		7,500
074032 Temporary Concrete Washout Facility	EA	2	2,500.00	x		5,000
074033 Temporary Construction Entrance	EA	2	3,000.00	x		6,000
074035 Temporary Check Dam	LF	200	12.00	x		2,400
074037 Move In/ Move Out (Temporary Erosion Cont	EA	2	500.00	x		1,000
074038 Temp. Drainage Inlet Protection	EA			x		-
074041 Street Sweeping	LS	1	25,000.00	x		25,000
074042 Temporary Concrete Washout (Portable)	LS			x		-

Supplemental Work for NPDES

(These costs are not accounted in total here but under Supplemental Work on sheet 7 of 11).

066595 Water Pollution Control Maintenance Sharing	LS			x		-
066596 Additional Water Pollution Control**	LS			x		-

Subtotal NPDES (Without Supplemental Work) \$ 111,900

*Applies to all SWPPPs and those WPCPs with sediment control or soil stabilization BMPs.

**Applies to both SWPPPs and WPCP projects.

*** Applies only to project with SWPPPs.

TOTAL ENVIRONMENTAL	\$ 312,400
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SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Item code	Unit	Quantity	Unit Price (\$)	Cost
150760 Remove Sign Structure	EA	x	= \$	-
151581 Reconstruct Sign Structure	EA	x	= \$	-
152641 Modify Sign Structure	EA	x	= \$	-
5602XX Furnish Sign Structure	LB	42,000	x 4.00 = \$	168,000
5602XX Install Sign Structure	LB	42,000	x 0.50 = \$	21,000
56XXXX XXX" CIDHC Pile (Sign Foundation)	LF	36	x 3,500.00 = \$	126,000
860090 Maintain Existing Traffic Management	LS	x	= \$	-
860810 Inductive Loop Detectors	EA	x	= \$	-
86055X Lighting & Sign Illumination	LS	x	= \$	-
8607XX Interconnection Facilities	LS	x	= \$	-
8609XX Traffic Monitoring Stations	LS	x	= \$	-
860XXX Lighting	LS	1	x 250,000.00 = \$	250,000
8611XX Ramp Metering System (Location X)	LS	x	= \$	-
8611XX Ramp Metering System (Location X)	LS	x	= \$	-
86XXXX Fiber Optic Conduit System	LS	x	= \$	-
<i>Subtotal Traffic Electrical</i>				\$ 565,000

6B - Traffic Signing and Striping

Item code	Unit	Quantity	Unit Price (\$)	Cost
120090 Construction Area Signs	LS	1	x 20,000.00 = \$	20,000
150701 Remove Yellow Painted Traffic Stripe	LF	5,000	x 1.30 = \$	6,500
150710 Remove Traffic Stripe	LF	4,000	x 0.40 = \$	1,600
150713 Remove Pavement Marking	SQFT	1,100	x 5.00 = \$	5,500
150742 Remove Roadside Sign	EA	15	x 100.00 = \$	1,500
152320 Reset Roadside Sign	EA	x	= \$	-
152390 Relocate Roadside Sign	EA	33	x 250.00 = \$	8,250
566011 Roadside Sign (One Post)	EA	65	x 330.00 = \$	21,450
566012 Roadside Sign (Two Post)	EA	x	= \$	-
560XXX Furnish Sign Panels	SQFT	600	x 24.00 = \$	14,400
560XXX Install Sign Panels	SQFT	600	x 11.00 = \$	6,600
82010X Delineator (Class X)	EA	x	= \$	-
84XXXX Permanent Pavement Delineation	LS	1	x 21,000.00 = \$	21,000
<i>Subtotal Traffic Signing and Striping</i>				\$ 106,800

6C - Stage Construction and Traffic Handling

Item code	Unit	Quantity	Unit Price (\$)	Cost
120100 Traffic Control System	LS	1	x 120,000.00 = \$	120,000
120120 Type III Barricade	EA	x	= \$	-
120143 Temporary Pavement Delineation	LF	28,000	x 1.50 = \$	42,000
12016X Channelizer	EA	300	x 40.00 = \$	12,000
128650 Portable Changeable Message Signs	EA	4	x 10,000.00 = \$	40,000
129000 Temporary Railing (Type K)	LF	1,000	x 25.00 = \$	25,000
129100 Temp. Crash Cushion Module	EA	84	x 200.00 = \$	16,800
129099A Traffic Plastic Drum	EA	x	= \$	-
839603A Temporary Crash Cushion (ADIEM)	EA	x	= \$	-
<i>Subtotal Stage Construction and Traffic Handling</i>				\$ 255,800

TOTAL TRAFFIC ITEMS	\$ 927,600
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SECTION 7: DETOURS

Include constructing, maintaining, and removal

Item code	Unit	Quantity	Unit Price (\$)	Cost
0713XX Temporary Fence (Type X)	LF	x	= \$	-
07XXXX Temporary Drainage	LS	x	= \$	-
120143 Temporary Pavement Delineation	LF	x	= \$	-
1286XX Temporary Signals	EA	x	= \$	-
129000 Temporary Railing (Type K)	LF	x	= \$	-
190101 Roadway Excavation	CY	x	= \$	-
198001 Imported Borrow	CY	x	= \$	-
198050 Embankment	CY	x	= \$	-
250401 Class 4 Aggregate Subbase	CY	x	= \$	-
260201 Class 2 Aggregate Base	CY	x	= \$	-
390132 Hot Mix Asphalt (Type A)	TON	x	= \$	-

TOTAL DETOURS	\$	-
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SUBTOTAL SECTIONS 1-7 \$ 4,428,900

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items

ADA Items 1.0% \$ 44,289

8B - Bike Path Items

Bike Path Items 1.0% \$ 44,289

8C - Other Minor Items

Other Minor Items 1.0% \$ 44,289

Total of Section 1-7 \$ 4,428,900 x 3.0% = \$ 132,867

TOTAL MINOR ITEMS	\$	132,900
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SECTIONS 9: MOBILIZATION

Item

999990 Total Section 1-8 \$ 4,561,800 x 8% = \$ 364,944

TOTAL MOBILIZATION	\$	365,000
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SECTION 10: SUPPLEMENTAL WORK

Item code	Unit	Quantity	Unit Price (\$)	Cost
066015 Federal Trainee Program	LS	x	= \$	-
066063 Traffic Management Plan - Public Informati	LS	x	= \$	-
066090 Maintain Traffic	LS	x	= \$	-
066094 Value Analysis	LS	x	= \$	-
066204 Remove Rock & Debris	LS	x	= \$	-
066222 Locate Existing Cross-Over	LS	x	= \$	-
066670 Payment Adjustments For Price Index Fluct	LS	x	= \$	-
066700 Partnering	LS	x	= \$	-
066866 Operation of Existing Traffic Management &	LS	x	= \$	-
066920 Dispute Review Board	LS	x	= \$	-

Cost of NPDES Supplemental Work specified in Section 5C = \$ -

Total Section 1-8 \$ 4,561,800 3% = \$ 136,854

TOTAL SUPPLEMENTAL WORK	\$	136,900
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PRELIMINARY
PROJECT COST ESTIMATE

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code	Unit	Quantity	Unit Price (\$)	Cost
066063 Public Information	LS	x	=	\$0
066105 RE Office	LS	x	=	\$0
066803 Padlocks	LS	x	=	\$0
066838 Reflective Numbers and Edge Sealer	LS	x	=	\$0
066901 Water Expenses	LS	x	=	\$0
066062A COZEEP Expenses	LS	x	=	\$0
06684X Ramp Meter Controller Assembly	LS	x	=	\$0
06684X TMS Controller Assembly	LS	x	=	\$0
06684X Traffic Signal Controller Assembly	LS	x	=	\$0

Total Section 1-8 \$ 4,561,800 6% = \$ 273,708

TOTAL STATE FURNISHED \$273,800

SECTION 12: TIME-RELATED OVERHEAD

Estimated Time-Related Overhead (TRO) Percentage (0% to 10%) = 5%

Item code	Unit	Quantity	Unit Price (\$)	Cost
070018 Time-Related Overhead	WD	200	X \$1,141	= \$228,100

TOTAL TIME-RELATED OVERHEAD \$228,100

SECTION 13: CONTINGENCY

(Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Total Section 1-11 \$ 5,565,600 x 30% = \$1,669,680

TOTAL CONTINGENCY \$1,669,700

Appendix C - 4-Leg Roundabout Alternative Layout

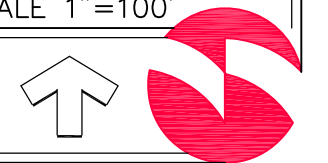


GOLD FLAT ROAD CORRIDOR STUDY

SCALE 1"=100'

4-LEG ROUNDABOUT ALTERNATIVE

FIGURE C-1



**Appendix D – Traffic Volumes, SimTraffic
and Sidra Outputs**

AM Peak Hour

AM Peak Hour from Counts

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	29	175	0	0	173	178	212	0	35	0	0	0
2	0	237	150	229	199	0	0	0	0	152	0	219
3	8	4	42	88	6	29	27	319	13	44	322	246
4	0	0	0	42	0	180	0	179	270	94	432	0
5	376	0	118	0	0	0	115	106	0	0	150	45
6	2	0	2	2	0	52	75	143	6	0	141	5

Project Only Traffic

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	0	6	0	0	3	2	3	0	0	0	0	0
2	0	3	6	11	2	0	0	0	0	3	0	0
3	0	0	0	14	0	3	6	11	0	0	15	15
4	0	0	0	0	0	20	0	18	7	0	10	0
5	8	0	0	0	0	0	16	2	0	0	2	0
6	0	0	0	0	0	0	0	2	0	0	2	0

Opening Year (2020) AM

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	31	184	0	0	182	187	223	0	37	0	0	0
2	0	249	158	241	209	0	0	0	0	160	0	230
3	9	5	45	93	7	31	29	335	14	47	339	259
4	0	0	0	45	0	189	0	188	284	99	454	0
5	395	0	124	0	0	0	121	112	0	0	158	48
6	3	0	3	3	0	55	79	151	7	0	149	6

Interim Year (2030) AM

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	36	204	0	0	201	206	244	0	44	0	0	0
2	0	272	177	268	229	0	0	0	0	178	0	250
3	12	8	53	111	11	38	37	370	20	54	375	289
4	0	0	0	53	0	217	0	216	312	110	497	0
5	432	0	137	0	0	0	143	124	0	0	174	54
6	7	0	7	7	0	63	87	166	11	0	165	11

Design Year (2040) AM

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	40	225	0	0	220	225	265	0	50	0	0	0
2	0	295	195	295	250	0	0	0	0	195	0	270
3	15	10	60	130	15	45	45	405	25	60	410	320
4	0	0	0	60	0	245	0	245	340	120	540	0
5	470	0	150	0	0	0	165	135	0	0	190	60
6	10	0	10	10	0	70	95	180	15	0	180	15

PM Peak Hour

PM Peak Hour from Counts

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	57	235	0	0	197	262	192	0	54	0	0	0
2	0	228	199	173	273	0	0	0	0	186	0	133
3	22	6	52	177	4	38	25	333	12	37	258	251
4	0	0	0	76	0	163	0	200	362	154	383	0
5	287	0	116	0	0	0	179	97	0	0	250	57
6	24	2	2	5	0	91	64	144	5	0	192	10

Project Only Traffic

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	0	12	0	0	13	6	6	0	0	0	0	0
2	0	3	15	14	3	0	0	0	0	16	0	0
3	0	0	0	69	0	16	15	14	0	0	15	64
4	0	0	0	0	0	61	0	71	12	0	18	0
5	12	0	0	0	0	0	65	6	0	0	6	0
6	0	0	0	0	0	0	0	6	0	0	6	0

Opening Year (2020) PM

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	60	247	0	0	207	276	202	0	57	0	0	0
2	0	240	209	182	287	0	0	0	0	196	0	140
3	24	7	55	186	5	40	27	350	13	39	271	264
4	0	0	0	80	0	172	0	210	381	162	403	0
5	302	0	122	0	0	0	188	102	0	0	263	60
6	26	3	3	6	0	96	68	152	6	0	202	11

Interim Year (2030) PM

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	68	276	0	0	233	303	224	0	64	0	0	0
2	0	263	237	206	314	0	0	0	0	223	0	153
3	30	11	63	244	8	55	41	387	17	45	303	323
4	0	0	0	90	0	222	0	271	418	176	446	0
5	334	0	134	0	0	0	242	116	0	0	289	68
6	31	7	7	11	0	106	77	169	11	0	224	16

Design Year (2040) PM

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	75	305	0	0	260	330	245	0	70	0	0	0
2	0	285	265	230	340	0	0	0	0	250	0	165
3	35	15	70	305	10	70	55	425	20	50	335	385
4	0	0	0	100	0	275	0	335	455	190	490	0
5	365	0	145	0	0	0	300	130	0	0	315	75
6	35	10	10	15	0	115	85	185	15	0	245	20

School PM Peak Hour

School PM Peak Hour from Counts

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	40	261	0	0	229	237	256	0	55	0	0	0
2	0	294	223	187	270	0	0	0	0	196	0	175
3	28	4	41	153	2	31	23	365	17	40	311	253
4	0	0	0	68	0	184	0	226	333	133	420	0
5	337	0	128	0	0	0	167	127	0	0	216	47
6	11	0	1	5	0	114	98	142	15	0	138	7

Project Only Traffic

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	0	12	0	0	13	6	6	0	0	0	0	0
2	0	3	15	14	3	0	0	0	0	16	0	0
3	0	0	0	69	0	16	15	14	0	0	15	64
4	0	0	0	0	0	61	0	71	12	0	18	0
5	12	0	0	0	0	0	65	6	0	0	6	0
6	0	0	0	0	0	0	0	6	0	0	6	0

Opening Year (2020) School PM

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	42	275	0	0	241	249	269	0	58	0	0	0
2	0	309	235	197	284	0	0	0	0	206	0	184
3	30	5	44	161	3	33	25	384	18	42	327	266
4	0	0	0	72	0	194	0	238	350	140	441	0
5	354	0	135	0	0	0	176	134	0	0	227	50
6	12	0	2	6	0	120	103	150	16	0	145	8

Interim Year (2030) School PM

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	49	305	0	0	270	274	294	0	67	0	0	0
2	0	337	265	223	310	0	0	0	0	233	0	200
3	35	8	50	216	7	49	40	422	24	49	363	327
4	0	0	0	81	0	246	0	300	385	153	488	0
5	389	0	148	0	0	0	229	150	0	0	251	58
6	16	0	6	11	0	133	114	168	21	0	162	12

Design Year (2040) School PM

INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	55	335	0	0	300	300	320	0	75	0	0	0
2	0	365	295	250	335	0	0	0	0	260	0	215
3	40	10	55	275	10	65	55	460	30	55	400	390
4	0	0	0	90	0	300	0	365	420	165	535	0
5	425	0	160	0	0	0	285	165	0	0	275	65
6	20	0	10	15	0	145	125	185	25	0	180	15

1: Nevada City Highway & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.0	0.0	0.1
Denied Del/Veh (s)	0.8	0.8	0.0	0.5
Total Delay (hr)	0.5	0.4	0.4	1.3
Total Del/Veh (s)	6.9	8.1	4.1	6.0
Stop Delay (hr)	0.3	0.2	0.2	0.8
Stop Del/Veh (s)	4.2	4.4	2.5	3.5

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.1	0.0	2.3	0.9
Total Delay (hr)	0.9	0.7	0.9	2.5
Total Del/Veh (s)	8.5	6.2	7.3	7.3
Stop Delay (hr)	0.6	0.4	0.4	1.5
Stop Del/Veh (s)	6.1	4.1	3.5	4.5

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.2	0.0
Total Delay (hr)	1.2	0.1	0.1	0.3	1.7
Total Del/Veh (s)	11.1	0.7	5.8	9.5	5.3
Stop Delay (hr)	0.8	0.0	0.1	0.2	1.1
Stop Del/Veh (s)	7.1	0.3	5.0	7.5	3.4

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	3.2	0.6
Total Delay (hr)	0.2	0.4	0.7	1.3
Total Del/Veh (s)	1.6	2.6	11.8	4.0
Stop Delay (hr)	0.1	0.1	0.7	0.9
Stop Del/Veh (s)	0.9	0.6	10.5	2.6

5: SR 49 NB Ramps & Gold Flat Rd Performance by approach

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.4	0.7
Total Delay (hr)	0.4	0.3	1.0	1.7
Total Del/Veh (s)	6.9	4.8	7.4	6.7
Stop Delay (hr)	0.3	0.2	0.6	1.1
Stop Del/Veh (s)	4.0	3.3	4.5	4.1

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1	0.1	0.1
Total Delay (hr)	0.1	0.0	0.0	0.1	0.2
Total Del/Veh (s)	1.7	1.0	3.0	3.4	1.6
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.1
Stop Del/Veh (s)	0.7	0.0	2.7	3.1	0.8

Total Network Performance

Denied Delay (hr)	0.8
Denied Del/Veh (s)	1.4
Total Delay (hr)	10.3
Total Del/Veh (s)	18.2
Stop Delay (hr)	6.4
Stop Del/Veh (s)	11.4

1: Nevada City Highway & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.2
Denied Del/Veh (s)	1.1	1.0	0.0	0.6
Total Delay (hr)	0.4	0.6	0.6	1.6
Total Del/Veh (s)	5.9	7.7	4.6	5.9
Stop Delay (hr)	0.2	0.3	0.4	0.9
Stop Del/Veh (s)	3.4	3.7	3.0	3.3

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.1	0.0	1.9	0.7
Total Delay (hr)	0.5	0.7	1.0	2.3
Total Del/Veh (s)	5.6	5.8	8.4	6.7
Stop Delay (hr)	0.3	0.4	0.5	1.3
Stop Del/Veh (s)	3.3	3.5	4.5	3.8

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.3	0.1
Total Delay (hr)	1.4	0.1	0.2	0.8	2.5
Total Del/Veh (s)	13.1	0.7	7.2	13.0	7.1
Stop Delay (hr)	0.9	0.0	0.1	0.6	1.8
Stop Del/Veh (s)	8.8	0.2	5.8	10.6	5.0

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	2.8	0.5
Total Delay (hr)	0.3	0.5	1.0	1.8
Total Del/Veh (s)	1.6	3.1	14.7	4.6
Stop Delay (hr)	0.2	0.1	0.9	1.2
Stop Del/Veh (s)	1.0	0.7	13.0	3.1

5: SR 49 NB Ramps & Gold Flat Rd Performance by approach

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.1	1.5	0.7
Total Delay (hr)	0.5	0.5	0.8	1.8
Total Del/Veh (s)	6.8	5.3	6.7	6.3
Stop Delay (hr)	0.3	0.3	0.5	1.2
Stop Del/Veh (s)	4.2	3.9	4.2	4.1

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1	0.1	0.1
Total Delay (hr)	0.1	0.1	0.1	0.1	0.4
Total Del/Veh (s)	1.7	1.4	7.3	5.5	2.5
Stop Delay (hr)	0.1	0.0	0.0	0.1	0.2
Stop Del/Veh (s)	0.9	0.1	6.2	4.9	1.5

Total Network Performance

Denied Delay (hr)	0.8
Denied Del/Veh (s)	1.2
Total Delay (hr)	11.7
Total Del/Veh (s)	17.5
Stop Delay (hr)	7.3
Stop Del/Veh (s)	11.0

Existing Conditions

School PM Peak Hour

1/22/2016

1: Nevada City Highway & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.2
Denied Del/Veh (s)	1.0	0.8	0.0	0.5
Total Delay (hr)	0.7	0.8	0.6	2.1
Total Del/Veh (s)	7.8	9.4	4.8	7.0
Stop Delay (hr)	0.4	0.5	0.4	1.3
Stop Del/Veh (s)	5.0	5.5	3.1	4.3

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.0	0.0	2.0	0.7
Total Delay (hr)	1.3	0.9	1.1	3.4
Total Del/Veh (s)	13.3	6.3	8.6	9.0
Stop Delay (hr)	1.1	0.6	0.6	2.3
Stop Del/Veh (s)	10.8	4.1	4.5	6.0

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.2	0.0
Total Delay (hr)	1.6	0.1	0.2	0.6	2.4
Total Del/Veh (s)	13.3	0.7	8.0	11.5	7.0
Stop Delay (hr)	1.0	0.0	0.1	0.5	1.7
Stop Del/Veh (s)	8.8	0.2	6.7	9.0	4.8

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	2.9	0.5
Total Delay (hr)	0.3	0.5	0.8	1.6
Total Del/Veh (s)	1.7	3.2	11.7	4.1
Stop Delay (hr)	0.2	0.1	0.7	1.0
Stop Del/Veh (s)	1.0	0.9	10.2	2.6

5: SR 49 NB Ramps & Gold Flat Rd Performance by approach

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.5	0.7
Total Delay (hr)	0.7	0.4	0.9	2.0
Total Del/Veh (s)	8.1	5.6	7.5	7.1
Stop Delay (hr)	0.4	0.3	0.6	1.4
Stop Del/Veh (s)	5.1	4.4	4.9	4.8

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1	0.2	0.1
Total Delay (hr)	0.1	0.0	0.0	0.2	0.4
Total Del/Veh (s)	1.7	1.1	6.3	5.6	2.5
Stop Delay (hr)	0.1	0.0	0.0	0.2	0.2
Stop Del/Veh (s)	0.8	0.0	5.2	4.8	1.6

Total Network Performance

Denied Delay (hr)	0.8
Denied Del/Veh (s)	1.3
Total Delay (hr)	13.7
Total Del/Veh (s)	21.0
Stop Delay (hr)	9.0
Stop Del/Veh (s)	13.8

1: Nevada City Hwy & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.0	0.0	0.1
Denied Del/Veh (s)	0.8	0.7	0.0	0.4
Total Delay (hr)	0.5	0.5	0.5	1.5
Total Del/Veh (s)	6.9	8.5	4.4	6.2
Stop Delay (hr)	0.3	0.3	0.3	0.9
Stop Del/Veh (s)	4.2	4.8	2.7	3.7

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.1	0.0	2.3	0.9
Total Delay (hr)	1.0	0.7	0.9	2.6
Total Del/Veh (s)	9.2	6.3	7.3	7.5
Stop Delay (hr)	0.7	0.5	0.5	1.6
Stop Del/Veh (s)	6.7	4.1	3.5	4.7

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.2	0.0
Total Delay (hr)	1.3	0.1	0.1	0.3	1.9
Total Del/Veh (s)	11.2	0.8	5.6	9.7	5.4
Stop Delay (hr)	0.8	0.0	0.1	0.3	1.2
Stop Del/Veh (s)	7.2	0.2	4.8	7.6	3.5

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	3.2	0.6
Total Delay (hr)	0.2	0.4	0.7	1.4
Total Del/Veh (s)	1.6	2.6	12.2	3.9
Stop Delay (hr)	0.1	0.1	0.7	0.9
Stop Del/Veh (s)	0.9	0.6	11.0	2.6

AM Peak Hour**5: SR 49 NB Ramps & Gold Flat Rd Performance by approach**

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.5	0.8
Total Delay (hr)	0.4	0.3	1.1	1.8
Total Del/Veh (s)	6.9	5.1	7.5	6.9
Stop Delay (hr)	0.3	0.2	0.7	1.1
Stop Del/Veh (s)	4.0	3.6	4.7	4.3

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1	0.1	0.1
Total Delay (hr)	0.1	0.0	0.0	0.1	0.2
Total Del/Veh (s)	1.6	1.0	4.7	3.8	1.7
Stop Delay (hr)	0.1	0.0	0.0	0.1	0.1
Stop Del/Veh (s)	0.7	0.0	4.1	3.3	0.9

Total Network Performance

Denied Delay (hr)	0.8
Denied Del/Veh (s)	1.4
Total Delay (hr)	10.9
Total Del/Veh (s)	18.4
Stop Delay (hr)	6.8
Stop Del/Veh (s)	11.5

1: Nevada City Hwy & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.2
Denied Del/Veh (s)	1.1	1.0	0.0	0.6
Total Delay (hr)	0.5	0.7	0.6	1.8
Total Del/Veh (s)	6.3	8.4	4.7	6.2
Stop Delay (hr)	0.3	0.4	0.4	1.1
Stop Del/Veh (s)	3.6	4.5	3.1	3.6

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.8	0.6
Total Delay (hr)	0.5	0.8	1.1	2.4
Total Del/Veh (s)	5.9	6.0	8.4	6.8
Stop Delay (hr)	0.3	0.5	0.6	1.4
Stop Del/Veh (s)	3.6	3.7	4.3	3.9

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.3	0.1
Total Delay (hr)	1.6	0.1	0.2	0.9	2.8
Total Del/Veh (s)	14.1	0.7	7.5	13.9	7.7
Stop Delay (hr)	1.1	0.0	0.2	0.7	2.0
Stop Del/Veh (s)	9.6	0.2	6.1	11.4	5.5

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	2.8	0.5
Total Delay (hr)	0.3	0.5	1.4	2.2
Total Del/Veh (s)	1.6	3.4	19.5	5.6
Stop Delay (hr)	0.2	0.1	1.3	1.6
Stop Del/Veh (s)	1.1	0.9	18.0	4.1

5: SR 49 NB Ramps & Gold Flat Rd Performance by approach

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.4	0.6
Total Delay (hr)	0.6	0.5	0.8	2.0
Total Del/Veh (s)	7.7	5.6	7.1	6.8
Stop Delay (hr)	0.4	0.4	0.5	1.3
Stop Del/Veh (s)	4.9	4.1	4.6	4.5

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1	0.1	0.1
Total Delay (hr)	0.1	0.1	0.1	0.2	0.4
Total Del/Veh (s)	1.8	1.4	6.8	5.7	2.6
Stop Delay (hr)	0.1	0.0	0.0	0.1	0.3
Stop Del/Veh (s)	0.9	0.1	5.8	5.1	1.6

Total Network Performance

Denied Delay (hr)	0.8
Denied Del/Veh (s)	1.2
Total Delay (hr)	13.1
Total Del/Veh (s)	19.6
Stop Delay (hr)	8.5
Stop Del/Veh (s)	12.7

1: Nevada City Hwy & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.2
Denied Del/Veh (s)	1.0	0.9	0.0	0.5
Total Delay (hr)	0.9	1.0	0.7	2.5
Total Del/Veh (s)	9.7	10.9	5.1	8.0
Stop Delay (hr)	0.6	0.6	0.4	1.7
Stop Del/Veh (s)	7.0	7.0	3.2	5.4

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.9	0.6
Total Delay (hr)	1.0	1.0	1.2	3.2
Total Del/Veh (s)	10.1	6.5	8.6	8.2
Stop Delay (hr)	0.8	0.6	0.6	2.0
Stop Del/Veh (s)	7.6	4.2	4.6	5.2

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.2	0.0
Total Delay (hr)	1.5	0.1	0.2	0.7	2.4
Total Del/Veh (s)	12.7	0.8	7.3	12.4	6.7
Stop Delay (hr)	1.0	0.0	0.1	0.5	1.7
Stop Del/Veh (s)	8.3	0.3	6.0	10.2	4.6

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	2.9	0.6
Total Delay (hr)	0.3	0.5	1.1	1.9
Total Del/Veh (s)	1.7	3.2	15.1	4.8
Stop Delay (hr)	0.2	0.1	1.0	1.3
Stop Del/Veh (s)	1.0	0.8	13.4	3.3

5: SR 49 NB Ramps & Gold Flat Rd Performance by approach

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.5	0.7
Total Delay (hr)	0.6	0.4	1.0	2.0
Total Del/Veh (s)	7.5	5.4	7.4	6.9
Stop Delay (hr)	0.4	0.3	0.6	1.3
Stop Del/Veh (s)	4.6	4.2	4.7	4.5

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1	0.2	0.1
Total Delay (hr)	0.1	0.1	0.0	0.2	0.4
Total Del/Veh (s)	1.7	1.2	5.8	5.4	2.5
Stop Delay (hr)	0.1	0.0	0.0	0.2	0.2
Stop Del/Veh (s)	0.8	0.1	5.0	4.7	1.6

Total Network Performance

Denied Delay (hr)	0.9
Denied Del/Veh (s)	1.3
Total Delay (hr)	14.2
Total Del/Veh (s)	20.9
Stop Delay (hr)	9.4
Stop Del/Veh (s)	13.8

1: Nevada City Hwy & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.1
Denied Del/Veh (s)	0.9	0.8	0.0	0.5
Total Delay (hr)	0.6	0.6	0.5	1.7
Total Del/Veh (s)	7.6	8.1	4.6	6.4
Stop Delay (hr)	0.4	0.3	0.3	1.0
Stop Del/Veh (s)	4.8	4.3	2.8	3.8

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.0	0.0	2.3	0.9
Total Delay (hr)	1.3	0.9	1.2	3.3
Total Del/Veh (s)	10.7	6.9	8.1	8.5
Stop Delay (hr)	1.0	0.6	0.6	2.2
Stop Del/Veh (s)	8.1	4.7	4.2	5.5

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.2	0.0
Total Delay (hr)	1.8	0.2	0.1	0.7	2.8
Total Del/Veh (s)	14.1	0.8	6.6	13.7	7.0
Stop Delay (hr)	1.3	0.1	0.1	0.5	2.0
Stop Del/Veh (s)	9.9	0.3	5.6	11.3	5.1

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	3.1	0.6
Total Delay (hr)	0.3	0.5	1.3	2.0
Total Del/Veh (s)	1.7	3.0	16.7	5.1
Stop Delay (hr)	0.1	0.1	1.2	1.4
Stop Del/Veh (s)	1.0	0.8	15.2	3.7

5: SR 49 NB Ramps & Gold Flat Rd Performance by approach

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.5	0.8
Total Delay (hr)	0.6	0.4	1.3	2.3
Total Del/Veh (s)	7.7	5.6	8.3	7.5
Stop Delay (hr)	0.4	0.3	0.8	1.5
Stop Del/Veh (s)	4.8	4.1	5.3	4.9

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1	0.1	0.1
Total Delay (hr)	0.1	0.1	0.0	0.1	0.3
Total Del/Veh (s)	1.8	1.2	4.7	4.4	1.9
Stop Delay (hr)	0.1	0.0	0.0	0.1	0.1
Stop Del/Veh (s)	0.8	0.1	4.2	3.9	1.0

Total Network Performance

Denied Delay (hr)	1.0
Denied Del/Veh (s)	1.4
Total Delay (hr)	14.2
Total Del/Veh (s)	21.0
Stop Delay (hr)	9.4
Stop Del/Veh (s)	13.9

1: Nevada City Hwy & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.2
Denied Del/Veh (s)	1.1	1.0	0.0	0.6
Total Delay (hr)	0.6	1.0	0.7	2.3
Total Del/Veh (s)	7.8	10.1	5.1	7.3
Stop Delay (hr)	0.4	0.6	0.5	1.5
Stop Del/Veh (s)	5.1	6.1	3.5	4.7

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.0	0.0	2.0	0.7
Total Delay (hr)	0.7	0.9	1.3	2.9
Total Del/Veh (s)	6.8	6.7	8.8	7.5
Stop Delay (hr)	0.5	0.6	0.7	1.8
Stop Del/Veh (s)	4.4	4.5	4.7	4.5

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.3	0.1
Total Delay (hr)	2.6	0.2	0.3	2.8	5.8
Total Del/Veh (s)	20.3	0.9	9.5	32.5	13.6
Stop Delay (hr)	2.1	0.1	0.2	2.6	5.0
Stop Del/Veh (s)	15.8	0.3	8.1	30.8	11.6

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	2.9	0.5
Total Delay (hr)	0.4	0.7	3.1	4.1
Total Del/Veh (s)	1.8	3.8	35.5	8.9
Stop Delay (hr)	0.2	0.2	3.0	3.4
Stop Del/Veh (s)	1.1	1.1	34.2	7.4

PM Peak Hour

5: SR 49 NB Ramps & Gold Flat Rd Performance by approach

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.5	0.6
Total Delay (hr)	1.1	0.6	1.2	2.9
Total Del/Veh (s)	9.9	6.4	8.8	8.5
Stop Delay (hr)	0.8	0.5	0.8	2.1
Stop Del/Veh (s)	7.3	5.0	6.3	6.2

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1	0.2	0.1
Total Delay (hr)	0.1	0.1	0.1	0.2	0.6
Total Del/Veh (s)	1.8	1.9	9.6	6.8	3.2
Stop Delay (hr)	0.1	0.0	0.1	0.2	0.4
Stop Del/Veh (s)	0.9	0.5	8.6	5.9	2.1

Total Network Performance

Denied Delay (hr)	1.0
Denied Del/Veh (s)	1.3
Total Delay (hr)	20.5
Total Del/Veh (s)	26.4
Stop Delay (hr)	15.2
Stop Del/Veh (s)	19.7

1: Nevada City Hwy & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.2
Denied Del/Veh (s)	1.1	0.9	0.0	0.6
Total Delay (hr)	1.2	1.3	0.8	3.3
Total Del/Veh (s)	11.9	13.3	5.3	9.4
Stop Delay (hr)	0.9	0.9	0.5	2.4
Stop Del/Veh (s)	9.1	9.3	3.5	6.7

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.0	0.0	1.9	0.6
Total Delay (hr)	1.6	1.2	1.4	4.2
Total Del/Veh (s)	12.5	7.0	9.8	9.5
Stop Delay (hr)	1.2	0.8	0.8	2.9
Stop Del/Veh (s)	9.9	4.8	5.6	6.5

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.3	0.1
Total Delay (hr)	2.6	0.2	0.2	2.1	5.1
Total Del/Veh (s)	19.1	0.9	9.3	28.4	11.7
Stop Delay (hr)	2.0	0.1	0.2	2.0	4.2
Stop Del/Veh (s)	14.6	0.3	7.8	26.5	9.6

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.0	0.0	3.3	0.6
Total Delay (hr)	0.3	0.7	3.6	4.6
Total Del/Veh (s)	1.8	3.9	39.9	10.1
Stop Delay (hr)	0.2	0.2	3.5	3.9
Stop Del/Veh (s)	1.0	1.3	38.8	8.5

5: SR 49 NB Ramps & Gold Flat Rd Performance by approach

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.6	0.7
Total Delay (hr)	1.1	0.6	1.7	3.4
Total Del/Veh (s)	10.8	6.6	11.1	9.8
Stop Delay (hr)	0.9	0.5	1.3	2.6
Stop Del/Veh (s)	8.0	5.4	8.6	7.6

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.2	0.2	0.1
Total Delay (hr)	0.2	0.1	0.0	0.3	0.6
Total Del/Veh (s)	2.1	1.5	7.2	7.1	3.2
Stop Delay (hr)	0.1	0.0	0.0	0.3	0.4
Stop Del/Veh (s)	1.1	0.1	6.4	6.1	2.2

Total Network Performance

Denied Delay (hr)	1.0
Denied Del/Veh (s)	1.3
Total Delay (hr)	23.6
Total Del/Veh (s)	29.7
Stop Delay (hr)	17.9
Stop Del/Veh (s)	22.6

AM Peak Hour**1: Nevada City Hwy & Ridge Rd Performance by approach**

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.2
Denied Del/Veh (s)	1.1	0.8	0.0	0.6
Total Delay (hr)	1.0	1.0	0.6	2.5
Total Del/Veh (s)	11.5	12.5	4.7	8.8
Stop Delay (hr)	0.8	0.7	0.4	1.8
Stop Del/Veh (s)	8.8	8.6	3.0	6.2

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.4	0.4
Denied Del/Veh (s)	0.0	0.0	2.3	0.8
Total Delay (hr)	2.3	1.1	1.3	4.8
Total Del/Veh (s)	16.9	8.3	8.9	11.3
Stop Delay (hr)	1.9	0.8	0.7	3.5
Stop Del/Veh (s)	14.1	6.1	4.9	8.2

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.2	0.0
Total Delay (hr)	2.2	0.2	0.2	1.3	3.9
Total Del/Veh (s)	16.0	1.0	9.3	23.5	8.9
Stop Delay (hr)	1.7	0.1	0.2	1.1	3.1
Stop Del/Veh (s)	11.8	0.3	8.0	21.5	6.9

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.0	0.0	3.1	0.6
Total Delay (hr)	0.3	0.6	3.7	4.5
Total Del/Veh (s)	1.7	3.1	42.5	10.2
Stop Delay (hr)	0.2	0.2	3.6	3.9
Stop Del/Veh (s)	1.0	0.8	41.6	8.8

AM Peak Hour**5: SR 49 NB Ramps & Gold Flat Rd Performance by approach**

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.0	0.0	1.5	0.8
Total Delay (hr)	0.8	0.5	2.0	3.2
Total Del/Veh (s)	8.8	6.1	11.6	9.6
Stop Delay (hr)	0.5	0.4	1.5	2.4
Stop Del/Veh (s)	5.9	4.7	8.7	7.1

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1	0.1	0.1
Total Delay (hr)	0.2	0.1	0.0	0.1	0.4
Total Del/Veh (s)	1.9	1.5	4.8	5.1	2.3
Stop Delay (hr)	0.1	0.0	0.0	0.1	0.2
Stop Del/Veh (s)	1.0	0.2	4.3	4.4	1.3

Total Network Performance

Denied Delay (hr)	1.1
Denied Del/Veh (s)	1.5
Total Delay (hr)	21.5
Total Del/Veh (s)	28.9
Stop Delay (hr)	16.2
Stop Del/Veh (s)	21.8

1: Nevada City Hwy & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.2
Denied Del/Veh (s)	1.2	1.2	0.0	0.6
Total Delay (hr)	0.7	1.3	0.9	3.0
Total Del/Veh (s)	8.8	12.9	5.6	8.5
Stop Delay (hr)	0.5	0.9	0.6	2.1
Stop Del/Veh (s)	6.1	9.0	3.9	5.9

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.0	0.0	1.9	0.7
Total Delay (hr)	1.2	1.1	1.8	4.0
Total Del/Veh (s)	9.4	7.2	11.6	9.4
Stop Delay (hr)	0.8	0.7	1.1	2.7
Stop Del/Veh (s)	6.9	5.0	7.2	6.3

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	30.1	30.1
Denied Del/Veh (s)	0.0	0.0	0.2	267.9	60.7
Total Delay (hr)	4.1	0.2	0.5	13.0	17.9
Total Del/Veh (s)	29.7	1.1	14.6	133.5	36.9
Stop Delay (hr)	3.5	0.1	0.5	13.8	17.8
Stop Del/Veh (s)	25.2	0.4	12.8	141.0	36.7

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	11.0	11.0
Denied Del/Veh (s)	0.0	0.0	106.8	21.6
Total Delay (hr)	0.4	0.9	13.0	14.3
Total Del/Veh (s)	1.8	4.6	123.2	28.0
Stop Delay (hr)	0.2	0.3	13.6	14.2
Stop Del/Veh (s)	1.2	1.7	129.2	27.8

5: SR 49 NB Ramps & Gold Flat Rd Performance by approach

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.6	0.6
Total Delay (hr)	1.7	0.9	1.8	4.4
Total Del/Veh (s)	14.6	8.2	12.2	11.7
Stop Delay (hr)	1.4	0.8	1.4	3.6
Stop Del/Veh (s)	12.3	6.8	9.7	9.6

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1	0.2	0.1
Total Delay (hr)	0.2	0.3	0.2	0.5	1.1
Total Del/Veh (s)	2.1	3.9	13.6	13.7	5.6
Stop Delay (hr)	0.1	0.2	0.2	0.4	0.9
Stop Del/Veh (s)	1.2	2.0	12.4	12.9	4.3

Total Network Performance

Denied Delay (hr)	41.9
Denied Del/Veh (s)	48.4
Total Delay (hr)	46.8
Total Del/Veh (s)	54.1
Stop Delay (hr)	42.6
Stop Del/Veh (s)	49.2

1: Nevada City Hwy & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.5	0.2	0.0	0.7
Denied Del/Veh (s)	4.2	2.1	0.0	1.8
Total Delay (hr)	5.2	4.4	0.9	10.6
Total Del/Veh (s)	45.6	41.5	5.8	27.6
Stop Delay (hr)	5.1	4.2	0.6	10.0
Stop Del/Veh (s)	45.1	39.4	4.0	26.1

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.4	0.4
Denied Del/Veh (s)	0.0	0.0	2.2	0.7
Total Delay (hr)	2.5	1.6	2.0	6.2
Total Del/Veh (s)	18.1	8.8	12.5	12.7
Stop Delay (hr)	2.1	1.2	1.3	4.7
Stop Del/Veh (s)	15.4	6.6	8.2	9.7

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	12.2	12.2
Denied Del/Veh (s)	0.0	0.0	0.2	126.1	24.1
Total Delay (hr)	4.1	0.3	0.4	11.8	16.6
Total Del/Veh (s)	26.7	1.1	14.2	125.0	32.8
Stop Delay (hr)	3.4	0.1	0.3	12.5	16.3
Stop Del/Veh (s)	22.0	0.4	12.4	131.5	32.1

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	17.0	17.0
Denied Del/Veh (s)	0.0	0.0	154.5	32.9
Total Delay (hr)	0.4	0.8	17.0	18.3
Total Del/Veh (s)	2.0	4.3	163.4	35.6
Stop Delay (hr)	0.3	0.3	17.9	18.5
Stop Del/Veh (s)	1.2	1.6	171.9	36.0

5: SR 49 NB Ramps & Gold Flat Rd Performance by approach

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.0	0.0	1.7	0.7
Total Delay (hr)	2.0	0.8	2.4	5.1
Total Del/Veh (s)	16.4	7.9	14.7	13.5
Stop Delay (hr)	1.7	0.7	2.0	4.4
Stop Del/Veh (s)	14.2	6.9	12.3	11.5

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1	0.2	0.1
Total Delay (hr)	0.2	0.1	0.1	0.5	0.9
Total Del/Veh (s)	2.1	2.4	8.1	11.2	4.5
Stop Delay (hr)	0.1	0.0	0.1	0.5	0.7
Stop Del/Veh (s)	1.2	0.7	7.5	10.2	3.3

Total Network Performance

Denied Delay (hr)	30.6
Denied Del/Veh (s)	34.5
Total Delay (hr)	60.1
Total Del/Veh (s)	67.4
Stop Delay (hr)	56.1
Stop Del/Veh (s)	62.9

1: Nevada City Hwy & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.1
Denied Del/Veh (s)	0.9	0.8	0.0	0.5
Total Delay (hr)	0.7	0.6	0.5	1.8
Total Del/Veh (s)	8.8	8.9	4.5	6.9
Stop Delay (hr)	0.5	0.3	0.3	1.2
Stop Del/Veh (s)	6.0	5.0	2.8	4.4

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.0	0.0	2.3	0.9
Total Delay (hr)	1.4	0.9	1.1	3.5
Total Del/Veh (s)	11.7	7.2	7.9	8.8
Stop Delay (hr)	1.1	0.6	0.6	2.3
Stop Del/Veh (s)	9.0	5.0	4.1	5.9

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.1	0.2	0.0
Total Delay (hr)	1.8	0.2	0.2	0.6	2.8
Total Del/Veh (s)	14.0	0.8	7.4	13.6	7.0
Stop Delay (hr)	1.3	0.1	0.1	0.5	2.0
Stop Del/Veh (s)	9.9	0.3	6.4	11.3	5.1

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	3.1	0.6
Total Delay (hr)	0.3	0.5	1.2	1.9
Total Del/Veh (s)	1.7	2.9	15.5	4.9
Stop Delay (hr)	0.1	0.1	1.1	1.4
Stop Del/Veh (s)	1.0	0.8	14.3	3.5

AM Peak Hour**5: SR 49 NB Ramps & Gold Flat Rd Performance by approach**

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.4	0.7
Total Delay (hr)	0.6	0.3	1.4	2.4
Total Del/Veh (s)	7.5	5.5	9.2	8.0
Stop Delay (hr)	0.4	0.3	1.0	1.6
Stop Del/Veh (s)	4.6	4.0	6.3	5.4

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1	0.1	0.1
Total Delay (hr)	0.1	0.1	0.0	0.1	0.3
Total Del/Veh (s)	1.7	1.2	4.5	4.7	2.0
Stop Delay (hr)	0.1	0.0	0.0	0.1	0.1
Stop Del/Veh (s)	0.8	0.1	4.0	4.2	1.0

Total Network Performance

Denied Delay (hr)	0.9
Denied Del/Veh (s)	1.4
Total Delay (hr)	14.4
Total Del/Veh (s)	21.6
Stop Delay (hr)	9.7
Stop Del/Veh (s)	14.6

1: Nevada City Hwy & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.2
Denied Del/Veh (s)	1.1	1.0	0.0	0.6
Total Delay (hr)	0.6	0.9	0.7	2.2
Total Del/Veh (s)	7.6	9.9	5.1	7.2
Stop Delay (hr)	0.4	0.6	0.5	1.4
Stop Del/Veh (s)	5.0	5.9	3.4	4.5

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.0	0.0	2.0	0.7
Total Delay (hr)	0.7	0.9	1.3	2.9
Total Del/Veh (s)	6.7	6.5	8.7	7.4
Stop Delay (hr)	0.4	0.6	0.7	1.7
Stop Del/Veh (s)	4.3	4.3	4.6	4.4

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.4	0.1
Total Delay (hr)	2.5	0.2	0.3	2.7	5.7
Total Del/Veh (s)	19.3	0.9	10.2	32.2	13.3
Stop Delay (hr)	1.9	0.1	0.3	2.6	4.8
Stop Del/Veh (s)	14.8	0.3	8.7	30.6	11.3

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	2.8	0.5
Total Delay (hr)	0.4	0.7	1.7	2.7
Total Del/Veh (s)	1.8	3.8	19.2	5.8
Stop Delay (hr)	0.2	0.2	1.5	1.9
Stop Del/Veh (s)	1.1	1.1	17.5	4.2

PM Peak Hour

5: SR 49 NB Ramps & Gold Flat Rd Performance by approach

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.5	0.6
Total Delay (hr)	1.1	0.6	1.2	2.9
Total Del/Veh (s)	10.0	6.5	8.9	8.6
Stop Delay (hr)	0.8	0.5	0.9	2.1
Stop Del/Veh (s)	7.3	5.1	6.4	6.3

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.1	0.2	0.1
Total Delay (hr)	0.1	0.1	0.1	0.2	0.6
Total Del/Veh (s)	1.8	1.9	9.0	7.0	3.2
Stop Delay (hr)	0.1	0.0	0.1	0.2	0.4
Stop Del/Veh (s)	0.9	0.5	7.9	6.2	2.1

Total Network Performance

Denied Delay (hr)	1.0
Denied Del/Veh (s)	1.3
Total Delay (hr)	18.8
Total Del/Veh (s)	24.4
Stop Delay (hr)	13.5
Stop Del/Veh (s)	17.6

1: Nevada City Hwy & Ridge Rd Performance by approach

Approach	EB	NB	SB	All
Denied Delay (hr)	0.1	0.1	0.0	0.2
Denied Del/Veh (s)	1.1	0.9	0.0	0.6
Total Delay (hr)	1.2	1.4	0.8	3.4
Total Del/Veh (s)	12.0	14.4	5.3	9.7
Stop Delay (hr)	0.9	1.0	0.5	2.5
Stop Del/Veh (s)	9.2	10.4	3.6	7.1

2: Ridge Rd & Zion St Performance by approach

Approach	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.0	0.0	1.9	0.6
Total Delay (hr)	1.3	1.2	1.5	4.1
Total Del/Veh (s)	10.3	7.3	10.4	9.2
Stop Delay (hr)	1.0	0.8	0.9	2.8
Stop Del/Veh (s)	7.8	5.1	6.3	6.3

3: Lower Grass Valley Rd/Searls Ave & Ridge Rd Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.2	0.3	0.1
Total Delay (hr)	2.1	0.2	0.2	1.6	4.1
Total Del/Veh (s)	15.3	1.0	8.2	21.5	9.3
Stop Delay (hr)	1.5	0.1	0.2	1.4	3.1
Stop Del/Veh (s)	10.8	0.3	6.6	19.3	7.1

4: Gold Flat Rd & SR 49 SB Ramps Performance by approach

Approach	EB	WB	SB	All
Denied Delay (hr)	0.0	0.0	0.3	0.3
Denied Del/Veh (s)	0.0	0.0	2.9	0.6
Total Delay (hr)	0.4	0.7	1.9	3.0
Total Del/Veh (s)	1.9	3.9	21.1	6.4
Stop Delay (hr)	0.2	0.2	1.8	2.2
Stop Del/Veh (s)	1.1	1.3	19.5	4.8

5: SR 49 NB Ramps & Gold Flat Rd Performance by approach

Approach	EB	WB	NB	All
Denied Delay (hr)	0.0	0.0	0.2	0.2
Denied Del/Veh (s)	0.0	0.0	1.6	0.7
Total Delay (hr)	1.1	0.6	1.6	3.3
Total Del/Veh (s)	10.4	6.6	10.6	9.5
Stop Delay (hr)	0.8	0.5	1.2	2.5
Stop Del/Veh (s)	7.6	5.4	8.0	7.2

6: Gold Flat Rd & Hollow Way Performance by approach

Approach	EB	WB	NB	SB	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.2	0.2	0.2	0.1
Total Delay (hr)	0.2	0.1	0.0	0.3	0.6
Total Del/Veh (s)	2.1	1.4	6.6	7.1	3.2
Stop Delay (hr)	0.1	0.0	0.0	0.3	0.4
Stop Del/Veh (s)	1.1	0.1	5.8	6.0	2.1

Total Network Performance

Denied Delay (hr)	1.0
Denied Del/Veh (s)	1.3
Total Delay (hr)	20.7
Total Del/Veh (s)	26.1
Stop Delay (hr)	15.0
Stop Del/Veh (s)	18.9

LANE SUMMARY

Site: Design Year (2040) AM - NB Ramps

Network: Design Year (2040) AM

New Site
Roundabout

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue		Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
	Total veh/h	HV %	Total veh/h	HV %						Veh	Dist ft				
South: Caltrans Access Rd															
Lane 1 ^d	24	5.0	24	5.0	482	0.050	100	13.5	LOS B	0.4	9.1	Full	150	0.0	0.0
Approach	24	5.0	24	5.0		0.050		13.5	LOS B	0.4	9.1				
East: Gold Flat Rd															
Lane 1 ^d	223	5.0	223	5.0	626	0.356	100	10.0	LOS A	2.6	68.3	Full	765	0.0	0.0
Approach	223	5.0	223	5.0		0.356		10.0	LOS A	2.6	68.3				
North: Hollow Way															
Lane 1 ^d	92	5.0	92	5.0	578	0.159	100	11.8	LOS B	1.1	28.7	Full	1100	0.0	0.0
Approach	92	5.0	92	5.0		0.159		11.8	LOS B	1.1	28.7				
West: Gold Flat Rd															
Lane 1 ^d	352	5.0	352	5.0	1415	0.249	100	7.4	LOS A	1.8	46.9	Full	180	0.0	0.0
Approach	352	5.0	352	5.0		0.249		7.4	LOS A	1.8	46.9				
SouthWest: SR 49 NB Off Ramp															
Lane 1 ^d	706	5.0	706	5.0	1075	0.657	100	14.7	LOS B	6.8	178.0	Full	919	0.0	0.0
Approach	706	5.0	706	5.0		0.657		14.7	LOS B	6.8	178.0				
Intersection	1397	5.0	1397	5.0		0.657		11.9	LOS B	6.8	178.0				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Signalised Intersections.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

^d Dominant lane on roundabout approach

LANE SUMMARY

Site: Design Year (2040) AM - SB Ramps

Network: Design Year (2040) AM

New Site
Roundabout

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue		Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
	Total veh/h	HV %	Total veh/h	HV %						Veh	Dist ft				
South: Lower Grass Valley Rd															
Lane 1 ^d	94	5.0	94	5.0	649	0.146	100	10.7	LOS B	1.0	25.4	Full	505	0.0	0.0
Approach	94	5.0	94	5.0		0.146		10.7	LOS B	1.0	25.4				
East: Gold Flat Rd															
Lane 1 ^d	744	5.0	744	5.0	1328	0.560	100	4.8	LOS A	5.3	138.7	Full	180	0.0	0.0
Approach	744	5.0	744	5.0		0.560		4.8	LOS A	5.3	138.7				
NorthEast: SR 49 EB Off Ramp															
Lane 1 ^d	340	5.0	340	5.0	686	0.496	100	14.0	LOS B	4.3	111.8	Full	940	0.0	0.0
Approach	340	5.0	340	5.0		0.496		14.0	LOS B	4.3	111.8				
North: Searls Rd															
Lane 1 ^d	211	5.0	211	5.0	763	0.277	100	12.7	LOS B	1.8	47.6	Full	653	0.0	0.0
Approach	211	5.0	211	5.0		0.277		12.7	LOS B	1.8	47.6				
West: Ridge Rd															
Lane 1 ^d	528	5.0	528	5.0	1000	0.528	100	7.6	LOS A	4.3	111.4	Full	777	0.0	0.0
Approach	528	5.0	528	5.0		0.528		7.6	LOS A	4.3	111.4				
Intersection	1918	5.0	1918	5.0		0.560		8.3	LOS A	5.3	138.7				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Signalised Intersections.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

^d Dominant lane on roundabout approach

LANE SUMMARY

Site: Design Year (2040) PM - NB Ramps

Network: Design Year (2040) PM

New Site
Roundabout

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue		Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
	Total veh/h	HV %	Total veh/h	HV %						Veh	Dist ft				
South: Caltrans Access Rd															
Lane 1 ^d	62	5.0	62	5.0	487	0.127	100	15.7	LOS B	0.9	23.6	Full	150	-0.7 ^{N3}	0.0
Approach	62	5.0	62	5.0		0.127		15.7	LOS B	0.9	23.6				
East: Gold Flat Rd															
Lane 1 ^d	288	5.0	288	5.0	614	0.469	100	13.2	LOS B	4.0	104.1	Full	765	-1.0 ^{N3}	0.0
Approach	288	5.0	288	5.0		0.469		13.2	LOS B	4.0	104.1				
North: Hollow Way															
Lane 1 ^d	147	5.0	147	5.0	519	0.284	100	14.9	LOS B	2.1	53.8	Full	1100	-0.9 ^{N3}	0.0
Approach	147	5.0	147	5.0		0.284		14.9	LOS B	2.1	53.8				
West: Gold Flat Rd															
Lane 1 ^d	494	5.0	494	5.0	1405	0.352	100	8.1	LOS A	2.9	76.4	Full	180	0.0	0.0
Approach	494	5.0	494	5.0		0.352		8.1	LOS A	2.9	76.4				
SouthWest: SR 49 NB Off Ramp															
Lane 1 ^d	574	5.0	574	5.0	950	0.604	100	15.9	LOS B	5.9	154.6	Full	919	-0.9 ^{N3}	0.0
Approach	574	5.0	574	5.0		0.604		15.9	LOS B	5.9	154.6				
Intersection	1565	5.0	1565	5.0		0.604		12.8	LOS B	5.9	154.6				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Signalised Intersections.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

^d Dominant lane on roundabout approach

^{N3} Capacity Adjustment due to downstream lane blockage determined by the program.

LANE SUMMARY

Site: Design Year (2040) PM - SB Ramps

Network: Design Year (2040) PM

New Site
Roundabout

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue		Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
	Total veh/h	HV %	Total veh/h	HV %						Veh	Dist ft				
South: Lower Grass Valley Rd															
Lane 1 ^d	136	5.0	136	5.0	377	0.362	100	21.6	LOS C	2.9	74.2	Full	505	0.0	0.0
Approach	136	5.0	136	5.0		0.362		21.6	LOS C	2.9	74.2				
East: Gold Flat Rd															
Lane 1 ^d	778	5.0	778	5.0	1276	0.610	100	5.8	LOS A	6.1	157.9	Full	180	0.0	1.3
Approach	778	5.0	778	5.0		0.610		5.8	LOS A	6.1	157.9				
NorthEast: SR 49 EB Off Ramp															
Lane 1 ^d	427	5.0	427	5.0	605	0.706	100	23.8	LOS C	8.8	230.0	Full	940	0.0	0.0
Approach	427	5.0	427	5.0		0.706		23.8	LOS C	8.8	230.0				
North: Searls Rd															
Lane 1 ^d	437	5.0	438	5.0	705	0.621	100	19.8	LOS B	6.6	172.1	Full	653	0.0	0.0
Approach	437	5.0	438	5.0		0.621		19.8	LOS B	6.6	172.1				
West: Ridge Rd															
Lane 1 ^d	568	5.0	568	5.0	725	0.784	100	20.6	LOS C	11.6	301.2	Full	777	0.0	0.0
Approach	568	5.0	568	5.0		0.784		20.6	LOS C	11.6	301.2				
Intersection	2348	5.0	2348	5.0		0.784		16.2	LOS B	11.6	301.2				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Signalised Intersections.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

^d Dominant lane on roundabout approach

LANE SUMMARY

Site: Design Year (2040) School PM - NB Ramps

Network: Design Year (2040) School PM

New Site
Roundabout

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue		Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
	Total veh/h	HV %	Total veh/h	HV %						Veh	Dist ft				
South: Caltrans Access Rd															
Lane 1 ^d	35	5.0	35	5.0	389	0.090	100	18.6	LOS B	0.7	17.5	Full	150	-1.1 ^{N3}	0.0
Approach	35	5.0	35	5.0		0.090		18.6	LOS B	0.7	17.5				
East: Gold Flat Rd															
Lane 1 ^d	223	5.0	223	5.0	526	0.424	100	13.9	LOS B	3.5	90.6	Full	765	-1.6 ^{N3}	0.0
Approach	223	5.0	223	5.0		0.424		13.9	LOS B	3.5	90.6				
North: Hollow Way															
Lane 1 ^d	183	5.0	183	5.0	505	0.362	100	14.5	LOS B	2.7	71.3	Full	1100	-1.7 ^{N3}	0.0
Approach	183	5.0	183	5.0		0.362		14.5	LOS B	2.7	71.3				
West: Gold Flat Rd															
Lane 1 ^d	523	5.0	523	5.0	1404	0.372	100	8.0	LOS A	3.2	83.6	Full	180	0.0	0.0
Approach	523	5.0	523	5.0		0.372		8.0	LOS A	3.2	83.6				
SouthWest: SR 49 NB Off Ramp															
Lane 1 ^d	666	5.0	666	5.0	921	0.723	100	19.8	LOS B	9.5	247.3	Full	919	-1.6 ^{N3}	0.0
Approach	666	5.0	666	5.0		0.723		19.8	LOS B	9.5	247.3				
Intersection	1630	5.0	1630	5.0		0.723		14.6	LOS B	9.5	247.3				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Signalised Intersections.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

^d Dominant lane on roundabout approach

^{N3} Capacity Adjustment due to downstream lane blockage determined by the program.

LANE SUMMARY

Site: Design Year (2040) School PM - SB Ramps

Network: Design Year (2040) School PM

New Site
Roundabout

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue		Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
	Total veh/h	HV %	Total veh/h	HV %						Veh	Dist ft				
South: Lower Grass Valley Rd															
Lane 1 ^d	118	5.0	118	5.0	399	0.296	100	19.6	LOS B	2.3	59.1	Full	505	0.0	0.0
Approach	118	5.0	118	5.0		0.296		19.6	LOS B	2.3	59.1				
East: Gold Flat Rd															
Lane 1 ^d	792	5.0	792	5.0	1277	0.620	100	5.5	LOS A	6.3	163.4	Full	180	0.0	2.2
Approach	792	5.0	792	5.0		0.620		5.5	LOS A	6.3	163.4				
NorthEast: SR 49 EB Off Ramp															
Lane 1 ^d	445	5.0	445	5.0	594	0.750	100	26.5	LOS C	10.2	266.0	Full	940	0.0	0.0
Approach	445	5.0	445	5.0		0.750		26.5	LOS C	10.2	266.0				
North: Searls Rd															
Lane 1 ^d	393	5.0	393	5.0	677	0.580	100	19.5	LOS B	5.8	150.9	Full	653	0.0	0.0
Approach	393	5.0	393	5.0		0.580		19.5	LOS B	5.8	150.9				
West: Ridge Rd															
Lane 1 ^d	612	5.0	612	5.0	787	0.779	100	18.0	LOS B	11.4	295.7	Full	777	0.0	0.0
Approach	612	5.0	612	5.0		0.779		18.0	LOS B	11.4	295.7				
Intersection	2361	5.0	2361	5.0		0.779		15.7	LOS B	11.4	295.7				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).

Roundabout LOS Method: Same as Signalised Intersections.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

^d Dominant lane on roundabout approach

Appendix E - Sidewalk Relocation Costs Memorandum

Memorandum

To:	Nevada County Transportation Commission	Date:	12/9/2015
Attn:	Mike Woodman	Project:	Gold Flat Road Corridor Traffic Analysis
From:	Kamesh Vedula PE, TE Daniel Kehrer PE		
Re:	Moving Gold Flat Road Overcrossing Sidewalk to North Side of Structure	Job No.:	25-4862-01
		File No.:	C2047MEM002.DOCX

CC:

This memo summarizes the findings and expected costs associated with shifting the existing four-foot sidewalk from the south side of the Gold Flat Road Overcrossing to the north side of the structure.

From a cursory inspection of the existing structure, the bridge soffit (box girder) appears to be symmetrical. The width of the structure is, approximately, 37 feet wide including the existing barriers.

Without widening the structure, the proposed cross section will include barriers on both sides, 2-11 foot lanes, 2-4 foot shoulders, and a 4.5' sidewalk. If a wider cross section is desired, the additional cost to widening the bridge deck should be assumed to be \$200 per square foot of widening.

The work involved to relocate the sidewalk includes:

- Temporary striping and traffic control
- Removal of the existing striping, sidewalk, and barriers
- Concrete overlay to adjust bridge crown
- Installing new barriers and sidewalk (drill and bond dowel)
- Restriping the roadway

The total estimated construction cost of relocating the sidewalk to the north side of Gold Flat Road Overcrossing is \$250,000 (rounded up for programming purposes).

See the table on the next page for an itemized estimate of the costs.

#	Description	Unit	Quantity	Unit Price	Cost
1	Traffic Control	LS	1	\$15,000	\$15,000
2	Temporary Striping	LF	500	\$2.5	\$1,250
3	Temporary Pavement Marking	SQFT	38	\$7.5	\$285
4	Temporary Railing (Type K)	LF	400	\$35	\$14,000
5	Temporary Crash Cushion (Module)	EA	44	\$200	\$8,800
6	Remove Striping	LF	500	\$1	\$500
7	Reset Roadside Sign	EA	10	\$250	\$2,500
8	Furnish and Install Polyester Concrete Overlay	SQFT	2000	\$15	\$30,000
9	Remove Bridge Barrier	LF	190	\$40	\$7,600
10	Remove Bridge Barrier and Sidewalk	LF	190	\$60	\$11,400
11	Drill and Bond Dowel	LF	660	\$40	\$26,400
12	Concrete Barrier (Type 732)	LF	190	\$125	\$23,750
13	Concrete Barrier (Type 26)	LF	190	\$150	\$28,500
14	Traffic Stripe	LF	500	\$3	\$1,500
15	Pavement Marking	LF	38	\$10	\$380
16	Mobilization (10%)	LS	1	\$17,200	\$17,200
Contingency (25%)					\$47,300
Total					\$236,365
Rounded for Programming					\$250,000

