Project Report

For Project Approval

On Highway 50/Route 89 at Pioneer Trail

Between 0.04 miles North of Santa Fe Road on US 50

And 0.03 miles South of Arapahoe Street on US 50

I have reviewed the right-of-way information contained in this report and the right-of-way data sheet attached hereto, and find the data to be complete, current and accurate:

John Ballantyne

John Ballantyne, Chief North Region Right of Way

APPROVAL RECOMMENDED:

Daniel Cuellar

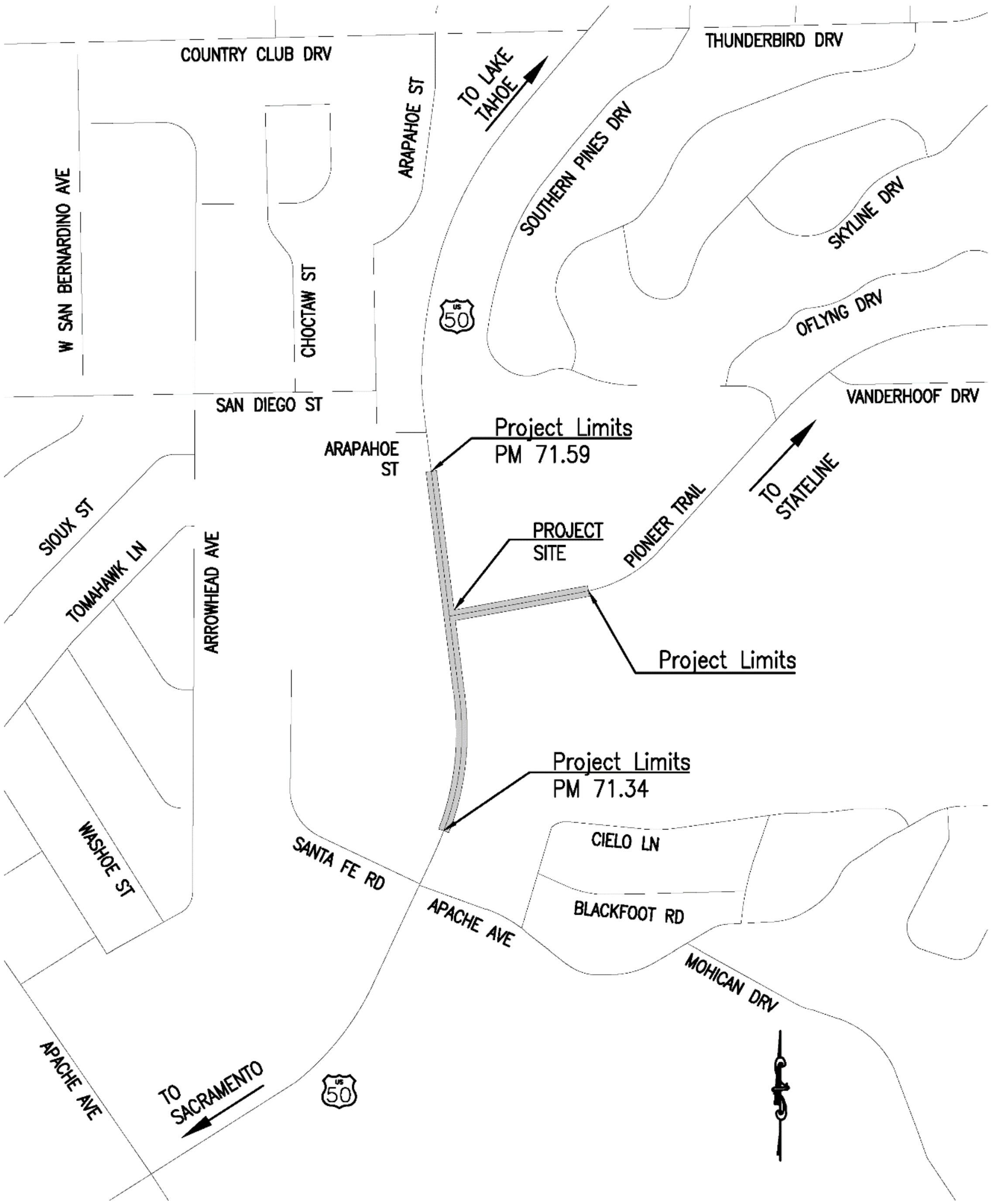
Daniel Cuellar, Project Manager

APPROVED:

Karl L. Dreher for 03/17/2022

Amarjeet S. Benipal, District Director Date

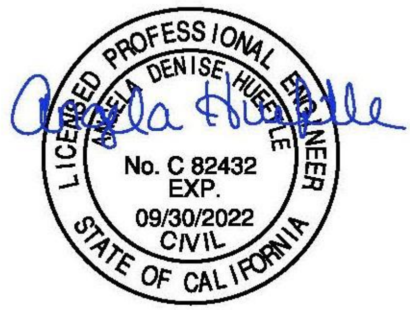
Vicinity Map



This project report has been prepared under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

February 2022

Angela Hueftle, PE, Registered Civil Engineer *DATE*



02-23-2022

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1. INTRODUCTION

The County of El Dorado (County), as the project sponsor and lead agency, in cooperation with the California Department of Transportation (Caltrans), is proposing to convert an existing signalized intersection at the U.S. Highway 50 (US 50)/State Route 89 (SR 89) and Pioneer Trail intersection in Meyers, California, into a three-leg modern roundabout as part of the Pioneer Trail/US 50 Intersection Safety Improvement Project (project).

Once constructed, the project would improve safety and mobility for all modes of travel, include lighting and signage, reduce reliance on private automobiles, provide multimodal transportation improvements like visible crosswalks and a shared-use path for pedestrian and bicycle movements, provide opportunity for future growth of transit facilities to enhance circulation, and provide opportunities to experience Meyers as a pedestrian or cyclist. Once implemented, the project would close a major gap in the area's active transportation system by providing full access for non-motorist users to the neighboring amenities.

It is proposed to improve approximately 0.25 miles of US 50 and approximately 0.09 miles of Pioneer Trail. Various alternatives were analyzed and all were rejected with the exception of the no-build alternative and the three-leg modern roundabout alternative. The three-leg modern roundabout alternative would remove the four existing traffic signals at the US 50/Pioneer Trail intersection and replace the intersection with a three-leg modern roundabout. The proposed roundabout is a single-lane roundabout with additional right-turn and through bypass lanes. In the northbound direction, the entry would flare from a single lane to a through lane and a right-turn lane. In the southbound direction, a through bypass lane and through/left-turn lane would merge into a single lane after the roundabout. In the westbound direction, the entry would flare from a single lane into dedicated left- and right-turn lanes.

The roundabout would include standard roundabout geometric features such as shared-use paths, crosswalks, splitter islands, truck apron with central island, and landscape buffer between the circulatory roadway and shared-use path. The project would also construct permanent site drainage improvements to protect water quality, such as an infiltration basin.

The project is fully funded through the Plans, Specifications & Estimate (PS&E) Phase and partially funded through the Construction Phase. The funding sources include Tahoe Regional Planning Agency (TRPA) Air Quality Mitigation Funds, Congestion Mitigation and Air Quality Program (CMAQ), Highway Safety Improvement Program (HSIP), Regional Surface Transportation Program (RSTP), and Surface Transportation Block Grant (STBG).

Project Limits	US 50 between PM 71.34 and 71.59	
Number of Alternatives	One	
	Current Cost Estimate:	**Escalated Cost Estimate:**
Capital Outlay Support	$3,052,000	$3,126,000
Capital Outlay Construction	$5,649,300	$6,016,640
Capital Outlay Right-of-Way	$57,000	$60,800
Funding Source	Local/CMAQ/HSIP/RSTP/STBG	
Funding Year	2019/2020 – 2022/2023	
Type of Facility	2-lane undivided urban conventional highway and local road	
Number of Structures	None	
Environmental Determination or Document	Initial Study/Mitigated Negative Declaration/ Initial Environmental Checklist; Categorical Exclusion	
Legal Description	In El Dorado County from 0.15 miles south of the US 50/Pioneer Trail intersection to 0.10 miles north of the intersection; from 0.0 miles west of the US 50/Pioneer Trail intersection to 0.09 miles east	
Project Development Category	Category 4B	

2. RECOMMENDATION

It is recommended that this project be approved to remove the existing traffic signals at the US 50/Pioneer Trail intersection and replace the intersection with a three-leg modern roundabout.

The County of El Dorado, Caltrans, TRPA, and community of Meyers have been consulted with respect to the recommended plan, and their views have been considered and incorporated into this report.

3. BACKGROUND

A. Project History

Substantial analysis has already been completed on the US 50 corridor through Meyers, including at the intersection at Pioneer Trail. The 2007 Meyers Operations Study conducted preliminary traffic counts and gathered baseline utility information. Since then, the County, in conjunction with the TRPA, Federal Highway Administration (FHWA), Caltrans, local community businesses, and the Meyers Community Foundation, has performed additional analysis as part of TRPA's 2014 On Our Way Grant Program. The program helps Lake Tahoe communities identify neighborhood-level projects that create mixed-use town centers; encourage walking, biking, and transit use; revitalize the economy; and reduce impacts to the environment.

In 2012, this intersection was identified as a high-accident location by the 2011 Annual Accident Location Survey. It was determined that most accidents at the intersection are a result of vehicles travelling at an unsafe speed in snowy and/or icy conditions with most of the accidents occurring at the US 50 northbound right-turn movement onto Pioneer Trail.

The *2016 Linking Tahoe: Active Transportation Plan* identifies needs related to the non-auto users of this intersection, including providing continuation through the intersection that accommodates all users including pedestrians, cyclists, and transit riders. At this intersection, pedestrians are currently only allowed to cross US 50 in the crosswalk on the north side of the intersection. This crosswalk does not connect to another pedestrian facility; all other pedestrian movements are prohibited within the existing project area intersection.

The FHWA Resource Center's *Meyers Road Safety Audit*, conducted in 2016, identified safety issues at the Pioneer Trail/US 50 intersection. Results of the audit concluded that this intersection experiences the highest number of accidents of all the intersections within the Meyers Road Safety Audit study area. Collision data provided from the California Highway Patrol indicate that 34 collisions occurred in the intersection between 2007 and 2015. Of these collisions, 6 resulted in injuries and 28 resulted in property damage. There were no fatalities at the intersection; however, one fatality was reported approximately 400 feet south of the intersection.

The proposed project is part of the larger Meyers Corridor Operational Improvement Project (COIP) identified by TRPA's Environmental Improvement Program (EIP) as a sustainable recreation and transportation project (EIP #03.01.02.0026). Sustainable recreation and transportation EIP project goals are to preserve and improve air quality, improve outdoor experiences for visitors and residents while protecting natural resources, and increase the use of alternative modes of transportation and decrease reliance on the private automobile. In 2016, during the development of the *Meyers Road Safety Audit*, the County and its stakeholders agreed to focus on the important issues along the Meyers highway corridor and supported the advancement/development of the signalized intersection project because of the community feedback and support to improve the intersection. The decision was made to phase the various concepts of the Meyers COIP due to the many constraints associated with the COIP including total funding, community/business impacts, limited Tahoe construction season, and impacts to the travelling public during the construction season. The identification of the roundabout was formalized and separated from the Meyers COIP during the execution of the cooperative agreement between the County and Caltrans, Agreement 03-0701, executed in November 2019. The current phase of the roundabout project falls under the PA&ED cooperative agreement, Agreement 03-0612, executed in September 2017, which encompasses all of the phases within the original Meyers COIP.

This project was added to El Dorado County's Capital Improvement Program on March 28, 2017, and the County completed a *Traffic Operations Analysis for the US Highway 50/Pioneer Trail Intersection Safety Improvement Project*. The traffic operations analysis concluded that one of the primary benefits of a roundabout at this location is that motorists would have to reduce their speeds while traveling through the intersection, as compared to the signalized intersection, consistent with the suggested improvements of the Meyers Road Safety Audit.

The transportation and circulation vision of the 2018 *Meyers Area Plan* is to redevelop the transportation system within Meyers to achieve complete streets, reduce reliance on the private automobile, improve circulation, and provide opportunities to experience Meyers as a pedestrian or cyclist. The plan aims to identify opportunities to reduce traffic speeds through Meyers without adversely affecting air quality and establishes a policy to maintain a level of service (LOS) of “D” or better at this intersection. Actions of the plan include developing and implementing intersection improvements at the US 50 and Pioneer Trail intersection that maintain or improve LOS, improve traffic flow, reduce vehicle emissions associated with traffic delays, and improve pedestrian and bicycle safety.

In 2019, an in-depth alternative analysis of a single-lane roundabout, modified traffic signal, and no-build alternative was conducted through the Intersection Control Evaluation (ICE) process. The evaluation included a comparison of operational feasibility, safety benefits, right-of-way (ROW) impacts, and cost estimates for current and future traffic conditions. Based on the results of the analysis, the roundabout alternative has the highest return on investment for the intersection and provides better efficiency, less delay, and reduced conflict points and vehicular queue lengths. These results are documented in the project Traffic Operations Analysis Report (TOAR) and ICE, included as Attachment B.

As part of the process, the alternatives were compared to the project purpose, need, and objectives. The roundabout improves safety and mobility for all users; improves traffic flow; provides access to and connectivity between nearby walking and cycling facilities; is consistent with local, regional, and state planning; and operates within acceptable levels of service for motor vehicles. Based on the analysis, it was determined the roundabout alternative solely meets the project’s purpose and need while the signal alternative does not. The roundabout alternative also offers improved conditions across more analysis outcomes than the signal alternative. Therefore, it was recommended by the County and agreed upon by Caltrans that the signalized alternative be dropped from further analysis and not included for consideration in the Draft Project Report or DED. This is discussed further in the Rejected Alternatives section later in this report.

B. Community Interaction

The County is committed to providing clear and consistent communication with the community on the project. As of the time this report was prepared, the following community interaction has occurred:

- Pop-up at Meyers Station shopping center (06/17/16)
- Pop-up at Lake Tahoe Environmental Science Magnet School (06/18/16)
- Feedback from the Meyers California Highway Patrol Office (03/21/19)

- Feedback from the El Dorado County Sheriff's Office (03/21/19)
- Presentation to the Meyers Advisory Council (05/01/19)
- Presentation to the South Shore Chamber of Commerce (05/03/19)
- Feedback from the Lake Valley Fire Protection District (05/09/19)
- Stakeholder meeting with the Community Mobility Group (05/28/19)
- Stakeholder meeting with the Lake Tahoe Bicycle Coalition (05/28/19)
- Public Workshop Meeting at California Conservation Corps (06/12/19)
- Presentation to the El Dorado County Board of Supervisors (08/06/19)
- Presentation to the Meyers Advisory Council (08/26/20)

Public outreach will continue through the Project Approval and Environmental Document (PA&ED), final design, and construction phases. The next public meeting is scheduled to be hosted during the final design phase.

C. Existing Facility

1) US 50

Within the project area, US 50 is a two-lane conventional highway travelling approximately north-south. On each side, a Class I shared-use path parallels the highway. On the east side, the shared-used path terminates at Pioneer Trail, approximately 150 feet east of the intersection. A bicycle lane begins at the US 50/Pioneer Trail intersection and continues southbound on US 50. The shared-use path on the west side does not connect to the shared-use path on the east side of US 50 or the Class II bicycle lanes on Pioneer Trail. There is existing curb and gutter and one driveway on the east side of US 50 south of the US 50/Pioneer Trail intersection.

2) US 50/Pioneer Trail Intersection

Under existing conditions, the US 50/Pioneer Trail intersection is signalized. No sidewalks exist at the intersection and the only pedestrian access is provided by the Class I shared-use path on the west side of US 50. Pedestrian crossings are only permitted in the crosswalk on the north leg of the intersection. All other pedestrian movements are prohibited.

US 50 accounts for both the northbound and southbound approaches to the intersection with Pioneer Trail being the westbound approach.

The northbound approach to the project intersection on US 50 has one signal-controlled through lane and one right-turn lane with overlap right-turn phasing. The southbound approach on US 50 has one signal-controlled through lane and one signal-controlled left-turn lane. The posted speed limit is 40 miles per hour (mph) through the project area in both directions, increasing to 55 mph further north of the intersection.

The westbound approach of the project intersection has one signal-controlled lane with a wide shoulder that can accommodate up to two right-turning vehicles with right-turn phasing. The posted speed limit is 40 mph within the project limits, which is a reduction from the 50 mph speed limit further east on Pioneer Trail.

3) Pioneer Trail

Pioneer Trail is an east-west County road that terminates at the US 50/Pioneer Trail intersection. Pioneer Trail is one lane in each direction with faded Class II bicycle markings and curb and gutter. There are no pedestrian facilities.

4. PURPOSE AND NEED

A. Purpose:

The project purpose is to:

- Improve safety and mobility at the US 50/Pioneer Trail intersection for all modes of travel.
- Improve traffic flow.
- Provide access to and connectivity between nearby walking and cycling facilities.
- Ensure consistency with local, regional, and state planning.

B. Need:

Traffic levels at this location are highly variable throughout the year, as the intersection serves tourist traffic to/from Lake Tahoe, the State of Nevada, and a variety of other outdoor activities including skiing, snowboarding, hiking, camping, and access to the Rubicon Trail. Traffic levels can vary significantly based on weather, economic conditions, special events, and other factors. Both US 50 and Pioneer Trail are heavily travelled routes between Meyers and the City of South Lake Tahoe. LOS standards for the project are set by Caltrans, the TRPA, and the County. The existing intersection operates at an unacceptable LOS during peak hours. Without improvement to traffic flow, the LOS at the intersection will continue to worsen and result in extensive delays and long traffic queues. Furthermore, the improved traffic flow is needed to reduce vehicle emissions and noise associated with traffic delays.

The *Meyers Area Plan* contains several goals, policies, and implementation measures that support improving traffic flow, including the goal to identify opportunities to reduce traffic speeds through Meyers without adversely affecting air quality using ROW improvements and traffic controls. One of the implementation measures in the plan includes developing and implementing intersection improvements at the US 50/Pioneer Trail intersection that maintain or improve LOS, improve traffic flow, reduce vehicle emissions associated with traffic delays, and improve pedestrian and bicycle safety.

The project objectives are to:

- Improve safety for all modes of transportation.

- Offer environmental benefits, including reduced air emissions, improved stormwater drainage, and stormwater treatment.
- Provide pedestrian and cyclist connectivity.
- Reduce the number and severity of collisions.
- Create a landmark to identify the start of the Meyers commercial corridor.
- Provide opportunity for future growth of transit facilities.
- Reduce motorist delays during non-gridlock conditions.
- Install landscaping, signage, and aesthetic improvements.
- Provide additional pedestrian and street lighting.
- Reduce traffic speeds without adversely affecting air quality.

1) Problem, Deficiencies, Justification

The intersection of US 50 and Pioneer Trail is one of the main ingress and egress routes for the south shore communities of Meyers, Tahoe Valley, and South Lake Tahoe. This intersection also serves as the entrance into Meyers. These south shore communities attract high levels of visitors/tourists in both the summer and winter seasons due to the beaches, hotels, airport, and nature trails. With the existing conditions, during the off-peak days, the intersection operates at acceptable levels of service. While overall operations are acceptable, the queuing in all directions during peak days exceeds available storage, causing additional delays to through traffic.

The queueing experienced at this intersection is partially exacerbated by pedestrians crossing on the northern leg. The existing crossing distance is approximately 67 feet, which results in longer signal cycles to allow sufficient time for pedestrians to cross that traveled way, again increasing vehicle delay. With the proposed project, the crossing distances would be reduced and the signals would be removed. This is expected to reduce the delay that vehicles experience due to pedestrian crossings.

Within the project limits, US 50 sees a high number of active non-motorized travelers in the summer season, which is primarily due to the recreational characteristics of the area. Currently, the only option for crossing the intersection of US 50 and Pioneer Trail is a crosswalk on the north leg; there are no other crossings, and pedestrians who reach the east side of this crosswalk have no sidewalk or path to continue their travel. In addition to creating additional vehicle delay at the intersection, this lack of pedestrian connectivity increases exposure to active traffic, which increases risk to the pedestrians. Similarly, an existing Class I shared-use path parallel to the west side of US 50 south of the intersection does not connect across Pioneer Trail or US 50 to the Class II (bike lane) facility or the Class I pathway on the east side of US 50.

In the existing condition, the US 50/Pioneer Trail intersection has three traffic lanes on the north leg, two traffic lanes on the east leg, and three traffic lanes on the south leg. As a result of the large roadway cross section, there are eight pedestrian-vehicle conflict points at the intersection alone. The number of conflict points leaves pedestrians vulnerable to traffic from multiple directions and motorized vehicles may be traveling at higher rates of speed when the light at the intersection is green. Therefore, by reducing vehicle speeds, shortening the crossing lengths, and providing connectivity, the project provides safer and more effective pedestrian mobility.

Additionally, improving traffic circulation at this intersection is needed to provide for future growth of transit facilities in support of the Regional Transportation Plan goal of increasing the non-auto mode share by 3 to 5 percent.

2) Regional and System Planning

El Dorado County issued the *2011 Annual Accident Location Survey* in 2012. This project is in line with the *2011 Annual Accident Location Survey* by reducing speeds and removing trees that cause snowy/icy conditions.

The Tahoe Metropolitan Planning Organization and the TRPA issued the 2016 *Linking Tahoe: Active Transportation Plan*. The plan identifies needs related to the non-auto users of this intersection, including providing continuation through the intersection that accommodates all users including pedestrians, cyclists, and transit riders. As mentioned previously, pedestrians are currently only allowed to cross US 50 in the crosswalk on the north side of the intersection. This crosswalk does not connect to another pedestrian facility; all other pedestrian movements are prohibited within the existing project area intersection. This project is in line with the 2016 Plan by providing connectivity/continuation through the intersection that accommodates all users including pedestrians, cyclists, and transit riders.

El Dorado County issued the *Meyers Area Plan* in 2018. This project is in line with the 2018 Plan, specifically the portion calling for improvements at the US 50/Pioneer Trail intersection. The plan goals fulfilled by the project include reducing traffic speeds through Meyers without adversely affecting air quality, using ROW improvements and traffic controls that maintain or improve LOS, improving traffic flow, reducing vehicle emissions associated with traffic delays, and improving pedestrian and bicycle safety.

US 50 is a transcontinental United States Numbered Highway and is part of the California Freeway and Expressway System. It is a major roadway that serves Lake Tahoe’s south shore, linking Meyers with the City of South Lake Tahoe/Stateline to the east and Tahoe’s west shore communities. It is a two-lane conventional highway in the project area and is a Terminal Access Route for Surface Transportation Assistance Act (STAA) trucks. According to Caltrans’ Functional Classification System, US 50 is a Class 3 Other Principal Arterial and Pioneer Trail is a Class 4 Minor Arterial.

Pioneer Trail is a county road that provides one of the two alternatives to US 50 for vehicles traveling from Meyers to the rest of the Tahoe basin. It connects from US 50 at Meyers to US 50 at the City of South Lake Tahoe just west of Stateline.

Both US 50 and Pioneer Trail are considered essential to the economy and mobility of the County, Meyers, and the City of South Lake Tahoe.

3) Traffic

A TOAR and ICE were prepared for the project by GHD Inc. The TOAR was approved by Caltrans in August 2019 and the ICE was approved in February 2020, see Attachment B. The following provides a summary of the findings of these studies.

Existing and Forecasted Conditions

Traffic volumes at the US 50 and Pioneer Trail intersection, and in the Meyers community in general, are highly variable throughout the year since the intersection serves tourist traffic to and from Lake Tahoe, the State of Nevada, and a variety of other year-round outdoor recreational activities. Congestion in the project area is driven by weekend tourism rather than typical commute patterns, and therefore, traffic operations have been quantified based on average Friday and Sunday peak hours rather than the traditional AM and PM peak hours.

As described in the TOAR and ICE, the traffic volumes identified in the *Meyers Intersection Improvements at United States Highway (US) 50 and State Route (SR) 89 Initial Study with Negative Declaration* were used to analyze the design year LOS under existing traffic control conditions and with the proposed intersection improvements. Caltrans staff concurred with this approach.

Based on this traffic volume data, the existing intersection generally operates at LOS D on Fridays and LOS E on Sundays. The intersection also experiences queues with over 40 vehicles along US 50 traveling north (eastbound) on Fridays and Sundays as well as along Pioneer Trail traveling west on Sundays.

The no-build alternative was analyzed using the Design Year traffic volumes. In the Design Year, with no improvements made to the intersection, the LOS degrades to an overall LOS D on Fridays and LOS E on Sundays. The analysis also looked at the 95th percentile queues for the US 50 and Pioneer Trail intersection for Design Year conditions. The longest queue length is on Sunday for eastbound US 50 traffic traveling north at 1,845 feet.

Collision Analysis

The study intersection had the second highest number of collisions in the Meyers area, with 34 reported collisions between 2007 and 2015. Of these, 6 collisions resulted in injuries and 28 resulted in property damage only. No fatal collisions were reported within the intersection; however, one fatality was reported approximately 400 feet south of the intersection. According to the Statewide Integrated Traffic Records System (SWITRS), the fatal collision occurred in 2012 (Case ID Number 5638393). The collision involved a vehicle and a pedestrian. The pedestrian was crossing US 50 in the dark and SWITRS records indicate that alcohol was involved.

To capture the collision patterns and any trends within the study area, the most recent 3 years were also obtained from SWITRS (January 1, 2016 to December 31, 2018). The table below displays the intersection collisions for this period. A total of 14 collisions were recorded within the influence area of the intersection.

US 50 and Pioneer Trail Intersection Collisions (2016-2018)

Intersection	Year			Total Collisions
	2016	2017	2018	
US 50 and Pioneer Trail	5	4	5	14

The tables below provide a summary of the collision severity, type, and primary collision factor for the US 50 and Pioneer Trail intersection. There were more Property Damage Only (PDO) collisions than injury collisions (12 vs. 2) and the most common collision type was broadside collisions (7). Broadside collisions are likely occurring due to the high free-flow speed and limited gaps across US 50. In addition, the most common cited primary collision factor violation was unsafe speed (12).

US 50 and Pioneer Trail Intersection – Collisions Severity/Type

Collision Severity			Collision Type				
Injury (Other Visible)	Injury (Complaint of Pain)	PDO	Head-On	Sideswipe	Rear End	Broadside	Hit Object
1	1	12	1	3	2	7	1

US 50 and Pioneer Trail – Primary Collision Factor

Intersection	Primary Collision Factor		
	DUI	Unsafe Speed	Wrong Side of Road
US 50 and Pioneer Trail	1	12	1

5. ALTERNATIVES

A. Viable Alternatives

1) No-build Alternative

The no-build alternative leaves the existing lane geometrics and intersection controls in place. Under existing conditions, the US 50 and Pioneer Trail intersection is a signaled intersection. No sidewalks exist at the intersection and the only pedestrian access is provided by the shared-use path on the west side of US 50. Faded Class II bicycle markings exist on Pioneer Trail, and a southbound bicycle lane is marked on US 50 beginning at the intersection. The Class I shared-use path parallel to US 50 on the west side does not connect to Class II bicycle lanes or the Class I shared-use path on the east side of US 50. Pedestrian crossings are only permitted in the crosswalk on the north leg of the intersection. All other pedestrian movements are prohibited.

The operational analysis of the no-build alternative indicates the level of service of the intersection degrades to an overall LOS D on Fridays and LOS E on Sundays with no improvements and increase in traffic volumes. Refer to the project ICE for additional details.

Design Hourly Intersection Traffic Operations No Build Conditions – Summer Weekend

	Friday			Sunday		
	Delay	LOS	Queue	Delay	LOS	Queue
North/Eastbound US 50	62.5	E	1,118	103.6	F	1,875
South/Westbound US 50	15.1	B	279	20.1	C	950
West/Southbound Pioneer Trail	45.6	D	361	66.8	E	1,025
Overall	**47.8**	**D**	**-**	**68.0**	**E**	**-**

The no-build alternative does not meet the project purpose and need, nor does it address the current congestion problem.

2) Build Alternative

The build alternative would remove the existing signal at the US 50 and Pioneer Trail intersection and replace it with a three-leg modern roundabout. This alternative increases the intersection’s footprint to the west and east.

The proposed roundabout is a single-lane roundabout with additional right-turn and through bypass lanes. In the northbound direction, the entry flares from a single lane to a through lane and a right-turn lane. In the southbound direction, there is a through bypass lane and a though/left-turn lane that merge into a single lane after the roundabout. In the westbound direction, the entry flares from a single lane into dedicated left- and right-turn lanes. This alternative would include bypass lanes separated by raised medians, which allow for single lane staged crossing for non-motorized users and allow the roundabout to operate as a single lane roundabout while reducing delay and queuing.

The operational analysis of the proposed roundabout indicates the intersection will operate at an overall LOS A with the improvements identified in the roundabout alternative. Refer to the project ICE for additional details.

Design Hourly Intersection Traffic Operations Roundabout Conditions

	Friday			Sunday		
	Delay	LOS	Queue	Delay	LOS	Queue
North/Eastbound US 50	3.9	A	76	4.0	A	100
South/Westbound US 50	4.9	A	24	5.0	A	54
West/Southbound Pioneer Trail	12.0	B	43	16.6	B	152
Overall LOS	**5.4**	**A**	-	**7.2**	**A**	-

Roundabout Proposed Features:

The roundabout alternative is expected to have the following features:

- Standard roundabout geometric features such as shared-use path, crosswalks, splitter islands, truck apron with central island, and landscape buffer between the circulatory roadway and shared-use path.
- Shared-use path (sidewalk and bike path) integrated into the roundabout alignment.
- Bicycle lanes on approaches to the roundabout.
- Removal and replacement of the existing shared-use path to accommodate the new intersection.
- Crosswalks within the roundabout may include the installation of Rectangular Rapid Flashing Beacons, Pedestrian Hybrid Beacon, or equivalent traffic control device.
- Landscaping, hardscaping, and/or a gateway sign for the town of Meyers in the central island. Splitter islands and landscape buffer areas located between the sidewalk and the traveled way would be treated with rock mulch.
- Removal and replacement of the existing storm drain system. Where feasible, the existing system would be maintained and adjusted as needed to accommodate the new improvements. Modifications to the existing storm drain system would include new or modified inlets/catch basins, connections to an existing culvert, and an extension of an existing culvert.
- Modification of various existing utilities in conflict with the proposed design.
- Installation of new permanent storm water/water quality features.
- Removal of the existing traffic signals.

- Removal and replacement of the existing intersection and pedestrian lighting in conformance with Caltrans and TRPA standards. At a minimum, lighting would be provided at the vehicle-vehicle conflict points at the intersection, vehicle-pedestrian conflict points at the crosswalks, and at the nose of each splitter island.

- Removal of approximately 160 existing trees within the project limits.

- Restriping of US 50 and Pioneer Trail within the limits of the project area. The traveled way would be striped in conformance with the California Manual on Uniform Traffic Control Devices (MUTCD).

- Removal and replacement of existing signage as appropriate. New roadside-mounted signs would be placed to assist in navigating the approach to the roundabout and through the roundabout. Overhead signs are not anticipated but may be included if determined necessary during final design.

- Removal and replacement of existing survey monuments located within the project limits.

- Permanent ROW/easements from one property southeast of the intersection and two properties northeast of the intersection.

- Temporary construction easements from one property southeast of the intersection, one property southwest of the intersection, and one property northeast of the intersection.

Excavation

The drainage systems and utility relocations are anticipated to be no deeper than 9 feet. However, existing utility depths are not known at this time and, therefore, the depths of both the drainage system and utility relocation may vary based on existing conditions.

Site Drainage and Water Quality Features

The project is proposing to install permanent treatment Best Management Practices (BMPs) to improve water quality and meet County, TRPA, Caltrans, and federal standards. These water quality features would include a new infiltration basin on the northeast corner of the intersection with the goal of routing as much of the runoff as possible to the basin. The project proposes to generally maintain existing site drainage patterns and, where feasible, the existing storm drain system would be maintained and adjusted as needed. Specifically, the project proposes the following:

- Construction of a new infiltration basin at the northeast corner of the proposed roundabout intersection, sized to store anticipated volume of runoff and overflow features for conveyance of larger storm events.

- Extension of an existing culvert located 220 feet east of the intersection on Pioneer Trail; the culvert would be extended on both sides to accommodate limits of proposed grading.

- Modification of an existing reinforced concrete pipe culvert, located 250 feet north of Pioneer Trail, to tie into two relocated traction sand traps via a new lateral pipe and one new traction sand trap on the western shoulder of southbound US 50.

- Installation of two new catch basins with 1-foot sumps at the southeast corner to capture flows and perpetuate existing drainage patterns. These two catch basins would be connected via laterals to a storm drain pipe under Pioneer Trail to outlet to the new infiltration basin at the northeast corner of the roundabout intersection.

- Installation of two additional catch basins with sumps along the northeast corner of the intersection to capture runoff from Pioneer Trail and US 50; one would be connected via a lateral to the storm drain pipe under Pioneer Trail, and the other would be connected to a lateral which outlets directly into the infiltration basin. Both pipes discharging into the infiltration basin would include flared end sections, and where design warrants, additional outfall protection.

- Revegetation of roundabout fill slopes with native species to accommodate site drainage, as part of restoration and site stabilization.

Lighting

The build alternative would include intersection and pedestrian lighting in accordance with the Highway Design Manual (HDM), National Cooperative Highway Research Program (NCHRP) Report 672 guidelines and TRPA standards. At a minimum, lighting would be provided at the vehicle-vehicle conflict points at the intersection, vehicle-pedestrian conflict points at the crosswalks, and at the nose of each splitter island. Downcast lighting would be installed to help protect the night sky and minimize light spill over.

Pedestrian Facilities

All pedestrian facilities would be compliant with the Americans with Disabilities Act accessibility requirements. All crossings would be marked with the MUTCD-compliant crosswalk markings and signing.

Design Standards Risk Assessment

Caltrans provided their concurrence with the project design elements and geometric approval drawing.

Interim Features

No interim features are proposed as part of this project.

Utility Involvement

There are several underground utilities that may be required to be relocated. The project team has contacted the utility purveyors and obtained their base mapping. Utility coordination will progress as the project design moves forward. The utilities within the project limits are communication, cable, electric, sewer, and water. The sewer and water lines are not anticipated to be relocated. Any relocated facilities will not require a utility policy variance due to the facility being a conventional highway, not a freeway.

To the maximum extent possible the project will be designed to avoid utility relocations. However, there is an existing electric transformer and meter and pole with communication and cable at the northeast corner that will need to be relocated to accommodate the new roundabout footprint. In addition, an existing sewer manhole frame and cover will need to be adjusted to grade.

Erosion Control

Existing vegetation will be protected to the maximum extent possible. All disturbed soil areas, outside of the impervious improvements and landscape areas, will be revegetated per Caltrans and TRPA standards.

Cost Estimates

The summary of current year cost is shown below:

Structures	$0
Roadway	$5,649,300
Total Construction Costs	**$5,649,300**
Right of Way and Utilities	$107,000
Total Project Construction Cost	**$5,756,300**

The Cost Estimates are included in Attachment F.

Right-of-Way Data

Right-of-Way Data Sheets are included in Attachment G.

The Right-of-Way costs are as follows:

Acquisitions	$7,000
Right-of-Way Support	$50,000
Utility Relocations	$50,000
Total Right-of-Way and Utility Costs	**$107,000**
Escalated Right-of-Way and Utility Costs	**$110,800**

Construction Access and Staging Areas

All improvements associated with the build alternative have been designed to allow for construction staging that maintains traffic flow during construction with minimal closures. The project would be constructed with live traffic to the maximum extent practicable.

This alternative would require acquisition of permanent ROW as well as temporary construction easements and/or permits to enter.

Various potential locations have been identified for construction staging for the project and would be evaluated as part of the project. The locations are described below.

<u>Lot A: Public Right-of-Way, Northmost End and West Side of Santa Fe Road</u>
This area is within the public ROW and is currently developed and previously disturbed. This area could accommodate material/equipment storage, is easily accessible from County roadways, and is not far from the project site.

<u>Lot B: Public Right-of-Way, Northwest corner at the intersection of Country Club Drive and Bakersfield Street</u>

This area is within the public ROW and is currently developed and previously disturbed. This area could accommodate material/equipment storage, is easily accessible from County roadways, and is not far from the project site.

<u>Lot C: Public Right-of-Way, Northeast end of Arapahoe Street</u>

This area is within the public ROW and is currently developed and previously disturbed. This area could accommodate material/equipment storage, is easily accessible from County roadways, and is not far from the project site.

Construction Schedule and Sequencing

Given the location of the intersection as an entry point to the South Lake Tahoe area, construction activities would affect traffic flow throughout the duration of the construction, which is anticipated to occur over the course of one construction season between May and October. These impacts would vary depending on the stages of construction. Although closures are anticipated, roadway lane and shoulder closures will be minimized to the extent possible.

Accommodations will be made to maintain and/or provide alternate routes for pedestrians and cyclists during all stages of construction. Some stages would include cyclists sharing the road with vehicles.

3) Rejected Alternatives

A modified traffic signal alternative was evaluated in the TOAR and ICE prepared for the project. The Project Development Team (PDT) (including staff from the County, Caltrans, NCE, and GHD) determined the modified traffic signal alternative would be eliminated from further consideration due to the results of the ICE and because the alternative did not meet the purpose and need of the project.

The modified traffic signal alternative would have added lanes through the intersection and provided a free right-turn lane from US 50 onto Pioneer Trail. The northbound approach would have provided two through lanes, and the existing right-turn pocket would have been replaced with a free right-turn lane. Drivers traveling north (or eastbound) on US 50 to Pioneer Trail would not have been required to stop at the traffic signal. The southbound approach would have been widened to include two through lanes and maintain one left-turn lane. The Pioneer Trail westbound approach would have been widened from a single lane to include two left-turn lanes and a right-turn lane.

Marked transverse crosswalks would have been provided across the north and east legs of the intersection as well as across the free right-turn lane on the southeast corner. Sidewalks would have been provided on the northeast and southeast corners of the intersection, and connections provided from the crosswalks to the Class I shared-use path on the west side of US 50. Directional ramps would have provided southbound bicyclists traveling in the roadway on US 50 with access to the shared-use path or sidewalks if they preferred to navigate the intersection using the crosswalks or path. A proposed connection of the shared-use path on the east side of US 50 would have provided a direct connection for people walking or bicycling to the crosswalks on the south and east legs of the intersection.

The ICE concluded that although the modified traffic signal alternative would improve the existing intersection and reduce traffic queue lengths, the alternative would operate at LOS B and C (Friday Peak and Sunday Peak), whereas the Roundabout alternative would operate at LOS A and B and have shorter queue lengths. In addition, it was determined that over the design life of the project, the life cycle costs for the Roundabout alternative would be more favorable than the modified traffic signal alternative.

6. CONSIDERATIONS REQUIRING DISCUSSION

A. Hazardous Waste

A Phase I Initial Site Assessment and preliminary site investigation for aerially deposited lead (ADL) was prepared by NCE on behalf of the County to identify Recognized Environmental Conditions (RECs) resulting from the improper use, manufacture, storage, and/or disposal of hazardous or toxic substances at or in the vicinity of the project that may be encountered during construction and/or need to be considered as part of the acquisition of ROW.

There were no RECs identified within the project area. Impacts to soil and groundwater from total petroleum hydrocarbons in the vicinity of several facilities near (but outside of) the southern perimeter of the project area were identified. Based on the nature of the releases at these facilities and their proximity and upgradient locations relative to the project area, the potential for environmental concerns from these facilities to have impacted the project area is low. Based on the current design, there are no excavations planned within 500 feet of the nearest facility that could have fuel-impacted soil and/or groundwater; therefore, encountering impacts due to their operations is unlikely.

Results of the preliminary ADL investigation indicate aerially deposited lead is present within the project area. Three of the 88 samples collected (two surface and one sample collected from 1.5-feet below ground surface) exceeded the screening value for unrestricted use (80 milligrams per kilogram [mg/kg]); however, no sample results exceeded the screening criteria for a commercial/industrial setting (320 mg/kg).

If the project qualifies for coverage under the Department of Toxic Substance Control and Caltrans Agreement, then Caltrans will take the lead on soil management requirements. Regardless of coverage, any material off-hauled from the site during construction will be screened prior to disposal at an appropriate facility.

Exposure of construction workers to potentially contaminated soils needs to be considered during earth-moving activities. The primary concern is exposure through ingestion of contaminated soil. Another concern is that shoes or clothing contaminated with lead-containing soils will enter vehicles, offices, or homes, and provide a source for lead contamination and exposure to others.

The following mitigation was developed for the DED to minimize the potential for contamination by and ingestion of lead-contaminated soils, and also to prevent exposure to the public during construction of the project. The following work practices are based on Caltrans' *Code of Safe Practices Manual*.

1) Mitigation Measure HAZ-1: Develop Lead Compliance Plan.

The Contractor shall develop and implement a Lead Compliance Plan (LCP). The LCP shall outline requirements mandated in 8 CCR 1532.1, Lead, to ensure the risks of potential worker exposure to inorganic lead through inhalation of airborne dust or ingestion lead from soils contaminated with aerially deposited lead are mitigated. Additional components of the LCP shall include:

- Prior to performing any excavation work at the locations containing material classified as hazardous, employees and subcontractors shall complete a safety training program that meets 29 CFR 1910.120 and 8 CCR 5192 covering the potential hazards as identified.

- Contractor shall educate employees and subcontractors in identification of contaminated soil and on contaminated soil handling, containment, and disposal procedures.

- Contractor shall hold regular meetings to discuss and reinforce contaminated soil handling, containment, and disposal procedures (incorporate into regular safety meetings and tailgates).

B. Value Analysis

Value engineering efforts, including constructability reviews, have been ongoing throughout the PA&ED phase in coordination with the PDT. Through these efforts, refinements to the build alternative have been developed to improve traffic operations and enhance safety.

Per the National Highway Systems Act and the Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users, projects costing $25 million or more must perform a Value Analysis study. This project does not exceed the $25 million threshold and this study is not required.

C. Resource Conservation

Where feasible, existing materials and facilities would be preserved, either through salvaging and/or incorporating previously salvaged material from existing roadway facilities, such as signs, light standards, guardrails, and other associated hardware. This approach would minimize the consumption, destruction, and disposal of nonrenewable resources.

The project's purpose to enhance pedestrian mobility and safety through the corridor also supports efforts to reduce emissions and fuel consumption by providing alternative transportation.

D. Right-of-Way Issues

Project activities would occur within County ROW on Pioneer Trail, federal highway US 50 (also known as SR 89 owned by Caltrans), on adjacent publicly owned parcels belonging to the CTC, and a portion of land of owned by private property owners.

The project would require the following property rights:

- Assessor's Parcel Number (APN) 034-270-056: A temporary easement of 245 square feet (SF) is required to construct grading, revegetation, and landscaping and to remove trees and the existing shared-use path. This is publicly owned vacant land.

- APN 034-270-041: A partial ROW take of 1,362 SF is required to construct and maintain roadway, curb and gutter, landscaping, and lighting. A temporary easement of 6,340 SF is required to construct grading, revegetation, and landscaping and to remove trees and existing shared-use path. This is publicly owned vacant land.

- APN 034-270-055: A partial ROW take of 434 SF is required to construct and maintain roadway, curb and gutter, landscaping, and lighting. A permanent easement of 5,202 SF is required to construct and maintain water quality treatment basin improvements. A temporary easement of 4,247 SF is required to construct grading, revegetation, and landscaping. This is publicly owned vacant land.

- APN 034-401-025: A temporary easement of 1,300 SF is required to construct grading, revegetation, and landscaping. This is a privately owned parcel.

Refer to the Right-of-Way Data Sheets, Attachment G, for more details.

E. Environmental Compliance

The DED, an Initial Study/Mitigated Negative Declaration/Initial Environmental Checklist compliant with the California Environmental Quality Act (CEQA) and TRPA requirements was circulated in August 2021. The public review period began on August 2, 2021 and ended on September 2, 2021. A Notice of Intent to Adopt the IS/MND/IEC was advertised in the Tahoe Daily Tribune and the document was posted on County Transportation's CEQA website at http://www.edcgov.us/government/dot/pages/CEQA.aspx. A hard copy was available at the County's Transportation Tahoe Engineering office located at 924 B Emerald Bay Road, South Lake Tahoe. The public comment period included the submittal of the Notice of Completion (NOC), Notice of Intent (NOI) to adopt the IS/MND/IEC to the State Clearinghouse (SCH #2021080009) and to other appropriate resource agencies for review.

During the 30-day public comment period, 28 comments were received from residents and one comment received from TRPA. The County responded to each comment. Changes have been incorporated in the IS/MND/IEC. The changes clarify aspects of the circulated IS/MND/IEC and do not modify the analysis or conclusions of the document. The responses were posted on the County Transportation's CEQA website prior to the request for County Board of Supervisors action. Commenters were notified of the document posting for their reference.

There were no identified significant impacts that could not be mitigated to less-than-significant. Caltrans as the National Environmental Policy Act (NEPA) Lead Agency for the project will prepare a Categorical Exclusion.

No issues with TRPA compliance are anticipated. The County is coordinating with the TRPA to mitigate for unavoidable coverage and disturbance within mapped SEZ. The County anticipates use of previously banked SEZ mitigation and restoration credit from prior projects. The project must comply with TRPA Code for tree removal; however, no issues with tree removal are anticipated as the TRPA Code exempts certain EIP projects from tree removal limitations.

The project proposes to impact 'non-federal' waters of the State of California. The County is required to obtain permits from the California Department of Fish and Wildlife (CDFW) and the Regional Water Quality Control Board for Waste Discharge Requirements. No issues obtaining these permits is anticipated.

Additionally, the project established an 'Environmentally Sensitive Area' to avoid potential impacts to historic resources.

F. Air Quality Conformity

Caltrans is preparing a NEPA Categorical Exemption (CE) the project, and anticipates the project being exempt under 23 USC 326; 23 CFR 771.117(c): activity (c)(26). Therefore, the project meets the Tier 1 FHWA category as a type of project qualifying as a categorical exclusion under 23 CFR 771.117 (GHD, 2021). Although the project qualifies as a Tier 1 level project in accordance with FHWA guidance, project parameters were evaluated using the FHWA Guidance for the Tier 2 level which includes analysis of Mobile Source Air Toxics (MSAT) emissions as discussed below.

The project's potential for MSAT impacts was analyzed using FHWA's 2016 Interim Guidance on Addressing MSAT, the Caltrans Flowchart for Analyzing Mobile Source Air Toxics, and the California Air Resources Board (ARB) Air Quality and Land Use Handbook (GHD 2021).

Based on FHWA's Updated Interim Guidance for analyzing MSAT, the project meets the screening guidance for the Tier 2 level, as the project would improve operations of the facility without adding substantial new capacity. Tier 2 projects are considered projects with low potential for MSAT effects. The types of projects improve operations of the facility without adding substantial new capacity (GHD 2021).

Because the project would reduce congestion without increasing VMT or AADT, the project will help reduce fuel consumption and associated vehicle emissions. Therefore, it is anticipated that the project would reduce MSAT emissions, as compared with the No Build Alternative (GHD 2021).

Results from air emissions modeling conducted for the DED verify that construction of the project is not anticipated to exceed standard levels for air quality. Additionally, once implemented, the roundabout would improve air quality by improving traffic flow, reducing idling times and improving acceleration conditions, and by improving the transportation network to support a walkable or bikeable community. The project does not propose new lanes or new uses that could encourage an increase in vehicle trips. Therefore, the project is anticipated to have a beneficial impact on operational air quality emissions.

G. Title VI Considerations

The purpose of the project is to improve safety at the US 50 and Pioneer Trail intersection for all modes of travel, improve traffic flow, reduce vehicle speeds through the intersection and into the Meyers area, reduce vehicle emissions associated with traffic delays, and improve access to nearby bikeways and trails.

All roadway and associated improvements are either on, or adjacent to, the existing highway/roadway; therefore, no new physical or perceptual barriers would be created. The changes to access in the immediate area of the project would not adversely affect the community, as the improvements would enhance circulation and access in the area.

During construction, temporary roadway closures might disrupt routines of community members for a short period of time. Residents and businesses whose access may be impacted would be notified in advance of construction activity and a Transportation Management Plan (TMP) would be in place to manage construction, detours, etc. Construction work would be limited to within or immediately adjacent to the US 50 corridor and Pioneer Trail intersection and would be temporary; therefore, no new physical or perceptual barriers would be created. No division of existing neighborhoods or disruption of routines would result from implementation of the build alternative.

The proposed project has no potential to cause disproportionately high and adverse effects on any minority or low-income populations. Transportation benefits of the proposed project would accrue to all area residents.

H. Noise Abatement Decision Report

No issues anticipated. The project does not require pile driving or blasting. The project is not Type I (new alignment, capacity increasing) for noise.

Construction-related noise will be limited to usual construction equipment such as pavement grinder, backhoe, trucks, paving machine, and roller. Construction will be limited to hours allowed by local and regional ordinance. The Tahoe Regional Planning Agency TRPA Chapter 68.9 "Exemptions to Noise Limitations" requires that construction be limited to the hours between 8:00 a.m. and 6:30 p.m. However, due to the short construction season and seasonal travel, nighttime construction is anticipated. Construction noise during the nighttime periods could result in noise levels in excess of the established standards set forth in the TRPA or County Code.

The following mitigation to offset potential impacts of nighttime construction noise was developed during preparation of the DED and will be implemented as part of the project. Mitigation Measure NOI-1 would limit construction hours, require noise-muffling devices/barriers and/or separation for construction-related equipment, and requires noticing of construction schedules for residences adjacent to the project alignment prior to commencement of construction, minimizing the potential for noise intrusion to local residents.

1) Mitigation Measure NOI-1

The project will implement the following Nighttime Construction Controls to reduce potential noise impacts:

- Project construction activities shall be limited to the hours of 8:00 a.m. and 6:30 p.m. Any exceptions to these hours shall be evaluated on a case-by-case basis and require prior approval by the County and TRPA to ensure the activity is not injurious or disturbing to the health, safety and general welfare of persons or property in the neighborhood, and the general welfare of the region, and the Contractor will take reasonable steps to protect against such injury.

- All internal combustion engines used for construction shall be fitted with manufacturer-recommended mufflers. No equipment shall have an unmuffled exhaust.

- Residents adjacent to proposed construction activities shall be given advanced notice of project construction schedules and shall be notified that substantial temporary increases in local noise levels will occur during project construction.

- To the greatest extent possible, nighttime construction work will be limited to the portion of the project site furthest from the residences.

- Generators and compressors required during project construction shall be located as far as possible from existing residents and, if necessary, shielded from view of those residences by portable noise barriers.

Because mitigation has been incorporated to reduce impacts to noise to less-than-significant, a Noise Abatement Decision Report is not needed for this project.

I. Life-Cycle Cost Analysis

A formal Life-Cycle Cost Analysis in Caltrans' RealCost program was not prepared for this project for the reasons outlined in this section. The Geotechnical Investigation prepared for the project by Corestone Engineering, Inc., included existing site conditions and the recommended pavement sections for the project. For additional information, refer to the Pavement Alternatives Memo, Attachment I.

A full-depth hot mix asphalt (HMA) section was recommended as the appropriate design alternative in order to approximately equal the existing average HMA thicknesses at the project site. In addition, the limited length of the roadways associated with the project could be categorized as spot improvements that can be considered rehabilitation for the purpose of determining pavement design life. With this, and based on conversations with El Dorado County, the selected pavement design life is 20 years for the flexible pavement.

Concrete pavement was also considered for this project and was deemed infeasible due to a number of constructability issues. In the mountainous conditions at the project site, annual pavement restriping is necessary during the peak travel season due to removal from snowplows. Striping is an important factor in the safe and efficient use of roundabout intersections. Because of its reflective properties, concrete requires double sets of paint in order to guarantee striping visibility, thus costing more in annual restriping costs than asphalt.

The constructability of a concrete surface is also more challenging than asphalt. Asphalt can be installed and driven upon within the same day, which is important for heavily traveled areas such as the project site. Concrete requires a longer time to cure, thus requiring additional delays due to lane closures. In addition, pavement delineation is essential for roundabout intersections, specifically roundabouts with right-turn and through bypass lanes like the proposed project. In addition, the joints in the concrete would need to align with the lane lines to minimize driver confusion between joints and lanes. To achieve this, concrete must be poured within a lane, which is difficult to do because of the limited width in the project environment and the need for maintaining traffic operations during the construction staging.

Due to the constructability issues associated with concrete pavement and the existing site conditions, it is recommended that HMA be used for this project.

J. Reversible Lanes

This project does not qualify as capacity-increasing or a major street or highway realignment project and reversible lanes have not been considered.

7. OTHER CONSIDERATIONS AS APPROPRIATE

A. Public Engagement Process

The County is intending to provide various opportunities for sharing this project with the community through public meetings, the project website, email blasts, and smaller stakeholder meetings.

The first public workshop was held in the community of Meyers at the California Conservation Corps building on June 12, 2019. An additional public engagement opportunity occurred during the January 4, 2022, County Board of Supervisors meeting to adopt the environmental document and approve the project as described.

B. Route Matters

None anticipated. The project does not impact/modify access to businesses, residences or driveways and does not require any relinquishment.

C. Permits

The County will be responsible for obtaining an encroachment permit from Caltrans for all work within the State ROW. Additional permits expected to be required by the project include the following:

1. Report of Waste Discharge Requirements (WDR) National Pollutant Discharge Elimination System (NPDES), California Regional Water Quality Control Board;
2. Section 1602 Lake or Streambed Alteration Notification, California Department of Fish and Wildlife;
3. TRPA Permits;
4. California Tahoe Conservancy (CTC) grant of easement and/or license agreement;
5. Department of Forestry and Fire Protection (CAL FIRE) Less Than 3 Acre Conversion Exemption; and,
6. Department of the Army, U.S. Corps of Engineers Nationwide Permit.

D. Cooperative/Maintenance Agreements

In September 2017, a cooperative agreement 03-0612, between El Dorado County and Caltrans was approved and is included as Attachment L. The agreement identifies Caltrans as the lead agency for the project under CEQA and the National Environmental Policy Act. On April 15, 2020, El Dorado County requested the CEQA lead agency status be delegated to the County. This request was approved by Caltrans on May 18, 2020.

A Maintenance Agreement between El Dorado County and Caltrans will need to be approved between both parties. The maintenance agreement will delineate responsibility for maintenance of the landscaping, storm water basin, shared-use paths, bike lanes, lighting, special signing, and striping. The agreement will be approved prior to issuing of encroachment permit and maintenance responsibilities will be defined prior to finalizing the Project Report.

An initial list of maintenance responsibilities is below:

Item to be Maintained	**Responsible Party**
Center of Roundabout Hardscape	Caltrans
Roundabout Signage	County
Center Median Signage	County
Culverts within State ROW	Caltrans
Culverts outside State ROW	County
Bikeways, Sidewalks, and Pedestrian Crosswalks	County
Electrical Improvements Inside State ROW	Caltrans
Electrical Improvements Outside State ROW	County

E. Report on Feasibility of Providing Access to Navigable Rivers

Navigable rivers are not located within the project limits.

F. Public Boat Ramps

There are no public boat ramps within the project limits.

G. Transportation Management Plan

A TMP report, data sheet, and checklist were prepared for the project and are provided as Attachment K. The TMP would be updated during the PS&E phase of the project. The TMP addresses traffic impacts from staged construction, detours, and specific traffic-handling concerns during construction of the project.

The duration of project construction is estimated at 120 working days. Construction of the project would require traffic control for a majority of the working days. Detours, traffic shifts, and lane restriping would be utilized to maintain access and improve worker safety as needed. As such, extensive delays are not anticipated; however, all efforts would be made to further minimize the potential for delays through minimization measures defined in the TMP. Public Information, Motorist Information Strategies, and Incident Management TMP elements would be considered and are accounted for in the preliminary cost estimate.

In implementing the project, the County would produce and disseminate press releases and other documents, as necessary, to adequately inform the public concerning the project and its associated traffic impacts. The Public Awareness Campaign (PAC) would be used to educate motorists, merchants, residents, and visitors/tourists about potential construction plans and schedule. Public awareness is expected to reduce the traffic demand in the construction zone by encouraging motorists to take alternate routes or to travel outside of closure hours.

The PAC would inform the public about the construction project and how it could affect their travel through the project area. The PAC would be operated by the County and the Caltrans District 3 Public Information Officer (PIO). The PIO would ensure that project information is available on the Caltrans District 3 website and the County would provide the same updates on their website. For concerns beyond general traffic information, interested parties would be directed to contact the project Resident Engineer. The Resident Engineer’s name, phone number, and email address would be provided on the project website by the commencement of project construction.

H. Stage Construction

Given the location of the intersection as an entry point to the South Lake Tahoe area, construction activities would impact traffic flow throughout the duration of the construction, which is anticipated to occur over the course of one construction season between May and October. These impacts would vary depending on the stages of construction. Roadway lane and shoulder closures would be avoided to the maximum extent possible; however, closures are anticipated. The following summary outlines the preliminary proposed staging.

Stage 1A:

Maintain existing traffic pattern.

Relocate existing bike path, construct shared-use path in northeast quadrant and temporary pedestrian access routes.

Stage 1B:

Maintain existing traffic pattern.

Construct curb and gutter, shared-use path, drainage basin, and pavement areas outside of existing roadway. Place temporary pavement for use in Stage 2.

Stage 1C:

Close eastbound US 50 right-turn lane to Pioneer Trail during non-peak period.

Construct pavement conform along eastbound right-turn lane.

Stage 2:

Shift traffic into partial temporary roundabout control, closing westbound US 50 left-turn movement.

Construct splitter islands, central island, and portions of approach roadway pavement.

Stage 3A:

Open intersection to roundabout control. Use flagger control during non-peak periods to facilitate construction equipment access.

Construct remaining portions of splitter island and other curbing as necessary.

Stage 3B:

Maintain full roundabout control. Use flagger control during non-peak periods to facilitate construction equipment access.

Construct final lift and overlay. Place final signing, striping, planting, and irrigation.

I. Storm Water

The Draft Storm Water Data Report (SWDR) is included as Attachment H. The project results in a new impervious surface in the State ROW of less than one acre; therefore, the project is not required to provide treatment.

The post-construction treatment area includes the sum of the new impervious surface and additional treatment areas. Since the project proposes to remove the existing traction sand traps, the impervious area currently being treated by traction sand traps was delineated and provided as additional treatment areas. The post-construction treatment area in the State ROW comprises more than one acre. Treatment BMPs will be included as part of this project to address the additional treatment areas. These treatment BMPs include an infiltration basin and traction sand traps.

Construction site stormwater BMPs will follow the *Caltrans Construction Site Best Management Practices Manual* (Caltrans 2017) and the TRPA *BMP Handbook* (TRPA 2014) to control and minimize the impacts of construction-related activities. A Stormwater Pollution Prevention Plan will be developed and submitted to the Lahontan RWQCB to comply with the Construction Storm Water NPDES Permit for the Tahoe Basin. The BMPs required at the site during construction are included in the SWDR.

J. Accommodation of Oversize Loads

Per HDM index 405.10, the layout of the roundabout has not been designed for oversized loads, and instead has been designed to accommodate the Surface Transportation Assistance Act (STAA) design vehicle. Removable objects and mountable curbs are proposed to accommodate oversized vehicles such as snow plows.

K. Graffiti Control

Anti-graffiti measures will be used for roadside and overhead signs, which are the only surfaces prone to graffiti being installed by the project.

L. Visual/Aesthetics

A Visual Impact Assessment was not required for the project.

Measures included in the design of roundabout fill slopes to reduce the amount of deviation to the adjacent forested/meadow landscape include use of native revegetation materials and naturally occurring types/colors of non-vegetation groundcover and boulders consistent with the adjacent landscape. With these measures in place, the roundabout would not be visually out-of-place with the adjacent landscape character when compared to other roadway features in the project vicinity.

Tree removal proposed for the roundabout would enlarge background views of nearby ridgelines as seen by drivers when approaching the roundabout from Pioneer Trail and US 50 from the north. Tree removal on either side of Pioneer Trail would widen existing views of Echo and Angora peaks for drivers approaching the intersection. Likewise, drivers on US 50 southbound would experience enhanced views of the ridgeline located south of Meyers because of the tree removal proposed on the northeast corner of the intersection.

Although trees will be removed, based on design features to revegetate disturbed areas with native vegetation, and the beneficial effect on mountain peak views from tree removal, the project would not damage views along the scenic roadway corridors (Pioneer Trail and US 50).

M. Asset Management

There are no outstanding issues carried over from the Project Initiation Phase of the project. Improvements associated with the roundabout that will require maintenance in the future include street lights, flashing beacon, roadway signs, concrete sidewalk, roadway and bike path asphalt concrete, striping, landscaping (if included), storm drain, and infiltration basin. Refer to Attachment F, Project Cost Estimate for the quantity of each item.

N. Complete Streets

This project includes safety improvement for all modes of traffic, satisfying complete street requirements. This project has not been classified as a complete streets project.

Pedestrian and cyclist facilities will be enhanced at the existing intersection of Pioneer Trail and US 50. Currently, pedestrians are allowed to cross US 50 in the crosswalk on the north side of the intersection. This crosswalk does not connect to another pedestrian facility; all other pedestrian movements are prohibited within the existing intersection. An existing Class I shared-use trail is located to the west of US 50; this trail does not connect to the Class II bike lane on US 50 or the Class 1 shared-use trail on the east side of US 50.

A shared-use path (sidewalk and bike path) would be integrated into the roundabout alignment. The existing Class 1 shared-use trail on the west side of US 50 would be integrated into the project by realigning the trail approximately to the west to allow for construction of the roundabout. Approximately 1,200 linear feet of new shared-use path would be constructed to provide connections to these paths for on-road cyclists at each roundabout leg. New crosswalks within the roundabout may include the installation of Rectangular Rapid Flashing Beacons, Pedestrian Hybrid Beacon or equivalent traffic control device.

O. Climate Change Considerations

The project supports the reduction of greenhouse gases by providing pedestrian facilities that encourage active transportation and prove for operational improvements that limit vehicle idling.

Operational air emission modeling was conducted for criteria air pollutants and greenhouse gas (GHG) emissions utilizing the EMFAC2021 model. The baseline year used for the emissions analysis is 2018, as it represents the 'existing conditions' of the project area and vicinity. The project buildout year is 2023, and the long-range planning horizon is 2040. Operational parameters for Existing, No Build Alternative, and Build Alternative include AADT, fleet mix, average speeds, and VMT. Traffic information used comes from the ICE and TOAR prepared for the project prior to traffic changes resulting from the Covid-19 restrictions (GHD 2020, GHD 2019).

By pollutant type, the Build Alternative is estimated to generate approximately 10% to 68% fewer operational emissions than the No Build Scenario in Year 2023. The project would have a beneficial effect on air quality through reduced operational emissions. The only pollutant that would increase with the Build Alternative would be PM_{10} in year 2040, but it is still a reduction from baseline conditions.

During construction, the County would implement the *Basic Construction Emission Control Practices* and the measures listed in the Guidance for Construction GHG Emissions Reductions developed by the SMAQMD (2019), which includes measures to improve fuel efficiency, minimize idling, limit emissions, use green energy sources, and recycling of materials.

Because operational emissions modeling indicates the project would result in reductions of all pollutants including carbon monoxide (CO), carbon dioxide (CO2) and methane (CH4) as opposed to the 'no-build' scenario, and impacts during construction would remain less than significant, the project overall is anticipated to have a beneficial impact on GHG emissions.

P. Broadband and Advance Technologies

As part of the utility coordination processes, utility purveyors would be given the opportunity to upgrade their facilities within the project limits to accommodate existing or future proposed installation of broadband and advanced technology. No improvements have been identified at this time.

8. FUNDING, PROGRAMMING AND ESTIMATE

It has been determined that this project is eligible for Federal-aid funding. The funding sources include TRPA Air Quality Mitigation Funds, CMAQ, HSIP, RSTP, and STBG.

Fund Source	Fiscal Year Estimate*								
20.XX.###.###	Prior	19/20	20/21	21/22	22/23	23/24	24/25	Future	Total
Component	In thousands of dollars ($1,000)								
PA&ED Support	115	627							742
PS&E Support			680	449					1,129
Right-of-Way Support				50					50
Construction Support					1,203				1,203
Right-of-Way				61					61
Construction				1,200	4,816				6,016
Total	115	627	680	1,760	6,019				9,201

* Figures shown are as of February 2022, subject to change.

The support cost ratio is 33.6%. Annual escalation is 3.2%.

Estimate

$3.5 million dollars has been secured for construction of the project. Future funding will need to be obtained for construction.

9. DELIVERY SCHEDULE

Project Milestones		Milestone Date (Month/Day/Year)
PROGRAM PROJECT	M015	09/25/2017
BEGIN ENVIRONMENTAL	M020	08/06/2019
CIRCULATE DPR & DED EXTERNALLY	M120	09/02/2021
PA & ED	M200	03/31/2022*
PROJECT PS&E	M380	03/31/2023*
RIGHT-OF-WAY CERTIFICATION	M410	03/31/2023*
READY TO LIST	M460	06/30/2023*
COUNTY ADVERTISE	M480	07/18/2023*
AWARD	M495	09/19/2023*
APPROVE CONTRACT	M500	10/31/2023*
CONTRACT ACCEPTANCE	M600	01/14/2025*
END PROJECT EXPENDITURES	M800	11/21/2025*
FINAL PROJECT CLOSEOUT	M900	12/31/2025*

* Anticipated completion dates shown, subject to change.

10. RISKS

A Formal Risk Management Plan has been prepared for this project. See Attachment J, Risk Register, for more information.

11. EXTERNAL AGENCY COORDINATION

The project is not an FHWA Project of Division Interest.

Coordination with the following agencies will be required, based on project location, stakeholders, and permits required to construct:

- California Department of Fish and Wildlife;
- California State Lands Commission;
- California Tahoe Conservancy;
- Department of the Army, U.S. Army Corps of Engineers;
- Lahontan Regional Water Quality Control Board;
- Tahoe Regional Planning Agency; and,
- USDA Forest Service, Lake Tahoe Basin Management Unit.

12. PROJECT REVIEWS

The following persons have reviewed this project modification and are in general concurrence:

Scoping team field review Daniel Cuellar Date 10-9-2020
Scoping team field review attendance roster attached.
District Program Advisor NA Date
Headquarters SHOPP Program Advisor NA Date
District Maintenance Greg Duffy/William Netto Date 5-24-2021
Headquarters Project Delivery Coordinator NA Date
Project Manager Daniel Cuellar Date 5-20-2021
FHWA NA Date
District Safety Review Fernando Rivera Date 05-24-2021
Constructability Review Kevin Espinoza Date 05-24-2021
Other Date

13. PROJECT PERSONNEL

The following table is a list of project personnel.

Title	*Name*	*Cell Phone No.*
Project Manager	Daniel Cuellar	530-812-5610
Branch Chief, Design M9	Scott Mann	530-821-3669
Environmental Planner	Bibiana Rodriguez	530-720-9957
Assoc Env Planner/Archaeology	Erick Wulf	530-720-6235
Stormwater Design	Iris Bishop	530-720-8605
Associate Right-of-Way Agent	Steve Mattos	530-821-8417

14. ATTACHMENTS

A. Location Map (1 Page)
B. Traffic Reports (149 Pages)
C. Environmental Document and Notice of Determination (4 Pages)
D. Layouts (1 Page)
E. Typical Sections (4 Pages)
F. Project Cost Estimate (10 Pages)
G. Right-of-Way Data Sheets (6 Pages)
H. Storm Water Data Report (30 Pages)
I. Pavement Alternatives Memo (3 Pages)
J. Risk Register (2 Pages)
K. TMP Report, Data Sheet, and Checklist (14 Pages)
L. Cooperative Agreement (28 Pages)

Attachment L

COOPERATIVE AGREEMENT

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Attachment A

LOCATION MAP

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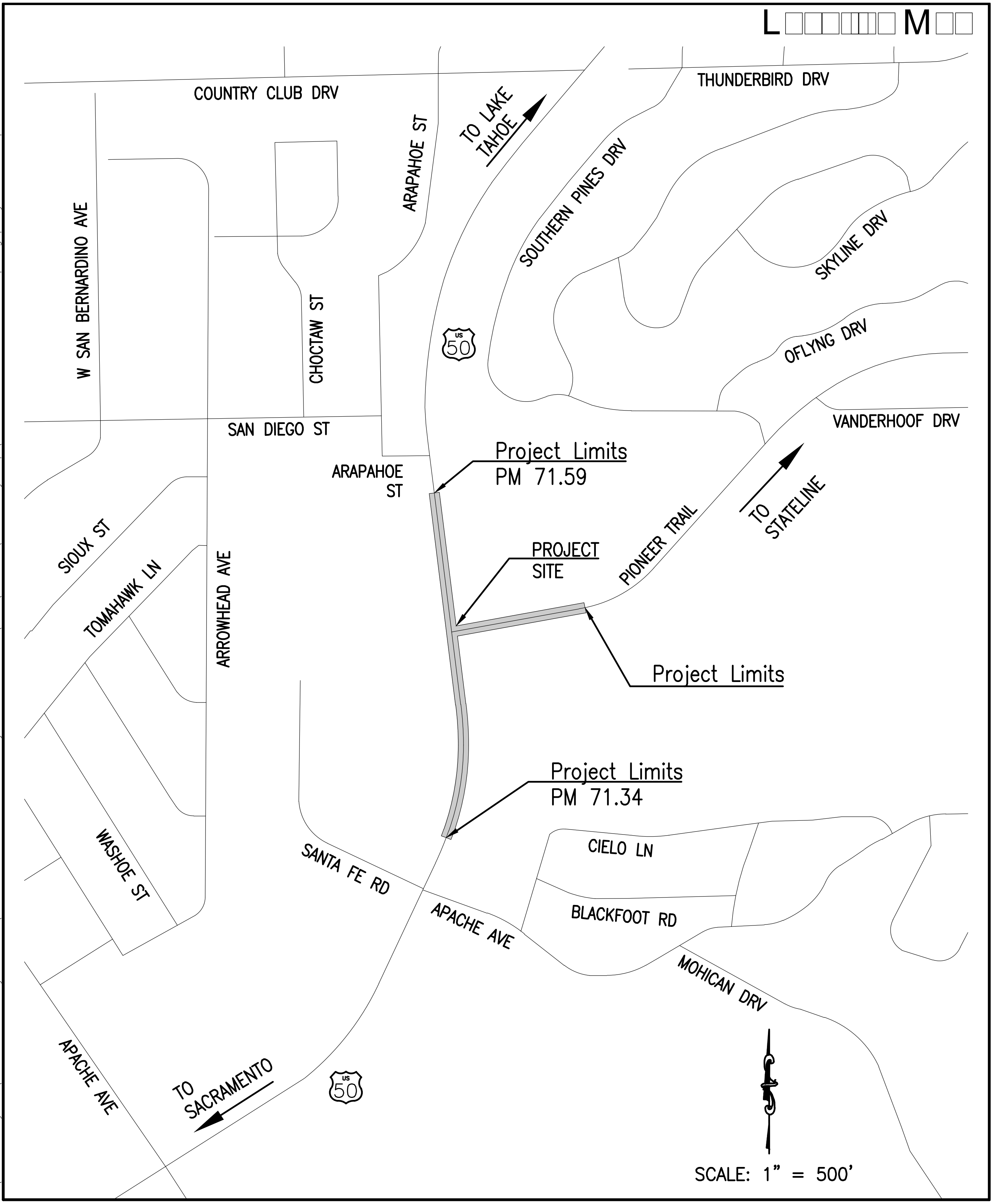
File: P:\Active Projects\El Dorado County - A501\501.30.25 - Pioneer Trail Hwy 50 Intersection\CAD\Exhibits\13 Vicinity Map\Pioneer Tr DPR Location Map.dwg | Layout: TS-1 | Printed Oct 22, 202



NCE

224 Kingsbury Grade Rd,
Suite 203
Stateline, NV 89449
(775) 588-2505

PIONEER TRAIL/US 50 INTERSECTION
SAFETY IMPROVEMENT PROJECT
MEYERS, CA
LOCATION MAP

FIGURE

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
PS	501.30.25		10-23-20		

Attachment B

TRAFFIC REPORTS

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Pioneer Trail/US 50 Intersection Safety Improvement Project

Intersection Control Evaluation

Prepared for:

03-ED-50-71.48
03-EA2H610

El Dorado County Department of Transportation

Executive Summary

GHD has prepared this Intersection Control Evaluation (ICE) report for El Dorado County Department of Transportation and California Department of Transportation (Caltrans) District 3 utilizing methodologies consistent with the ICE process currently implemented by Caltrans. The analysis compares safety and operations associated with the following proposed improvement alternatives (that are consistent with the Caltrans Traffic Operations Policy Directive (TOPD) 13-02). The Build Alternatives analyzed at the signalized intersection of the United States Highway 50 (US 50) and Pioneer Trail in the unincorporated community of Meyers, California, near South Lake Tahoe are as follows:

- **Single-Lane Roundabout Alternative** - The roundabout would include one through lane and one right-turn bypass lane on the northbound approach, a left-turn lane and a right turn bypass lane on the westbound approach, and a through bypass lane and a shared through/left turn lane on the southbound approach; and
- **Modified Traffic Signal Alternative** - The Modified Traffic Signal Alternative would increase capacity at the intersection by providing additional lanes through the intersection and providing a free right-turn lane from US 50 onto Pioneer Trail. The northbound approach would provide two through lanes, and the existing right-turn pocket would be replaced with a free right-turn lane. Therefore, drivers traveling north (or eastbound) on US 50 to Pioneer Trail would no longer be required to stop at the traffic signal. The southbound approach would be widened to include two through lanes and would maintain one left-turn lane. The Pioneer Trail westbound approach would be widened from a single lane to include two left-turn lanes and a right-turn lane

Included in this report is a comparison of operational feasibility, safety benefits, right of way impacts, and cost estimates of two Build Alternatives and a No Build Alternative for the signalized intersection of the United States Highway 50 (US 50) and Pioneer Trail for current and future traffic conditions.

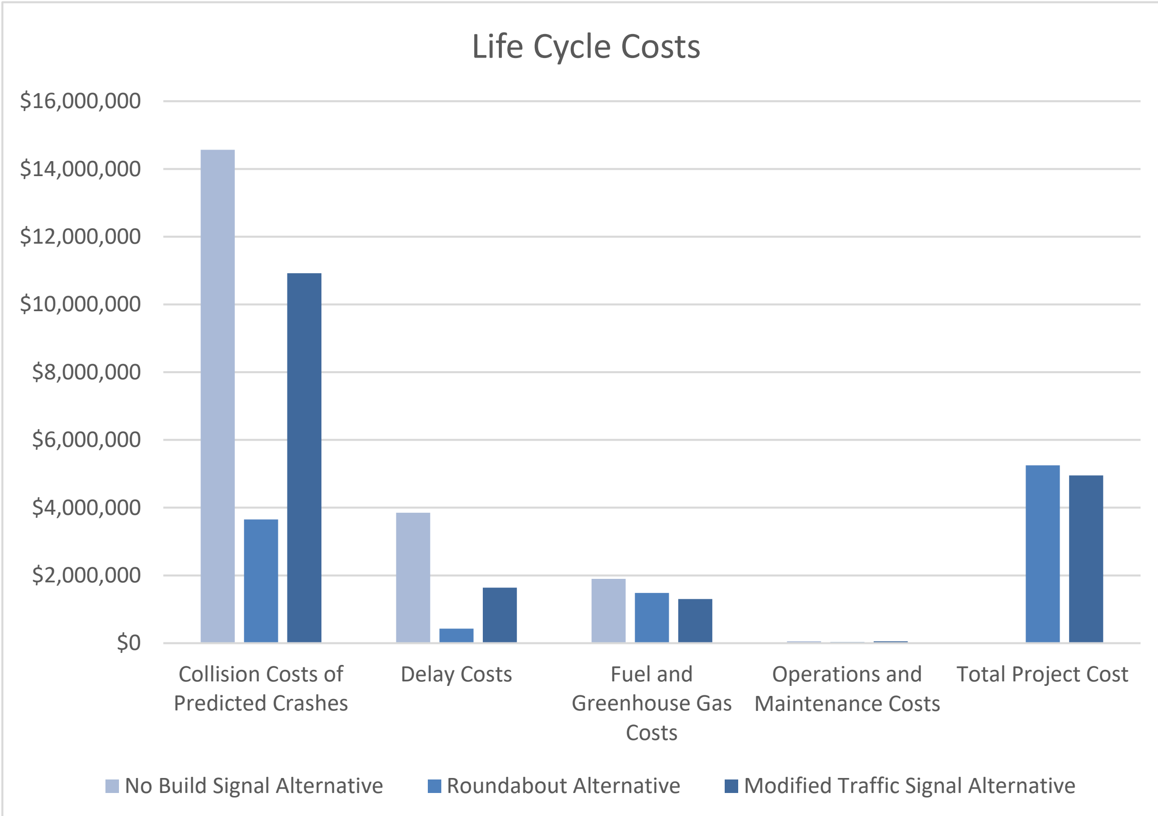
Based on the results of this analysis, the Roundabout Alternative has the highest return on investment for the study intersection. In addition, with a roundabout as the traffic control device, there is better efficiency and less delay, reduced conflict points and vehicular queue lengths. The Roundabout Alternative will also perform better when compared to the Modified Traffic Signal Alternative in terms of collision and mobility costs.

It is estimated the Roundabout Alternative will have slightly higher construction costs than the Modified Traffic Signal Alternative, but will provide overall better life cycle costs than both the No Build Alternative and Modified Traffic Signal Alternative. Figure EX-1 provides a summary of the expected life cycle costs for the No-Build and Build Alternatives over the project life.

The following El Dorado County Department of Transportation representatives were consulted during preparation of this ICE:

- John Kahling
- Donaldo Palaroan

Figure EX-1 Life Cycle Costs



As shown in Figure EX-1, the total life cycle costs of the No Build Alternative are generally higher than the Roundabout Alternative and the Modified Traffic Signal Alternative, with the exception of the total project cost. Also, the Modified Traffic Signal Alternative has higher collision and delay costs compared to the Roundabout Alternative. For additional detail regarding the project cost estimates and life cycle costs, refer to Appendix D (Cost Estimates and Life Cycle Costs).

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Appendix Index

1. Introduction

This Intersection Control Evaluation (ICE) report has been prepared to present the results of the two Build Alternatives and the No Build Alternative. The report builds on the previous analysis in the August 2019 Traffic Operations Analysis Report (TOAR) and compares safety and operations associated with the Build Alternative improvements that are consistent with the Caltrans TOPD 13-02. The term “project,” as used in this report, will refer to the potential improvements at the US 50 and Pioneer Trail intersection. The project is located in El Dorado County within the unincorporated community of Meyers, California. Figure 1.1 presents the study area and the intersection analyzed within this report.

US 50 is a two-lane conventional highway in the project area with a posted speed limit of 40 miles per hour (mph) (reduced from 55 mph further north of the intersection). Pioneer Trail is a two-lane rural arterial with a posted speed limit of 40 mph in the project area. US 50 is a Terminal Access Route for Surface Transportation Assistance Act (STAA) trucks.

1.1 Need and Purpose

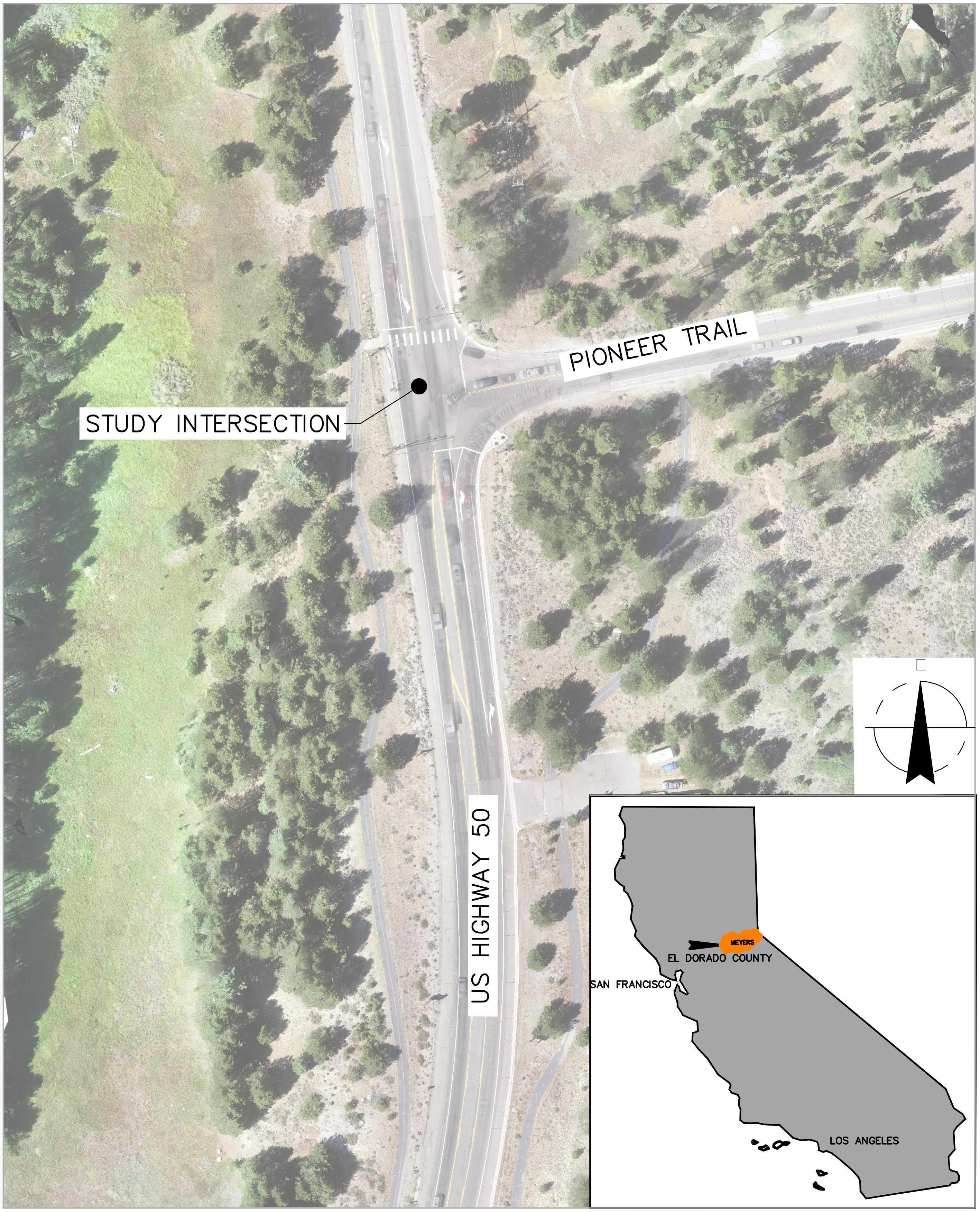
The purpose of this project is to improve safety at the US 50 and Pioneer Trail intersection for all modes of travel, improve traffic flow, reduce vehicle speeds through the intersection and into the Meyers area, reduce vehicle emissions associated with traffic delays, and improve access to nearby bikeways and trails.

Several prior plans and studies have identified a need for safety and transportation improvements at the study intersection. Three issues help define the need for improvements:

- High number of collisions;
- Disjointed pedestrian and bicycle facilities lack connectivity; and
- Unacceptable intersection level of service (LOS) during peak periods.

These issues correspond to three needs for this project, described in greater detail below:

- Enhance Safety;
- Provide Bicycle and Pedestrian Access; and
- Reducing speed and improving traffic flow through the corridor



El Dorado County Department of Transportation
US 50/Pioneer Trail Intersection Safety Improvement Project

Project Location Map

Project No. **11191432**
Report No. **R2610RPT002**
Date **January 16, 2020**

Figure 1.1

Filename: \\ghdnet\ghd\US\Roseville\Projects\Legacy\PRJ\2610\2610EX007.dwg Plot Date: 21 January 2020 - 2:25 PM

Source:

In 2012, the US 50 and Pioneer Trail intersection was identified as a high collision location.[1] It was determined that most collisions at the intersection were a result of drivers traveling at unsafe speeds in snowy or icy conditions. Most collisions occurred on the northbound right-turn movement onto Pioneer Trail. Collision data collected for the last three years showed that the most common collision type was broadside collisions.

When compared to traditional intersection controls, roundabouts have fewer conflict points for vehicles, bicyclists, and pedestrians. This directly correlates to improved safety. Roundabouts have the potential to reduce the number and severity of broadside collisions, reduce vehicle speeds, and reduce exposure for people bicycling and walking compared to traditional intersections. A study of 55 roundabouts in the United States concluded that roundabouts generally reduce crashes by 35 percent overall, reduce injury crashes by 76 percent, and reduce fatal crashes by 90 percent.[2]

At the study intersection, pedestrian crossings are currently only permitted in the crosswalk on the north leg of the intersection. All other pedestrian movements are prohibited. While this crosswalk connects to a shared use path on the west side of US 50, it does not connect to another pedestrian facility on the east side. A Class I shared use path parallel to US 50 on the west side does not connect to Class II bicycle lanes or the Class I shared use path on the east side of US 50. Accommodation for people walking, bicycling, and riding transit was identified as a need in the 2016 *Linking Tahoe: Active Transportation Plan* (amended in October 2018).

Both US 50 and Pioneer Trail are heavily traveled routes between Meyers and South Lake Tahoe. Traffic levels at this location are highly variable throughout the year, as the intersection serves tourist traffic to and from Lake Tahoe, Nevada, and a variety of other outdoor recreation opportunities. Traffic levels can vary significantly based on weather, economic conditions, special events, and other factors. The summer months typically have the highest traffic volumes due to the wide range of tourist attractions throughout the Tahoe Basin, but traffic congestion is typically worse in winter due to weather conditions, chain restrictions, and avalanche control operations.

LOS standards for the project are set by Caltrans, the Tahoe Regional Planning Agency (TRPA), and El Dorado County, as described further in Section 1.5 (Level of Service Criteria) of this report. The existing intersection currently operates at an unacceptable LOS during Sunday peak hours, with an LOS E or F between 10:45 AM and 2:00 PM. With no improvements, LOS at the intersection would continue to worsen and result in extensive delays and long queues. El Dorado County's 2018 *Meyers Area Plan* includes policy and implementation language that recommends reducing traffic speeds through Meyers without adversely affecting air quality and enhancing the intersection at US 50 and Pioneer Trail to improve LOS and traffic flow, reduce vehicle emissions, and improve bicycle and pedestrian safety.

[1] 2011 Annual Accident Location Survey (El Dorado County Department of Transportation, 2012)

[2] Roundabouts in the United States (National Cooperative Highway Research Program Report 572, 2007)

This report examines the traffic operations for Existing Conditions, No Build Alternative, and Build Alternatives for the Design Year (typically 20 years) conditions.

1.1.1 Project Funding

El Dorado County has identified several funding sources for the Pioneer Trail/U.S. 50 Intersection Safety Improvement Project in their *2019 Capital Improvement Program*. Also, the project is listed in the TRPA *Federal Transportation Improvement Program*. The project is expected to be funded through a combination of Highway Safety Improvement Program (HSIP) funds, TRPA/Air Quality funds, Regional Surface Transportation Program (RSTP) Exchange Funds through TRPA and Caltrans, Congestion Mitigation and Air Quality Program (CMAQ) funds, and other local funds.

1.1.2 Previous Studies

The project team was retained by El Dorado County to provide engineering as well as project approval and environmental document support for the project. In preparation for the Project Study Report/Project Development Support (PSR/PDS) document and subsequent Project Approval-Environmental Document (PA-ED) phase, a TOAR was prepared. This ICE report will build on the findings in the TOAR.

1.2 Data Collection and Analysis Time Periods

As described in the TOAR prepared for the project, the summer traffic (between the months of June and September) was found to be generally higher when compared to the other months. Because congestion in the project area is driven by weekend tourism rather than typical commute patterns, traffic operations have been quantified based on average Friday and Sunday peak hours, rather than the traditional AM and PM peak hours.

The TOAR included a summary of the three recent and relevant planning studies in the area that contain traffic volume information in the Meyers community. This information is provided in Appendix A (Traffic Volume Information from TOAR).

1.3 Level of Service Methodologies

The following section outlines the LOS methodologies and analysis parameters used to quantify traffic operations at the study location.

Levels of service (LOS) have been calculated for all intersection control types using the methods documented in the Transportation Research Board's *Highway Capacity Manual (HCM)* or SIDRA methodology. Traffic operations have been quantified through the determination of LOS. LOS is a qualitative measure of traffic operating conditions, whereby a letter grade A through F is assigned to an intersection or roadway segment representing progressively worsening traffic conditions. For a signalized or roundabout intersection, a LOS determination is based on the weighted calculated averaged delay for all approaches and movements.

The methodology for the Roundabout Alternative is based on the 6th edition of the HCM, which draws from a Federal Highway Administration (FHWA) report on capacity modeling for roundabouts.[3] At signalized intersections and roundabouts, the HCM specifies that LOS is based on the average control delay for the entire intersection. Table 1.1 displays the control delay range associated with each LOS grade.

Table 1.1 Intersection Level of Service Thresholds

Level of Service	Average Control Delay (Seconds/Vehicle)		Description
	Signalized	Roundabout	
A	<10.0	<10.0	Very low delay. At signalized intersections, most vehicles do not stop.
B	10.0 to 20.0	10.0 to 15.0	Generally good progression of vehicles. Slight delays.
C	20.1 to 35.0	15.1 to 25.0	Fair progression. At signalized intersections, increased number of stopped vehicles.
D	35.1 to 55.0	25.1 to 35.0	Noticeable congestion. At signalized intersections, large portion of vehicles stopped.
E	55.1 to 80.0	35.1 to 50.0	Poor progression. High delays and frequent cycle failure.
F	>80.0	>50.0	Oversaturation. Forced flow. Extensive queuing.

Note: Highway Capacity Manual (Transportation Research Board 2016)

1.4 Technical Analysis Parameters

The software programs used to analyze the intersection include Synchro 10 for signalized intersection control, and SIDRA 8 for roundabouts. The Synchro and SIDRA outputs are included in Appendix B (Synchro and SIDRA LOS Worksheets).

The evaluation incorporated appropriate heavy vehicle adjustment factors, peak hour factors, and signal lost-time factors, and reported the resulting intersection delays and LOS as projected using HCM-based analysis methodologies. Lane widths for the Roundabout Alternative analysis were determined by measuring face of curb to face of curb.

The specific technical analysis parameters that have been used for this study are presented in Table 1.2. As mentioned in the TOAR for the project, these parameters were reviewed with Caltrans staff.

[3] Assessment of Roundabout Capacity Models for the Highway Capacity Manual: Volume 2 of Accelerating Roundabout Implementation in the United States (Report FHWA-SA-15-070)

Table 1.2 Intersection Technical Analysis Parameters

Technical Parameters[1]	Intersections
Grade[2]	Level
% Trucks[2]	Obtained from Caltrans US50/SR89 Study
Peak Hour Factor Design Hourly Volume	0.96 for Friday and 0.94 for Sunday based on 2017 count data
Minimum Signal Cycle Length[3]	120 seconds (based on field observations)
Lost Time per Critical Signal Phase	4 seconds (if applicable)
Left-Turn Critical Lane Volume[4]	1,900 vehicles per hour
Pedestrian Calls per Hour	5
SIDRA Environmental Factor	1.05 for Design Hourly Volumes
SIDRA Environmental Factor	1.00 for Sensitivity Analysis

Notes:

1. *Computer software defaults will be used for parameters not listed.*
2. *For Existing and Future conditions.*
3. *Will be optimized as appropriate.*
4. *A.k.a. Saturated Flow Rate.*

1.5 Level of Service Criteria

LOS standards for the project are set by Caltrans, TRPA, and El Dorado County. The applicable LOS guidelines are discussed below.

Caltrans identified standards for the project area in the *US 50 Transportation Concept Report/Corridor System Management Plan* (TCR/CSMP) in 2014. The minimum acceptable LOS for this segment of US 50 is LOS D.

TRPA identifies LOS thresholds in its *Linking Tahoe: Regional Transportation Plan* (RTP) in 2017. The acceptable LOS for Pioneer Trail is D, though the policy notes LOS E may be acceptable during peak periods in urban areas but not to exceed four hours per day. The policy also states, “These vehicle LOS standards may be exceeded when provisions for multi-modal amenities and/or services (such as transit, bicycling, and walking facilities) are adequate to provide mobility for users at a level that is proportional to the project-generated traffic in relation to overall traffic conditions on affected roadways.”

The *El Dorado County General Plan Transportation and Circulation Element* includes Policy TC-Xd that states, “Level of Service (LOS) for County-maintained roads and state highways within the unincorporated areas of the county shall not be worse than LOS E in the Community Regions or LOS D in the Rural Centers and Rural Regions.”

Based on the applicable standards discussed above, LOS D is the standard applied to this project. The intersection is also allowed to operate at LOS E for fewer than four hours per day during peak periods.

2. Existing Conditions

This section presents the analysis of current operations at the study location and establishes the baseline traffic conditions.

2.1 Multimodal Facilities

Currently, two Class I shared use paths provide bicycling and walking facilities in the project area. On the west side of US 50, a shared use path parallels the highway from State Route (SR) 89 past the project area to Sawmill Road. On the east side of US 50, a shared use path parallels the highway from SR 89/Luther Pass Road and terminates at Pioneer Trail, approximately 150 feet east of the intersection. No sidewalks exist at the intersection; the only pedestrian access is provided by the shared use path on the west side of US 50. Faded Class II bicycle markings exist on Pioneer Trail, and a southbound bicycle lane is marked on US 50 beginning at the Pioneer Trail intersection. The Class I shared use path parallel to US 50 on the west side does not connect to Class II bicycle lanes or the Class I shared use path on the east side of US 50.

At the US 50 and Pioneer Trail intersection, pedestrian crossings are only permitted in the crosswalk on the north leg of the intersection. All other pedestrian movements are prohibited. While this crosswalk connects to a shared use path on the west side of US 50, it does not connect to the pedestrian facility on the east side.

2.2 Intersection Operations

Traffic volumes at the US 50 and Pioneer Trail intersection, and in the Meyers community in general, are highly variable throughout the year since the intersection serves tourist traffic to and from Lake Tahoe, the State of Nevada, and a variety of other year-round outdoor recreation activities. Congestion in the project area is driven by weekend tourism rather than typical commute patterns, and therefore, traffic operations have been quantified based on average Friday and Sunday peak hours rather than the traditional AM and PM peak hours.

As described in the TOAR, the traffic volumes identified in the *Meyers Intersection Improvements at United States Highway (US) 50 and State Route (SR) 89 Initial Study with Negative Declaration* (provided in Appendix A [Traffic Volume Information from TOAR]) were used to analyze the LOS under existing conditions without and with the proposed intersection improvements. Caltrans staff concurred with this approach.

Based on this traffic volume data, the intersection generally operates at LOS D on Fridays and LOS E on Sundays. The intersection also experiences queues over 40 vehicles along US 50 traveling north (eastbound) on Fridays and Sundays as well as along Pioneer Trail traveling west on Sundays.

2.3 Safety Analysis

As summarized in the TOAR prepared for the project, the study intersection had the second highest number of collisions in the Meyers area[4], with 34 reported collisions between 2007 and 2015. Of these, six collisions resulted in injuries and 28 resulted in property damage only. No fatal collisions were reported within the intersection, however, one fatality was reported approximately 400 feet south of the intersection. According to the Statewide Integrated Traffic Records System (SWITRS) the fatal collision occurred in 2012 (Case ID Number 5638393). The collision involved a vehicle and a pedestrian. The pedestrian was crossing US 50 in the dark and SWITRS records indicate that alcohol was involved.

More recent collision data was collected from the SWITRS for the study intersection. To capture the collision patterns and any trends within the study area, the most recent three years were obtained from SWITRS (January 1, 2016 – December 31, 2018).

2.3.1 US 50 and Pioneer Trail Intersection Collisions

Table 2.1 displays the intersection collisions for the past three years from SWITRS. There was a total of 14 intersection collisions within the influence area of the intersection.

Table 2.1 US 50 and Pioneer Trail Intersection Collisions (2016-2018)

Intersection	Year			Total Collisions
	2016	2017	2018	
US 50 and Pioneer Trail	5	4	5	14

As presented in Tables 2.2 and 2.3, the collision severity, type, and primary collision factor are displayed for US 50 and Pioneer Trail intersection for 2016-2018. There were more Property Damage Only (PDO) collisions than injury collisions (12 vs. 2) and the most common collision type was broadside collisions (7). Broadside collisions are likely occurring due to the high free flow speed and limited gaps across US 50. In addition, the most common cited primary collision factor violation was unsafe speed (12).

Table 2.2 US 50 and Pioneer Trail Intersection – Collision Severity/Type

Collision Severity			Collision Type				
Injury (Other Visible)	Injury (Complaint of Pain)	PDO	Head-On	Sideswipe	Rear End	Broadside	Hit Object
1	1	12	1	3	2	7	1

Table 2.3 US 50 and Pioneer Trail – Primary Collision Factor

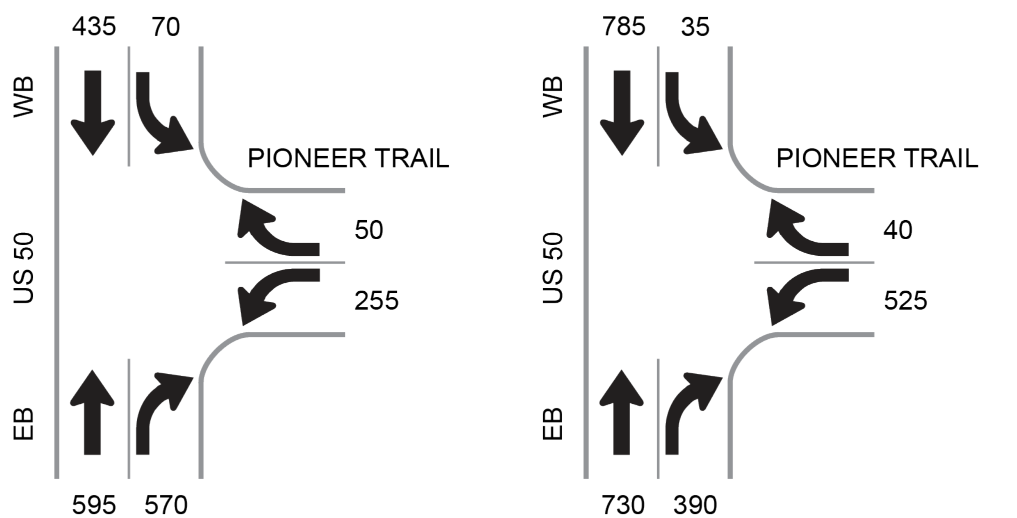
Intersection	Primary Collision Factor		
	DUI	Unsafe Speed	Wrong Side of Road
US 50 and Pioneer Trail	1	12	1

3. Design Year Forecasts

The TOAR for the project established the methodology to develop the traffic forecast for the Design Year at the study intersection. As previously stated, all project alternatives were evaluated for design hourly volumes identified in the *Meyers Intersection Improvements at United States Highway (US) 50 and State Route (SR) 89 Initial Study with Negative Declaration* (provided in Appendix A [Traffic Volume Information from TOAR]). Figure 3.1 illustrates the Design Year traffic volumes.

Figure 3.1 Design Year Traffic Volumes

Friday Summer Peak Hour Volumes Sunday Summer Peak Hour Volumes



4 2016 Meyers Road Safety Audit

3.1 No Build Operational Analysis

Assuming the same lane geometries and traffic control at the study intersection, the No Build Alternative was analyzed using the Design Year traffic volumes. As presented in Table 3.1, the LOS degrades to an overall LOS D on Fridays and LOS E on Sundays with the increase in traffic volumes and no improvements. See Appendix B (Synchro and SIDRA LOS Worksheets) for additional details.

Table 3.1 also shows the 95th percentile queues for the US 50 and Pioneer Trail intersection for Design Year conditions. The longest queue length is on Sunday for eastbound US 50 traffic traveling north.

Table 3.1 Design Hourly Intersection Traffic Operations No Build Conditions – Summer Weekend

	Friday			Sunday		
	Delay	LOS	Queue	Delay	LOS	Queue
North/Eastbound US 50	62.5	E	1,118	103.6	F	1,875
South/Westbound US 50	15.1	B	279	20.1	C	950
West/Southbound Pioneer Trail	45.6	D	361	66.8	E	1,025
Overall	**47.8**	**D**	**-**	**68.0**	**E**	**-**

Note: Analysis is based on the methodology and procedures in the HCM. Average delay is reported in seconds per vehicle. For signalized intersections, LOS is based on the average control delay for all approaches. Queue is reported in feet for the 95th percentile.

4. Build Conditions

4.1 Roundabout Alternative

The Roundabout Alternative would construct a three-legged roundabout at the US 50 and Pioneer Trail intersection. The roundabout would provide an inscribed circle diameter of 140 feet with one through lane and one right-turn bypass lane on the northbound approach, a left-turn lane and a right turn bypass lane on the westbound approach, and a through bypass lane and a shared through/left turn lane on the southbound approach. Figure 4.1 provides a visual of the proposed Roundabout Alternative design.

High-visibility marked crosswalks would be provided on all three legs, including refuge areas in the splitter islands that would allow people walking or bicycling to cross one lane of traffic at a time. Crosswalks would be set back at least one car-length from the roundabout, allowing drivers to yield to pedestrians and move past the crosswalk before waiting for a gap in traffic and entering the roundabout. Separating the crosswalk from the roundabout entry in this way allows drivers to focus their attention on one potential conflict at a time.

The Roundabout Alternative would include bypass lanes with splitter islands designed to reduce excessive delay and queueing, to avoid two-lane entrances for collision reduction, and to increase pedestrian safety by providing refuge when crossing.

Roundabout Alternative

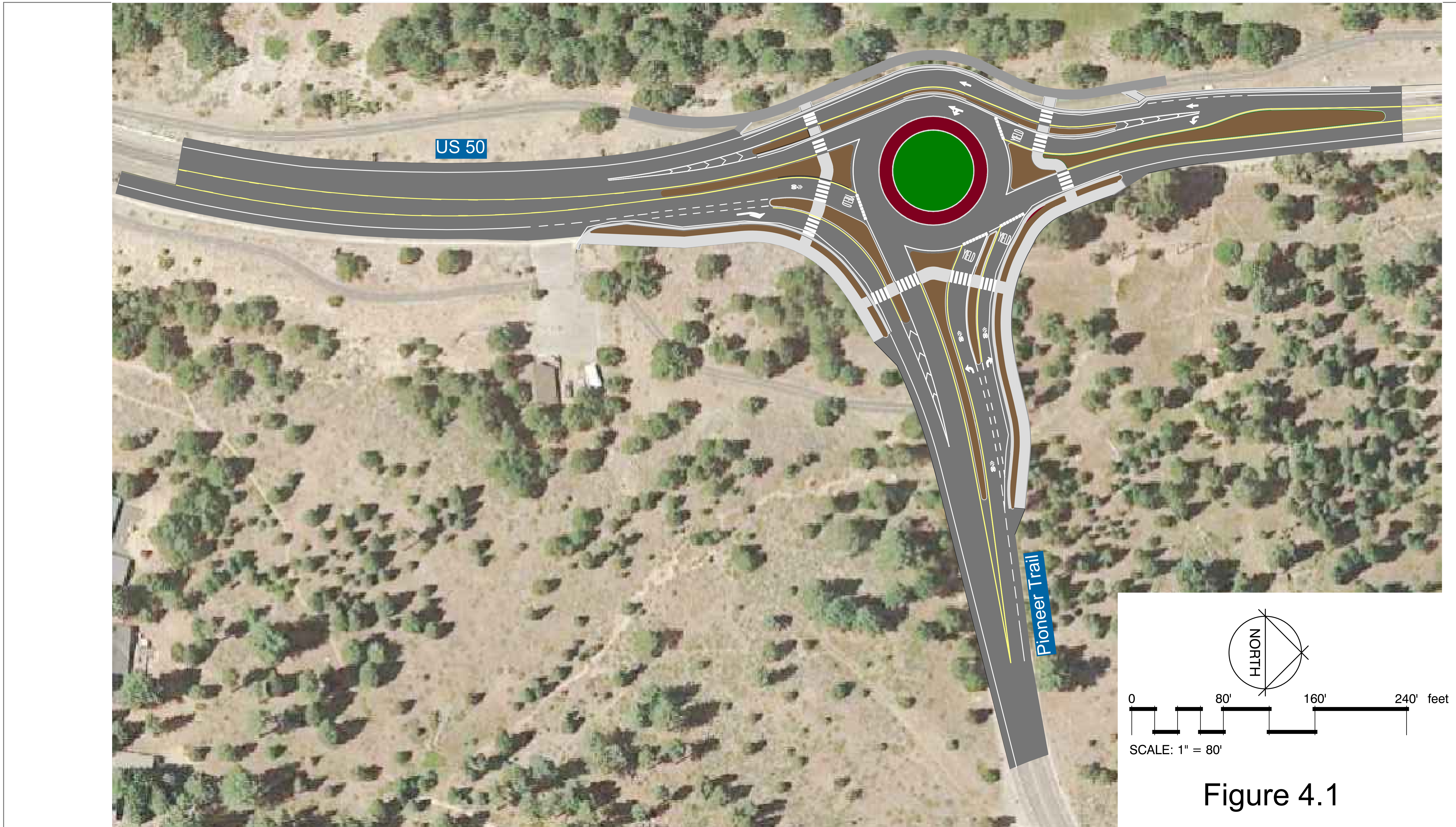


Figure 4.1

US 50 / Pioneer Trail Intersection Improvement Project

Meyers, California

GHD
GHD Inc.
943 Reserve Drive
Roseville, CA 95678 USA
T 1 916 782 8688 W www.ghd.com

July 18, 2019
2610EX002.dwg

Sidewalks would be provided on the northeast and southeast corners of the intersection, and connections would be provided from crosswalks to the Class I shared use path on the west side of US 50. Directional bike ramps would provide bicyclists traveling in the roadway with access to the shared use path or sidewalks if they prefer to navigate the intersection using the crosswalks or path. A proposed connection to the shared use path on the east side of US 50 would provide a direct connection for people walking or bicycling to the crosswalks on the south and east legs of the intersection.

4.1.1 Roundabout Alternative Operational Analysis

Table 4.1 presents the peak hour intersection LOS for the Roundabout Alternative. LOS and delay were projected with SIDRA 8 software for the design hourly traffic volumes with the lane geometrics of the Roundabout Alternative.

Table 4.1 Design Hourly Intersection Traffic Operations Roundabout Conditions

	Friday			Sunday		
	Delay	LOS	Queue	Delay	LOS	Queue
North/Eastbound US 50	3.9	A	76	4.0	A	100
South/Westbound US 50	4.9	A	24	5.0	A	54
West/Southbound Pioneer Trail	12.0	B	43	16.6	B	152
Overall LOS	**5.4**	**A**	**-**	**7.2**	**A**	**-**

Note: Analysis is based on the methodology and procedures in the HCM. Average delay is reported in seconds per vehicle. For roundabout intersections, LOS is based on the average control delay for all approaches. Queue is reported in feet for the 95th percentile.

The intersection is projected to operate at an overall acceptable LOS A with improvements identified in the Roundabout Alternative. The intersection is projected to experience queues less than or equal to 6 vehicles for either time period.

4.2 Modified Traffic Signal Alternative

The Modified Traffic Signal Alternative would increase capacity at the intersection by providing additional lanes through the intersection and providing a free right-turn lane from US 50 onto Pioneer Trail. The northbound approach would provide two through lanes, and the existing right-turn pocket would be replaced with a free right-turn lane. Drivers traveling north (or eastbound) on US 50 to Pioneer Trail would no longer be required to stop at the traffic signal. The southbound approach would be widened to include two through lanes and would maintain one left-turn lane. The Pioneer Trail westbound approach would be widened from a single lane to include two left-turn lanes and a right-turn lane. Figure 4.2 provides a visual of the proposed Modified Traffic Signal Alternative design.

Modified Traffic Signal Alternative

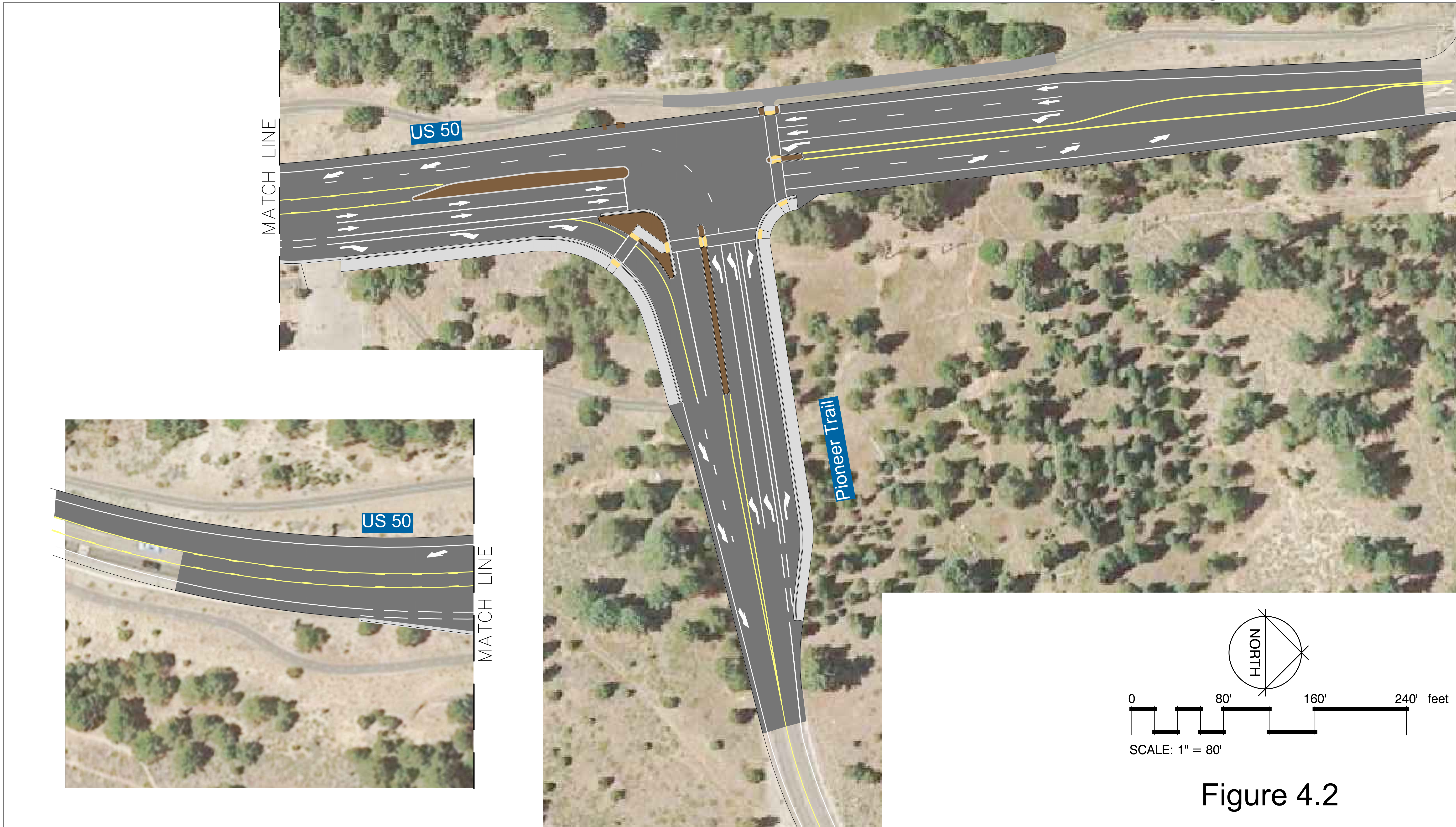


Figure 4.2

US 50 / Pioneer Trail Intersection Improvement Project

Meyers, California

GHD
943 Reserve Drive
Roseville, CA 95678 USA
T 1 916 782 8688 W www.ghd.com
GHD Inc.

July 18, 2019
2610EX003.dwg

Marked transverse crosswalks would be provided across the north and east legs of the intersection as well as across the free right-turn lane on the southeast corner. A crosswalk on the south leg of the intersection would require a pedestrian only phase resulting in increased green/cycle time and intersection delay. For this reason, the project team agreed to eliminate the crosswalk on the south leg as it would compromise the overall intersection operations.

Sidewalks would be provided on the northeast and southeast corners of the intersection, and connections would be provided from the crosswalks to the Class I shared use path on the west side of US 50. Directional ramps would provide southbound bicyclists traveling in the roadway on US 50 with access to the shared use path or sidewalks if they prefer to navigate the intersection using the crosswalks or path. A proposed connection of the shared use path on the east side of US 50 would provide a direct connection for people walking or bicycling to the crosswalks on the south and east legs of the intersection.

4.2.1 Modified Traffic Signal Alternative

Table 4.2 presents peak hour intersection LOS for the Modified Traffic Signal Alternative. LOS and delay were projected for the design hourly traffic volumes with the lane geometrics of the Modified Traffic Signal Alternative. Projections were developed using Synchro 10 software based on the HCM.

Table 4.2 Design Hourly Intersection Traffic Operations – Modified Traffic Signal Alternative

	Friday			Sunday		
	Delay	LOS	Queue	Delay	LOS	Queue
North/Eastbound US 50	12.4	B	208	16.5	B	491
South/Westbound US 50	12.3	B	218	17.7	B	331
West/Southbound Pioneer Trail	23.0	C	173	32.0	C	311
Overall LOS	**14.0**	**B**	**-**	**20.5**	**C**	**-**

Note: Analysis is based on the methodology and procedures in the HCM. Average delay is reported in seconds per vehicle. For signalized intersections, LOS is based on the average control delay for all approaches. Queue is reported in feet for the 95th percentile.

The intersection is projected to operate at acceptable LOS C or better with the improvements identified in the Modified Traffic Signal Alternative. The intersection is projected to experience queues less than or equal to 8 vehicles for the Friday peak period and 20 vehicles during the Sunday peak period.

5. Roundabout Performance Checks

Based on the traffic analysis, the Roundabout Alternative is further evaluated for performance based checks. The following design criteria were used to analyze the geometrics and safety performance of the proposed Roundabout Alternative:

- Criteria and methodologies to be consistent with Caltrans DIB 80-01, Caltrans *Highway Design Manual* (HDM), 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 Federal Highway Administration (FHWA) in 2000.

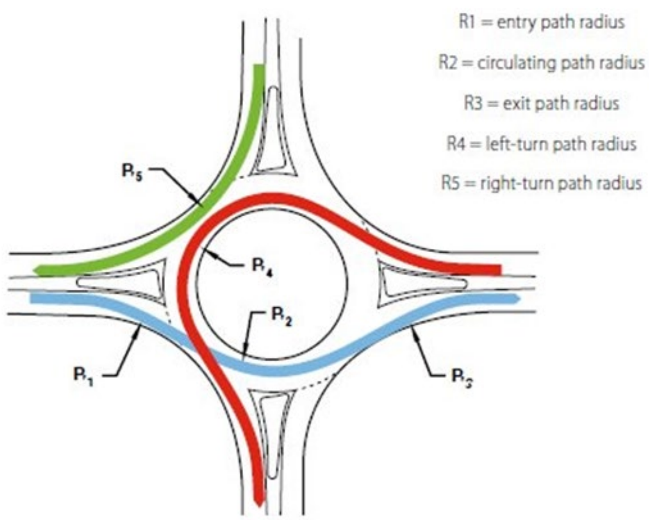
- The "STAA-Standard" design vehicle from the Caltrans HDM, 6th Edition (update September 2014) shall be accommodated on all movements from and to US 50.
- Fast path entry speeds on single-lane approaches should be 25 mph or less.
- Minimum stopping sight distance for posted speed limits should be provided for vehicles approaching roundabout entrances and pedestrian crosswalks.
- View angles for all legs of the roundabout should be no more than 15 degrees.
- Entry angles for all legs of the roundabout should be between 20 and 40 degrees.

5.1 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 speeds along the fastest path should be less than 25 mph at urban single-lane roundabouts, and less than 30 mph at urban multi-lane roundabouts. 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 circulating speeds (V2); exiting speeds (V3); left turn movement circulating speeds (V4); and right turn speeds (V5). A diagram of the described locations is shown in Figure 5.1.

Figure 5.1 Fast Path Critical Speed Locations



Fastest-path speeds for the Roundabout Alternative for vehicles entering, circulating, exiting, left, and right turns are provided in Table 5.1 and further performance based checks and exhibits are provided in Appendix C (Roundabout Performance Based Checks). The fast path speeds for entering traffic are less than 25 mph, which is consistent with the NCHRP Report 672 recommendation for single-lane roundabouts.

Table 5.1 Fast Path Checks for Roundabout Alternative

FAST PATH SPEED (MPH)					
Movement	Northbound US 50 (N#)	Northbound US 50 Right Bypass (N#)	Southbound US 50(S#)	Southbound US 50 Bypass(S#)	Westbound Pioneer Trail (W#)
Entering (V1)	24.5	N/A	24.7	24.5	24.2
Circulating (V2)	18.2	N/A	19.7	20.0	N/A
Exiting (V3)	29.9	N/A	31.1	29.8	N/A
Left Turn (V4)	N/A	N/A	15.0	N/A	15.0
Right Turn (V5)	N/A	20.9	N/A	N/A	24.5

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.
As acceleration potential of vehicle determines actual exiting speed, V3 presented is a conservative estimate.
N/A = Fastest path speed does not exist for this approach.
2% cross-slope assumed for determining fastest path.

6. Alternatives Comparison

For the alternatives comparison, the two Build Alternatives (Roundabout and Modified Traffic Signal) were compared to the No Build Alternative in the Design Year. This comparison analysis will consist of LOS and queue graphics, planning level cost estimates, and life cycle costs.

6.1 Level of Service and Queuing

Figure 6.1 illustrates the No Build Alternative LOS and 95th percentile queue lengths and LOS in the project study area. This figure shows the extensive queues for all directions of travel. With no improvements, traffic will continue to queue, causing delays and limiting access to private properties/businesses in the area.

Figure 6.2 illustrates the LOS and 95th percentile queues for both Build Alternatives. The Roundabout Alternative is expected to have better LOS and shorter queue lengths when compared to the Modified Traffic Signal Alternative.

95th Percentile Queue Lengths - No Build Alternative

Figure 6.1

PIONEER TRAIL / US 50 INTERSECTION SAFETY IMPROVEMENT

Meyers, California

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GHD Inc.

January 2020
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95th Percentile Queue Lengths - Roundabout and Modified Traffic Signal Alternatives

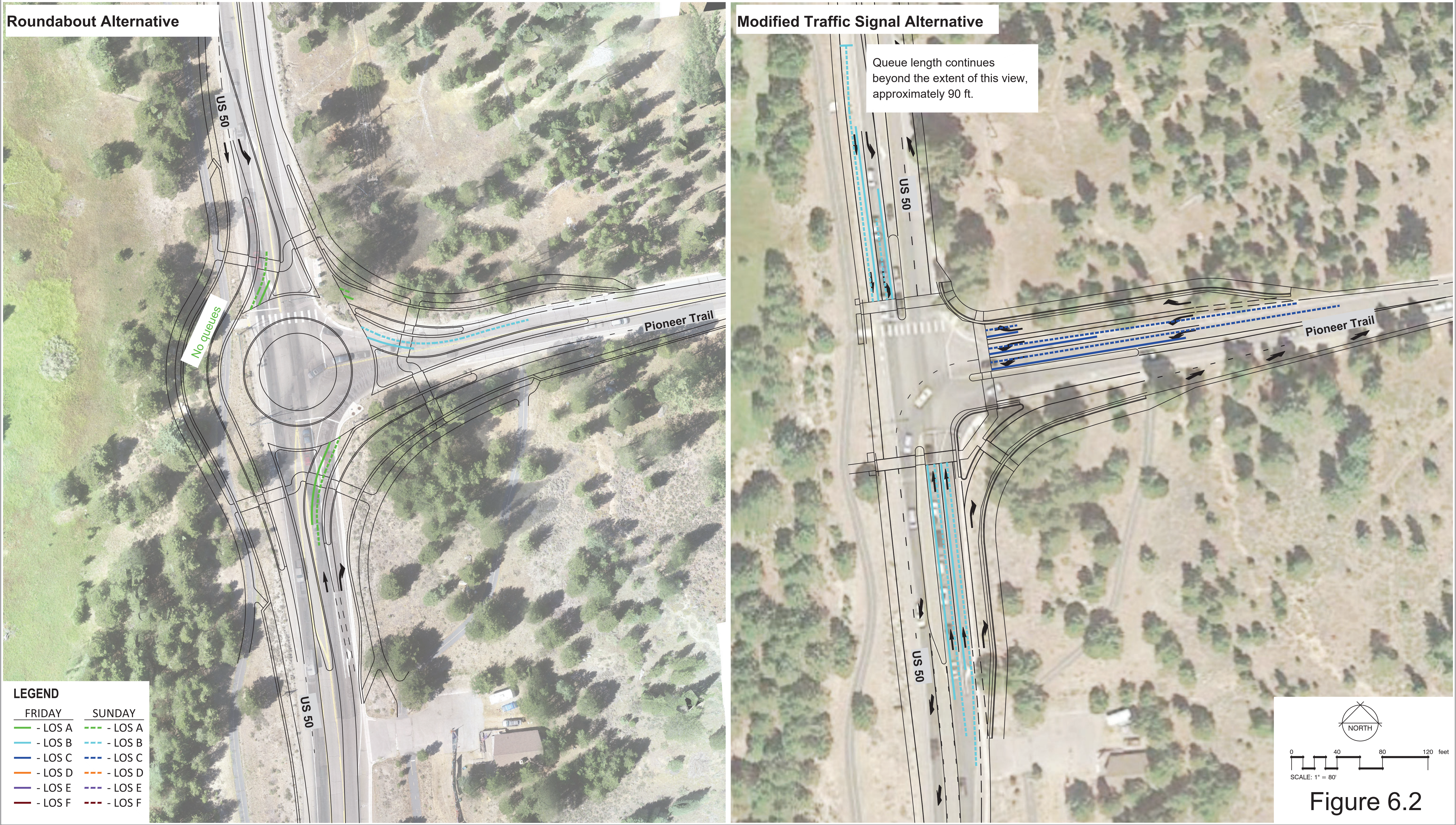

Figure 6.2

PIONEER TRAIL / US 50 INTERSECTION SAFETY IMPROVEMENT

Meyers, California

GHD
943 Reserve Drive, Suite 100
Roseville, CA 95678 USA
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GHD Inc.

January 2020
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6.2 Preliminary Cost Estimate

The Roundabout Alternative is estimated to cost $5,246,000 and the Modified Traffic Signal Alternative is estimated to cost $4,950,000 in the current year. Detailed cost estimates are provided in Appendix D (Cost Estimates and Life Cycle Costs).

6.3 Life-Cycle Costs

In evaluating the life-cycle costs of the project, a 20 year service life was used in comparing the No-Build and Build Alternatives (Roundabout and Modified Traffic Signal). In following Caltrans methodology and transportation economics, Caltrans Vehicle Operations Cost Parameters (2016 Current Dollar Value), the vehicle operations costs, collision costs, and emission cost parameters (CA rural area) were used. As presented in Table 6.1, the No Build Alternative is expected to have life-cycle costs of $20,366,000. The higher cost is mainly attributed to the predicted collision costs of $14,564,000. Table 6.2 shows both Build Alternatives have lower life cycle costs than the No Build Alternative, and the Roundabout Alternative is lower than the Modified Traffic Signal Alternative. This is primarily due to the predicted collision costs. The detailed life cycle costs are provided in Appendix D (Cost Estimates and Life Cycle Costs).

Table 6.1 Life Cycle Costs – No Build Alternative

Safety and Delay Costs	
Collision Costs of Predicted Crashes	$14,564,000
Delay Costs	$3,850,000
Fuel and Greenhouse Gas Emission Costs	$1,897,000
Project Costs (Design, Construction, and Maintenance)	
Operations & Maintenance Costs	$54,000
Project Costs (including soft costs)	$0
TOTAL LIFE CYCLE COSTS FOR NO BUILD ALTERNATIVE	**$20,365,000**

Table 6.2 Life Cycle Costs – Build Alternatives

Safety and Delay Costs*		
	Roundabout Alternative	**Modified Traffic Signal Alternative**
Collision Costs of Predicted Crashes	$3,652,000	$10,923,000
Delay Costs	$430,000	$1,640,000
Fuel and Greenhouse Gas Emission Costs	$1,484,000	$1,302,000
Project Costs (Design, Construction, and Maintenance)*		
	Roundabout Alternative	**Modified Traffic Signal Alternative**
Operations & Maintenance Costs	$31,000	$54,000
Project Costs (including soft costs)	$5,250,000	$4,950,000
TOTAL LIFE CYCLE COSTS FOR BUILD ALTERNATIVES	**$10,847,000**	**$18,869,000**

7. Conclusions

With no improvements to the US 50 and Pioneer Trail intersection, the delay will increase and the intersection will reach an overall LOS D on Fridays and LOS E on Sundays by the Design Year. Excessive queuing will continue in all directions of travel. Both Build Alternatives would improve the intersection and provide acceptable LOS and reduced queue lengths. However, compared to the Modified Traffic Signal Alternative that would provide LOS C operations, the Roundabout Alternative would provide LOS A operations and shorter queue lengths. In addition, over the design life of the project, the life cycle costs for the Roundabout Alternative would be more favorable than the Modified Traffic Signal Alternative.

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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Appendix A. Traffic Volume Information from TOAR

Existing Traffic Conditions

Existing Traffic Volumes

Traffic volumes at the study intersection and in the Meyers community in general are highly variable throughout the year, as the intersection serves tourist traffic to and from Lake Tahoe, the State of Nevada, and a variety of other year-round outdoor recreation activities. Based on discussion with the project team, the summer traffic (between the months of June and September) was found to be generally higher when compared to the other months.

This section reviews three recent and relevant planning studies in the area that contain traffic volume information in the Meyers community. An overview of the count data collected in these studies is presented in Table 5.1.

Table 5.1 Comparison of Traffic Counts Collected on US 50 between SR 89 and Pioneer Trail

	Count Year		
	2010	2016	2017
Agency	El Dorado County	Caltrans	El Dorado County
Number of Data points	1 day	12 weekends (over 3 months)a	6 days (2 weekends)
Location	US 50 between SR 89 and Pioneer Trail	US 50 between SR 89 and Pioneer Trail	US 50 between SR 89 and Pioneer Trail

Traffic Operations Analysis for the US Highway 50/Pioneer Trail Intersection Safety Improvement Project (El Dorado County, December 2017). This study cites two time frames (2010 and 2017) when counts were conducted at the study intersection during the summer months. One count was conducted in 2010, and six counts were conducted in 2017. Additionally, this study extrapolated 2010 traffic with a 0.6% growth increase to derive 2016 counts. As the 2016 data is derived and not based actual counts, these numbers are not included in Table 5.2, which presents the traffic volumes.

Table 5.2 Traffic Patterns on US 50 between SR 89 and Pioneer Trail (December 2017 Study)

	Aug 2010 Sunday	Aug 2017 Friday	Aug 2017 Saturday	Aug 2017 Sunday	Oct 2017 Friday	Oct 2017 Saturday	Oct 2017 Sunday
US 50 (EB)	1,243	1,075	1,130	872	1,115	796	637
US 50 (WB)	1,278	726	730	1,234	653	883	1,317
Total	**2,521**	**1,801**	**1,860**	**2,106**	**1,768**	**1,679**	**1,954**

Meyers Intersection Improvements at United States Highway (US) 50 and State Route (SR) 89 Initial Study with Negative Declaration (Caltrans, December 2016). This study utilized average summer traffic volumes representative of a three month summer period. Table 5.3 presents the average summer traffic volumes for 2016.

Table 5.3 Traffic Patterns on US 50 between SR 89 and Pioneer Trail (December 2016 Study)

	Average Summer 2016	
	Friday	Sunday
US 50 (EB)	1,161	1,119
US 50 (WB)	688	1,308
Total	**1,849**	**2,427**

Design Hourly Volumes

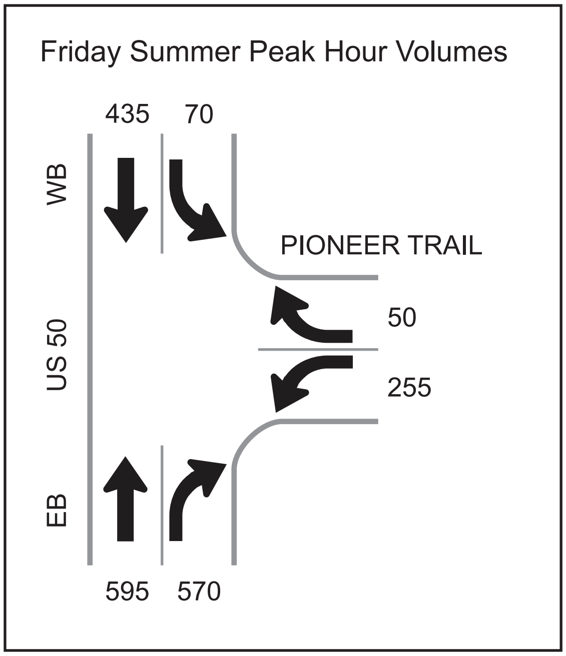
Because the 2016 traffic volumes are based on three months of counts, they are more likely to represent average traffic volumes for a summer weekend and less likely to reflect anomalies in traffic patterns. A comparison of Table 5.2 and Table 5.3 indicates that the average Friday and Sunday summer traffic volumes were greater in the 2016 study than in 2017. Using the higher volumes from 2016 represents a more conservative approach to this analysis of alternatives, as it accounts for increased traffic under current conditions as well as for the sensitivity analysis.

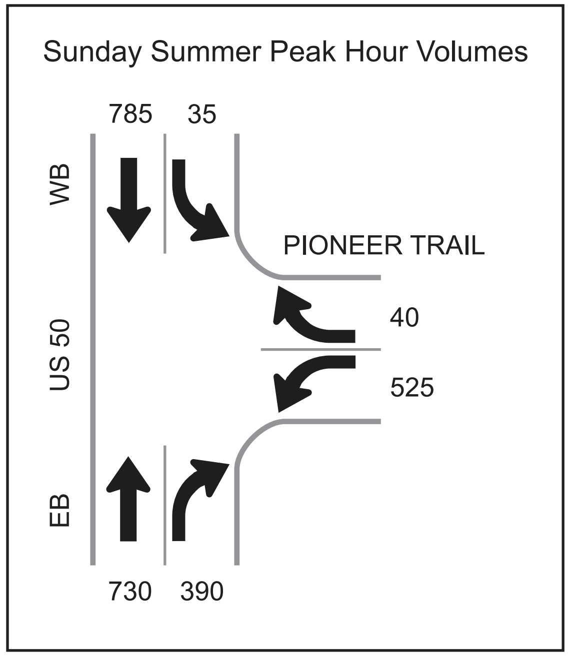
Furthermore, the traffic volumes from the 2016 study were used in the recently completed *Initial Study with Negative Declaration* for the US 50 and SR 89 roundabout project, which is currently under construction. Based on input from the project development team, which includes staff from TRPA, Caltrans, El Dorado County, and consultants, traffic volumes from the 2016 study have been used as the design hourly volumes in the preparation of this Traffic Operations Analysis Report. These design hourly volumes are shown in Appendix A.

Turning movements at the intersection were derived from the traffic split obtained from the 2017 counts. A review of these counts and turning movements revealed the following patterns:

- North/Eastbound US 50 traffic on a typical Friday as it approaches the intersection breaks up into two movements; 51 percent of traffic continues north/east on US 50 and 49 percent turns east/north onto Pioneer Trail. Westbound traffic on a typical Friday is made up of 37 percent from Pioneer Trail (southbound/westbound left) and 63 percent from US 50 (southbound/westbound through).
- North/Eastbound US 50 traffic on a typical Sunday as it approaches the intersection breaks up into two movements; 65 percent of traffic continues north/east on US 50 and 35 percent turns east/north onto Pioneer Trail. Westbound US 50 traffic is made up of 40 percent from Pioneer Trail (southbound/westbound left) and 60 percent from US 50 (southbound/westbound through).

Appendix A from TOAR





N

NOT TO SCALE

El Dorado County
US 50 and Pioneer Trail TOAR

Design Hourly Volumes

Project No. 11191432
Report No. R2610RPT001
Date 8/21/2019

Appendix Figure 1

Appendix B. Synchro and SIDRA LOS Worksheets

LANE SUMMARY

Site: 1v [Pioneer RB Summer No Build Friday]

No Build Design Volumes Signal Alternative
Site Category: (None)
Signals - Actuated Isolated Cycle Time = 108 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Pioneer Trail													
Lane 1	266	3.0	379[1]	0.700	100	46.5	LOS D	14.1	360.4	Full	1600	0.0	0.0
Lane 2	52	1.0	399	0.131	100	41.1	LOS D	2.2	56.7	Short	50	0.0	NA
Approach	318	2.7		0.700		45.6	LOS D	14.1	360.4				
East: WB US 50													
Lane 1	73	1.0	199	0.366	100	57.3	LOS E	4.0	100.1	Short	165	0.0	NA
Lane 2	453	3.0	1247	0.363	100	8.3	LOS A	10.9	278.7	Full	1600	0.0	0.0
Approach	526	2.7		0.366		15.1	LOS B	10.9	278.7				
West: EB US 50													
Lane 1	620	3.0	616[1]	1.007	100	57.7	LOS F	43.7	1118.0	Full	1600	0.0	0.0
Lane 2	594	1.0	583[1]	1.018	100	67.5	LOS F	42.8	1077.4	Short	225	0.0	NA
Approach	1214	2.0		1.018		62.5	LOS E	43.7	1118.0				
Intersection	2057	2.3		1.018		47.8	LOS D	43.7	1118.0				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 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).
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

LANE SUMMARY

Site: 1 [Pioneer RB Summer Friday Peak Hour]

2019 Pioneer RB Sidra Standard EF 1.05
Site Category: (None)
Roundabout

Lane Use and Performance														
	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Pioneer Trail													
Lane 1[d]	266	3.0	1043	0.255	100	12.8	LOS B	1.7	42.4	Full	1600	0.0	0.0
Lane 2	52	1.0	700	0.074	100	8.0	LOS A	0.4	9.7	Short	200	0.0	NA
Approach	318	2.7		0.255		12.0	LOS B	1.7	42.4				
East: WB US 50													
Lane 1[d]	207	2.3	1309	0.158	95[6]	6.8	LOS A	0.9	23.6	Short	150	0.0	NA
Lane 2	319	3.0	1918	0.166	100	3.7	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	526	2.7		0.166		4.9	LOS A	0.9	23.6				
West: EB US 50													
Lane 1[d]	620	3.0	1504	0.412	100	4.1	LOS A	2.9	75.4	Full	1600	0.0	0.0
Lane 2	594	1.0	1658	0.358	100	3.6	LOS A	0.0	0.0	Short	150	0.0	NA
Approach	1214	2.0		0.412		3.9	LOS A	2.9	75.4				
Intersection	2057	2.3		0.412		5.4	LOS A	2.9	75.4				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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 > 1 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.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:45	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	3	3	3	3	3	3	3
# of Recorded Intervals	2	2	2	2	2	2	2
Vehs Entered	1988	1894	1950	1961	2007	1923	1962
Vehs Exited	2000	1920	1963	1957	1995	1934	1946
Starting Vehs	43	63	34	37	49	48	31
Ending Vehs	31	37	21	41	61	37	47
Travel Distance (mi)	972	934	955	957	976	944	952
Travel Time (hr)	38.4	36.2	39.0	38.5	40.0	37.6	38.6
Total Delay (hr)	10.4	9.4	11.6	10.9	11.7	10.5	11.1
Total Stops	1055	989	1135	1098	1128	1052	1126
Fuel Used (gal)	33.4	31.6	33.3	32.8	33.5	32.5	33.1

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	3	3	3	3
# of Recorded Intervals	2	2	2	2
Vehs Entered	1966	1909	2041	1960
Vehs Exited	1955	1909	2048	1963
Starting Vehs	29	33	45	41
Ending Vehs	40	33	38	39
Travel Distance (mi)	959	932	1002	958
Travel Time (hr)	38.3	37.0	40.3	38.4
Total Delay (hr)	10.7	10.2	11.4	10.8
Total Stops	1069	1051	1091	1079
Fuel Used (gal)	32.8	32.1	34.3	33.0

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	536	489	501	540	534	509	511
Vehs Exited	543	516	498	546	543	522	498
Starting Vehs	43	63	34	37	49	48	31
Ending Vehs	36	36	37	31	40	35	44
Travel Distance (mi)	264	246	244	266	266	251	246
Travel Time (hr)	10.6	9.5	10.3	11.1	10.8	10.3	10.0
Total Delay (hr)	3.0	2.4	3.3	3.5	3.1	3.1	2.9
Total Stops	284	248	303	308	289	285	295
Fuel Used (gal)	9.2	8.4	8.7	9.2	9.1	8.7	8.5

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	544	516	563	524
Vehs Exited	531	515	565	528
Starting Vehs	29	33	45	41
Ending Vehs	42	34	43	38
Travel Distance (mi)	264	249	274	257
Travel Time (hr)	10.9	10.1	11.3	10.5
Total Delay (hr)	3.3	2.9	3.5	3.1
Total Stops	309	282	291	291
Fuel Used (gal)	9.1	8.7	9.5	8.9

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1452	1405	1449	1421	1473	1414	1451
Vehs Exited	1457	1404	1465	1411	1452	1412	1448
Starting Vehs	36	36	37	31	40	35	44
Ending Vehs	31	37	21	41	61	37	47
Travel Distance (mi)	708	688	711	691	711	693	705
Travel Time (hr)	27.8	26.7	28.7	27.4	29.2	27.3	28.6
Total Delay (hr)	7.4	6.9	8.3	7.4	8.6	7.4	8.2
Total Stops	771	741	832	790	839	767	831
Fuel Used (gal)	24.2	23.2	24.6	23.6	24.4	23.8	24.7

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1422	1393	1478	1436
Vehs Exited	1424	1394	1483	1435
Starting Vehs	42	34	43	38
Ending Vehs	40	33	38	39
Travel Distance (mi)	695	683	728	701
Travel Time (hr)	27.4	26.9	29.0	27.9
Total Delay (hr)	7.4	7.3	8.0	7.7
Total Stops	760	769	800	790
Fuel Used (gal)	23.8	23.4	24.8	24.0

3: Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	3.5	0.0	0.0	0.5
Total Del/Veh (s)	23.0	12.4	12.3	14.0

Total Network Performance

Denied Del/Veh (s)	1.4
Total Del/Veh (s)	18.0

Intersection: 3:

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	195	162	36	245	237	210	115	187	160
Average Queue (ft)	107	26	12	134	80	102	52	87	33
95th Queue (ft)	173	96	28	208	183	174	98	155	103
Link Distance (ft)		719		540	540			447	447
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325		300			225	300		
Storage Blk Time (%)					0	0			
Queuing Penalty (veh)					0	0			

Intersection: 5: Bend

Movement	SB
Directions Served	T
Maximum Queue (ft)	62
Average Queue (ft)	2
95th Queue (ft)	63
Link Distance (ft)	540
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 1

LANE SUMMARY

Site: 1v [Pioneer RB Summer No Build Sunday]

No Build Design Volumes Signal Alternative
Site Category: (None)
Signals - Actuated Isolated   Cycle Time = 110 seconds (Site User-Given Phase Times)

Lane Use and Performance														
	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Pioneer Trail													
Lane 1	559	1.5	558 [1]	1.002	100	69.4	LOS F	40.3	1020.8	Full	1600	0.0	0.0
Lane 2	43	1.0	536	0.079	100	33.4	LOS C	1.6	40.9	Short	50	0.0	NA
Approach	601	1.5		1.002		66.8	LOS E	40.3	1020.8				
East: WB US 50													
Lane 1	37	1.0	179	0.208	100	58.2	LOS E	2.0	51.0	Short	165	0.0	NA
Lane 2	835	1.5	1066 [1]	0.783	100	18.4	LOS B	37.1	937.9	Full	1600	0.0	0.0
Approach	872	1.5		0.783		20.1	LOS C	37.1	937.9				
West: EB US 50													
Lane 1	777	1.1	637 [1]	1.219	100	142.5	LOS F	74.6	1881.1	Full	1600	0.0	19.7
Lane 2	415	1.1	626 [1]	0.663	100	30.7	LOS C	18.2	459.0	Short	225	0.0	NA
Approach	1191	1.1		1.219		103.6	LOS F	74.6	1881.1				
Intersection	2665	1.3		1.219		68.0	LOS E	74.6	1881.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 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).
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

Organisation: GHD SERVICES PTY LTD | Processed: Wednesday, September 4, 2019 9:10:22 AM
Project: K:\PRJ\2610\A2610\To Caltrans\2019 Sidra50_Pioneer.sip8

LANE SUMMARY

Site: 1 [Pioneer RB Summer Sunday Peak Hour]

2019 Myers RB Sidra Standard EF 1.05
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Pioneer Trail													
Lane 1[d]	559	1.5	956	0.584	100	17.2	LOS B	6.0	152.0	Full	1600	0.0	0.0
Lane 2	43	1.0	635	0.067	100	9.4	LOS A	0.4	9.0	Short	200	0.0	NA
Approach	601	1.5		0.584		16.6	LOS B	6.0	152.0				
East: WB US 50													
Lane 1[d]	289	1.4	1016	0.284	95[6]	7.2	LOS A	2.1	53.2	Short	150	0.0	NA
Lane 2	584	1.5	1947	0.300	100	4.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	872	1.5		0.300		5.0	LOS A	2.1	53.2				
West: EB US 50													
Lane 1[d]	777	1.1	1706	0.455	100	4.1	LOS A	3.9	99.2	Full	1600	0.0	0.0
Lane 2	415	1.1	1656	0.250	100	3.7	LOS A	0.0	0.0	Short	150	0.0	NA
Approach	1191	1.1		0.455		4.0	LOS A	3.9	99.2				
Intersection	2665	1.3		0.584		7.2	LOS A	6.0	152.0				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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 > 1 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.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	3	3	3	3	3	3	3
# of Recorded Intervals	2	2	2	2	2	2	2
Vehs Entered	2602	2514	2433	2441	2476	2509	2433
Vehs Exited	2614	2513	2431	2451	2465	2505	2425
Starting Vehs	62	54	57	62	52	49	53
Ending Vehs	50	55	59	52	63	53	61
Travel Distance (mi)	1293	1258	1212	1217	1229	1251	1208
Travel Time (hr)	59.5	55.4	53.3	53.7	53.7	55.4	53.0
Total Delay (hr)	23.0	20.0	19.2	19.4	19.1	20.5	18.9
Total Stops	1862	1632	1695	1568	1647	1655	1636
Fuel Used (gal)	49.0	46.8	45.4	45.2	45.5	47.0	44.8

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	3	3	3	3
# of Recorded Intervals	2	2	2	2
Vehs Entered	2498	2472	2528	2491
Vehs Exited	2510	2472	2532	2492
Starting Vehs	52	62	61	57
Ending Vehs	40	62	57	54
Travel Distance (mi)	1249	1226	1260	1240
Travel Time (hr)	56.5	54.4	60.1	55.5
Total Delay (hr)	21.4	19.9	24.5	20.6
Total Stops	1768	1683	1910	1706
Fuel Used (gal)	46.9	45.7	47.6	46.4

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	677	687	629	641	659	650	649
Vehs Exited	668	665	635	655	648	646	637
Starting Vehs	62	54	57	62	52	49	53
Ending Vehs	71	76	51	48	63	53	65
Travel Distance (mi)	333	338	316	323	327	320	321
Travel Time (hr)	15.8	15.6	14.2	15.1	14.7	14.3	14.7
Total Delay (hr)	6.3	6.1	5.3	6.0	5.5	5.3	5.7
Total Stops	499	486	454	479	465	440	475
Fuel Used (gal)	12.8	12.8	11.8	12.3	12.2	12.1	12.1

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	701	676	716	668
Vehs Exited	687	680	709	663
Starting Vehs	52	62	61	57
Ending Vehs	66	58	68	61
Travel Distance (mi)	346	335	353	331
Travel Time (hr)	16.7	16.1	19.3	15.6
Total Delay (hr)	6.9	6.6	9.3	6.3
Total Stops	534	541	663	504
Fuel Used (gal)	13.3	12.8	13.9	12.6

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1925	1827	1804	1800	1817	1859	1784
Vehs Exited	1946	1848	1796	1796	1817	1859	1788
Starting Vehs	71	76	51	48	63	53	65
Ending Vehs	50	55	59	52	63	53	61
Travel Distance (mi)	960	920	897	894	902	930	888
Travel Time (hr)	43.7	39.8	39.1	38.5	39.0	41.2	38.3
Total Delay (hr)	16.7	13.8	13.9	13.4	13.7	15.2	13.2
Total Stops	1363	1146	1241	1089	1182	1215	1161
Fuel Used (gal)	36.3	34.0	33.6	32.9	33.3	34.9	32.7

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1797	1796	1812	1822
Vehs Exited	1823	1792	1823	1829
Starting Vehs	66	58	68	61
Ending Vehs	40	62	57	54
Travel Distance (mi)	903	891	907	909
Travel Time (hr)	39.8	38.3	40.7	39.9
Total Delay (hr)	14.4	13.3	15.2	14.3
Total Stops	1234	1142	1247	1202
Fuel Used (gal)	33.6	32.9	33.7	33.8

3: Performance by approach Interval #1 7:00

Approach	WB	NB	SB	All
Denied Del/Veh (s)	3.3	0.0	0.0	0.7
Total Del/Veh (s)	36.7	18.6	19.2	23.1

3: Performance by approach Interval #2 7:15

Approach	WB	NB	SB	All
Denied Del/Veh (s)	3.3	0.0	0.0	0.7
Total Del/Veh (s)	29.5	15.6	17.0	19.2

3: Performance by approach Entire Run

Approach	WB	NB	SB	All
Denied Del/Veh (s)	3.3	0.0	0.0	0.7
Total Del/Veh (s)	32.0	16.5	17.7	20.5

Total Network Performance By Interval

Interval Start	7:00	7:15	All
Denied Del/Veh (s)	1.6	1.5	1.5
Total Del/Veh (s)	29.9	25.9	27.6

Intersection: 3: , Interval #1

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	316	282	28	282	254	118	65	315	284
Average Queue (ft)	245	167	12	199	152	74	36	211	159
95th Queue (ft)	348	324	32	300	272	132	72	330	291
Link Distance (ft)		719		540	540			447	447
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325		300			225	300		
Storage Blk Time (%)	4	2			1			1	
Queuing Penalty (veh)	12	5			3			0	

Intersection: 3: , Interval #2

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	302	253	34	274	246	132	90	343	308
Average Queue (ft)	205	122	10	174	124	61	32	195	129
95th Queue (ft)	293	253	26	254	229	111	72	304	268
Link Distance (ft)		719		540	540			447	447
Upstream Blk Time (%)								0	0
Queuing Penalty (veh)								0	0
Storage Bay Dist (ft)	325		300			225	300		
Storage Blk Time (%)	0	0			0			1	
Queuing Penalty (veh)	1	0			1			0	

Intersection: 3: , All Intervals

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	329	293	37	295	262	156	92	354	327
Average Queue (ft)	215	133	11	180	131	64	33	199	136
95th Queue (ft)	311	274	28	268	241	117	72	311	275
Link Distance (ft)		719		540	540			447	447
Upstream Blk Time (%)								0	0
Queuing Penalty (veh)								0	0
Storage Bay Dist (ft)	325		300			225	300		
Storage Blk Time (%)	1	0			0			1	
Queuing Penalty (veh)	3	1			1			0	

Intersection: 5: Bend, Interval #1

Movement	SB	SB
Directions Served	T	
Maximum Queue (ft)	63	56
Average Queue (ft)	9	8
95th Queue (ft)	133	117
Link Distance (ft)	540	540
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Bend, Interval #2

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

Intersection: 5: Bend, All Intervals

Movement	SB	SB
Directions Served	T	
Maximum Queue (ft)	63	56
Average Queue (ft)	2	2
95th Queue (ft)	63	56
Link Distance (ft)	540	540
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Bend, Interval #1

Movement	NB	NB
Directions Served	T	
Maximum Queue (ft)	143	46
Average Queue (ft)	20	7
95th Queue (ft)	179	97
Link Distance (ft)	447	447
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	1	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Bend, Interval #2

Movement	NB
Directions Served	T
Maximum Queue (ft)	280
Average Queue (ft)	21
95th Queue (ft)	180
Link Distance (ft)	447
Upstream Blk Time (%)	0
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Bend, All Intervals

Movement	NB	NB
Directions Served	T	
Maximum Queue (ft)	330	46
Average Queue (ft)	21	2
95th Queue (ft)	180	46
Link Distance (ft)	447	447
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	1	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty, Interval #1: 22
Network wide Queuing Penalty, Interval #2: 2
Network wide Queuing Penalty, All Intervals: 7

LANE SUMMARY

Site: 1 [Pioneer RB Summer Friday Peak Hour - Sensitivity]

2019 Pioneer RB Sidra Standard EF 1.05; sensitivity analysis 1% growth over 20 years, applied a 120% volume factor in SIDRA
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Pioneer Trail													
Lane 1 [d]	319	3.0	922	0.346	100	14.0	LOS B	2.5	64.0	Full	1600	0.0	0.0
Lane 2	63	1.0	625	0.100	100	9.2	LOS A	0.6	14.0	Short	200	0.0	NA
Approach	381	2.7		0.346		13.2	LOS B	2.5	64.0				
East: WB US 50													
Lane 1 [d]	241	2.3	1245	0.193	95 [6]	7.1	LOS A	1.2	30.8	Short	150	0.0	NA
Lane 2	390	3.0	1918	0.204	100	3.8	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	631	2.7		0.204		5.0	LOS A	1.2	30.8				
West: EB US 50													
Lane 1 [d]	744	3.0	1484	0.501	100	4.2	LOS A	4.1	104.7	Full	1600	0.0	0.0
Lane 2	712	1.0	1658	0.430	100	3.6	LOS A	0.0	0.0	Short	150	0.0	NA
Approach	1456	2.0		0.501		3.9	LOS A	4.1	104.7				
Intersection	2469	2.3		0.501		5.7	LOS A	4.1	104.7				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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 > 1 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.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:45	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	3	3	3	3	3	3	3
# of Recorded Intervals	2	2	2	2	2	2	2
Vehs Entered	2337	2289	2440	2316	2338	2328	2352
Vehs Exited	2327	2288	2445	2330	2325	2337	2358
Starting Vehs	41	45	48	56	53	46	45
Ending Vehs	51	46	43	42	66	37	39
Travel Distance (mi)	1141	1119	1196	1133	1138	1141	1152
Travel Time (hr)	48.8	47.0	52.6	47.7	48.3	48.6	49.0
Total Delay (hr)	16.0	14.9	18.2	14.9	15.5	15.9	15.9
Total Stops	1362	1312	1471	1323	1328	1385	1373
Fuel Used (gal)	39.8	39.0	42.9	39.5	39.5	40.2	40.5

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	3	3	3	3
# of Recorded Intervals	2	2	2	2
Vehs Entered	2399	2364	2410	2356
Vehs Exited	2410	2361	2418	2360
Starting Vehs	38	56	46	46
Ending Vehs	27	59	38	43
Travel Distance (mi)	1175	1153	1176	1152
Travel Time (hr)	50.5	50.4	52.5	49.5
Total Delay (hr)	16.7	17.2	18.4	16.4
Total Stops	1423	1427	1523	1393
Fuel Used (gal)	41.3	40.9	41.8	40.5

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	607	610	652	615	625	599	616
Vehs Exited	587	600	644	628	631	603	621
Starting Vehs	41	45	48	56	53	46	45
Ending Vehs	61	55	56	43	47	42	40
Travel Distance (mi)	289	296	319	302	307	293	303
Travel Time (hr)	12.8	13.1	14.3	13.0	13.4	13.0	12.7
Total Delay (hr)	4.5	4.6	5.1	4.3	4.6	4.6	4.0
Total Stops	378	382	374	366	384	384	339
Fuel Used (gal)	10.3	10.6	11.8	10.7	10.8	10.5	10.6

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	650	667	658	630
Vehs Exited	633	656	645	624
Starting Vehs	38	56	46	46
Ending Vehs	55	67	59	52
Travel Distance (mi)	314	322	316	306
Travel Time (hr)	14.3	15.5	14.6	13.7
Total Delay (hr)	5.3	6.2	5.4	4.8
Total Stops	439	461	427	394
Fuel Used (gal)	11.4	12.1	11.4	11.0

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1730	1679	1788	1701	1713	1729	1736
Vehs Exited	1740	1688	1801	1702	1694	1734	1737
Starting Vehs	61	55	56	43	47	42	40
Ending Vehs	51	46	43	42	66	37	39
Travel Distance (mi)	852	823	877	831	831	848	849
Travel Time (hr)	36.0	34.0	38.3	34.7	34.9	35.6	36.4
Total Delay (hr)	11.5	10.2	13.1	10.7	10.9	11.3	11.9
Total Stops	984	930	1097	957	944	1001	1034
Fuel Used (gal)	29.5	28.5	31.1	28.8	28.7	29.7	29.9

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1749	1697	1752	1727
Vehs Exited	1777	1705	1773	1735
Starting Vehs	55	67	59	52
Ending Vehs	27	59	38	43
Travel Distance (mi)	862	831	860	846
Travel Time (hr)	36.2	34.9	37.9	35.9
Total Delay (hr)	11.4	11.0	13.1	11.5
Total Stops	984	966	1096	1000
Fuel Used (gal)	29.9	28.8	30.4	29.5

3: Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	3.4	0.0	0.0	0.5
Total Del/Veh (s)	26.0	16.1	14.3	17.2

Total Network Performance

Denied Del/Veh (s)	1.9
Total Del/Veh (s)	22.6

Intersection: 3:

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	240	195	44	267	307	296	141	211	178
Average Queue (ft)	133	47	15	162	119	147	66	111	44
95th Queue (ft)	207	148	32	246	250	263	117	187	132
Link Distance (ft)		719		540	540			447	447
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325		300			225	300		
Storage Blk Time (%)					0	3			
Queuing Penalty (veh)					1	10			

Intersection: 6: Bend

Movement	NB	NB
Directions Served	T	
Maximum Queue (ft)	233	46
Average Queue (ft)	13	2
95th Queue (ft)	137	46
Link Distance (ft)	447	447
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 12

LANE SUMMARY

Site: 1 [Pioneer RB Summer Sunday Peak Hour - Sensitivity]

2019 Myers RB Sidra Standard EF 1.05; sensitivity analysis 1% growth over 20 years, applied a 120% volume factor in SIDRA
Site Category: (None)
Roundabout

Lane Use and Performance														
	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Pioneer Trail													
Lane 1[d]	670	1.5	813	0.824	100	31.9	LOS C	15.5	393.1	Full	1600	0.0	0.0
Lane 2	51	1.0	550	0.093	100	11.3	LOS B	0.5	13.7	Short	200	0.0	NA
Approach	721	1.5		0.824		30.4	LOS C	15.5	393.1				
East: WB US 50													
Lane 1[d]	313	1.4	876	0.357	95[6]	8.1	LOS A	2.9	74.4	Short	150	0.0	NA
Lane 2	734	1.5	1947	0.377	100	4.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	1047	1.5		0.377		5.2	LOS A	2.9	74.4				
West: EB US 50													
Lane 1[d]	932	1.1	1692	0.551	100	4.2	LOS A	5.7	143.4	Full	1600	0.0	0.0
Lane 2	498	1.1	1656	0.301	100	3.7	LOS A	0.0	0.0	Short	150	0.0	NA
Approach	1430	1.1		0.551		4.0	LOS A	5.7	143.4				
Intersection	3198	1.3		0.824		10.4	LOS B	15.5	393.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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 > 1 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.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:45	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	3	3	3	3	3	3	3
# of Recorded Intervals	2	2	2	2	2	2	2
Vehs Entered	3040	2988	2954	2878	2927	3018	3035
Vehs Exited	3035	2995	2977	2896	2888	3019	2982
Starting Vehs	83	91	83	87	63	94	58
Ending Vehs	88	84	60	69	102	93	111
Travel Distance (mi)	1511	1494	1480	1442	1446	1509	1494
Travel Time (hr)	98.3	75.8	84.6	73.4	80.4	93.5	91.9
Total Delay (hr)	55.8	33.9	43.0	32.9	39.8	51.1	49.9
Total Stops	3428	2636	3065	2408	2762	3207	3131
Fuel Used (gal)	65.3	58.8	60.7	56.3	58.7	63.5	62.4

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	3	3	3	3
# of Recorded Intervals	2	2	2	2
Vehs Entered	3043	2947	3008	2984
Vehs Exited	3042	2959	3024	2982
Starting Vehs	68	83	86	79
Ending Vehs	69	71	70	81
Travel Distance (mi)	1518	1471	1502	1487
Travel Time (hr)	84.0	80.1	95.1	85.7
Total Delay (hr)	41.3	38.7	52.7	43.9
Total Stops	2998	2781	3290	2971
Fuel Used (gal)	61.2	59.1	63.7	61.0

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Seeding

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	827	779	801	772	784	776	787
Vehs Exited	766	790	775	759	751	771	735
Starting Vehs	83	91	83	87	63	94	58
Ending Vehs	144	80	109	100	96	99	110
Travel Distance (mi)	391	395	392	381	381	386	377
Travel Time (hr)	26.0	20.3	24.2	20.9	22.1	23.5	20.6
Total Delay (hr)	15.0	9.3	13.3	10.3	11.4	12.7	10.1
Total Stops	958	728	961	733	776	867	759
Fuel Used (gal)	17.1	15.6	16.6	15.2	15.7	16.0	15.2

Interval #1 Information Seeding

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	780	815	822	794
Vehs Exited	760	781	795	767
Starting Vehs	68	83	86	79
Ending Vehs	88	117	113	105
Travel Distance (mi)	385	396	400	388
Travel Time (hr)	22.1	23.8	27.6	23.1
Total Delay (hr)	11.3	12.7	16.3	12.2
Total Stops	764	927	1019	849
Fuel Used (gal)	15.7	16.4	17.6	16.1

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	2213	2209	2153	2106	2143	2242	2248
Vehs Exited	2269	2205	2202	2137	2137	2248	2247
Starting Vehs	144	80	109	100	96	99	110
Ending Vehs	88	84	60	69	102	93	111
Travel Distance (mi)	1120	1099	1088	1061	1065	1123	1118
Travel Time (hr)	72.4	55.5	60.4	52.4	58.3	69.9	71.3
Total Delay (hr)	40.8	24.6	29.7	22.6	28.4	38.4	39.8
Total Stops	2470	1908	2104	1675	1986	2340	2372
Fuel Used (gal)	48.2	43.2	44.1	41.1	43.0	47.5	47.2

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	2263	2132	2186	2190
Vehs Exited	2282	2178	2229	2213
Starting Vehs	88	117	113	105
Ending Vehs	69	71	70	81
Travel Distance (mi)	1134	1075	1101	1098
Travel Time (hr)	61.9	56.3	67.5	62.6
Total Delay (hr)	30.0	26.0	36.4	31.7
Total Stops	2234	1854	2271	2123
Fuel Used (gal)	45.5	42.7	46.1	44.9

3: Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	4.7	0.0	0.0	1.1
Total Del/Veh (s)	78.7	25.2	27.8	38.1

Total Network Performance

Denied Del/Veh (s)	2.3
Total Del/Veh (s)	49.4

Intersection: 3:

Movement	WB	WB	WB	NB	NB	NB	B5	SB	SB	SB	B6
Directions Served	L	L	R	T	T	R	T	L	T	T	T
Maximum Queue (ft)	408	642	217	462	454	283	7	204	472	431	158
Average Queue (ft)	338	351	35	260	224	104	0	44	288	239	10
95th Queue (ft)	468	681	177	410	400	230	8	148	445	421	110
Link Distance (ft)		719		540	540		1102		447	447	474
Upstream Blk Time (%)		4		0	0				2	0	0
Queuing Penalty (veh)		0		0	0				0	0	0
Storage Bay Dist (ft)	325		300			225		300			
Storage Blk Time (%)	38	14			5	0			11		
Queuing Penalty (veh)	137	52			25	0			5		

Intersection: 5: Bend

Movement	SB	SB
Directions Served	T	
Maximum Queue (ft)	586	165
Average Queue (ft)	69	8
95th Queue (ft)	374	114
Link Distance (ft)	540	540
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	4	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Bend

Movement	NB	NB
Directions Served	T	
Maximum Queue (ft)	488	435
Average Queue (ft)	111	31
95th Queue (ft)	439	221
Link Distance (ft)	447	447
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	5	1
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

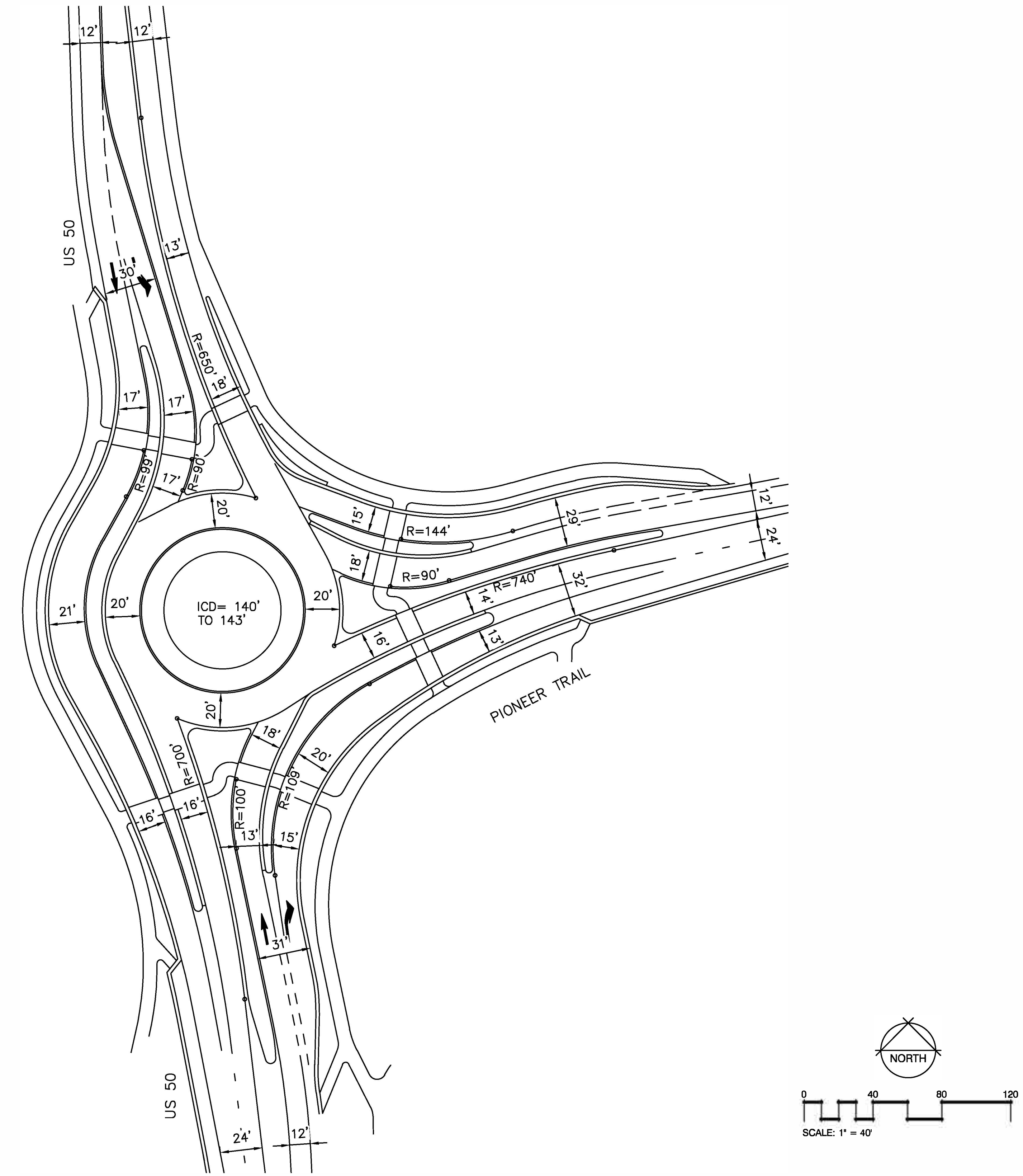
Network Summary

Network wide Queuing Penalty: 229

Appendix C. Roundabout Performance Based Checks

Roundabout Performance Based Checks

INDEX OF SHEETS



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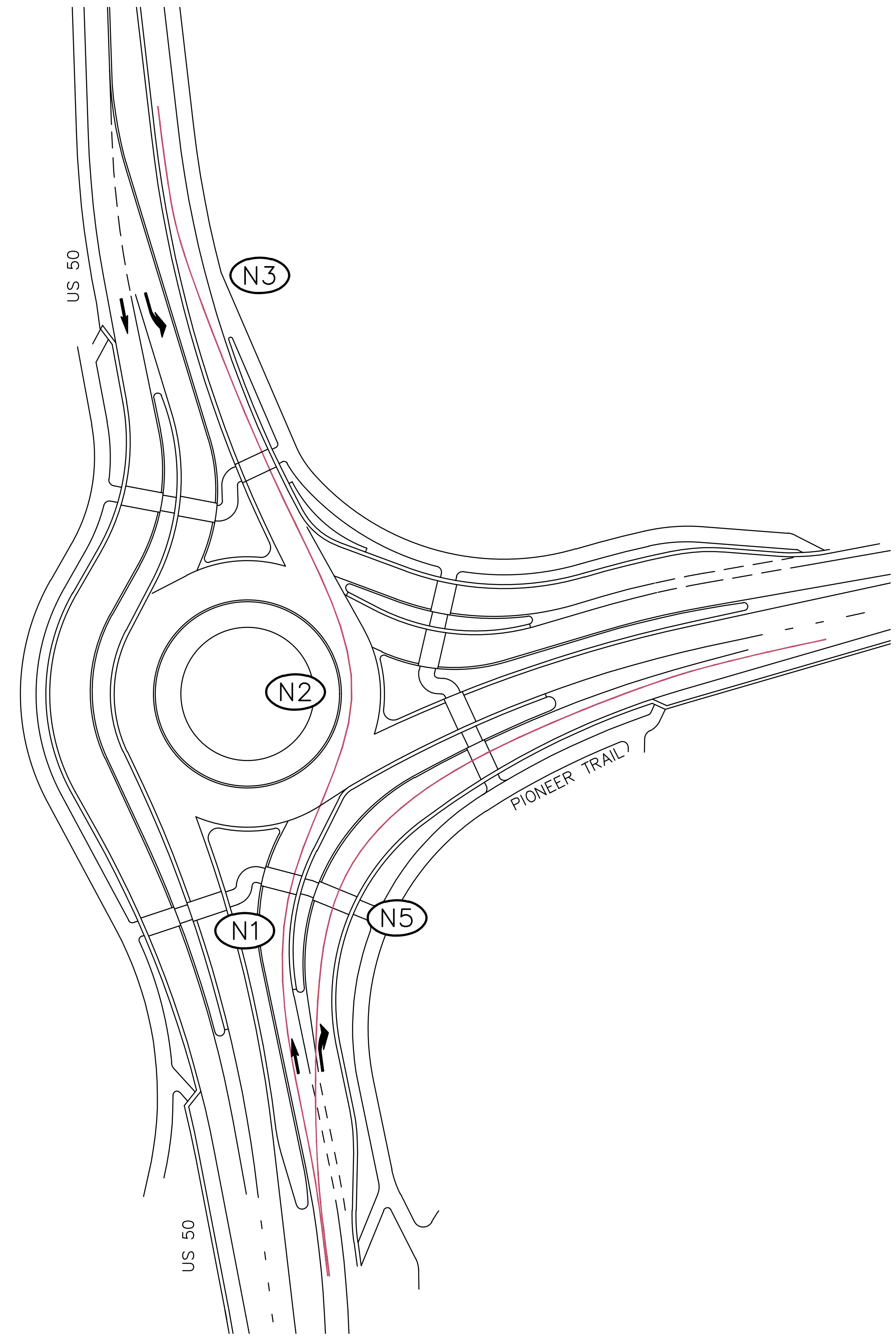
Meyers, California

Fastpath (NB)

LEGEND:
FAST PATH
D# FAST PATH SPEED IDENTIFIER



Movement	Northbound US50 Radius (ft)	Northbound US50 Speed (N#)	Northbound US50 Right Bypass Radius (ft)	Northbound US50 Right Bypass Speed (N#)
Entering (V1)	161.0	24.5	N/A	N/A
Circulating (V2)	91.2	18.2	N/A	N/A
Exiting (V3)	979.4	29.9	N/A	N/A
Left Turn (V4)	N/A	N/A	N/A	N/A
Right Turn (V5)	N/A	N/A	106.7	20.9

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.
As acceleration potential of vehicle determines actual exiting speed, V3 presented is a conservative estimate.
N/A = Fastest path speed does not exist for this approach
2% cross-slope assumed for determining Fastest path

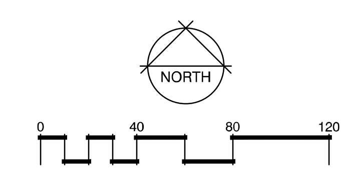


Figure 1

Pioneer Trail/US50 Intersection Safety Improvement Project

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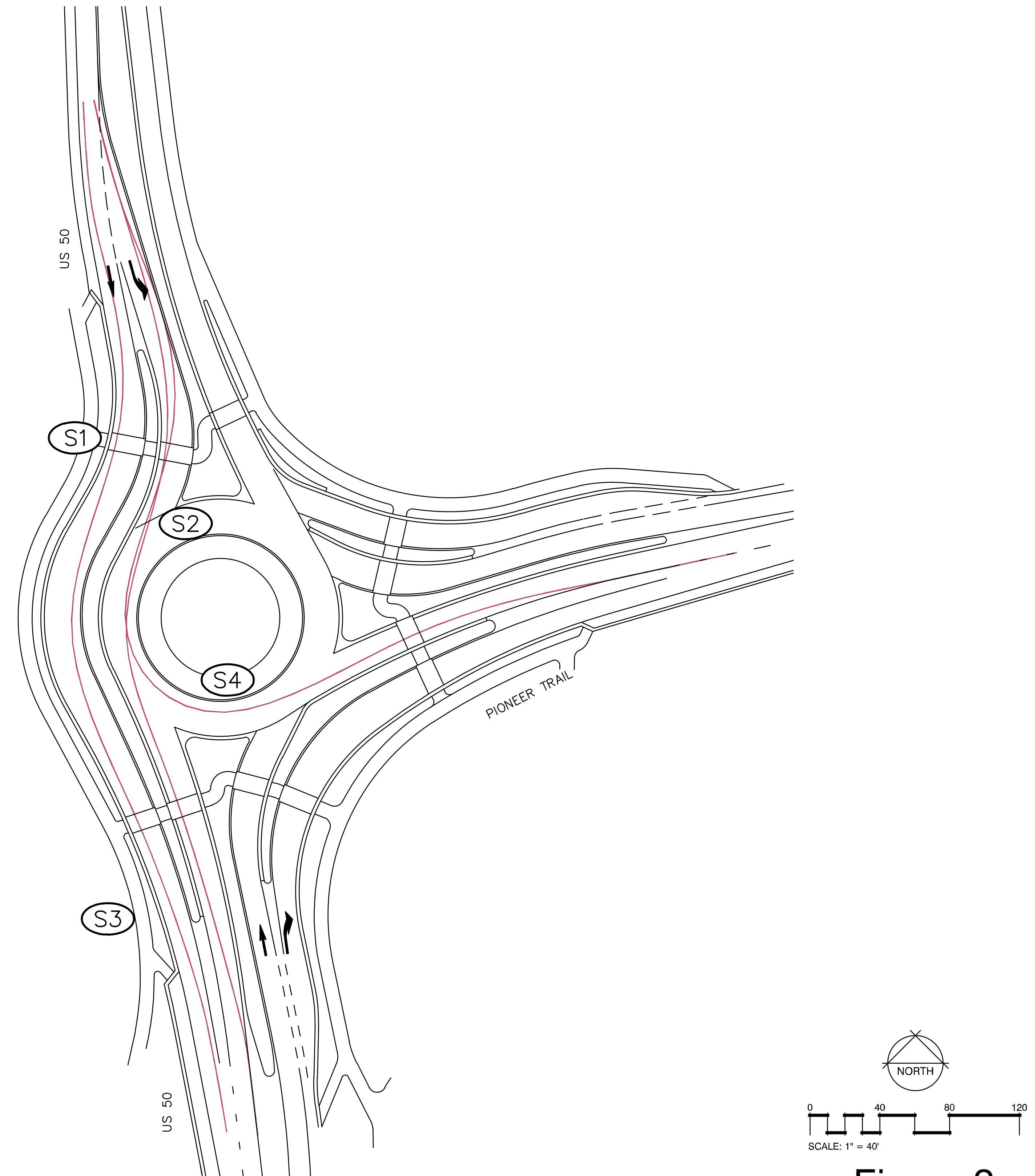
Fastpath (SB)

LEGEND:
FAST PATH
D# FAST PATH SPEED IDENTIFIER



Movement	Southbound US 50 Radius (ft)	Southbound US50 Speed (S#)	Southbound US 50 Radius (ft)	Southbound US50 Bypass Speed (S#)
Entering (V1)	164.8	24.7	162.0	24.5
Circulating (V2)	113.2	19.7	119.2	20.0
Exiting (V3)	N/A	31.1	75.9	29.8
Left Turn (V4)	N/A	15.0	N/A	N/A
Right Turn (V5)	N/A	N/A	N/A	N/A

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.
As acceleration potential of vehicle determines actual exiting speed, V3 presented is a conservative estimate.
N/A = Fastest path speed does not exist for this approach
2% cross-slope assumed for determining Fastest path

Figure 2

Pioneer Trail/US50 Intersection Safety Improvement Project

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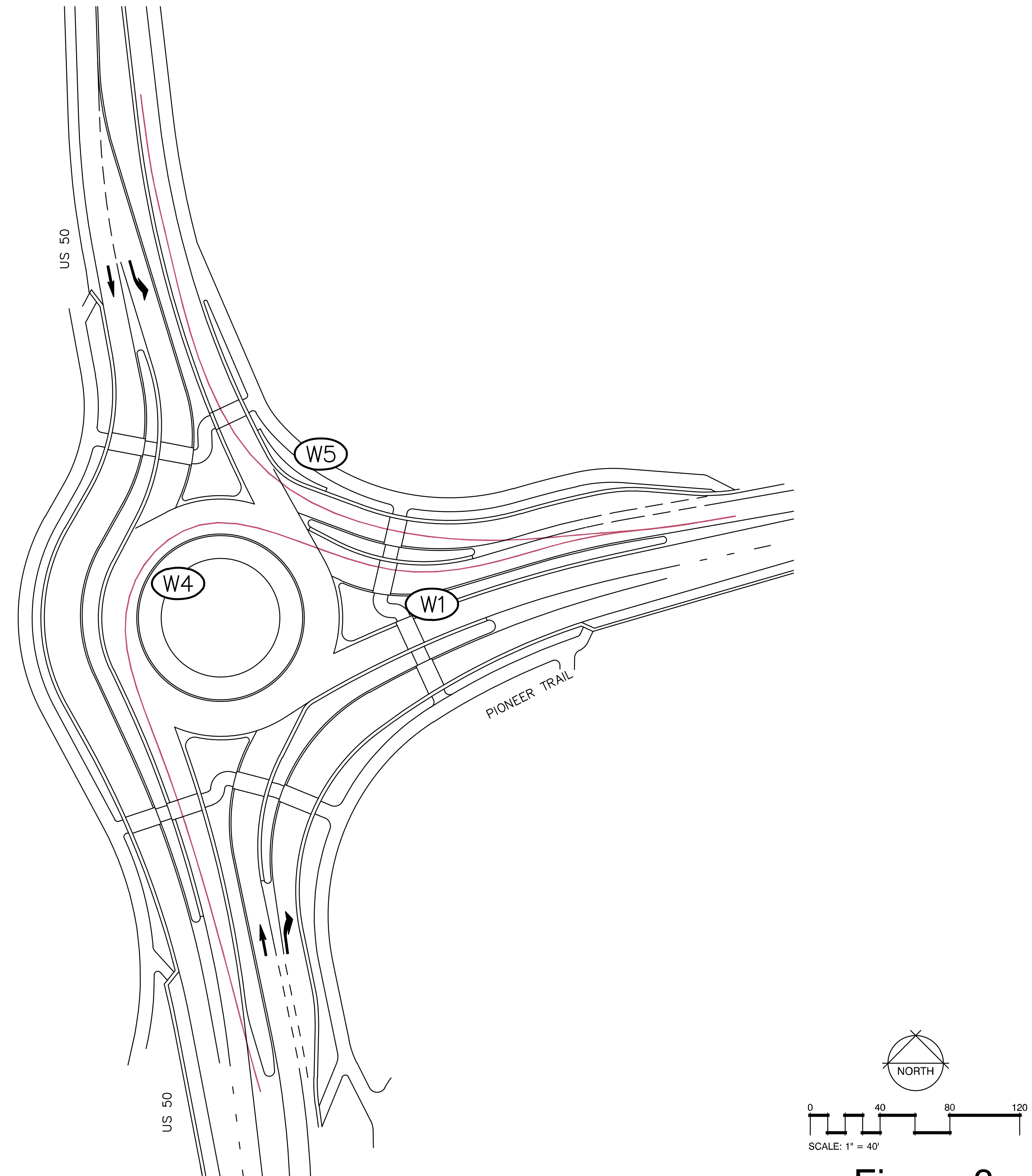
Fastpath (WB)

LEGEND:
FAST PATH
D# FAST PATH SPEED IDENTIFIER



Movement	Westbound Pioneer Trail Radius (ft)	Westbound Pioneer Trail Speed (W#)
Entering (V1)	156.4	24.2
Circulating (V2)	N/A	N/A
Exiting (V3)	N/A	N/A
Left Turn (V4)	53.7	15.0
Right Turn (V5)	161.1	24.5

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.
As acceleration potential of vehicle determines actual exiting speed, V3 presented is a conservative estimate.
N/A = Fastest path speed does not exist for this approach
2% cross-slope assumed for determining Fastest path

Figure 3

Pioneer Trail/US50 Intersection Safety Improvement Project

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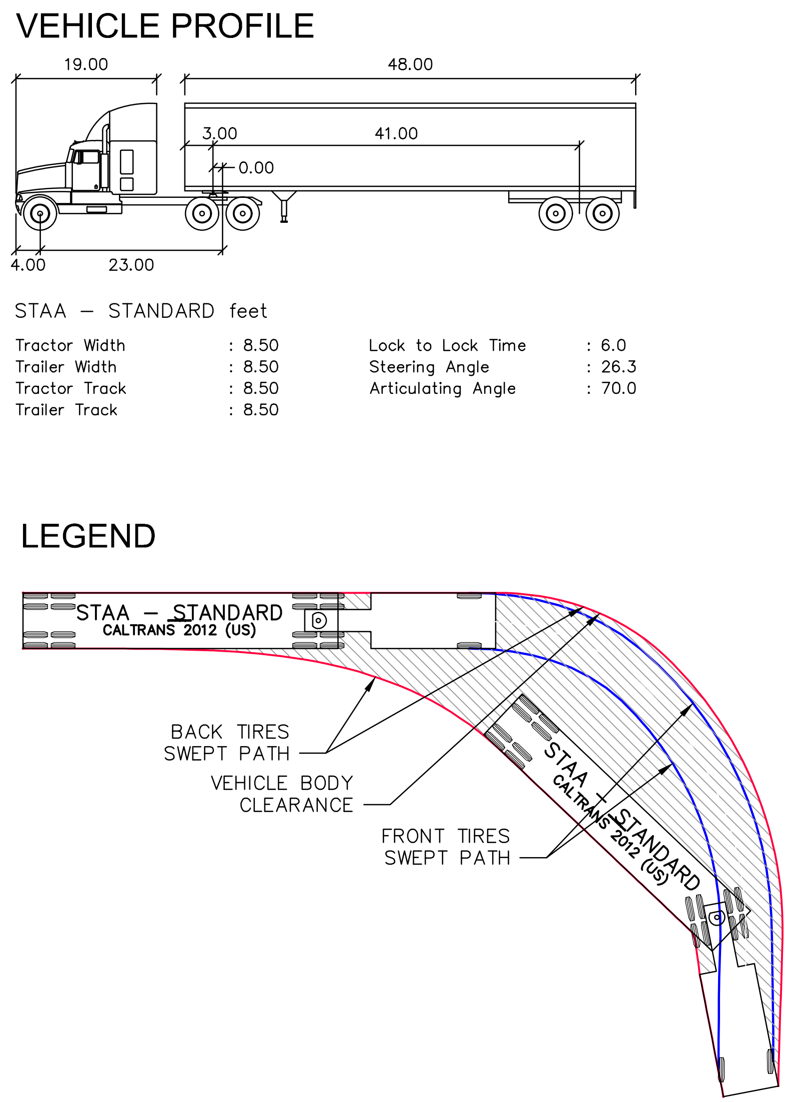
Meyers, California

STAA Truck Turns (NB)



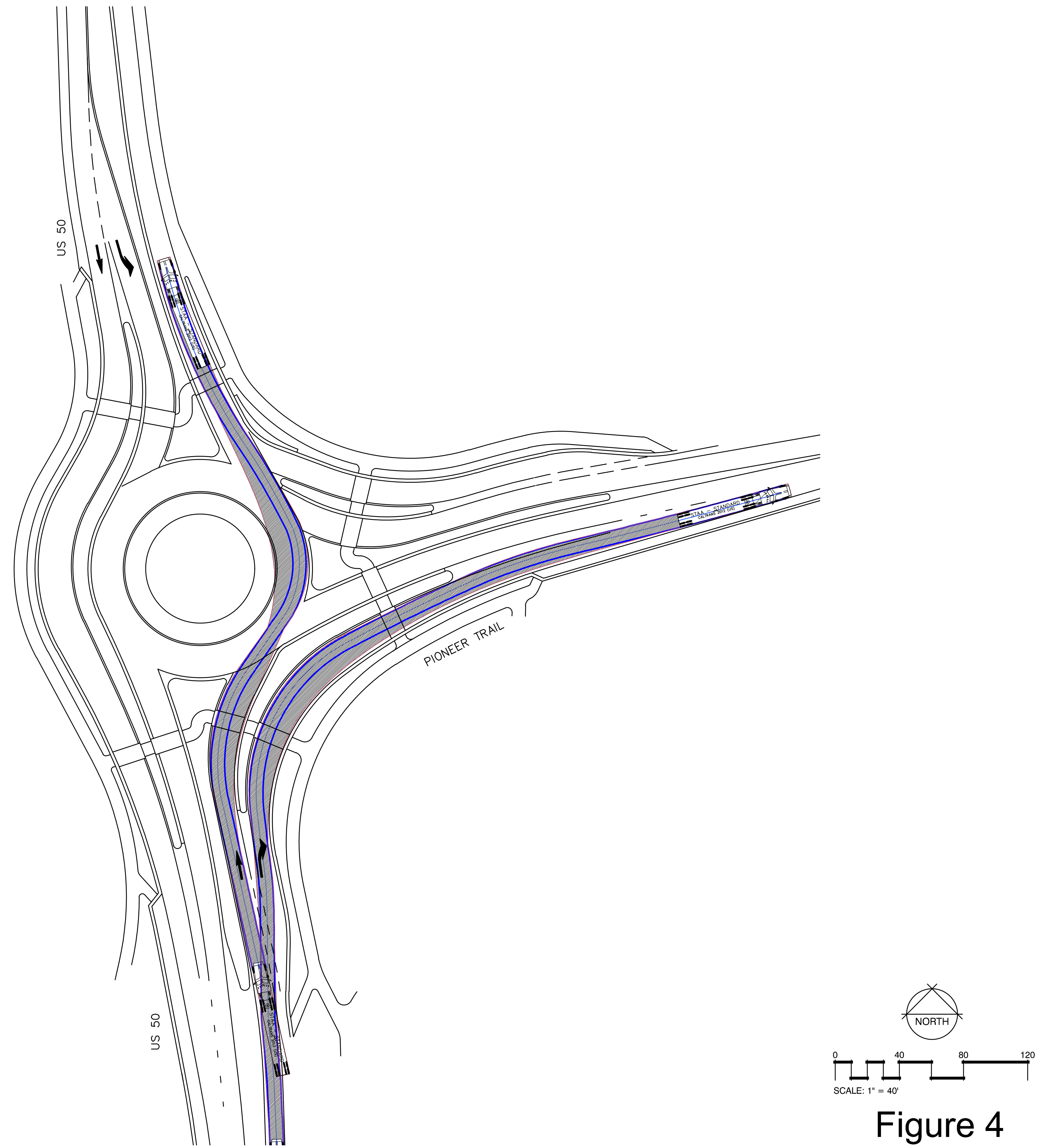


Figure 4

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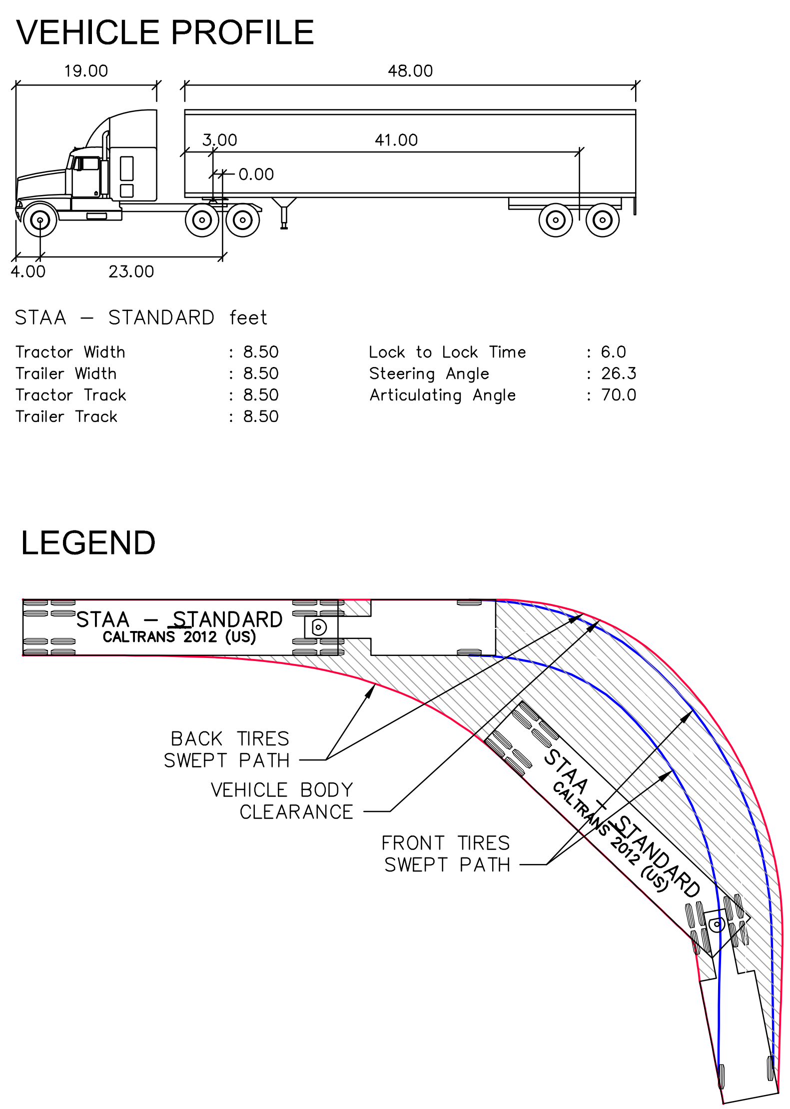
STAA Truck Turns (SB)



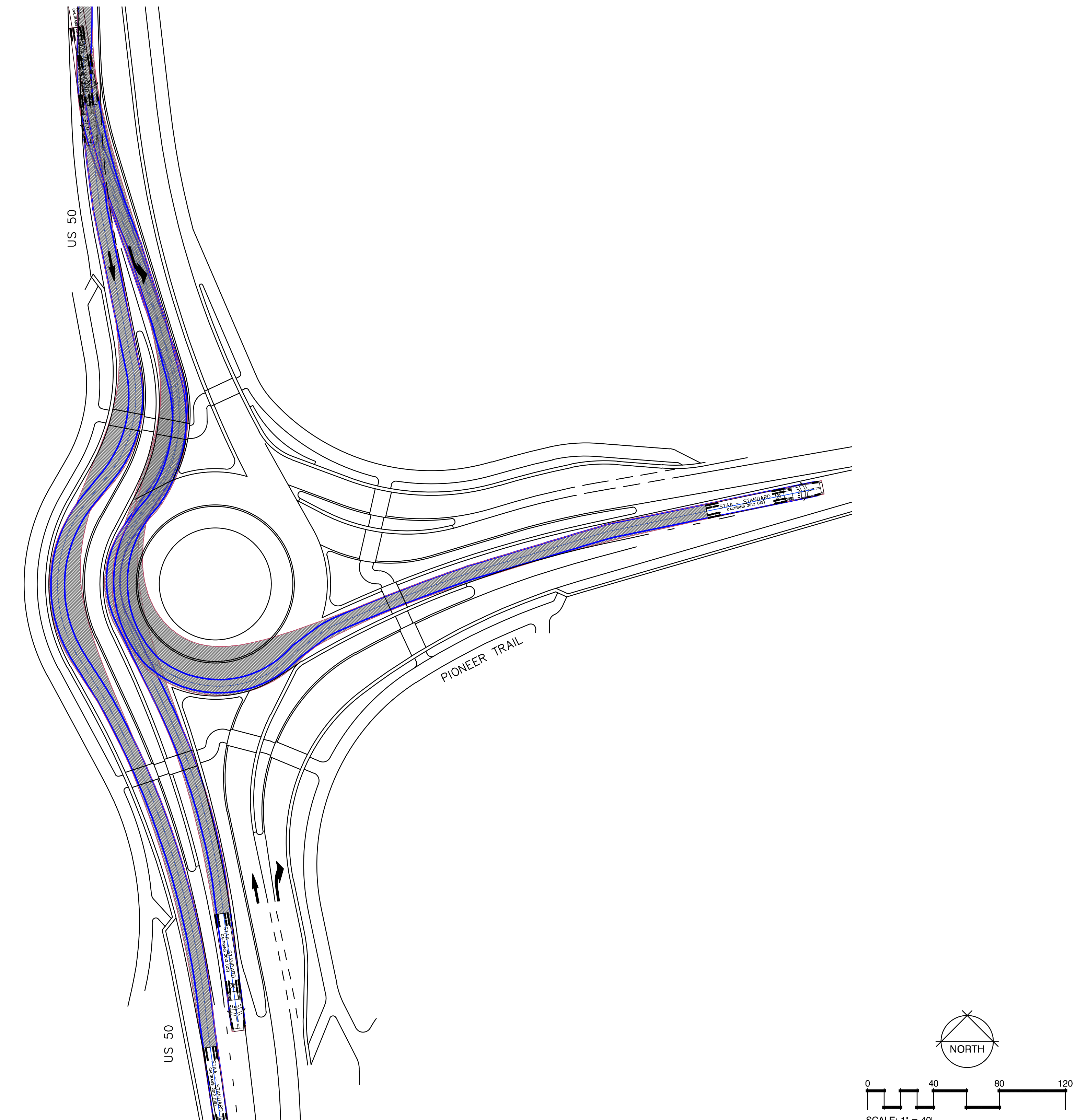


Figure 5

Pioneer Trail/US50 Intersection Safety Improvement Project

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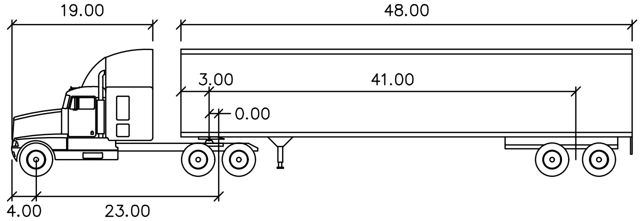
STAA Truck Turns (WB)

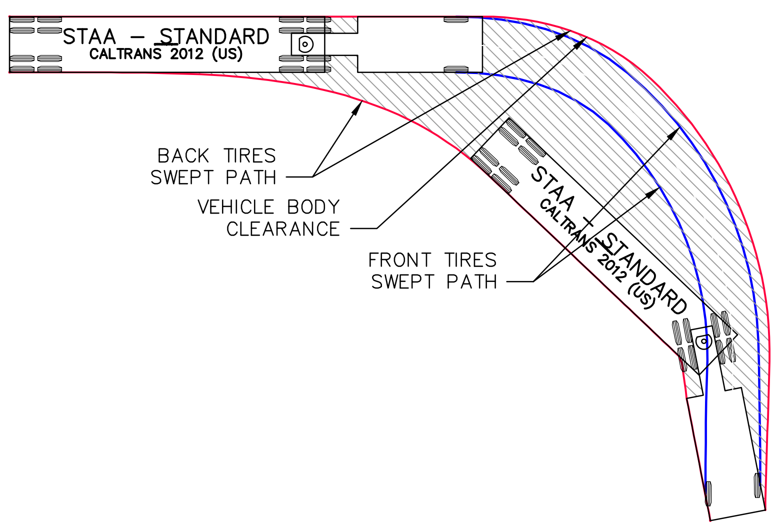
VEHICLE PROFILE

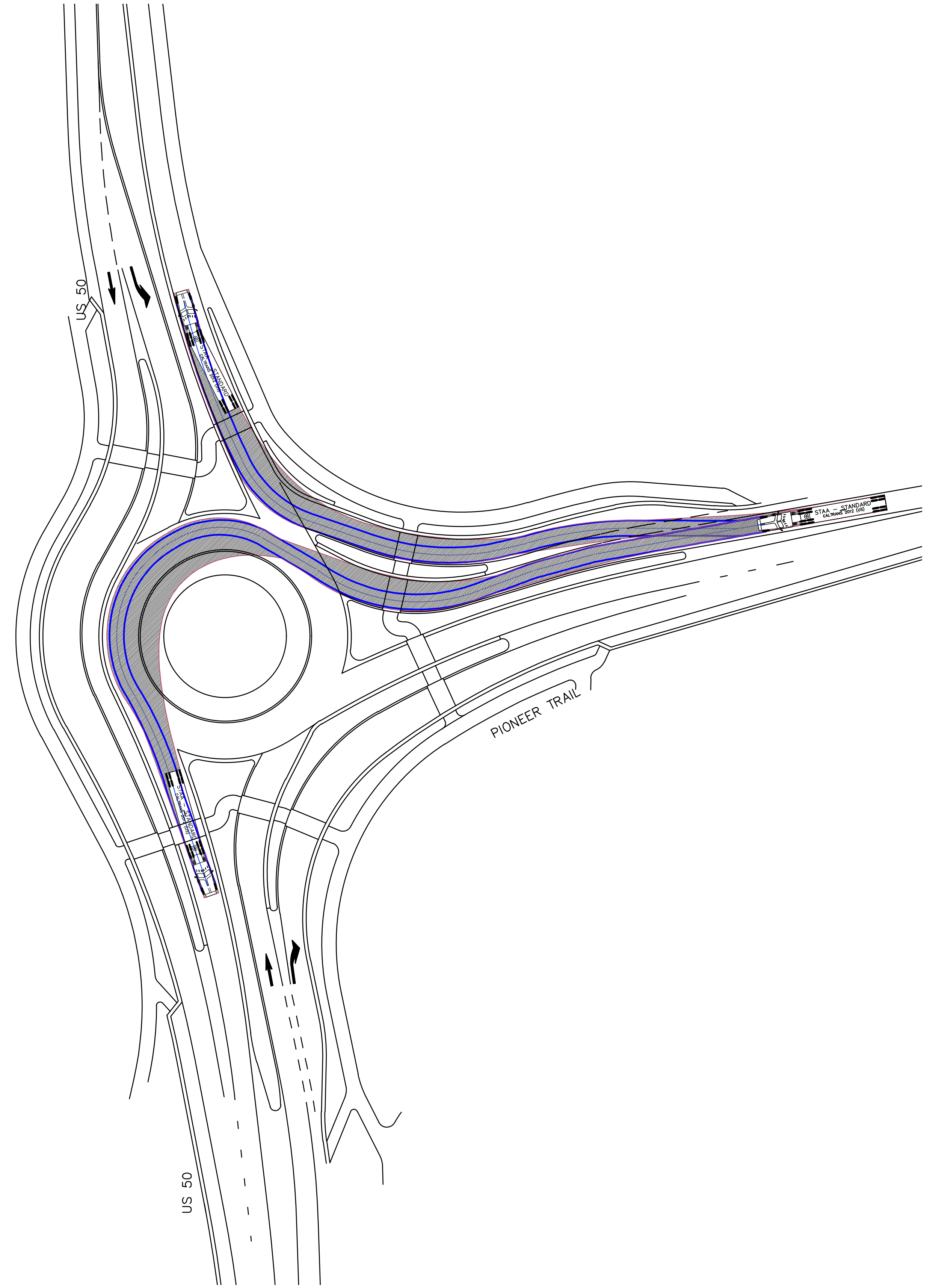


STAA — STANDARD feet

Tractor Width	: 8.50	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 26.3
Tractor Track	: 8.50	Articulating Angle	: 70.0
Trailer Track	: 8.50		

LEGEND





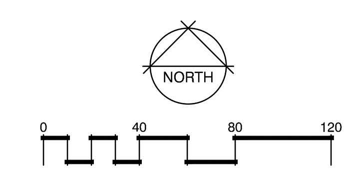


Figure 6

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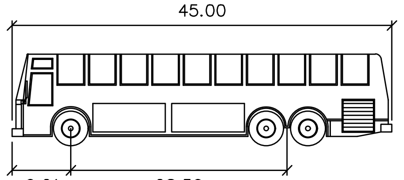
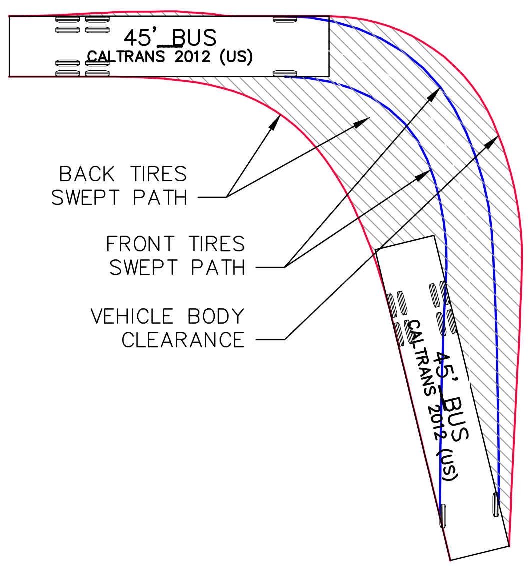
BUS 45 TURNS (NB)

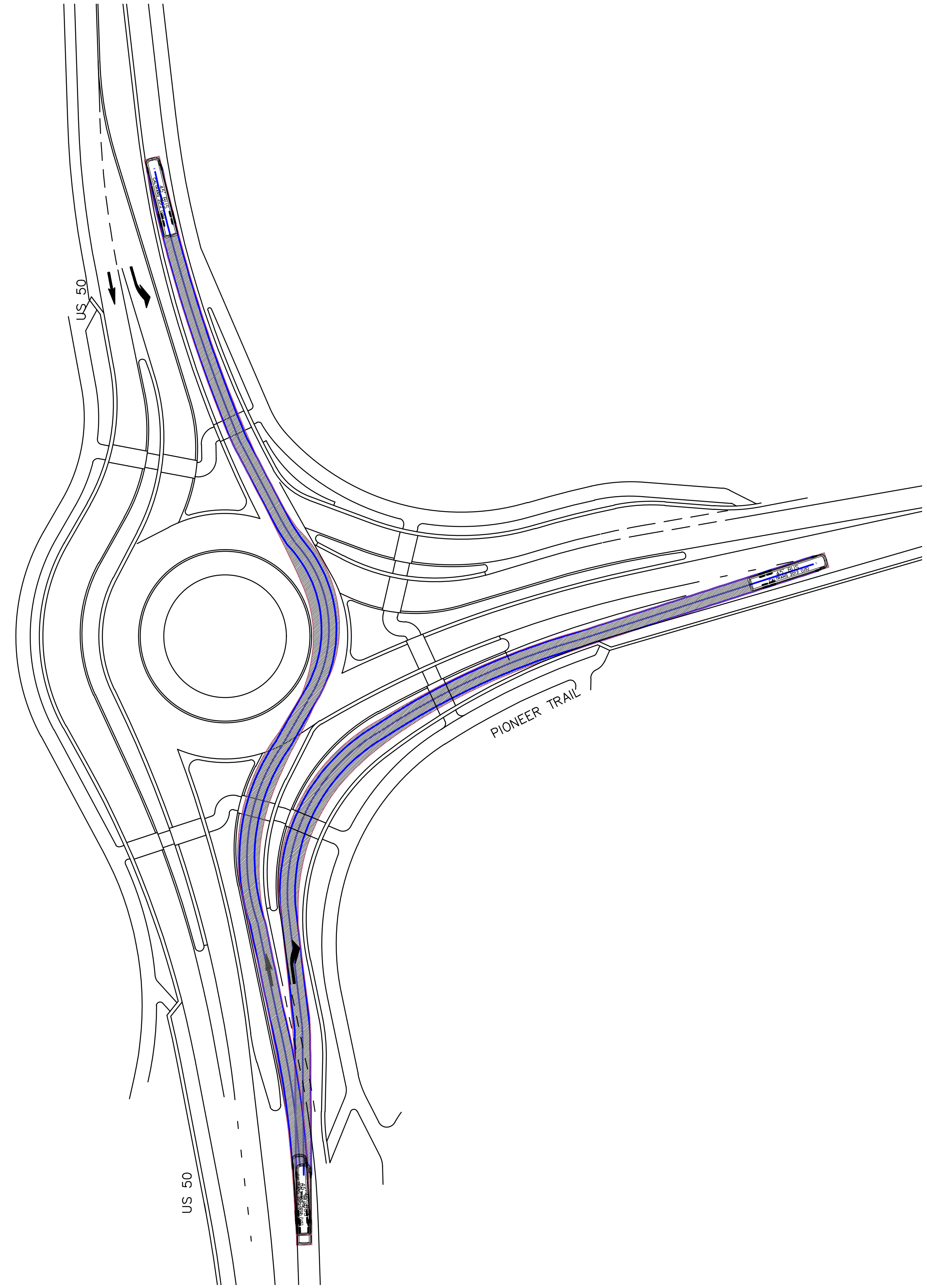
VEHICLE PROFILE



45' BUS	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 44.3

LEGEND





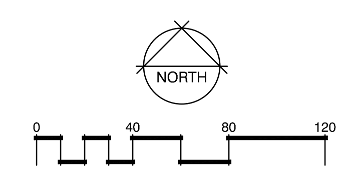


Figure 7

Pioneer Trail/US50 Intersection Safety Improvement Project

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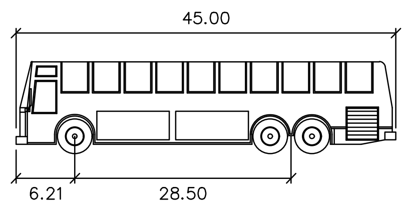
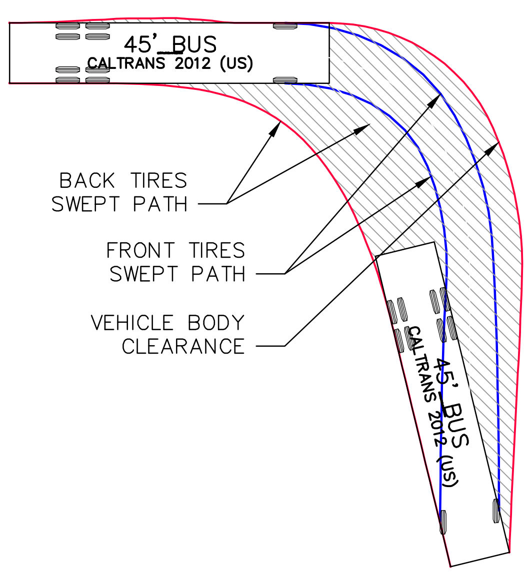
BUS 45 TURNS (SB)

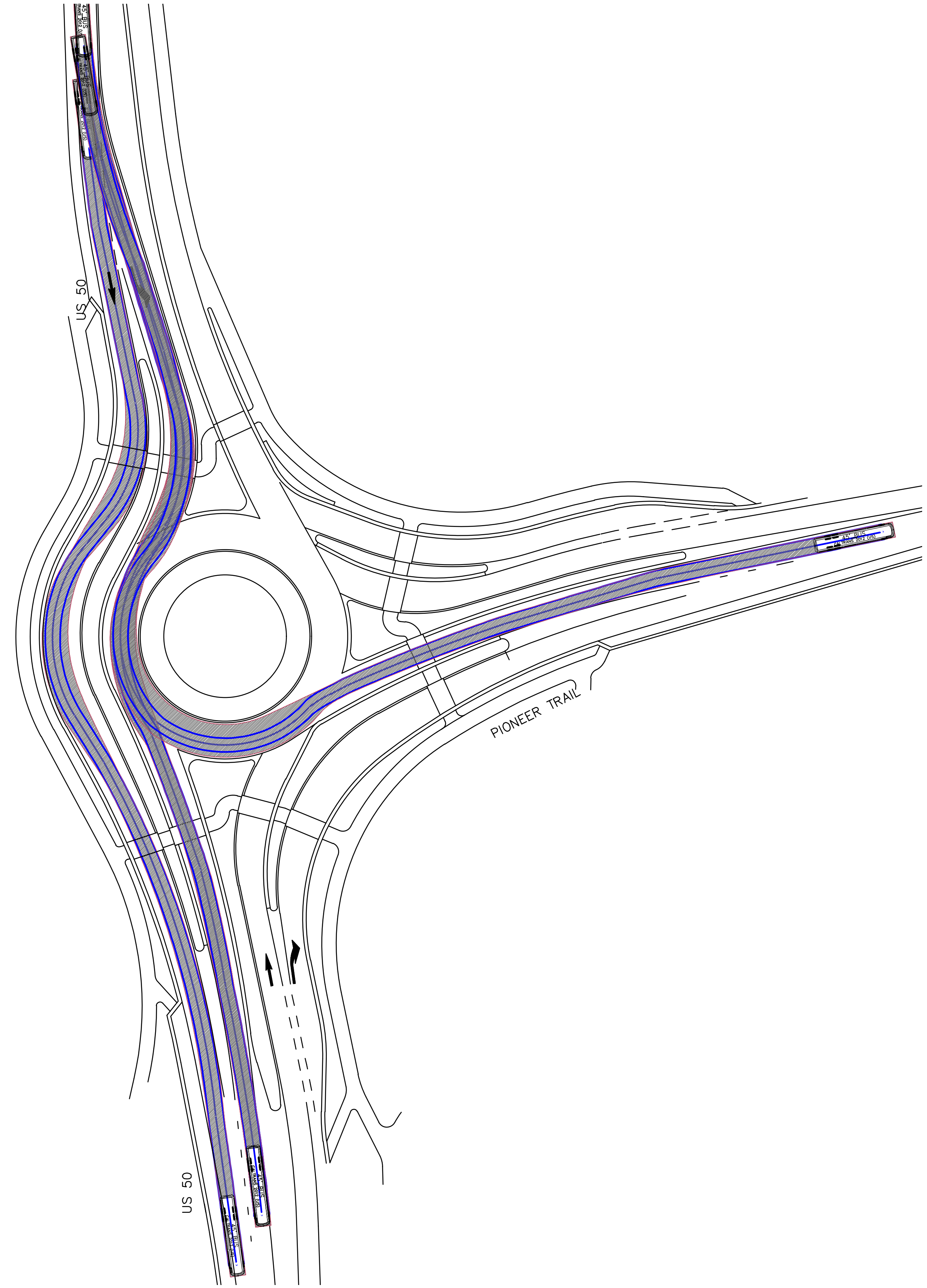
VEHICLE PROFILE



45' BUS	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 44.3

LEGEND





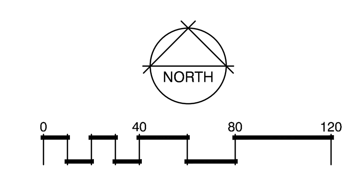


Figure 8

Pioneer Trail/US50 Intersection Safety Improvement Project

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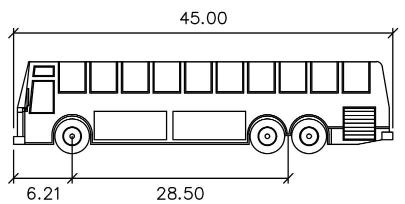
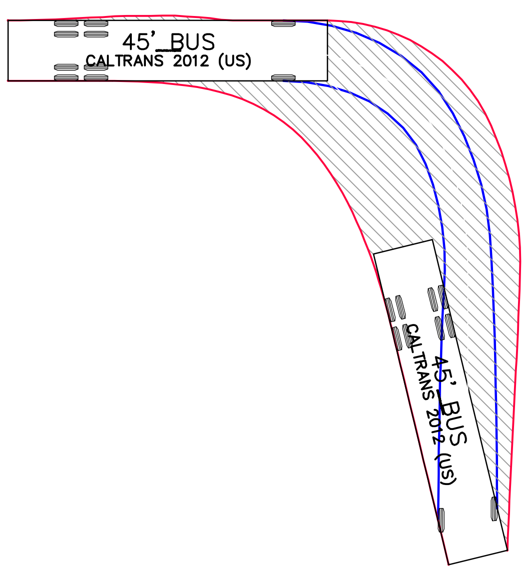
BUS 45 TURNS (WB)

VEHICLE PROFILE



45' BUS	feet
Width	: 8.50
Track	: 8.50
Lock to Lock Time	: 6.0
Steering Angle	: 44.3

LEGEND



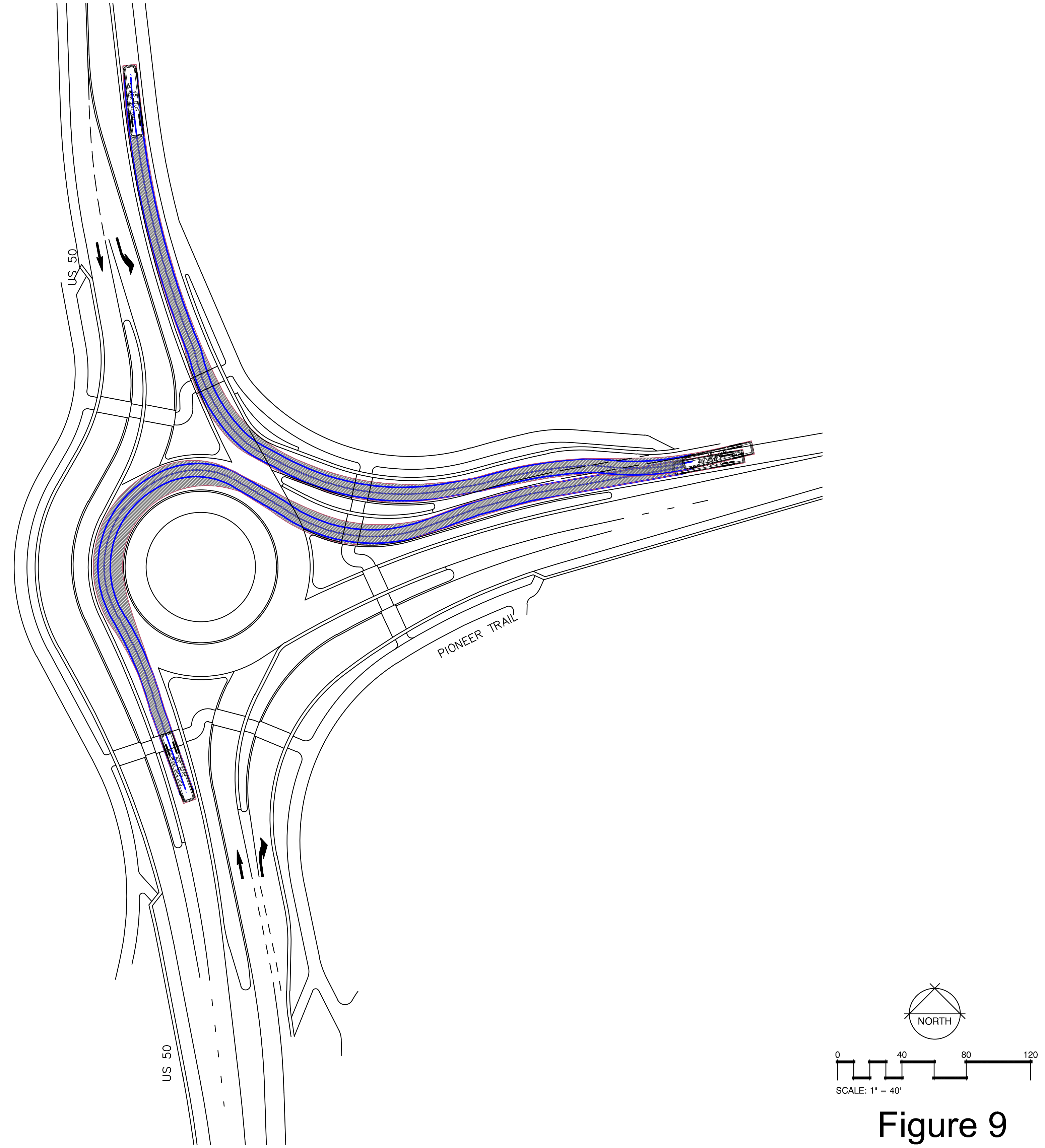


Figure 9

Pioneer Trail/US50 Intersection Safety Improvement Project

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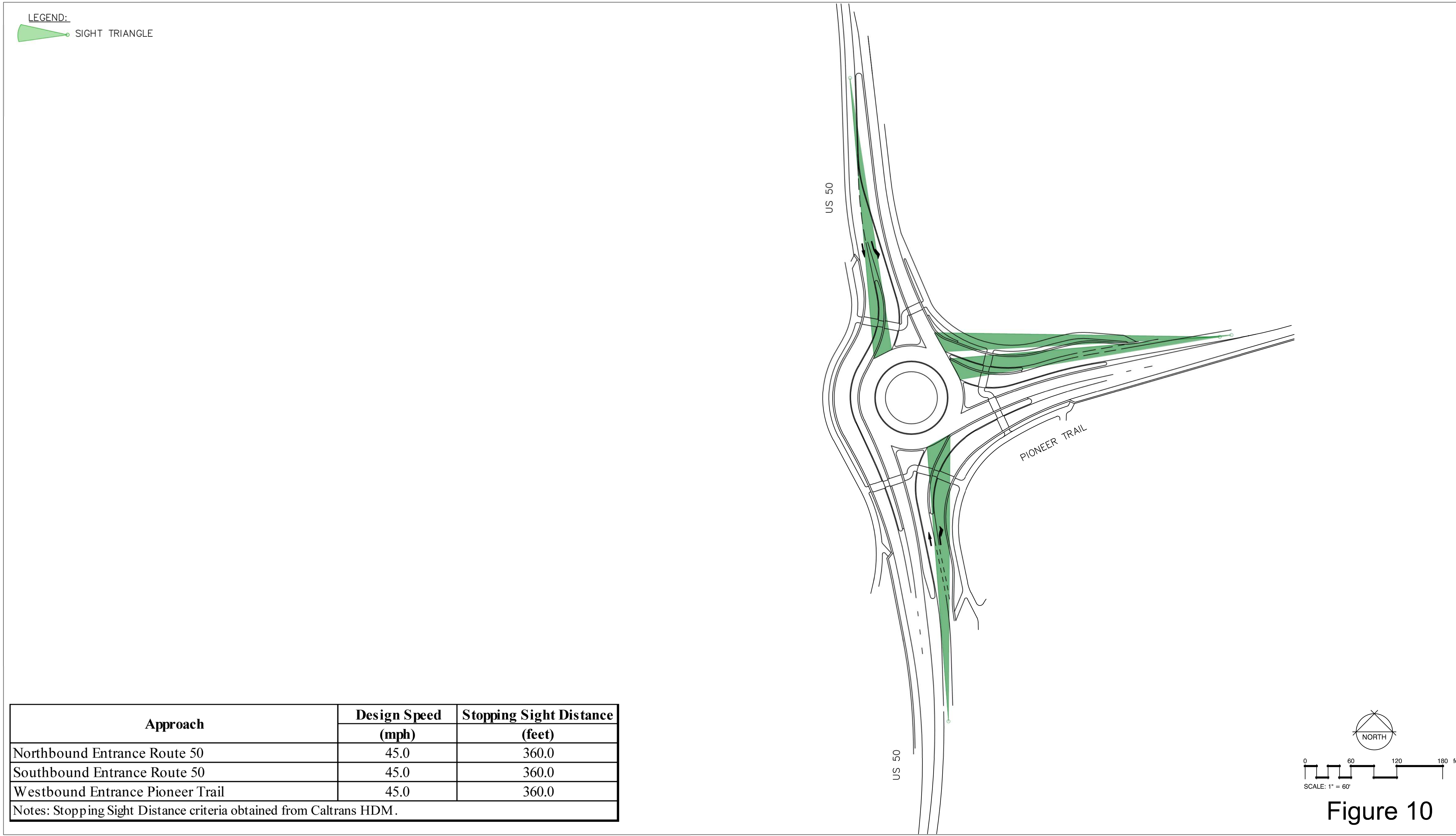
STOPPING SIGHT DISTANCE - YIELD LINE



Approach	Design Speed (mph)	Stopping Sight Distance (feet)
Northbound Entrance Route 50	45.0	360.0
Southbound Entrance Route 50	45.0	360.0
Westbound Entrance Pioneer Trail	45.0	360.0
Notes: Stopping Sight Distance criteria obtained from Caltrans HDM.		

Figure 10

Pioneer Trail/US50 Intersection Safety Improvement Project

Meyers, California

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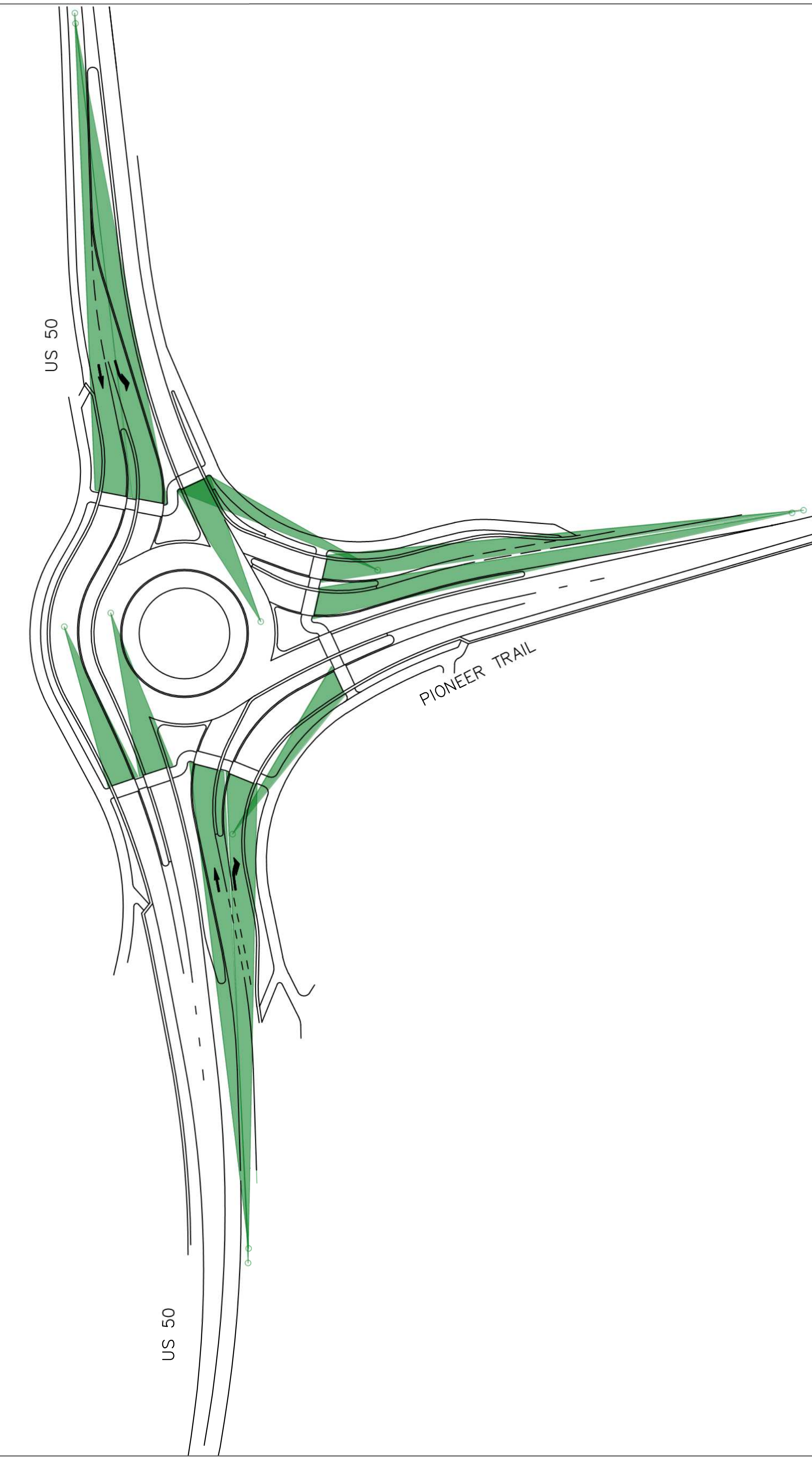
STOPPING SIGHT DISTANCE - PEDESTRIANS

LEGEND:
SIGHT TRIANGLE



Approach	Design Speed (mph)	Stopping Sight Distance (feet)
Northbound Entrance Route 50	45.0	360.0
Northbound Circulating from Route 50 (V2)	18.2	115.8
Northbound Right from Route 50	20.9	129.4
Southbound Entrance Route 50	45.0	360.0
Southbound Circulating Route 50 (V2)	19.7	123.3
Southbound Entrance from Route 50 Bypass	45.0	360.0
Southbound Circulating from Route 50 Bypass (V2)	20.0	125.2
Westbound Entrance from Pioneer Trail	45.0	360.0
Westbound Right from Pioneer Trail (V5)	24.5	147.4
Notes: 1. Stopping Sight Distance criteria obtained from Caltrans HDM. 2. To be conservative, fastpath speeds were used for right turn movements.		

NORTH

0 60 120 180 feet
SCALE: 1" = 60'

Figure 11

Pioneer Trail/US50 Intersection Safety Improvement Project

Meyers, California

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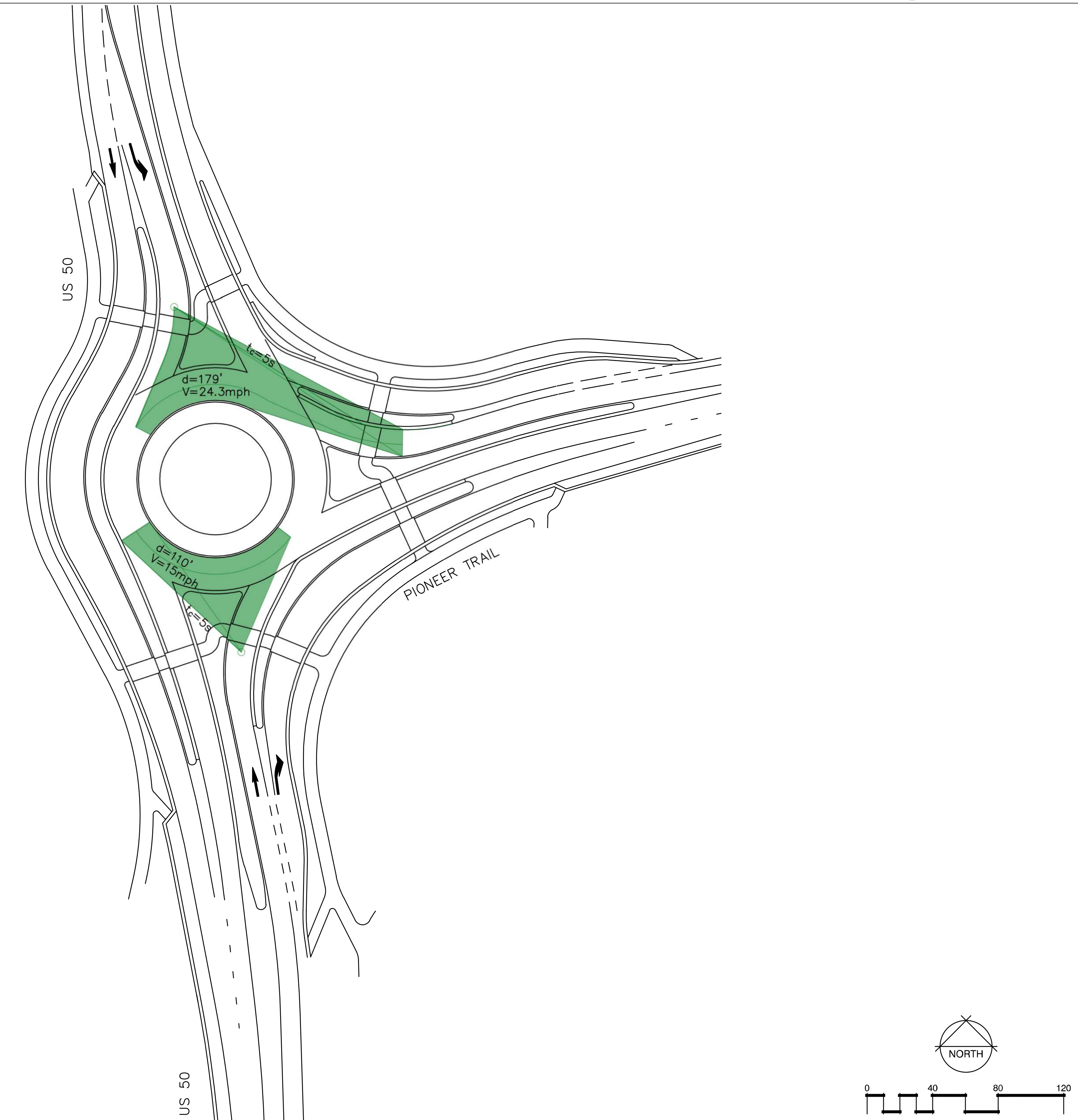
INTERSECTION SIGHT DISTANCE (NB/SB)

LEGEND:

SIGHT TRIANGLE

t_c	CRITICAL HEADWAY FOR ENTERING THE MAJOR ROADS
V	DESIGN SPEED (R4) OF CONFLICTING MOVEMENT (MPH)
d	LENGTH OF ENTERING/CIRCULATING LEG OF SIGHT TRIANGLE

NOTE:
FOR CALCULATING THE SIGHT TRIANGLE FOR SOUTHBOUND TRAFFIC THE WESTBOUND LEFT LEFT TURN FASTPATH SPEED WAS USED DUE TO A LACK OF CIRCULATING CONFLICT SPEED.



Approach	Conflicting Speed (mph)	Sight Triangle Length (feet)
Northbound Route 50		
Entering Leg (D1, N/A)	N/A	N/A
Circulating Leg (D2, Northbound Route 50)	15.0	110.2
Southbound Route 50		
Entering Leg (D1, Pioneer Trail)	24.3	178.7
Circulating Leg (D2, N/A)	N/A	N/A
Notes: Intersection Sight Distance criteria obtained from NCHRP Report 672 with 5.0 second Critical Headway (tc)		

Figure 12

Pioneer Trail/US50 Intersection Safety Improvement Project

Meyers, California

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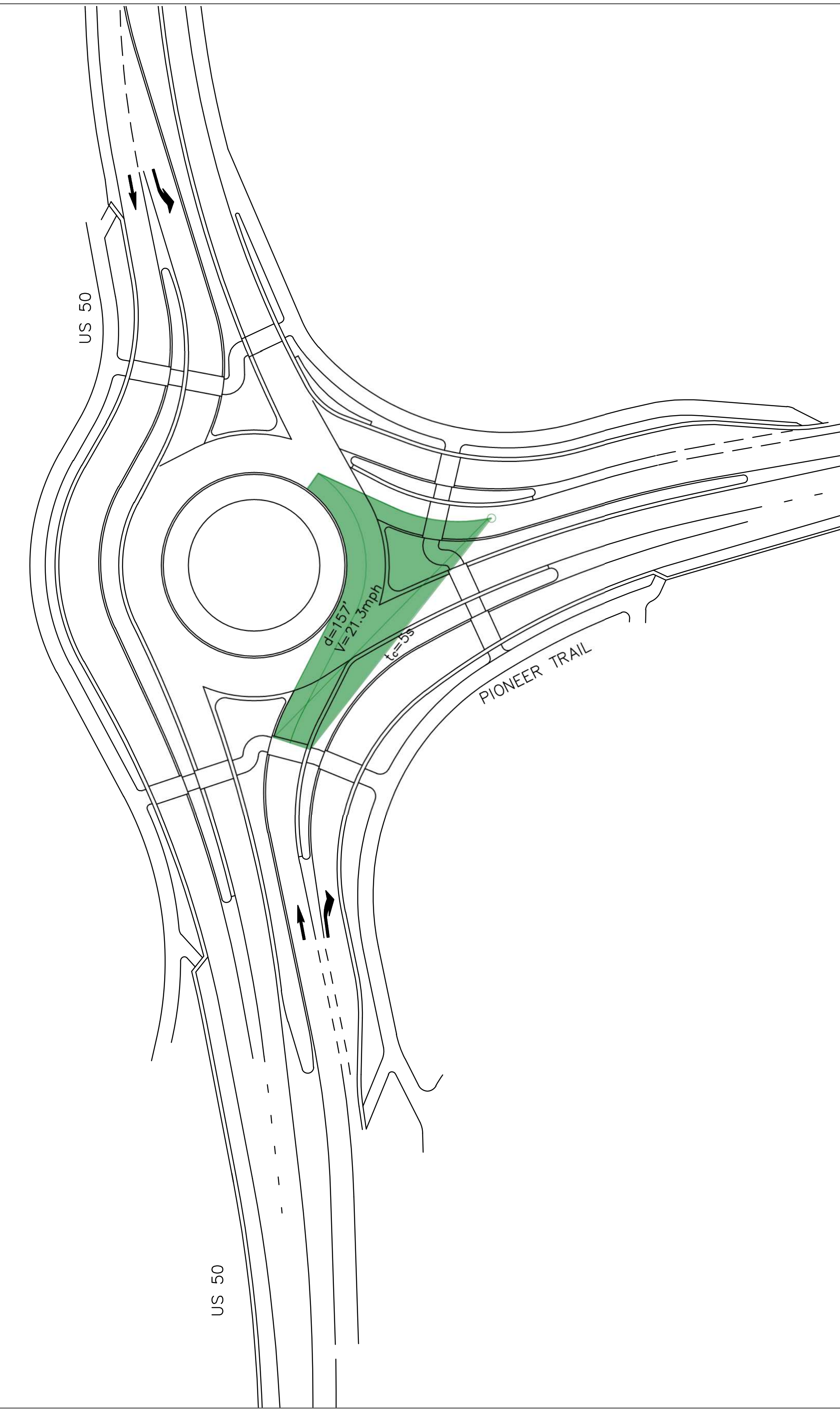
INTERSECTION SIGHT DISTANCE (WB)

LEGEND:

SIGHT TRIANGLE

t_c CRITICAL HEADWAY FOR ENTERING THE MAJOR ROADS
V DESIGN SPEED (R4) OF CONFLICTING MOVEMENT (MPH)
d LENGTH OF ENTERING/CIRCULATING LEG OF SIGHT TRIANGLE



Approach	Conflicting Speed (mph)	Sight Triangle Length (feet)
Westbound Pioneer Trail		
Entering Leg (D1, Southbound Route 50)	21.3	156.5
Circulating Leg (D2, N/A)	N/A	N/A
Notes: Intersection Sight Distance criteria obtained from NCHRP Report 672 with 5.0 second Critical Headway (tc)		

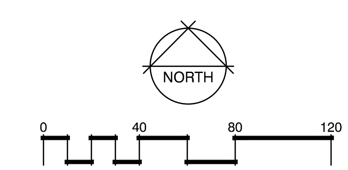


Figure 13

Pioneer Trail/US50 Intersection Safety Improvement Project

Meyers, California

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INTERSECTION VIEW ANGLES

NOTE:

VALUES SHOWN ARE THE ANGLE FOR THE DRIVER TO VIEW ONCOMING TRAFFIC WITHIN THE CIRCULATORY ROADWAY AND AT THE ROUNDABOUT ENTRANCE PER NCHRP 672 GUIDELINES. VIEW ANGLES SHOULD BE EQUAL TO OR GREATER THAN 75°.

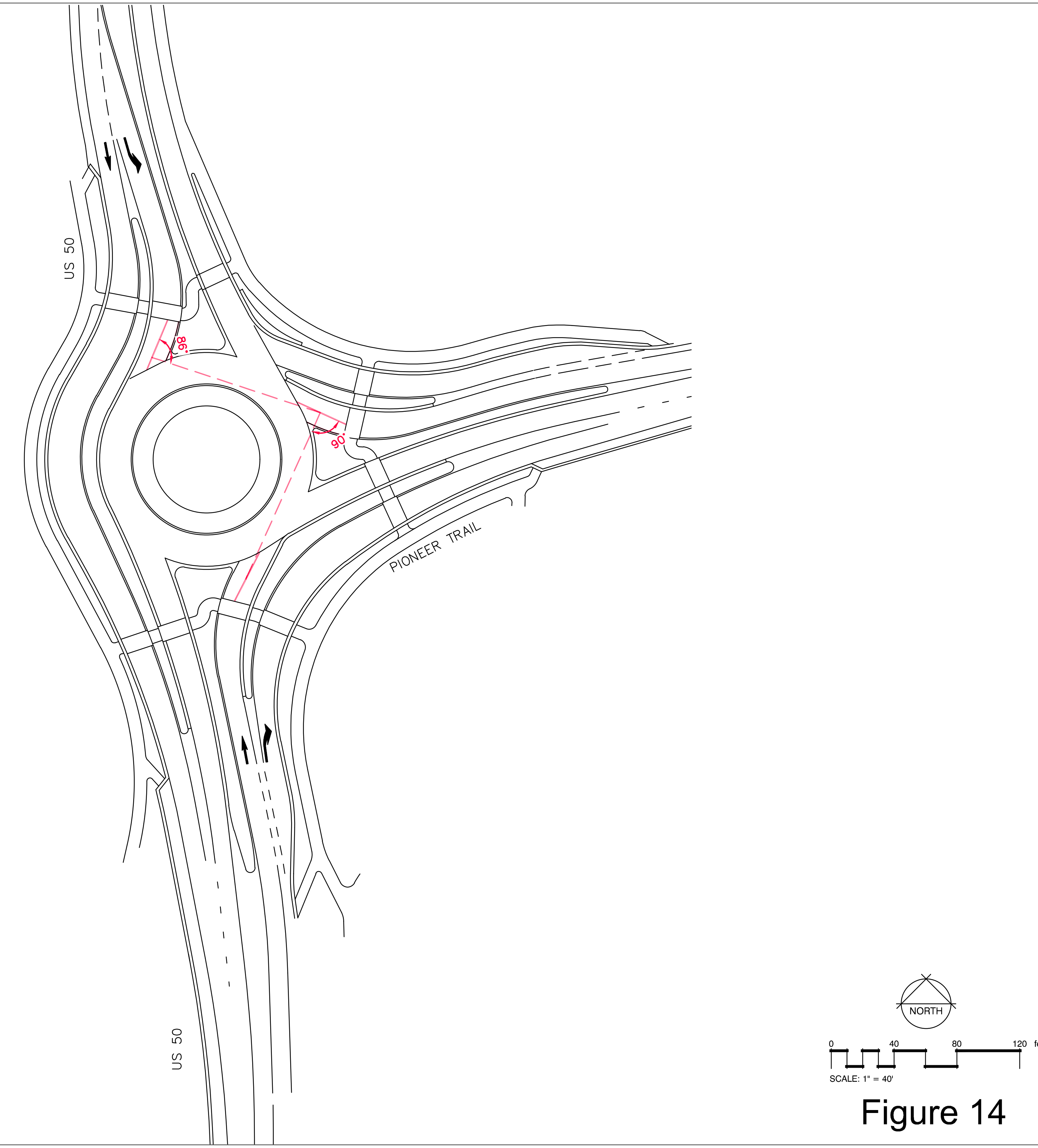

Figure 14

Pioneer Trail/US50 Intersection Safety Improvement Project

Meyers, California

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December, 2019

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Appendix D. Cost Estimates and Life Cycle Costs

Preliminary Cost Estimate

US 50 at Pioneer Trail Intersection Safety Improvement Project

Type of Estimate : Planning Level (PSR)
Program Code :
Project Limits : US 50 at Pioneer Trail Intersection
Description: Single lane roundabout with southbound bypass lane
Scope : Assumes 25% of existing pavement is overlaid with 3" HMA, 9"/24" in new pavement areas
Alternative :

	Current Cost	Escalated Cost
ROADWAY ITEMS	**$ 5,245,500**	**$ 5,245,500**
STRUCTURE ITEMS	**$ -**	**$ -**
SUBTOTAL CONSTRUCTION COST	**$ 5,245,500**	**$ 5,245,500**
RIGHT OF WAY	**$ -**	**$ -**
TOTAL CAPITAL OUTLAY COST	**$ 5,246,000**	**$ 5,246,000**
PR/ED SUPPORT	**$ -**	**$ -**
PS&E SUPPORT	**$ -**	**$ -**
RIGHT OF WAY SUPPORT	**$ -**	**$ -**
CONSTRUCTION SUPPORT	**$ -**	**$ -**
TOTAL CAPITAL OUTLAY SUPPORT COST*	**$ -**	**$ -**
TOTAL PROJECT COST	**$ 5,250,000**	**$ 5,250,000**

If Project has been programmed enter Programmed Amount $ -

	Month / Year
Date of Estimate (Month/Year)	1 / 2020
Estimated Date of Construction Start (Month/Year)	6 / 2022
Number of Working Days	150 Working Days
Estimated Mid-Point of Construction (Month/Year)	10 2022
Number of Plant Establishment Days	Days

Estimated Project Schedule

PID Approval	March-20
PA/ED Approval	December-20
PS&E	December-21
RTL	February-22
Begin Construction	June-22

Approved by Project Manager

Project Manager	Date	Phone
		(xxx) xxx-xxxx

I. ROADWAY ITEMS SUMMARY

	Section	Cost
1	Earthwork	$ 457,200
2	Pavement Structural Section	$ 1,534,400
3	Drainage	$ 255,100
4	Specialty Items	$ 196,300
5	Environmental	$ 315,300
6	Traffic Items	$ 728,200
7	Detours	$ 95,000
8	Minor Items	$ 179,100
9	Roadway Mobilization	$ 376,100
10	Supplemental Work	$ 341,600
11	State Furnished	$ 83,000
12	Contingencies	$ 684,200
13	Overhead	$ -

TOTAL ROADWAY ITEMS	$ 5,245,500

	Name and Title	Date	Phone
Estimate Prepared By	Ron Boyle P.E.	1/14/2020	916 782 8688
Estimate Reviewed By			

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	1	x	18,250.00	=	$	18,250
190101	Roadway Excavation	CY	7,928	x	41.00	=	$	325,048
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	Impored Borrow	CY	426	x	150.00	=	$	63,900
198007	Imported Material (Shoulder Backing)	TON		x		=	$	-

TOTAL EARTHWORK SECTION ITEMS	**$**	**457,200**

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code		Unit	Quantity		Unit Price ($)			Cost
150771	Remove Asphalt Concrete Dike	LF		x		=	$	-
150860	Remove Base and Surfacing	CY		x	68.00	=	$	-
153103	Cold Plane Asphalt Concrete Pavement	SQYD	2,023	x	10.00	=	$	20,230
1532XX	Remove Concrete (type)	CY		x		=	$	-
250401	Class 4 Aggregate Subbase	CY		x		=	$	-
260201	Class 2 Aggregate Base	CY	6,072	x	81.00	=	$	491,832
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	4,758	x	180.00	=	$	856,440
390136	Minor Hot Mix Asphalt	TON		x		=	$	-
390137	Rubberized Hot Mix Asphalt (Gap Graded)	TON		x		=	$	-
393003	Geosynthetic Pavement Interlayer	SQYD	10,747	x	9.50	=	$	102,097
39405X	Shoulder Rumber Strip *(HMA, Type XX Indentation)*	STA		x		=	$	-
394071	Place Hot Mix Asphalt Dike	LF		x		=	$	-
394090	Place Hot Mix Asphalt (Misc. Area)	SQYD		x		=	$	-
397005	Tack Coat	TON	5	x	2,600.00	=	$	13,000
401000	Concrete Pavement (truck apron)	CY	71	x	715.00	=	$	50,765
401108	Replace Concrete Pavement (Rapid Strength Concrete)	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		=	$	-
XXXXXX	Some Item			x		=	$	-

TOTAL STRUCTURAL SECTION ITEMS	**$**	**1,534,400**

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	18" Plastic Pipe	LF	800	x	75.00	=	$	60,000
65XXXX	XXX" RCP Pipe	LF		x		=	$	-
66XXXX	XXX" CSP Pipe	LF		x		=	$	-
68XXXX	Edge Drain	LF		x		=	$	-
69XXXX	XXX" Pipe Downdrain	LF		x		=	$	-
70XXXX	XXX" Pipe Inlet	LF		x		=	$	-
70XXXX	XXX" Pipe Riser	LF		x		=	$	-
70XXXX	XXX" Flared End Section	EA	3	x	1,200.00	=	$	3,600
703233	Grated Line Drain	LF		x		=	$	-
72XXXX	Rock Slope Protection (Type and Method)	CY	15	x	100.00	=	$	1,500
721420	Concrete (Ditch Lining)	CY		x		=	$	-
721430	Concrete (Channel Lining)	CY		x		=	$	-
729010	Rock Slope Protection Fabric	SQYD		x		=	$	-
750001	Miscellaneous Iron and Steel	LB		x	4.75	=	$	-
XXXXXX	Additional Drainage - Water Quality	LS	1	x	100,000.00	=	$	100,000
510094	Structural Concrete Drainage Inlet	EA	20	x	4,500.00	=	$	90,000

TOTAL DRAINAGE ITEMS $ 255,100

SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price ($)			Cost
070012	Progress Schedule (Critical Path Method)	LS	1	x	4,500.00	=	$	4,500
150662	Remove Metal Beam Guard Railing	LF		x		=	$	-
150668	Remove Terminal Systems	EA		x		=	$	-
1532XX	Remove Barrier (*Insert Type)*	LF		x		=	$	-
153250	Remove Sound Wall	SQFT		x		=	$	-
190110	Lead Compliance Plan	LS	1	x	3,000.00	=	$	3,000
49XXXX	CIDH Concrete Piling *(Insert Diameter)*	LF		x		=	$	-
510060	Structural Concrete (Retaining Wall)	CY		x		=	$	-
731504	Minor Concrete (curb and Gutter)	CY	94	x	853.00	=	$	80,182
731511	Minor Concrete (Island Paving)	CY	84	x	933.00	=	$	78,372
5110XX	Architectural Treatment *(Insert Type)*	SQFT		x		=	$	-
511048	Apply Anti-Graffiti Coating	SQFT		x		=	$	-
5136XX	Reinforced Concrete Crib Wall *(Insert Type)*	SQFT		x		=	$	-
518002	Sound Wall (Masonry Block)	SQFT		x		=	$	-
520103	Bar Reinf. Steel (Retaining Wall)	LB		x		=	$	-
80XXXX	Fence (*Insert Type*)	LF		x		=	$	-
832001	Metal Beam Guard Railing	LF		x		=	$	-
839310	Double Thrie Beam Barrier	LF		x		=	$	-
839521	Cable Railing	LF		x		=	$	-
83954X	Transition Railing *(Insert Type)*	EA		x		=	$	-
8395XX	Terminal System (Type CAT)	EA		x		=	$	-
8395XX	Alternative Flared Terminal System	EA		x		=	$	-
8395XX	End Anchor Assembly (*Insert Type*)	EA		x		=	$	-
839561	Rail Tensioning Assembly	EA		x		=	$	-
839XXX	Crash Cushion *(Insert Type)*	EA		x		=	$	-
83XXXX	Concrete Barrier *(Insert Type)*	LF		x		=	$	-
730070	Dectectable Warning Surface	SQFT	630	x	48.00	=	$	30,240

TOTAL SPECIALTY ITEMS $ 196,300

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

m code		Unit	Quantity		Unit Price ($)			Cost
	Biological Mitigation	LS		x		=	$	-
071325	TEMPORARY REINFORCED SILT FENCE	LF	1,200	x	5.00	=	$	6,000
071325	Temporary Fence (Type ESA)	LF	1,900	x	8.00	=	$	15,200

Subtotal Environmental *$ 6,000*

5B - LANDSCAPE AND IRRIGATION

m code		Unit	Quantity		Unit Price ($)			Cost
200001	Highway Planting	LS		x		=	$	-
20XXXX	XXX" (*Insert Type*) Conduit *(Use for Irrigation x-overs)*	LF		x		=	$	-
20XXXX	Extend XXX" *(Insert Type)* Conduit *Use for Extension of Irrigation x-overs)*	LF		x		=	$	-
201700	Imported Topsoil	CY		x		=	$	-
2030XX	Erosion Control (Type __)	SQYD	6,207	x	2.70	=	$	16,759
203021	Fiber Rolls	LF		x	15.00	=	$	-
203026	Move In/ Move Out (Erosion Control)	EA	6	x	500.00	=	$	3,000
204099	Plant Establishment Work	LS		x		=	$	-
205035	Wood Mulch	CY	228	x	120.00	=	$	27,360
208000	Irrigation System	LS		x		=	$	-
208304	Water Meter	EA		x		=	$	-
209801	Maintenance Vehicle Pullout	EA		x		=	$	-
036370	Unmortared Rock Blanket	SF	6,860	x	9.50	=	$	65,170
036376	Boulder	EA	12	x	800.00	=	$	9,600

Subtotal Landscape and Irrigation *$ 47,119*

5C - NPDES

m code		Unit	Quantity		Unit Price ($)			Cost
074016	Construction Site Management	LS	1	x	75,000.00	=	$	75,000
074017	Prepare WPCP	LS		x		=	$	-
074019	Prepare SWPPP	LS	1	x	3,200.00	=	$	3,200
130530	Temporary Hydraulic Mulch	SQYD	6,207	x	3.00	=	$	18,621
130570	Temporary Cover	SQYD	1,552	x	10.00	=	$	15,520
074028	Temporary Fiber Roll	LF	1,862	x	15.00	=	$	27,930
074032	Temporary Concrete Washout Facility	EA	1	x	5,000.00	=	$	5,000
074033	Temporary Construction Entrance	EA	1	x	5,000.00	=	$	5,000
074035	Temporary Check Dam	LF	100	x	13.00	=	$	1,300
074037	Move In/ Move Out (Temporary Erosion Control)	EA	6	x	600.00	=	$	3,600
074038	Temp. Drainage Inlet Protection	EA	6	x	325.00	=	$	1,950
074041	Street Sweeping	LS	1	x	100,000.00	=	$	100,000
074042	Temporary Concrete Washout (Portable)	LS	1	x	5,000.00	=	$	5,000
130310	Rain Event Action Plan	EA	9	x	500.00	=	$	4,500

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	1	x	3,500.00	=	$	3,500
XXXXXX	Some Item							

Subtotal NPDES (Without Supplemental Work) *$ 262,121*

*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 $ 315,300

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 System Elements During Construction	LS	1	x	5,000.00	=	$	5,000
860810	Inductive Loop Detectors	EA		x		=	$	-
86055X	Lighting & Sign Illumination	LS	1	x	100,000.00	=	$	100,000
8607XX	Interconnection Facilities	LS		x		=	$	-
8609XX	Traffic Monitoring Stations	LS		x		=	$	-
860XXX	Modify Existing Electrical/Remove Signal	LS	1	x	75,000.00	=	$	75,000
8611XX	Ramp Metering System (Location X)	LS		x		=	$	-
8611XX	Ramp Metering System (Location X)	LS		x		=	$	-
86XXXX	Fiber Optic Conduit System	LS		x		=	$	-
XXXXX	Flashing Beacon System	LS	1	x	25,000.00	=	$	25,000

Subtotal Traffic Electrical *$ 180,000*

6B - Traffic Signing and Striping

m code		Unit	Quantity		Unit Price ($)			Cost
120090	Construction Area Signs	LS	1	x	7,000.00	=	$	7,000
150701	Remove Yellow Painted Traffic Stripe	LF		x		=	$	-
150710	Remove Traffic Stripe	LF		x		=	$	-
150713	Remove Pavement Marking	SQFT		x		=	$	-
150742	Remove Roadside Sign	EA		x		=	$	-
152320	Reset Roadside Sign	EA		x		=	$	-
152390	Relocate Roadside Sign	EA		x		=	$	-
566011	Roadside Sign (One Post)	EA	30	x	250.00	=	$	7,500
566012	Roadside Sign (Two Post)	EA	6	x	750.00	=	$	4,500
560XXX	Furnish Sign Panels	SQFT		x		=	$	-
560XXX	Install Sign Panels	SQFT		x		=	$	-
82010X	Delineator (Class X)	EA		x		=	$	-
84XXXX	Permanent Pavement Delineation	LS	1	x	60,000.00	=	$	60,000

Subtotal Traffic Signing and Striping *$ 79,000*

6C - Stage Construction and Traffic Handling

m code		Unit	Quantity		Unit Price ($)			Cost
120100	Traffic Control System	LS	1	x	350,000.00	=	$	350,000
120120	Type III Barricade	EA	6	x	200.00	=	$	1,200
120143	Temporary Pavement Delineation	LF	10,000	x	1.00	=	$	10,000
12016X	Channelizer	EA		x		=	$	-
128650	Portable Changeable Message Signs	EA	3	x	7,500.00	=	$	22,500
129000	Temporary Railing (Type K)	LF	1,500	x	37.00	=	$	55,500
129100	Temp. Crash Cushion Module	EA		x		=	$	-
129099A	Traffic Plastic Drum	EA	100	x	90.00	=	$	9,000
839603A	Temporary Crash Cushion (ADIEM)	EA	6	x	3,500.00	=	$	21,000
XXXXXX	Some Item							

Subtotal Stage Construction and Traffic Handling *$ 469,200*

TOTAL TRAFFIC ITEMS $ 728,200

SECTION 7: DETOURS

Include constructing, maintaining, and removal

m code		Unit	Quantity		Unit Price ($)			Cost
0713XX	Temporary Fence	LF		x		=	$	-
07XXXX	Temporary Drainage	LS	1	x	10,000.00	=	$	10,000
120143	Temporary Pavement Delineation	LF	1	x	10,000.00	=	$	10,000
1286XX	Temporary Signals	EA	1	x	75,000.00	=	$	75,000
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		=	$	-
XXXXXX	Signs	LS		x		=	$	-

TOTAL DETOURS $ 95,000

SUBTOTAL SECTIONS 1-7 $ 3,581,500

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items							
ADA Items				1.0%		$	35,815
8B - Bike Path Items							
Bike Path Items				1.0%		$	35,815
8C - Other Minor Items							
Other Minor Items				3.0%		$	107,445
Total of Section 1-7	$	3,581,500	x	5.0%	=	$	179,075

TOTAL MINOR ITEMS $ 179,100

SECTIONS 9: MOBILIZATION

ı code								
999990	Total Section 1-8	$	3,760,600	x	10%	=	$	376,060

TOTAL MOBILIZATION $ 376,100

SECTION 10: SUPPLEMENTAL WORK

m code		Unit	Quantity		Unit Price ($)			Cost
066015	Federal Trainee Program	LS		x		=	$	-
066063	Traffic Management Plan - Public Information	LS	1	x	50,000.00	=	$	50,000
066090	Maintain Traffic	LS	1	x	100,000.00	=	$	100,000
066094	Value Analysis	LS		x		=	$	-
066204	Remove Rock & Debris	LS		x		=	$	-
066222	Locate Existing Cross-Over	LS		x		=	$	-
066670	Payment Adjustments For Price Index Fluctuations	LS		x		=	$	-
066700	Partnering	LS		x		=	$	-
066866	Operation of Existing Traffic Management System Elements During Construction	LS		x		=	$	-
066920	Dispute Review Board	LS		x		=	$	-
XXXXXX	Some Item			x		=	$	-
	*Cost of **NPDES** Supplemental Work specified in Section 5C*					=	$	3,500
	Total Section 1-8	$	3,760,600		5%	=	$	188,030

TOTAL SUPPLEMENTAL WORK $ 341,600

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code		Unit	Quantity		Unit Price ($)		Cost
066063	Public Information	LS		x		=	$0
066105	RE Office	LS	1	x	35,000.00	=	$35,000
066803	Padlocks	LS		x		=	$0
066838	Reflective Numbers and Edge Sealer	LS		x		=	$0
066901	Water Expenses	LS		x		=	$0
066062A	COZEEP Expenses	LS	1	x	48,000.00	=	$48,000
06684X	Ramp Meter Controller Assembly	LS		x		=	$0
06684X	TMS Controller Assembly	LS		x		=	$0
06684X	Traffic Signal Controller Assembly	LS	0	x	35,000.00	=	$0
XXXXXX	Some Item						
	Total Section 1-8	$	3,760,600		0%	=	$ -

TOTAL STATE FURNISHED	$83,000

SECTION 12: TIME-RELATED OVERHEAD

Estiamted Time-Releated Overhead (TRO) Percentage (0% to 10%) = 5%

Item code		Unit	Quantity		Unit Price ($)		Cost
070018	Time-Related Overhead	WD	150	X	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	$	4,561,300	x	15%	=	$684,195

TOTAL CONTINGENCY	$684,200

II. STRUCTURE ITEMS

DATE OF ESTIMATE	00/00/00	00/00/00	00/00/00
Name	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX	57-XXX	57-XXX
Structure Type	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx
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)	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx
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	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX	57-XXX	57-XXX
Structure Type	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx
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)	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx
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**
TOTAL COST OF BUILDINGS	**$0.00**

TOTAL COST OF STRUCTURES[1]	**$0.00**

Estimate Prepared By:____

XXXXXXXXXXXXXXXXX ------ Division of Structures

____

Date

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

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)		$	0
	C2) Potholing (Design Phase)		$	0
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 (Items G & H applied to items A + B)	0%	$	0
J)	Design Appreciation Factor	0%	$	0
K)	Utility Relocation (Construction Cost)		$	0

L) **TOTAL RIGHT OF WAY ESTIMATE** **$0**

(Excluding Item #8 - Hazardous Waste)

M) **TOTAL R/W ESTIMATE: Escalated** **$0**

N) **Right of Way Support** **$** **0**

Support Cost Estimate Prepared By ______ Project Coordinator[1] Phone

Utility Estimate Prepared By ______ Utiliy Coordinator[2] Phone

R/W Acquistion Estimate Prepared By ______ Right of Way Estimator[3] Phone

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

Preliminary Cost Estimate

US 50 at Pioneer Trail Intersection Safety Improvement Project

Type of Estimate : Planning Level (PSR)
Program Code :
Project Limits : US 50 at Pioneer Trail Intersection
Description: Enlarged Intersection with Traffic Signal
Scope : Includes 3" HMA overlay of existing pavement and 9"/24" in new pavement areas
Alternative :

	Current Cost		Escalated Cost	
ROADWAY ITEMS	**$**	**4,940,900**	**$**	**4,940,900**
STRUCTURE ITEMS	**$**	**-**	**$**	**-**
SUBTOTAL CONSTRUCTION COST	**$**	**4,940,900**	**$**	**4,940,900**
RIGHT OF WAY	**$**	**-**	**$**	**-**
TOTAL CAPITAL OUTLAY COST	**$**	**4,941,000**	**$**	**4,941,000**
PR/ED SUPPORT	**$**	**-**	**$**	**-**
PS&E SUPPORT	**$**	**-**	**$**	**-**
RIGHT OF WAY SUPPORT	**$**	**-**	**$**	**-**
CONSTRUCTION SUPPORT	**$**	**-**	**$**	**-**
TOTAL CAPITAL OUTLAY SUPPORT COST*	**$**	**-**	**$**	**-**
TOTAL PROJECT COST	**$**	**4,950,000**	**$**	**4,950,000**

If Project has been programmed enter Programmed Amount $ -

	Month / Year
Date of Estimate (Month/Year)	1 / 2020
Estimated Date of Construction Start (Month/Year)	6 / 2022
Number of Working Days	125 Working Days
	Month / Year
Estimated Mid-Point of Construction (Month/Year)	10 2022
Number of Plant Establishment Days	Days

Estimated Project Schedule

PID Approval	March-20
PA/ED Approval	December-20
PS&E	December-21
RTL	February-22
Begin Construction	June-22

Approved by Project Manager

(xxx) xxx-xxxx

Project Manager	**Date**	**Phone**

I. ROADWAY ITEMS SUMMARY

	Section	Cost
1	**Earthwork**	$ 282,500
2	**Pavement Structural Section**	$ 1,527,600
3	**Drainage**	$ 195,100
4	**Specialty Items**	$ 94,000
5	**Environmental**	$ 315,300
6	**Traffic Items**	$ 898,700
7	**Detours**	$ 20,000
8	**Minor Items**	$ 166,700
9	**Roadway Mobilization**	$ 350,000
10	**Supplemental Work**	$ 328,500
11	**State Furnished**	$ 118,000
12	**Contingencies**	$ 644,500
13	**Overhead**	$ -
	TOTAL ROADWAY ITEMS	**$ 4,940,900**

	Name and Title	Date	Phone
Estimate Prepared By	Ron Boyle P.E.	1/14/2020	916 782 8688
Estimate Reviewed By			

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	1	x	18,250.00	=	$	18,250
190101	Roadway Excavation	CY	5,225	x	41.00	=	$	214,225
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	Impored Borrow	CY	0	x	150.00	=	$	-
198007	Imported Material (Shoulder Backing)	TON		x		=	$	-

TOTAL EARTHWORK SECTION ITEMS	**$**	**282,500**

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code		Unit	Quantity		Unit Price ($)			Cost
150771	Remove Asphalt Concrete Dike	LF		x		=	$	-
150860	Remove Base and Surfacing	CY		x	68.00	=	$	-
153103	Cold Plane Asphalt Concrete Pavement	SQYD	8,983	x	10.00	=	$	89,830
1532XX	Remove Concrete (type)	CY		x		=	$	-
250401	Class 4 Aggregate Subbase	CY		x		=	$	-
260201	Class 2 Aggregate Base	CY	4,450	x	81.00	=	$	360,450
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	4,711	x	180.00	=	$	847,980
390136	Minor Hot Mix Asphalt	TON		x		=	$	-
390137	Rubberized Hot Mix Asphalt (Gap Graded)	TON		x		=	$	-
393003	Geosynthetic Pavement Interlayer	SQYD	15,411	x	9.50	=	$	146,405
39405X	Shoulder Rumber Strip *(HMA, Type XX Indentation)*	STA		x		=	$	-
394071	Place Hot Mix Asphalt Dike	LF		x		=	$	-
394090	Place Hot Mix Asphalt (Misc. Area)	SQYD		x		=	$	-
397005	Tack Coat	TON	5	x	2,600.00	=	$	13,000
401000	Concrete Pavement (truck apron)	CY	0	x	715.00	=	$	-
401108	Replace Concrete Pavement (Rapid Strength Concrete)	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		=	$	-
XXXXXX	Bike Path	SQFT	3,492	x	20.00	=	$	69,840

TOTAL STRUCTURAL SECTION ITEMS	**$**	**1,527,600**

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	18" Plastic Pipe	LF	600	x	75.00	=	$	45,000
65XXXX	XXX" RCP Pipe	LF		x		=	$	-
66XXXX	XXX" CSP Pipe	LF		x		=	$	-
68XXXX	Edge Drain	LF		x		=	$	-
69XXXX	XXX" Pipe Downdrain	LF		x		=	$	-
70XXXX	XXX" Pipe Inlet	LF		x		=	$	-
70XXXX	XXX" Pipe Riser	LF		x		=	$	-
70XXXX	XXX" Flared End Section	EA	3	x	1,200.00	=	$	3,600
703233	Grated Line Drain	LF		x		=	$	-
72XXXX	Rock Slope Protection (Type and Method)	CY	15	x	100.00	=	$	1,500
721420	Concrete (Ditch Lining)	CY		x		=	$	-
721430	Concrete (Channel Lining)	CY		x		=	$	-
729010	Rock Slope Protection Fabric	SQYD		x		=	$	-
750001	Miscellaneous Iron and Steel	LB		x	4.75	=	$	-
XXXXXX	Additional Drainage - Water Quality	LS	1	x	100,000.00	=	$	100,000
510094	Structural Concrete Drainage Inlet	EA	10	x	4,500.00	=	$	45,000

TOTAL DRAINAGE ITEMS $ 195,100

SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price ($)			Cost
070012	Progress Schedule (Critical Path Method)	LS	1	x	4,500.00	=	$	4,500
150662	Remove Metal Beam Guard Railing	LF		x		=	$	-
150668	Remove Terminal Systems	EA		x		=	$	-
1532XX	Remove Barrier (*Insert Type)*	LF		x		=	$	-
153250	Remove Sound Wall	SQFT		x		=	$	-
190110	Lead Compliance Plan	LS	1	x	3,000.00	=	$	3,000
49XXXX	CIDH Concrete Piling *(Insert Diameter)*	LF		x		=	$	-
510060	Structural Concrete (Retaining Wall)	CY		x		=	$	-
731504	Minor Concrete (curb and Gutter)	CY	61	x	853.00	=	$	52,033
731511	Minor Concrete (Island Paving)	CY	23	x	933.00	=	$	21,459
5110XX	Architectural Treatment *(Insert Type)*	SQFT		x		=	$	-
511048	Apply Anti-Graffiti Coating	SQFT		x		=	$	-
5136XX	Reinforced Concrete Crib Wall *(Insert Type)*	SQFT		x		=	$	-
518002	Sound Wall (Masonry Block)	SQFT		x		=	$	-
520103	Bar Reinf. Steel (Retaining Wall)	LB		x		=	$	-
80XXXX	Fence (*Insert Type*)	LF		x		=	$	-
832001	Metal Beam Guard Railing	LF		x		=	$	-
839310	Double Thrie Beam Barrier	LF		x		=	$	-
839521	Cable Railing	LF		x		=	$	-
83954X	Transition Railing *(Insert Type)*	EA		x		=	$	-
8395XX	Terminal System (Type CAT)	EA		x		=	$	-
8395XX	Alternative Flared Terminal System	EA		x		=	$	-
8395XX	End Anchor Assembly (*Insert Type*)	EA		x		=	$	-
839561	Rail Tensioning Assembly	EA		x		=	$	-
839XXX	Crash Cushion *(Insert Type)*	EA		x		=	$	-
83XXXX	Concrete Barrier *(Insert Type)*	LF		x		=	$	-
730070	Dectectable Warning Surface	SQFT	270	x	48.00	=	$	12,960

TOTAL SPECIALTY ITEMS $ 94,000

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost
	Biological Mitigation	LS		x		=	$	-
071325	TEMPORARY REINFORCED SILT FENCE	LF	1,200	x	5.00	=	$	6,000
071325	Temporary Fence (Type ESA)	LF	1,900	x	8.00	=	$	15,200

Subtotal Environmental $ 6,000

5B - LANDSCAPE AND IRRIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost
200001	Highway Planting	LS		x		=	$	-
20XXXX	XXX" (*Insert Type*) Conduit *(Use for Irrigation x-overs)*	LF		x		=	$	-
20XXXX	Extend XXX" *(Insert Type)* Conduit *(Use for Extension of Irrigation x-overs)*	LF		x		=	$	-
201700	Imported Topsoil	CY		x		=	$	-
2030XX	Erosion Control (Type __)	SQYD	6,207	x	2.70	=	$	16,759
203021	Fiber Rolls	LF		x		=	$	-
203026	Move In/ Move Out (Erosion Control)	EA	6	x	500.00	=	$	3,000
204099	Plant Establishment Work	LS		x		=	$	-
205035	Wood Mulch	CY	228	x	120.00	=	$	27,360
208000	Irrigation System	LS		x		=	$	-
208304	Water Meter	EA		x		=	$	-
209801	Maintenance Vehicle Pullout	EA		x		=	$	-
036370	Unmortared Rock Blanket	SF	1,910	x	9.50	=	$	18,145
036376	Boulder	EA	0	x	800.00	=	$	-

Subtotal Landscape and Irrigation $ 47,119

5C - NPDES

Item code		Unit	Quantity		Unit Price ($)			Cost
074016	Construction Site Management	LS	1	x	75,000.00	=	$	75,000
074017	Prepare WPCP	LS		x		=	$	-
074019	Prepare SWPPP	LS	1	x	3,200.00	=	$	3,200
130530	Temporary Hydraulic Mulch	SQYD	6,207	x	3.00	=	$	18,621
130570	Temporary Cover	SQYD	1,552	x	10.00	=	$	15,520
074028	Temporary Fiber Roll	LF	1,862	x	15.00	=	$	27,930
074032	Temporary Concrete Washout Facility	EA	1	x	5,000.00	=	$	5,000
074033	Temporary Construction Entrance	EA	1	x	5,000.00	=	$	5,000
074035	Temporary Check Dam	LF	100	x	13.00	=	$	1,300
074037	Move In/ Move Out (Temporary Erosion Control)	EA	6	x	600.00	=	$	3,600
074038	Temp. Drainage Inlet Protection	EA	6	x	325.00	=	$	1,950
074041	Street Sweeping	LS	1	x	100,000.00	=	$	100,000
074042	Temporary Concrete Washout (Portable)	LS	1	x	5,000.00	=	$	5,000
130310	Rain Event Action Plan	EA	9	x	500.00	=	$	4,500

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	1	x	3,500.00	=	$	3,500
XXXXXX	Some Item							

Subtotal NPDES (Without Supplemental Work) $ 262,121

*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 $ 315,300

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 System Elements During Construction	LS	1	x	5,000.00	=	$	5,000
860810	Inductive Loop Detectors	EA		x		=	$	-
86055X	Lighting & Sign Illumination	LS	1	x	50,000.00	=	$	50,000
8607XX	Interconnection Facilities	LS		x		=	$	-
8609XX	Traffic Monitoring Stations	LS		x		=	$	-
860XXX	Modify Existing Electrical/Modify Signal	LS	1	x	450,000.00	=	$	450,000
8611XX	Ramp Metering System (Location X)	LS		x		=	$	-
8611XX	Ramp Metering System (Location X)	LS		x		=	$	-
86XXXX	Fiber Optic Conduit System	LS		x		=	$	-
XXXXX	Flashing Beacon System	LS	1	x	25,000.00	=	$	25,000

Subtotal Traffic Electrical *$ 505,000*

6B - Traffic Signing and Striping

Item code		Unit	Quantity		Unit Price ($)			Cost
120090	Construction Area Signs	LS	1	x	7,000.00	=	$	7,000
150701	Remove Yellow Painted Traffic Stripe	LF		x		=	$	-
150710	Remove Traffic Stripe	LF		x		=	$	-
150713	Remove Pavement Marking	SQFT		x		=	$	-
150742	Remove Roadside Sign	EA		x		=	$	-
152320	Reset Roadside Sign	EA		x		=	$	-
152390	Relocate Roadside Sign	EA		x		=	$	-
566011	Roadside Sign (One Post)	EA	12	x	250.00	=	$	3,000
566012	Roadside Sign (Two Post)	EA	6	x	750.00	=	$	4,500
560XXX	Furnish Sign Panels	SQFT		x		=	$	-
560XXX	Install Sign Panels	SQFT		x		=	$	-
82010X	Delineator (Class X)	EA		x		=	$	-
84XXXX	Permanent Pavement Delineation	LS	1	x	60,000.00	=	$	60,000

Subtotal Traffic Signing and Striping *$ 74,500*

6C - Stage Construction and Traffic Handling

Item code		Unit	Quantity		Unit Price ($)			Cost
120100	Traffic Control System	LS	1	x	200,000.00	=	$	200,000
120120	Type III Barricade	EA	6	x	200.00	=	$	1,200
120143	Temporary Pavement Delineation	LF	10,000	x	1.00	=	$	10,000
12016X	Channelizer	EA		x		=	$	-
128650	Portable Changeable Message Signs	EA	3	x	7,500.00	=	$	22,500
129000	Temporary Railing (Type K)	LF	1,500	x	37.00	=	$	55,500
129100	Temp. Crash Cushion Module	EA		x		=	$	-
129099A	Traffic Plastic Drum	EA	100	x	90.00	=	$	9,000
839603A	Temporary Crash Cushion (ADIEM)	EA	6	x	3,500.00	=	$	21,000
XXXXXX	Some Item							

Subtotal Stage Construction and Traffic Handling *$ 319,200*

TOTAL TRAFFIC ITEMS $ 898,700

SECTION 7: DETOURS

Include constructing, maintaining, and removal

Item code		Unit	Quantity		Unit Price ($)			Cost
0713XX	Temporary Fence	LF		x		=	$	-
07XXXX	Temporary Drainage	LS	1	x	10,000.00	=	$	10,000
120143	Temporary Pavement Delineation	LF	1	x	10,000.00	=	$	10,000
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		=	$	-
XXXXXX	Signs	LS		x		=	$	-

TOTAL DETOURS $ 20,000

SUBTOTAL SECTIONS 1-7 $ 3,333,200

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items							
ADA Items				1.0%		$	33,332
8B - Bike Path Items							
Bike Path Items				1.0%		$	33,332
8C - Other Minor Items							
Other Minor Items				3.0%		$	99,996
Total of Section 1-7	$	3,333,200	x	5.0%	=	$	166,660

TOTAL MINOR ITEMS $ 166,700

SECTIONS 9: MOBILIZATION

Item code								
999990	Total Section 1-8	$	3,499,900	x	10%	=	$	349,990

TOTAL MOBILIZATION $ 350,000

SECTION 10: SUPPLEMENTAL WORK

Item code		Unit	Quantity		Unit Price ($)			Cost
066015	Federal Trainee Program	LS		x		=	$	-
066063	Traffic Management Plan - Public Information	LS	1	x	50,000.00	=	$	50,000
066090	Maintain Traffic	LS	1	x	100,000.00	=	$	100,000
066094	Value Analysis	LS		x		=	$	-
066204	Remove Rock & Debris	LS		x		=	$	-
066222	Locate Existing Cross-Over	LS		x		=	$	-
066670	Payment Adjustments For Price Index Fluctuations	LS		x		=	$	-
066700	Partnering	LS		x		=	$	-
066866	Operation of Existing Traffic Management System Elements During Constructior	LS		x		=	$	-
066920	Dispute Review Board	LS		x		=	$	-
XXXXXX	Some Item			x		=	$	-
	*Cost of **NPDES** Supplemental Work specified in Section 5C*					=	$	3,500
	Total Section 1-8	$	3,499,900		5%	=	$	174,995

TOTAL SUPPLEMENTAL WORK $ 328,500

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code		Unit	Quantity		Unit Price ($)		Cost
066063	Public Information	LS		x		=	$0
066105	RE Office	LS	1	x	35,000.00	=	$35,000
066803	Padlocks	LS		x		=	$0
066838	Reflective Numbers and Edge Sealer	LS		x		=	$0
066901	Water Expenses	LS		x		=	$0
066062A	COZEEP Expenses	LS	1	x	48,000.00	=	$48,000
06684X	Ramp Meter Controller Assembly	LS		x		=	$0
06684X	TMS Controller Assembly	LS		x		=	$0
06684X	Traffic Signal Controller Assembly	LS	1	x	35,000.00	=	$35,000
XXXXXX	Some Item						
	Total Section 1-8	$	3,499,900		0%	=	$ -

TOTAL STATE FURNISHED **$118,000**

SECTION 12: TIME-RELATED OVERHEAD

Estiamted Time-Releated Overhead (TRO) Percentage (0% to 10%) = 5%

Item code		Unit	Quantity		Unit Price ($)		Cost
070018	Time-Related Overhead	WD	125	X	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	$	4,296,400	x	15%	=	$644,460

TOTAL CONTINGENCY **$644,500**

II. STRUCTURE ITEMS

DATE OF ESTIMATE	00/00/00	00/00/00	00/00/00
Name	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX	57-XXX	57-XXX
Structure Type	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx
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)	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx
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	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX	57-XXX	57-XXX
Structure Type	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx
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)	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxxx
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**
TOTAL COST OF BUILDINGS	**$0.00**
TOTAL COST OF STRUCTURES[1]	**$0.00**

Estimate Prepared By:______________________________
XXXXXXXXXXXXXXXXX ------ Division of Structures

____
Date

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

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)		$	0
	C2) Potholing (Design Phase)		$	0
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 (Items G & H applied to items A + B)	0%	$	0
J)	Design Appreciation Factor	0%	$	0
K)	Utility Relocation (Construction Cost)		$	0

L) **TOTAL RIGHT OF WAY ESTIMATE** **$0**

(Excluding Item #8 - Hazardous Waste)

M) **TOTAL R/W ESTIMATE: Escalated** **$0**

N) **Right of Way Support $ 0**

Support Cost Estimate Prepared By ______ Project Coordinator[1] Phone

Utility Estimate Prepared By ______ Utiliy Coordinator[2] Phone

R/W Acquistion Estimate Prepared By ______ Right of Way Estimator[3] Phone

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

US50/Pioneer Trail Intersection Improvement Project - Cost Benefit Analysis Summary

7/18/2019

Modified Traffic Signal compared to No Build Alternative

R2610C001.xls

Annual Costs	Modified Traffic Signal Alternative		No Build Traffic Signal Alternative	
Safety	**Predicted Annual Crashes**	**Safety Cost**	**Predicted Annual Crashes**	**Safety Cost**
Predicted Fatal/Injury Crashes	Safety Data Omitted	0	Safety Data Omitted	0
Predicted PDO Crashes	Safety Data Omitted	0	Safety Data Omitted	0
	Annual Costs of Predicted Crashes	**$ 803,733**	***Annual Costs of Predicted Crashes***	**$ 1,071,645**
Delay	**Annual Intersection Delay (person-hrs)**	**Delay Cost**	**Annual Intersection Delay (person-hrs)**	**Delay Cost**
Average Annual Person (in Vehicle) Delay	5912	**$ 79,000**	13919	**$ 184,000**
Operation and Maintenance	**Operation and Maintenance**	**O&M Cost**	**Operation and Maintenance**	**O&M Cost**
Annualized Cost of Signal Retiming		$ -	Signal Retiming Every 3 Years	$ 1,000
Annual Cost of Power for Signal		$ -	Power for Signal	$ 750
Annual Cost of Illumination	Intersection Illumination	$ 750	Intersection Illumination	$ 750
Annual Cost of Maintenance	Landscaping Costs	$ 1,500	Signal Maintenance Costs (power outage, detection, etc.)	$ 1,500
	Total Annual Operation and Maintenance Costs	**$ 2,250**	***Total Annual Operation and Maintenance Costs***	**$ 4,000**
Initial Capital Costs	**Total Capital Costs**	**Cost**	**Total Capital Costs**	**Cost**
Preliminary Engineering		$ -		$ -
Right-of-way and Utilities		$ -		$ -
Construction		$ 4,950,000		

***Delay cost is based upon an average of the AM and PM peak hours.**

Total Discounted Life Cycle Costs (2020 - 2040)	Modified Traffic Signal Alternative		No Build Traffic Signal Alternative	
Safety	**Total Predicted Crashes**	**Safety Cost**	**Total Predicted Crashes**	**Safety Cost**
	Costs of Predicted Crashes	$ 10,923,000	***Costs of Predicted Crashes***	$ 14,564,000
Delay	**Total Intersection Delay (person-hrs)**	**Delay Cost**	**Total Intersection Delay (person-hrs)**	**Delay Cost**
Total Person (in Vehicle) Delay	124100	**$ 1,640,000**	292300	**$ 3,850,000**
Fuel and GHG Cost	**Fuel and Green House Gas Cost**		**Fuel and Green House Gas Cost**	
		$ 1,302,000		**$ 1,897,000**
Operation and Maintenance	**Operation and Maintenance**	**O&M Cost**	**Operation and Maintenance**	**O&M Cost**
Annualized Cost of Signal Retiming	Signal Retiming Every 3 Years	$ 13,600	Signal Retiming Every 3 Years	$ 13,600
Annual Cost of Power for Signal	Power for Signal	$ 10,200	Power for Signal	$ 10,200
Annual Cost of Illumination	Intersection Illumination	$ 10,200	Intersection Illumination	$ 10,200
Annual Cost of Maintenance	Signal Maintenance Costs (power outage, detection, etc.)	$ 20,400	Signal Maintenance Costs (power outage, detection, etc.)	$ 20,400
	Total Annual Operation and Maintenance Costs	**$ 54,000**	***Total Annual Operation and Maintenance Costs***	**$ 54,000**
Initial Capital Costs	**Total Capital Costs**	**Cost**	**Total Capital Costs**	**Cost**
Preliminary Engineering		$ -		$ -
Right-of-way and Utilities		$ -		$ -
Construction		$ 4,950,000		$ -
	Total Initial Capital Costs	**$ 4,950,000**	***Total Initial Capital Costs***	**$ -**
Total Life Cycle Costs (Opening Year $)	**Net Present Value**	**$ 18,869,000**	**Net Present Value**	**$ 20,365,000**
		Modified Traffic Signal Alternative		No Build Signal Alternative

***Delay cost is based upon an average of the AM and PM peak hours.**

Life Cycle Benefit/Cost Ratio

Modified Signal Alt vs.No Build Signal Alt	
Safety Benefit	$ 3,641,000
Delay Reduction Benefit	$ 2,210,000
Fuel and GHG Benefit	$ 595,000
Total Benefits	**$ 6,446,000**
Added Operations&Maintenance Costs	$ -
Added Capital Costs	$ 4,950,000
Total Costs	**$ 4,950,000**
Life Cycle Benefit/Cost Ratio	**1.3**

US50/Pioneer Trail Intersection Improvement Project - Cost Benefit Analysis Summary

7/18/2019

Roundabout Alternative compared to No Build Signal Alternative

R2610C002.xls

Annual Costs	Roundabout Alternative		No Build Signal Alternative	
Safety	**Predicted Annual Crashes**	**Safety Cost**	**Predicted Annual Crashes**	**Safety Cost**
Predicted Fatal/Injury Crashes	Safety Data Omitted	0	Safety Data Omitted	0
Predicted PDO Crashes	Safety Data Omitted	0	Safety Data Omitted	0
	Annual Costs of Predicted Crashes	**$ 268,721**	***Annual Costs of Predicted Crashes***	**$ 1,071,645**
Delay	**Annual Intersection Delay (person-hrs)**	**Delay Cost**	**Annual Intersection Delay (person-hrs)**	**Delay Cost**
Average Annual Person (in Vehicle) Delay	1529	**$ 21,000**	13919	**$ 184,000**
Operation and Maintenance	**Operation and Maintenance**	**O&M Cost**	**Operation and Maintenance**	**O&M Cost**
Annualized Cost of Signal Retiming		$ -	Signal Retiming Every 3 Years	$ 1,000
Annual Cost of Power for Signal		$ -	Power for Signal	$ 750
Annual Cost of Illumination	Intersection Illumination	$ 750	Intersection Illumination	$ 750
Annual Cost of Maintenance	Landscaping Costs	$ 1,500	Signal Maintenance Costs (power outage, detection, etc.)	$ 1,500
	Total Annual Operation and Maintenance Costs	**$ 2,250**	***Total Annual Operation and Maintenance Costs***	**$ 4,000**
Initial Capital Costs	**Total Capital Costs**	**Cost**	**Total Capital Costs**	**Cost**
Preliminary Engineering		$ -		$ -
Right-of-way and Utilities		$ -		$ -
Construction		**$ 5,250,000**		**$ -**

***Delay cost is based upon an average of the AM and PM peak hours.**

Total Discounted Life Cycle Costs (2020 - 2040)	Roundabout Alternative		No Build Signal Alternative	
Safety	**Total Predicted Crashes**	**Safety Cost**	**Total Predicted Crashes**	**Safety Cost**
Predicted Fatal/Injury Crashes	Safety Data Omitted	$ -	Safety Data Omitted	$ -
Predicted PDO Crashes	Safety Data Omitted	$ -	Safety Data Omitted	$ -
	Total Costs of Predicted Crashes	**$ 3,652,000**	***Total Costs of Predicted Crashes***	**$ 14,564,000**
Delay	**Total Intersection Delay (person-hrs)**	**Delay Cost**	**Total Intersection Delay (person-hrs)**	**Delay Cost**
Total Person (in Vehicle) Delay	32117	**$ 430,000**	292305	**$ 3,850,000**
Fuel and GHG Cost	**Fuel and Green House Gas Cost**		**Fuel and Green House Gas Cost**	
		$ 1,484,000		**$ 1,897,000**
Operation and Maintenance	**Operation and Maintenance**	**O&M Cost**	**Operation and Maintenance**	**O&M Cost**
Annualized Cost of Signal Retiming		$ -	Signal Retiming Every 3 Years	$ 13,600
Annual Cost of Power for Signal		$ -	Power for Signal	$ 10,200
Annual Cost of Illumination	Intersection Illumination	$ 10,200	Intersection Illumination	$ 10,200
Annual Cost of Maintenance	Landscaping Costs	$ 20,400	Signal Maintenance Costs (power outage, detection, etc.)	$ 20,400
	Total Annual Operation and Maintenance Costs	**$ 31,000**	***Total Annual Operation and Maintenance Costs***	**$ 54,000**
Initial Capital Costs	**Total Capital Costs**	**Cost**	**Total Capital Costs**	**Cost**
Preliminary Engineering		$ -		$ -
Right-of-way and Utilities		$ -		$ -
Construction		$ 5,250,000		$ -
	Total Initial Capital Costs	**$ 5,250,000**	***Total Initial Capital Costs***	**$ -**
Total Life Cycle Costs (Opening Year $)	**Net Present Value**	**$ 10,847,000**	**Net Present Value**	**$ 20,365,000**
		Roundabout Alternative		No Build Signal Alternative

***Delay cost is based upon an average of the AM and PM peak hours.**

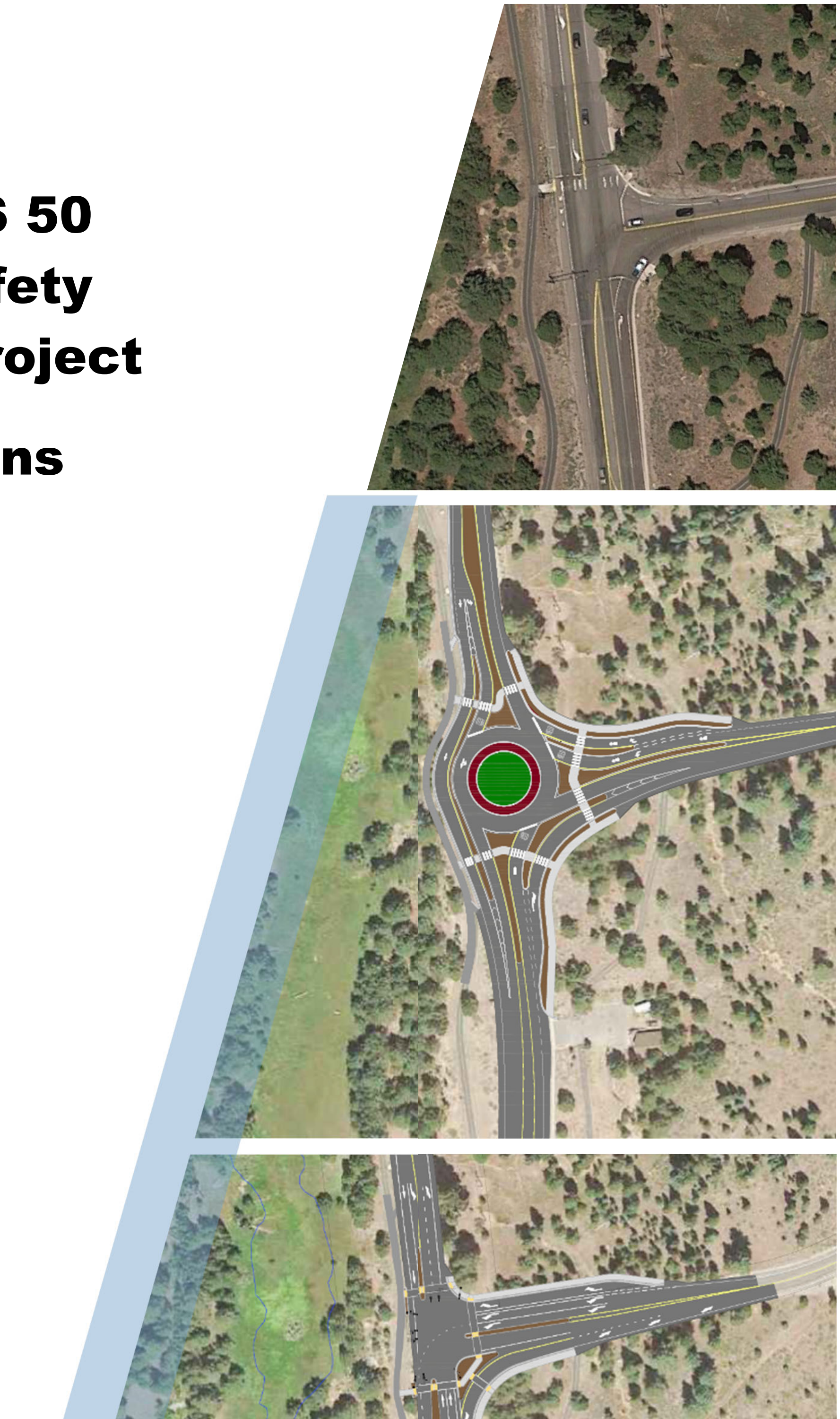
Life Cycle Benefit/Cost Ratio

Roundabout vs. No Build Signal Alternative	
Safety Benefit	$ 10,912,000
Delay Reduction Benefit	$ 3,420,000
Fuel and GHG Benefit	$ 413,000
Total Benefits	**$ 14,745,000**
Added Operations&Maintenance Costs	$ (23,000)
Added Capital Costs	$ 5,250,000
Total Costs	**$ 5,227,000**
Life Cycle Benefit/Cost Ratio	**2.8**
	Roundabout Preferred

Pioneer Trail/US 50 Intersection Safety Improvement Project

Traffic Operations Analysis Report

El Dorado County
Department of
Transportation



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Appendix Index

1. Introduction

This report presents the results of a traffic operations analysis performed by GHD for the El Dorado County Department of Transportation. The term "project," as used in this report, refers to the proposed modifications to the existing signalized intersection of United States Highway 50 (US 50) and Pioneer Trail in the unincorporated community of Meyers, California, near South Lake Tahoe.

US 50 and Pioneer Trail are important traffic arteries in the Tahoe Basin and are heavily impacted by recreational travel. Traffic levels are highly variable throughout the year as the intersection serves traffic to and from Lake Tahoe, the State of Nevada, and California's Sacramento Valley for outdoor recreation activities including skiing, snowboarding, hiking, camping, and boating. Traffic levels can vary significantly based on weather, economic conditions, special events, and other factors, with traffic peaking on Sunday afternoon when tourists leave the Tahoe Basin.

Because congestion in the project area is driven by weekend tourism rather than typical commute patterns, traffic operations have been quantified based on average Friday and Sunday peak hours rather than the traditional AM and PM peak hours.

Two Class I shared use paths provide bicycling and walking facilities in the project area. On the west side of US 50 a shared use path parallels the highway from SR 89 past this project area to Sawmill Road. On the east side of US 50 a shared use path parallels the highway from State Route 89 (SR 89)/Luther Pass Road and terminates at Pioneer Trail approximately 150 feet east of the intersection. No sidewalks exist at the intersection; the only pedestrian access is provided by the shared use path on the west side of US 50. Faded Class II bicycle markings exist on Pioneer Trail, and a southbound bicycle lane is marked on US 50 beginning at the Pioneer Trail intersection.

One marked crosswalk exists on the north leg of the intersection across US 50; the pedestrian WALK phase can be requested with a push button. Other crossings are not marked and do not have pedestrian signals. The crosswalk provides access to the shared use path on the west side of US 50, but there are no bicycle or pedestrian facilities on the northeast corner of the intersection.

This project was added to El Dorado County's Capital Improvement Program (CIP) on March 28, 2017. Multiple studies and plans have identified the US 50/Pioneer Trail intersection as needing improvements for bicyclists and pedestrians, including the Federal Highway Administration's (FHWA) *Meyers, El Dorado County, California Road Safety Audit* from April 2016 and the *Linking Tahoe: Active Transportation Plan* by the Tahoe Regional Planning Agency (TRPA) from March 2016. The March 2018 *Meyers Area Plan* also prioritizes intersection improvements at the US 50/Pioneer Trail intersection, specifically stating on page 3-6 that "intersection improvements should maintain or improve level of service, improve traffic flow, reduce vehicle emissions associated with traffic delays, and improve pedestrian and bicycle safety."

Strategies identified for the project intersection included improving sight distances and enhancing bicycle and pedestrian facilities through the intersection, as well as creating a gateway to the Meyers community that encourages slower vehicle speeds. Two intersection types were selected as alternatives for this traffic operations analysis: a traffic signal and a roundabout.

2. Study Area Roadways

Roadways that provide the primary vehicle circulation for the study intersection include US 50 and Pioneer Trail. The following is a brief description of the roadways and planned transportation improvements for the study intersection.

2.1 US 50

US 50 is a two-lane conventional highway in the project area. The highway begins in West Sacramento as a freeway, and transitions to its two-lane configuration east of Placerville in El Dorado County. US 50 continues across the United States to terminate in Ocean City, Maryland. In the project area, US 50 primarily serves interregional traffic from the Sacramento Valley to and from the Tahoe Basin. While US 50 is designated as an east-west highway, it is oriented north-south through the project intersection. The eastbound direction of travel runs north through the intersection, and westbound travel runs south.

The northbound approach of the project intersection has one through lane and one right-turn lane with overlap right-turn phasing. The posted speed limit is 40 mph, increasing to 55 mph past the intersection with Pioneer Trail. The southbound approach has one through lane and one left-turn lane. According to Caltrans' Functional Classification System, US 50 is a Class 3 Other Principal Arterial. The posted speed limit is 40 mph, reduced from 55 mph further north of the intersection.

2.2 Pioneer Trail

Pioneer Trail is a two-lane rural arterial that serves residential neighborhoods east of US 50, including vacation rentals and small resorts. The roadway begins at the project intersection and continues northeast to terminate at another intersection with US 50 within the city limits of South Lake Tahoe.

The westbound approach of the project intersection has a single lane with a wide shoulder that can accommodate up to two right-turning vehicles. According to Caltrans' Functional Classification System, Pioneer Trail is a Class 4 Minor Arterial. The posted speed limit is 40 mph within the project limits, and increases to 50 mph 1.3 miles east of the intersection.

2.3 Planned Improvements

Tahoe Transportation District operates two year-round routes from the intersection of US 50 and US 89 to the Nevada state line area, but transit service does not currently serve the Meyers area. A planned expansion of service to Meyers includes transit routes along both US 50 and Pioneer Trail.

A 2016 plan identifies a planned Class I shared use path on the east side of US 50 north of Pioneer Trail.[1]

---

[1] Linking Tahoe: Active Transportation Plan (Tahoe Metropolitan Planning Organization and Tahoe Regional Planning Agency, 2016)

3. Purpose and Need

3.1 Purpose

The purpose of this project is to improve safety at the intersection for all modes of travel, improve traffic flow, reduce speeds through the intersection and into the Meyers area, reduce vehicle emissions associated with traffic delays, and improve access to nearby bikeways and trails.

3.2 Need

Several prior plans and studies have identified a need for safety and transportation improvements at this intersection. Three issues help define the need for improvements:

- High number of collisions
- Disjointed pedestrian and bicycle facilities lack connectivity
- Unacceptable level of service (LOS) during peak periods

These issues correspond to three needs for this project, described in greater detail below:

- Enhance Safety
- Provide Bicycle and Pedestrian Access
- Improve Traffic Flow

3.2.1 Enhance Safety

In 2012, this intersection was identified as a high collision location.[2] It was determined that most collisions at the intersection were a result of drivers traveling at unsafe speeds in snowy or icy conditions. Most collisions occurred on the northbound right-turn movement onto Pioneer Trail.

The intersection had the second highest collisions in the Meyers area[3], with 34 reported collisions between 2007 and 2015. Of these, six collisions resulted in injuries and 28 resulted in property damage. No fatal collisions were reported within the intersection, however one fatality was reported approximately 400 feet south of the intersection.

When compared to traditional intersection controls, roundabouts have fewer conflict points for vehicles, bicyclists, and pedestrians. This directly correlates to improved safety. Roundabouts have the potential to reduce the number and severity of broadside collisions, reduce vehicle speeds, and reduce exposure for people bicycling and walking compared to traditional intersections. A study of 55 roundabouts in the United States concluded that roundabouts generally reduce crashes by 35 percent overall, reduce injury crashes by 76 percent, and reduce fatal crashes by 90 percent.[4]

[2] 2011 Annual Accident Location Survey (El Dorado County Department of Transportation, 2012)

[3] 2016 Meyers Road Safety Audit

[4] Roundabouts in the United States (National Cooperative Highway Research Program Report 572, 2007)

3.2.2 Provide Bicycle and Pedestrian Access

At this intersection, pedestrian crossings are only permitted in the crosswalk on the north leg of the intersection. All other pedestrian movements are prohibited. While this crosswalk connects to a shared use path on the west side of US 50, it does not connect to another pedestrian facility on the east side. A Class I shared use path parallel to US 50 on the west side does not connect to Class II bicycle lanes or the Class I shared use path on the east side of US 50.

Accommodation for people walking, bicycling, and riding transit was identified as a need in the 2016 *Linking Tahoe: Active Transportation Plan*.

3.2.3 Improve Traffic Flow

Both US 50 and Pioneer Trail are heavily traveled routes between Meyers and South Lake Tahoe. Traffic levels at this location are highly variable throughout the year, as the intersection serves tourist traffic to and from Lake Tahoe, Nevada, and a variety of other outdoor recreation opportunities. Traffic levels can vary significantly based on weather, economic conditions, special events, and other factors. The summer months typically have the highest traffic volumes due to the wide range of tourist attractions throughout the Tahoe Basin, but traffic congestion is typically worse in winter due to weather conditions, chain restrictions, and avalanche control operations.

The 2018 *Meyers Area Plan* established the acceptable LOS for this intersection as D or better. The existing intersection currently operates at an unacceptable LOS during Sunday peak hours, with LOS E or F between 10:45 AM and 2:00 PM. With no improvements, LOS at the intersection would continue to worsen and result in extensive delays and long queues. The plan also includes policy and implementation language that recommends reducing traffic speeds through Meyers without adversely affecting air quality and improving the intersection at US 50 and Pioneer Trail to improve LOS and traffic flow, reduce vehicle emissions, and improve bicycle and pedestrian safety.

4. Level of Service Methodology

Traffic operations are measured through “Level of Service” (LOS), a qualitative metric for traffic conditions. Letter grades A through F are assigned to intersections or roadway segments and represent progressively worsening traffic conditions. In general, LOS A represents free-flow conditions with very little delay, and LOS F represents over-capacity conditions with long delays and queues.

The project intersection was analyzed using the procedures and methodologies in the *Highway Capacity Manual (HCM)* (Transportation Research Board, 2016). The methodology for the roundabout alternative is based on the 6th edition of the HCM which draws from an FHWA report on capacity modeling for roundabouts.[5] At signalized intersections and roundabouts, the HCM

[5] Assessment of Roundabout Capacity Models for the Highway Capacity Manual: Volume 2 of Accelerating Roundabout Implementation in the United States (Report FHWA-SA-15-070)

specifies that LOS is based on the average control delay for the entire intersection. Table 4.1 displays the control delay range associated with each LOS grade.

Table 4.1 Intersection Level of Service Criteria

Level of Service	Average Control Delay (Seconds/Vehicle)		Description
	Signalized	Roundabout	
A	<10.0	<10.0	Very low delay. At signalized intersections, most vehicles do not stop.
B	10.0 to 20.0	10.0 to 15.0	Generally good progression of vehicles. Slight delays.
C	20.1 to 35.0	15.1 to 25.0	Fair progression. At signalized intersections, increased number of stopped vehicles.
D	35.1 to 55.0	25.1 to 35.0	Noticeable congestion. At signalized intersections, large portion of vehicles stopped.
E	55.1 to 80.0	35.1 to 50.0	Poor progression. High delays and frequent cycle failure.
F	>80.0	>50.0	Oversaturation. Forced flow. Extensive queuing.

Highway Capacity Manual (Transportation Research Board 2016)

4.1 Applicable LOS Policies and Target LOS Threshold

LOS standards for the project are set by Caltrans, TRPA, and El Dorado County. Caltrans identified standards for the project area in the *US 50 Transportation Concept Report/Corridor System Management Plan (TCR/CSMP)* in 2014. The minimum acceptable LOS for this segment of US 50 is LOS D.

TRPA identifies LOS thresholds in Policy 4.6 of its *Linking Tahoe: Regional Transportation Plan (RTP)* in 2017. The acceptable LOS for Pioneer Trail is D, though the policy notes LOS E may be acceptable during peak periods in urban areas but not to exceed 4 hours per day. The policy also states, “These vehicle LOS standards may be exceeded when provisions for multi-modal amenities and/or services (such as transit, bicycling, and walking facilities) are adequate to provide mobility for users at a level that is proportional to the project-generated traffic in relation to overall traffic conditions on affected roadways.”

Based on the applicable standards discussed above, LOS D is the standard applied to this project. The intersection is also allowed to operate at LOS E for fewer than four hours per day during peak periods.

4.2 Technical Analysis Parameters

The software programs used to analyze the intersection include Synchro 10 for signalized intersection control, and SIDRA 8 for roundabouts. The Synchro and SIDRA outputs are included in Appendix B.

The evaluation incorporated appropriate heavy vehicle adjustment factors, peak hour factors, and signal lost-time factors and reported the resulting intersection delays and LOS as projected using

HCM-based analysis methodologies. Lane widths for the roundabout alternative analysis were determined by measuring face of curb to face of curb.

The specific technical analysis parameters that have been used for this study are presented in Table 4.2. These parameters were reviewed with Caltrans Staff.

Table 4.2 Intersection Technical Analysis Parameters

Technical Parameters (1)	Intersections
Grade (2)	Level
% Trucks (2)	Obtained from Caltrans US50/SR89 Study
Peak Hour Factor Design Hourly Volume	0.96 for Friday and 0.94 for Sunday based on 2017 count data
Minimum Signal Cycle Length (3)	120 seconds (based on field observations)
Lost Time per Critical Signal Phase	4 seconds (if applicable)
Left-Turn Critical Lane Volume (4)	1,900 vehicles per hour
Pedestrian Calls per Hour	5
SIDRA Environmental Factor	1.05 for Design Hourly Volumes
SIDRA Environmental Factor	1.00 for Sensitivity Analysis

Notes:

1. *Computer software defaults will be used for parameters not listed.*
2. *For Existing and Future conditions*
3. *Will be optimized as appropriate*
4. *A.k.a. Saturated Flow Rate*

5. Existing Traffic Conditions

5.1 Existing Traffic Volumes

Traffic volumes at the study intersection and in the Meyers community in general are highly variable throughout the year, as the intersection serves tourist traffic to and from Lake Tahoe, the State of Nevada, and a variety of other year-round outdoor recreation activities. Based on discussion with the project team, the summer traffic (between the months of June and September) was found to be generally higher when compared to the other months.

This section reviews three recent and relevant planning studies in the area that contain traffic volume information in the Meyers community. An overview of the count data collected in these studies is presented in Table 5.1.

Table 5.1 Comparison of Traffic Counts Collected on US 50 between SR 89 and Pioneer Trail

	Count Year		
	2010	2016	2017
Agency	El Dorado County	Caltrans	El Dorado County

Table 5.1 Comparison of Traffic Counts Collected on US 50 between SR 89 and Pioneer Trail

	Count Year		
	2010	2016	2017
Number of Data points	1 day	12 weekends (over 3 months)a	6 days (2 weekends)
Location	US 50 between SR 89 and Pioneer Trail	US 50 between SR 89 and Pioneer Trail	US 50 between SR 89 and Pioneer Trail

1. *Traffic Operations Analysis for the US Highway 50/Pioneer Trail Intersection Safety Improvement Project* (El Dorado County, December 2017). This study cites two time frames (2010 and 2017) when counts were conducted at the study intersection during the summer months. One count was conducted in 2010, and six counts were conducted in 2017. Additionally, this study extrapolated 2010 traffic with a 0.6% growth increase to derive 2016 counts. As the 2016 data is derived and not based actual counts, these numbers are not included in Table 5.2, which presents the traffic volumes.

Table 5.2 Traffic Patterns on US 50 between SR 89 and Pioneer Trail (December 2017 Study)

	Aug 2010 Sunday	Aug 2017 Friday	Aug 2017 Saturday	Aug 2017 Sunday	Oct 2017 Friday	Oct 2017 Saturday	Oct 2017 Sunday
US 50 (EB)	1,243	1,075	1,130	872	1,115	796	637
US 50 (WB)	1,278	726	730	1,234	653	883	1,317
Total	**2,521**	**1,801**	**1,860**	**2,106**	**1,768**	**1,679**	**1,954**

2. *Meyers Intersection Improvements at United States Highway (US) 50 and State Route (SR) 89 Initial Study with Negative Declaration* (Caltrans, December 2016). This study utilized average summer traffic volumes representative of a three month summer period. Table 5.3 presents the average summer traffic volumes for 2016.

Table 5.3 Traffic Patterns on US 50 between SR 89 and Pioneer Trail (December 2016 Study)

	Average Summer 2016	
	Friday	Sunday
US 50 (EB)	1,161	1,119
US 50 (WB)	688	1,308
Total	**1,849**	**2,427**

5.2 Design Hourly Volumes

Because the 2016 traffic volumes are based on three months of counts, they are more likely to represent average traffic volumes for a summer weekend and less likely to reflect anomalies in traffic patterns. A comparison of Table 5.2 and Table 5.3 indicates that the average Friday and

Sunday summer traffic volumes were greater in the 2016 study than in 2017. Using the higher volumes from 2016 represents a more conservative approach to this analysis of alternatives, as it accounts for increased traffic under current conditions as well as for the sensitivity analysis.

Furthermore, the traffic volumes from the 2016 study were used in the recently completed *Initial Study with Negative Declaration* for the US 50 and SR 89 roundabout project, which is currently under construction. Based on input from the project development team, which includes staff from TRPA, Caltrans, El Dorado County, and consultants, traffic volumes from the 2016 study have been used as the design hourly volumes in the preparation of this Traffic Operations Analysis Report. These design hourly volumes are shown in Appendix A.

Turning movements at the intersection were derived from the traffic split obtained from the 2017 counts. A review of these counts and turning movements revealed the following patterns:

- North/Eastbound US 50 traffic on a typical Friday as it approaches the intersection breaks up into two movements; 51 percent of traffic continues north/east on US 50 and 49 percent turns east/north onto Pioneer Trail. Westbound traffic on a typical Friday is made up of 37 percent from Pioneer Trail (southbound/westbound left) and 63 percent from US 50 (southbound/westbound through).
- North/Eastbound US 50 traffic on a typical Sunday as it approaches the intersection breaks up into two movements; 65 percent of traffic continues north/east on US 50 and 35 percent turns east/north onto Pioneer Trail. Westbound US 50 traffic is made up of 40 percent from Pioneer Trail (southbound/westbound left) and 60 percent from US 50 (southbound/westbound through).

5.3 No Build Design Hourly LOS

The traffic volumes derived in Table 5.3 were used to analyze the LOS under existing conditions without and with the proposed intersection improvements. The “No Build” alternative represents a scenario where no improvements are made to the intersection, retaining the existing geometry and intersection controls. The results are summarized in Table 5.4 and the technical calculations are in Appendix B.

Table 5.4 Design Hourly Intersection Traffic Operations
No Build Conditions – Summer Weekend

	Friday			Sunday		
	Delay	LOS	Queue	Delay	LOS	Queue
North/Eastbound US 50	62.5	E	1,118	103.6	F	1,875
South/Westbound US 50	15.1	B	279	20.1	C	950
West/Southbound Pioneer Trail	45.6	D	361	66.8	E	1,025
Overall LOS	**47.8**	**D**	**-**	**68.0**	**E**	**-**

Analysis is based on the methodology and procedures in the HCM. Average delay is reported in seconds per vehicle. For signalized intersections, LOS is based on the average control delay for all approaches. Queue is reported in feet for the 95th percentile.

Currently, the intersection operates at LOS D on Fridays. Sunday operations are expected to be at LOS E. The intersection also experiences queues over 40 vehicles north/eastbound on Fridays and north/eastbound and west/southbound on Pioneer Trail on Sundays.

6. Project Alternatives

One No Build and two project alternatives were selected for this study. All project alternatives were evaluated for design hourly volumes identified in Table 5.3. Because a focus of this study is reducing congestion at the intersection, this analysis includes intersection traffic operations for No Build conditions, Alternative 1, and Alternative 2. The alternatives are summarized below and conceptual designs are presented in Appendix C.

6.1 No Build Alternative

As shown in Table 5.4, under the No Build alternative the project intersection experiences significant congestion that is expected to negatively impact intersection operations. Therefore, alternatives that would alleviate traffic congestion and provide an acceptable LOS are identified and discussed in detail in the following sections of the report.

6.2 Alternative 1 – Roundabout

Alternative 1 would construct a three-legged roundabout at the project intersection. The roundabout would provide an inscribed circle diameter of 140 feet with one through lane and one right-turn bypass lane on the northbound approach, a left-turn lane and a right turn bypass lane on the westbound approach, and a through bypass lane and a shared through/left turn lane on the southbound approach.

High-visibility marked crosswalks would be provided on all three legs, including refuge areas in the diverter medians that would allow people walking or bicycling to cross one lane of traffic at a time. Crosswalks would be set back at least one car-length from the roundabout, allowing drivers to yield to pedestrians and move past the crosswalk before waiting for a gap in traffic and entering the roundabout. Separating the crosswalk from the roundabout entry in this way allows drivers to focus their attention on one potential conflict at a time.

Sidewalks would be provided on the northeast and southeast corners of the intersection, and connections would be provided from crosswalks to the Class I shared use path on the west side of US 50. Directional ramps would provide bicyclists traveling in the roadway with access to the shared use path or sidewalks if they prefer to navigate the intersection using the crosswalks or path. A proposed extension of the shared use path on the east side of US 50 would provide a direct connection for people walking or bicycling to the crosswalks on the south and east legs of the intersection.

6.3 Alternative 2 – Traffic Signal

Alternative 2 would increase capacity at the intersection by providing additional lanes through the intersection and providing a free right-turn lane from US 50 onto Pioneer Trail. The northbound approach would provide two through lanes, and the existing right-turn pocket would be replaced with a free right-turn lane. Drivers traveling north (or eastbound) on US 50 to Pioneer Trail would no longer be required to stop at the traffic signal. The westbound approach would be widened from a single lane to include two left-turn lanes and a right-turn lane. The southbound approach would maintain the existing single through lane and one left-turn lane, however the left-turn pocket would be extended to increase capacity.

Marked transverse crosswalks would be provided across the north and east legs of the intersection, as well as across the free right-turn lane on the southeast corner.

Sidewalks would be provided on the northeast and southeast corners of the intersection, and connections would be provided from crosswalks to the Class I shared use path on the west side of US 50. Directional ramps would provide southbound bicyclists traveling in the roadway on US 50 with access to the shared use path or sidewalks if they prefer to navigate the intersection using the crosswalks or path. A proposed extension of the shared use path on the east side of US 50 would provide a direct connection for people walking or bicycling to the crosswalks on the south and east legs of the intersection.

7. Alternative 1 – Roundabout Operations

Table 7.1 presents peak hour intersection LOS for Alternative 1, a three-legged roundabout. LOS and delay were projected with SIDRA 8 software for the design hourly traffic volumes with the lane geometrics of the roundabout alternative.

Table 7.1 Design Hourly Intersection Traffic Operations Alternative 2 – Roundabout Conditions

	Friday			Sunday		
	Delay	LOS	Queue	Delay	LOS	Queue
North/Eastbound US 50	3.9	A	76	4.0	A	100
South/Westbound US 50	4.9	A	24	5.0	A	54
West/Southbound Pioneer Trail	12.0	B	43	16.6	B	152
Overall LOS	**5.4**	**A**	**-**	**7.2**	**A**	**-**

Analysis is based on the methodology and procedures in the HCM. Average delay is reported in seconds per vehicle. For roundabout intersections, LOS is based on the average control delay for all approaches. Queue is reported in feet for the 95th percentile.

The intersection is projected to operate at acceptable LOS A with improvements identified in the roundabout alternative. The intersection is projected to experience queues less than 6 vehicles or less for either time period.

8. Alternative 2 – Traffic Signal Operations

Table 8.1 presents peak hour intersection LOS for Alternative 2, an improved signalized intersection. LOS and delay were projected for the design hourly traffic volumes with the lane geometrics of the traffic signal alternative. Projections were developed using Synchro 10 software based on the HCM.

Table 8.1 Design Hourly Intersection Traffic Operations Alternative 2 – Improved Signalized Conditions

	Friday			Sunday		
	Delay	LOS	Queue	Delay	LOS	Queue
North/Eastbound US 50	12.4	B	208	16.5	B	491
South/Westbound US 50	12.3	B	218	17.7	B	331
West/Southbound Pioneer Trail	23.0	C	173	32.0	C	311
Overall LOS	**14.0**	**B**	**-**	**20.5**	**C**	**-**

Analysis is based on the methodology and procedures in the HCM. Average delay is reported in seconds per vehicle. For signalized intersections, LOS is based on the average control delay for all approaches. Queue is reported in feet for the 95th percentile.

The intersection is projected to operate at acceptable LOS C or better with improvements identified in the improved traffic signal alternative. The intersection is projected to experience queues less than 8 vehicles or less for the Friday peak period and less than 20 vehicles during the Sunday peak period.

9. Alternative Comparison of Friday Operations

Table 9.1 presents a summary of Friday peak operations for Alternatives 1 and 2 for design hourly volumes.

Table 9.1 Design Hourly Intersection Operations – Friday Comparison of Alternatives

	Alternative 1 – Roundabout			Alternative 2 – Traffic Signal		
	Delay	LOS	Queue	Delay	LOS	Queue
North/Eastbound US 50	3.9	A	76	12.4	B	208
South/Westbound US 50	4.9	A	24	12.3	B	218
West/Southbound Pioneer Trail	12.0	B	43	23.0	C	173
Overall LOS	**5.4**	**A**	**-**	**14.0**	**B**	**-**

Analysis is based on the methodology and procedures in the HCM. Average delay is reported in seconds per vehicle. For signalized and roundabout intersections, LOS is based on the average control delay for all approaches. Queue is reported in feet for the 95th percentile.

Alternative 1 is expected to operate slightly better than Alternative 2 at LOS A and LOS B, respectively.

10. Alternative Comparison of Sunday Operations

Table 10.1 presents a summary of Sunday peak hour operations for Alternatives 1 and 2 for design hourly volumes.

Table 10.1 Design Hourly Intersection Operations – Sunday Comparison of Alternatives

	Alternative 1 – Roundabout			Alternative 2 – Traffic Signal		
	Delay	LOS	Queue	Delay	LOS	Queue
North/Eastbound US 50	4.0	A	100	16.5	B	491
South/Westbound US 50	5.0	A	54	17.7	B	331
West/Southbound Pioneer Trail	16.6	B	152	32.0	C	311
Overall LOS	**7.2**	**A**	**-**	**20.5**	**C**	**-**

Analysis is based on the methodology and procedures in the HCM. Average delay is reported in seconds per vehicle. For signalized and roundabout intersections, LOS is based on the average control delay for all approaches. Queue is reported in feet for the 95th percentile.

Alternative 1 is expected to operate better than Alternative 2 at LOS A and LOS C, respectively.

11. Sensitivity Analysis

A sensitivity analysis was completed to test whether the proposed geometry for both alternatives can accommodate variations in traffic as cumulative development in the area occurs. Cumulative analysis is typically conducted for a 20-year horizon. This is also consistent with Caltrans stipulation for Design which is typically 20 years after construction of the facility.[6] Based on information obtained from the County, a growth rate of 0.6 percent per year is appropriate for this area. A conservative 1% per year straight line growth rate was used to understand the geometric sensitivities for cumulative conditions.

11.1 Alternative 1 – Roundabout Sensitivity Operations

Table 11.1 presents Alternative 1 – Roundabout Friday and Sunday intersection LOS for cumulative conditions adjusted traffic volumes with the lane geometrics of the roundabout alternative. Intersection LOS and delay projections were developed using SIDRA 8 software.

Table 11.1 Alternative 1 – Roundabout Sensitivity: Intersection LOS for cumulative conditions

	Friday			Sunday		
	Delay	LOS	Queue	Delay	LOS	Queue
North/Eastbound US 50	3.9	A	105	4.0	A	144
South/Westbound US 50	5.0	A	31	5.2	A	75
West/Southbound Pioneer Trail	13.2	B	64	30.4	C	394
Overall LOS	**5.7**	**A**	**-**	**10.4**	**B**	**-**

Analysis is based on the methodology and procedures in the HCM. Average delay is reported in seconds per vehicle. For roundabout intersections, LOS is based on the average control delay for all approaches. Queue is reported in feet for the 95th percentile.

[6] Caltrans Highway Design Manual Topic 103.2

The intersection is projected to operate at LOS B or better under all conditions in cumulative conditions.

11.2 Alternative 2 – Traffic Signal Sensitivity Operations

Table 11.2 presents Alternative 2 – Traffic Signal Friday and Sunday intersection LOS for cumulative conditions adjusted traffic volumes with the lane geometrics of the traffic signal alternative. Intersection LOS and delay projections were developed using Synchro 10 software.

Table 11.2 Alternative 2 – Traffic Signal Sensitivity: Intersection LOS for cumulative conditions

	Friday			Sunday		
	Delay	LOS	Queue	Delay	LOS	Queue
North/Eastbound US 50	16.1	B	383	25.2	C	849
South/Westbound US 50	14.3	B	187	27.8	C	819
West/Southbound Pioneer Trail	26.0	C	207	78.7	E	681.0
Overall LOS	**17.2**	**B**	**-**	**38.1**	**D**	**-**

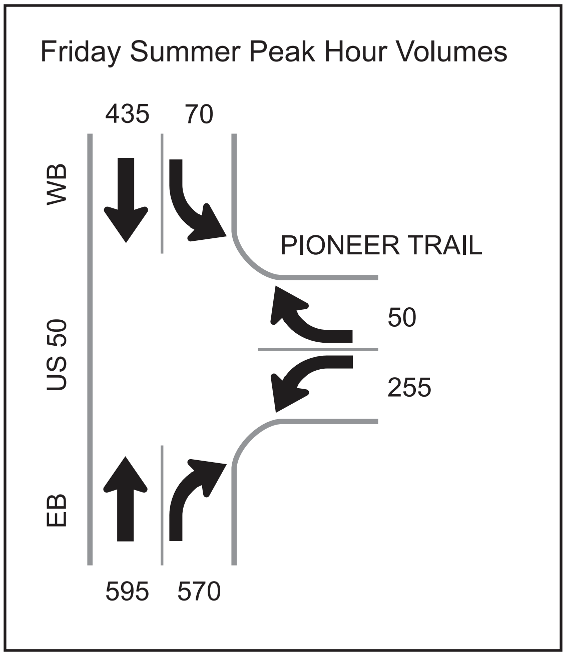
Analysis is based on the methodology and procedures in the HCM. Average delay is reported in seconds per vehicle. For signalized intersections, LOS is based on the average control delay for all approaches. Queue is reported in feet for the 95th percentile.

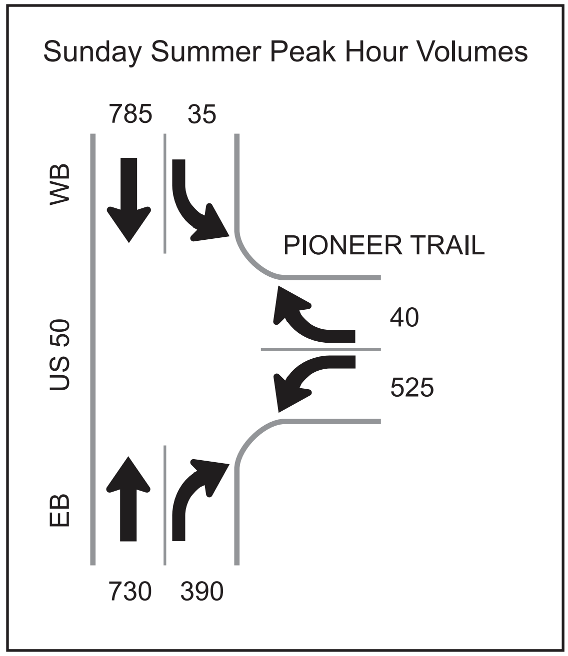
The intersection overall is projected to operate at LOS D or better under all conditions in cumulative conditions, with the Pioneer Trail approach operating at LOS E during Sunday peak.

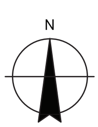
12. Conclusions

- For Friday design hourly volumes, the roundabout alternative is projected to operate at LOS A with a delay of 5.4 seconds per vehicle, while the improved signalized alternative is projected to operate at LOS B with a delay of 14 seconds per vehicle.
- For Sunday design hourly volumes, the roundabout alternative is projected to operate at LOS A with a delay of 7.2 seconds per vehicle, while the improved signalized alternative is projected to operate at LOS C with a delay of 20.5 seconds per vehicle.
- Based on the results of the sensitivity analysis, the roundabout alternative is projected to operate at LOS B under Sunday cumulative conditions compared to projected LOS D operations for the improved signalized alternative.
- For all scenarios, the roundabout alternative is projected to provide better operations (with respect to delay and LOS) when compared to the improved signalized alternative.

A. Design Hourly Volumes







NOT TO SCALE

El Dorado County
US 50 and Pioneer Trail TOAR

Design Hourly Volumes

Project No. 11191432
Report No. R2610RPT001
Date 8/21/2019

Appendix Figure 1

Filename: K:\PRJ\2610\R2610\R2610RPT001.docx
Plot Date: 21 August 2019 - 2:05 PM

Source: GHD

B. Synchro and SIDRA LOS Worksheets

LANE SUMMARY

Site: 1v [Pioneer RB Summer No Build Friday]

No Build Design Volumes Signal Alternative
Site Category: (None)
Signals - Actuated Isolated   Cycle Time = 108 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Pioneer Trail													
Lane 1	266	3.0	379 [1]	0.700	100	46.5	LOS D	14.1	360.4	Full	1600	0.0	0.0
Lane 2	52	1.0	399	0.131	100	41.1	LOS D	2.2	56.7	Short	50	0.0	NA
Approach	318	2.7		0.700		45.6	LOS D	14.1	360.4				
East: WB US 50													
Lane 1	73	1.0	199	0.366	100	57.3	LOS E	4.0	100.1	Short	165	0.0	NA
Lane 2	453	3.0	1247	0.363	100	8.3	LOS A	10.9	278.7	Full	1600	0.0	0.0
Approach	526	2.7		0.366		15.1	LOS B	10.9	278.7				
West: EB US 50													
Lane 1	620	3.0	616 [1]	1.007	100	57.7	LOS F	43.7	1118.0	Full	1600	0.0	0.0
Lane 2	594	1.0	583 [1]	1.018	100	67.5	LOS F	42.8	1077.4	Short	225	0.0	NA
Approach	1214	2.0		1.018		62.5	LOS E	43.7	1118.0				
Intersection	2057	2.3		1.018		47.8	LOS D	43.7	1118.0				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 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).
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

LANE SUMMARY

Site: 1 [Pioneer RB Summer Friday Peak Hour]

2019 Pioneer RB Sidra Standard EF 1.05
Site Category: (None)
Roundabout

Lane Use and Performance														
	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Pioneer Trail													
Lane 1[d]	266	3.0	1043	0.255	100	12.8	LOS B	1.7	42.4	Full	1600	0.0	0.0
Lane 2	52	1.0	700	0.074	100	8.0	LOS A	0.4	9.7	Short	200	0.0	NA
Approach	318	2.7		0.255		12.0	LOS B	1.7	42.4				
East: WB US 50													
Lane 1[d]	207	2.3	1309	0.158	95[6]	6.8	LOS A	0.9	23.6	Short	150	0.0	NA
Lane 2	319	3.0	1918	0.166	100	3.7	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	526	2.7		0.166		4.9	LOS A	0.9	23.6				
West: EB US 50													
Lane 1[d]	620	3.0	1504	0.412	100	4.1	LOS A	2.9	75.4	Full	1600	0.0	0.0
Lane 2	594	1.0	1658	0.358	100	3.6	LOS A	0.0	0.0	Short	150	0.0	NA
Approach	1214	2.0		0.412		3.9	LOS A	2.9	75.4				
Intersection	2057	2.3		0.412		5.4	LOS A	2.9	75.4				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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 > 1 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.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:45	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	3	3	3	3	3	3	3
# of Recorded Intervals	2	2	2	2	2	2	2
Vehs Entered	1988	1894	1950	1961	2007	1923	1962
Vehs Exited	2000	1920	1963	1957	1995	1934	1946
Starting Vehs	43	63	34	37	49	48	31
Ending Vehs	31	37	21	41	61	37	47
Travel Distance (mi)	972	934	955	957	976	944	952
Travel Time (hr)	38.4	36.2	39.0	38.5	40.0	37.6	38.6
Total Delay (hr)	10.4	9.4	11.6	10.9	11.7	10.5	11.1
Total Stops	1055	989	1135	1098	1128	1052	1126
Fuel Used (gal)	33.4	31.6	33.3	32.8	33.5	32.5	33.1

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	3	3	3	3
# of Recorded Intervals	2	2	2	2
Vehs Entered	1966	1909	2041	1960
Vehs Exited	1955	1909	2048	1963
Starting Vehs	29	33	45	41
Ending Vehs	40	33	38	39
Travel Distance (mi)	959	932	1002	958
Travel Time (hr)	38.3	37.0	40.3	38.4
Total Delay (hr)	10.7	10.2	11.4	10.8
Total Stops	1069	1051	1091	1079
Fuel Used (gal)	32.8	32.1	34.3	33.0

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	536	489	501	540	534	509	511
Vehs Exited	543	516	498	546	543	522	498
Starting Vehs	43	63	34	37	49	48	31
Ending Vehs	36	36	37	31	40	35	44
Travel Distance (mi)	264	246	244	266	266	251	246
Travel Time (hr)	10.6	9.5	10.3	11.1	10.8	10.3	10.0
Total Delay (hr)	3.0	2.4	3.3	3.5	3.1	3.1	2.9
Total Stops	284	248	303	308	289	285	295
Fuel Used (gal)	9.2	8.4	8.7	9.2	9.1	8.7	8.5

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	544	516	563	524
Vehs Exited	531	515	565	528
Starting Vehs	29	33	45	41
Ending Vehs	42	34	43	38
Travel Distance (mi)	264	249	274	257
Travel Time (hr)	10.9	10.1	11.3	10.5
Total Delay (hr)	3.3	2.9	3.5	3.1
Total Stops	309	282	291	291
Fuel Used (gal)	9.1	8.7	9.5	8.9

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1452	1405	1449	1421	1473	1414	1451
Vehs Exited	1457	1404	1465	1411	1452	1412	1448
Starting Vehs	36	36	37	31	40	35	44
Ending Vehs	31	37	21	41	61	37	47
Travel Distance (mi)	708	688	711	691	711	693	705
Travel Time (hr)	27.8	26.7	28.7	27.4	29.2	27.3	28.6
Total Delay (hr)	7.4	6.9	8.3	7.4	8.6	7.4	8.2
Total Stops	771	741	832	790	839	767	831
Fuel Used (gal)	24.2	23.2	24.6	23.6	24.4	23.8	24.7

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1422	1393	1478	1436
Vehs Exited	1424	1394	1483	1435
Starting Vehs	42	34	43	38
Ending Vehs	40	33	38	39
Travel Distance (mi)	695	683	728	701
Travel Time (hr)	27.4	26.9	29.0	27.9
Total Delay (hr)	7.4	7.3	8.0	7.7
Total Stops	760	769	800	790
Fuel Used (gal)	23.8	23.4	24.8	24.0

3: Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	3.5	0.0	0.0	0.5
Total Del/Veh (s)	23.0	12.4	12.3	14.0

Total Network Performance

Denied Del/Veh (s)	1.4
Total Del/Veh (s)	18.0

Intersection: 3:

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	195	162	36	245	237	210	115	187	160
Average Queue (ft)	107	26	12	134	80	102	52	87	33
95th Queue (ft)	173	96	28	208	183	174	98	155	103
Link Distance (ft)		719		540	540			447	447
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325		300			225	300		
Storage Blk Time (%)					0	0			
Queuing Penalty (veh)					0	0			

Intersection: 5: Bend

Movement	SB
Directions Served	T
Maximum Queue (ft)	62
Average Queue (ft)	2
95th Queue (ft)	63
Link Distance (ft)	540
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 1

LANE SUMMARY

Site: 1v [Pioneer RB Summer No Build Sunday]

No Build Design Volumes Signal Alternative
Site Category: (None)
Signals - Actuated Isolated   Cycle Time = 110 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Pioneer Trail													
Lane 1	559	1.5	558[1]	1.002	100	69.4	LOS F	40.3	1020.8	Full	1600	0.0	0.0
Lane 2	43	1.0	536	0.079	100	33.4	LOS C	1.6	40.9	Short	50	0.0	NA
Approach	601	1.5		1.002		66.8	LOS E	40.3	1020.8				
East: WB US 50													
Lane 1	37	1.0	179	0.208	100	58.2	LOS E	2.0	51.0	Short	165	0.0	NA
Lane 2	835	1.5	1066[1]	0.783	100	18.4	LOS B	37.1	937.9	Full	1600	0.0	0.0
Approach	872	1.5		0.783		20.1	LOS C	37.1	937.9				
West: EB US 50													
Lane 1	777	1.1	637[1]	1.219	100	142.5	LOS F	74.6	1881.1	Full	1600	0.0	19.7
Lane 2	415	1.1	626[1]	0.663	100	30.7	LOS C	18.2	459.0	Short	225	0.0	NA
Approach	1191	1.1		1.219		103.6	LOS F	74.6	1881.1				
Intersection	2665	1.3		1.219		68.0	LOS E	74.6	1881.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 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).
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.

1 Reduced capacity due to a short lane effect. Short lane queues may extend into the full-length lanes. Some upstream delays at entry to short lanes are not included.

LANE SUMMARY

Site: 1 [Pioneer RB Summer Sunday Peak Hour]

2019 Myers RB Sidra Standard EF 1.05
Site Category: (None)
Roundabout

Lane Use and Performance														
	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Pioneer Trail													
Lane 1[d]	559	1.5	956	0.584	100	17.2	LOS B	6.0	152.0	Full	1600	0.0	0.0
Lane 2	43	1.0	635	0.067	100	9.4	LOS A	0.4	9.0	Short	200	0.0	NA
Approach	601	1.5		0.584		16.6	LOS B	6.0	152.0				
East: WB US 50													
Lane 1[d]	289	1.4	1016	0.284	95[6]	7.2	LOS A	2.1	53.2	Short	150	0.0	NA
Lane 2	584	1.5	1947	0.300	100	4.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	872	1.5		0.300		5.0	LOS A	2.1	53.2				
West: EB US 50													
Lane 1[d]	777	1.1	1706	0.455	100	4.1	LOS A	3.9	99.2	Full	1600	0.0	0.0
Lane 2	415	1.1	1656	0.250	100	3.7	LOS A	0.0	0.0	Short	150	0.0	NA
Approach	1191	1.1		0.455		4.0	LOS A	3.9	99.2				
Intersection	2665	1.3		0.584		7.2	LOS A	6.0	152.0				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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 > 1 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.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:50	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	3	3	3	3	3	3	3
# of Recorded Intervals	2	2	2	2	2	2	2
Vehs Entered	2602	2514	2433	2441	2476	2509	2433
Vehs Exited	2614	2513	2431	2451	2465	2505	2425
Starting Vehs	62	54	57	62	52	49	53
Ending Vehs	50	55	59	52	63	53	61
Travel Distance (mi)	1293	1258	1212	1217	1229	1251	1208
Travel Time (hr)	59.5	55.4	53.3	53.7	53.7	55.4	53.0
Total Delay (hr)	23.0	20.0	19.2	19.4	19.1	20.5	18.9
Total Stops	1862	1632	1695	1568	1647	1655	1636
Fuel Used (gal)	49.0	46.8	45.4	45.2	45.5	47.0	44.8

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70
Time Recorded (min)	60	60	60	60
# of Intervals	3	3	3	3
# of Recorded Intervals	2	2	2	2
Vehs Entered	2498	2472	2528	2491
Vehs Exited	2510	2472	2532	2492
Starting Vehs	52	62	61	57
Ending Vehs	40	62	57	54
Travel Distance (mi)	1249	1226	1260	1240
Travel Time (hr)	56.5	54.4	60.1	55.5
Total Delay (hr)	21.4	19.9	24.5	20.6
Total Stops	1768	1683	1910	1706
Fuel Used (gal)	46.9	45.7	47.6	46.4

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	677	687	629	641	659	650	649
Vehs Exited	668	665	635	655	648	646	637
Starting Vehs	62	54	57	62	52	49	53
Ending Vehs	71	76	51	48	63	53	65
Travel Distance (mi)	333	338	316	323	327	320	321
Travel Time (hr)	15.8	15.6	14.2	15.1	14.7	14.3	14.7
Total Delay (hr)	6.3	6.1	5.3	6.0	5.5	5.3	5.7
Total Stops	499	486	454	479	465	440	475
Fuel Used (gal)	12.8	12.8	11.8	12.3	12.2	12.1	12.1

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	701	676	716	668
Vehs Exited	687	680	709	663
Starting Vehs	52	62	61	57
Ending Vehs	66	58	68	61
Travel Distance (mi)	346	335	353	331
Travel Time (hr)	16.7	16.1	19.3	15.6
Total Delay (hr)	6.9	6.6	9.3	6.3
Total Stops	534	541	663	504
Fuel Used (gal)	13.3	12.8	13.9	12.6

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1925	1827	1804	1800	1817	1859	1784
Vehs Exited	1946	1848	1796	1796	1817	1859	1788
Starting Vehs	71	76	51	48	63	53	65
Ending Vehs	50	55	59	52	63	53	61
Travel Distance (mi)	960	920	897	894	902	930	888
Travel Time (hr)	43.7	39.8	39.1	38.5	39.0	41.2	38.3
Total Delay (hr)	16.7	13.8	13.9	13.4	13.7	15.2	13.2
Total Stops	1363	1146	1241	1089	1182	1215	1161
Fuel Used (gal)	36.3	34.0	33.6	32.9	33.3	34.9	32.7

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1797	1796	1812	1822
Vehs Exited	1823	1792	1823	1829
Starting Vehs	66	58	68	61
Ending Vehs	40	62	57	54
Travel Distance (mi)	903	891	907	909
Travel Time (hr)	39.8	38.3	40.7	39.9
Total Delay (hr)	14.4	13.3	15.2	14.3
Total Stops	1234	1142	1247	1202
Fuel Used (gal)	33.6	32.9	33.7	33.8

3: Performance by approach Interval #1 7:00

Approach	WB	NB	SB	All
Denied Del/Veh (s)	3.3	0.0	0.0	0.7
Total Del/Veh (s)	36.7	18.6	19.2	23.1

3: Performance by approach Interval #2 7:15

Approach	WB	NB	SB	All
Denied Del/Veh (s)	3.3	0.0	0.0	0.7
Total Del/Veh (s)	29.5	15.6	17.0	19.2

3: Performance by approach Entire Run

Approach	WB	NB	SB	All
Denied Del/Veh (s)	3.3	0.0	0.0	0.7
Total Del/Veh (s)	32.0	16.5	17.7	20.5

Total Network Performance By Interval

Interval Start	7:00	7:15	All
Denied Del/Veh (s)	1.6	1.5	1.5
Total Del/Veh (s)	29.9	25.9	27.6

Intersection: 3: , Interval #1

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	316	282	28	282	254	118	65	315	284
Average Queue (ft)	245	167	12	199	152	74	36	211	159
95th Queue (ft)	348	324	32	300	272	132	72	330	291
Link Distance (ft)		719		540	540			447	447
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325		300			225	300		
Storage Blk Time (%)	4	2			1			1	
Queuing Penalty (veh)	12	5			3			0	

Intersection: 3: , Interval #2

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	302	253	34	274	246	132	90	343	308
Average Queue (ft)	205	122	10	174	124	61	32	195	129
95th Queue (ft)	293	253	26	254	229	111	72	304	268
Link Distance (ft)		719		540	540			447	447
Upstream Blk Time (%)								0	0
Queuing Penalty (veh)								0	0
Storage Bay Dist (ft)	325		300			225	300		
Storage Blk Time (%)	0	0			0			1	
Queuing Penalty (veh)	1	0			1			0	

Intersection: 3: , All Intervals

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	329	293	37	295	262	156	92	354	327
Average Queue (ft)	215	133	11	180	131	64	33	199	136
95th Queue (ft)	311	274	28	268	241	117	72	311	275
Link Distance (ft)		719		540	540			447	447
Upstream Blk Time (%)								0	0
Queuing Penalty (veh)								0	0
Storage Bay Dist (ft)	325		300			225	300		
Storage Blk Time (%)	1	0			0			1	
Queuing Penalty (veh)	3	1			1			0	

Intersection: 5: Bend, Interval #1

Movement	SB	SB
Directions Served	T	
Maximum Queue (ft)	63	56
Average Queue (ft)	9	8
95th Queue (ft)	133	117
Link Distance (ft)	540	540
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Bend, Interval #2

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

Intersection: 5: Bend, All Intervals

Movement	SB	SB
Directions Served	T	
Maximum Queue (ft)	63	56
Average Queue (ft)	2	2
95th Queue (ft)	63	56
Link Distance (ft)	540	540
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Bend, Interval #1

Movement	NB	NB
Directions Served	T	
Maximum Queue (ft)	143	46
Average Queue (ft)	20	7
95th Queue (ft)	179	97
Link Distance (ft)	447	447
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	1	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Bend, Interval #2

Movement	NB
Directions Served	T
Maximum Queue (ft)	280
Average Queue (ft)	21
95th Queue (ft)	180
Link Distance (ft)	447
Upstream Blk Time (%)	0
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Bend, All Intervals

Movement	NB	NB
Directions Served	T	
Maximum Queue (ft)	330	46
Average Queue (ft)	21	2
95th Queue (ft)	180	46
Link Distance (ft)	447	447
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	1	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty, Interval #1: 22
Network wide Queuing Penalty, Interval #2: 2
Network wide Queuing Penalty, All Intervals: 7

LANE SUMMARY

Site: 1 [Pioneer RB Summer Friday Peak Hour - Sensitivity]

2019 Pioneer RB Sidra Standard EF 1.05; sensitivity analysis 1% growth over 20 years, applied a 120% volume factor in SIDRA
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Pioneer Trail													
Lane 1[d]	319	3.0	922	0.346	100	14.0	LOS B	2.5	64.0	Full	1600	0.0	0.0
Lane 2	63	1.0	625	0.100	100	9.2	LOS A	0.6	14.0	Short	200	0.0	NA
Approach	381	2.7		0.346		13.2	LOS B	2.5	64.0				
East: WB US 50													
Lane 1[d]	241	2.3	1245	0.193	95[6]	7.1	LOS A	1.2	30.8	Short	150	0.0	NA
Lane 2	390	3.0	1918	0.204	100	3.8	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	631	2.7		0.204		5.0	LOS A	1.2	30.8				
West: EB US 50													
Lane 1[d]	744	3.0	1484	0.501	100	4.2	LOS A	4.1	104.7	Full	1600	0.0	0.0
Lane 2	712	1.0	1658	0.430	100	3.6	LOS A	0.0	0.0	Short	150	0.0	NA
Approach	1456	2.0		0.501		3.9	LOS A	4.1	104.7				
Intersection	2469	2.3		0.501		5.7	LOS A	4.1	104.7				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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 > 1 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.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:45	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	3	3	3	3	3	3	3
# of Recorded Intervals	2	2	2	2	2	2	2
Vehs Entered	2337	2289	2440	2316	2338	2328	2352
Vehs Exited	2327	2288	2445	2330	2325	2337	2358
Starting Vehs	41	45	48	56	53	46	45
Ending Vehs	51	46	43	42	66	37	39
Travel Distance (mi)	1141	1119	1196	1133	1138	1141	1152
Travel Time (hr)	48.8	47.0	52.6	47.7	48.3	48.6	49.0
Total Delay (hr)	16.0	14.9	18.2	14.9	15.5	15.9	15.9
Total Stops	1362	1312	1471	1323	1328	1385	1373
Fuel Used (gal)	39.8	39.0	42.9	39.5	39.5	40.2	40.5

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	3	3	3	3
# of Recorded Intervals	2	2	2	2
Vehs Entered	2399	2364	2410	2356
Vehs Exited	2410	2361	2418	2360
Starting Vehs	38	56	46	46
Ending Vehs	27	59	38	43
Travel Distance (mi)	1175	1153	1176	1152
Travel Time (hr)	50.5	50.4	52.5	49.5
Total Delay (hr)	16.7	17.2	18.4	16.4
Total Stops	1423	1427	1523	1393
Fuel Used (gal)	41.3	40.9	41.8	40.5

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	607	610	652	615	625	599	616
Vehs Exited	587	600	644	628	631	603	621
Starting Vehs	41	45	48	56	53	46	45
Ending Vehs	61	55	56	43	47	42	40
Travel Distance (mi)	289	296	319	302	307	293	303
Travel Time (hr)	12.8	13.1	14.3	13.0	13.4	13.0	12.7
Total Delay (hr)	4.5	4.6	5.1	4.3	4.6	4.6	4.0
Total Stops	378	382	374	366	384	384	339
Fuel Used (gal)	10.3	10.6	11.8	10.7	10.8	10.5	10.6

Interval #1 Information Recording

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	650	667	658	630
Vehs Exited	633	656	645	624
Starting Vehs	38	56	46	46
Ending Vehs	55	67	59	52
Travel Distance (mi)	314	322	316	306
Travel Time (hr)	14.3	15.5	14.6	13.7
Total Delay (hr)	5.3	6.2	5.4	4.8
Total Stops	439	461	427	394
Fuel Used (gal)	11.4	12.1	11.4	11.0

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	1730	1679	1788	1701	1713	1729	1736
Vehs Exited	1740	1688	1801	1702	1694	1734	1737
Starting Vehs	61	55	56	43	47	42	40
Ending Vehs	51	46	43	42	66	37	39
Travel Distance (mi)	852	823	877	831	831	848	849
Travel Time (hr)	36.0	34.0	38.3	34.7	34.9	35.6	36.4
Total Delay (hr)	11.5	10.2	13.1	10.7	10.9	11.3	11.9
Total Stops	984	930	1097	957	944	1001	1034
Fuel Used (gal)	29.5	28.5	31.1	28.8	28.7	29.7	29.9

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	1749	1697	1752	1727
Vehs Exited	1777	1705	1773	1735
Starting Vehs	55	67	59	52
Ending Vehs	27	59	38	43
Travel Distance (mi)	862	831	860	846
Travel Time (hr)	36.2	34.9	37.9	35.9
Total Delay (hr)	11.4	11.0	13.1	11.5
Total Stops	984	966	1096	1000
Fuel Used (gal)	29.9	28.8	30.4	29.5

3: Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	3.4	0.0	0.0	0.5
Total Del/Veh (s)	26.0	16.1	14.3	17.2

Total Network Performance

Denied Del/Veh (s)	1.9
Total Del/Veh (s)	22.6

Intersection: 3:

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	R	T	T	R	L	T	T
Maximum Queue (ft)	240	195	44	267	307	296	141	211	178
Average Queue (ft)	133	47	15	162	119	147	66	111	44
95th Queue (ft)	207	148	32	246	250	263	117	187	132
Link Distance (ft)		719		540	540			447	447
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	325		300			225	300		
Storage Blk Time (%)					0	3			
Queuing Penalty (veh)					1	10			

Intersection: 6: Bend

Movement	NB	NB
Directions Served	T	
Maximum Queue (ft)	233	46
Average Queue (ft)	13	2
95th Queue (ft)	137	46
Link Distance (ft)	447	447
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 12

LANE SUMMARY

Site: 1 [Pioneer RB Summer Sunday Peak Hour - Sensitivity]

2019 Myers RB Sidra Standard EF 1.05; sensitivity analysis 1% growth over 20 years, applied a 120% volume factor in SIDRA
Site Category: (None)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	Demand Flows HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	95% Back of Queue Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: NB Pioneer Trail													
Lane 1 [d]	670	1.5	813	0.824	100	31.9	LOS C	15.5	393.1	Full	1600	0.0	0.0
Lane 2	51	1.0	550	0.093	100	11.3	LOS B	0.5	13.7	Short	200	0.0	NA
Approach	721	1.5		0.824		30.4	LOS C	15.5	393.1				
East: WB US 50													
Lane 1 [d]	313	1.4	876	0.357	95 [6]	8.1	LOS A	2.9	74.4	Short	150	0.0	NA
Lane 2	734	1.5	1947	0.377	100	4.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	1047	1.5		0.377		5.2	LOS A	2.9	74.4				
West: EB US 50													
Lane 1 [d]	932	1.1	1692	0.551	100	4.2	LOS A	5.7	143.4	Full	1600	0.0	0.0
Lane 2	498	1.1	1656	0.301	100	3.7	LOS A	0.0	0.0	Short	150	0.0	NA
Approach	1430	1.1		0.551		4.0	LOS A	5.7	143.4				
Intersection	3198	1.3		0.824		10.4	LOS B	15.5	393.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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 > 1 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.

6 Lane under-utilisation due to downstream effects
d Dominant lane on roundabout approach

Summary of All Intervals

Run Number	1	10	2	3	4	5	6
Start Time	6:45	6:45	6:45	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	3	3	3	3	3	3	3
# of Recorded Intervals	2	2	2	2	2	2	2
Vehs Entered	3040	2988	2954	2878	2927	3018	3035
Vehs Exited	3035	2995	2977	2896	2888	3019	2982
Starting Vehs	83	91	83	87	63	94	58
Ending Vehs	88	84	60	69	102	93	111
Travel Distance (mi)	1511	1494	1480	1442	1446	1509	1494
Travel Time (hr)	98.3	75.8	84.6	73.4	80.4	93.5	91.9
Total Delay (hr)	55.8	33.9	43.0	32.9	39.8	51.1	49.9
Total Stops	3428	2636	3065	2408	2762	3207	3131
Fuel Used (gal)	65.3	58.8	60.7	56.3	58.7	63.5	62.4

Summary of All Intervals

Run Number	7	8	9	Avg
Start Time	6:45	6:45	6:45	6:45
End Time	8:00	8:00	8:00	8:00
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	3	3	3	3
# of Recorded Intervals	2	2	2	2
Vehs Entered	3043	2947	3008	2984
Vehs Exited	3042	2959	3024	2982
Starting Vehs	68	83	86	79
Ending Vehs	69	71	70	81
Travel Distance (mi)	1518	1471	1502	1487
Travel Time (hr)	84.0	80.1	95.1	85.7
Total Delay (hr)	41.3	38.7	52.7	43.9
Total Stops	2998	2781	3290	2971
Fuel Used (gal)	61.2	59.1	63.7	61.0

Interval #0 Information Seeding

Start Time	6:45
End Time	7:00
Total Time (min)	15

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Seeding

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	10	2	3	4	5	6
Vehs Entered	827	779	801	772	784	776	787
Vehs Exited	766	790	775	759	751	771	735
Starting Vehs	83	91	83	87	63	94	58
Ending Vehs	144	80	109	100	96	99	110
Travel Distance (mi)	391	395	392	381	381	386	377
Travel Time (hr)	26.0	20.3	24.2	20.9	22.1	23.5	20.6
Total Delay (hr)	15.0	9.3	13.3	10.3	11.4	12.7	10.1
Total Stops	958	728	961	733	776	867	759
Fuel Used (gal)	17.1	15.6	16.6	15.2	15.7	16.0	15.2

Interval #1 Information Seeding

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	7	8	9	Avg
Vehs Entered	780	815	822	794
Vehs Exited	760	781	795	767
Starting Vehs	68	83	86	79
Ending Vehs	88	117	113	105
Travel Distance (mi)	385	396	400	388
Travel Time (hr)	22.1	23.8	27.6	23.1
Total Delay (hr)	11.3	12.7	16.3	12.2
Total Stops	764	927	1019	849
Fuel Used (gal)	15.7	16.4	17.6	16.1

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	10	2	3	4	5	6
Vehs Entered	2213	2209	2153	2106	2143	2242	2248
Vehs Exited	2269	2205	2202	2137	2137	2248	2247
Starting Vehs	144	80	109	100	96	99	110
Ending Vehs	88	84	60	69	102	93	111
Travel Distance (mi)	1120	1099	1088	1061	1065	1123	1118
Travel Time (hr)	72.4	55.5	60.4	52.4	58.3	69.9	71.3
Total Delay (hr)	40.8	24.6	29.7	22.6	28.4	38.4	39.8
Total Stops	2470	1908	2104	1675	1986	2340	2372
Fuel Used (gal)	48.2	43.2	44.1	41.1	43.0	47.5	47.2

Interval #2 Information Recording

Start Time	7:15
End Time	8:00
Total Time (min)	45

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	7	8	9	Avg
Vehs Entered	2263	2132	2186	2190
Vehs Exited	2282	2178	2229	2213
Starting Vehs	88	117	113	105
Ending Vehs	69	71	70	81
Travel Distance (mi)	1134	1075	1101	1098
Travel Time (hr)	61.9	56.3	67.5	62.6
Total Delay (hr)	30.0	26.0	36.4	31.7
Total Stops	2234	1854	2271	2123
Fuel Used (gal)	45.5	42.7	46.1	44.9

3: Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	4.7	0.0	0.0	1.1
Total Del/Veh (s)	78.7	25.2	27.8	38.1

Total Network Performance

Denied Del/Veh (s)	2.3
Total Del/Veh (s)	49.4

Intersection: 3:

Movement	WB	WB	WB	NB	NB	NB	B5	SB	SB	SB	B6
Directions Served	L	L	R	T	T	R	T	L	T	T	T
Maximum Queue (ft)	408	642	217	462	454	283	7	204	472	431	158
Average Queue (ft)	338	351	35	260	224	104	0	44	288	239	10
95th Queue (ft)	468	681	177	410	400	230	8	148	445	421	110
Link Distance (ft)		719		540	540		1102		447	447	474
Upstream Blk Time (%)		4		0	0				2	0	0
Queuing Penalty (veh)		0		0	0				0	0	0
Storage Bay Dist (ft)	325		300			225		300			
Storage Blk Time (%)	38	14			5	0			11		
Queuing Penalty (veh)	137	52			25	0			5		

Intersection: 5: Bend

Movement	SB	SB
Directions Served	T	
Maximum Queue (ft)	586	165
Average Queue (ft)	69	8
95th Queue (ft)	374	114
Link Distance (ft)	540	540
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	4	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Bend

Movement	NB	NB
Directions Served	T	
Maximum Queue (ft)	488	435
Average Queue (ft)	111	31
95th Queue (ft)	439	221
Link Distance (ft)	447	447
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	5	1
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 229

C. Conceptual Designs for Alternatives 1 and 2

Roundabout Alternative

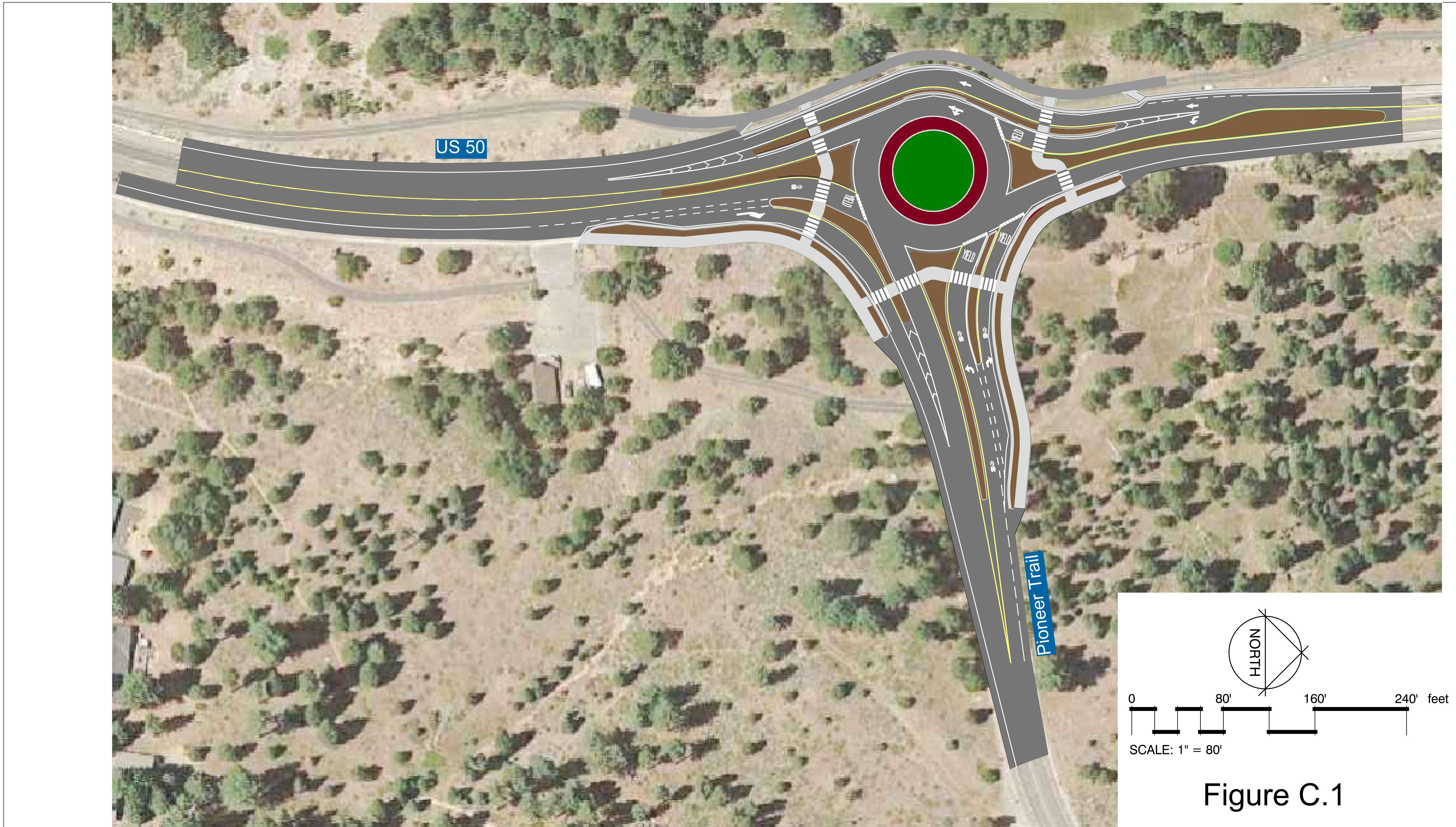


Figure C.1

US 50 / Pioneer Trail Intersection Improvement Project

Meyers, California

GHD
943 Reserve Drive
Roseville, CA 95678 USA
T 1 916 782 8688 W www.ghd.com
GHD Inc.

July 18, 2019
2610EX002.dwg

Signal Alternative

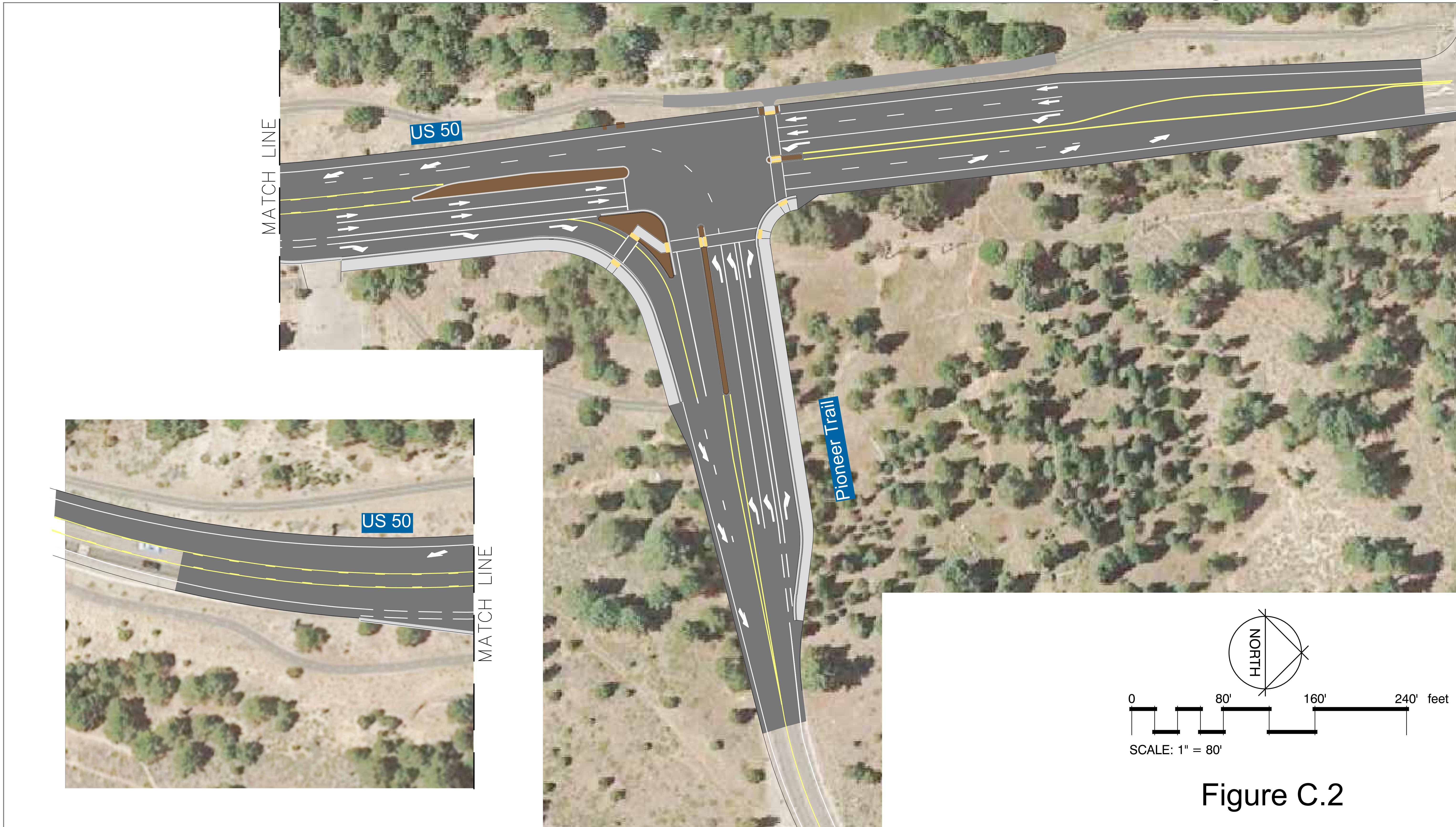


Figure C.2

US 50 / Pioneer Trail Intersection Improvement Project

Meyers, California

GHD
GHD Inc.
943 Reserve Drive
Roseville, CA 95678 USA
T 1 916 782 8688 W www.ghd.com

July 18, 2019
2610EX003.dwg

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

www.ghd.com

Attachment C

ENVIRONMENTAL DOCUMENT

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Initial Study/Mitigated Negative Declaration/Initial Environmental Checklist

Pioneer Trail/US Highway 50 Intersection Safety Improvement Project

Community of Meyers, South Lake Tahoe, CA

December 2021

State of California - Department of Fish and Wildlife
2020 ENVIRONMENTAL FILING FEE CASH RECEIPT
DFW 753.5a (REV. 12/01/19) Previously DFG 753.5a

RECEIPT NUMBER: 09--01042022-001

STATE CLEARINGHOUSE NUMBER (*If applicable*): 2021080009

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY.

LEAD AGENCY	LEADAGENCY EMAIL	DATE
EL DORADO CO DEPARTMENT OF	donaldo.palaroan@edcgov.us	01/04/2022

COUNTY/STATE AGENCY OF FILING	DOCUMENT NUMBER
EL DORADO	FW2022-0001

PROJECT TITLE

PIONEER TRAIL/US HIGHAY 50 INTERSECTION IMPROVEMENT PROJECT

PROJECT APPLICANT NAME	PROJECT APPLICANT EMAIL	PHONE NUMBER
EL DORADO CO DEPARTMENT OF	donaldo.palaroan@edcgov.us	(530) 573-7920

PROJECT APPLICANT ADDRESS	CITY	STATE	ZIP CODE
924B EMERALD BAY RD	SOUTH LAKE	CA	96150

PROJECT APPLICANT (*Check appropriate box*)

☒ Local Public Agency ☐ School District ☐ Other Special District ☐ State Agency ☐ Private Entity

CHECK APPLICABLE FEES:

☐ Environmental Impact Report (EIR)	$3,343.25	$
☒ Mitigated/Negative Declaration (MND)(ND)	$2,406.75	$ $2,548.00
☐ Certified Regulatory Program (CRP) document - payment due directly to CDFW	$1,136.50	$

☐ Exempt from fee
- ☐ Notice of Exemption (attach)
- ☐ CDFW No Effect Determination (attach)

☐ Fee previously paid (attach previously issued cash receipt copy)

☐ Water Right Application or Petition Fee (State Water Resources Control Board only)	$850.00	$
☒ County documentary handling fee		$ $50.00
☐ Other		$

PAYMENT METHOD:

☐ Cash ☐ Credit ☐ Check ☒ Other

TOTAL RECEIVED $ $2,598.00

SIGNATURE	AGENCY OF FILING PRINTED NAME AND TITLE
X Samantha Hicks	Janelle K. Horne Recorder-Clerk, by Samantha Hicks, Dpty

FILED

JAN 04 2022

JANELLE K. HORNE, Recorder-Clerk
By Samantha McNeil

Notice of Determination

Appendix D

To:
☒ Office of Planning and Research
U.S. Mail: P.O. Box 3044, Sacramento, CA 95812-3044
Street Address: 1400 Tenth St., Rm 113, Sacramento, CA 95814

☒ County Clerk
County of: El Dorado
Address: 360 Fair Lane
Placerville, CA 95667

From:
Public Agency: El Dorado County - Transportation
Address: 924B Emerald Bay Road
South Lake Tahoe, CA 96150
Contact: Donaldo Palaroan, P.E.
Phone: 530-573-7920, donaldo.palaroan@edcgov.us

Lead Agency (if different from above):
Address:
Contact:
Phone:

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (if submitted to State Clearinghouse): 2021080009

Project Title: Pioneer Trail/ U.S. Highway 50 Intersection Safety Improvement Project

Project Applicant: El Dorado County, Department of Transportation

Project Location (include county): South Lake Tahoe, CA - El Dorado County

Project Description:
The objectives of the proposed Project are to remove the existing traffic signals at the Pioneer Trail/ U.S. Highway 50 intersection and replace the intersection with a three-leg modern roundabout with standard roundabout geometric features such as shared-use paths, crosswalks, splitter islands, truck apron with central island, and landscape buffer between the circulatory roadway and shared-use path. The proposed Project would also construct permanent site drainage improvements to protect water quality, such as sediment traps and an infiltration basin.

This is to advise that the El Dorado County Board of Supervisors (☒ Lead Agency or ☐ Responsible Agency) has approved the above described project on January 4, 2022 (date) and has made the following determinations regarding the above described project.

1. The project [☐ will ☒ will not] have a significant effect on the environment.
2. ☐ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☒ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [☒ were ☐ were not] made a condition of the approval of the project.
4. A mitigation reporting or monitoring plan [☒ was ☐ was not] adopted for this project.
5. A statement of Overriding Considerations [☐ was ☒ was not] adopted for this project.
6. Findings [☒ were ☐ were not] made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval, or the negative Declaration, is available to the General Public at:
El Dorado County, Department of Transportation, 924B Emerald Bay Road, South Lake Tahoe, CA 96150

Signature (Public Agency): [signature] Title: Senior Civil Engineer

Date: January 4, 2022 Date Received for filing at OPR:

Authority cited: Sections 21083, Public Resources Code.
Reference Section 21000-21174, Public Resources Code.

Revised 2011

El Dorado County

Janelle K. Horne, Recorder-Clerk
360 Fair Lane
Placerville, CA 95667
(530) 621-5490

Receipt: 22-385

Product	**Name**	**Extended**
FISH	FISH AND WILDLIFE FILING	$2,598.00

# Pages	1
Document #	09--01042022-001
Document Info:	EL DORADO CO DEPARTMENT OF TRANSPORATION
Filing Type	ND

Total $2,598 00

Tender (Journal Voucher) $2,598 00

Paid By EL DORADO CO DEPARTMENT OF TRANSPORTATION

CommentJE35093

Thank You for Your Business

1/4/22 3:21 PM SH
PLACERVILLE

Attachment D

LAYOUTS

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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
3	ED	50	71.34 71.59		
NCE 224 KINGSBURY GRADE ROAD, SUITE 203 STATELINE, NV 89449		COUNTY OF EL DORADO 924 B EMERALD BAY ROAD, SOUTH LAKE TAHOE, CA 96150		1	1

ABBREVIATIONS:

BCC	BEGIN HORIZONTAL COMPOUND CURVE
C	CURVE NUMBER
C&G	CURB AND GUTTER
E	EASTING
ECC	END HORIZONTAL COMPOUND CURVE
L	LINE NUMBER
N	NORTHING

ALIGNMENT DATA "A1" LINE

NO.	R	Δ	T	L
L1		N25° 12' 38.00" E		67.81'
C1	1332.99'	N22° 18' 38.00" E	67.53'	134.94'
C2	999.62'	N09° 02' 38.00" E	182.86'	361.72'
C3	1332.99'	N22° 18' 38.00" E	67.53'	134.94'
L2		N07° 07' 22.00" E		823.45'

ALIGNMENT DATA "PT" LINE

NO.	R	Δ	T	L
L5		N79° 45' 08.00" E		650.81'
C9	575.00'	N72° 19' 09.34" E	75.02'	149.19'

LEGEND:

- TEXTURED HMA
- CONCRETE
- REVEGETATE / LANDSCAPE

LAYOUT

SCALE: 1" = 50'

PRELIMINARY FOR REVIEW NOT FOR CONSTRUCTION DATE: 12-22-20

ORIGINAL SCALE IS IN INCHES FOR REDUCED PLANS 0 1 2

Drawing name: P:\Active Projects\El Dorado County – A501\501.30.25 – Pioneer Trail Hwy 50 Intersection\CAD\Sheets\L1-v02.dwg Layout Tab: L2 Dec 21,2020 – 3:55pm KHowell

REVISION | NUMBER | DATE | DESCRIPTION | BY

LICENSED PROFESSIONAL ENGINEER ANGELA DENISE HUEFTLE No. C 82432 EXP. 09/30/2022 CIVIL STATE OF CALIFORNIA

PREPARED UNDER THE SUPERVISION OF : ANGELA D. HUEFTLE

REGISTERED CIVIL ENGINEER DATE:

DESIGNED: ST DRAWN: PS CHECKED: FH DATE: 10-09-20 ROAD NUMBER: US-50

EL DORADO COUNTY CALIFORNIA

COUNTY OF EL DORADO
DEPARTMENT OF TRANSPORTATION

PIONEER TRAIL/US 50 INTERSECTION
SAFETY IMPROVEMENT PROJECT

SHEET L-1 1 OF 1 W.O. No.

Attachment E

TYPICAL SECTIONS

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	71.3/71.6	--	--

PRELIMINARY, NOT FOR CONSTRUCTION

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

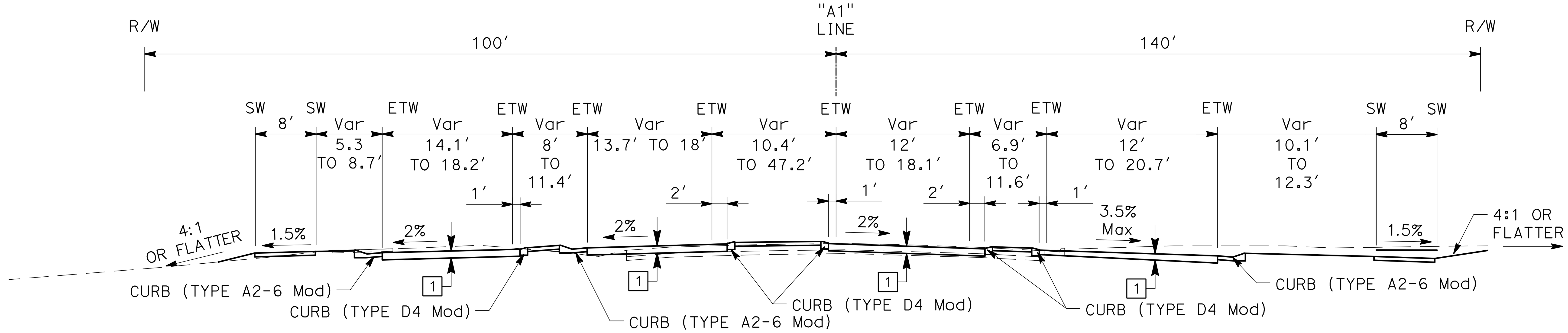
REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

GHD Inc.
943 RESERVE DRIVE
ROSEVILLE, CA 95678

EL DORADO COUNTY
2850 FAIRLANE Ct Bldg C
PLACERVILE, CA 95667

NOTES:

1. DIMENSIONS OF PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. SUPERELEVATIONS ARE SHOWN ON THE SUPERELEVATION DIAGRAMS.
3. LANE WIDTHS VARY. SEE LAYOUTS, CONSTRUCTION DETAILS, AND PAVEMENT DELINEATION PLANS.



WESTBOUND
"A1" 245+12.60 TO 246+25.14

EASTBOUND
"A1" 245+29.67 TO 246+17.23

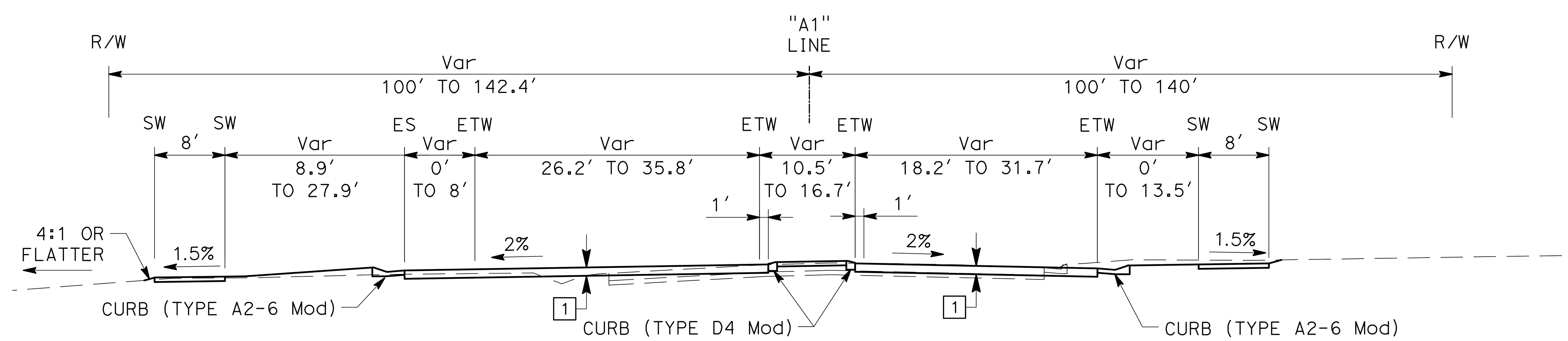
US 50

TYPICAL PAVEMENT STRUCTURE SECTIONS:

[1] 0.95' HMA (TYPE A)

[2] 0.95' TEXTURED HMA

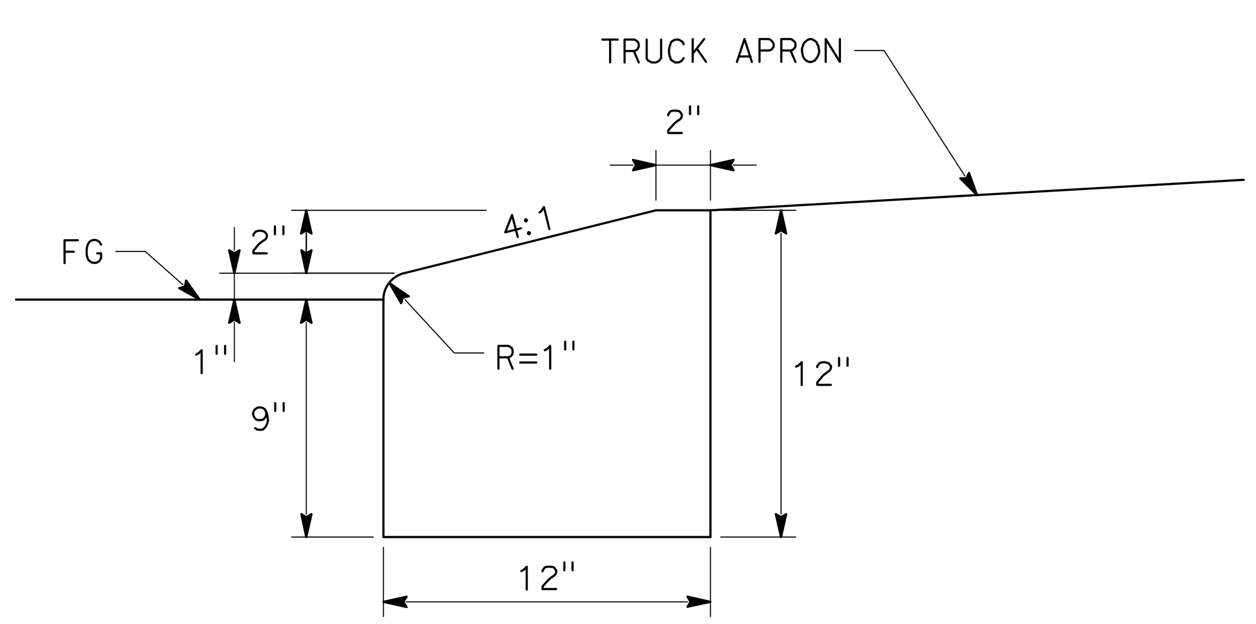
[3] 0.80' HMA (TYPE A)



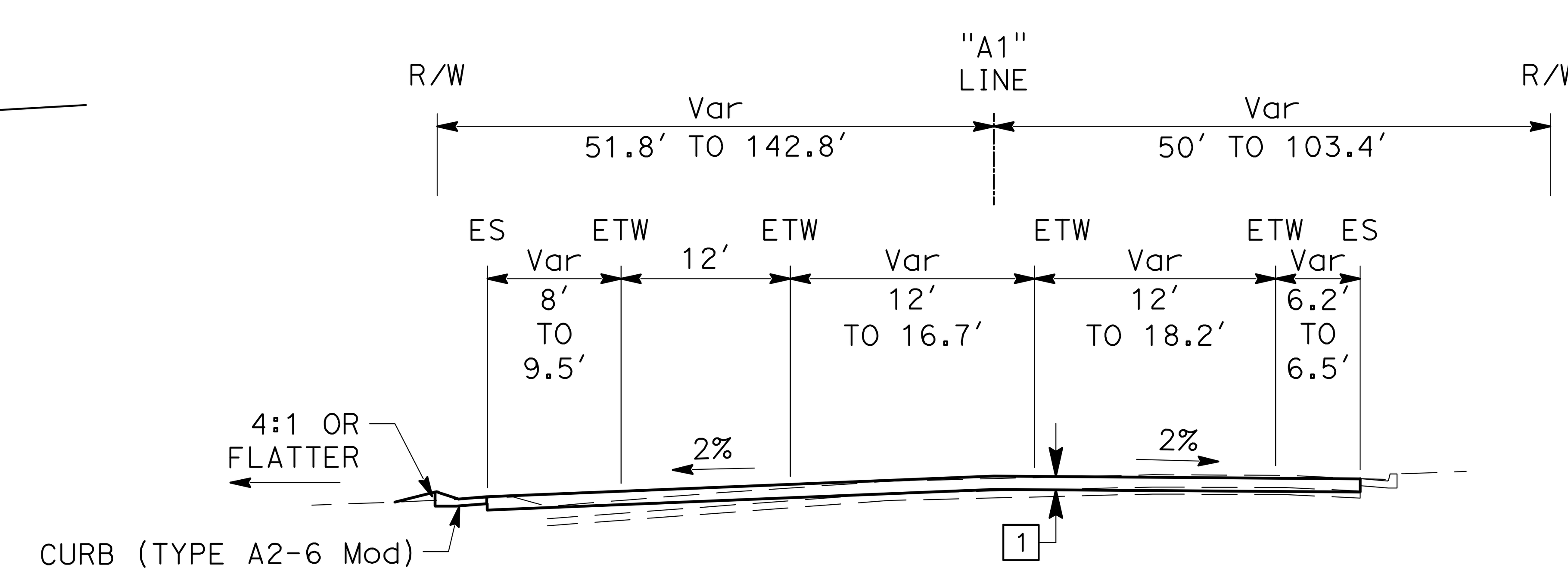
WESTBOUND
"A1" 241+95.06 TO 245+12.60

EASTBOUND
"A1" 241+95.06 TO 245+29.67

US 50

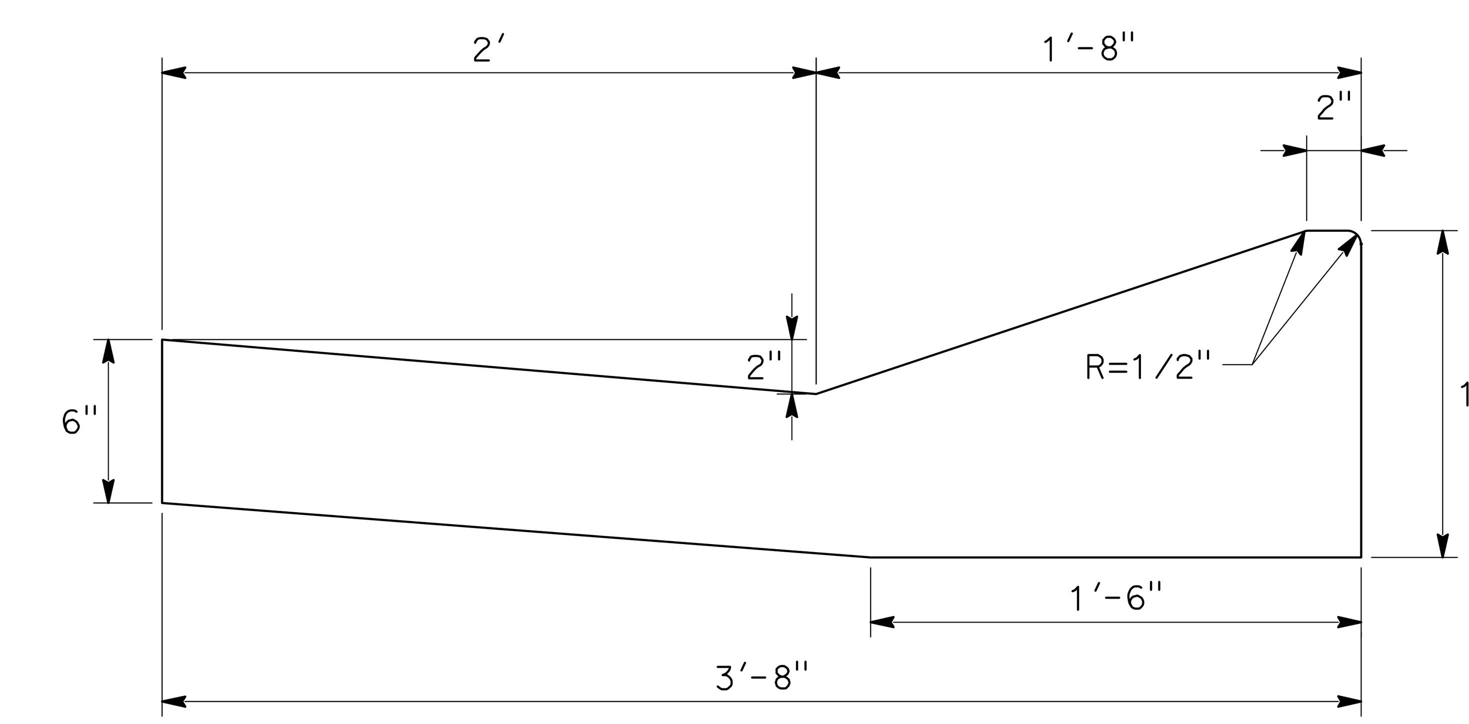


CURB (TYPE D4 Mod)



"A1" 238+74.91 TO 241+95.06

US 50



CURB (TYPE A2-6 Mod)

TYPICAL CROSS SECTIONS

NO SCALE

X-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: RONALD G. BOYLE

CALCULATED-DESIGNED BY: MICHAEL PITCOCK

CHECKED BY: LINDSEY VAN PARYS

REVISED BY: MCP

DATE REVISED: 12-10-20

DATE PLOTTED => 12-11-2020
TIME PLOTTED => 10:58

LAST REVISION 00-00-00

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	71.3/71.6	--	--

PRELIMINARY, NOT FOR CONSTRUCTION

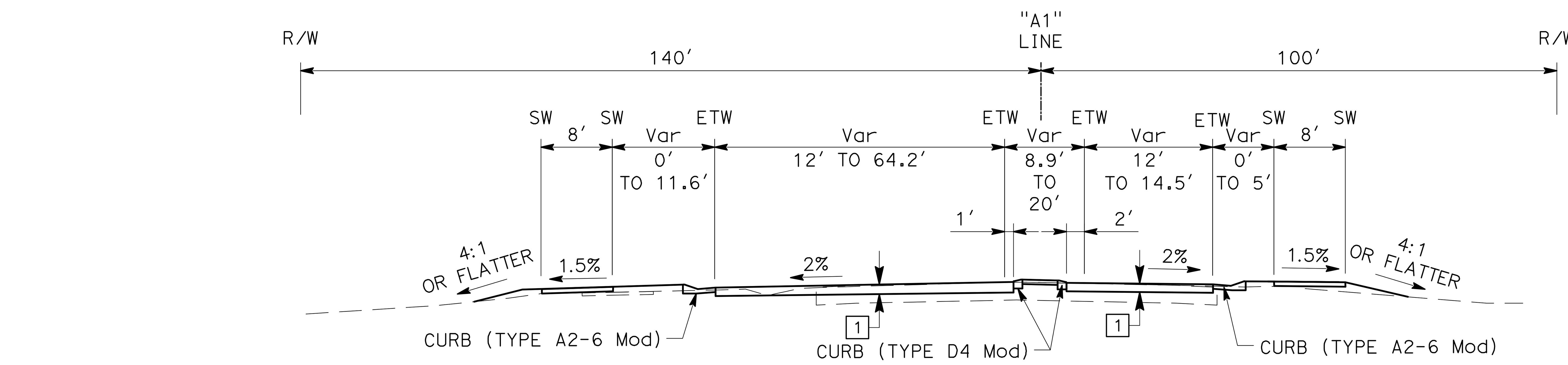
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

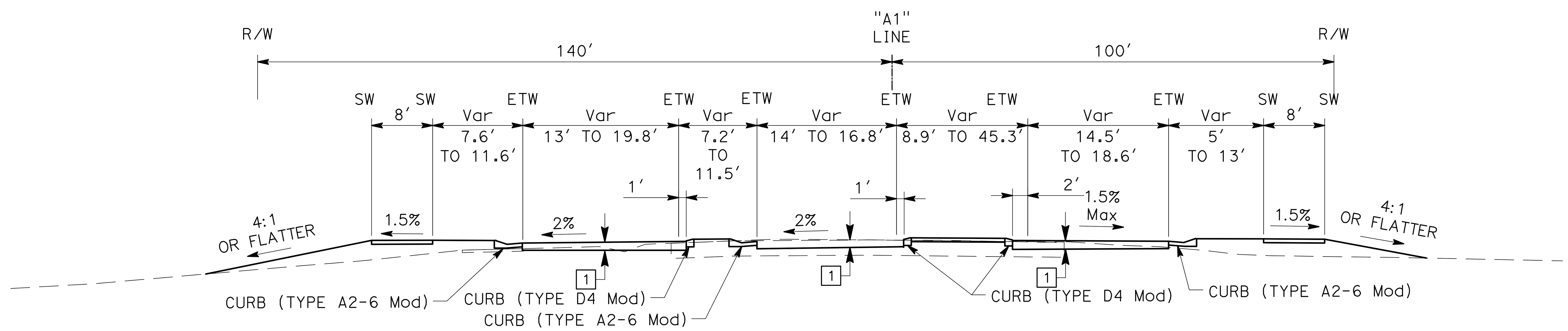
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

GHD Inc. 943 RESERVE DRIVE ROSEVILLE, CA 95678	EL DORADO COUNTY 2850 FAIRLANE Ct Bldg C PLACERVILE, CA 95667



"A1" 248+42.09 TO 250+09.10

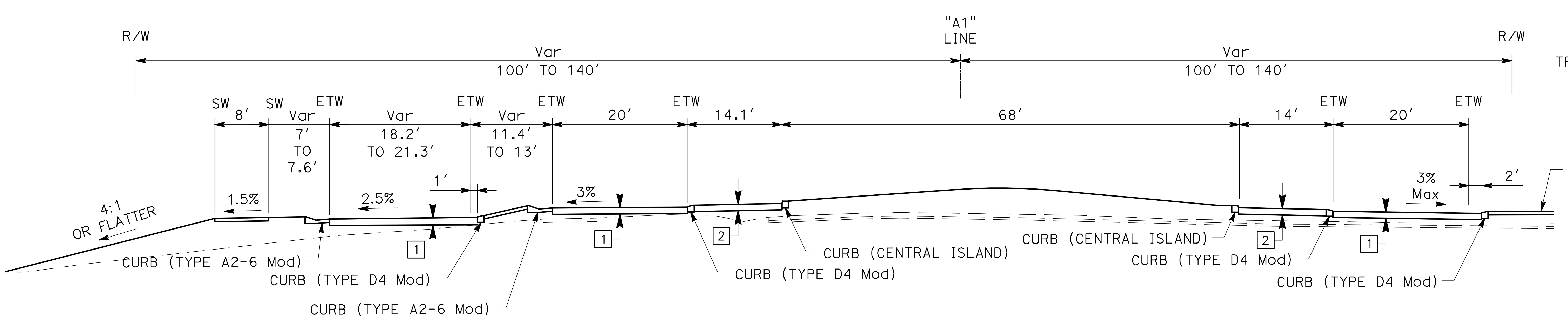
US 50



WESTBOUND
"A1" 247+49.66 TO 248+42.09

EASTBOUND
"A1" 247+46.34 TO 248+42.09

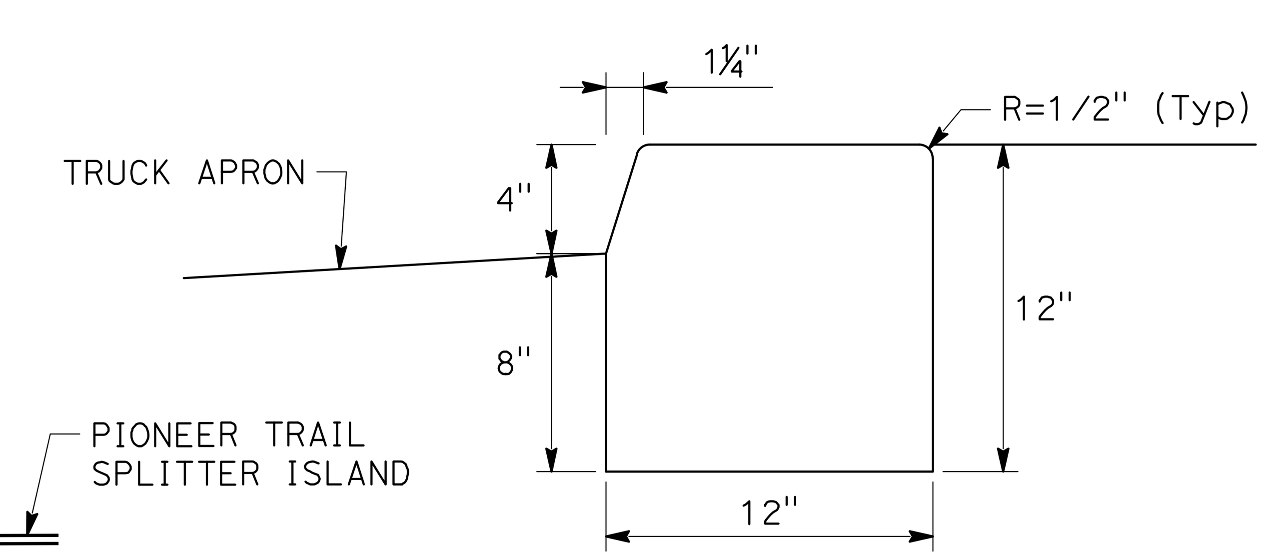
US 50



WESTBOUND
"A1" 246+25.14 TO 247+49.66

EASTBOUND
"A1" 246+17.23 TO 247+46.34

US 50



CURB (CENTRAL ISLAND)

TYPICAL CROSS SECTIONS

NO SCALE

X-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: RONALD G. BOYLE

CALCULATED-DESIGNED BY: MICHAEL PITCOCK | CHECKED BY: LINDSEY VAN PARYS

REVISED BY: MCP | DATE REVISED: 12-10-20

LAST REVISION 00-00-00 | DATE PLOTTED => 12-11-2020 | TIME PLOTTED => 10:58

BORDER LAST REVISED 7/2/2010

USERNAME => mpitcock
DGN FILE => K:\PRJ\2610\2610X001.DWG

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 0317000163

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	71.3/71.6	--	--

PRELIMINARY, NOT FOR CONSTRUCTION

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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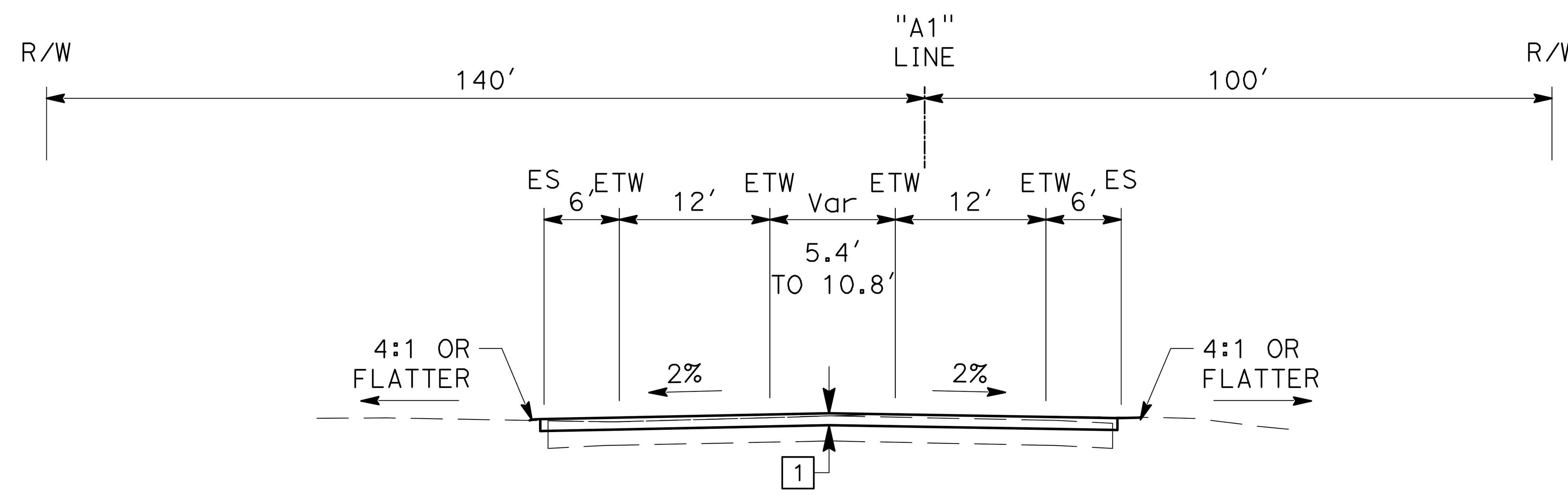
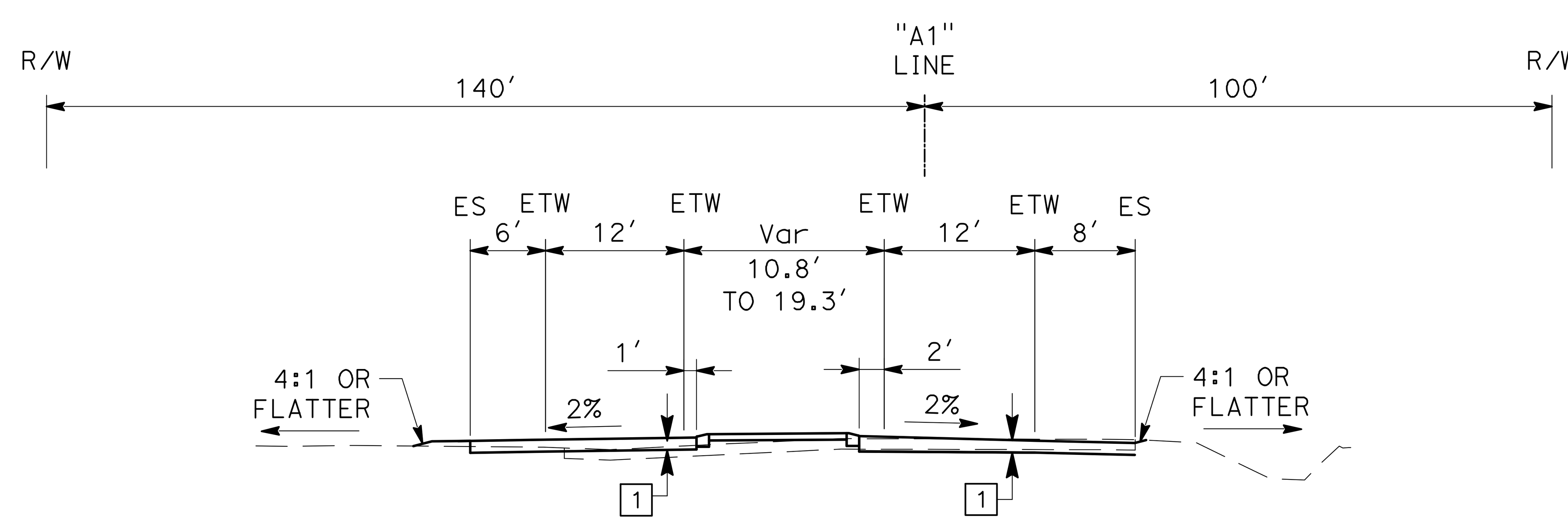
REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

GHD Inc.
943 RESERVE DRIVE
ROSEVILLE, CA 95678

EL DORADO COUNTY
2850 FAIRLANE Ct Bldg C
PLACERVILE, CA 95667



"A1" 251+14.32 TO 252+22.43
US 50



"A1" 250+09.10 TO 251+14.32
US 50

TYPICAL CROSS SECTIONS
NO SCALE

X-3

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: RONALD G. BOYLE

CALCULATED-DESIGNED BY: MICHAEL PITCOCK
CHECKED BY: LINDSEY VAN PARYS
REVISED BY: MCP
DATE REVISED: 12-10-20

DATE PLOTTED => 12-11-2020
TIME PLOTTED => 10:58
LAST REVISION 00-00-00

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	ED	50	71.3/71.6	--	--

PRELIMINARY, NOT FOR CONSTRUCTION

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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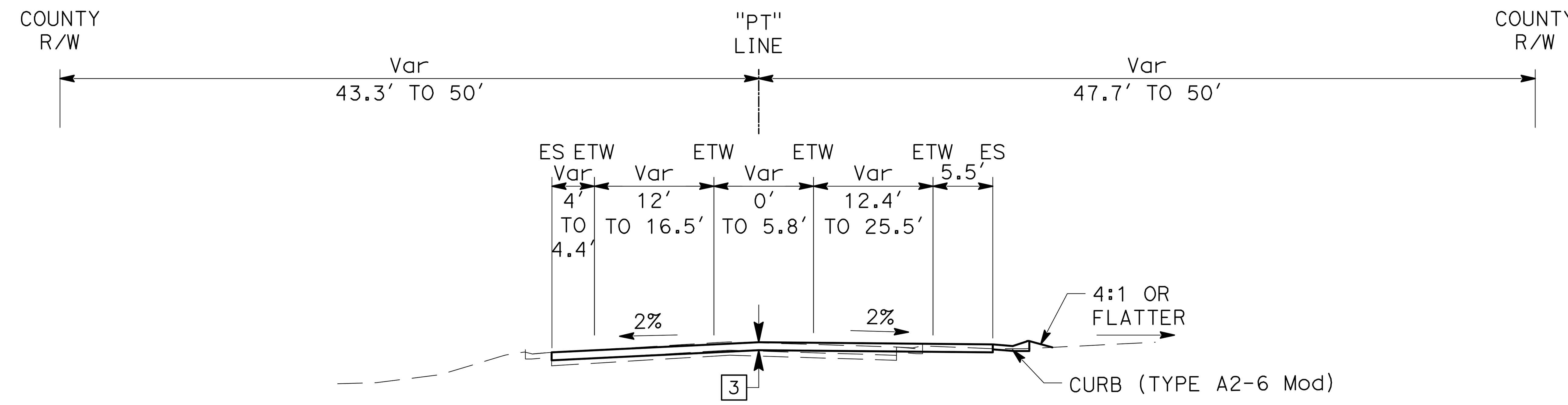
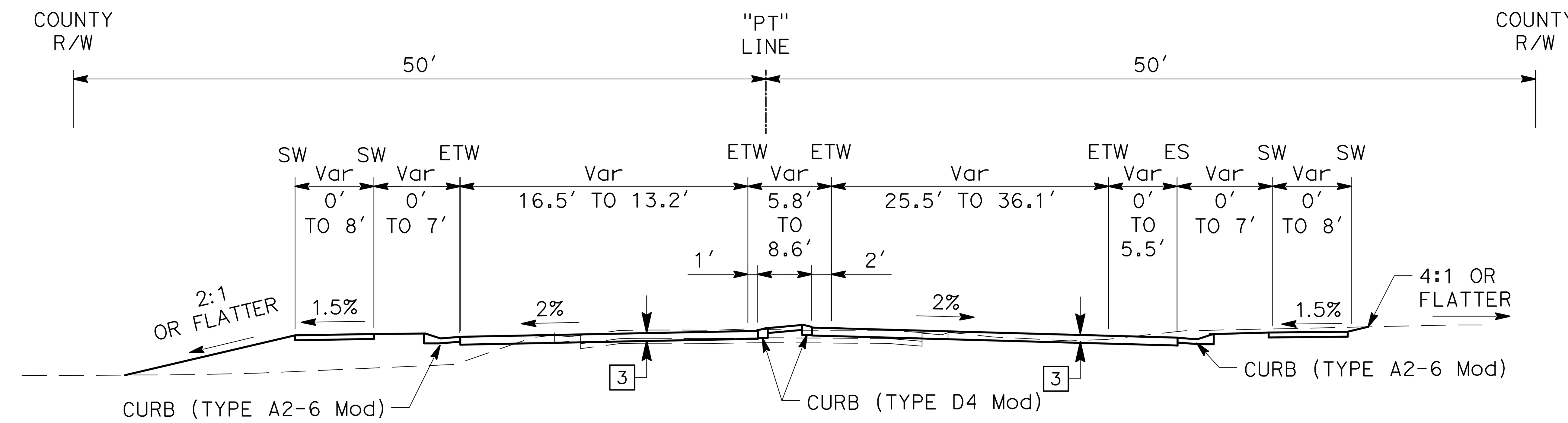
REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

GHD Inc. 943 RESERVE DRIVE ROSEVILLE, CA 95678	EL DORADO COUNTY 2850 FAIRLANE Ct Bldg C PLACERVILE, CA 95667



"A1" 14+17.02 TO 16+74.55

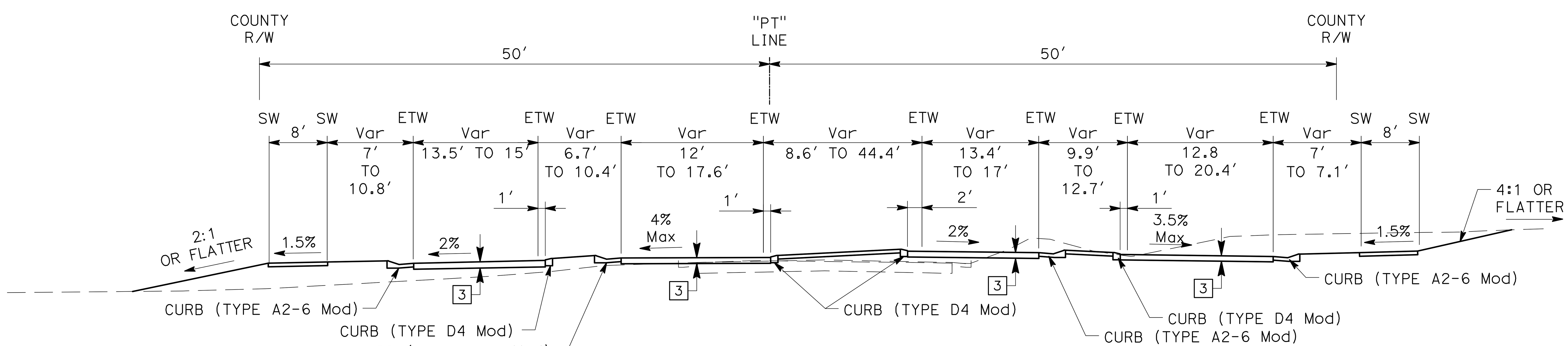
PIONEER TRAIL



WESTBOUND "A1" 13+07.52 TO 14+17.02

EASTBOUND "A1" 13+11.66 TO 14+17.02

PIONEER TRAIL



WESTBOUND "A1" 12+11.79 TO 13+07.52

EASTBOUND "A1" 12+17.73 TO 13+11.66

PIONEER TRAIL

TYPICAL CROSS SECTIONS

NO SCALE

X-4

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: RONALD G. BOYLE

CALCULATED-DESIGNED BY: MICHAEL PITCOCK

CHECKED BY: LINDSEY VAN PARYS

REVISED BY: MCP

DATE REVISED: 12-10-20

DATE PLOTTED => 12-11-2020
TIME PLOTTED => 10:58

LAST REVISION 00-00-00

Attachment F

PROJECT COST ESTIMATE

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PROJECT

PRELIMINARY COST ESTIMATE©

EA: 03-2H610 PID: 0317000163

EA: 03-2H610

PID: 0317000163

District-County-Route: 03-ED-50

PM: 71.34/71.59

Type of Estimate : Draft Project Report

Program Code : 20.400.400 (Capital Outlay, Local Funding, Safety)

Project Limits : On US 50 from 0.15 miles south of the US 50/Pioneer Trail intersection to 0.10 miles north of the intersection and from US 50/Pioneer Trail intersection to 0.09 miles east

Project Description: Three-leg, single lane roundabout with additional right turn and through bypass lanes.

Scope : Construct one three-leg, single lane roundabout with additional right turn and through bypass lanes.

Alternative : Build alternative

SUMMARY OF PROJECT COST ESTIMATE

	Current Year Cost		Escalated Cost	
TOTAL ROADWAY COST	$	5,649,300	$	6,016,640
TOTAL STRUCTURES COST	$	-	$	-
SUBTOTAL CONSTRUCTION COST	$	5,649,300	$	6,016,640
TOTAL RIGHT OF WAY COST	$	57,000	$	60,800
TOTAL CAPITAL OUTLAY COSTS	$	5,707,000	$	6,078,000
PA/ED SUPPORT	$	742,000	$	742,000
PS&E SUPPORT (20%)	$	1,129,860	$	1,129,860
RIGHT OF WAY SUPPORT	$	50,000	$	50,000
CONSTRUCTION SUPPORT (20%)	$	1,129,860	$	1,203,328
TOTAL SUPPORT COST	$	3,052,000	$	3,126,000
TOTAL PROJECT COST	$	8,800,000	$	9,250,000

	Month	/	Year
Date of Estimate (Month/Year)	10	/	2020
Estimated Construction Start (Month/Year)	5	/	2022
Number of Working Days =			120
Estimated Mid-Point of Construction (Month/Year)	8	/	2022
Estimated Construction End (Month/Year)	10	/	2022
Number of Plant Establishment Days			TBD

Estimated Project Schedule

PID Approval	
PA/ED Approval	08/10/2021
PS&E	01/28/2022
RTL	02/25/2022
Begin Construction	05/02/2022

Reviewed by District O.E. or Cost Estimate Certifier		xx/xx/xxxx	(xxx) xxx-xxxx
	Office Engineer / Cost Estimate Certifier	**Date**	**Phone**
Approved by Project Manager	Angela Hueftle	5/17/2021	(775) 329-4955
	Project Manager	**Date**	**Phone**

I. ROADWAY ITEMS SUMMARY

	Section	Cost
1	**Earthwork**	$ 755,200
2	**Pavement Structural Section**	$ 1,350,100
3	**Drainage**	$ 163,400
4	**Specialty Items**	$ 574,000
5	**Environmental**	$ 410,100
6	**Traffic Items**	$ 996,200
7	**Detours**	$ 35,000
8	**Minor Items**	$ 17,200
9	**Roadway Mobilization**	$ 430,200
10	**Supplemental Work**	$ 176,000
11	**State Furnished**	$ 5,000
12	**Time-Related Overhead**	$ -
13	**Total Roadway Contingency**	$ 736,900

TOTAL ROADWAY ITEMS	**$ 5,649,300**

	Name and Title	Date	Phone
Estimate Prepared By :	Dustin Thelen	10/6/2020	(775) 329-4955
Estimate Reviewed By :	Angela Hueftle, Project Manager	10/23/2020	(775) 329-4955

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
190101	Roadway Excavation	CY	836	x	106.00	=	$	88,616
198010	Imported Borrow	CY	3,200	x	126.00	=	$	403,200
194001	Ditch Excavation	CY	361	x	58.00	=	$	20,938
35415	Roadside Clearing (Remove Tree-R1)	EA	65	x	700.00	=	$	45,500
35416	Roadside Clearing (Remove Tree-R2)	EA	89	x	1,140.00	=	$	101,460
35417	Roadside Clearing (Remove Tree-R3)	EA	6	x	1,900.00	=	$	11,400
600029	Remove Asphalt Concrete Surfacing	SF	2,705	x	4.00	=	$	10,820
17010X	Clearing & Grubbing	LS	1	x	55,000.00	=	$	55,000
100100	Develop Water Supply	LS	1	x	18,250.00	=	$	18,250

TOTAL EARTHWORK SECTION ITEMS $ 755,200

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code		Unit	Quantity		Unit Price ($)			Cost
390132	Hot Mix Asphalt (Type A)	TON	6,720	x	177.00	=	$	1,189,440
390133A	Textured Hot Mix Asphalt	SQYD	377	x	160.00	=	$	60,320
397005	Tack Coat	TON	9.0	x	1,000.00	=	$	9,000
398200	Cold Plane Asphalt Concrete Pavement	SQYD	7,020	x	13.00	=	$	91,260

TOTAL PAVEMENT STRUCTURAL SECTION ITEMS $ 1,350,100

EA: 03-2H610 PID: 0317000163

SECTION 3: DRAINAGE

Item code		Unit	Quantity		Unit Price ($)			Cost
710150	Remove Inlet	EA	4	x	1,440.00	=	$	5,760
710102	Abandon Culvert	LF	89	x	80.00	=	$	7,120
710167	Remove Flared End Section	EA	4	x	540.00	=	$	2,160
650014	12" Reinforced Concrete Pipe	LF	209	x	280.00	=	$	58,520
650015	18" Reinforced Concrete Pipe	LF	131	x	240.00	=	$	31,440
665037	36" Corrugated Steel Pipe (.109" THICK)	LF	23	x	415.00	=	$	9,545
707225	48" Precast Concrete Pipe Manhole	EA	2	x	1,500.00	=	$	3,000
36377	Permeable Material	CY	4	x	1,350.00	=	$	5,400
705201	12" RCP Flared End Section	EA	1	x	1,300.00	=	$	1,300
705204	18" RCP Flared End Section	EA	5	x	1,580.00	=	$	7,900
7216XX	Rock Slope Protection (60 lb, Class II, Method B)	CY	7	x	280.00	=	$	1,960
729010	Rock Slope Protection Fabric (Class 8)	SQYD	35	x	20.00	=	$	700
750001	Miscellaneous Iron and Steel	LB	1,686	x	3.75	=	$	6,323
510094	Structural Concrete Drainage Inlet	CY	6	x	3,700.00		$	22,200

TOTAL DRAINAGE ITEMS $ 163,400

SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price ($)			Cost
080050	Progress Schedule (Critical Path Method)	LS	1	x	4,500.00	=	$	4,500
710220	Adjust Utility Cover To Grade	EA	1	x	3,000.00	=	$	3,000
070030	Lead Compliance Plan	LS	1	x	3,000.00	=	$	3,000
730020	Minor Concrete (Curb)	CY	320	x	1,000.00	=	$	320,000
731521	Minor Concrete (Sidewalk)	CY	100	x	1,000.00	=	$	100,000
731519	Minor Concrete (Stamped Concrete)	CY	118	x	1,000.00	=	$	118,000
730070	Dectectable Warning Surface	SQFT	530	x	48.00	=	$	25,440

TOTAL SPECIALTY ITEMS $ 574,000

EA: 03-2H610 PID: 0317000163

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost
80010X	Termporary Fence (Type ESA)	LF	1,900	x	8.00	=	$	15,200
130670	Temporary Reinforced Silt Fence	LF	1,200	x	5.00	=	$	6,000

Subtotal Environmental Mitigation $ 21,200

5B - LANDSCAPE AND IRRIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost
20XXXX	Follow-up Landscape Project	LS	1	x	75,000.00	=	$	75,000
205035	Wood Mulch	CY	150	x	120.00	=	$	18,000

Subtotal Landscape and Irrigation $ 93,000

5C - EROSION CONTROL

Item code		Unit	Quantity		Unit Price ($)			Cost
210270	Rolled Erosion Control Product (Netting)	SQYD	5,000	x	2.70	=	$	13,500
210010	Move-In/Move-Out (Erosion Control)	EA	4	x	900.00	=	$	3,600
210212	Dry Seed	SQFT	45,808	x	0.21	=	$	9,620
210610	Compost	CY	570	x	82.00	=	$	46,740
210630	Incorporate Materials	SQFT	45,808	x	0.12	=	$	5,497

Subtotal Erosion Control $ 78,957

5D - NPDES

Item code		Unit	Quantity		Unit Price ($)			Cost
130100	Job Site Management	LS	1	x	65,000.00	=	$	65,000
130310	Rain Event Action Plan	EA	9	x	500.00	=	$	4,500
130520	Temporary Hydraulic Mulch	SQYD	5,000	x	3.00	=	$	15,000
130505	Move-In/Move-Out (Temporary Erosion Control)	EA	7	x	600.00	=	$	4,200
130570	Temporary Cover	SQYD	1,600	x	6.50	=	$	10,400
130640	Temporary Fiber Roll	LF	2,000	x	5.00	=	$	10,000
130900	Temporary Concrete Washout	LS	1	x	5,000.00	=	$	5,000
130710	Temporary Construction Entrance	EA	1	x	5,000.00	=	$	5,000
130610	Temporary Check Dam	LF	100	x	13.00	=	$	1,300
130620	Temporary Drainage Inlet Protection	EA	26	x	250.00	=	$	6,500
074042	Temporary Concrete Washout (Portable)	LS	1	x	5,000.00	=	$	5,000
130730	Street Sweeping	LS	1	x	85,000.00	=	$	85,000

Subtotal NPDES $ 216,900

TOTAL ENVIRONMENTAL $ 410,100

Supplemental Work for NPDES

Subtotal Supplemental Work for NDPES $ -

EA: 03-2H610 PID: 0317000163

SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Item code		Unit	Quantity		Unit Price ($)			Cost		
870200	Lighting System	LS	1	x	300,000.00	=	$	300,000		
872143	Removing Signal and Lighting System	LS	1	x	75,000.00	=	$	75,000		
870700	Flashing Beacon System	LS	1	x	25,000.00	=	$	25,000		
870009	During Construction	LS	1	x	5,000.00	=	$	5,000		
								Subtotal Traffic Electrical	*$*	*405,000*

6B - Traffic Signing and Striping

Item code		Unit	Quantity		Unit Price ($)			Cost		
820840	Roadside Sign - One Post	EA	30	x	250.00	=	$	7,500		
820850	Roadside Sign - Two Post	EA	6	x	750.00	=	$	4,500		
820750	Furnish Single Sheet Aluminum Sign (0.063"-Unframed)	SQFT	430	x	10.00	=	$	4,300		
84XXXX	Permanent Pavement Delineation	LS	1	x	80,000.00	=		80,000.00		
								Subtotal Traffic Signing and Striping	*$*	*96,300*

6C - Traffic Management Plan

Item code		Unit	Quantity		Unit Price ($)			Cost		
12865X	Portable Changeable Message Sign	LS	3	x	$ 7,500	=	$	22,500		
								Subtotal Traffic Management Plan	*$*	*22,500*

6C - Stage Construction and Traffic Handling

Item code		Unit	Quantity		Unit Price ($)			Cost		
120120	Type III Barricade	EA	3	x	200.00	=	$	600		
129100A	Temporary Alternative Crash Cushion	EA	2	x	6,000.00	=	$	12,000		
120100	Traffic Control System	LS	1	x	300,000.00	=	$	300,000		
120090	Construction Area Signs	LS	1	x	8,000.00	=	$	8,000		
129000	Temporary Railing (Type K)	LF	3,000	x	40.00	=	$	120,000		
840656	Paint Traffic Stripe (2-Coat)	LF	13,000	x	1.75	=	$	22,750		
129100A	Traffic Plastic Drum	EA	100	x	90.00	=	$	9,000		
8101XX	Delineator (Insert Class)	EA	0	x	0.00	=	$	-		
								Subtotal Stage Construction and Traffic Handling	*$*	*472,350*

TOTAL TRAFFIC ITEMS	**$**	**996,200**

EA: 03-2H610 PID: 0317000163

SECTION 7: DETOURS

Includes constructing, maintaining, and removal

Item code		Unit	Quantity		Unit Price ($)			Cost
07XXXX	Temporary Drainage	LS	1	x	10,000.00	=	$	10,000
1286XX	Temporary Signals	EA	1	x	25,000.00	=	$	25,000

TOTAL DETOURS $ 35,000

SUBTOTAL SECTIONS 1 through 7 $ 4,284,000

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items

ADA Items				0.4%		$	17,136
Total of Section 1-7	$	4,284,000	x	0.4%	=	$	17,136

TOTAL MINOR ITEMS $ 17,200

SECTIONS 9: ROADWAY MOBILIZATION *

Item code								
999990	Total Section 1-8	$	4,301,200	x	10%	=	$	430,120

TOTAL ROADWAY MOBILIZATION $ 430,200

SECTION 10: SUPPLEMENTAL WORK

Item code		Unit	Quantity		Unit Price ($)			Cost
066063	Traffic Management Plan - Public Information	LS	1	x	15,000.00	=	$	15,000
066070	Maintain Traffic	LS	1	x	144,000.00	=	$	144,000
066921	Dispute Resolution Advisor	LS	1	x	17,000.00	=	$	17,000

*Cost of **NPDES** Supplemental Work specified in Section 5D*				=	$	-
Total Section 1-8	$	4,301,200	0%	=	$	-

TOTAL SUPPLEMENTAL WORK $ 176,000

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code		Unit	Quantity		Unit Price ($)		Cost
066063	Traffic Management Plan - Motorist Information	LS	1	x	5,000.00	=	$5,000
	Total Section 1-8	$	4,301,200		0%	= $	-

TOTAL STATE FURNISHED	**$5,000**

SECTION 12: TIME-RELATED OVERHEAD

Total of Roadway and Structures Contract Items excluding Mobilization	$4,301,200	(used to calculate total TRO)
Total Construction Cost (excluding TRO and Contingency)	$4,912,400	(used to check if project is greater than $5 million including contingency)

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

Item code		Unit	Quantity		Unit Price ($)		Cost
090100	Time-Related Overhead	WD	120	X	$0	=	$0

TOTAL TIME-RELATED OVERHEAD	**$0**

SECTION 13: ROADWAY CONTINGENCY*

Risk Amount from Risk Register		(for Known Risks)		0%		
Additional or Residual Contingency		(for Unknown/Undefined Risks)		15%		$736,860
Total Section 1-12	$	4,912,400	x	**15%**	=	$736,860

TOTAL CONTINGENCY*	**$736,900**

*Total recommended percentages includes any quantified risk based contingency from the risk register.

EA: 03-2H610 PID: 0317000163

II. STRUCTURE ITEMS

Bridge 1

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

Building 1

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

TOTAL COST OF BRIDGES		**$0**
TOTAL COST OF BUILDINGS		**$0**
Time-Related Overhead	10%	**$0**
STRUCTURES MOBILIZATION	10%	**$0**
STRUCTURES CONTINGENCY*	25%	**$0**
TOTAL COST OF STRUCTURES		**$0**

Estimate Prepared By: ______________________ ______________________

XXXXXXXXXXXXXXXXX ------ Division of Structures Date

EA: 03-2H610 PID: 0317000163

III. RIGHT OF WAY

Fill in all of the available information from the Right of Way Data Sheet.

				Current Value Future Use		Escalated Value
A)	A1)	Acquisition, including Excess Land, Fees, Damages, Goodwill	$	7,000	$	7,455
	A2)	Acquisition of Offsite Mitigation	$	0	$	0
	A3)	Railroad Acquisition	$	0	$	0
B)	B1)	Utility Relocation (State Share)	$	0	$	0
	B2)	Potholing (Design Phase)	$	0	$	0
C)		Utility - Advance Engineering Estimate (Encumber with State Only Funds)	$	0	$	0
D)		RAP and/or Last Resort Housing	$	0	$	0
E)		Clearance & Demolition	$	0	$	0
F)		Relocation Assistance (RAP and/or Last Resort Housing Costs)	$	0	$	0
G)		Title and Escrow	$	0	$	0
H)		Environmental Review	$	0	$	0
I)		Condemnation Settlements 0%	$	0	$	0
J)		Design Appreciation Factor 0%	$	0	$	0
K)		Utility Relocation (Construction Cost)	$	50,000	$	53,251

L)	**TOTAL RIGHT OF WAY ESTIMATE**	**$57,000**
M)	**TOTAL R/W ESTIMATE: Escalated**	**$60,800**
N)	**RIGHT OF WAY SUPPORT**	**$0**

Support Cost Estimate Prepared By ______________________
Project Coordinator[1] Phone

Utility Estimate Prepared By ______________________
Utility Coordinator[2] Phone

R/W Acquisition Estimate Prepared By ______________________
Right of Way Estimator[3] Phone

Note: Items G & H applied to items A + B

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

Attachment G

RIGHT-OF-WAY DATA SHEETS

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To: District Division Chief
Division of Right of Way and Land Surveys

Date: 05-14-2021

Co. ED Rte. 50
Expense Authorization 2H610

Attention: District Branch Chief
R/W Local Programs

Subject: **RIGHT OF WAY DATA SHEET - LOCAL PUBLIC AGENCIES**

Project Description: Improve safety at the U.S. 50 and Pioneer Trail intersection (PM 71.48) for all modes of travel, improve traffic flow, reduce vehicle speeds through the intersection and into the Meyers area, reduce vehicle emissions associated with traffic delays, and improve access to nearby bikeways and trails.

Right of way necessary for the subject project will be the responsibility of El Dorado County.

The information in this data sheet was developed by ______El Dorado County________________________.

I. ***Right of Way Engineering***

Will Right of Way Engineering be required for this project?

- No _____
- Yes __X__ (Submit a copy of the *Right of Way Engineering Surveys and Mapping Services checklist for Locally Funded Projects*. This checklist includes, but is not limited to, the following items.)

  - Hard copy (base map) — See property network map dated 07/20/2020
  - Appraisal map — January 31, 2022
  - Acquisition Documents — January 31, 2022
  - Property Transfer Documents — January 31, 2022
  - R/W Record Map — March 31, 2022
  - Record of Survey — March 31, 2022

II. ***Engineering Surveys***

1. Is any surveying or photogrammetric mapping required?

   No _____ Yes __X__ (Complete the following.)

2. Datum Requirements

   Yes _____Project will adhere to the following criteria:
   - Horizontal - datum policy is NAD 83, CA-HPGN, EPOCH 1991.35 and English system of units and measures.
   - Vertical - datum policy is NAVD 88.
   - Units - metric is not required.

   No __X__ Provide an explanation on additional page. See Remarks Section.

3. Will land survey monument perpetuation be scoped into the project, if required?

   Yes __X__

   No _____ Provide explanation on additional page.

III. ***Parcel Information (Land and Improvements)***

Are there any property rights required within the proposed project limits?

No _____ Yes __X__ (Complete the following.)

	Part Take	Full Take	Estimate $
A. Number of Vacant Land Parcels	2		$ 2,000
B. Number of Single Family Residential Units			$
C. Number of Multifamily Residential Units			$
D. Number of Commercial/Industrial Parcels			$
E. Number of Farm/Agricultural Parcels			$
F. Permanent and/or Temporary Easements	5		$ 5,000
G. Other Parcels (define in "Remarks" section)			$
Totals	7 on 4 parcels		$ 7,000

APN 034-270-056: A temporary easement of 245 SF is required to construct grading, revegetation, and tree removal and the existing shared-use path. This is publicly owned vacant land.

APN 034-270-041: A partial right of way take of 1,362 SF is required to construct and maintain roadway, curb and gutter, and lighting and a temporary easement of 6,340 SF is required to construct grading, revegetation, and tree removal and existing shared-use path. This is publicly owned vacant land.

APN 034-270-055: A partial right of way take of 434 SF is required to construct and maintain roadway, curb and gutter, and lighting and a 5,202 SF permanent easement is required to construct and maintain water quality treatment basin improvements. A temporary easement of 4,247 SF is required to construct grading, revegetation, and landscaping. This is publicly owned vacant land.

APN 034-401-025: A temporary easement of 1,300 SF is required to construct grading and revegetation.

IV. ***Dedications***

Are there any property rights which have been acquired, or anticipate will be acquired, through the "dedication" process for the Project?

No __X__ Yes _____ (Complete the following.)

Number of dedicated parcels ________

Have the dedication parcel(s) been accepted by the municipality involved?

V. ***Excess Lands / Relinquishments***

Are there Caltrans property rights which may become excess lands or potential relinquishment areas?

No __X__ Yes _____ (Provide an explanation on additional page.)

VI. ***Relocation Information***

Are relocation displacements anticipated?

No __X__ Yes _____ (Complete the following.)

A. Number of Single Family Residential Units	__________	
Estimated RAP Payments		$ __________
B. Number of Multifamily Residential Units	__________	
Estimated RAP Payments		$ __________
C. Number of Business/Nonprofit	__________	
Estimated RAP Payments		$ __________
D. Number of Farms	__________	
Estimated RAP Payments		$ __________
E. Other (define in the "Remarks" section)	__________	
Estimated RAP Payments		$ __________
Totals	__________	$ __________

R/W Data Sheet - Local Public Agencies
Page 4 of 6

VII. ***Utility Relocation Information***

Do you anticipate any utility facilities or utility rights of way to be affected?

No _____ Yes __X__ (Complete the following.)

Facility	Owner	Estimated Relocation Expense State Obligation	 Local Obligation	 Utility Owner Obligation
A. Telephone	AT&T	$	$	$
B. Power	Liberty Utilities	$	$50,000	$
D. Sewer	STPUD	$	$	$
E. Cable	Charter Comm.	$	$	$
F.		$	$	$
Totals		$ *	$50,000	$
Number of facilities			power pole (1 EA); transformer (1 EA); meter(s)/utility box(es) (qty unknown)	

*This amount reflects the estimated total financial obligation by the State.

Any additional information concerning utility involvement on this project?

To the maximum extent possible the project will be designed to avoid utility relocations. However, there is an existing electric transformer and meter and pole with communication and cable at the northeast corner that will need to be relocated to accommodate the new roundabout footprint. In addition, an existing sewer manhole frame and cover will need to be adjusted to grade.

Utility coordination will progress as the project design moves forward. Relocation expense and obligation is yet to be determined.

VIII. ***Rail Information***

Are railroad facilities or railroad rights of way affected?

No __X__ Yes _____ (Complete the following.)

Describe railroad facilities or railroad rights of way affected.

Owner's Name	Transverse Crossing	Longitudinal Encroachment
A.		
B.		

Discuss types of agreements and rights required from the railroads. Are grade crossings that require services contracts, or grade separations that require construction and maintenance agreements involved?

IX. ***Clearance Information***

Are there improvements that require clearance?

No __X__ Yes _____ (Complete the following.)

A. Number of Structures to be Demolished ____________
Estimated Cost of Demolition $ ______________________

X. ***Hazardous Materials/Waste***

Are there any site(s) and/or improvements(s) in the Project Limits that are known to contain

hazardous materials? None _____ Yes __X__ (Explain in the "Remarks" section.)

Are there any site(s) and/or improvement(s) in the Project Limits that are suspected to contain

hazardous waste? None __X__ Yes _____ (Explain in the "Remarks" section.)

XI. ***Project Scheduling***

	Proposed lead time	Completion date
* Preliminary Engineering, Surveys	9 (months)	January 2022
* R/W Engineering Submittals	3 (months)	August 2021
* R/W Appraisals/Acquisition	6 (months)	January 2022
Proposed Environmental Clearance		January 2022
Proposed R/W Certification		January 2022

XII. ***Proposed Funding* - TBD**

	Local	State	Federal	Other
Acquisition	TRPA*			
Utilities	TRPA*			
Relocation Assistance Program	n/a			
R/W Support	TRPA*			
Cost (Eng. Appraisals, etc.)	TRPA*			

* TRPA Air Quality and/or Water Quality Mitigation Funds

XIII. ***Remarks***

Vertical datum is NGVD 29 per Caltrans published survey data for the area.

Results of the preliminary ADL investigation indicate aerially deposited lead is present within the project area. Three of the 88 samples collected (two surface and one sample collected from 1.5-feet below ground surface) exceeded the screening value for unrestricted use (80 milligrams per kilogram [mg/kg]); however, no sample results exceeded the screening criteria for a commercial/industrial setting (320 mg/kg). Any material off-hauled from the site during construction will be screened prior to disposal at an appropriate facility. Exposure of construction workers to potentially contaminated soils needs to be considered during earth-moving activities. Mitigation to minimize the potential for contamination by lead-contaminated soils is included in the draft environmental document.

Project Sponsor Consultant
Prepared by: Angela Hueftle

Angela Hueftle

Nichols Consulting Engineers

05/14/2021
Date

Project Sponsor
Reviewed and Approved by: Donaldo Palaroan

El Dorado County DOT

05/14/2021
Date

Caltrans
Reviewed and approved based on information provided to date:

Karen Baum

Caltrans District Branch Chief
Local Programs
Division of Right of Way

05/14/2021
Date

Attachment H

STORM WATER DATA REPORT

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Caltrans

Dist-County-Route: 3-ED-50/Pioneer Trail
Post Mile Limits: ED 50 71.34 – 71.59
Type of Work: Intersection Safety Improvement Project
Project ID (EA): 0317000163 (03-2H6100)
Program Identification: ______
Phase: ☐ PID ☒ PA/ED ☐ PS&E

Regional Water Quality Control Board(s): Lahontan (Region 6)
Total Disturbed Soil Area: 4.56 acres PCTA: 1.10 acres
Alternative Compliance (acres): 0 acres ATA 2 (50% Rule)? Yes ☐ No ☒
Estimated Const. Start Date: 5/1/22 Estimated Const. Completion Date: 10/31/22
Risk Level: RL 1 ☐ RL 2 ☒ RL 3 ☐ WPCP ☐ Other: Tahoe Basin
Is MWELO applicable? Yes ☒ No ☐
Is the Project within a TMDL watershed? Yes ☒ No ☐
TMDL Compliance Units (acres): ______
Notification of ADL reuse (if yes, provide date): Yes ☐ Date: ______ No ☒

This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E only.

Angela Hueftle 04/23/2021
Angela Hueftle, Registered Project Engineer Date

Type text here

I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:

04/23/2021
Donaldo Palaroan, Project Manager *Date*

Anthony Thurman 5/13/2021
Anthony Thurman, Designated Maintenance Representative *Date*

Nicki Johnson 5/13/2021
Nicki Johnson, Designated Landscape Architect Representative *Date*

5/14/2021
[Stamp Required at PS&E only] *Iris Bishop, District/Regional Design SW Coordinator or Designee* *Date*

COVID-19 AND TELEWORKING, DIGITAL SIGNATURES

Due to the challenges of the current COVID-19 Teleworking environment digital signatures were used to finalize this report/document.

Chris Rockey, PE
Hydraulics & Stormwater Branch Chief, Marysville District 3
Division of Engineering Services
North Region Division of Project Development
California Department of Transportation
703 B Street
Marysville, CA. 95901
(530) 741-4517

STORMWATER DATA INFORMATION

1. Project Description

The County of El Dorado (County) as the project sponsor and lead agency, in cooperation with the California Department of Transportation (Caltrans), is proposing to convert an existing signalized intersection at the U.S. Highway 50 (US 50)/State Route 89 (SR 89) and Pioneer Trail intersection in Meyers, California, into a three-leg modern roundabout as part of the Pioneer Trail/US 50 Intersection Safety Improvement Project (Project).

The Project would improve safety and mobility for all modes of travel, include lighting, signage, and landscaping, reduce resilience on the private automobile, provide multimodal transportation improvements like visible crosswalks and a shared-use path for pedestrian and bicycle movements, provide opportunity for future growth of transit facilities to enhance circulation, and provide opportunities to experience Meyers as a pedestrian or cyclist. Once implemented, the Project would close a major gap in the active transportation system by providing full access for non-motorist users to the neighboring amenities.

The Project is located in El Dorado County, California, in the Tahoe Basin. The Project site lies in the central portion of Sections 20 and 29 of Township 12 North and Range 18 East (Mt. Diablo Meridian). The Project covers a total area of approximately 4 acres, including 0.35 miles of US 50/SR 89 and 0.13 miles of Pioneer Trail, and is generally surrounded by forested open space.

The Project will remove the existing signal at the intersection of Pioneer Trail and US 50 and replace it with a three-leg modern roundabout. The proposed roundabout is a single-lane roundabout with additional right turn and through bypass lanes and would include standard roundabout design features such as a shared-use path, crosswalks, splitter islands, truck apron with central island, lighting and signage improvements, site drainage improvements, and landscape buffers between the circular roadway and shared-use path. Approximately 1,200 linear feet of an 8-foot wide shared-use path (sidewalk and bike path) concrete path would be constructed as part of the Project.

Disturbed Soil Area and New Impervious Surface

The total disturbed soil area (DSA) was calculated by using the grading limits within the State of California (State) Right-of-Way (ROW) and the County ROW. These quantities were determined from preliminary design plans and are likely to change as the design progresses. A few potential locations have been identified for construction staging of the project and will be evaluated as the design progresses. Thus, staging areas were not included in the calculation of DSA. The Table below provides the total DSA per jurisdiction's ROW (Attachment 4).

The quantities of existing and post-project impervious areas were calculated for the State ROW and the County ROW (Attachment 5). Per Caltrans guidance, existing and post-project impervious areas may include pavement, sidewalks, bridges, bicycle lanes, pedestrian lanes, and gore areas. The existing impervious area subtracted from the post-project impervious area results in the quantity of net new impervious area (NNI).

The new impervious surface (NIS) is the sum of the NNI and the replaced impervious surface (RIS) minus the excluded impervious areas (EIA). The RIS included any existing paved area removed to subgrade (native material) and replaced. EIA included sidewalks, a Class 1 shared use path, and pedestrian ramps. These parameters were calculated for the State ROW and the County ROW (Attachment 5).

The NIS for the State ROW does not exceed the threshold treatment requirement of 1 acre for an on-highway project. Thus, this Project is not required to provide treatment.

The Post Construction Treatment Area (PCTA) is the sum of the NIS and Additional Treatment Areas (ATA) #1 and #2. Since the Project plans to remove the existing traction sand traps, the impervious area currently being treated by traction sand traps was delineated and provided as ATA #1. The quantity of NNI divided by the post-project impervious area is less than 50% and thus ATA #2 is equal to zero. The PCTA was calculated for the State ROW to be 1.10 acres. Treatment BMPs will be included as part of this Project to address the ATA #1 areas. These Treatment BMPs include an infiltration basin and traction sand traps.

The Project is subject to the treatment threshold requirements of the 2012 Caltrans Municipal Separate Storm Sewer System (MS4) Permit.

Owner	State Right-of-Way	County Right-of-Way	Total
Disturbed Soil Area (DSA) (acres)	3.42	1.14	4.56
Existing Impervious Area (acres)	1.43	0.42	1.85
Post-Project Impervious Area (acres)	1.98	0.63	2.61
Net New Impervious Area (NNI) (acres)	0.55	0.21	0.76
Replaced Impervious Surface (RIS) (acres)	0.00	0.00	0.00
Excluded Impervious Area (EIA) (acres)	0.43	0.12	0.55
New Impervious Surface (NIS) (acres)	0.12	0.09	0.21
ATA #1 (acres)	0.98	0.19	1.17
ATA #2 (acres)	0.00	0.00	0.00
PCTA (acres)	1.10	0.28	1.38

- Per Section 4.3, Step 7 of the PPDG, July 2017, Post Construction Treatment Area (PCTA) is required for New Impervious Surface (NIS) that equals or exceeds one acre or more or 5,000 sqft. on non-highway projects. PCTA = NIS + ATA #1 + ATA #2
- NIS = NNI + RIS - EIA
- ATA = Additional Treated Area
- EIA= Sidewalk, Pedestrians, Separate bikeways Areas, and areas over paved areas (any area of a bridge that goes over a road needs to be excluded)
- PCTA = Post Construction Treatment Area

2. Site Data and Stormwater Quality Design Issues

Water Quality Data

The Project area is located within the Angora Creek – Upper Truckee River subwatershed of the Upper Truckee River watershed and is within Planning Watershed 8634100403 and Hydrologic Sub-Area 634.10 in the South Lake Tahoe Hydrologic Area in the Lake Tahoe Hydrologic Unit. This area is overseen by the Lahontan Regional Water Quality Control Board (RWQCB), Region Number 6. The approximate center of the US 50/Pioneer Trail intersection is located at latitude 38.859541 and longitude -120.012105.

The Project drains to an unnamed, ephemeral tributary which flows approximately 200 feet to its junction with Meyers Creek, a tributary to the Upper Truckee River which drains into Lake Tahoe. The Caltrans Water Quality Planning Tool identifies the project as being located within a high-risk receiving watershed.

The Caltrans Water Quality Planning Tool identified the following water bodies on the 303(d) list of impaired receiving water bodies. The Upper Truckee River is listed as requiring a Total Maximum Daily Load (TMDL) for Iron and Phosphorus as being addressed with a U.S. Environmental Protection Agency (USEPA) approved TMDL. The Upper Truckee River is tributary to Lake Tahoe, which is listed for Nitrogen, Phosphorus, and Sedimentation/Siltation TMDLs. Caltrans is a named stakeholder within the Lake Tahoe Basin.

The Lahontan Basin Plan identifies the existing or potential beneficial uses of the Upper Truckee River as a surface water of the Lake Tahoe hydrologic unit with the receiving body being Lake Tahoe. The beneficial uses include Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Ground Water Recharge (GWR), Navigation (NAV), Water Contact Recreation (REC-1), Non-contact Water Recreation (REC-2), Commercial and Sport Fishing (COMM), Cold Freshwater Habitat (COLD), Wildlife Habitat (WILD), Migration of Aquatic Organisms (MIGR), and Spawning, Reproduction, and Development (SPAWN).

The Project area does not drain to an Area of Special Biological Significance (ASBS). It is also not located within a Federal Emergency Management Agency (FEMA) Special Flood Hazard Area 1%, a National Wetland Inventory site, nor within a State Wetland. There are no drinking water reservoirs and/or recharge facilities located within the project limits.

The Project is located within Scenic Roadway Units 36 (US 50/SR 89) and Unit 46 (Pioneer Trail). According to TRPA Plan Area Statement (PAS), the project is located within PAS 123 – Meyers Forest. The PAS 123 general land use classification is Conservation with a management strategy of mitigation, and it contains a special designation as a scenic restoration area. Most of the PAS 123 area is undeveloped except for a few minor structures at the US 50/Pioneer Trail intersection.

Commercial establishments are located south and east of the US 50/Pioneer Trail intersection, the Tahoe Paradise Golf Course is located to the southeast and there is open space to the west and east. There are residences further to the north, east, west and southwest. Lake Tahoe Golf Course is a mile further north of the US 50/Pioneer Trail intersection to the west.

The California Hazardous Material Incident Report System (CHMIRS) list identifies one site within the Project area related to a sewage release in 2010 that was contained and cleaned up. A review of the Leaking Underground Storage Tank (LUST) list indicates that there are four LUST facilities within approximately 0.5 miles of the Project site with the potential for environmental concerns from these facilities being moderate.

A Phase I Environment Site Assessment (ESA) and an Aerially Deposited Lead (ADL) Assessment were completed in support of this project. The preliminary ADL investigation indicated that aerially deposited lead is present within the Project Area. Three of the 88 samples collected (two surface and one sample collected from 1.5-feet below ground surface) exceeded the screening value for unrestricted use. However, no sample results exceeded the screening criteria for a commercial/industrial setting. Any material off-hauled from the site during construction will be screened prior to disposal at an appropriate facility. Results of the ESA and ADL will be considered in the placement and design of water quality treatment devices on the Project. Mitigation to minimize the potential for contamination by lead-contaminated soils is included in the draft environmental document.

The Project falls within the Tahoe Basin Phase I MS4 Permit Area and will comply with Lahontan RWQCB requirements for the Tahoe Basin. These include the requirements of the Renewed Waste Discharge and NPDES Permit for Stormwater/Urban Runoff discharges from El Dorado County, Placer County, and the City of South Lake Tahoe within the Lake Tahoe Hydrologic Unit. The region-specific requirements developed for the Lake Tahoe Basin include compliance with established TMDLs, and loading reduction requirements for fine sediment particles, total nitrogen, and total phosphorus. The current NPDES Permit requires Caltrans to implement collection and treatment BMPs that are capable of infiltrating the discharge from all impervious surfaces generated by the 20-year, 1-hour storm (1 inch of rainfall in the Lake Tahoe Basin), if possible. Otherwise, the Project must demonstrate how the numeric effluent limits will be meet or demonstrate that shared facilities are sufficient to meet average annual fine sediment and nutrient load reduction requirements.

The Project will obtain or comply with the following permits:

- NPDES Construction Storm Water NPDES Permit for the Tahoe Basin (ORDER NO. R6T-2016-0010 NPDES NO. CAG616002).
- Lahontan RWQCB Waste Discharge Requirements
- TRPA Project Permit
- TRPA Soils/Hydrology Scoping Report Application

Existing Treatment BMPs within the Caltrans ROW of the project area include two, dual traction sand traps. A pair of traction sand traps are located along the southeastern corner of the US 50/Pioneer Trail intersection. Another pair of traction sand traps are located approximately 250 feet north of the US 50/Pioneer Trail intersection and are tied into a cross culvert under US 50.

According to the November 2, 2020, Caltrans Maintenance IMMS System the following existing Treatment BMPs are near and within the project limits;

A 401 Certification and 404 Permit will be required. [IB]

Post Mile	Direction	TBMP Type	Post Mile	Direction	TBMP Type
033.520	E	TRCSND	070.732	E	INDBAS
061.789	W	INDBAS	070.742	E	TRCSND
066.665	W	DETBAS	070.757	W	INDBAS
066.772	W	DETBAS	070.758	E	TRCSND
066.773	W	DETBAS	070.759	E	INDBAS
066.774	W	DETBAS	070.783	E	TRCSND
067.910	E	TRCSND	070.787	E	INDTRE
067.990	E	TRCSND	070.836	E	INDBAS
068.000	E	TRCSND	070.853	W	INDBAS
069.378	W	INDBAS	070.907	W	INDBAS
070.225	E	DETBAS	070.949	E	INDBAS
070.226	E	INDBAS	071.004	W	INDBAS
070.227	E	INDTRE	071.030	E	INDBAS
070.240	E	TRCSND	071.061	W	INDBAS
070.372	E	INDBAS	071.074	E	INDBAS
070.620	E	TRCSND	071.132	E	INDBAS
070.626	W	INDBAS	071.149	E	INDBAS
070.637	W	INDTRE	071.156	W	INDBAS
070.660	E	TRCSND	071.290	E	TRCSND
070.680	W	INDBAS	071.470	E	TRCSND
070.729	W	INDBAS			

- TRCSND= Traction sand trap
- INDBAS= Infiltration device-basin
- INDTRE= Infiltration device- trench

Geotechnical Data

The Natural Resource Conservation Service (NRCS)'s Tahoe Basin Area, California and Nevada Soil Report shows the Project area as underlain by the Jabu coarse sandy loam, 0 to 9 percent slopes. This soil type is well drained with a Hydrologic Soil Group A indicating that it has a low runoff potential. Geotechnical exploration results identified a soils profile consisting of silty sand, silty, clayey sand, and poorly graded sand soils with low to moderation amounts of gravel through the maximum depth of exploration. A subgrade soil type of SM Unified Soil Classification System, which corresponds to a coarse-grained soil of sands with fines, was determined.

Geotechnical borings and pavement cores were collected for this Project in October 2019. Results from the geotechnical investigation indicate that groundwater was not encountered during collection of the borings that were advanced to 11.5 feet below the existing grade. However, seasonal snowmelt will saturate the subgrade soils and could potentially result in perched water layers during the spring months. Infiltration testing was completed in three borings at a 5-foot depth. An adjusted infiltration rate of 3.37 inches per hour was determined for a boring located adjacent to the proposed infiltration basin at the northeast corner of the US 50/Pioneer Trail intersection.

Topographic

The Project area is located in the Echo Lake United States Geological Survey (USGS) 7.5-minute topographic quadrangle. The topography of the Project area slopes gently downward from the southern and eastern edges of the Project area. The intersection of US 50/Pioneer Trail is located at approximately 6,320 feet above mean sea level.

In October 2019, MAPCA Surveys Inc., performed a ground survey of the Project area. The survey extended approximately 1,900 feet from the intersection of Santa Fe Road and Apache Avenue with US 50 north to the intersection of Arapahoe Street and US 50 and covered the extent of the State ROW. The survey also included a portion of Pioneer Trail extending slightly beyond the edge of pavement. The data was collected in the North American Datum (NAD) 83/94, California State Plane Coordinate System, Zone 2 horizontal datum and the National Geodetic Vertical Datum of 1929 (NGVD 29). The survey included existing utilities, recreational facilities, trees, signage, roadway, and ground shots.

Climatic

The climate in South Lake Tahoe, California, consists of warm, dry summers and cold, wet winters. Temperatures vary throughout the year with an average maximum temperature of 79.7 degrees Fahrenheit in July to an average minimum temperature in January of 16.4 degrees Fahrenheit (WRCC, 2019). The majority of precipitation falls between October and April averaging approximately 41 inches per year. Annual snowfall approximates 200 inches per year (WRCC 2019).

Right of Way Requirements

Project activities would occur within County ROW on Pioneer Trail, federal highway US 50 (also known as SR 89 owned by Caltrans), on adjacent publicly owned parcels belonging to the California Tahoe Conservancy (CTC), and a portion of land of owned by private property owners. Permanent and temporary easements will be required as part of this Project. The easements will be obtained for roadway, multi-use path, and infiltration basin improvements as well as for tree removal, grading associated with the multi-use path, and removal and restoration of an existing multi-use path.

The project would require the following property rights:

- Assessor's Parcel Number (APN) 034-270-056: A temporary easement of 245 square feet (SF) is required to construct grading, revegetation, and landscaping and to remove trees and the existing shared-use path. This is publicly owned vacant land.
- APN 034-270-041: A partial ROW take of 1,362 SF is required to construct and maintain roadway, curb and gutter, landscaping, and lighting. A temporary easement of 6,340 SF is required to construct grading, revegetation, and landscaping and to remove trees and existing shared-use path. This is publicly owned vacant land.
- APN 034-270-055: A partial ROW take of 434 SF is required to construct and maintain roadway, curb and gutter, landscaping, and lighting. A permanent easement of 5,202 SF is required to construct and maintain water quality treatment basin improvements. A temporary easement of 4,247 SF is required to construct grading, revegetation, and landscaping. This is publicly owned vacant land.
- APN 034-401-025: A temporary easement of 1,300 SF is required to construct grading, revegetation, and landscaping. This is a privately owned parcel.

3. Construction Site BMPs to be used on Project

Project Risk Level

The Risk Determination Excel spreadsheet from Appendix 1 of the California General Permit (CGP) was used to determine the risk level (RL) for the Project site. The RL considers a project's sediment risk and risk to the receiving water to determine a project risk level. The Project was identified to have a Level 2 Combined Risk. Supporting documentation is summarized below and is provided in detail in Attachment 3.

Sediment Risk Factor Determination:

R Factor: 9.33 (EPA Rainfall Erosivity Factor Calculator for Small Construction Sites)

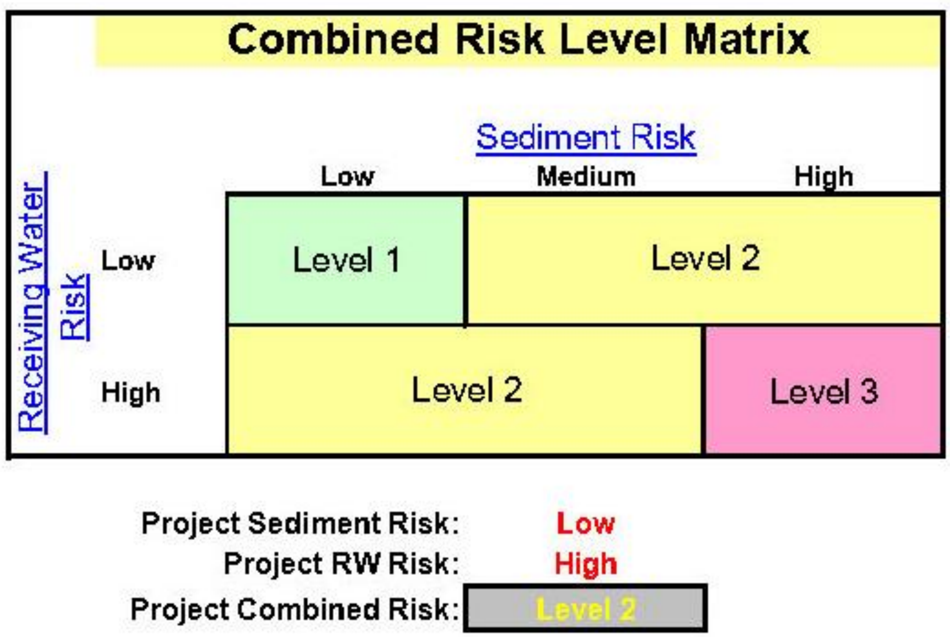
K Factor: 0.15 (Caltrans Water Quality Planning Tool)

LS Factor: 2.54 (Caltrans Water Quality Planning Tool)

Site Sediment Risk Factor: Low (<15 tons/acre)

Receiving Water Risk Factor Determination

Receiving Water Risk Factor: High



Construction Site Stormwater BMPs

Construction site stormwater BMPs would follow the Caltrans Construction Site Best Management Practices Manual (Caltrans 2017) and the TRPA BMP Handbook (TRPA 2014) to control and minimize the impacts of construction related activities. A Stormwater Pollution Prevention Plan (SWPPP) will be developed and submitted to the County and Lahontan RWQCB to comply with the National Pollutant Discharge Elimination System (NPDES) Construction Storm Water NPDES Permit for the Tahoe Basin (Order No. R6T-2016-0010 NPDES No. CAG616002). At the PS&E phase, the County will review and approve the SWPPP prior to information being submitted in Caltrans Stormwater Multiple Application Report Tracking System (SMARTS). The County will submit the Notice of Intent (NOI) to the Lahontan RWQCB prior to construction. The following BMPs, at a minimum, are required at the site during construction:

- A dewatering/diversion plan will be developed as part of the SWPPP, if the need for dewatering is anticipated.
- Temporary erosion and sediment control BMPs to prevent the transport of earthen materials and other construction waste materials from disturbed land areas, stockpiles, and staging areas during periods of precipitation or runoff (such as silt fence, erosion control fabric, fiber rolls).
- Tracking controls (such as designated ingress and egress areas) and designated staging areas outside of drainage, swale, and Stream Environment Zone (SEZ) areas. Staging area to be restored in accordance with TRPA Code Section 61.4 (Revegetation).
- Temporary BMPs to prevent wind erosion and sediment transport of disturbed areas, such as use of water for dust control and covering of stockpiles.
- Limit grading to May 1 through October 15, unless an exemption is granted by TRPA. At the end of the grading season or before completion of the project, all surplus or waste earthen materials from the project site would be removed and disposed of at a TRPA approved disposal site or stabilized on-site in accordance with TRPA regulations.
- Implement a Spill Prevention Plan. Project contractors would be responsible for storing on-site materials and temporary BMPs capable of capturing and containing pollutants.
- Use of vegetation protection fencing to prevent damage to trees or other vegetation where possible.
- Use of construction boundary fencing to limit land disturbance to ESA and areas not planned for construction.
- Temporary erosion and sediment control devices will be placed to protect sediment laden runoff from discharging from the site.
- Temporary clear water diversion BMPs may be implemented, as needed, to convey flows around the project site.

4. Maintenance BMPs

The Project is within the boundary of an MS4 Permit area and pedestrian and bicycle traffic are permitted within the project limits. Therefore, drainage inlet stenciling is required within Caltrans ROW. Maintenance Vehicle Pullouts (MVP) are not part of this Project.

5. Other Water Quality Requirements and Agreements

The Caltrans NEAT Report dated March 2010 identifies the Project area as being located within a Natural Environment as Treatment (NEAT) designation of Modified NEAT (Attachment 7). These sections of roadway require minor modification to adequately address stormwater runoff. These types of modifications might include minor grading, promotion of sheet flow, enhancement of vegetation, and construction of an energy dissipation feature. Although projects located within the County are not required to follow the NEAT approach, when opportunities exist, standard engineering best practices are applied to follow LID, which includes sheet flow and utilizing existing stormwater features for storage/treatment.

The County will consult with the Lahontan RWQCB or TRPA to discuss specific Treatment BMPs for this Project. The regulatory agencies will have an opportunity to provide feedback during the upcoming review process of the Draft Environmental Document and also during design (60% and 90% level designs).

6. Permanent BMPs

Rapid Stability Assessment

The Caltrans NPDES permit mandates that a rapid stability assessment (RSA) be conducted during planning and design for all projects that will include 1 acre or more of net new impervious surface and for which any new impervious portion of the project drains to a stream crossing located within the project limits. Since the NNI for the State ROW portion of this project is 0.55 acres, RSA is not required.

Design Pollution Prevention (DPP) BMP Strategy

The Project area is located within the Upper Truckee River subwatershed within the Lake Tahoe Basin. Meyers Creek, a stream included in both the United States Geological Survey topographic map and in the National Hydrography Dataset (NHD), crosses US 50 in an existing 2 foot (ft) by 4 ft box culvert near the southernmost project boundary (intersection of US 50 and Santa Fe Road). Meyers Creek then flows north through a wetland paralleling US 50 to the west of the Project.

The proposed site drainage will generally maintain existing drainage patterns. A localized high point on US 50 occurs approximately 300 feet north of the Santa Fe Road/Apache Ave and US 50 intersection such that flows are conveyed to the south along existing curb and gutter to the intersection. From the localized high point, northward flows will be conveyed via curb and gutter. Along the southbound lane, flows will be collected and treated in dual traction sand traps before being conveyed via a 12-inch pipe to a junction with the existing 18-inch reinforced concrete pipe (RCP) under US 50 located approximately 250 feet north of the Pioneer Trail and US 50 intersection. A traction sand trap will be integrated at the pipe junction to maintain existing drainage patterns.

At the US 50/Pioneer Trail intersection within the Caltrans ROW, the existing dual traction sand traps at the southeast corner of the intersection will be removed. Maintenance staff have noted that standing water is an issue at this corner of the intersection. New catch basins with 1-foot sumps will be installed within the Caltrans ROW along the curb and gutter at the southeast corner to capture flows. These two catch basins will be connected via laterals to a storm drain pipe under Pioneer Trail. The storm drain pipe will outlet into an infiltration basin located adjacent to the northeast corner of the intersection. Two additional catch basins with sumps will be installed along the northeast corner of the intersection within the Caltrans ROW. One catch basin will connect via a lateral to the storm drain pipe under Pioneer Trail. The other catch basin will be connected to a lateral which will outlet directly into the infiltration basin. Both pipes discharging into the infiltration basin will include flared end sections, and where design warrants, outlet protection/energy dissipation devices.

The NHD mapping shows two additional 'flow lines' crossing the roadways within the Project area. Flows along Pioneer Trail are conveyed toward the intersection with US 50 in curb and gutter along both the east and west bound lanes. Approximately 220 feet from the Pioneer Trail and US 50 intersection, an 18-inch corrugated metal pipe (CMP) conveys snowmelt and runoff from the undeveloped uplands and adjacent neighborhood under Pioneer Trail toward the north. This existing culvert will remain in place and will be extended on both sides to match the limits of the proposed grading. Once leaving the CMP, flows will be conveyed in an existing shallow channel toward the second mapped NHD flow line crossing under US 50 approximately 250 feet north of the Pioneer Trail and US 50 intersection in an existing 18-inch RCP. This culvert will be modified as described above to integrate a new traction sand trap.

The NHD mapped flow lines are ephemeral drainages which convey snowmelt and runoff from the undeveloped upland and the adjacent neighborhoods. As such, there are regular periods of time where these drainages are dry. As discussed above in the Geotechnical Data, groundwater was not encountered to a depth of 11.5 feet at the borings. Therefore, it is not anticipated that groundwater will restrict the design of the proposed Treatment BMPs.

Downstream Effects Related to Potentially Increased Flow

The intent of the drainage design is to maintain existing flow patterns to the maximum extent possible.

The project proposes to increase the amount of impervious area. Based on this increase, it is anticipated that the project will have some effect on downstream flow and will result in an increased runoff volume. This increased volume will be partially mitigated through the implementation of an infiltration basin sized to contain and treat the Water Quality Volume (WQV) and runoff volumes from Project areas not draining to the infiltration basin will not have an adverse effect on downstream facilities. The infiltration basin will reduce runoff volumes from regular precipitation events from the portion of the Project area that drains to it.

An increased flow velocity is not anticipated in the channel downstream of the culvert under US 50 located to the north of the US 50/Pioneer Trail intersection as flow velocities are slightly attenuated as they pass through the system of dual traction sand traps before discharging into the cross culvert and downstream channel. Hydraulic conditions will be determined during the PS&E phase of the Project.

Increased flow velocity and volumes will be quantified and mitigated during PS&E phase of the project. The project's Drainage Report will evaluate options to reduce runoff to preconditions.

Slope/Surface Protection Systems

The Project will be modifying the existing slopes in the State ROW due to road reconfiguration of the proposed roundabout. The fill slopes will be regraded where the slopes are maintained to be less than 2:1 (h:v). An erosion control plan will address the stabilization of these slopes. New slopes and Disturbed Soil Areas (DSA) will be stabilized and vegetated in accordance with plans NJ reviewed and conccured by ~~approved~~ by the Caltrans District Landscape Architect.

Concentrated Flow Conveyance Systems

Flared end sections will be installed on the culvert inlets and outlets. Outlet protection/energy dissipation devices will be implemented at outlets to reduce turbulence and scour, as needed. Hydraulic conditions will be determined during the PS&E phase of the Project.

Preservation of Existing Vegetation, Soils, and Stream Buffer Areas

Construction boundary fencing will be installed to limit land disturbance to ESA and areas not planned for construction. Revegetation of the impacted areas will consider soil types, existing vegetation types, and level of maintenance. Vegetated areas and supporting permanent irrigation systems will be designed to comply with the Model Water Efficient Landscape Ordinance (MWELO).

Treatment BMP Strategy

This Project is required to consider Treatment BMPs in accordance with the attached Evaluation Documentation Form (Attachment 2). Sediments~~No Targeted Design Constituents (TDC)~~ have been identified as Targeted Design Constituent (TDC). This Project is ~~not~~ within a TMDL area and therefore is eligible for Compliance Units (CU). IB

Treatment BMPs will be designed and constructed to comply with the NPDES Construction Storm Water NPDES Permit for the Tahoe Basin (Order No. R6T-2016-0010 NPDES No. CAG616002). Per the Permit, storm water runoff from impervious surfaces and other developed areas where natural percolation of precipitation is impeded following completion of construction should be treated with permanent storm water infiltration facilities designed and constructed to infiltrate runoff generated by the 20-year, 1-hour storm event which equates to approximately 1-inch of runoff during a 1-hour period. Treatment BMPs sized on a water quality flow (WQF) will apply a precipitation intensity of 0.2 inches/hours per Section 5.3.3.3 of the Caltrans Stormwater Quality Handbook: Project Planning and Design Guide (PPDG) for Region 6 (Lahontan).

Treatment BMPs will be considered in the following order of priority; infiltrate, harvest, and reuse; treatment of excess runoff using low impact development (LID) based flow-through BMPs; treatment using existing BMPs (with an emphasis on low impact green BMPs), and off-site mitigation. The Treatment BMPs will provide reduction of Phosphorus, Nitrogen, and Sediment loads.

The Project is proposing to install permanent Treatment BMPs to meet County, TRPA, Caltrans, and Federal Standards. Treatment BMPs will be installed to address the PCTA. These water quality features include the following:

- New infiltration basin constructed at the northeast corner of the proposed roundabout intersection, sized to store the anticipated WQV and includes overflow features for conveyance of larger storm events
- An existing culvert located 220 feet east of the intersection on Pioneer Trail will be extended on both sides to accommodate limits of proposed grading
- Modification of an existing RCP culvert located 250 feet north of Pioneer Trail, to tie in two relocated traction sand traps via a new lateral pipe and one new traction sand trap on the western shoulder of southbound US 50. The existing, dual traction sand traps treat approximately 0.65 acres of impervious surface associated with US 50. Since traction sand is typically applied more than twice a year to the roads within the Project area, the traction sand traps will provide a means for capturing the coarse sediments prior to flows entering the cross culvert and creek channel.
- The existing dual traction sand traps will be replaced with two new catch basins with 1-foot sumps installed at the southeast corner to capture flows and perpetuate existing drainage patterns. The existing dual traction sand traps treated 0.33 acres of impervious surface of US 50 and 0.19 acres of Pioneer Trail impervious surface. The two new catch basins will be connected via laterals to a storm drain pipe under Pioneer Trail to outlet to the new infiltration basin at the northeast corner of the roundabout intersection. Since traction sand is typically applied more than twice a year to the roads within the Project

area, the sumps will provide a means for capturing the coarse sediments prior to conveyance to the infiltration basin.

- Two additional catch basins with sumps would be installed along the northeast corner of the intersection to capture runoff from Pioneer Trail and US 50; one to be connected via a lateral to the storm drain pipe under Pioneer Trail, and the other connected to a lateral which outlets directly into the infiltration basin. Both pipes discharging into the infiltration basin would include flared end sections, and where design warrants, additional outfall protection

The Project cost estimate developed as part of the Pioneer Trail/US 50 Intersection Safety Improvement Project Intersection Control Evaluation for the Roundabout design alternative was $5,250,000. Costs related to Design Pollution Prevention and Treatment BMPs are approximately $100,000.

Required Attachments

1. Vicinity Map
2. Evaluation Documentation Form
3. Risk Level Determination Documentation
4. Construction Site BMP Consideration Form

Supplemental Attachments

5. Disturbed Soil Area
6. Impervious Area
7. Additional Treated Area
8. NEAT Report Excerpt

Attachment 1
Vicinity Map

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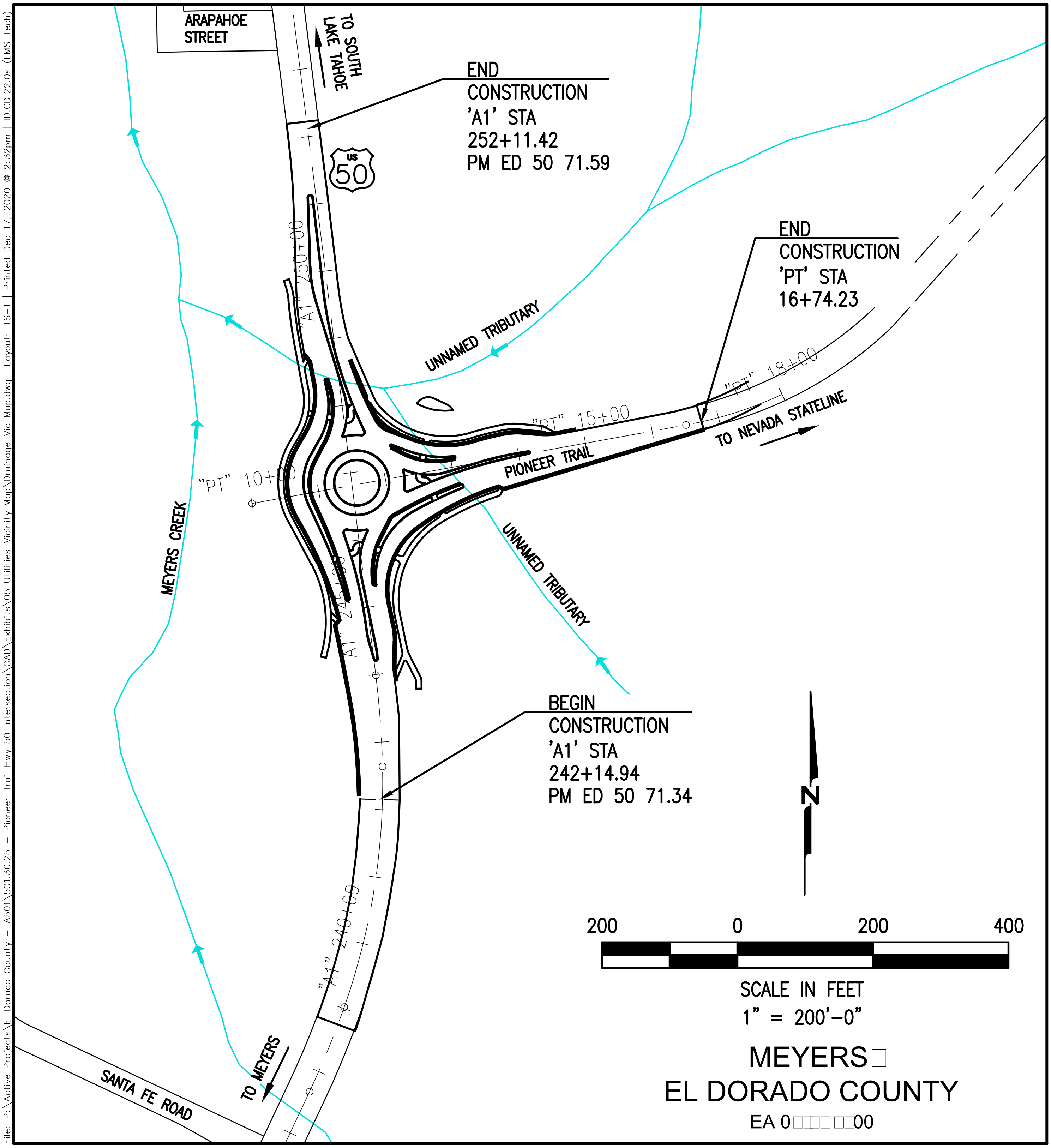

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PIONEER TRAIL/US 50 INTERSECTION
SAFETY IMPROVEMENT PROJECT
VICINITY MAP

FIGURE
A.

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
SPT	501.30.25	ADH	07-31-2020	12-17-2020

Attachment 2
Evaluation Documentation Form

DATE: _December 2020_______________

Project ID (EA): __03-2H6100_______________

No.	Criteria	Yes ✓	No ✓	Supplemental Information for Evaluation
1.	Begin Project evaluation regarding requirement for implementation of Treatment BMPs	✓		See Figure 4-1, Project Evaluation Process for Consideration of Treatment BMPs. Continue to 2.
2.	Is the scope of the Project to install Treatment BMPs (e.g., Alternative Compliance or TMDL Compliance Units)?		✓	If **Yes**, go to 8. If **No**, continue to 3.
3.	Is there a direct or indirect discharge to surface waters?	✓		If **Yes**, continue to 4. If **No**, go to 9.
4.	As defined in the WQAR or ED, does the project: a. discharge to Areas of Special Biological Significance (ASBS), or		✓	If **Yes to any**, contact the District/Regional Design Stormwater Coordinator or District/Regional NPDES Coordinator to discuss the Department's obligations, go to 8 or 5. __IB____*(Dist./Reg. Coordinator initials)* If **No** to all, continue to 5.
	b. discharge to a TMDL watershed where Caltrans is named stakeholder, or	✓		
	c. have other pollution control requirements for surface waters within the project limits?	✓		
5.	Are any existing Treatment BMPs partially or completely removed? (ATA Condition 1, Section 4.4.1)	✓		If **Yes**, go to 8 **AND** continue to 6. If **No**, continue to 6.
6.	Is this a Routine Maintenance Project?		✓	If **Yes**, go to 9. If **No**, continue to 7.
7.	Does the project result in an increase of one acre or more of new impervious surface (NIS)?		✓	If **Yes**, go to 8. If **No**, go to 9.
8.	Project is required to implement Treatment BMPs.	Complete Checklist T-1, Part 1.		
9.	Project is not required to implement Treatment BMPs. _______ *(Dist./Reg. Design SW Coord. Initials)* _______ *(Project Engineer Initials)* ______________ *(Date)*	Document for Project Files by completing this form and attaching it to the SWDR.		

Attachment 3
Risk Level Determination Documentation

Project Risk Factor:

R Factor

The R factor for the project is calculated using the online calculator at: https://lew.epa.gov

Facility Information

Start Date: 05/01/2022	**Latitude:** 38.8595
End Date: 10/31/2022	**Longitude:** -120.0121

Calculation Results

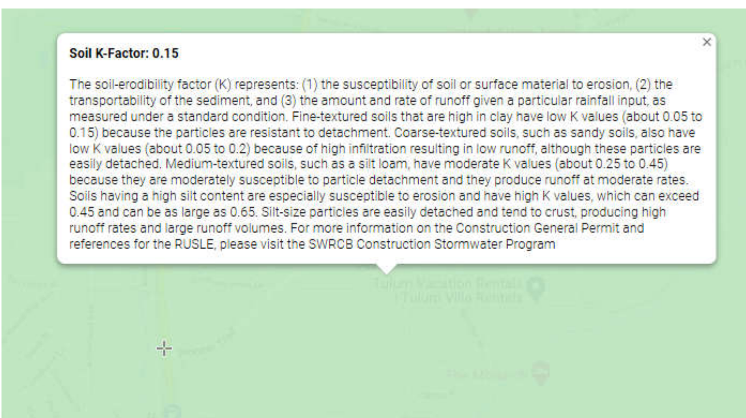
Rainfall erosivity factor (R Factor) = **9**

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction.

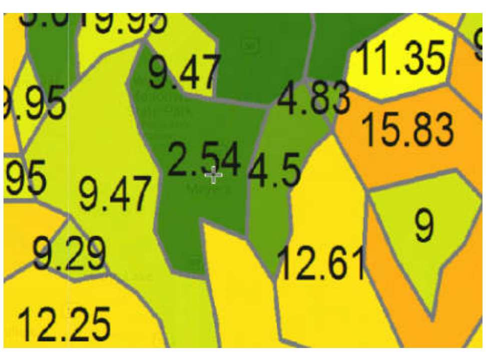
You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where EPA is the permitting authority, you must submit a Notice of Intent (NOI) through the NPDES eReporting Tool (NeT).Otherwise, you must seek coverage under your state's CGP.

K Factor

The K and LS factors may be obtained by accessing the GIS maps located on the State Water Board FTP website at: ftp://swrcb2a.waterboards.ca.gov/pub/swrcb/dwq/cgp/Risk/



LS Factor



Sediment Risk Factor Worksheet	**Entry**
A) R Factor	
Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site. http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm	
R Factor Value	9
B) K Factor (weighted average, by area, for all site soils)	
The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted. Site-specific K factor guidance	
K Factor Value	0.15
C) LS Factor (weighted average, by area, for all slopes)	
The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction. LS Table	
LS Factor Value	2.54
Watershed Erosion Estimate (=RxKxLS) in tons/acre	3.429
Site Sediment Risk Factor Low Sediment Risk: < 15 tons/acre Medium Sediment Risk: >=15 and <75 tons/acre High Sediment Risk: >= 75 tons/acre	**Low**

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	yes/no	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml **OR** A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan) http://www.waterboards.ca.gov/waterboards_map.shtml	yes	High

Region 1 Basin Plan

Region 2 Basin Plan

Region 3 Basin Plan

Region 4 Basin Plan

Region 5 Basin Plan

Region 6 Basin Plan

Region 7 Basin Plan

Region 8 Basin Plan

Region 9 Basin Plan

Combined Risk Level Matrix

Receiving Water Risk	Sediment Risk: Low	Sediment Risk: Medium	Sediment Risk: High
Low	Level 1	Level 2	Level 2
High	Level 2	Level 2	Level 3

Project Sediment Risk: Low

Project RW Risk: High

Project Combined Risk: Level 2

Attachment 4
Construction Site BMP Consideration Form

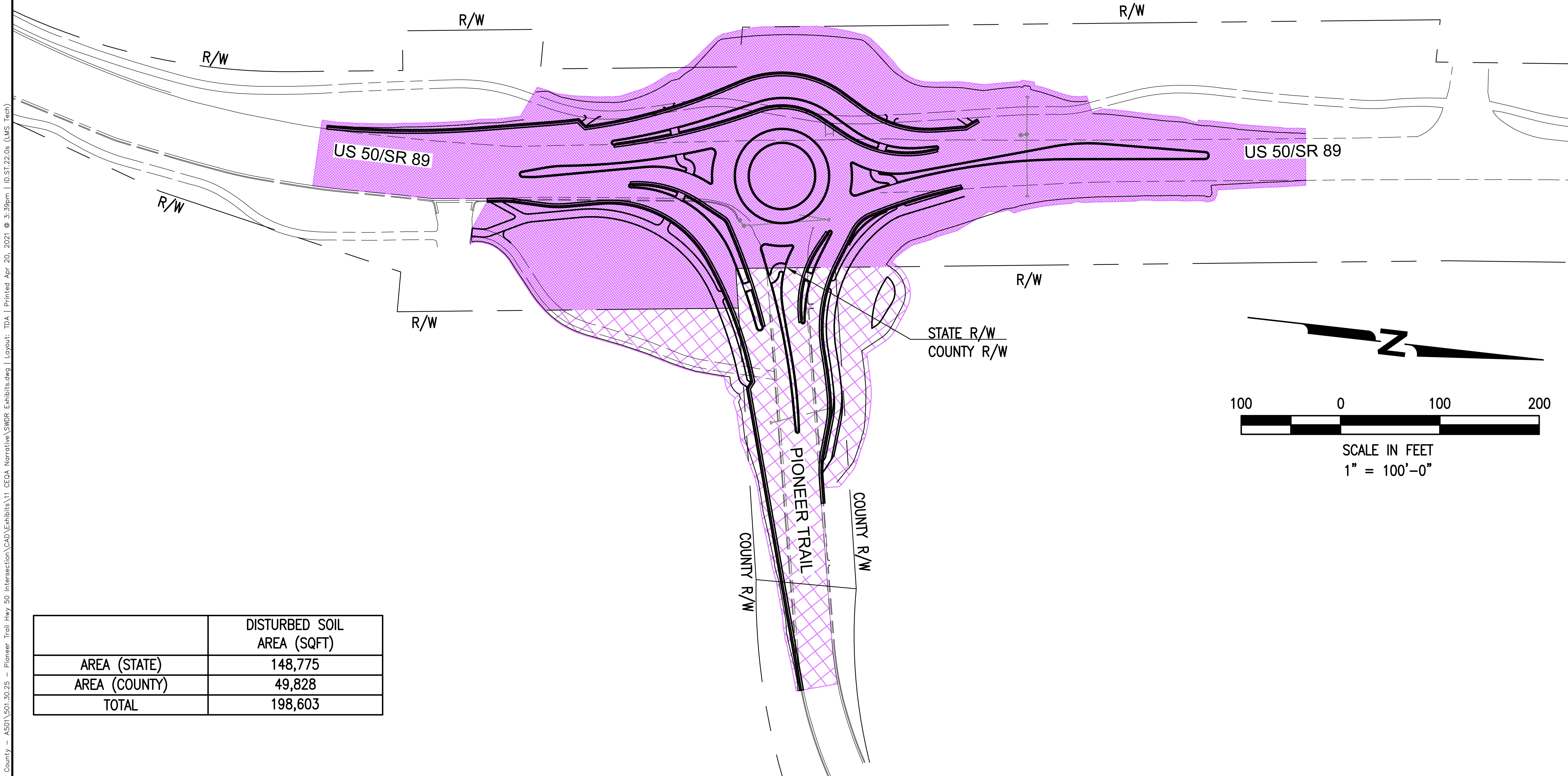
DATE: ___December 2020_________

Project ID / EA: ____03-2H6100______________

Project Evaluation Process for the Consideration of Construction Site BMPs

No.	Criteria	Yes ✓	No ✓	Supplemental Information
1.	Will construction of the project result in areas of disturbed soil as defined by the Project Planning and Design Guide (PPDG)?	✓		If Yes, Construction Site BMPs for Soil Stabilization (SS) will be required. Review CS-1, Part 1. Continue to 2. If No, Continue to 3.
2.	Is there a potential for disturbed soil areas within the project to discharge to storm drain inlets, drainage ditches, areas outside the RW, etc.?	✓		If Yes, Construction Site BMPs for Sediment Control (SC) will be required. Review CS-1, Part 2. Continue to 3.
3.	Is there a potential for sediment or construction related materials and wastes to be tracked offsite and deposited on private or public paved roads by construction vehicles and equipment?	✓		If Yes, Construction Site BMPs for Tracking Control (TC) will be required. Review CS-1, Part 3. Continue to 4.
4.	Is there a potential for wind to transport soil and dust offsite during the period of construction?	✓		If Yes, Construction Site BMPs for Wind Erosion Control (WE) will be required. Review CS-1, Part 4. Continue to 5.
5.	Is dewatering anticipated or will construction activities occur within or adjacent to a live channel or stream?	✓		If Yes, Construction Site BMPs for Non-Stormwater Management (NS) will be required. Review CS-1, Part 5. Continue to 6.
6.	Will construction include saw-cutting, grinding, drilling, concrete or mortar mixing, hydro-demolition, blasting, sandblasting, painting, paving, or other activities that produce residues?	✓		If Yes, Construction Site BMPs for Non-Stormwater Management (NS) will be required. Review CS-1, Parts 5 & 6. Continue to 7.
7.	Are stockpiles of soil, construction related materials, and/or wastes anticipated?	✓		If Yes, Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Review CS-1, Part 6. Continue to 8.
8.	Is there a potential for construction related materials and wastes to have direct contact with stormwater; be dispersed by wind; be dumped and/or spilled into storm drain systems?	✓		If Yes, Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Review CS-1, Part 6.

Attachment 5
Disturbed Soil Area



	DISTURBED SOIL AREA (SQFT)
AREA (STATE)	148,775
AREA (COUNTY)	49,828
TOTAL	198,603

LEGEND

DISTUR□ED SOIL AREA (STATE)

DISTUR□ED SOIL AREA (COUNTY)

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PIONEER TRAIL/US 50 INTERSECTION
SAFETY IMPROVEMENT PROJECT
DISTURBED SOIL AREA

FIGURE
A.5

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
SPT	501.30.25	ADH	07-30-20	

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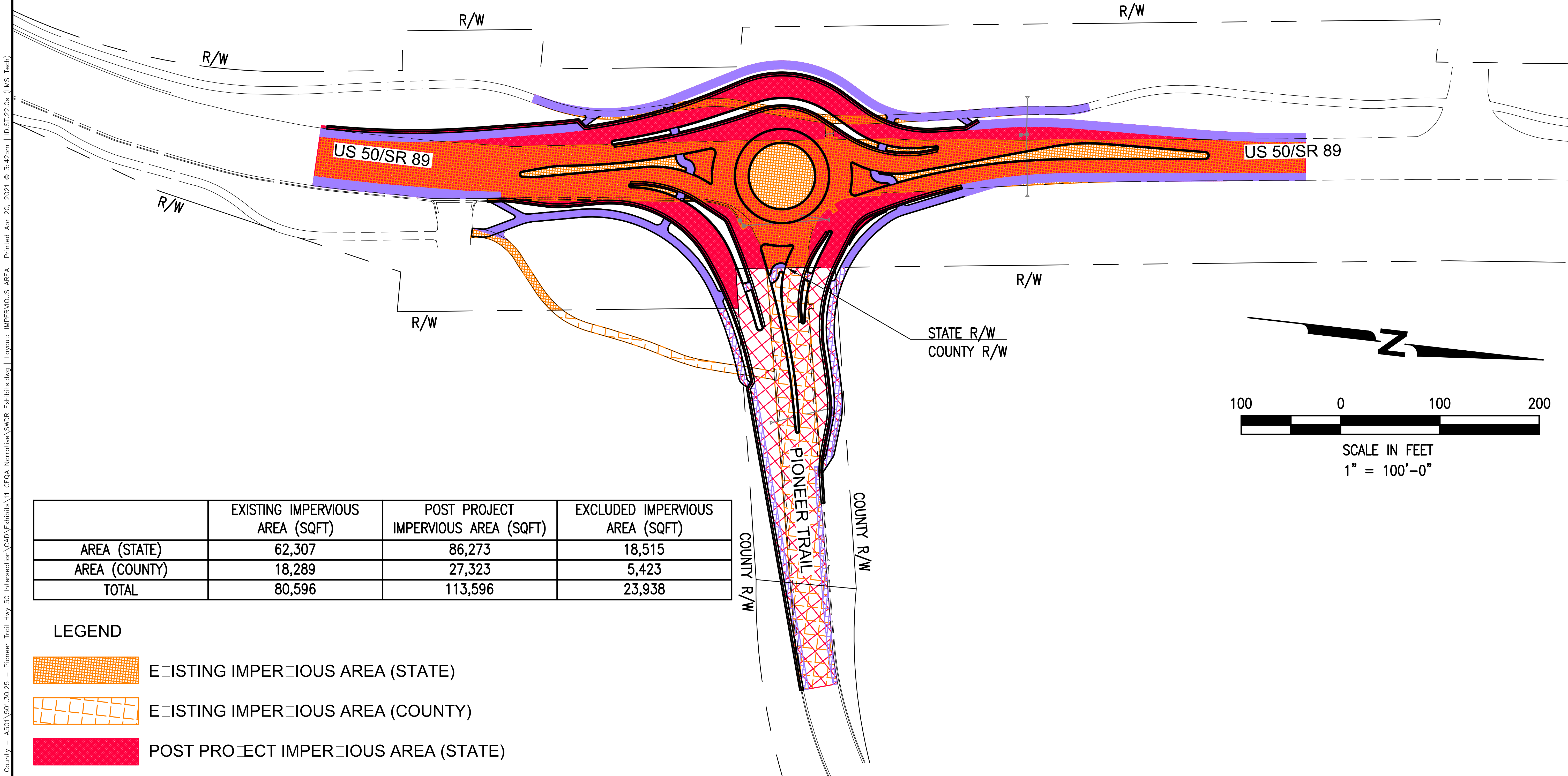
Attachment 6
Impervious Area



	EXISTING IMPERVIOUS AREA (SQFT)	POST PROJECT IMPERVIOUS AREA (SQFT)	EXCLUDED IMPERVIOUS AREA (SQFT)
AREA (STATE)	62,307	86,273	18,515
AREA (COUNTY)	18,289	27,323	5,423
TOTAL	80,596	113,596	23,938

LEGEND

- E□ISTING IMPER□IOUS AREA (STATE)
- E□ISTING IMPER□IOUS AREA (COUNTY)
- POST PRO□ECT IMPER□IOUS AREA (STATE)
- POST PRO□ECT IMPER□IOUS AREA (COUNTY)
- E□CLUDED IMPER□IOUS AREA (STATE)
- E□CLUDED IMPER□IOUS AREA (COUNTY)

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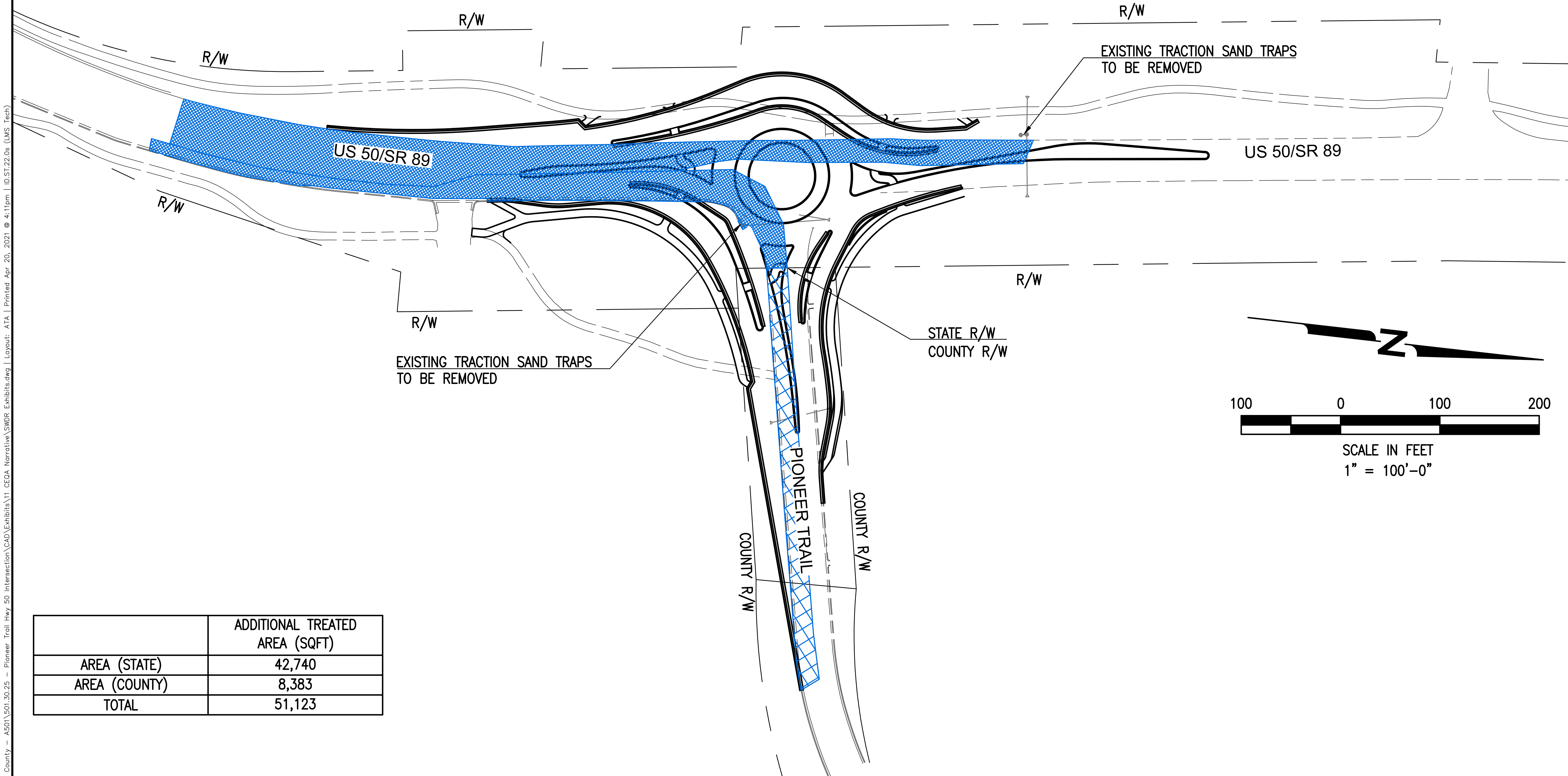
PIONEER TRAIL/US 50 INTERSECTION
SAFETY IMPROVEMENT PROJECT
IMPERVIOUS AREA

FIGURE A.□

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
SPT	501.30.25	ADH	07-30-20	

Attachment 7
Additional Treated Area



	ADDITIONAL TREATED AREA (SQFT)
AREA (STATE)	42,740
AREA (COUNTY)	8,383
TOTAL	51,123

LEGEND

ADDITIONAL TREATED AREA (STATE)

ADDITIONAL TREATED AREA (COUNTY)

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PIONEER TRAIL/US 50 INTERSECTION
SAFETY IMPROVEMENT PROJECT
ADDITIONAL TREATED AREA

FIGURE
A.7

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
SPT	501.30.25	ADH	07-30-20	

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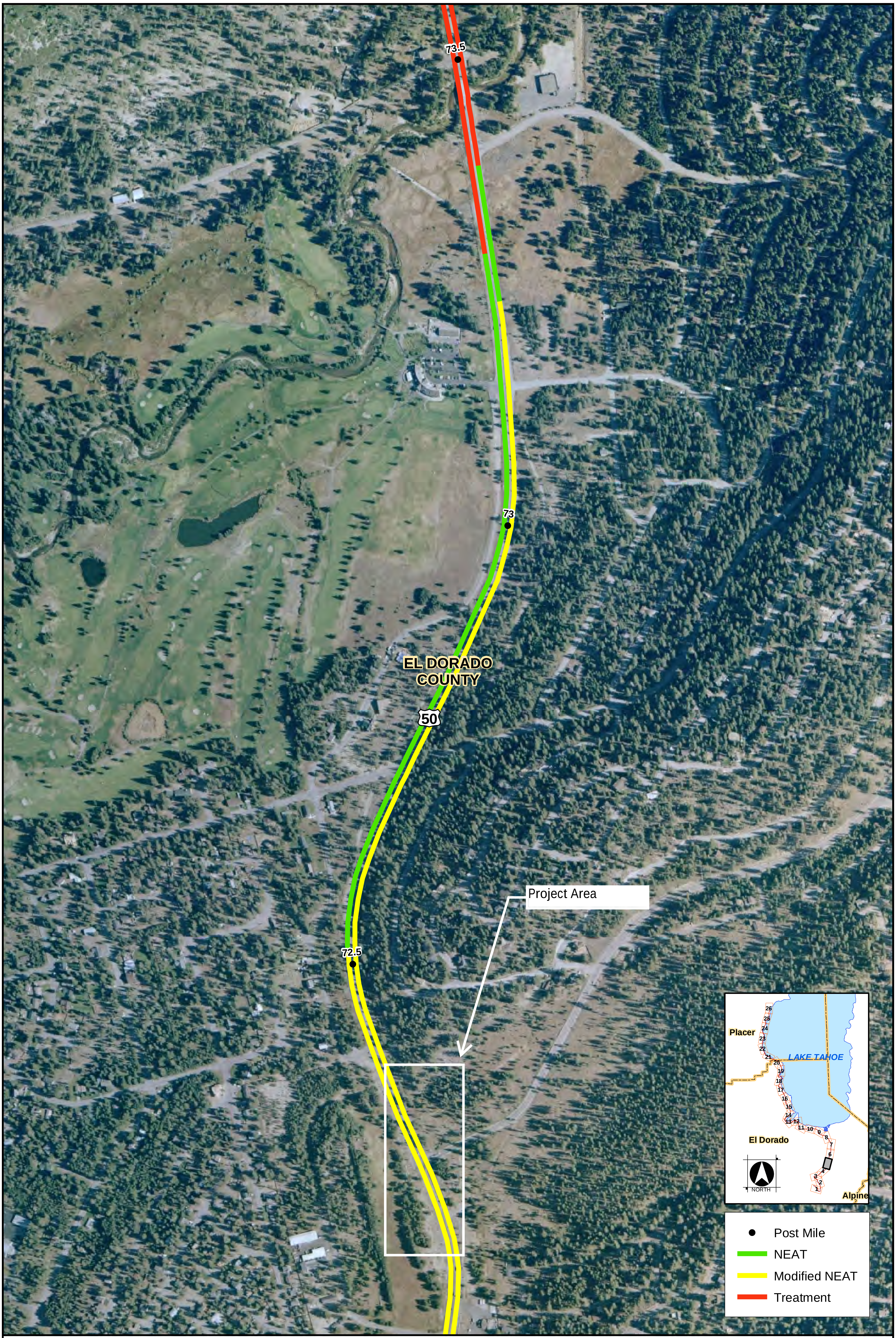
Attachment 8
NEAT Report Excerpt



NEAT RESULTS
CALTRANS DISTRICT 3
LAKE TAHOE, CALIFORNIA
MARCH, 2010

NOTES

NORTH
0 250 500
Feet

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

Attachment I

PAVEMENT ALTERNATIVES MEMO

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Memorandum

August 10, 2020

To:	Caltrans District 3	Project:	Pioneer Trail/US 50 Intersection Safety Improvement Project
Attn:	Martin Clark, P.E., Program / Project Management		
From:	Lindsey Van Parys, GHD Inc.	EA No.:	03-2H610
CC:	Angela Hueftle, NCE Donaldo Palaroan, County of El Dorado John Kahling, County of El Dorado	File No.:	2020-08 PAVEMENT ALTERNATIVE SELECTION TM.DOCX
Subject:	DRAFT Pavement Alternative Selection Memorandum		

Introduction

The County of El Dorado Department of Transportation (County DOT) is proposing to construct a three-legged roundabout at the existing signalized intersection of United States Highway 50 (US 50) and Pioneer Trail in the unincorporated community of Meyers, California, near South Lake Tahoe. The County DOT is currently in the Project Approval and Environmental Document (PA&ED) phase of Pioneer Trail/US 50 Intersection Safety Improvement Project (project). The County DOT has retained NCE and GHD to assist with project development during this phase.

US 50 and Pioneer Trail are important traffic arteries in the Tahoe Basin and are heavily impacted by recreational travel. Traffic levels are highly variable throughout the year as the intersection serves traffic to and from Lake Tahoe, the State of Nevada, and California's Sacramento Valley for outdoor recreation activities including skiing, snowboarding, hiking, camping, and boating.

During the process of reviewing pavement alternatives, the project location and the high level of recreational travel were the main factors that determined the selected pavement alternative.

Existing Site Conditions

The draft Geotechnical Investigation prepared for the project by Corestone Engineering, Inc. (Corestone) included existing site conditions and the recommended pavement sections for the project. The report stated that the pavements along US Highway 50 are in fair condition. Slurry seals are beyond their useful life, and the surface pavement exhibits high wear of coarse aggregates/significant raveling of the surface course. Moderate transverse cracking (20- to 40-foot spacing) is present and was about 30 to 40 percent filled during the pavement conditions assessment conducted by Corestone. Moderate, isolated failures (fatigue cracking) are more prominent within the southbound lanes. The northbound right turn lane to Pioneer Trail has been repaved, as have several small utility patches.

The report also stated that pavements along Pioneer Trail are in poor condition adjacent to the intersection and are fair throughout the remaining alignment. Some slurry seal was still present, and the surface course

GHD
943 Reserve Drive Roseville California 95678 USA
T 916 782 8688 **F** 916 782 8689 **W** www.ghd.com

exhibits moderate wear. Transverse cracking is present (20- to 60-foot spacing) and was about 50 to 60 percent filled during the assessment. Minor wheel path distress (cracks, rutting) is present within the eastern end of the alignment.

The existing thickness of asphalt concrete or hot-mix asphalt (HMA) along US Highway 50 varies between approximately 5 and 14.5 inches, and the average HMA thickness is about 11.5 inches or 0.95 feet. The thickness of existing asphalt concrete or HMA along Pioneer Trail varies between approximately 7.5 to 14 inches, and the average existing HMA thickness is about 9.75 inches or 0.80 feet. The thickness of aggregate base is generally less than 6 inches within the roadways, and multiple exploration locations did not reveal aggregate base. The significant variance in the HMA thicknesses within the roadways is due to multiple overlays associated with past rehabilitation projects.

Recommended Pavement Sections

The design of asphalt concrete or HMA pavement for the project was completed in accordance with the Caltrans Highway Design Manual (HDM). Per Section 612.2 of the Caltrans HDM, pavement design life for new construction and reconstruction projects shall be no less than 40 years. However, because of the limited length of the roadways associated with the project, the project may be categorized as spot improvements that can be considered rehabilitation for the purpose of determining pavement design life. With this, and based on conversations with El Dorado County, the selected pavement design life is 20 years for the flexible pavement.

Corestone referred to the Caltrans traffic data for the US Highway 50 section between State Route 89 and Pioneer Trail as well as traffic distribution at the US 50 and Pioneer Trail intersection from the Traffic Operations Analysis Report (TOAR) prepared by GHD Inc. for the project. This data was utilized to determine the total number of equivalent 18-kip single-axle loads (ESALs) and the Traffic Index (TI) for the proposed roundabout and each leg of the roundabout. Caltrans data provide a maximum annual average daily traffic (AADT) of 14,700 for US 50 in year 2018, and this AADT was used as the basis in the design.

The recommended structural sections for the project are summarized in Table 1 (Structural Section Recommendations) below. A full-depth HMA section is selected as the appropriate design alternate in order to approximately equal the existing average HMA thicknesses.

TABLE 1 STRUCTURAL PAVEMENT SECTION RECOMMENDATIONS

Street/Section	HMA[1] Thickness (Feet)	Aggregate Base Thickness (Feet)
US 50/Pioneer Trail Roundabout	0.95	0 (Full Depth HMA)
US 50 Legs of the Roundabout	0.95[2]	0 (Full Depth HMA)
Pioneer Trail Leg of the Roundabout	0.80	0 (Full Depth HMA)

1. Dense graded utilizing PG 64-28 binder.
2. Calculated value is 0.9 feet for the TI, but thickness is slightly increased to meet the existing HMA thickness within US Highway 50.

Pavement Alternative Selection

As stated in the previous section, a full-depth HMA section is recommended as the appropriate design alternate in order to approximately equal the existing average HMA thicknesses at the project site. In addition, the limited length of the roadways associated with the project could be categorized as spot improvements that can be considered rehabilitation for the purpose of determining pavement design life. With this, and based on conversations with El Dorado County, the selected pavement design life is 20 years for the flexible pavement.

Concrete pavement was also considered for this project and was deemed infeasible due to a number of constructability issues. In the mountainous conditions at the project site, annual pavement restriping is necessary during the peak travel season due to removal from snowplows. Striping is an important factor in the safe and efficient use of roundabout intersections. Because of its reflective properties, concrete requires double sets of paint in order to guarantee striping visibility, thus costing more in annual restriping costs than asphalt.

The constructability of a concrete surface is also more challenging than asphalt. Asphalt can be installed and driven upon within the same day, which is important for heavily traveled areas such as the project site. Concrete requires a longer time to cure, thus requiring additional delays due to lane closures. In addition, pavement delineation is essential for roundabout intersections, specifically roundabouts with right turn and through bypass lanes like the proposed project. The joints in the concrete would need to align with the lane lines in order to minimize drivers confusing joints for lanes. To achieve this, concrete must be poured within a lane, which is difficult to do because of the limited width in the project environment and the need for maintaining traffic operations during the construction staging.

A formal Life Cycle Cost Analysis (LCCA) in Caltrans' RealCost program was not completed for this project for the reasons outlined above. Therefore, due to the constructability issues associated with concrete pavement and the existing site conditions, it is recommended that HMA be used for this project.

Attachment J

RISK REGISTER

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Risk Factor	*Risk Rating*	*Risk Owner*	*Response Actions*
Public Support: Local community could oppose the project.	Low	County	As stated in Section 3B-Community Interaction, the County has been and is continuing to work with the community to educate, obtain support, and collect input throughout the design process.
Increased Costs: Unit price inflation and/or economic uncertainty may lead to higher than anticipated bids, posing the risk of a funding shortfall. Costs of certain materials, particularly asphalt and concrete, have been unusually varied over the years.	Moderate	County	The unit prices in the preliminary costs estimates were pulled from the Caltrans Contract Cost Data ranging from 2020 to 2018 and reflect the most current costs. The cost estimate will be updated throughout the design phase with the most current cost data available. If necessary, strategies for anticipating cost increases of specific materials, such as oil, may be implemented into the construction bid.
Regulatory Compliance & Permitting: Regulatory agency requirements may lead to modifications to the preferred alternative or conditions of approval that may increase construction cost.	Moderate	County	The County has prepared an environmental tracker which identifies all required project permits and approvals, the agency from which approval is required, status of reviews, and resulting environmental commitments. All environmental commitments, modifications to the design, and conditions of approval that may increase construction costs will be discussed immediately and incorporated as appropriate. The County will continue discussions with permitting agencies throughout the project.
Tree Removal: The project requires removal of trees over 30" in diameter and removal of over 100 trees from a Conservation Land Use parcel.	Low	County	TRPA may require a timber harvest plan and will require a finding for removal of trees greater than 30". The County will engage TRPA early in the permit process and prepare the necessary permit applications and plans.
Utility Conflicts: Additional cost and/or schedule delays due to encountering unknown/unverified utilities during construction.	Moderate	County/Utility Owner/Contractor	Coordinate with utility companies throughout design and construction of the project. Work with the Contractor to identify potential delays should an unknown utility be encountered and develop action plan to minimize impacts.
Soil Contamination: Unanticipated hazardous materials encountered during construction may require mitigation, removal, and disposal, resulting in additional costs to the project.	Low	County/Contractor	The appropriate actions to be taken, should potentially contaminated soils be found during construction, will be included in the construction documents. Consider including payment for excavation, treatment, and disposal of contaminated materials as a contingent bid item.
ROW Acquisition: Right-of -way is required for this project. Delays and/or costs associated with the process could result in additional project costs and schedule delays.	Low	County	Begin ROW activities immediately upon approval to proceed with ROW phase. Communicate project needs to property owners as soon as possible and provide clear project information.

Access: Provide route continuity and consistent access for residents and for visitors to Meyers/Tahoe, during construction, especially during special events.	Moderate	County/Contractor	Construction staging and phasing will be planned and implemented to minimize delays and maximize mobility through active construction zones.
Access: Maintain access for Tahoe Furs driveway, which is adjacent to the new right-turn lane.	Low	County/Contractor	Manage construction schedule to minimize impacts to access. Work closely with business/property owner to manage existing access.
Archeological Finds: Historical artifact preservation/protection.	Low	County/Contractor	Stipulations dealing with monitoring, discoveries, and human remains will be included or referenced in the construction documents developed by the County for the project. The County project manager will brief field personnel on stipulation requirements. All personnel involved in construction activities associated with the project will be instructed on site avoidance and protection measures.
Weather Delays: Schedule and cost impacts due to inclement weather resulting in lack of completion by the end of the grading season.	Low	County/Contractor	Schedule construction to begin early in the grading season to ensure that construction of the project occurs during the dry season.
Maintenance Agreement: An agreement between the County and Caltrans will need to be revised to accommodate the multi-use path, which may include the path area within the splitter islands. This could delay bid of the project.	Moderate	County/Caltrans	Continued coordination between the County and Caltrans on maintenance agreement requirements.
Design Alteration: Addition of chain on/off area within the project limits per Caltrans request could result in re-engineering or re-permitting, resulting in additional cost and time.	Moderate	County/Caltrans	Continued coordination between the County and Caltrans to determine if Caltrans is requesting a chain on/off area within the project limits. If so, identify the location and design requirements of the area and incorporate into the project as soon as possible to minimize associated re-engineering and re-permitting.
Unanticipated Requests: Additional requests by Caltrans, the County, or the Meyers community may cause extra work or re-work, resulting in additional cost and time.	Moderate	County	Continued coordination between the County, Caltrans, Meyers community, and the project team. If a request is received, the parties involved will discuss the request, identify cost and schedule impacts, and make a determination on the request quickly.

Attachment K

TMP REPORT, DATA SHEET, AND CHECKLIST

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US 50 at Pioneer Trail Intersection Improvement Project

Transportation Management Plan

In El Dorado County at the intersection of US Highway 50 and Pioneer Trail

Caltrans EA: 03-2H610

Prepared for:

El Dorado County
Department of Transportation

Lead Agency

Prepared by:

GHD

August 2020

US 50 AT PIONEER TRAIL
INTERSECTION IMPROVEMENT PROJECT

TRANSPORTATION MANAGEMENT PLAN

IN SUPPORT OF THE

DRAFT PROJECT REPORT

PREPARED FOR:

EL DORADO COUNTY

&

CALTRANS, DISTRICT 3

PREPARED BY:

GHD INC.
943 RESERVE DRIVE
ROSEVILLE, CA, 95678
(916) 782-8688

AUGUST 2020

PURPOSE OF THE TRANSPORTATION MANAGEMENT PLAN

This Transportation Management Plan (TMP) outlines steps to minimize traffic impacts and delays associated with the United States Highway 50 (US 50) at Pioneer Trail Intersection Improvement Project. The TMP summarizes the procedures that may be used to minimize traffic impacts and the process for distribution of accurate and timely information to the public.

The goals and objectives of this TMP are to:

- Reduce traffic delay or time spent in the queue to less than 15 minutes above normal recurring traffic delay;
- Maintain traffic flow throughout the corridor and the surrounding areas to the maximum extent practical; and
- Provide a safe environment for the work force and motoring public.

PROJECT DESCRIPTION

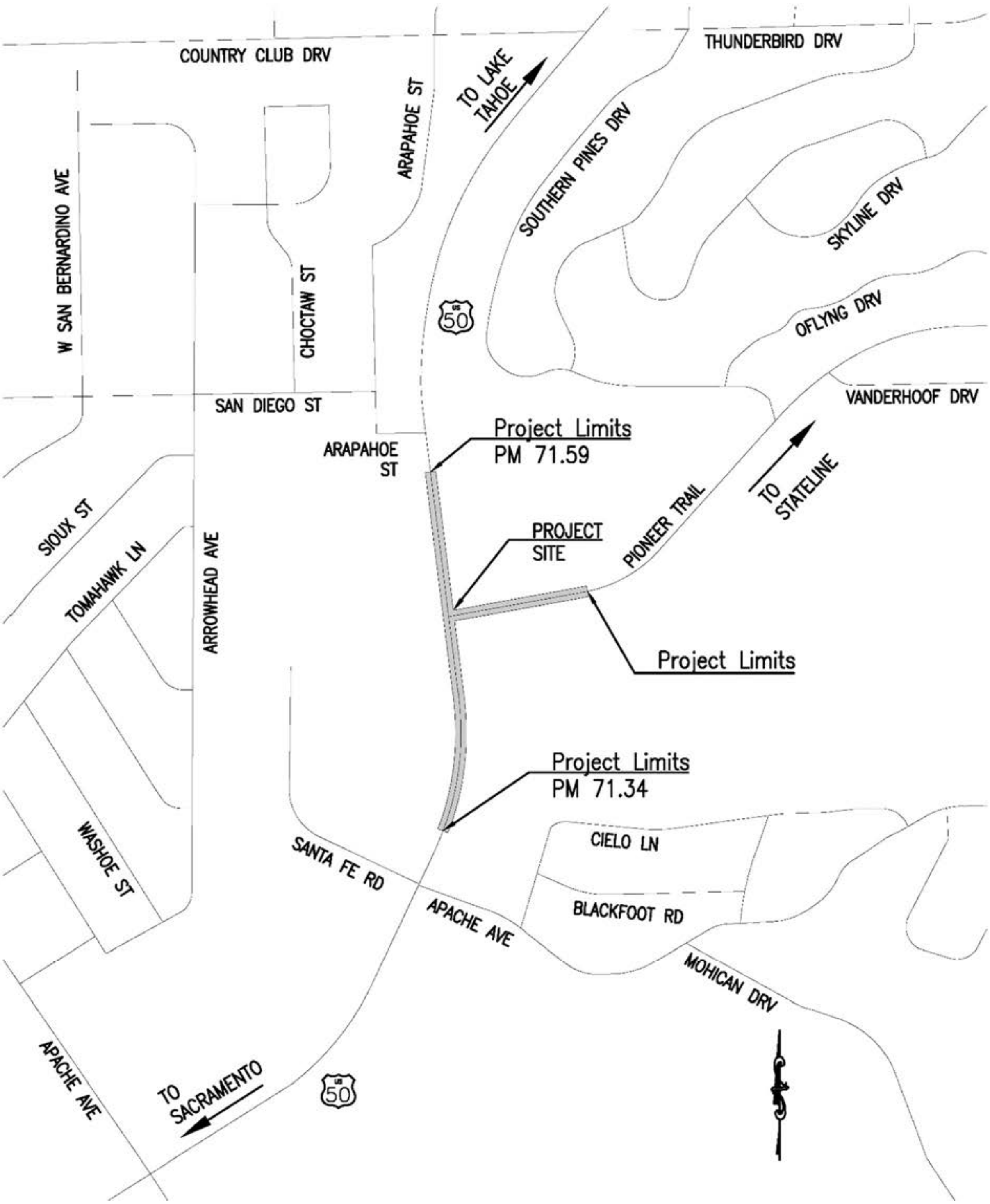
The El Dorado County Department of Transportation (County), in cooperation with the California Department of Transportation (Caltrans), proposes roadway improvements at and around the intersection of US Highway 50 and Pioneer Trail near the unincorporated town of Meyers within the El Dorado County (see Figure 1, Project Location Map). These improvements are proposed in order to enhance the safety and mobility of all roadway users, and to calm traffic heading into the Meyers area.

It is proposed to improve approximately 0.25 miles of US 50 and approximately 0.09 miles of Pioneer Trail. Various alternatives were analyzed, including an enhanced signalized intersection and a single lane roundabout with a westbound bypass lane. After completion of the Intersection Control Evaluation (ICE), it was determined that the single lane roundabout with a bypass lane was the Build Alternative that met the purpose and need of the project.

The project would also provide shared use paths along each leg of the roundabout with crossings of Pioneer Trail and US 50 connecting to existing trails on the west side and southeast quadrant of the intersection.

The project is fully funded through the PS&E Phase and partially funded through the Construction Phase. The funding sources include TRPA Air Quality Mitigation Funds, Congestion Mitigation and Air Quality Program, Highway Safety Improvement Program, Regional Surface Transportation Program, and Surface Transportation Block Grant.

FIGURE 1 – PROJECT LOCATION MAP



Existing Facilities

US 50 is a two-lane conventional highway in the project area with a posted speed limit of 40 miles per hour (mph) (reduced from 55 mph further north of the intersection). Pioneer Trail is a two-lane rural arterial with a posted speed limit of 40 mph in the project area. US 50 is a Terminal Access Route for Surface Transportation Assistance Act (STAA) trucks.

The US 50 and Pioneer Trail intersection is currently a signalized intersection with no sidewalks. The only pedestrian access is provided by the shared use path on the west side of US 50. Faded Class II bicycle markings exist on Pioneer Trail, and a southbound bicycle lane is marked on US 50 beginning at the Pioneer Trail intersection. Pedestrian crossings are only permitted in the crosswalk on the north leg of the intersection.

Proposed Engineering Features – Roundabout

The roundabout may have the following features:

- Standard roundabout geometric features such as shared use path, crosswalks, splitter islands, truck apron with central island, and landscape buffer between the circulatory roadway and shared use path.
- Sidewalk and bicycle lanes on approaches to the roundabout.
- Removal and replacement of the existing shared use path to accommodate the new intersection.
- Crosswalks within the roundabout may include the installation of Rectangular Rapid Flashing Beacons (RRFBs), Pedestrian Hybrid Beacon (PBH), or equivalent traffic control device.
- Installation of landscaping, hardscaping, and/or a gateway sign for the town of Meyers in the central island. Splitter islands, and landscape buffer areas located between the sidewalk and the traveled way would be treated with rock mulch.
- Removal and replacement of the existing storm drain system. Where feasible, the existing system would be maintained and adjusted as needed to accommodate the new improvements.
- Modifications to the existing storm drain system would include new catch basins, connections to an existing culvert, and an extension of an existing culvert.
- Modification of various existing utilities in conflict with the proposed design.
- Installation of new permanent storm water/water quality features.
- Removal of the existing traffic signals.
- Removal and replacement of the existing intersection and pedestrian lighting in conformance with Caltrans and roundabout lighting standards. At a minimum, lighting would be provided at the vehicle-vehicle conflict points at the intersection, vehicle-pedestrian conflict points at the crosswalks, and at the nose of each splitter island.
- Removal of approximately 160 existing trees within the project limits.
- Restriping of all crosswalks and roadways within the limits of the project.

- Removal and replacement of existing signing, as appropriate. New roadside mounted signs would be placed to assist in navigating the approach to the roundabout and through the roundabout. Overhead signs are not anticipated and may be included if determined necessary during final design.
- Removal and replacement of existing survey monuments located within the project limits.

TRAFFIC IMPACTS

Motorized Traffic Impacts

Given the location of the intersection as an entry point to the South Lake Tahoe area, construction activities would impact traffic flow throughout the duration of the construction, which is anticipated to occur over the course of one construction seasons between May and October. These impacts would vary depending on the stages of construction. Roadway lane and shoulder closures would be avoided to the maximum extent possible, however, closures are anticipated. The following is a summary of the proposed staging.

Stage 1A:

Maintain existing traffic pattern.

Relocate existing bike path, construct shared use path in northeast quadrant and temporary pedestrian access routes.

Stage 1B:

Maintain existing traffic pattern.

Construct curb and gutter, shared use path, drainage basin, and pavement areas outside of existing roadway. Place temporary pavement for use in Stage 2.

Stage 1C:

Close eastbound US 50 right turn lane to Pioneer Trail during non-peak period.

Construct pavement conform along eastbound right turn lane.

Stage 2:

Shift Traffic into Partial Temporary Roundabout Control, closing westbound US 50 left-turn movement.

Construct splitter islands, central island and portions of approach roadway pavement.

Stage 3A:

Open intersection to roundabout control. Use flagger control during non-peak periods to facilitate construction equipment access.

Construct remaining portions of splitter-island and other curbing as necessary.

Stage 3B:

Maintain full roundabout control. Use flagger control during non-peak periods to facilitate construction equipment access.

Construct final lift and overlay. Place final signing, striping, planting, and irrigation.

Non-Motorized Traffic Impacts

Accommodations would be made to maintain and/or provide alternate routes for pedestrians and cyclists during all stages of construction. Some stages would include cyclists sharing the road with vehicles.

TRANSPORTATION MANAGEMENT PLAN SUMMARY

The following TMP elements would be utilized to help reduce traveler delay and enhance traveler safety due to construction impacts and activities:

1) Public Information;
2) Motorist Information Strategies;
3) Incident Management;
4) Construction Strategies;
5) Contingency Plans; and
6) Alternate Route Strategies.

The cost estimates for the above TMP elements are listed in Attachment 1 (Transportation Management Plan Checklist) and Attachment 2 (Transportation Management Plan Data Sheet). These TMP elements are discussed in the following sections.

TRANSPORTATION MANAGEMENT PLAN STRATEGIES

Public Awareness Campaign

The Public Awareness Campaign (PAC) would be used to educate motorists, merchants, residents, and visitors/tourists about potential construction plans and schedule. Public awareness is expected to reduce the traffic demand in the construction zone by encouraging motorists to take alternate routes or to travel outside of closure hours.

The PAC would inform the public about the construction project and how it could affect their travel through the project area. The PAC would be run through the County and Caltrans District 3 Public Information Officer (PIO). The PIO would ensure that project information is available on the Caltrans District 3 website and County would provide the same updates on their website. The majority of project and traffic related inquiries can be directed to the PIO via the Caltrans and County websites. For concerns beyond general traffic information, interested parties would be directed to contact the project Resident Engineer (RE). The RE’s name, phone number, and email address would be provided on the project website by the commencement of project construction.

Motorist Information Strategies

Construction Area Signs would be placed throughout the project site, alerting the traveling public of construction ahead, closures and detours, lane changes/closures, and more.

Changeable Message Signs (CMS) would be posted at appropriate locations based on the current and upcoming staging. CMS would be used for notification of road/ramp closures and when there would be extended traffic delays. The CMS located at the project site would be activated as stated in the project specifications.

The public would be able to access road information by dialing Caltrans Highway Information Network (CHIN) at 1-800-427-ROAD. The public would also be able to obtain updated project information and traffic delay information by accessing the Road Information Bulletin (RIB) on the Caltrans website here: https://roads.dot.ca.gov/. The District Traffic Manager would update the RIB on a weekly basis. The RE would provide information to the Traffic Management Center as part of this effort.

Construction Strategies

Construction phasing, as described above, has been optimized to minimize impacts to the public by not only minimizing closures, but maximizing construction areas so that work can be performed more efficiently and the overall construction time is kept as short as possible.

Lane closure charts would be developed as part of the plans, specifications, and estimate (PS&E) and would be approved by District 3 Traffic Operations and County staff. In addition, the Contractor would be required to submit a traffic control plan for the following week, outlining which types of control would be used. The traffic control plan shall contain a detailed contingency plan, addressing equipment standby, and emergency notification, in the event that problems arise in opening the lane(s) within the designated timeframe. During construction activities requiring closures and extended delays, the contractor shall provide appropriate personnel to monitor activities and make decisions regarding activation of a contingency plan, if necessary.

Contingency Plans

The Contractor would be responsible to prepare a contingency plan which shall identify key operational decision points with a schedule listing the expected completion time of each critical path activity. A communication plan shall include a decision tree with clearly defined lines of communication. The names, telephone numbers, and pager numbers (if applicable) of the Contractor's Project Manager, Caltrans Traffic Management Center (TMC), RE, Caltrans Permit and/or Construction Inspector, and other applicable personnel shall be provided.

Alternate Route Strategies

The proposed staging plan includes one detour during construction due to the closure of the southbound left turn movement onto Pioneer Trail. This is a low volume movement with 35 to 70 vehicles during the peak weekend period. The proposed detour route, via a u-turn movement at the US 50 at SR 89 roundabout, would add approximately 5 minutes to this movement. Other closures would be of short duration routes that do not add significant length to travel times for the public.

Reasonable access to businesses and residences along the main and minor detours would be maintained throughout the duration of the project construction.

ATTACHMENTS

- Attachment 1: Transportation Management Plan Checklist
- Attachment 2: Transportation Management Plan Data Sheet

DISTRICT 3
TRANSPORTATION MANAGEMENT PLAN CHECKLIST

**** This checklist is to be signed and a copy be included in the Resident Engineer file ****

EA/Project ID	EA 03-2H610	**Co-Rte-PM:**	03-ED-50-71.34/71.59
Project Engineer:	Lindsey Van Parys, P.E.	**Description:**	Construct roundabout
Date Prepared:	8/21/2020	**Construction Cost:**	$5.7M **Working Days:** 120

Check each box and reference your attachments to the item(s) number(s) shown on the list.

Item	Required	Not required	Not Applicable	COMMENTS
1.0 Public Information				
1.1 Public Awareness Campaign		x		
1.2 Other Strategies	x			$15,000 Supplemental Work
2.0 Motorist Information Strategies				
2.1 Changeable Message Signs	x			$22,500 Bid Item
2.2 Construction Area Signs	x			$8,000 Bid Item
2.3 Highway Advisory Radio (fixed and mobile)			x	
2.4 Planned Lane Closure Web Site			x	
2.5 Caltrans Highway Information Network (CHIN)	x			$5,000 State Furnished Material
3.0 Incident Management				
3.1 COZEEP		x		
3.2 Tow Truck/Freeway Service Patrol		x		
4.0 Construction Strategies				
4.1 Lane/Ramp Closures Charts	x			40 Days of lane/ramp closure
4.1.1 Constructability Review	x			To be held during PS&E
4.1.2 Detour On Highway	x			
4.2 Full Facility Closure			x	
4.3 Coordination with adjacent construction		x		None identified
4.4 Contingency Plan	x			
4.4.1 Contractor Cont. Plan	x			Construction to provide upon engineer's request
4.4.2 Emergency Detour Plan	x			Construction/Contractor to provide
4.4.3 Emergency Notification Plan	x			Construction/Contractor to provide
4.5 SSP 12-4.02 and Others	x			Damage Clause Recommendation provided separately
4.6 A+B Bidding Provisions			x	El Dorado County is administering contract
4.7 Other Strategies:				
Traffic Control System	x			$300,000 Bid Item
Maintain Traffic	x			$144,000 Supplemental Work
5.0 Anticipate Delays				
5.1 Lane Closure Review Committee (for anticipated delays over 15 minutes)	x			Close SB left turn pocket
5.2 Full (directional) freeway closures			x	

5.3 Minimal delay anticipated - [x] yes [ ] no If no, explain additional measures on attached sheet.

5.4 For detailed discussion, see TMP report [x] yes [ ] no

5.5 TMP categories [ ] Blanket TMP [x] Minor TMP [ ] Major TMP

Project Manager, Lindsey Van Parys, P.E.

Date:

TRANSPORTATION MANAGEMENT PLAN DATA SHEET

For Consultant TMP Projects

PROJECT MANAGER Daniel Cuellar, P.E.	(Phone #) 1 (530) 741-4518
PROJECT ENGINEER Lindsey Van Parys, PE	(Phone #) 1 (916) 782-8688
DIST-EA/PROJ ID: 03-2H610 PROGRAM CATEGORY: 20.400.400 (Capital Outlay, Local Funding, Safety)	
PROJECT COMMON NAME Pioneer Trail/US 50 Intersection Safety Improvement Project	
CO-RTE-PM: ED-50-71.34/71.59	
LEGAL DESCRIPTION: In El Dorado County at Meyers at the Pioneer Trail Intersection.	
DETAILED WORK DESCRIPTION: Construct a three-leg, Single-lane roundabout with right turn and thru bypass lanes at the existing intersection of US 50 and Pioneer Trail.	
CONSTRUCTION COST ESTIMATE: $5,649,300	
PROJECT PHASE: PIR ☐ PR ☒	PS&E ☐ ________%

Traffic Impact Descriptions

A) Does the proposed project include long term closures (> 24 hours)

Yes____ No___X_

[If "No", Continue to Item D (Preliminary TMP Elements and Costs.). If "Yes", Check Applicable Facilities.]

- ☐ Freeway Lanes
- ☐ Freeway Shoulder
- ☐ Freeway Connectors
- ☐ Freeway Off-ramps
- ☐ Freeway On-ramps
- ☐ Local Streets
- ☐ Full Freeway Closures

B) Are there any construction strategies that can restore existing number of lanes? (Check Applicable Strategies)

- ☐ Temporary Roadway Widening Structure Involvement? Yes____ No__X__
  (If yes, notify Project Manager)
- ☒ Lane Restriping (Temporary Narrow Lane Widths) Yes____ No__X__
- ☐ Roadway Realignment (Detour Around Work Area)
- ☒ Median and/or Right Shoulder Utilization
- ☐ Use of an HOV lane as a Temporary Mixed Flow Lane
- ☐ Staging Alternatives (Explain Below)

Notes:

____

____

C) Calculated Delays (To be performed if construction strategies in Item B do not mitigate congestion resulting from Item A)

1. Estimated Maximum Individual Vehicle Delay ____<15____Minutes
2. Existing or Acceptable Individual Vehicle Delay ____15____Minutes
3. Estimated Individual Vehicle Delay Requiring Mitigation [(1) - (2)] _____0_____Minutes
4. Estimated Delay Cost (Most Applicable)
   - ☐ Extended Weekend Closure $__________________
   - ☐ Weekly (7 days) $__________________
5. Estimated Duration of Project Related Delays __________________
6. Cost of Construction Related Delays [(4 x 5)] $_____0_______________

D) Preliminary TMP Elements and Cost

1. Public Information
   - ☐ a. Brochures and Mailers $__________________
   - ☐ b. Press Release $__________________
   - ☐ c. Paid Advertising $__________________
   - ☐ d. Public Information Center/Kiosk $__________________
   - ☐ e. Public Meeting/Speakers Bureau $__________________
   - ☐ f. Telephone Hotline $__________________
   - ☐ g. Internet $__________________
   - ☐ h. Notification to impacted groups $__________________
     (Bicycle users, Pedestrians with disability, others.)
   - ☒ i. Others _Changeable Message Signs_ $____15,000__________

SUB TOTAL **$**___15,000____________

2. Motorists Information strategies
   - ☐ a. Changeable Message Signs (Fixed) $__________________
   - ☒ b. Changeable Message Signs (Portable) $____22,500__________
   - ☒ c. Ground Mounted Signs $____8,000__________
   - ☐ d. Highway Advisory Radio $__________________
   - ☒ e. Caltrans Highway Information Network (CHIN) $____5,000__________
   - ☐ f. Revised Transit Schedules/Maps $__________________
   - ☐ g. Others ______________________ $__________________

SUB TOTAL **$**___35,500____________

3. Incident Management
   - ☐ a. Construction or Maintenance Zone Enhanced Enforcement Program (COZEEP or MAZEEP) $_____Not Required____
   - ☐ b. Freeway Service Patrol $_____Not Required____
   - ☐ c. Traffic Management Team $__________________
   - ☐ d. New CCTVs and Detectors $__________________
   - ☐ e. Others ______________________ $__________________

SUB TOTAL **$**____________________

4. Construction Strategies (In Addition to Elements Identified on Item B)

☐	a. Off Peak/Night/Weekend Work (Lane Closure Charts)	$
☐	b. Reversible Lanes	$
☐	c. Total Facility Closure	$
☐	d. Extended Weekend Closure	$
☐	e. Truck Traffic Restrictions	$
☒	f. Reduced Speed Zone	$ Included in cost 2C
☐	g. Connector and Ramp Closures	$
☐	h. Incentive and Disincentive	$
☐	i. Moveable Barrier	$
☒	j. Others Traffic Control System	$ 300,000
	Maintain Traffic	$ 144,000

SUB TOTAL **$** 444,000

5. Demand Management

☐	a. HOV Lanes/Ramps (New or Convert)	$
☐	b. Park and Ride Lots	$
☐	c. Rideshare Incentives	$
☐	d. Variable Work Hours	$
☐	e. Telecommute	$
☐	f. Ramp Metering (New Installation)	$
☐	g. Ramp Metering (Maintain Existing)	$
☐	h. Others	$

SUB TOTAL **$** 0

6. Alternate Route Strategies

☐	a. Add Capacity to Freeway Connector	$
☐	b. Street Improvement (widening, traffic signal, etc)	$
☐	c. Traffic Control Officers	$
☐	d. Parking Restrictions	
☐	e. Others	$

SUB TOTAL **$** 0

7. Other Strategies

☐	a. Application of New Technology	$
☐	b. Others	$

SUB TOTAL **$** 0

8. The Project includes the following: (Check applicable type of facility closures)

- ☒ a. Highway or Freeway Lanes
- ☒ b. Highway or Freeway Shoulders
- ☐ c. Full Freeway Closure
- ☐ d. Freeway On/Off-Ramps
- ☐ e. Freeway Connectors
- ☒ f. Local Streets
- ☐ g. Prolonged Ramp Closures

9. Major operations requiring traffic control and working days for each

Operation	# of Working Days	# of Traffic Control Days
☒ a. Clearing and Grubbing	5	0
☒ b. Existing Feature Removal	10	5
☒ c. Excavation of Embankments Construction	40	25
☒ d. Structural Section Construction	30	15
☒ e. Drainage Feature Construction	10	5
☐ f. Structures Construction		
☐ g. MGS/Barrier Construction		
☒ h. Striping	5	5
☒ i. Electrical Component Construction	20	0
☐ j. Other		
Total days	120	55

TOTAL ESTIMATED COST OF TMP ELEMENTS = $ 494,500

Notes : Extensive TMP may be required for the significant impacts.

PREPARED BY (Consultant) ______________________ DATE__________

Lindsey Van Parys, PE

APPROVAL RECOMMENDED BY

(Caltrans Oversight Engineer) ______________________ DATE__________

Daniel Cuellar, PE

APPROVED BY (TMP Office) ______________________ DATE__________

[Name Of TMP Office]

Attachment L

COOPERATIVE AGREEMENT

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ORIGINAL

COOPERATIVE AGREEMENT COVER SHEET

Work Description

PLANNING, DESIGN, AND CONSTRUCTION OF A MULTIMODAL COMPLETE STREETS STRATEGY WITHIN THE 1.3 MILE STRETCH OF THE MEYERS CORRIDOR ALONG US HWY 50/STATE ROUTE 89. IT WILL ACCOMPLISH COMPLETE STREETS BY ADDING LIGHTING, SIGNAGE, AND LANDSCAPING, REDUCE RELIANCE ON THE PRIVATE AUTOMOBILE, PROVIDE MULTIMODAL TRANSPORTATION IMPROVEMENTS LIKE VISIBLE CROSSWALKS FOR BICYCLE AND PEDESTRIAN MOVEMENTS, PROVIDE FOR FUTURE GROWTH FOR TRANSIT FACILITIES TO ENHANCE CIRCULATION, AND PROVIDE OPPORTUNITIES TO EXPERIENCE MEYERS AS A PEDESTRIAN OR CYCLIST.

Contact Information

CALTRANS

Rodney Murphy, Project Manager
703 B Street
Marysville, CA 95901
Office Phone: (530) 741-5127
Mobile Phone: (530) 701-1305
Email: rodney.murphy@dot.ca.gov

EL DORADO COUNTY COMMUNITY DEVELOPMENT AGENCY

Bard Lower, Transportation Division Director
2850 Fairlane Court
Placerville, CA 95667
Office Phone: (530) 621-7533
Email: bard.lower@edcgov.us

COOPERATIVE AGREEMENT

This AGREEMENT, effective on SEPTEMBER 25, 2017, is between the State of California, acting through its Department of Transportation, referred to as CALTRANS, and:

El Dorado County Community Development Agency, a political subdivision of the State of California, referred to hereinafter as COUNTY.

RECITALS

1. PARTIES are authorized to enter into a cooperative agreement for improvements to the State Highway System per the California Streets and Highways Code sections 114 and 130.

2. For the purpose of this AGREEMENT, planning, design, and construction of a multimodal complete streets strategy within the 1.3 mile stretch of the Meyers corridor along US Hwy 50/State Route 89. It will accomplish complete streets by adding lighting, signage, and landscaping, reduce reliance on the private automobile, provide multimodal transportation improvements like visible crosswalks for bicycle and pedestrian movements, provide for future growth for transit facilities to enhance circulation, and provide opportunities to experience Meyers as a pedestrian or cyclist will be referred to hereinafter as PROJECT. The PROJECT scope of work is defined in the project initiation and approval documents.

3. All obligations and responsibilities assigned in this AGREEMENT to complete the following PROJECT COMPONENT will be referred to hereinafter as WORK:

   - PROJECT APPROVAL AND ENVIRONMENTAL DOCUMENT (PA&ED)

   Each PROJECT COMPONENT is defined in the CALTRANS Workplan Standards Guide as a distinct group of activities/products in the project planning and development process.

4. The term AGREEMENT, as used herein, includes this document and any attachments, exhibits, and amendments.

   This AGREEMENT is separate from and does not modify or replace any other cooperative agreement or memorandum of understanding between the PARTIES regarding the PROJECT.

   PARTIES intend this AGREEMENT to be their final expression that supersedes any oral understanding or writings pertaining to the WORK. The requirements of this AGREEMENT will preside over any conflicting requirements in any documents that are made an express part of this AGREEMENT.

   If any provisions in this AGREEMENT are found by a court of competent jurisdiction to be, or are in fact, illegal, inoperative, or unenforceable, those provisions do not render any or all other AGREEMENT provisions invalid, inoperative, or unenforceable, and those provisions will be automatically severed from this AGREEMENT.

   Except as otherwise provided in the AGREEMENT, PARTIES will execute a written amendment if there are any changes to the terms of this AGREEMENT.

   PARTIES agree to sign a CLOSURE STATEMENT to terminate this AGREEMENT. However, all indemnification, document retention, audit, claims, environmental commitment, legal challenge, maintenance and ownership articles will remain in effect until terminated or modified in writing by mutual agreement or expire by the statute of limitations.

5. No PROJECT deliverables have been completed prior to this AGREEMENT.

6. In this AGREEMENT capitalized words represent defined terms, initialisms, or acronyms.

7. PARTIES hereby set forth the terms, covenants, and conditions of this AGREEMENT.

RESPONSIBILITIES

Sponsorship

8. A SPONSOR is responsible for establishing the scope of the PROJECT and securing the financial resources to fund the WORK. A SPONSOR is responsible for securing additional funds when necessary or implementing PROJECT changes to ensure the WORK can be completed with the funds obligated in this AGREEMENT.

   PROJECT changes, as described in the CALTRANS Project Development Procedures Manual, will be approved by CALTRANS as the owner/operator of the State Highway System.

9. COUNTY is the SPONSOR for the WORK in this AGREEMENT.

Implementing Agency

10. The IMPLEMENTING AGENCY is the PARTY responsible for managing the scope, cost, schedule, and quality of the work activities and products of a PROJECT COMPONENT.

    - COUNTY is the Project Approval and Environmental Document (PA&ED) IMPLEMENTING AGENCY.

      PA&ED includes the completion of the Final Environmental Document and the Project Report (documenting the project alternative selection).

11. The IMPLEMENTING AGENCY for a PROJECT COMPONENT will provide a Quality Management Plan (QMP) for the WORK in that component. The Quality Management Plan describes the IMPLEMENTING AGENCY's quality policy and how it will be used. The Quality Management Plan will include a process for resolving disputes between the PARTIES at the team level. The Quality Management Plan is subject to CALTRANS review and approval.

12. Any PARTY responsible for completing WORK will make its personnel and consultants that prepare WORK available to help resolve WORK-related problems and changes for the entire duration of the PROJECT including PROJECT work that may occur under separate agreements.

Funding

13. Funding sources, PARTIES committing funds, funding amounts, and invoicing/payment details are documented in the Funding Summary section of this AGREEMENT.

    PARTIES will amend this AGREEMENT by updating and replacing the Funding Summary, in its entirety, each time the funding details change. Funding Summary replacements will be executed by a legally authorized representative of the respective PARTIES. The most current fully executed Funding Summary supersedes any previous Funding Summary created for this AGREEMENT.

14. PARTIES will not be reimbursed for costs beyond the funds obligated in this AGREEMENT.

15. Unless otherwise documented in the Funding Summary, overall liability for project costs within a PROJECT COMPONENT will be in proportion to the amount contributed to that PROJECT COMPONENT by each fund type.

16. Unless otherwise documented in the Funding Summary, any savings recognized within a PROJECT COMPONENT will be credited or reimbursed, when allowed by policy or law, in proportion to the amount contributed to that PROJECT COMPONENT by each fund type.

17. WORK costs, except those that are specifically excluded in this AGREEMENT, are to be paid from the funds obligated in the Funding Summary. Costs that are specifically excluded from the funds obligated in this AGREEMENT are to be paid by the PARTY incurring the costs from funds that are independent of this AGREEMENT.

CALTRANS' Quality Management

18. CALTRANS, as the owner/operator of the State Highway System, will perform quality management work including independent quality assurance, environmental document quality control, and owner/operator approvals for the portions of WORK within the existing and proposed State Highway System right-of-way.

19. CALTRANS' independent quality assurance efforts are to ensure that COUNTY's quality assurance results in WORK that is in accordance with the applicable standards and the PROJECT's quality management plan (QMP). Independent quality assurance does not include any efforts necessary to develop or deliver WORK or any validation by verifying or rechecking WORK.

    When CALTRANS performs independent quality assurance it does so for its own benefit. No one can assign liability to CALTRANS due to its independent quality assurance.

20. CALTRANS, as the owner/operator of the State Highway System, will approve WORK products in accordance with CALTRANS policies and guidance and as indicated in this AGREEMENT.

21. Per National Environmental Policy Act (NEPA) assignment and California Environmental Quality Act (CEQA) statutes, CALTRANS will perform environmental document quality control and NEPA assignment review procedures for environmental documentation. CALTRANS quality control and quality assurance procedures for all environmental documents are described in the Jay Norvell Memos dated October 1, 2012 (available at http://www.dot.ca.gov/ser/memos.htm#LinkTarget_705). This also includes the independent judgment analysis and determination under CEQA that the environmental documentation meets CEQA requirements.

22. COUNTY will provide WORK-related products and supporting documentation upon CALTRANS' request for the purpose of CALTRANS' quality management work.

CEQA/NEPA Lead Agency

23. CALTRANS is the CEQA Lead Agency for the PROJECT.

24. CALTRANS is the NEPA Lead Agency for the PROJECT.

Environmental Permits, Approvals and Agreements

25. PARTIES will comply with the commitments and conditions set forth in the environmental documentation, environmental permits, approvals, and applicable agreements as those commitments and conditions apply to each PARTIES responsibilities in this AGREEMENT.

26. Unless otherwise assigned in this AGREEMENT, the IMPLEMENTING AGENCY for a PROJECT COMPONENT is responsible for all PROJECT COMPONENT WORK associated with coordinating, obtaining, implementing, renewing, and amending the PROJECT permits, agreements, and approvals whether they are identified in the planned project scope of work or become necessary in the course of completing the PROJECT.

27. It is expected that the PROJECT requires the following environmental permits/approvals:

ENVIRONMENTAL PERMITS/REQUIREMENTS
404, US Army Corps Of Engineers
401, Regional Water Quality Control Board
National Pollutant Discharge Elimination System (NPDES), State Water Resources Control Board
State Waste Discharge Requirements (Porter Cologne), Regional Water Quality Control Board
Federal Endangered Species Act Consultation
Air Quality Permits

Project Approval and Environmental Document (PA&ED)

28. As the PA&ED IMPLEMENTING AGENCY, COUNTY is responsible for all PA&ED WORK except those activities and responsibilities that are assigned to another PARTY and those activities that are excluded under this AGREEMENT.

29. CALTRANS will be responsible for completing the following PA&ED activities:

CALTRANS Work Breakdown Structure Identifier (If Applicable)	AGREEMENT Funded Cost
100.10.10.xx Quality Management	No
165.15.15.xx Essential Fish Habitat Consultation	No
165.15.15.xx Section 7 Consultation	No
165.25.25 Approval to Circulate Resolution	No
175.20 Project Preferred Alternative	No
180.10.05.05.xx CEQA Lead Final Env. Doc QA/QC and Approval	No
180.10.05.45 Section 7 Consultation	No
180.15.05 Record of Decision (NEPA)	No
180.15.10 Notice of Determination (CEQA)	No

30. Any PARTY preparing environmental documentation, including studies and reports, will ensure that qualified personnel remain available to help resolve environmental issues and perform any necessary work to ensure that the PROJECT remains in environmental compliance.

31. COUNTY will provide written notice of the initiation of environmental studies to the CEQA and NEPA Lead Agencies prior to completing any other PA&ED phase work.

California Environmental Quality Act (CEQA)

32. Environmental documentation will be prepared in compliance with the California Public Resources Code §§ 21080.3.1(d)(e). CALTRANS will provide, and COUNTY will use, a letter template and a list of California Native American tribes requesting notification. COUNTY will prepare consultation documentation for CALTRANS' signature and transmittal in compliance with the statutorily required time frames.

33. The CEQA Lead Agency will determine the type of CEQA documentation and will cause that documentation to be prepared in accordance with CEQA requirements.

34. Any PARTY involved in the preparation of CEQA documentation will prepare the documentation to meet CEQA requirements and follow the CEQA Lead Agency's standards that apply to the CEQA process.

35. Any PARTY preparing any portion of the CEQA-documentation, including any studies and reports, will submit that portion of the documentation to the CEQA Lead Agency for review, comment, and approval at appropriate stages of development prior to public availability.

36. COUNTY will submit CEQA-related public notices to CALTRANS for review, comment, and approval prior to publication and circulation.

37. COUNTY will submit all CEQA-related public meeting materials to the CEQA Lead Agency for review, comment, and approval at least ten (10) working days prior to the public meeting date.

    If the CEQA Lead Agency makes any changes to the materials, then the CEQA Lead Agency will allow COUNTY to review, comment, and concur on those changes at least three (3) working days prior to the public meeting date.

38. The CEQA Lead Agency will attend all CEQA-related public meetings.

39. If a PARTY who is not the CEQA Lead Agency holds a public meeting about the PROJECT, that PARTY must clearly state its role in the PROJECT and the identity of the CEQA Lead Agency on all meeting publications. All meeting publications must also inform the attendees that public comments collected at the meetings are not part of the CEQA public review process.

    That PARTY will submit all meeting advertisements, agendas, exhibits, handouts, and materials to the CEQA Lead Agency for review, comment, and approval at least ten (10) working days prior to publication or use. If that PARTY makes any changes to the materials, it will allow the CEQA Lead Agency to review, comment on, and approve those changes at least three (3) working days prior to the public meeting date.

    The CEQA Lead Agency maintains final editorial control with respect to text or graphics that could lead to public confusion over CEQA-related roles and responsibilities.

National Environmental Policy Act (NEPA)

40. Pursuant to Chapter 3 of Title 23, United States Code (23 U.S.C. 326) and 23 U.S.C. 327, CALTRANS is the NEPA Lead Agency for the PROJECT. CALTRANS is responsible for NEPA compliance, will determine the type of NEPA documentation, and will cause that documentation to be prepared in accordance with NEPA requirements.

    CALTRANS, as the NEPA Lead Agency for PROJECT, will review, comment, and approve all environmental documentation (including, but not limited to, studies, reports, public notices, and public meeting materials, determinations, administrative drafts, and final environmental documents) at appropriate stages of development prior to approval and public availability.

    When required as NEPA Lead Agency, CALTRANS will conduct consultation and coordination and obtain, renew, or amend approvals pursuant to the Federal Endangered Species Act, and Essential Fish Habitat.

    When required as NEPA Lead Agency, CALTRANS will conduct consultation and coordination approvals pursuant to Section 106 of the National Historic Preservation Act.

41. Any PARTY involved in the preparation of NEPA documentation will follow FHWA and CALTRANS standards that apply to the NEPA process including, but not limited to, the guidance provided in the FHWA Environmental Guidebook (available at www.fhwa.dot.gov/hep/index.htm) and the CALTRANS Standard Environmental Reference.

42. Any PARTY preparing any portion of the NEPA documentation (including, but not limited to, studies, reports, public notices, and public meeting materials, determinations, administrative drafts, and final environmental documents) will submit that portion of the documentation to CALTRANS for CALTRANS' review, comment, and approval prior to public availability.

43. COUNTY will prepare, publicize, and circulate all NEPA-related public notices, except Federal Register notices. COUNTY will submit all notices to CALTRANS for CALTRANS' review, comment, and approval prior to publication and circulation.

    CALTRANS will work with the appropriate federal agency to publish notices in the Federal Register.

44. The NEPA Lead Agency will attend all NEPA-related public meetings.

45. COUNTY will submit all NEPA-related public meeting materials to CALTRANS for CALTRANS' review, comment, and approval at least ten (10) working days prior to the public meeting date.

46. If a PARTY who is not the NEPA Lead Agency holds a public meeting about the PROJECT, that PARTY must clearly state its role in the PROJECT and the identity of the NEPA Lead Agency on all meeting publications. All meeting publications must also inform the attendees that public comments collected at the meetings are not part of the NEPA public review process.

    That PARTY will submit all meeting advertisements, agendas, exhibits, handouts, and materials to the NEPA Lead Agency for review, comment, and approval at least ten (10) working days prior to publication or use. If that PARTY makes any changes to the materials, it will allow the NEPA Lead Agency to review, comment on, and approve those changes at least three (3) working days prior to the public meeting date.

    The NEPA Lead Agency has final approval authority with respect to text or graphics that could lead to public confusion over NEPA-related roles and responsibilities.

47. COUNTY will ensure that the PROJECT is included in the approved Federal Statewide Transportation Improvement Program (FSTIP) prior to the NEPA Lead Agency's approval of the environmental document.

Schedule

48. PARTIES will manage the WORK schedule to ensure the timely use of obligated funds and to ensure compliance with any environmental permits, right-of-way agreements, construction contracts, and any other commitments. PARTIES will communicate schedule risks or changes as soon as they are identified and will actively manage and mitigate schedule risks.

49. The IMPLEMENTING AGENCY for each PROJECT COMPONENT will furnish PARTIES with written quarterly progress reports during the completion of the WORK.

Additional Provisions

Standards

50. PARTIES will perform all WORK in accordance with federal and California laws, regulations, and standards; FHWA standards; and CALTRANS standards. CALTRANS standards include, but are not limited to, the guidance provided in the:

    - CALTRANS policies and directives
    - Project Development Procedures Manual (PDPM)
    - Workplan Standards Guide
    - Standard Environmental Reference
    - Highway Design Manual

Noncompliant Work

51. CALTRANS retains the right to reject noncompliant WORK. COUNTY agrees to suspend WORK upon request by CALTRANS for the purpose of protecting public safety, preserving property rights, and ensuring that all WORK is in the best interest of the State Highway System.

Qualifications

52. Each PARTY will ensure that personnel participating in WORK are appropriately qualified or licensed to perform the tasks assigned to them.

Consultant Selection

53. COUNTY will invite CALTRANS to participate in the selection of any consultants that participate in the WORK.

Encroachment Permits

54. CALTRANS will issue, upon proper application, the encroachment permits required for WORK within State Highway System right-of-way. Contractors and/or agents, and utility owners will not work within the State Highway System right-of-way without an encroachment permit issued in their name. CALTRANS will provide encroachment permits to PARTIES, their contractors, consultants and agents at no cost. If the encroachment permit and this AGREEMENT conflict, the requirements of this AGREEMENT will prevail.

55. The IMPLEMENTING AGENCY for a PROJECT COMPONENT will coordinate, prepare, obtain, implement, renew, and amend any encroachment permits needed to complete the WORK.

Protected Resources

56. If any PARTY discovers unanticipated cultural, archaeological, paleontological, or other protected resources during WORK, all WORK in that area will stop and that PARTY will notify all PARTIES within 24 hours of discovery. WORK may only resume after a qualified professional has evaluated the nature and significance of the discovery and CALTRANS approves a plan for its removal or protection.

Disclosures

57. PARTIES will hold all administrative drafts and administrative final reports, studies, materials, and documentation relied upon, produced, created, or utilized for the WORK in confidence to the extent permitted by law and where applicable, the provisions of California Government Code section 6254.5(e) will protect the confidentiality of such documents in the event that said documents are shared between PARTIES.

PARTIES will not distribute, release, or share said documents with anyone other than employees, agents, and consultants who require access to complete the WORK without the written consent of the PARTY authorized to release them, unless required or authorized to do so by law.

58. If a PARTY receives a public records request pertaining to the WORK, that PARTY will notify PARTIES within five (5) working days of receipt and make PARTIES aware of any disclosed public documents. PARTIES will consult with each other prior to the release of any public documents related to the WORK.

Hazardous Materials

59. HM-1 is hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law, irrespective of whether it is disturbed by the PROJECT or not.

HM-2 is hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law only if disturbed by the PROJECT.

The management activities related to HM-1 and HM-2, including and without limitation, any necessary manifest requirements and disposal facility designations are referred to herein as HM-1 MANAGEMENT and HM-2 MANAGEMENT respectively.

60. If HM-1 or HM-2 is found the discovering PARTY will immediately notify all other PARTIES.

61. CALTRANS, independent of the PROJECT, is responsible for any HM-1 found within the existing State Highway System right-of-way. CALTRANS will undertake, or cause to be undertaken, HM-1 MANAGEMENT with minimum impact to the PROJECT schedule.

    CALTRANS will pay, or cause to be paid, the cost of HM-1 MANAGEMENT for HM-1 found within the existing State Highway System right-of-way with funds that are independent of the funds obligated in this AGREEMENT.

62. COUNTY, independent of the PROJECT, is responsible for any HM-1 found within the PROJECT limits and outside the existing State Highway System right-of-way. COUNTY will undertake, or cause to be undertaken, HM-1 MANAGEMENT with minimum impact to the PROJECT schedule.

    COUNTY will pay, or cause to be paid, the cost of HM-1 MANAGEMENT for HM-1 found within the PROJECT limits and outside of the existing State Highway System right-of-way with funds that are independent of the funds obligated in this AGREEMENT.

63. The CONSTRUCTION IMPLEMENTING AGENCY is responsible for HM-2 MANAGEMENT within the PROJECT limits.

64. CALTRANS' acquisition or acceptance of title to any property on which any HM-1 or HM-2 is found will proceed in accordance with CALTRANS' policy on such acquisition.

Claims

65. Any PARTY that is responsible for completing WORK may accept, reject, compromise, settle, or litigate claims arising from the WORK without concurrence from the other PARTY.

66. PARTIES will confer on any claim that may affect the WORK or PARTIES' liability or responsibility under this AGREEMENT in order to retain resolution possibilities for potential future claims. No PARTY will prejudice the rights of another PARTY until after PARTIES confer on the claim.

67. If the WORK expends state or federal funds, each PARTY will comply with the federal Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards of 2 CFR, Part 200. PARTIES will ensure that any for-profit consultant hired to participate in the WORK will comply with the requirements in 48 CFR, Chapter 1, Part 31. When state or federal funds are expended on the WORK these principles and requirements apply to all funding types included in this AGREEMENT.

Accounting and Audits

68. PARTIES will maintain, and will ensure that any consultant hired by PARTIES to participate in WORK will maintain, a financial management system that conforms to Generally Accepted Accounting Principles (GAAP), and that can properly accumulate and segregate incurred PROJECT costs and billings.

69. PARTIES will maintain and make available to each other all WORK-related documents, including financial data, during the term of this AGREEMENT.

    PARTIES will retain all WORK-related records for three (3) years after the final voucher.

    PARTIES will require that any consultants hired to participate in the WORK will comply with this Article.

70. PARTIES have the right to audit each other in accordance with generally accepted governmental audit standards.

    CALTRANS, the state auditor, FHWA (if the PROJECT utilizes federal funds), and COUNTY will have access to all WORK -related records of each PARTY, and any consultant hired by a PARTY to participate in WORK, for audit, examination, excerpt, or transcription.

    The examination of any records will take place in the offices and locations where said records are generated and/or stored and will be accomplished during reasonable hours of operation. The auditing PARTY will be permitted to make copies of any WORK-related records needed for the audit.

    The audited PARTY will review the draft audit, findings, and recommendations, and provide written comments within thirty (30) calendar days of receipt.

    Upon completion of the final audit, PARTIES have forty-five (45) calendar days to refund or invoice as necessary in order to satisfy the obligation of the audit.

    Any audit dispute not resolved by PARTIES is subject to mediation. Mediation will follow the process described in the General Conditions section of this AGREEMENT.

71. If the WORK expends state or federal funds, each PARTY will undergo an annual audit in accordance with the Single Audit Act in the federal Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards as defined in 2 CFR, Part 200.

72. When a PARTY reimburses a consultant for WORK with state or federal funds, the procurement of the consultant and the consultant overhead costs will be in accordance with Chapter 10 of the Local Assistance Procedures Manual.

Interruption of Work

73. If WORK stops for any reason, IMPLEMENTING AGENCY will place the PROJECT right-of-way in a safe and operable condition acceptable to CALTRANS.

74. If WORK stops for any reason, each PARTY will continue to implement the obligations of this AGREEMENT, including the commitments and conditions included in the environmental documentation, permits, agreements, or approvals that are in effect at the time that WORK stops, and will keep the PROJECT in environmental compliance until WORK resumes.

Penalties, Judgements and Settlements

75. The cost of awards, judgments, or settlements generated by the WORK are to be paid from the funds obligated in this AGREEMENT.

76. The cost of legal challenges to the environmental process or documentation may be paid from the funds obligated in this AGREEMENT.

77. Any PARTY who action or lack of action causes the levy of fines, interest, or penalties will indemnify and hold all other PARTIES harmless per the terms of this AGREEMENT.

Project Files

78. COUNTY will furnish CALTRANS with the Project History Files related to the PROJECT facilities on State Highway System within sixty (60) days following the completion of each PROJECT COMPONENT. COUNTY will prepare the Project History File in accordance with the Project Development Procedures Manual, Chapter 7. All material will be submitted neatly in a three-ring binder and on a CD ROM in PDF format.

GENERAL CONDITIONS

Venue

79. PARTIES understand that this AGREEMENT is in accordance with and governed by the Constitution and laws of the State of California. This AGREEMENT will be enforceable in the State of California. Any PARTY initiating legal action arising from this AGREEMENT will file and maintain that legal action in the Superior Court of the county in which the CALTRANS district office that is signatory to this AGREEMENT resides, or in the Superior Court of the county in which the PROJECT is physically located.

Exemptions

80. All CALTRANS' obligations under this AGREEMENT are subject to the appropriation of resources by the Legislature, the State Budget Act authority, and the allocation of funds by the California Transportation Commission.

Indemnification

81. Neither CALTRANS nor any of their officers and employees, are responsible for any injury, damage, or liability occurring by reason of anything done or omitted to be done by COUNTY, its contractors, sub-contractors, and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon COUNTY under this AGREEMENT. It is understood and agreed that COUNTY, to the extent permitted by law, will defend, indemnify, and save harmless CALTRANS and all of their officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortious, contractual, inverse condemnation, or other theories and assertions of liability occurring by reason of anything done or omitted to be done by COUNTY, its contractors, sub-contractors, and/or its agents under this AGREEMENT.

82. Neither COUNTY nor any of their officers and employees, are responsible for any injury, damage, or liability occurring by reason of anything done or omitted to be done by CALTRANS, its contractors, sub-contractors, and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon CALTRANS under this AGREEMENT. It is understood and agreed that CALTRANS, to the extent permitted by law, will defend, indemnify, and save harmless COUNTY and all of their officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortious, contractual, inverse condemnation, or other theories and assertions of liability occurring by reason of anything done or omitted to be done by CALTRANS, its contractors, sub-contractors, and/or its agents under this AGREEMENT.

Non-parties

83. PARTIES do not intend this AGREEMENT to create a third party beneficiary or define duties, obligations, or rights in PARTIES not signatory to this AGREEMENT. PARTIES do not intend this AGREEMENT to affect their legal liability by imposing any standard of care for fulfilling the WORK different from the standards imposed by law.

84. PARTIES will not assign or attempt to assign obligations to PARTIES not signatory to this AGREEMENT without an amendment to this AGREEMENT.

Ambiguity and Performance

85. COUNTY will not interpret any ambiguity contained in this AGREEMENT against CALTRANS. COUNTY waives the provisions of California Civil Code section 1654.

A waiver of a PARTY's performance under this AGREEMENT will not constitute a continuous waiver of any other provision.

86. A delay or omission to exercise a right or power due to a default does not negate the use of that right or power in the future when deemed necessary.

Defaults

87. If any PARTY defaults in its performance of the WORK, a non-defaulting PARTY will request in writing that the default be remedied within thirty (30) calendar days. If the defaulting PARTY fails to do so, the non-defaulting PARTY may initiate dispute resolution.

Dispute Resolution

88. PARTIES will first attempt to resolve AGREEMENT disputes at the PROJECT team level as described in the Quality Management Plan. If they cannot resolve the dispute themselves, the CALTRANS district director and the executive officer of COUNTY will attempt to negotiate a resolution. If PARTIES do not reach a resolution, PARTIES' legal counsel will initiate mediation. PARTIES agree to participate in mediation in good faith and will share equally in its costs.

Neither the dispute nor the mediation process relieves PARTIES from full and timely performance of the WORK in accordance with the terms of this AGREEMENT. However, if any PARTY stops fulfilling its obligations, any other PARTY may seek equitable relief to ensure that the WORK continues.

Except for equitable relief, no PARTY may file a civil complaint until after mediation, or forty-five (45) calendar days after filing the written mediation request, whichever occurs first.

PARTIES will file any civil complaints in the Superior Court of the county in which the CALTRANS district office signatory to this AGREEMENT resides or in the Superior Court of the county in which the PROJECT is physically located.

PARTIES maintain the ability to pursue alternative or additional dispute remedies if a previously selected remedy does not achieve resolution.

Prevailing Wage

89. When WORK falls within the Labor Code § 1720(a)(1) definition of "public works" in that it is construction, alteration, demolition, installation, or repair; or maintenance work under Labor Code § 1771, PARTIES will conform to the provisions of Labor Code § 1720-1815, and all applicable provisions of California Code of Regulations found in Title 8, Division 1, Chapter 8, Subchapter 3, Articles 1-7. PARTIES will include prevailing wage requirements in contracts for public work and require contractors to include the same prevailing wage requirements in all subcontracts.

    Work performed by a PARTY's own employees is exempt from the Labor Code's Prevailing Wage requirements.

    If WORK is paid for, in whole or part, with federal funds and is of the type of work subject to federal prevailing wage requirements, PARTIES will conform to the provisions of the Davis-Bacon and Related Acts, 40 U.S.C. § 276(a).

    When applicable, PARTIES will include federal prevailing wage requirements in contracts for public works. WORK performed by a PARTY's employees is exempt from federal prevailing wage requirements.

DEFINITIONS

PARTY – Any individual signatory party to this AGREEMENT.

PARTIES – The term that collectively references all of the signatory agencies to this AGREEMENT.

WORK BREAKDOWN STRUCTURE (WBS) – A WBS is a standardized hierarchical listing of project work activities/products in increasing levels of detail. The CALTRANS WBS defines each PROJECT COMPONENT as a group of work activities/products. The CALTRANS Work Breakdown Structure is defined in the CALTRANS Workplan Standards Guide.

SIGNATURES

PARTIES are empowered by California Streets and Highways Code to enter into this AGREEMENT and have delegated to the undersigned the authority to execute this AGREEMENT on behalf of the respective agencies and covenants to have followed all the necessary legal requirements to validly execute this AGREEMENT.

Signatories may execute this AGREEMENT through individual signature pages provided that each signature is an original. This AGREEMENT is not fully executed until all original signatures are attached.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

Thomas L. Brannon
Deputy District Director
D3 Program / Project Management

VERIFICATION OF FUNDS AND AUTHORITY:

Stacey Salazar
District Project Control Officer

CERTIFIED AS TO FINANCIAL TERMS AND POLICIES:

Tamara Warren

Tamara Warren
HQ Accounting Supervisor

COUNTY OF EL DORADO

Shiva Frentzen
Chair, Board of Supervisors 9/12/17

Attest:

James S. Mitrisin
Clerk of the Board of Supervisors

Approved as to form and procedure:

County Counsel

FUNDING SUMMARY NO. 01

FUNDING TABLE			
			PA&ED
Source	Party	Fund Type	Totals
LOCAL-FEDERAL	COUNTY	CMAQ (88.53%)	261,455
LOCAL	COUNTY	Local[M]	282,904
Totals			544,359

[M]Non-federal match

SPENDING SUMMARY			
	PA&ED		
Fund Type	CALTRANS	COUNTY	Totals
CMAQ	0	261,455	261,455
Local	0	282,904	282,904
Totals	0	544,359	544,359

v 2

Funding

1. If there are insufficient funds available in this AGREEMENT to place the PROJECT right-of-way in a safe and operable condition, the appropriate IMPLEMENTING AGENCY will fund these activities until such time as PARTIES amend this AGREEMENT.

   That IMPLEMENTING AGENCY may request reimbursement for these costs during the amendment process.

ICRP Rate

2. The cost of any engineering support performed by CALTRANS includes all direct and applicable indirect costs. CALTRANS calculates indirect costs based solely on the type of funds used to pay support costs. State and federal funds administered by CALTRANS are subject to the current Program Functional Rate. All other funds are subject to the current Program Functional Rate and the current Administration Rate. The Program Functional Rate and Administration Rate are adjusted periodically.

3. In accordance with the CALTRANS Federal-Aid Project Funding Guidelines, PARTIES must obtain approval from the Federal Highway Administration prior to any PROJECT funding changes that that will change the federal share of funds.

Invoicing and Payment

4. PARTIES will invoice for funds where the SPENDING SUMMARY shows that one PARTY provides funds for use by another PARTY. PARTIES will pay invoices within forty-five (45) calendar days of receipt of invoice when not paying with Electronic Funds Transfer (EFT). When paying with EFT, COUNTY will pay invoices within five (5) calendar days of receipt of invoice.

5. If COUNTY has received EFT certification from CALTRANS then COUNTY will use the EFT mechanism and follow all EFT procedures to pay all invoices issued from CALTRANS.

Project Approval and Environmental Document (PA&ED)

6. No invoicing or reimbursement will occur for the PA&ED PROJECT COMPONENT.

CLOSURE STATEMENT INSTRUCTIONS

1. Did PARTIES complete all scope, cost and schedule commitments included in this AGREEMENT and any amendments to this AGREEMENT?

YES / NO

2. Did CALTRANS accept and approve all final deliverables submitted by other PARTIES?

YES / NO

3. Did the CALTRANS HQ Office of Accounting verify that all final accounting for this AGREEMENT and any amendments to this AGREEMENT were completed?

YES / NO

4. If construction is involved, did the CALTRANS District Project Manager verify that all claims and third party billings (utilities, etc.) have been settled before termination of the AGREEMENT?

YES / NO

5. Did PARTIES complete and transmit the As-Built Plans, Project History File, and all other required contract documents?

YES / NO

If ALL answers are "YES", this form may be used to TERMINATE this AGREEMENT.

CLOSURE STATEMENT

PARTIES agree that they have completed all scope, cost, and schedule commitments included in Agreement 03-0612 and any amendments to the agreement. The final signature date on this document terminates agreement 03-0612 except survival articles. All survival articles in agreement 03-0612 will remain in effect until expired by law, terminated or modified in writing by the PARTIES' mutual agreement, whichever occurs earlier.

The people signing this agreement have the authority to do so on behalf of their public agencies.

CALTRANS

______________________________ ______________________
Date

Deputy District Director, D3 Program / Project Management

EL DORADO COUNTY COMMUNITY DEVELOPMENT AGENCY

______________________________ ______________________
Date

Transportation Division Director

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION
http://www.edcgov.us/DOT/

PLACERVILLE OFFICES:
MAIN OFFICE:
2850 Fairlane Court, Placerville, CA 95667
(530) 621-5900 / (530) 626-0387 Fax

CONSTRUCTION & MAINTENANCE:
2441 Headington Road, Placerville, CA 95667
(530) 642-4909 / (530) 642-0508 Fax

LAKE TAHOE OFFICES:
ENGINEERING:
924 B Emerald Bay Road, South Lake Tahoe, CA 96150
(530) 573-7900 / (530) 541-7049 Fax

MAINTENANCE:
1121 Shakori Drive, South Lake Tahoe, CA 96150
(530) 573-3180 / (530) 577-8402 Fax

April 15, 2020

Mr. Amarjeet Benipal, District 3 Director
California Department of Transportation
703 B Street
Marysville, CA 95901

Subject: Request for designation of the County of El Dorado as CEQA Lead Agency for the Federal-aid Project No. CMSTPL 5925 (163), Pioneer Trail/U.S. Highway 50 Intersection Safety Improvement Project – Cooperative Agreement 03-0612

Dear Mr. Benipal,

The County of El Dorado (County) is the local agency lead for the above referenced Project, which aims to improve safety at the U.S. 50 and Pioneer Trail intersection for all modes of travel, improve traffic flow, reduce vehicle speeds through the intersection and into the Meyers area, reduce vehicle emissions associated with traffic delays, and improve access to nearby bikeways and trails.

The County has established a Project Development Team with County staff, Caltrans staff (Highway Operations, Program/Project Management, South Lake Tahoe Maintenance, and Local Assistance), local law enforcement/ safety personnel and the County's A&E Consultant, NCE.

We understand that current and long-standing policy is for Caltrans to be the CEQA lead agency for improvement projects within the State Highway System (SHS). However, for reasons discussed below, the County respectfully requests Caltrans delegate CEQA lead agency status to the County of El Dorado.

We are requesting CEQA lead agency status be delegated to the County for the following reasons:

1) Funding for the PA&ED phase is programmed in the FTIP.
2) The County has procured an A&E consultant to complete the PA&ED phase including Project Approval (PA), the Preliminary Environmental Analysis (PEAR), Intersection Control Evaluation (ICE), and Environmental Documentation (ED) in coordination with County and Caltrans staff.
3) The County and its A&E consultant have the necessary staff and resources to prepare the ED, including all technical reports required by the PEAR and ICE, already reviewed and approved by Caltrans.
4) The County will continue to cooperate closely with Caltrans staff throughout the entire process. Caltrans is an integral member of the Project Development Team and the County is coordinating closely with Caltrans staff.

Based on our understanding of the preliminary design and environmental issues associated with the Project, a CEQA Initial Study (IS) will be conducted. It is anticipated that a Mitigated Negative Declaration (MND) will be the appropriate environmental document. The County will submit the technical reports and administrative to Caltrans for review and approval prior to release of any of the documents for public review.

If you have any questions about this request, or would like to discuss this Project or request, please contact John Kahling at (530) 642-4974 or email at john.kahling@edcgov.us. We look forward to your approval.

Sincerely,

R Martinez

Rafael Martinez, Director
Department of Transportation
County of El Dorado

c: John Kahling, County
Donaldo Palaroan, County
Martin Clark, Caltrans
Angie Hueftle, NCE

DEPARTMENT OF TRANSPORTATION
DISTRICT 3
703 B STREET
MARYSVILLE, CA 95901
PHONE (530) 741-4233
FAX (530) 741-4245
TTY 711
www.dot.ca.gov/dist3

Making Conservation a California Way of Life.

May 18, 2020

Mr. Rafael Martinez, Director
Department of Transportation
County of Eldorado
2850 Fairlane Court, Building C
Placerville, CA 95667

Subject: Request for Delegation of California Environmental Quality Act (CEQA) Lead Agency for Federal-aid Project No. CMSTLP 5925 (163), Pioneer Trail/U.S. Highway 50 Intersection Safety Improvement Project – Cooperative Agreement 03-0612

Dear ~~Mr. Martinez~~ Rafael

Thank you for your letter dated April 15, 2020 requesting delegation of Lead Agency status pursuant to the California Environmental Quality Act (CEQA) for the State Route 50 Pioneer Trail/U.S. Highway 50 Intersection Safety Improvement Project.

While it is Caltrans' policy to normally be the CEQA lead agency for improvements to the State highway system, there are sometimes compelling reasons to delegate lead agency status. I am delegating CEQA lead agency status to El Dorado County for this project. Caltrans should be identified as a Responsible Agency and the action of the encroachment permit shall be part of the CEQA action.

The reasons for this delegation are:

1) Funding for the Project Approval and Environmental Document (PA&ED) phase will be paid by the County. County is in process of completing Project Initiation Report by end of June 2020.

2) The County has procured GHD Inc., an Architectural & Engineering consultant to complete the PA&ED phase including Project Approval (PA), and the Environmental Documentation (ED) in coordination with County staff and Caltrans staff.

3) The County and Architectural & Engineering consultant GHD have the necessary staff and resources to prepare the Draft Environmental Document (DED) and Final Environmental Document (FED), including all technical reports required by the PEAR, each to be reviewed and approved by Caltrans.

4) County will ensure the design of the roundabout alternative meets the operational requirements for Caltrans' snow operations and coordinate the design with Caltrans' Traffic and Maintenance Operations.

5) County will continue to coordinate and cooperate closely with Caltrans staff throughout the entire process.

Should Federal funds be used for this project, Caltrans will be the Lead Agency for the National Environmental Policy Act (NEPA) per the NEPA Assignment Memorandum of Understanding with the Federal Highway Administration. The NEPA related procedures and documentation requirements as established by Caltrans and FHWA must be followed including, but not limited, to an Environmental Commitment Record at the time the Final NEPA document is approved and at the completion of the project to document that all environmental commitments required in the Final NEPA document have been met. Caltrans is not authorized to undertake final approval of the NEPA environmental document until such time as Federal funds are programmed.

The Caltrans team under the leadership of Martin Clark, Project Manager, are looking forward to working with you and your team to assist in the delivery process for this project.

Sincerely,

Amarjeet S. Benipal

AMARJEET BENIPAL
Director