



ROCKY HILL

Bicycle/Pedestrian Trail Study

Feasibility Study

February 2019



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Submitted to TCAG/Tulare County:



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- Appendix D: Cultural Resources Records Request Results

1. Introduction

Purpose and Objectives of Study

The Rocky Hill Bicycle/Pedestrian Path Feasibility Study has been prepared by 4-Creeks Inc. at the direction of the Tulare County Resource Management Agency (RMA), and Tulare County Association of Governments (TCAG). This study was completed in accordance with tasks identified in the 8/25/17 TCAG request for proposal, and within the scope of work agreed to by TCAG and by 4-Creeks, Inc. planning/engineering consultant.

The purpose of this study is to develop two design concepts that will determine the most feasible and effective improvements for the section of Rocky Hill Drive between Spruce Road (Road 204) and Yokohl Drive, in unincorporated Tulare County. The study will provide information on the existing conditions of Rocky Hill Drive and identify methods to increase safety for all road users. The planning team will identify possible funding opportunities, constraints, and project costs to promote implementation of the design concepts.

Grant funding has been provided to start this initial step in providing for a safer route for all users of the Rocky Hill Drive segment between Spruce and Yokohl Drive. The feasibility study includes the completion of the following professional services:

1. Site imagery/drone flown aerials
2. Geotechnical reports (Appendix A)
3. Biological Reconnaissance Level Study (Appendix B)
4. Research of applicable planning/engineering standards and requirements
5. Outreach events
6. Develop two conceptual design alternatives
7. Help the community visualize project build-out by providing illustrations of the built-out project
8. Preliminary engineering drawings (Appendix C)
9. Cost estimates for both alternatives
10. Provide list of grant funding opportunities for TCAG to pursue for next steps in project completion



Figure 1-1. Rocky Hill Drive looking east; Source: 4-Creeks.

Location of Project

As shown in Figure 1-2, Rocky Hill Drive is located in the mid-western portion of Tulare County, approximately 1/2 mile east of the City of Exeter, in the San Joaquin Valley of Central California. The study area encompasses a 3.35 mile segment of Rocky Hill Drive from Road 204 (Spruce Road) to Yokohl Drive (See Figure 1-3). Figure 1-2 shows the location of Rocky Hill Drive in the context of Tulare County and nearby cities.

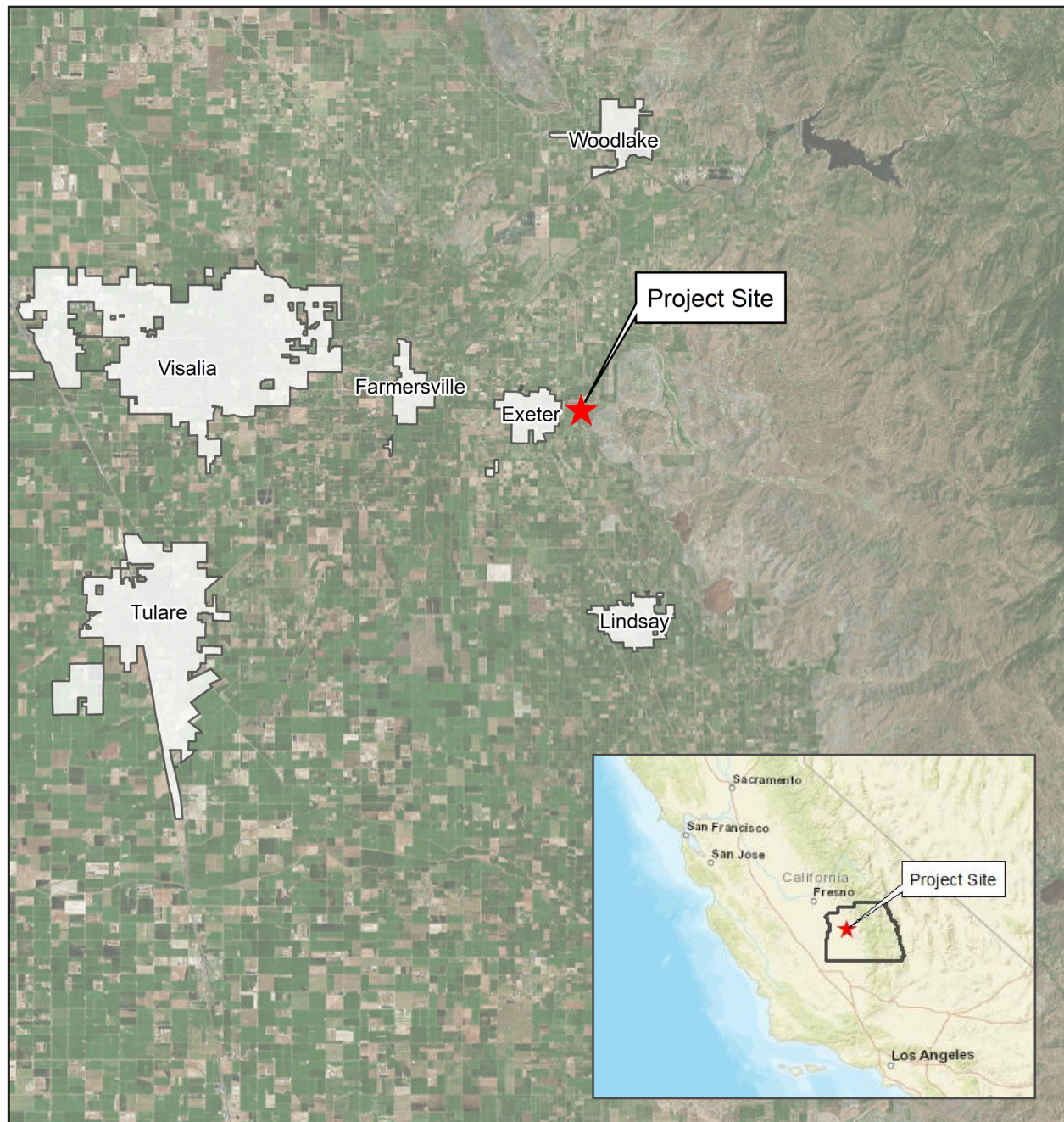


Figure 1-2. Rocky Hill Feasibility Study regional location map.

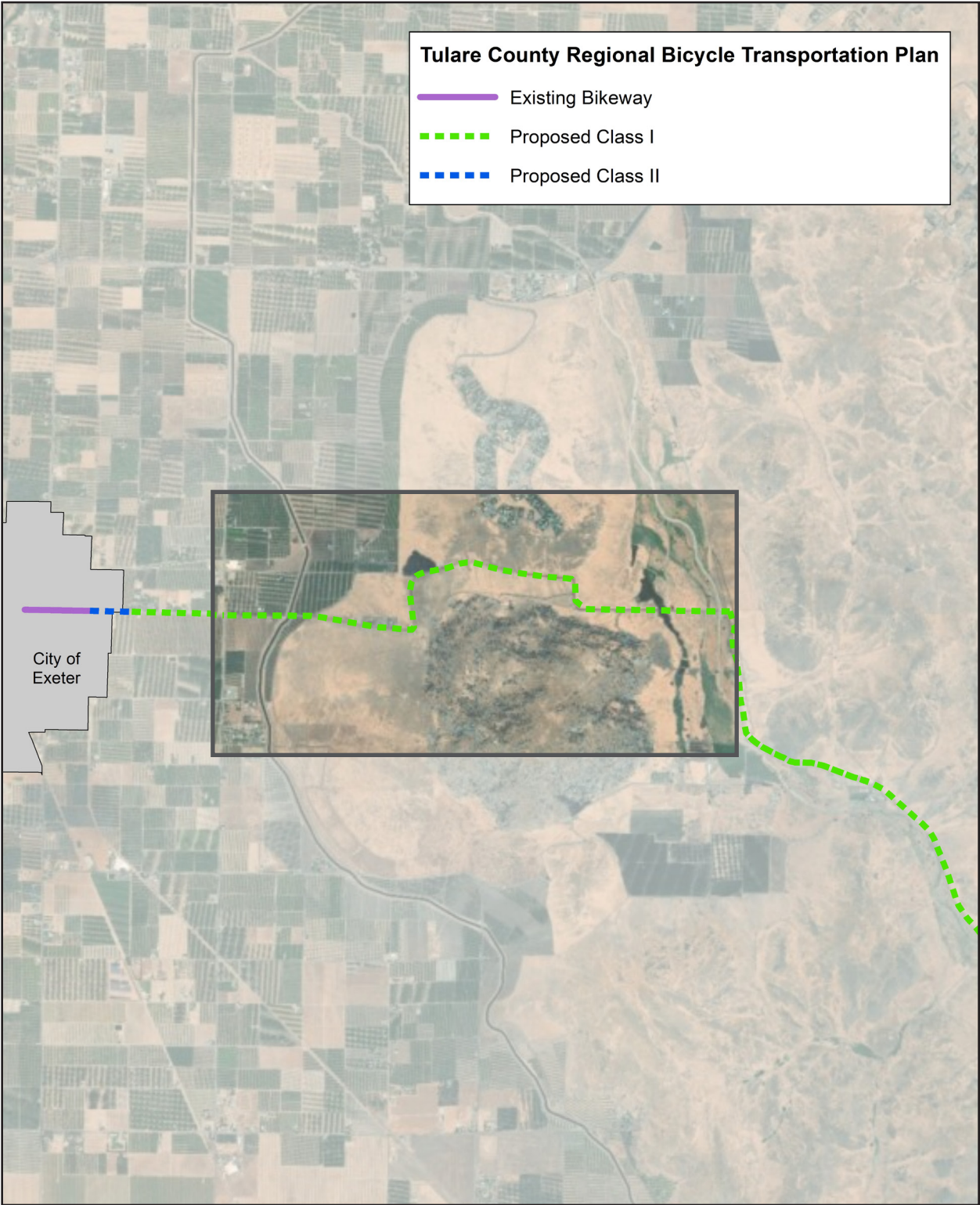


Figure 1-3. Segment of Rocky Hill Drive in context of adjacent planned bicycle facilities.

Physical and Demographic Context

Diversity

According to the 2016 American Community Survey (ACS) 1-year Estimate, the County of Tulare has a population of approximately 442,179. Of that population, 64.1% is Hispanic, 28.7% is White, 3.1% are Asian, 1.7% are multiracial, 1.1% are Black or African American, and 0.6% are Native Indian or Alaska Native. While 88.4% of residents in Tulare County are U.S. citizens, more than half of the population speaks Spanish at home. Of the 195,710 Spanish speakers in Tulare County, approximately 50% speak English less than “very well.”

Age

The median age of all residents of Tulare County residents is 29.6 years. 31.9% of those residents are under the age of 18, which is a high percentage when compared to California’s overall average of 22.9%. Residents between the ages of 18 and 24 make up for 10.3% of the population, 26.1% are between 25 and 44 years, 21.2% are between 45 and 64 years, and 10.5% are 65 years and older. The high number of individuals under the age of 30 suggests significant potential for population growth at an increased rate compared to the State.

Economy

The medium household income in Tulare County is \$45,881, which falls below the medium income of California and the United States (\$67,739 and \$57,617, respectively). Agriculture, Forestry, Fishing and Hunting are the primary driver of economic activity in Tulare County, and employ approximately 19.6 times more individuals than what is expected for a county this size.

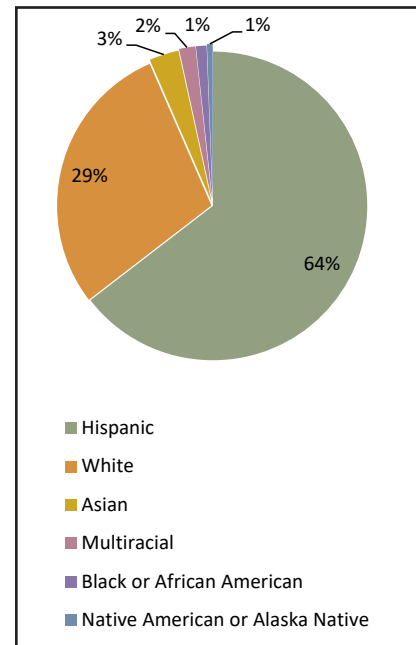


Figure 1-4. Cultural makeup of Tulare County. Source: 2016 ACS

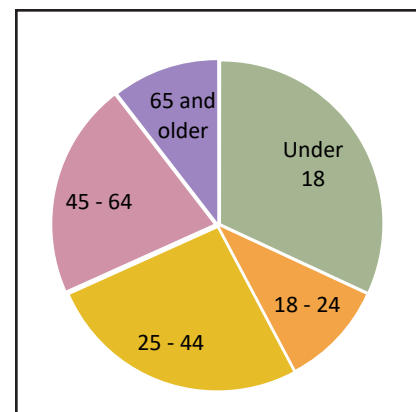


Figure 1-5. Age of Tulare County Residents. Source: 2016 ACS

Future Growth

Tulare County is projected to grow to more than 1,000,000 residents by 2050. The 2010 Tulare County General Plan Background Report identifies a 1.3% project annual growth rate for unincorporated areas of Tulare County. These values can be used to project the population growth within the County through 2050. This growth will lead to an increasing use of recreational trails, and developing need for user safety. The County's ability to provide residents with active transportation that is both safe and functional is a primary goal for TCAG.

Expected Outcome of Study

This Rocky Hill Feasibility Study will help identify appropriate motorized and non-motorized design concepts to increase the safety and aesthetics of Rocky Hill Drive for pedestrians, cyclists, and drivers.

The implementation and construction of design concepts will require action subsequent to this study. This includes the hiring of consultants to prepare the required focused surveys, regulatory permits, CEQA/NEPA environmental documentation, engineering improvement plans, and construction contractors to construct the final design concept. The implementation of the design concepts identified in this study will ultimately result in a significant improvement user safety along Rocky Hill Drive.

Implementation of this Study will:

1. Increase safety for multi-modal users of Rocky Hill Drive
2. Balance the needs of private landowners with public safety
3. Improve aesthetics of Rocky Hill Drive
4. Be consistent with the Tulare County General Plan



Figure 1-6. Rocky Hill Drive Triathlete

Case Studies

There have been several communities throughout California that have already implemented separated bikeways due to the enhanced safety and functionality they offer users. The following cases studies can be used as important lessons when considering separated walkways and bikeways for user safety, and can serve as proper examples for this feasibility study.

San Luis Obispo, CA – Cal Poly Campus: California Boulevard

The two-way separated Class I bikeway alongside a Class II bikeway on California Avenue on the Cal Poly campus serves as an example of both Bikeway Classes being used concurrently. The separated walkway is protected by a raised curb as well as vegetative palm trees planted beside the roadway. The one-way bikeway runs parallel next to California Boulevard on both sides of the road. The separated bike lane begins at the entrance of Cal Poly's campus and continues down California Boulevard for approximately 0.65 miles. Before and after this separated bikeway, a shared bikeway, or Class II bikeway, is used along California Boulevard.

Riverside, CA - Victoria Avenue

The Victoria Avenue Bike Path was built in 1892 and listed on the National Register of Historic Place. The separate bikeway is now more commonly used for pedestrians since a one-way bike lane was added alongside Victoria Avenue on both sides of the road. Victoria Avenue is also an example of a Class I and Class II bikeway. The northeastern end of the trail offers a peaceful ride through Riverside neighborhoods and as the trail continues southwest, the landscape become more rural with stands of orange groves. Cyclist using the separated bikeway will eventually have to safely merge into the parallel roadway since short gaps interrupt the otherwise continuous trail.



Figure 1-7. California Boulevard in San Luis Obispo



Figure 1-8. Victoria Avenue in Riverside

Regulatory Context

Federal

National Environmental Policy Act

Any project undertaken on the recommendation of this document may meet the definition of a “project” under the National Environmental Policy Act (NEPA), and will be subject to NEPA review if the project receives Federal funding. Tulare County is considered the Lead Agency under NEPA, and thus is obligated to honestly determine whether or not the project is subject to NEPA. If it is, Tulare County must commence with the appropriate level of environmental assessment as stated by NEPA and the various Federal Guidelines adopted to implement the act. The determinations under NEPA that the Tulare County can make as Lead Agency are as follows:

1. The implementation project is not a “federal action” as defined by NEPA, 24 CFR 1508.18 and therefore is not subject to further review under NEPA;
2. The implementation is a Categorical Excluded project pursuant to Federal Guidelines;
3. The implementation project is subject to further environmental study requiring the preparation of an Environmental Assessment pursuant to applicable NEPA Guidelines.
4. Following the NEPA Environmental Assessment, a project will require one of the following environmental documents:
 - i. Finding of No Significant Impact (FONSI), a document finding the project will not result in significant impacts on the environment, or
 - ii. Environmental Impact Statement (EIS), a document which conducts an in-depth study of potential environmental impacts from the proposed project and recommends mitigation measures and project alternatives. An EIS is the highest order environmental analysis that can be performed under NEPA.

State

California Environmental Quality Act

Any project undertaken on the recommendation of this document may meet the definition of a “project” under the California Environmental Quality Act (CEQA). The Tulare County RMA is the Lead Agency under CEQA, and thus is obligated to honestly determine whether or not the project is subject to CEQA. If it is, Tulare County must commence with the appropriate level of environmental assessment as stated by CEQA and the various State and local Guidelines adopted to implement the act. The determinations under CEQA that the Tulare County can make as Lead

Agency are as follows:

1. The implementation project is not a “project” as defined by CEQA, Guidelines Section 15378 and therefore is not subject to further review under CEQA;
2. The implementation project is a Categorical Exempt project pursuant to CEQA Guidelines Section 15354 and 15300-15333, or is a Categorical Excluded project pursuant to Federal Guidelines;
3. The implementation project is subject to further environmental study requiring the preparation of an Initial Study pursuant to applicable CEQA Guidelines.
4. Following the outcome of the CEQA Initial Study the Lead Agency must cause the preparation of one of the following
5. Environmental documents supported by substantial evidence:
 - a. Negative Declaration (ND) a document finding the project will not result in significant impacts on the environment;
 - b. Mitigated Negative Declaration (MND) a document finding potential significant impact(s) from the project and citing mitigation measure(s) to reduce impacts to less than significant levels, or that will avoid the impacts. Said mitigation measures must be agreed to by proponent/applicant prior to public hearing taking action to approve the project, or;
 - c. Environmental Impact Report (EIR) is the highest order of environmental analysis that can be required under CEQA. An EIR requires a public hearing on the project and an in-depth analysis of potential Environmental Impacts.

On 8/28/18 the Tulare County RMA (lead agency) determined that a Categorical Exemption will be issued for this feasibility study. Additional CEQA review will be required upon implementation of design concepts proposed in this feasibility study.

On 1/30/18 Ted Smalley-TCAG Executive Director stated that TCAG will seek Measure R funding for the project which will result in a CEQA compliance document for the improvements project. The CEQA compliance document determination will be provided by Tulare County RMA which is the CEQA lead agency.

Complete Streets Act

The Complete Streets Act (Assembly Bill 1358) was signed into law by California Governor Arnold Schwarzenegger in September 2008. The law requires cities and counties to ensure that all circulation planning accounts for the needs of all roadway users. Specifically, the law requires cities and counties to ensure that local roads and streets accommodate the needs of bicyclists, pedestrians, and transit riders, as well as motorists.

California Department of Transportation 2015-2020 Strategic Management Plan

The California Department of Transportation (Caltrans) views all transportation improvements as an opportunity to improve sustainability, livability, and the economy. The department of transportation has identified five goals with specific objectives, performance measures, and targets in its 2015-2020 Strategic Management Plan. The outline of these specific goals and objectives are contained in the following section.

Goal 1: Safety and Health

Provide a safe transportation system for workers and users and promote health through active transportation and reduced pollution in communities

Goal 2: Stewardship and Efficiency

Money counts. Responsibility manage California's transportation-related assets

Goal 3: Sustainability, Livability and Economy

Make long-lasting, smart mobility decisions that improve the environment, support a vibrant economy, and build communities, not sprawl.

Goal 4: System Performance

Utilize leadership, collaboration, and strategic partnerships to develop and integrated transportation system that provides reliable and accessible mobility for travelers.

Goal 5: Organizational Excellence

Be a national leader in delivering quality service through excellent employee performance, public communication, and accountability

California Highway Design Manual (2016)

The California Highway Design Manual (HDM) establishes uniform policies and procedure to carry out the design, implementation and operation of highways for Caltrans, but its guidelines also apply to local streets. It is updated periodically with the most recent revision related in 2016.

California Department of Transportation Bikeway Classification

Class I bikeway: Bike paths or shared use paths, also referred to as "Class I bikeways," which provide a completely separated right-of-way designed for the exclusive use of

bicycles and pedestrians with crossflows by motorists minimized.

Class II bikeway: Bike lanes, also referred to as “Class II bikeways,” that provide a restricted right-of-way designed for the exclusive or semi-exclusive use of cyclists with through travel by motor vehicles or pedestrians prohibited, but with vehicles parking and crossflows by pedestrians and motorists permitted.

Class III bikeway: Bike routes referred to as “Class III bikeways” provide a right-of-way on-street or off-street, designated by signs and permanent markings and shared with pedestrians and motorist.

According to the Tulare County Regional Bicycle Transportation Plan, Rocky Hill Drive is a “Proposed Class I Bike Facility” (Figure 1-3)

Class IV bikeway: Cycle tracks or separated bikeways, referred to as “Class IV bikeways,” that promote active transportation and provide a right-of-way designated exclusively for bicycle travel adjacent to a roadway and are separated from vehicular traffic. These types of separation include, but are not limited to, grade separation, flexible posts, inflexible physical barriers, or on street parking.

Caltrans Design Information Bulletin 89 (2015)

Design information Bulletin (DIB) 89 was issues by Caltrans in 2015 to officially endorse separated bikeways as IV in California, and provides dimensions and design requirements. The guidance outlined in DIB 89 will be integrated into the next update of HDM.

California Manual on Uniform Traffic Control Devices (2014)

The California Manual on Uniform Traffic Control Devices (CA MUTCD) is the guide to all pavement markings and signs used for traffic control on California streets. It is a state-specific version of the national MUTCD updated every few years. This iteration of the CA MUTCD does not specifically address separated bikeways, but provides general guidance on signs, pavement markings, and other traffic control devices that may be used to create a spate bikeway.

FHWA Separated Bike Lane Guide (2015)

The FHWA Separated Bike Lane Planning and Design Guide is commonly called the “Separated Bike Lane Guide,” and was adopted in 2015. This document provides comprehensive guidelines on preferred and minimum dimensions of separated bikeways. It stresses the evolving understanding of this new bicycle facility, emphasizing the need for design flexibility as separated bikeways are implemented in widely varying contexts.

Local

Tulare County General Plan

The Transportation and Circulation section of the Tulare County General Plan document outlines goals and policies to facilities a functional circulation system within Tulare County. In an effort to improve the circulation and mobility throughout Tulare County, multi-modal and complete street goals and policies are incorporated into the Transportation and Circulation element of the Tulare County General Plan.

The goal of this element is to promote an efficient roadway and highway system for the movement of people and goods, which enhances the physical, economic, and social environment while being safe, environmentally friendly, and cost-effective. The following further explains the Tulare County General Plan's list of policies below. This feasibility study is consistent with the General Plan's policies.

TC-1.1 Provision of an Adequate Public Road Network

The County shall establish and maintain a public road network comprised of the major facilities illustrated on the Tulare County Road Systems to accommodate projected growth in traffic volume.

TC-1.2 County Improvement Standards

The County's public roadway system shall be built and maintained consistent with adopted County Improvement Standards, and the need and function of each roadway, within constraints of funding capacity.

TC-1.3 Regional Coordination

The County shall continue to work with State, regional, and local agencies to assess transportation needs and goals and support coordinated transportation planning and programming with the Tulare County Association of Governments (TCAG) and other local agencies.

TC-1.4 Funding Sources

The County shall work to enhance funding available for transportation projects. This includes:

1. Working with TCAG, Federal and State agencies, and other available funding sources to maximize funding available to the County for transportation projects and programs, and
2. Enhance local funding sources, including assessment of transportation impact fees to pay for appropriate construction, enhancement, and maintenance of transportation facilities

TC-1.5 Public Road System Maintenance

The County shall give priority for maintenance to roadways identified by the Tulare County Pavement Management System (PMS) and other inputs relevant to maintaining the safety and integrity of the County roadway system.

TC-1.6 Intermodal Connectivity

The County shall ensure that, whenever possible, roadway, highway, and public transit systems will interconnect with other modes of transportation. Specifically, the County shall encourage the interaction of truck, rail, and air-freight/passenger movements.

TC-1.7 Intermodal Freight Villages

The County shall consider the appropriate placement of intermodal freight villages in locations within the Regional Growth Corridors.

TC-1.8 Promoting Operational Efficiency

The County shall give consideration to transportation programs that improve the operational efficiency of goods movement, especially those that enhance farm-to-market connectivity.

TC-1.11 Regionally Significant Intersections

To enhance safety and efficiency, the County shall work to limit the frequency of intersections along regionally-significant corridors.

TC-1.12 Scenic Highways and Roads

The County shall work with appropriate agencies to support the designation of scenic highways and roads in the County.

TC-1.13 Land Dedication for Roadways and Other Travel Modes

As required to meet the adopted County Improvement Standards, the County shall require, where warranted, an irrevocable offer of dedication to the right-of-way for roadways and other travel modes, as part of the development review process.

TC-1.14 Roadway Facilities

As part of the development review process, new development shall be conditioned to fund, through impact fees, tonnage fees, and/or other mechanism, the construction and maintenance of roadway facilities impacted by the project. As projects or locations warrant, construction or payment of prorated fees for planned road facilities may also be required as a condition of approval.

TC-1.16 County Level of Service (LOS) Standards

The County shall strive to develop and manage its roadway system (both segments and intersections) to meet a LOS of "D" or better in accordance with the LOS definitions established by the Highway Capacity Manual.

Tulare County Regional Bicycle Transportation Plan (2010)

In 2004, TCAG prepared the Tulare County Regional Bicycle Transportation Plan that consolidated all the bicycle planning efforts into one document as a Transportation Control Measure. The Regional Bicycle Transportation Plan was divided into nine sections, one for each jurisdiction, to prioritize, plan, estimate and coordinate bicycle activities. All cities as well as the unincorporated

area of the county in Tulare County have adopted either the Regional Bicycle Transportation Plan, or created their own, which has also been incorporated into this Plan. The Regional Bicycle Transportation Plan is a comprehensive plan that provides for travel between major urban areas and within urban areas. The Plan can be found on the following page. It details an unsigned system of routes designated for improvement.

Goals and Objectives for Regional Bicycle Transportation Plan

The main goal for the County is to make the bicycle the integral part of daily life in Tulare County, particularly for trips of less than five miles, by implementing and maintaining a bikeway network, providing end-of-trip facilities, improving bicycle/transit integration, encouraging bicycle use, and making bicycling safe in Tulare County. The following objectives address these goals and their consistency with this feasibility study.

Objective A: Implement the Bicycle Transportation Plan, which identifies existing and future needs, and provides specific recommendations for facilities and programs over the next four (4) years and beyond.

Objective B: Complete a network of bikeways that is feasible, fundable over the life of the Plan, and that serve bicyclists' needs, especially for travel to employment centers, schools, commercial districts, transit terminals, and recreational destinations.

Objective C: Maintain and improve the quality, operation, and integrity of the bikeway network and facilities.

Objective D: Provide short- and long-term bicycle parking and amenities in employment and commercial areas, in multifamily housing, at schools, and at recreation and transit facilities.

Objective E: Increase bicycle ridership in Tulare County.

Objective F: Develop and implement education and encourage plans aimed at youth, adult cyclists, pedestrians, and motorists. Increase public awareness of the benefits of bicycling and of available resources and facilities.

2. Existing Conditions

Existing Street System

Rocky Hill Drive is a popular scenic roadway within the City of Exeter and is used to reach the eastern hillsides of Tulare County. Rocky Hill Drive is a two-way, two-lane street with alternating dirt paths and shoulders along the northern and southern sides. The study area includes Rocky Hill Drive from Spruce Road (Road 204) to Yokohl Drive, a predominantly rural area. The Caltrans Road System Map classifies this section of Rocky Hill Drive as a "Minor Collector (Rural)". Caltrans states that Rural Minor Collectors are:

- Be spaced at intervals, consistent with population density, to collect traffic from Local Roads and bring all developed areas within reasonable distance of a Collector.
- Provide service to smaller communities not served by a higher-class facility Link locally important traffic generators with their rural hinterlands.
- Link locally important traffic generators with their rural hinterlands.

There are several speed limit signs posted within the study area noting speed limits ranging from 20-35 mph (Figure 2-2). As shown in Figure 2-1, existing Right-of-Way (ROW) ranges from 40-60 feet throughout the study area.



Figure 2-1. Existing Right-of-Way on Rocky Hill Drive.

Parking Facilities

There are no vehicle parking facilities or spaces along either side of Rocky Hill Drive. Pedestrians and cyclists frequently park their vehicles on dirt shoulders in locations that block off the cattle ranchers' gates and access points. More frequently, pedestrians and cyclists park their cars along the side of the road, in small dirt patches where Rocky Hill Drive and the Friant-Kern Canal meet.

At the 1/16/19 Public Meeting at Exeter City Hall, property owners stated that any proposed parking along Rocky Hill Drive will interfere with existing cattle and agriculture activities. Therefore, all proposed parking is recommended to be provided off-site.

Pedestrian and Bicycle Infrastructure

The natural scenery along Rocky Hill Drive makes it a well-known running and cycling route for local residents. The road is also used for recreational events, such as the annual “Hell of a Half Marathon” and “Rocky Hill Triathlon.” Rocky Hill Drive is a very well-established running and cycling route, however Rocky Hill Drive currently lacks the infrastructure to support this level of multi-modal use. While Rocky Hill Drive has some signage to direct pedestrian users, there are no marked sidewalks, crosswalks, or other pedestrian/cyclist infrastructure.

In addition to the relatively high number of recreational users, Rocky Hill Drive has a vehicular traffic volume of 610 annual average daily traffic (AADT) east of Road 204, and a vehicular traffic volume of 210 AADT west of Mountain 296. The larger volume near Road 204 can be correlated with who tend to park closer to the west end of Rocky Hill Drive. The lack of critical bicycle and pedestrian infrastructure creates an unsafe environment for all road users.

During public outreach events, the planning team received feedback from agricultural property owners who identified conflicts between cyclist, pedestrian, and agricultural use of Rocky Hill Drive. Specifically, the agricultural property owners identify the need for parking and restroom facilities for the bicyclists and pedestrians in order to prevent the ongoing conflict.

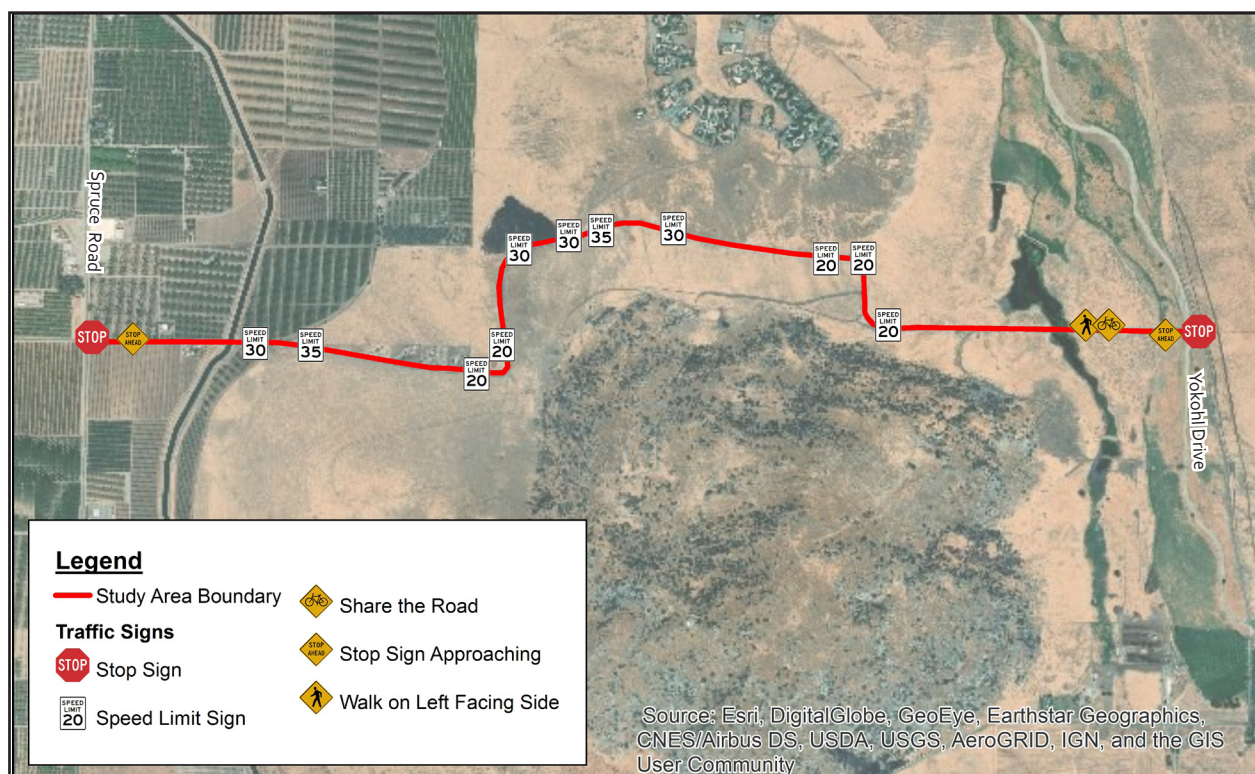


Figure 2-2. Rocky Hill Drive Study area boundary and speed limit signage.

Speed Enforcement and Collision History

The Tulare County Sheriff provides traffic control and speed enforcement on all roadways in unincorporated areas of Tulare County, where Rocky Hill Drive is located. Accident data was provided from the California Highway Patrol. As shown in Figure 2-3, 13 accidents occurred on Rocky Hill Drive from 2013 to 2017. Improper turns and unsafe speeds were listed as the most common cause of collision during the four-year study period.

Collisions with stationary objects were identified as the most common type of collision. The first right turn along Rocky Hill Drive, coming from Yokohl Drive, was the most common collision location, followed by the intersection of Road 204 / Spruce Ave and Rocky Hill Drive. In 2011, there was a collision between a cyclist and a runner, which resulted in the death of the cyclist on scene.

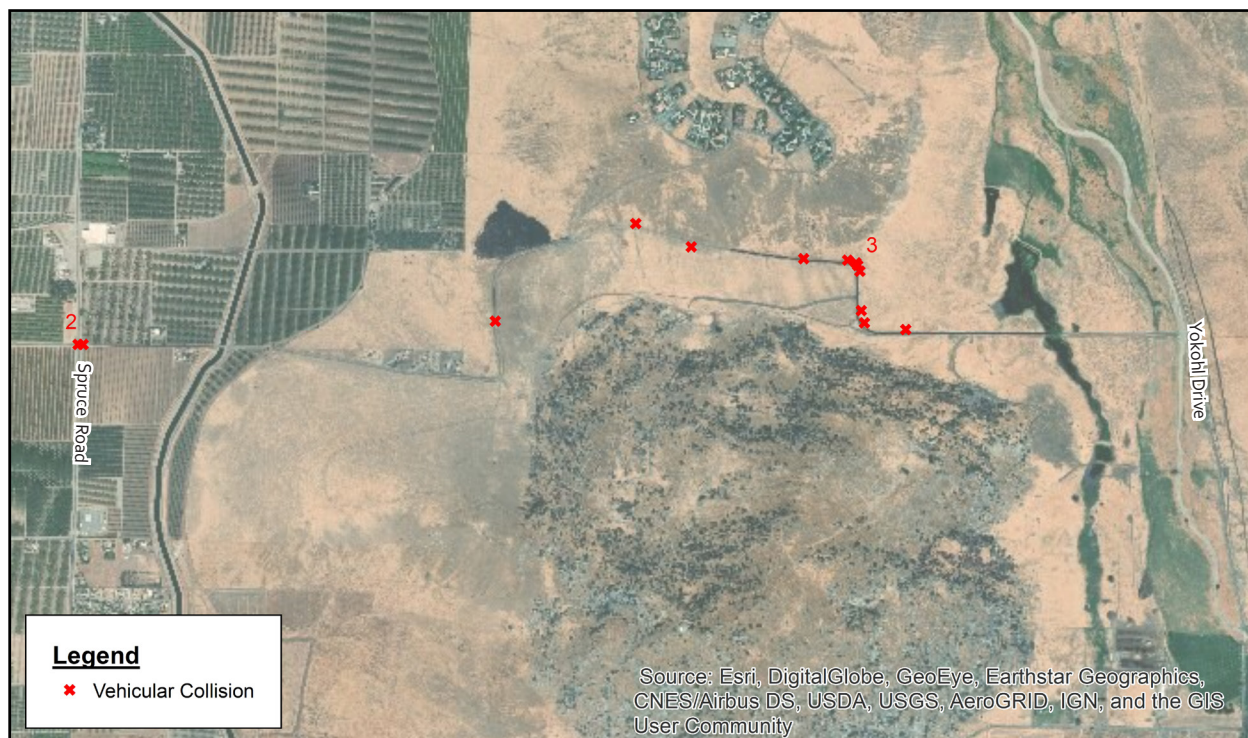


Figure 2-3. Collisions occurring within the study area from 2013-2017.



Figure 2-4 Bicycle collision on Rocky Hill Drive.
Source: YouTube

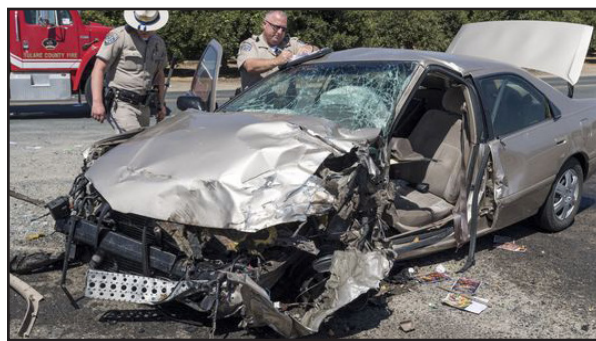


Figure 2-5 Vehicle collision on Rocky Hill Drive.

Surrounding Land Uses

Rocky Hill Drive is located in a rural area east of Exeter, and is predominantly used as ranchland. The road gets its name for the granite outcroppings that occur near the area. Steep mountains over 8,000 feet mean sea level (MSL) in Sequoia National Forest can be found further east of the study area. The majority of the land abutting Rocky Hill Drive is privately owned, with grazing and ranch land as its primary use. Private property has been developed on both sides of Rocky Hill Road; single family homes can be found north of the road. Ranch buildings are located south of Rocky Hill Drive, around two-thirds of the way east of the study area. The eastern half mile of Rocky Hill Drive also cuts through citrus orchards and intersects the Friant-Kern Canal.



Figure 2-6. Rocky Hill Drive at Yokohl Dr looking west. Source: 4-Creeks.

Rocky Hill Drive is classified by Caltrans as a Rural Minor-Collector and consists entirely of Right-Of-Way that is owned and maintained by Tulare County. The table below includes the private property owners and their access easements that abut Rocky Hill Drive, listed from west to east.

| Table 2-1. Parcel / Property Owner Information | | |
|--|---------------------------------------|-----------|
| Owners | APNs | Easements |
| Mark G and Melissa A Lambert | 136-120-017 | 3 |
| Rita P Hogan | 134-030-031, 134-030-041, 134-030-042 | 3 |
| Leland G and Judy T Perryman | 136-120-010 | 2 |
| USA WPRS | 134-030-123 | 2 |
| Exeter Farms, LLC | 134-030-010 | 1 |
| Clorie Gill | 136-120-007 | 2 |
| Badger Hill Association | 134-030-009, 142-030-010, 142-030-011 | 2 |
| Larry and Mia Espino | 136-120-015 | 1 |
| John M and Rhonda J Otis | 136-120-013 | 1 |
| DLJ Mortgage Capital, Inc. | 136-120-013 | 1 |
| Juan L and Estela B Poblete | 136-120-012 | 1 |
| Joseph P and Betty A Collins | 142-020-006 | 1 |
| Linda Gill | 142-030-007 | 2 |
| Albert Lee Moore | 142-020-011 | 5 |
| Fred W and Teresa J Gill | 142-020-012 | 2 |
| Total: | 16 | 29 |

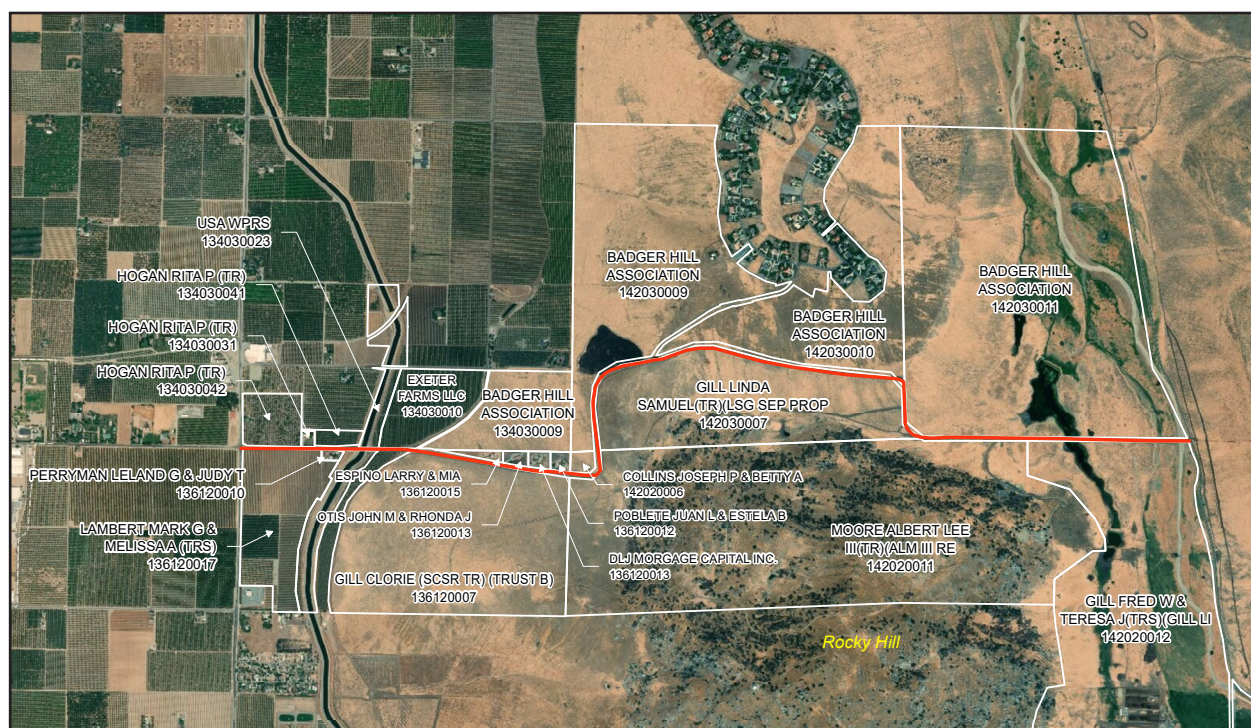


Figure 2-7. Rocky Hill Drive parcel ownership map

Some property owners have informed Tulare County staff of conflict between agricultural operations and recreational users of Rocky Hill Drive. Specifically, parked cars along the property edge restricts tractor farming operations, fertilizer and pesticide spraying occurs while people are present which causes health and liability issues, and people using the Lambert's property as a toilet is a trespass and security issue. The proposed trail improvements are expected to eliminate all of conflict between the people and private property owners.

Cultural Resources

Cultural Resources Records Search

A records search was conducted at the Southern San Joaquin Valley Archaeological Information Center (AIC), to determine if historical or archaeological sites had previously been recorded within the study area, if the study area had been systematically surveyed by archaeologists, and/or whether the region was known to contain archaeological sites and to thereby be archaeologically sensitive.

The AIC results indicated that one previous cultural resources study had been completed that crossed the study area and five additional studies conducted within the one-half radius of the road. There is one recorded cultural resource within the study area, the Friant Kern Canal, and 12 recorded Tribal cultural resources within a one-half mile radius. The full Cultural Resources Records report is available in Appendix D.

Tribal History

Tulare County was originally home to the Yokuts and the Western Mono (or Monache) tribes; however by the time settlers found their way to the Central Valley, the two cultural prehistoric groups had broken into dozens of separate tribal entities. The Yokuts inhabited an approximately 250 mile stretch in the San Joaquin Valley, as well as the eastern foothills that rise along half the valley. The word Yokut translates into “person”. The Yokuts had approximately twenty-two villages stretched from Stockton in the north to Tejon Canyon in the Tehachapi Mountains to the south. The largest concentrations of Yokuts were found in eight villages located around Tulare Lake and the Kaweah River and its tributaries.

The Central Valley Yokuts were divided into Southern Valley Yokuts, Northern Valley Yokuts and Foothill Yokuts, all of whom spoke very similar languages. The Foothill Yokuts were the subgroup of California’s great Yokuts nation that settled around Rocky Hill, and considered the hill a traditional spiritual site. Many of the prehistoric sites of the Yokuts and Western Mono tribes have been lost, either ruined by time, usage, vandalism, or neglect. Only a few of these sites still exist as dispersed rocks, cupules, grinding holes, pecked and painted drawings on boulders, and some potentially uncovered artifacts.

However, sites that still stand continue to be used by descendants of Tulare County’s first residents. And while many of the sites that are known are all hidden from the public in efforts to protect them, there are still a few sites that are accessible through the Archaeological Conservancy – such as Rocky Hill. The area currently features seven sites with pictograph paintings, bedrock mortars, slicks and cupules created by the native Yokuts tribes anytime in the past 2,000 years. For the Foothill Yokuts, the Rocky Hill Archeological Preserve is not just an archaeological site, or even a prehistoric site. This traditional spiritual site is considered a living, historical and sacred location that is still in use today.



Figure 2-8. Pictographs from Rocky Hill Archaeological Reserve.

Friant-Kern Canal

The Friant Division is the core of the Federal government's Central Valley Project (CVP), formed between the 1940s and 1950s to supply water from wetter regions of Northern California to the agriculture-rich Central Valley. Excavation for the Friant-Kern Canal began in August 1945, and by July 1949, roughly 2,500 people watched the first delivery of water from the Friant Dam along the eastern edge of the San Joaquin Valley. The canal begins at the Friant Dam, located 25 miles northeast of Fresno, and travels in a southerly direction to the Kern River, four miles west of Bakersfield. Friant Dam was built between 1939 and 1944 to create the reservoir that is currently Millerton Lake, which stores and diverts river waters into various canals for agricultural irrigation. The dam controls the San Joaquin River flows, serves as a historic and magnificent example of engineering in the Central Valley, while also providing the following:

- Downstream release to meet water delivery requirements
- Flood control, conservation storage and water diversions into Friant-Kern and Madera Canals
- Delivers water to a million acres of agricultural land in Fresno, Kern, Madera and Tulare counties in the San Joaquin Valley
- Delivers water releases as part of the San Joaquin River Restoration Program
- Recreational uses

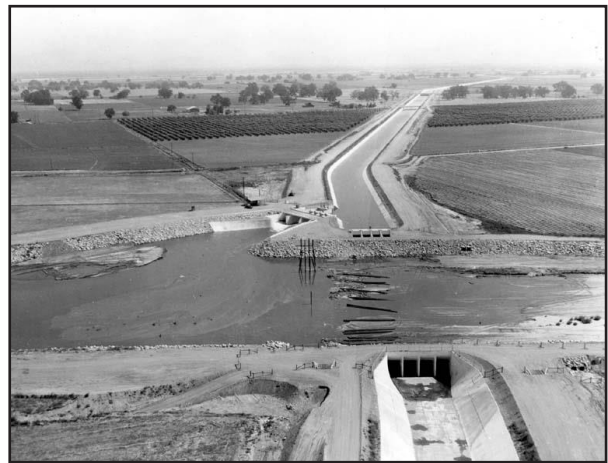


Figure 2-9. Friant-Kern Canal.

Biological Resources

A Biological Report was prepared in March 2018 by Sequoia Ecological Consulting Inc. to identify potential biological impacts associated with widening Rocky Hill Drive to accommodate cyclist and pedestrian travel. The report identifies protected habitats, waters of the state, existing drainages, and special status species with potential to occur within the project area. The full Biological Report is available in Appendix B.

Special-status Species

The two special-status species listed on the California Natural Diversity Database (CNDDDB) and the U.S. Fish and Wildlife Service National Wetlands Inventory within a 250-foot buffer of the study area are the tricolored blackbird and the vernal pool fairy shrimp.

CNDDDB animal occurrences within five miles of the study area include the western mastiff bat, northern California legless lizard, San Joaquin kit fox, tricolored blackbird, American badger, and vernal pool fairy shrimp. CNDDDB sensitive habitats within five miles of the site are the Great Valley Oak Riparian Forest, the Northern Claypan Vernal Pool (wetlands lacking of fish) and the Valley Sacaton Grassland. All special status animal and plant species with moderate to high potential to occur are listed in Tables 2-2 and 2-3.

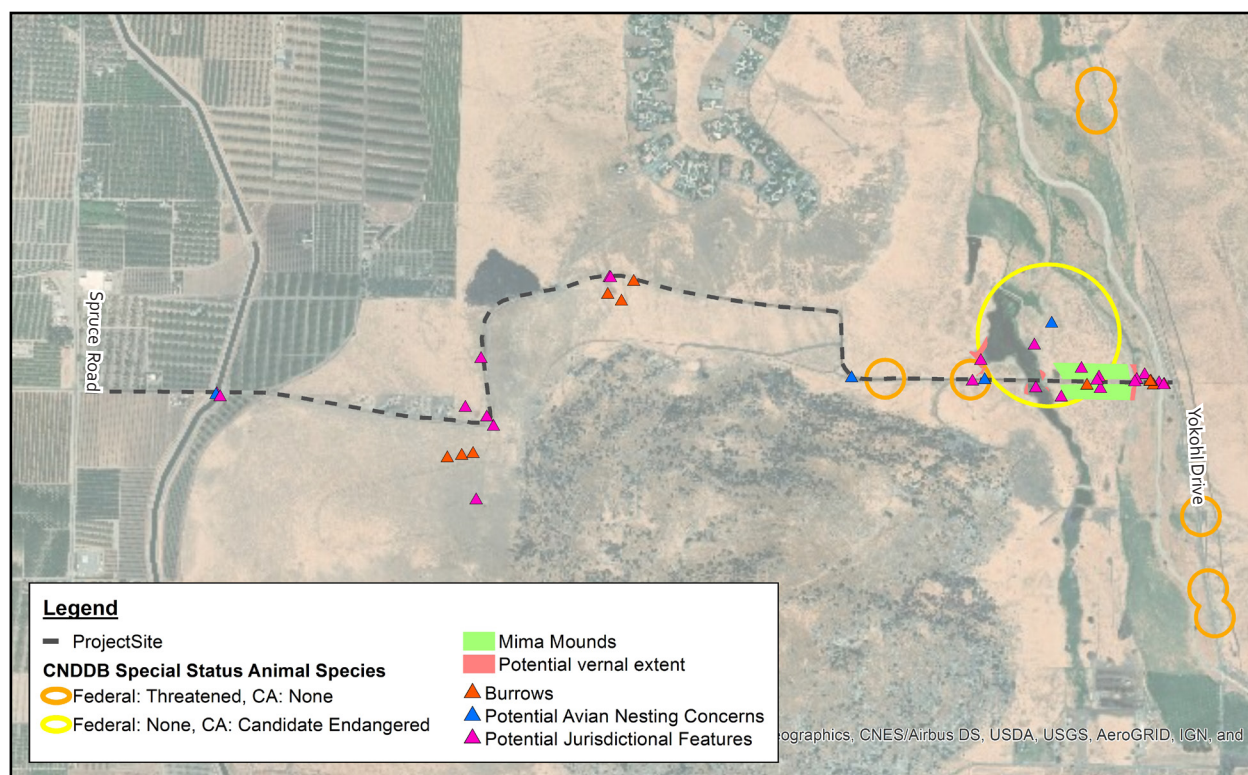


Figure 2-9. Biological constraints within study area. Source: Rocky Hill Road Widening Feasibility Study Biological Constraints Report prepared by Sequoia Ecological Consulting.

Table 2-2. Special-status Animal Species

| Special-status Animal Species | Listed Status | Habitat Requirement | Potential for Occurrences |
|--|--------------------|--|--|
| Western mastiff bat (<i>Eumops perotis californicus</i>) | CSSC | Open, semi-arid habitats like woodlands, grasslands, urban environments and open areas with roost locations with crevices in rock outposts | Moderate Potential - one occurrence within five miles |
| American badger (<i>Taxidea taxus</i>) | CSSC | Abundant in drier open stages of most shrub, forest and herbaceous habitats, with friable soils | High Potential - one occurrence within five miles |
| San Joaquin kit fox (<i>Vulpes macrotis mutica</i>) | FE, CT | Grows in sand or gravel, prefers chaparral grassland and oak woodland habitats | High Potential - five occurrences within five miles |
| Northern California legless lizard (<i>Anniella pulchra</i>) | CSSC | Requires den for shelters, loose textures soils associates with grasslands, vernal pools, and alkali meadows are suitable requirements | Moderate Potential - one occurrence within five miles |
| Tricolored blackbird (<i>Agelaius tricolor</i>) | CSSC, CE candidate | Constructs nests in dense stands of tulle, cattail, or other marshland vegetation, needs protected nesting areas near colonies | Moderate Potential - one CNDDDB occurrences w/in project area records approximately 1,800 birds nesting in cattails and bulrushes |
| Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>) | FT | Found only in vernal ponds, endemic to the grasslands of the Central Valley, Central Coast mountains, and the South Coast mountains | Presence Assumed - two CNDDDB records east of large vernal feature along Rocky Hill Drive and seven along Yokohl Drive indicate their presence is extremely likely |
| Key to Species Listing Status FE Federally Endangered CT California Threatened FT Federally Threatened CFP California Fully Protected FC Federal Candidate CSSC California Species of Special Concern CE California Endangered CR California Rare | | | |

Table 2-3. Special-status Plant Species

| Special-status Animal Species | Listed Status | Habitat Requirement | Potential for Occurrences |
|--|---------------|---|--|
| Lesser saltscale (<i>Atriplex minuscule</i>) | 1B.1 | This species prefers sandy, saline, and alkaline soils and playa habitats, in shadescale shrub, valley grassland, and alkali sinks. Blooms May-October. | Moderate Potential - Potential to occur in vernal pool habitat present within/adjacent to project area. |
| Kaweah brodiaea (<i>Brodiaea insignis</i>) | CE, 1B.2 | This species prefers valley grassland and foothill woodland. Blooms April-June. | Moderate Potential - Valley grassland and foothill woodland communities present within/adjacent to project area |
| Mouse buckwheat (<i>Eriogonum nudum</i> var. <i>murinum</i>) | 1B.2 | This subspecies grows in sand or gravel, preferring chaparral, grassland, and oak woodland habitats. Blooms June-November. | Moderate Potential - Potentially suitable habitat exists in the sandy wash of Yokohl Creek. |
| Spiny-sealed button-celery (<i>Eryngium spinosepalum</i>) | 1B.2 | This species grows in vernal pools, moist grasslands, swales, roadside ditches, and other wetland habitats. Blooms April and May. | High Potential - Three CNDDB occurrences within five miles of projects area. |
| Hoover's spurge (<i>Euphorbia hooveri</i>) | 1B.2 | This species grows only in vernal pools of the Central Valley. | Moderate Potential - Potential to occur in vernal pool habitat present within/adjacent to project area. |
| Madera leptosiphon (<i>Leptosiphon serrulatus</i>) | 1B.2 | This species grows in openings in woodland, chaparral, and yellow pine forests. Blooms in April and May. | Moderate Potential - Suitable open woodland habitat for Madera leptosiphon is present south of the project area. |

Table 2-3. Special-status Plant Species (continued)

| Special-status Animal Species | Listed Status | Habitat Requirement | Potential for Occurrences |
|--|---------------|---|---|
| Calico monkeyflower (<i>Mimulus pictus</i>) | 1B.2 | This species prefers bare, sunny, rocky soils, shrubby areas, and granite outcrops in oak woodland. Blooms March-May. | Moderate Potential - One CNDDDB occurrence within five miles of project area. |
| San Joaquin Valley Orcutt grass (<i>Orcuttia inaequalis</i>) | 1B.1 | This species grows only in vernal pools. Blooming period is April-September. | Moderate Potential - Potential to occur in vernal pool habitat present within/adjacent to project area. |
| San Joaquin adobe sunburst (<i>Pseudobahia peirsonii</i>) | FT, CE, 1B.1 | This species grows in grassland and oak woodland habitat, prefers heavy adobe clay soils. Blooming period is March and April. | Moderate Potential - One CNDDDB record from inexact location within five miles of project area. |
| Greene's tuctoria (<i>Tuctoria greenei</i>) | FE, 1B.1 | This species prefers vernal pools and open grassland. Blooms May-July. | Moderate Potential - Potential to occur in vernal pool habitat present within/adjacent to project area. |
| Key to Species Listing Status 1A Plants presumed extirpated in California, and either rare or extinct elsewhere 1B Plants rare, threatened, or endangered in California, or elsewhere 2A Plants presumed extirpated in California, but more common elsewhere 2B Plants rare, threatened, or endangered in California, but more common elsewhere 3 Plants about which more information is needed – a review list 4 Plants of limited distribution – a watch list | | | |

Geotechnical Constraints

Pavement and Soil Conditions

Consolidated Testing Laboratories, Inc. provided a geotechnical report to assess the geologic conditions of the study area. A subsurface geologic exploration was performed using a Mobile B-8o Drill Rig with an 8" O.D. hollow stem auger throughout the study area. The geotechnical report identified the following constraints:

- At one boring location, the R-value less than 5
- At one location, rock was present at 5" below the surface
- At one location, rock was present at 1.5' below the surface

Figure 2-10 below shows the location of these boring sites and provides an overview of the geology and structure of the study area. The geological units within the vicinity of the study area are identified by their codes and described below.

- **grMz:** Plutonic rocks (Mesozoic) - Mesozoic granite, quartz monzonite, granodiorite, and quartz diorite.
- **mv:** Metavolcanic rocks (pre-Cenozoic) - Undivided pre-Cenozoic metavolcanic rocks. Includes latite, dacite, tuff, and greenstone; commonly schistose.
- **um:** Plutonic rocks (Mesozoic) - Ultramafic rocks, mostly serpentine. Minor peridotite, gabbro, and diabase; chiefly Mesozoic
- **Qoa:** Marine and nonmarine (continental) sedimentary rocks (Pleistocene) - Older alluvium, lake, playa, and terrace deposits
- **Q:** Marine and nonmarine (continental) sedimentary rocks (Pleistocene-Holocene) - Alluvium, lake, playa, and terrace deposits; unconsolidated and semi-consolidated. Mostly nonmarine, but includes marine deposits near the coast.

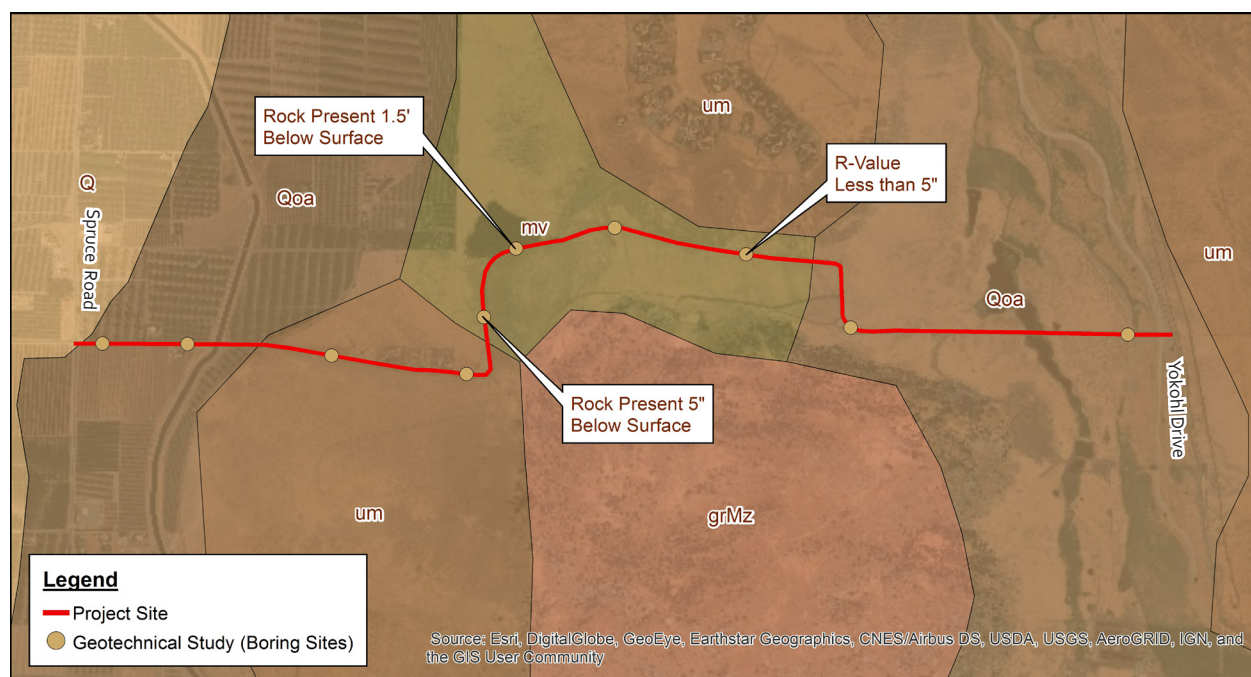


Figure 2-10. Geological conditions within study area.

The current pavement sections comprised of .75 to 5 inches of asphaltic concrete; aggregate base was not observed at boring locations. Subsurface soils were explored to a maximum depth of 10 feet and visually classified in accordance with the Unified Soil Classification System. Underneath the asphaltic concrete consisted of moist sandy silt, silty sand, sandy clay, silty clay and rock Auger. Shallow rock ranged from about 5 to 8 inches below the existing pavement surface.

No groundwater or perched groundwater was encountered in the field exploration during or after drilling. That being said, groundwater levels can fluctuate with variations in precipitation land use, and other factors. The evaluation of such factors was beyond the scope of Consolidated Testing Laboratories, Inc.'s services.

These findings support the conclusion that extensive excavation and compaction will be required to demolish and construct a new roadway.

3. Community Outreach

About Community Outreach

Public involvement is essential when identifying useful and appropriate design concepts to meet the needs of a specific community. For this reason, extensive community outreach efforts were made to foster dialogue and gain perspective on community users, stakeholders, and agency concerns related to mobility and transportation on Rocky Hill Drive. All community outreach efforts were intended to maximize public involvement. In summary, the following public outreach efforts were made as part of this feasibility study:

- Hell of a Half Marathon Public Workshop - August 18, 2018
- TCAG Active Transportation Advisory Committee (ATAC) Meeting - August 23, 2018
- Stakeholder Meeting - August 29, 2018
- Public Survey - October 2018
- Tribal Consultation

Hell of a Half Marathon Public Workshop

The Rocky Hill Feasibility Study was introduced to the public at the Hell and a Half Marathon on August 18, 2008. The Hell and a Half Marathon is an annual running event that takes place on Rocky Hill Drive.

The 4-Creeks Planning team set up a booth near the race's finish line to engage recreational users of Rocky Hill Drive in the development of this Feasibility Study. The planning team handed out drink koozies and water to increase the booth's approachability and encourage public interest. They also facilitated discussions with the Hell and a Half Marathon runners, who were able to



Figure 3-1. Hell and a Half Marathon community outreach event.

TCAG Active Transportation Advisory Committee (ATAC) Meeting

An agency stakeholder meeting was held on at the TCAG office in Visalia on August 23, 2018 at 8:30 AM. The purpose of the meeting was to bring together all agency stakeholders to coordinate the Rocky Hill Drive Feasibility Study planning process. Attendees included representatives from TCAG, Caltrans, the Sheriff's Department, Tulare County Resource Management Agency, and the City of Exeter. The meeting involved a powerpoint presentation by the 4-Creeks planning team followed by round-table discussion. The representatives discussed outreach strategies, site constraints, and general design options.



Figure 3-2. ATAC Meeting

Stakeholder Meeting 1

The first stakeholder meeting was held on Wednesday, August 29, 2018 from 9:00 AM to 11:00 AM at the TCAG office in Visalia. While one cyclist was present at the meeting, the majority of attendees were property owners who were invited via mail. The primary objectives of the meeting were to:

1. Introduce the project to the community
2. Listen to landowners concerns regarding the recreational use of Rocky Hill Drive
3. Conduct survey on existing roadway use
4. Gain understanding of specific constraints and opportunities specific to Rocky Hill Drive
5. Receive input on preferred design concepts

Public Comments

Meeting attendees were encouraged to voice their opinions regarding the recreational use of Rocky Hill Drive and the Rocky Hill Drive Feasibility Study. Because the group was predominantly composed of landowners, the majority of comments involved conflict between recreational users of Rocky Hill Drive and the adjacent landowners. The primary problems identified during this meeting were:

- Lack of public parking
- Lack of public restrooms
- Insufficient law enforcement/solid waste management
- General disregard for private property and traffic laws by recreational users

Final Open House

The final open house meeting was held on Wednesday, January 16, 2019 from 6:00 PM to 7:30 PM at City Hall in Exeter. Landowners, cyclist groups, and other interested stakeholders were present at the meeting. The primary objectives of the Final Open house were to:

1. Present the design options that were developed by the Planning Team to the community.
2. Get feedback from the public to identify unanticipated implications of each design concept.
3. Identify areas of the Feasibility Study where further elaboration is needed.



Figure 3-3. Final Open House

Large form exhibits displaying the proposed Rocky Hill Drive design concepts were positioned around the room. Attendees were given sticky notes and encouraged to write any questions or comments they had regarding the design concepts and place them directly on the boards. The planning team also gathered verbal comments as they engaged in conversations with community members. The comments received during this meeting for each design concept are listed below:

Design Alternative 1:

- Roadway centerline should be shifted to provide more room in uphill direction to create room for vehicles to pass cyclists.
- Use bollards, raised curb, or bendable pylons instead of fencing in-between road and Class I path.
- Shared access (sharrows) symbols should extend all the way from Rocky Hill Drive to Exeter High School.
- Cyclist and run/walk groups should be involved in trail maintenance.
- Class III bike way will ultimately be safer for cyclists
- Bikes should be prohibited from using Class I shared use path.
- Spraying of fertilizer should be managed to prevent interference with Trail users.

Design Alternative 2:

- Roadway centerline should be shifted to create more room for uphill bike lane.
- Include Oleander barrier on Mr. Lambert's property to prevent pesticide spraying from interfering with trail users.
- Proposed scenic outlook should be relocated ¼ mile to the west.
- Proposed scenic outlook is likely to attract criminal activity. Security/surveillance cameras should be installed at this location.
- Class III bike way will ultimately be safer for cyclists
- Bikes should be prohibited from using Class I shared use path.
- Parallel parking should not be provided on Rocky Hill Drive. All parking should be located off the roadway.



Figure 3-4. Final Open House.
Source: 4-Creeks, 1/16/19



Figure 3-5. Final Open House. Source: 4-Creeks, 1/16/19



Figure 3-6. Final Open House. Source: 4-Creeks, 1/16/19



Figure 3-7. Final Open House.
Source: 4-Creeks, 1/16/19

Public Survey

Gathering information from a diverse range of perspectives is an essential component of effective community outreach. To achieve this, the planning team invited individuals from Hell and a Half Marathon and Stakeholder Meeting 1 to participate in a survey intended to gather information on the existing use of Rocky Hill Drive and determine potential areas for improvement. Surveys were also distributed online through social media by TCAG (facebook) and local running and cyclist organizations. Additional survey responses were collected via a kiosk located at Exeter Coffee Company, which was present for two weeks during the month of October. This allowed the Planning team to understand the perspectives of both recreational and utilitarian users of Rocky Hill Drive. A total of 162 responses were received. The results of this survey are described below.

Question 1 asked the participants what their Zip code is. The majority of participants were from Tulare County.

Question 2 inquired about the participant's gender. The gender distribution of respondents was split almost evenly, with 46% of respondents identifying as male and 54% identifying as female.

Question 3 asked users to identify their age group. Only 1% of the participants were under the age of 15, 5% were between 16 and 25, and 23% were between 26 and 35. 39% of users were between the ages of 36 and 45, followed 46 to 55 year olds with 19%. 13% of the users were between 56 and 65 years of age, and 3% were 66 years and older.

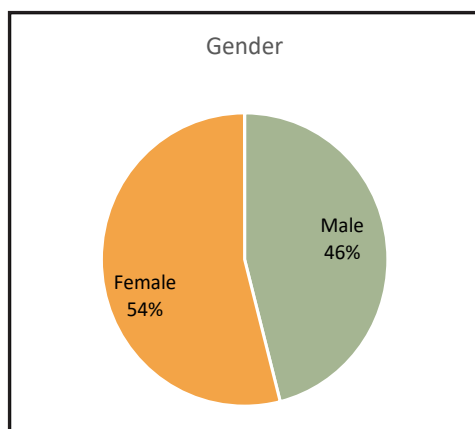


Figure 3-8. Question 2: Participant Gender

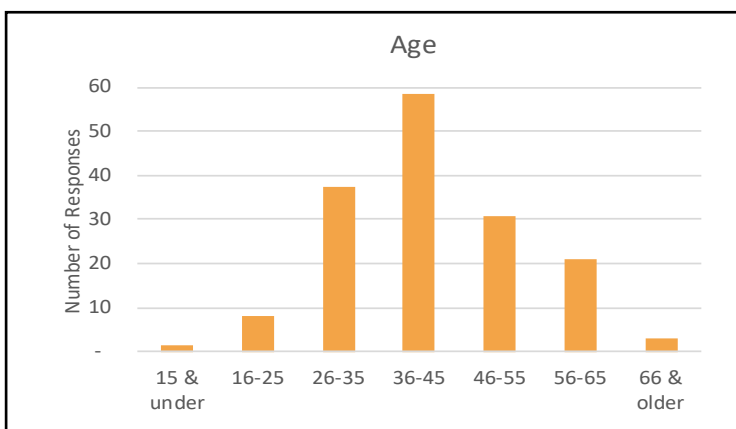


Figure 3-9. Question 3: Participant Age

Question 4 asked how often participants use Rocky Hill Drive, on average. 23% of users stated only visit the road a few times a year, 23% of users also noted they use the road a couple times a month, while 9% use the road once a month. 10% use the road 3-5 times a week, 5% stated that the Hell and Half marathon was a first time they used Rocky Hill, 14% of participants said they use Rocky Hill once a week, 12% said 1-2 times per week, and 6% said they use it daily.

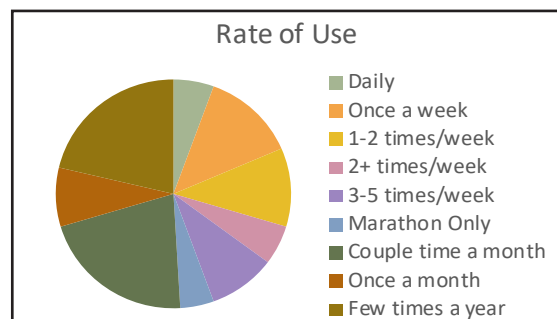


Figure 3-10. Question 4: How often participant uses Rocky Hill Drive.

Question 5 asked whether children under the age of 15 were present during their time on Rocky Hill. 72% responded yes, while 28% answered no. This question was only asked at the survey passed around at the Hell and a Half Marathon.

Question 6 asked when users are most likely to use Rocky Hill. 51% answered both weekdays and weekends, 38% stated they are more likely to use the road on weekends, and only 12% responded weekdays.

Question 7 asked how much time users generally spend on Rocky Hill each time they visit. 9% stated they live in the area and use Rocky Hill Drive when needed, 6% spend less than 30 minutes there, 12% of users said they spend less than an hour on the road, 23% stated they spend 30 minutes to an hour there, 28% of users responded 1 to 2 hours, 12% spend over two hours on the road, and 2% of people quickly drive past the road.

Question 8 asked what the user would consider their use of Rocky Hill to be for. 47% responded health and exercise, 34% answered recreational uses, 12% answered commuting, and 7% responded other.

Question 9 asks how users found out about Rocky Hill. 54% stated they found out about the road through word of mouth, 4% said through it was the internet, 10% stated it was by driving past it, 2% stated through newspapers, 1% of users found Rocky Hill through road signage, another 1% stated it was through the Convention and Visitors Bureau, and 29% responded through other means.

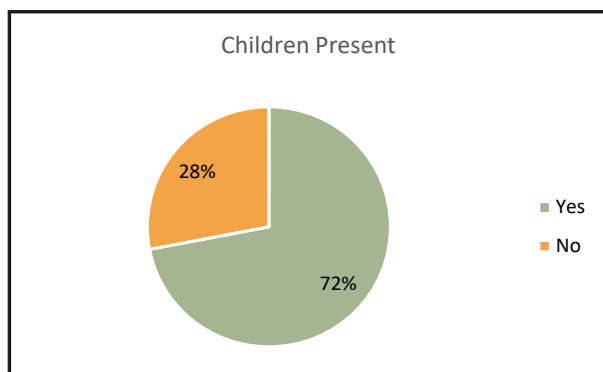


Figure 3-11. Question 5: Does participant bring Children on Rocky Hill Drive.

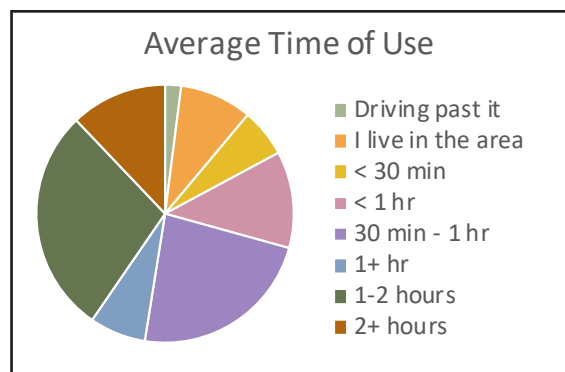


Figure 3-12. Question 6: Amount of time participants spends on Rocky Hill Drive.

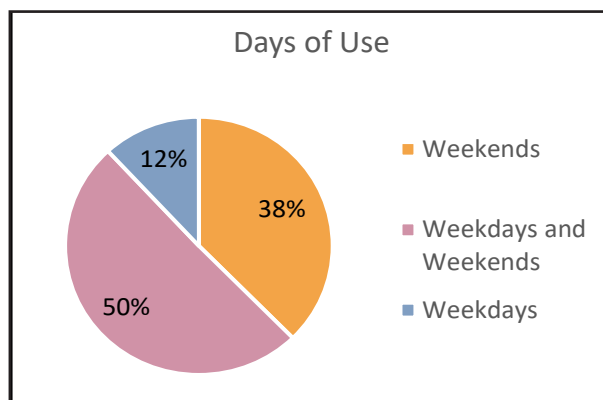


Figure 3-13. Question 7. Days participant uses RHD.

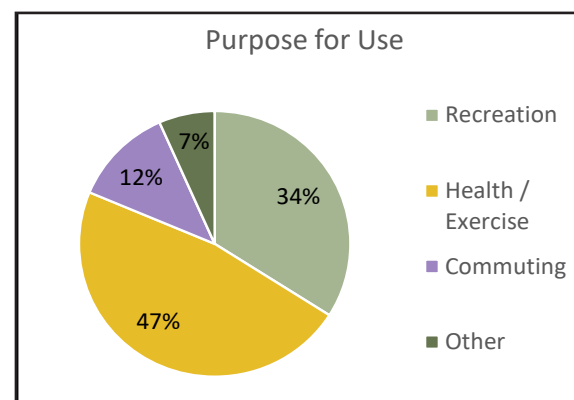


Figure 3-14. Question 8. Purpose for using RHD.

Question 10 asked users what road improvements they would like to see on Rocky Hill Drive. 44% responded with a two lane roadway, 19% voted for a two-lane roadway with an adjacent trail, 16% liked the idea of a one-lane roadway best, and 12% of surveyed voted on a complete roadway closure, 4% voted to close the roadway to vehicular traffic only, allowing farming operations to continue using the road, and 5% voted for nothing, as Rocky Hill is perfect as it is.

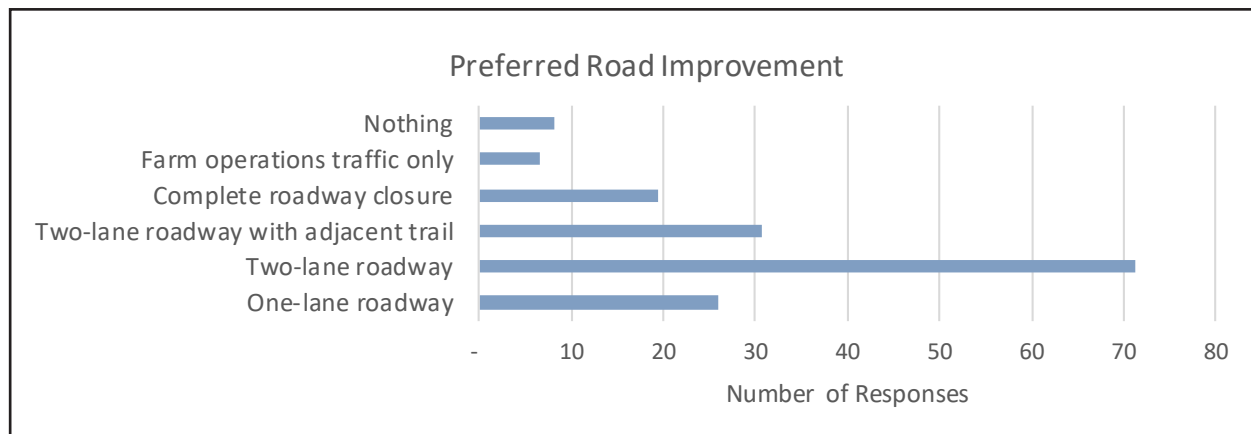


Figure 3-15. Question 10: Preferred road improvement.

Question 11 asked users what general improvement they would like to see to Rocky Hill. 62% would like to see public parking, 43% voted for washroom facilities, 40% said they'd like more public benches, 30% voted for more landscaping, 5 % of surveyed voted for water fountains and 11% voted for nothing, as Rocky Hill is perfect as it is.

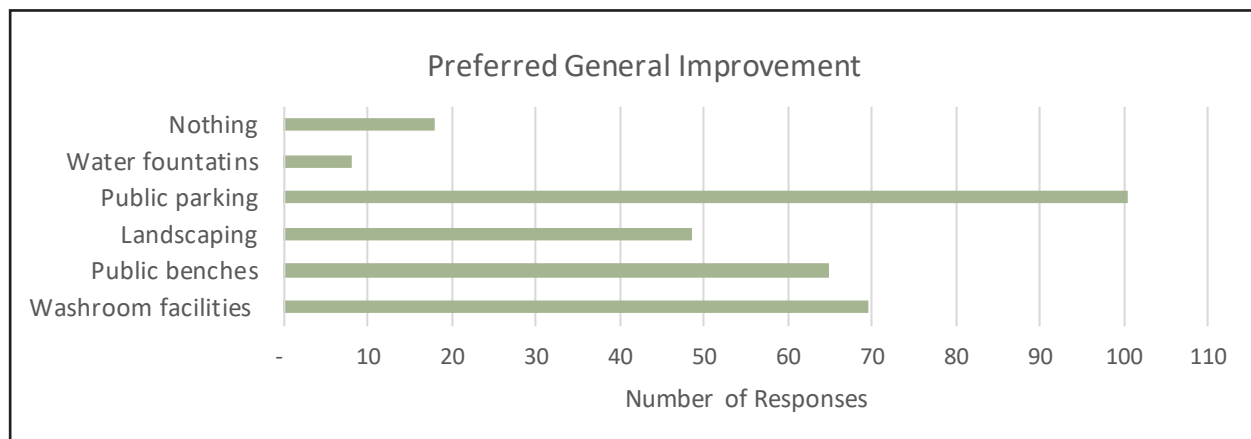


Figure 3-16. Question 16: Preferred general improvement.

Tribal Consultation

In order to identify any cultural resources located in or around the study area, consult letters were sent to the following tribes:

- Wuksache Indian Tribe / Eshom Valley Band
- Santa Rosa Rancheria Tachi Yokut Tribe
- Kern Valley Indian Council
- Tubatulabals of Kern Valley
- Tule River Indian Tribe

Consultation with the Tule River and Santa Rosa Tachi Yokut Tribes took place on October 15, 2018 in Visalia, CA.

The scope and purpose of the feasibility study, as well as the overall interest of the Tribes in the feasibility study, were discussed at the meeting. Further discussion reassured the Planning Team that the area is a very culturally significant, and that additional archaeologically sensitive materials may be found within the study area. Mitigation measures to reduce development impacts, including a site walk and construction team education, were also shared during the discussion.

Ultimately, the Tribal representatives were not interested in incorporating educational design concepts, as they would like to keep the site as sacred as possible. That being said, the representatives were generally supportive of the study and understood that there's a need to improve the safety of Rocky Hill Drive for multi-modal users. The tribes' main concerns was regarding the use of the borrow pits during construction and their impact to surrounding cultural resources. The preferred design alternative was the one which utilized only the existing pavement and limited vehicular access. The two tribes requested to be kept informed as the development of design's progresses.

4. Proposed Design Concepts

Introduction

The purpose of the Rocky Hill Bicycle/Pedestrian Trail Feasibility Study is to develop two design concepts that will determine the most effective improvements for the section of Rocky Hill Drive between Spruce Road (Road 204) and Yokohl Drive, in unincorporated Tulare County. Design Option 1 is intended to represent the least impactful option that can still meet these objectives, while Design Option 2 is intended to represent the ideal option to meet these objectives.

This section will discuss the elements that guided the development of these design concepts and propose two options that meet the objectives of this feasibility study.



Figure 4-1. Rocky Hill Drive Study Area.

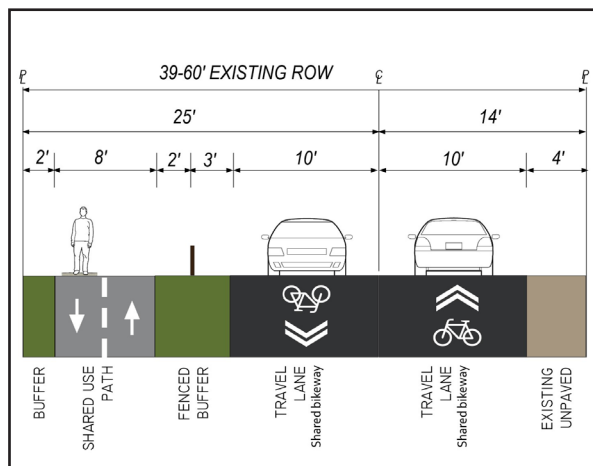


Figure 4-2. Design Option 1 (general)

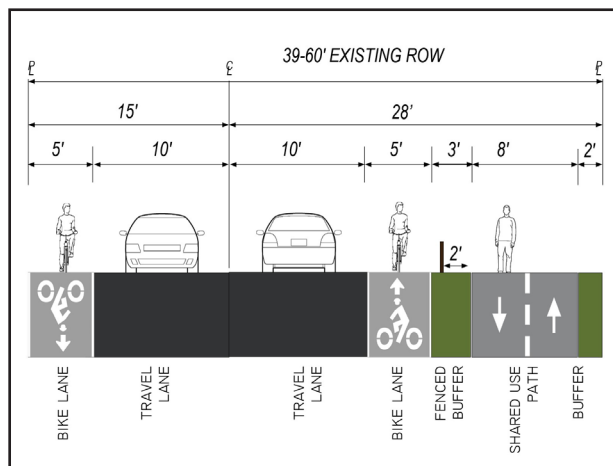


Figure 4-3. Design Option 2 (general)

Guidance Documents

Guidelines from several documents were referenced while developing design concepts for Rocky Hill Drive. These documents vary in their level of technical detail, however each provided essential information to guide the development of multi-modal facilities.

2010 Tulare County Regional Bicycle Transportation Plan

The Tulare County Regional Bicycle Transportation Plan was adopted in 2010 and serves as the primary local guidance document for the development of bicycle facilities on Rocky Hill Drive. The Plan identifies the County's goals regarding multi-modal networks and provides guidance on the County's planned bicycle facilities,

AASHTO 2012 Guide for the Development of Bicycle Facilities

The AASHTO Guide for the Development of Bicycle Facilities was adopted in 2012 and provides guidance on the development of bicycle infrastructure. The guide includes information on the design, use, signage, operation, and maintenance of bicycle facilities. The guide also how the type of user should influence bicycle facility design.

California MUTCD 2014 Edition

The California MUTCD was last update in 2014 by the Federal Highway Administration and provides detailed information on signage and markings for bicycle and pedestrian facilities. These guidelines were used to select appropriate signage and markings for Rocky Hill Drive Improvements.

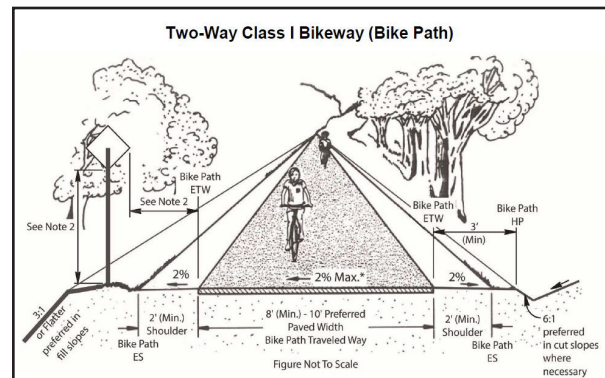


Figure 4-4. Caltrans Class 1 Bikeway Cross Section

Caltrans Highway Design Manual - Chapter 1000

The Bicycle Transportation Design chapter of the Caltrans Highway Design Manual provided direct guidance in the development of the proposed Class 1 Bikeway. The manual provides detailed information on the dimensions, layout, and use of bicycle facilities.

2015 FHA Separated Bike Lane Planning and Design Guide

The FHA Separated Bike Lane Planning and Design Guide was adopted in 2015 and provides information on the different types of bicycle facility and emphasizes the need for design flexibility based on local considerations.

NCHRP Report 552: Guidelines for Analysis of Investments in Bicycle Facilities

NCHRP Report 55 was developed by the National Cooperative Highway Research Program and describes how to prioritize bicycle infrastructure projects based on funding, environmental impact, and social benefit.

User Characteristics

Great consideration should be placed on the typical user in the development of multi-modal design concepts. Different types of users vary in terms of their level of comfort in different types of situations and facilities, their awareness of surrounding conditions, and their knowledge of traffic laws pertaining to bicyclists and pedestrians. The AASHTO Guide for the Development of Bicycle Facilities organizes adult bicycles into two categories based on level of user skill and comfort:

- **Experienced/Confident Riders:** Experienced/Confident Riders are comfortable riding with vehicles on streets and are knowledgeable regarding traffic laws pertaining to cyclists. These riders avoid riding on sidewalks, however they may prefer on-street bike lanes, paved shoulders, or shared use paths when available. Compared to casual/less confident riders, experienced/confident riders have less need for separation from vehicular traffic but greater need for separation from pedestrians. Approximately 10% of adults are included in this group, which includes commuters, racers, long-distance road bicyclists, and individuals who participate in group rides organized by bicycle clubs.
- **Casual/Less Confident Riders:** Approximately 60% of adults are included in the casual/less confident rider group. These riders are uncomfortable riding with traffic on busy streets and prefer shared use paths, bicycle boulevards, or bike lanes along low-volume, low speed streets. Casual/less confident riders may have difficulty gauging traffic and may be unfamiliar with the traffic laws pertaining to bicyclists.



Figure 4-5. Experienced/Confident Rider.



Figure 4-6. Casual/Less Confident Riders.

Because Rocky Hill Drive is a well known recreation and training route, it is heavily used by both experienced/confident riders and casual/less confident riders. This, in conjunction with pedestrian presence, can create conflict between users who prefer different travel speeds and vary in their awareness of traffic laws and surrounding conditions. Therefore, it is important that the proposed design concepts are designed to accommodate both types riders as well as pedestrians.

Bikeway Classifications

There are four primary types of bikeways recognized by Caltrans. All bikeways are intended to accommodate bicycle travel, however the classifications vary in the level of separation and comfort they provide to their users.

Class I

Class 1 Bikeways are shared use paths that offer the greatest level of protection from vehicular traffic. Class 1 Bikeways have a minimum travel width of 8 feet and are usually used in areas not served by streets or highways. Class I bikeways are the only bikeway facilities that also accommodate pedestrian travel.



Figure 4-7. Class I Shared Use Path

Class II

Class II Bikeways are bike lanes located adjacent to vehicular travel lanes. These facilities designate space for bicycle travel but do not provide a physical barrier between cyclists and motorists. Class II Bikeways are marked using standard bike lane markings and separated from vehicular traffic by a solid white line.



Figure 4-8. Class II Bike Lane

Class III

Class III Bikeways are shared facilities that provide signage and markings to calm vehicular traffic. Signage and markings used to designate a Class III facility include sharrows, and "Share the Road" signs. Class III facilities do not physically separate cyclists from vehicular traffic, however signage can increase public awareness of non-motorist road users.



Figure 4-9. Class III Bike Route

Class IV

Class IV Bikeways are protected bike lanes. They are very similar to Class II facilities in that they are located directly adjacent to vehicular travel lanes. However, Class IV Bikeways provide additional protection from motorists through the use of buffers and physical barriers.



Figure 4-10. Class IV Protected Bike Lane

Bikeway Signage and Markings

Signage and pavement markings are a critical component of bikeway infrastructure. Signage and pavement markings are useful tools to educate the public and can be used to direct road users in where different modes of travel can occur, where passing is allowed, etc. Strategic use of signage and markings is instrumental in educating users in the appropriate use of the bikeway facility.

Chapter 9 of the California MUTCD provides standards for pavement markings and signage for bicycle facilities within the State of California. All proposed signage and pavement markings involved in the implementation of the proposed design concepts must be consistent with these standards.

Shared Use Path

Signage for Class I shared use paths can be used to prohibit motorized vehicles from entering the path and to regulate types of non-motorized modes of travel allowed on the path. As shown in Figures 4-12 and 4-13 below, signage can be used to encourage or discourage different modes of travel and prevent public confusion regarding which modes of travel are allowed on the path.

As shown in Figure 4-11, pavement markings on shared use paths can be used to delineate travel space for different modes of travel, specify the direction of travel, and to indicate where passing is allowed.

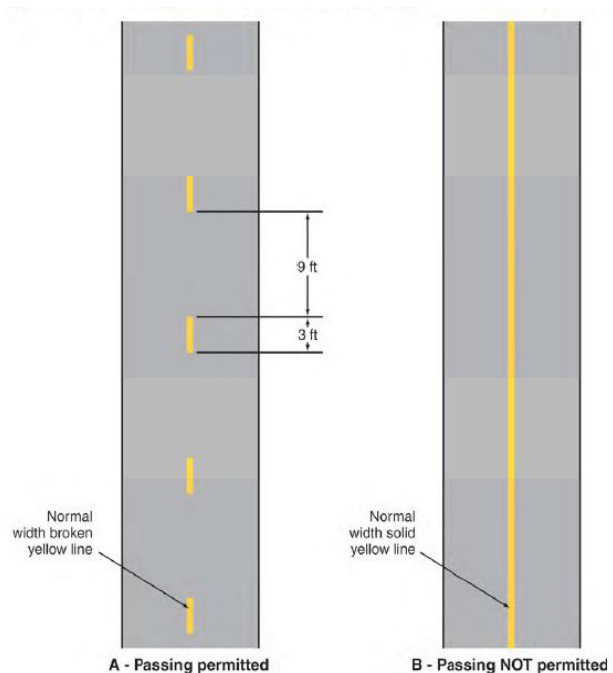


Figure 4-11. Pavement markings for Class I shared use path for areas with and without allowed passing



Figure 4-12. No Motor Vehicle Signage



Figure 4-13. Mode-specific signage for Class I shared use path.

Bike Lanes

Class II Bike Lanes are created primarily through the use of pavement markings that inform all road users of the restricted nature of the bike lane. Bike lanes are defined using white longitudinal pavement markings. As shown in Figure 4-14, wording, arrows, or symbols may also be used. These should be placed at the beginning of a bike lane and at periodic intervals along the bike lane based on engineering judgment.

Signage for Class II bike lanes is intended to prevent motorists from parking in the bike lane and to supplement information conveyed in pavement markings. The 'No Parking' sign shown in Figure 4-15 should be placed as needed, and the 'Bike Lane' sign shown in Figure 4-16 must be placed at the beginning of the bike lane and along the bike lane at all major changes in direction. Specific striping, pavement markings, and signage locations are to be identified during engineering drawing stages.

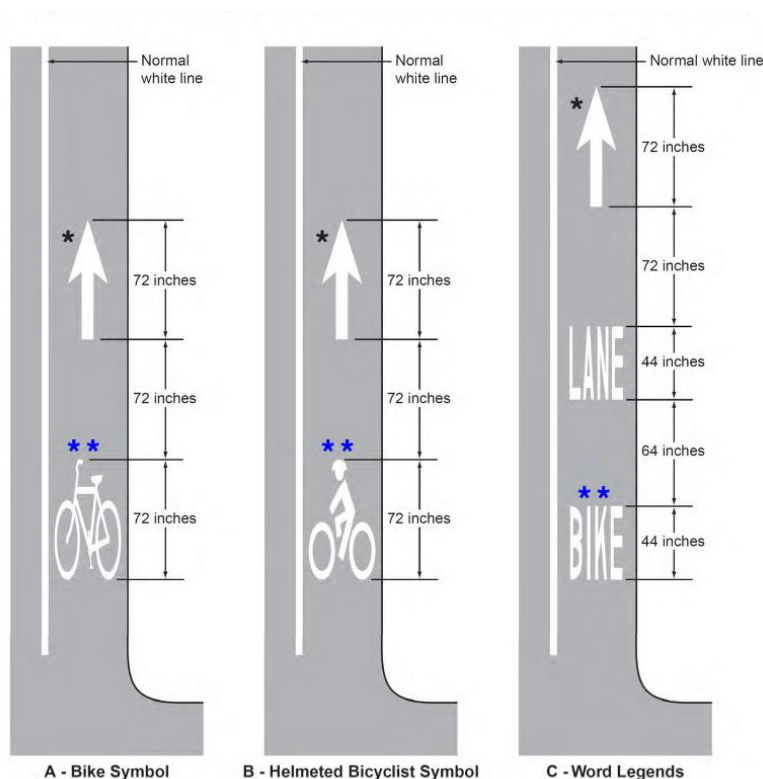


Figure 4-14. Class II bike lane pavement markings.



Figure 4-15. Class II bike lane signage to restrict parking



Figure 4-16. Class II bike lane signage.

Bike Route

Signage and pavement markings for Class III Bike Routes are intended to educate motorists of bicycle presence on the road. Although the use of signage and pavement markings on Class III bike routes is optional, it can significantly increase public awareness of cyclists and encourage more cyclists to use the route.

The most common form of pavement marking for Class III facilities are shared lane markings, commonly referred to as “sharrows,” shown in Figure 4-17. According to the MUTCD, sharrows may be used to:

- Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist’s impacting the open door of a parked vehicle,
- Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane,
- Alert road users of the lateral location bicyclists are likely to occupy within the traveled way,
- Encourage safe passing of bicyclists by motorists, and
- Reduce the incidence of wrong-way bicycling.

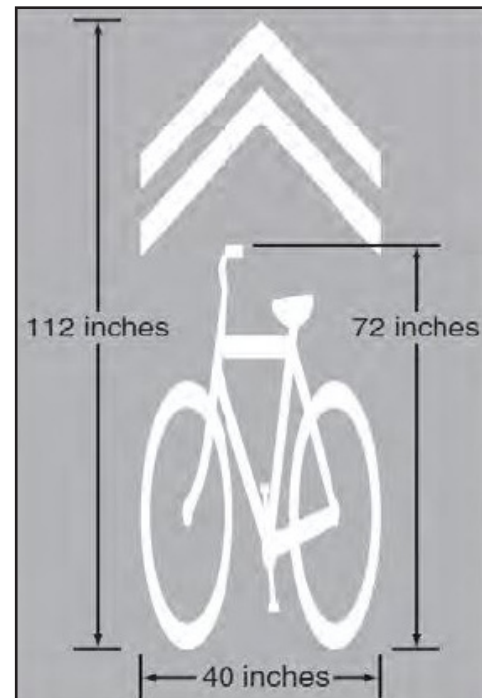


Figure 4-17. Class III pavement marking.

Signage, such as the “Share the Road” sign shown in Figure 4-18, is often used to reinforce a cyclists right to travel within vehicular travel lanes and to warn motorists to watch out for cyclists. The “Bicycles May Use Full Lane” sign (see Figure 4-19) may be used on roadways without adjacent shoulders and where travel lanes are too narrow for bicyclists and motor vehicles to operate side by side.



Figure 4-18. Class III Share the road signage



Figure 4-19. Class III signage

Design Option 1

Design Option 1 was developed to be the least impactful option that can meet the basic objectives of the study; to provide safe bicycle and pedestrian infrastructure on Rocky Hill Drive. This option provides physical separation for pedestrians and casual/less confident cyclists from experienced/confident riders and vehicular traffic. Proposed improvements include:

- Designate existing vehicular lanes as Class III Bikeway with appropriate signage and pavement markings.
- Construct multi-use path with protected buffer and appropriate signage and pavement markings to promote safe non-motorized travel
- Extend Friant-Kern Canal bridge to ensure an uninterrupted pedestrian pathway.
- Shift roadway centerline to provide more room on uphill lane.

The use of a Class I multi-use path in conjunction with a Class III bikeway allows this concept to meet the needs of both casual and experienced riders as well as pedestrians. Cyclists who would like to avoid pedestrians will be encouraged to share the road with motorists through the use of signage and pavement markings, while cyclists who are less comfortable riding with vehicles will have the option of using the shared-use path.

The proposed Class I multi-use path will significantly increase pedestrian safety and comfort on Rocky Hill Drive by decreasing the likelihood of conflicts with vehicles and high speed cyclists. Fencing will provide additional separation for pedestrians and casual cyclists, creating a safer and more comfortable environment for all road users. The Class I multi-use path will run along the south side of Rocky Hill Drive until it reaches the crossing shown in Figure 4-23. From this point, the path will continue on the north side until it reaches its termination at the bridge. This will minimize the number of intersections with private access easements.

Comments received during public outreach revealed that Design Option 1 is the preferred alternative for both Cyclists and motorists. Several cyclists stated that sharing the road with motorists is actually safer than riding in a separate bike lane because of the area's topography. Shifting the centerline to create more room on the uphill lane will be sufficient to prevent conflicts between motorists and cyclists, as it will create space for vehicles to pass cyclists in areas where their difference in speed is substantial.

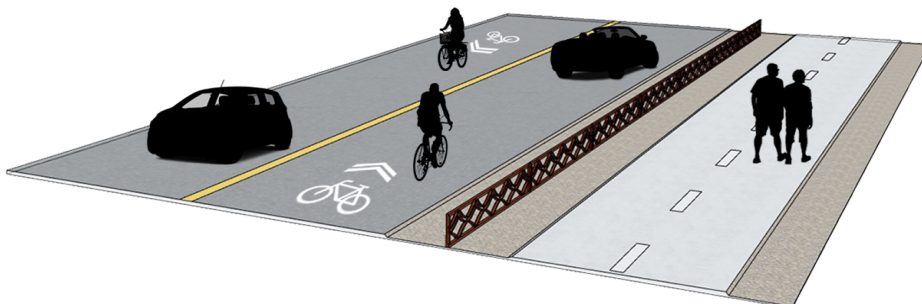


Figure 4-20. Isometric View of Design Option 1



Figure 4-21. Existing Conditions on Rocky Hill Drive



Figure 4-22. Proposed Improvements under Design Option 1

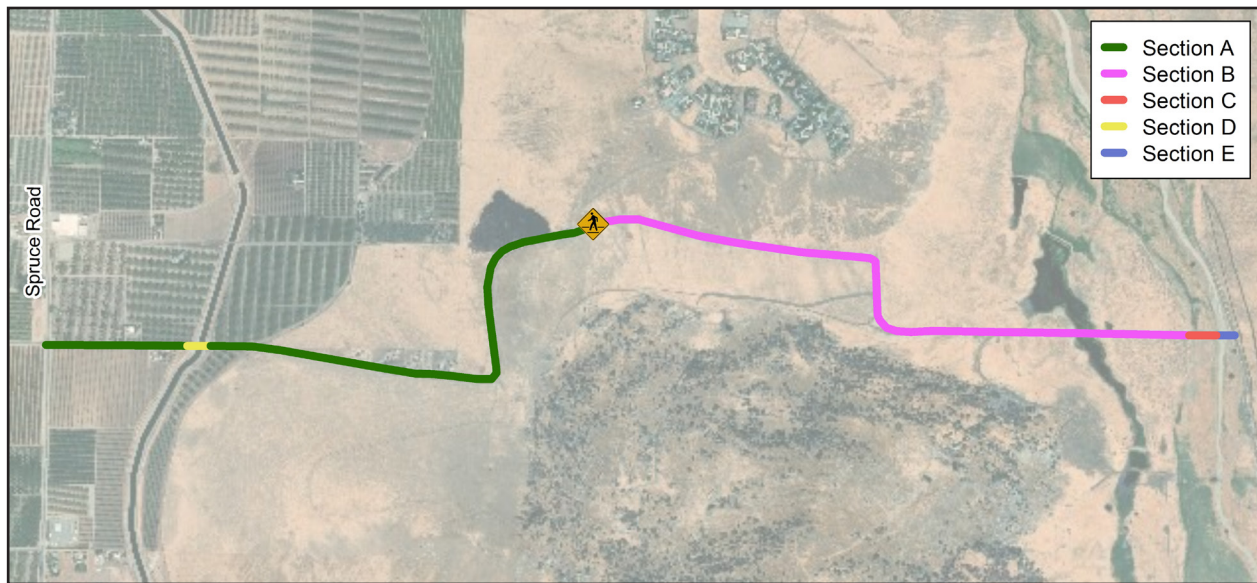
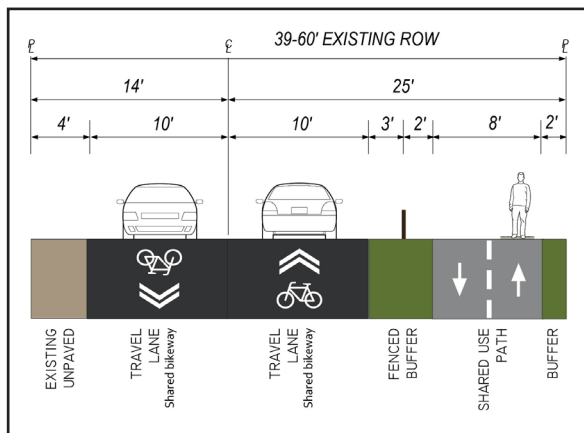
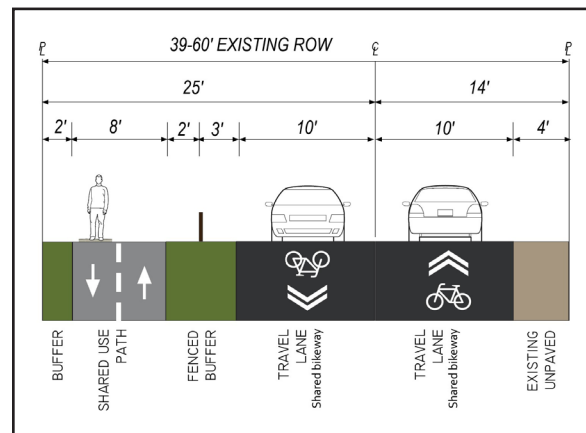


Figure 4-23. Design Option 1 Cross Sections

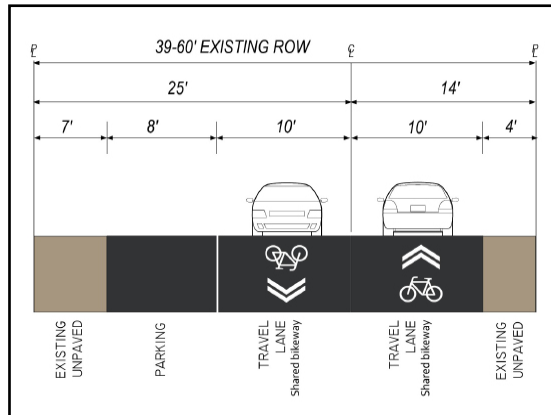
Section A



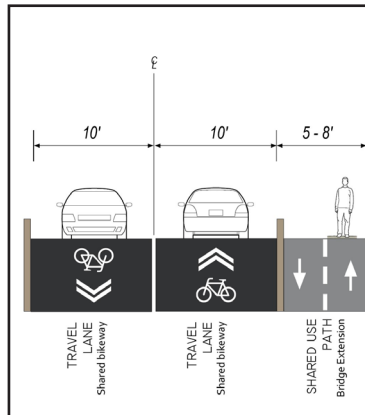
Section B



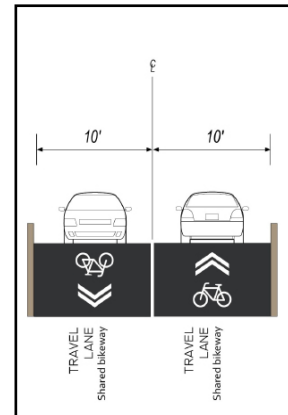
Section C



Section D



Section E



Design Option 2

Design Option 2 is intended to serve as the ideal option to provide safe and comfortable multi-modal access on Rocky Hill Drive. This option provides physical separation for pedestrians, cyclists, and vehicular traffic. This is achieved through the implementation of a Class I mixed use trail and Class II bike lane. This option also proposes additional amenities to improve the recreational experience of Rocky Hill Drive. Proposed improvements include:

- Construct 5-foot Class II bike lanes with appropriate signage and pavement markings to provide separate travel space for cyclists.
- Construct 8-foot Class I multi-use path with protected buffer and appropriate signage and pavement markings to promote safe pedestrian travel.
- Construct lookout area near the top of Rocky Hill Drive to enhance pedestrian experience.
- Extend Friant-Kern Canal bridge to ensure a continued, uninterrupted pedestrian pathway.

Construction of Class II bike lanes and a Class I multi-use path will provide separate travel space for vehicles, cyclists, and pedestrians. The proposed Class I multi-use path will run along the south side of Rocky Hill Drive for the full duration of the study area to minimize conflict between vehicles and non-motorist users. The proposed bridge extension will further minimize conflicts by providing a continued, uninterrupted pedestrian pathway. The Class II bike lanes will generally be 5-feet wide to provide a comfortable travel experience for cyclists, and will extend on both sides of Rocky Hill Drive. These lanes may be reduced to 4-feet where necessary.

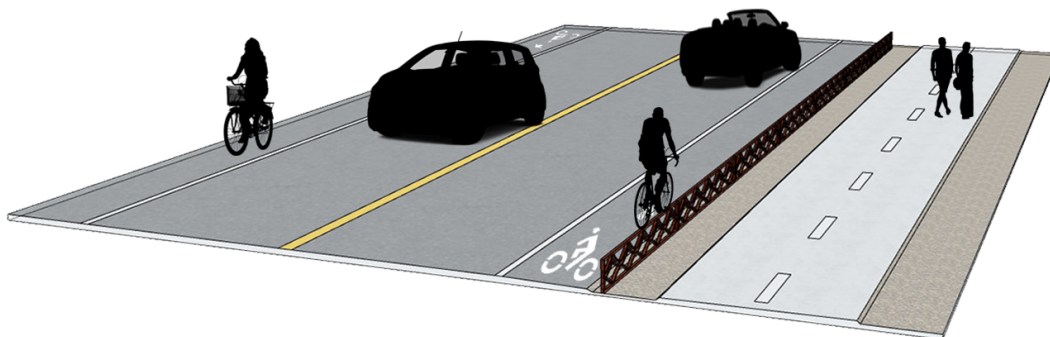


Figure 4-24. Isometric View of Design Option 2

Design Option 2 includes improvements to the Friant-Kern Canal Bridge. Improvements would include Class III signage/pavement markings and cantilever bridge extensions to accommodate a continued, uninterrupted pedestrian pathway. The Class II bike lanes will transition to Class III bike routes at this location. Appropriate signage and pavement markings will be used at the transition zone direct cyclists to use the appropriate travel space.

Pedestrian Lookout Area

The proposed pedestrian lookout area is a supplemental feature intended to enhance the recreational experience of Rocky Hill Drive. A pedestrian lookout will provide scenic opportunities for Rocky Hill Drive users and will serve as a resting place for cyclists and pedestrians once they reach the top of the road's incline. Possible features for the pedestrian lookout area include benches, picnic tables, info-booths, and workout stations.

At the 1/16/19 Public Meeting at Exeter City Hall, both the public and the property owners stated that a pedestrian lookout area will attract criminal activity. Therefore the public and property owners unanimously disapproved of the proposed lookout area.



Figure 4-25. Proposed pedestrian lookout area.



Figure 4-26. Existing Conditions on Rocky Hill Drive



Figure 4-27. Proposed Improvements under Design Option 2

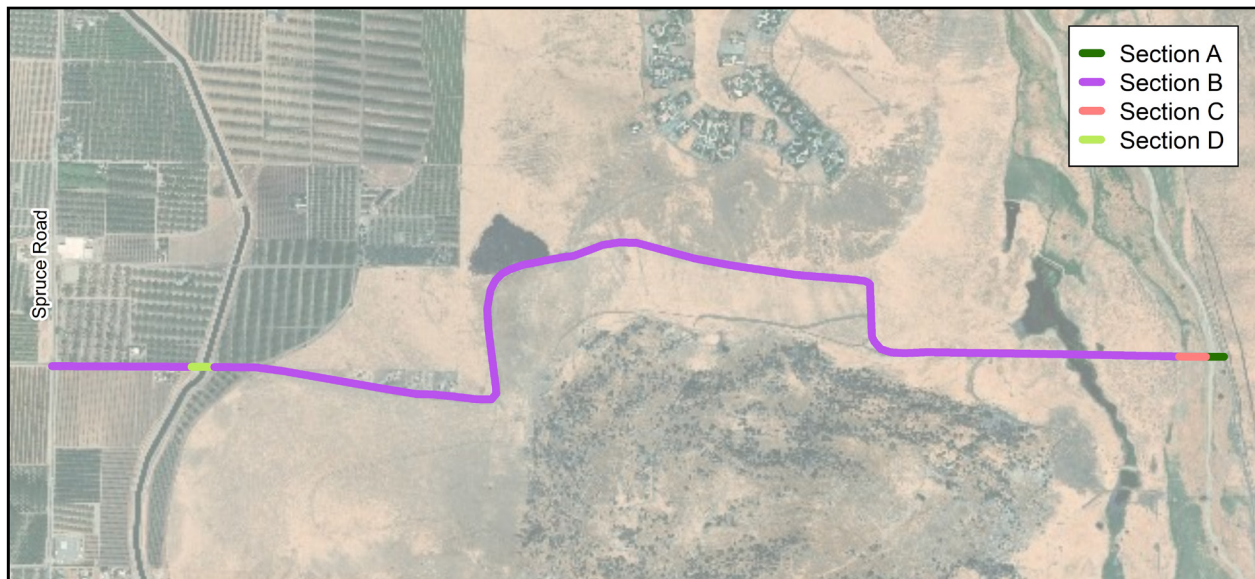
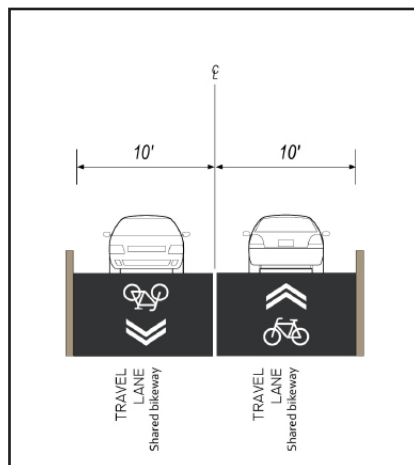
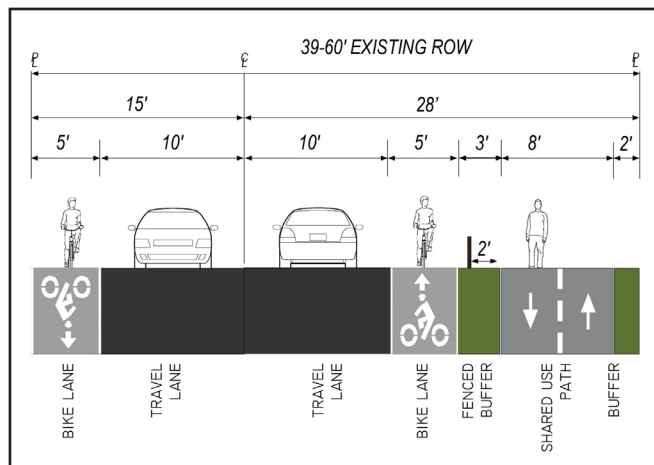


Figure 4-28. Design Option 2 Cross Sections

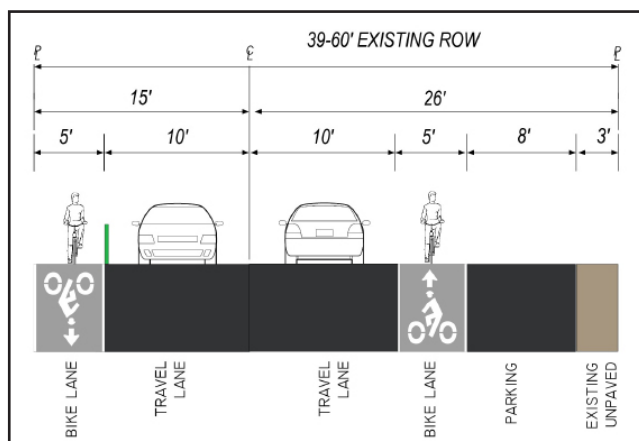
Section A



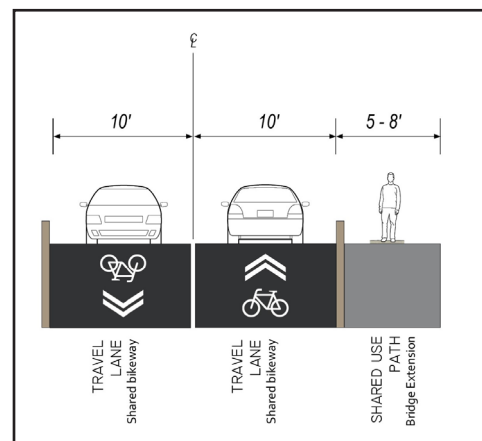
Section B



Section C



Section D



Other Considerations

Restroom Facilities and Parking

The lack of public parking and restroom facilities were two primary issues identified through community outreach. At the 1/16/19 Public Meeting at Exeter City Hall, property owners stated that any proposed parking along Rocky Hill Drive will interfere with existing cattle and agriculture activities. Therefore, it is recommended that all proposed parking and restroom facilities be provided off-site. Restroom facilities and additional parking may be provided upon the development of a property located on the south-east corner of Spruce Avenue and Rocky Hill Drive. The property owner intends to develop the site with neighborhoods serving commercial services, and is interested in making an agreement with the County to include public parking and restroom facilities in that development.

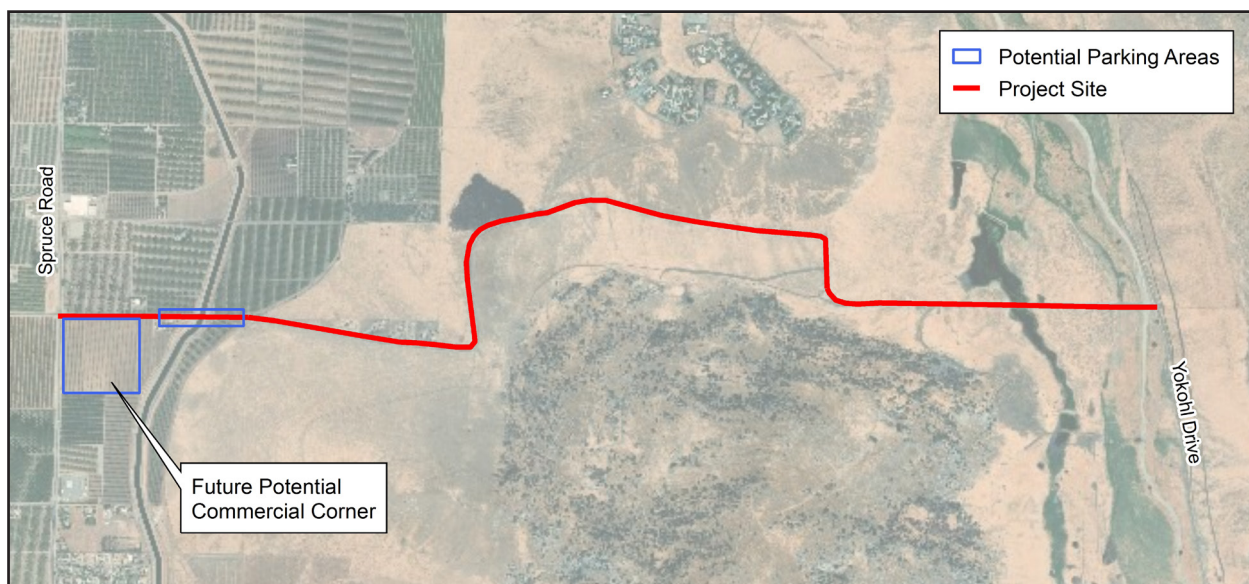


Figure 4-29. Potential Parking Opportunities

Cattle Crossings

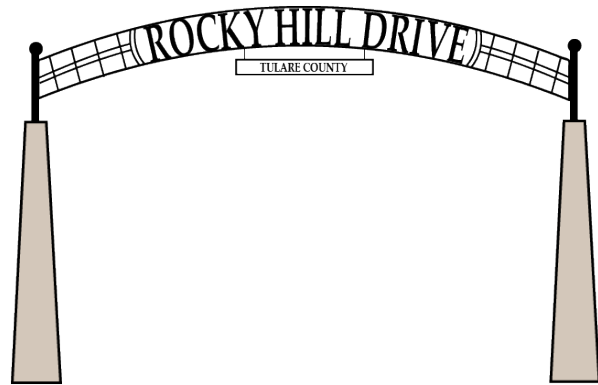
The improvements proposed in Design Concepts 1 and 2 will be designed to allow cattle crossings between the north and south sides of Rocky Hill Drive. This will be accomplished through the use of removable barriers at specific locations.



Figure 4-30. Example gated barrier.

Entrance Signage

Entrance signage can be an effective tool to create a sense of identity in a public space. It is a distinguishing feature can transform a site into a mini-destination. Entrance signage also serves as a natural meeting place for visitors and acts as a natural starting point or finish line for races and triathlons.



Fencing Options

Design Options 1 and 2 both propose fencing to create a continuous barrier between the Class I multi-use path and roadway. There are several options for fencing, all of which vary in cost, appearance and durability.

Fencing can also serve as a multi-functional tool. Lighted fencing can be used to provide light along the route, while gated fencing can be used when a permanent barrier is not practical. Examples of a few fencing options are shown in Figures 4-30 through 4-33.



Figure 4-31. Wood Fencing



Figure 4-32. Cable Fencing



Figure 4-33. Gated Fence

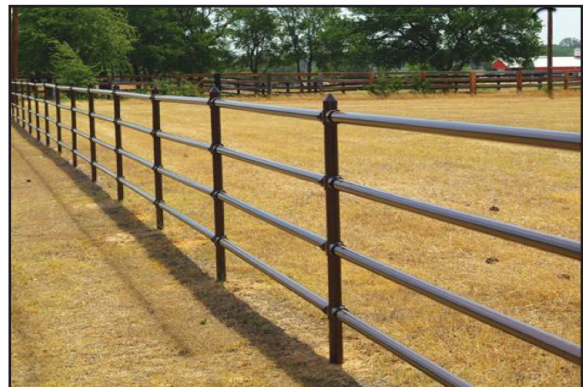


Figure 4-34. Pipe Fence

5. Action Plan and Implementation

This feasibility study was developed to identify two feasible design concepts that provide pedestrian and cyclist access on Rocky Hill Drive. It is intended to serve as a planning-level study to guide multi-modal improvements within the study area. Implementation of this plan is based on the following assumptions:

- All improvements to Rocky Hill Drive will be consistent with the Tulare County General Plan, as well as all other applicable agency standards.
- Implementation of the proposed design concepts identified in this feasibility study will occur as funding sources become available. This may be in phases depending on the funding source and timing availability.
- Project funding may be obtained locally or through State and Federal funding sources.

Based on these assumptions, both Design Option 1 and Design Option 2 are considered to be feasible solutions to provide pedestrian and cyclist access on Rocky Hill Drive with Design Option 2 serving as the preferred alternative.

Environmental Review and Compliance Process

The proposed improvements to Rocky Hill Drive will be reviewed by Tulare County prior to project implementation to ensure compliance with either CEQA or NEPA, depending on the source of project funding. CEQA compliance will be required for State funding, while NEPA compliance will be required for Federal funding.

On 1/30/18 Ted Smalley, the TCAG Executive Director, stated that TCAG will seek Measure R funding for the project which will result in a CEQA compliance document for the improvements project. The CEQA compliance document determination will be provided by Tulare County RMA which is the CEQA lead agency.

Implementation Strategies

A combination of strategies will be utilized in the implementation of either Design Concept 1 or 2. The strategies summarized below were identified as a means to actualize the proposed design concepts in the context of the site's existing conditions and restraints.

Road Widening

The existing pavement will need to be widened to accommodate the Class I multi-use path proposed in Design Options 1 and 2, and the Class II bike lane proposed in Design Option 2. Due to the geologic conditions of the study area, extensive excavation and compaction will be required to accomplish widening at certain locations.

Reconfiguration of the existing centerline may be used to reduce costs associated with road widening. In areas where one side of the road may be widened more easily than the other, widening may occur on less onerous side and the centerline may be reconfigured accordingly.

Bridge Extension

The existing bridge crossing the Friant-Kern Canal will need to be expanded to provide a continuous pedestrian path as proposed in Design Options 1 and 2. The bridge extension must be designed to safely accommodate pedestrian travel and is subject to approval by the Tulare County Public Works Department. It is anticipated to be a light-weight cantilevered bridge extension that will support pedestrians only.

Right of Way Acquisitions

Right of Way (ROW) acquisitions occur when necessary improvements cannot be completed within the existing ROW and involve the purchase of private property by a public entity. Right of Way Acquisition may be required to develop the Lookout Area proposed by Design Option 2 as well as other proposed improvements.

Financial Plan

Because implementation of the proposed design concepts is completely dependent on the acquisition of adequate funding, cost estimates and identification of potential funding sources is necessary to ensure the practicality of design implementation. This section will provide construction and maintenance cost estimates for Design Options 1 and 2 and identify potential funding sources to support project implementation.

This section contains the detailed cost estimates for the two design alternatives and the corresponding roadway, bike and pedestrian path improvements that we designed pursuant to the Caltrans Highway Design Manual on Bikeway Facilities.

Construction

The construction cost estimates are to improve the 3.37 miles (17,7947 linear feet) of Rocky Hill Drive which is a two-lane, rural minor-collector road.

| Table 5-1. Rocky Hill Drive Feasibility Study - Design Alternative 1 | | | | | |
|--|----------------------------|-------|----------|------------|------------------------|
| No. | Items | Units | Quantity | Unit Price | Totals |
| Bike Routes (Caltrans Class III Bikeway) | | | | | |
| 1 | Remove existing striping | LF | 17,794 | \$4.00 | \$71,176 |
| 2 | Restripe two lanes | LF | 17,794 | \$3.00 | \$53,382 |
| 3 | Bike lane markings | SF | 600 | \$15.00 | \$9,000 |
| 4 | Signs | EA | 20 | \$150.00 | \$3,000 |
| 5 | Subtotal | | | | \$136,558 |
| 6 | Design | % | 20 | percent | \$27,312 |
| 7 | Contingency | % | 20 | percent | \$27,312 |
| 8 | Total (per mile) | | | | \$191,182 (\$56,731) |
| Bike & Pedestrian Path (Caltrans Class I Bikeway) | | | | | |
| 9 | Bike lane markings | SF | 300 | \$15.00 | \$4,500 |
| 10 | Signs | EA | 10 | \$150.00 | \$1,500 |
| 11 | Dryscaped Buffers | SF | 124,558 | \$4.00 | \$498,232 |
| 12 | Fence (continuous barrier) | LF | 17,544 | \$7.00 | \$122,808 |
| 13 | Grading (Cut / Fill) | CY | 17,544 | \$12.00 | \$300,000 |
| 14 | Paving | SF | 25,000 | \$5.00 | \$708,160 |
| 15 | Retaining walls | LF | 750 | \$150 | \$112,500 |
| 16 | Relocate Utility Poles | EA | 9 | \$15,000 | \$135,000 |
| 17 | Slurry Seal | SF | 146,973 | \$1.50 | \$220,459 |
| 18 | Right-of-Way Acquisitions | AC | 0.53 | \$25,000 | \$16,430 |
| 19 | Subtotal | | | | \$2,119,589 |
| 20 | Design | % | 20 | percent | \$423,918 |
| 21 | Contingency | % | 20 | percent | \$423,918 |
| 22 | Total (per mile) | | | | \$2,96,425 (\$880,541) |
| Friant Kern Canal Bridge | | | | | |
| | Pedestrian Bridge | LS | 1 | \$150,000 | \$150,000 |
| 22 | Grand Totals | | | | \$3,117,425 |

| Table 5-2. Rocky Hill Drive Feasability Study - Design Alternative 2 | | | | | |
|--|---------------------------|-------|----------|------------|----------------------------|
| No. | Items | Units | Quantity | Unit Price | Totals |
| One-Way Bike Path (Caltrans Class II Bikeway) | | | | | |
| 1 | Bike lane marking | SF | 600 | \$15.00 | \$9,000 |
| 2 | Signs | EA | 20 | \$150.00 | \$3,000 |
| 4 | Grading (Cut / Fill) | CY | 200 | \$12.00 | \$2,400 |
| 5 | Paving | SF | 4,239 | \$5.00 | \$533,370 |
| 6 | Subtotal | | | | \$547,770 |
| 7 | Design | % | 20 | percent | \$109,554 |
| 8 | Contingency | % | 20 | percent | \$109,554 |
| 9 | Total (per mile) | | | | \$766,878 (\$227,560) |
| Bike and Pedestrian Path (Class I Bikeway) | | | | | |
| 10 | Bike lane markings | SF | 300 | \$15.00 | \$4,500 |
| 11 | Signs | EA | 10 | \$150.00 | \$1,500 |
| 12 | Dryscaped Buffers | SF | 88,970 | \$4.00 | \$355,880 |
| 13 | Fence | LF | 17,544 | \$7.00 | \$122,808 |
| 14 | Grading (Cut / Fill) | CY | 21,000 | \$12.00 | \$252,000 |
| 15 | Paving | SF | 141,632 | \$5.00 | \$708,160 |
| 15 | Retaining walls | LF | 750 | \$150 | \$112,500 |
| 16 | Relocate Utility Poles | EA | 9 | \$15,000 | \$135,000 |
| 17 | Slurry Seal | SF | 146,973 | \$1.50 | \$220,459 |
| 18 | Right-of-Way Acquisitions | AC | 1.98 | \$25,000 | \$49,500 |
| 19 | Subtotal | | | | \$1,707,027 |
| 20 | Design | % | 20 | percent | \$341,405 |
| 21 | Contingency | % | 20 | percent | \$341,405 |
| 22 | Total (per mile) | | | | \$2,389,837 (\$709,150) |
| Bike Route (Caltrans Class III Bikeway) | | | | | |
| 23 | Bike lane marking | SF | 120 | \$5.00 | \$600 |
| 24 | Signs | EA | 4 | \$150.00 | \$600 |
| 25 | Subtotal | | | | \$1,200 |
| Friant Kern Canal Bridge | | | | | |
| 26 | Pedestrian Bridge | LS | 1 | \$150,000 | \$150,000 |
| 27 | Grand Totals | | | | \$3,307,915 |

Maintenance

The cost estimates are to maintain the 3.37 miles (17,794 linear feet) of Rocky Hill Drive which is a two-lane, rural minor-collector road.

Maintaining separated bikeways shares many similarities with maintenance of on-street bicycle lanes.

All separated bikeways must be swept regularly to keep them free of debris, and the pavement surface must be repaired or refreshed to ensure a smooth surface for bicyclists. Separated bikeways should be incorporated into the city's routine street sweeping schedule and swept no less than once per month. More frequent sweeping may be needed on priority or high-volume streets, or where street trees or yard waste piles create more debris.

If the bikeway is wide enough, it can be swept using the City's existing standard street sweeper. Narrower bikeways may require new sweeping equipment. A wide range of options and models are available and can also be used to sweep off-street paths or sidewalks if necessary. These specialized sweepers cost between \$80,000 and \$200,000 depending on the model.

Maintenance of the physical features of separated bikeways will include filling potholes and making other minor pavement repairs, replacing signs, refreshing pavement markings, and conducting periodic pavement overlays. Some of these actions should be performed on a routine schedule, while others may require action on an as-needed basis if bikeway features are damaged or obscured.

Typical annual cost ranges for these activities are listed in the table below.

| Table 5-3. Maintenance Costs for Design Alternatives 1 & 2 | | |
|--|--|----------------------|
| No. | Items | Annual Cost/ Mile |
| 1 | Sweeping (existing equipment) | \$1,900 - \$4,000 |
| 2 | Fill potholes | \$500 |
| 4 | Replace signs | \$50-\$100 |
| 5 | Refresh pavement markings | \$100-\$150 |
| | Replace flexible bollards (assuming 25% of bollards replaced annually) | \$6,500 |
| | Pavement repairs and overlay (distributes cost of overlay annually) | \$5,500 - \$8,000 |
| 6 | Total | \$14,500 - \$19,200 |

Potential Funding Sources

Successful implementation of the design concepts proposed by this Feasibility Study will require acquisition of reliable funding. Funding for design concept implementation may be obtained locally or through State and Federal Grant programs. Although local funding sources are often more reliable, State and Federal grants should be pursued to supplement project implementation.

The number and type of grant and loan programs available to public agencies in any given year can vary significantly based on Legislature appropriations. Many of the grant programs below are on-going with rounds of grant monies provided upon availability of funding. The grant and loan programs listed below are not exhaustive and should be updated regularly upon implementation of any design concepts proposed by this feasibility. Tulare County will be responsible for developing individual applications in response to grant program solicitations.

Federal Funding Sources

- **Transportation Investment Generating Economic Recovery (TIGER) program:** Provides funding for selected projects and programs based on considerations for safety, state of good repair, economic competitiveness, quality of life and environmental sustainability.
- **Infrastructure for Rebuilding America (INFRA) discretionary grant program:** Provides funding to State and regional governments for public infrastructure projects.
- **Fixing America's Surface Transportation (FAST) Act:** A fairly flexible program to provide federal funding to state and regional governments for transportation related projects and programs. The Safe Routes to School program, Transportation Enhancements Program, and Transportation Alternatives Program grants are also provided under the FAST Act.
- **Transportation Enhancements (TE):** 50% of TE funds received by Tulare County have been dedicated to Measure R projects in Tulare County. The approximate \$500,000 annually serve as an offset of Measure R funded bicycle projects. TE funds require approximately a 12% match by the applicant and are usually programmed in coordination with the Federal Transportation Improvement Program (FTIP). These funds can be used for facilities for pedestrians and bicycles that enhance transportation corridors (\$60M/yr statewide, 75% programmed by RTPAs; 25% by Caltrans).
- **Transportation, Community, and System Preservation Program (TCSP):** TCSP is intended to address the relationships among transportation, community, and system preservation plans and practices and identify private sector-based initiatives to improve those relationships. State and local governments, metropolitan planning organizations (MPOs), and tribal governments are eligible for discretionary grants, authorized at \$270 million through 2009, to carry out eligible projects to integrate transportation, community, and system preservation plans and practices.

State Funding Sources

- **California Department of Housing and Community Development Block Grant Program:** Provides funding for projects related to housing, public works, and community facilities for low-income areas.
- **Road Repair and Accountability Act (SB1):** Provides increased funding to fix roads, freeways, and bridges in communities across California with funds split equally between State and Local Investments.
- **Transportation Development Act (TDA) Article 3 (SB 821):** TDA Article 3 funds, also known as the Local Transportation Fund (LTF), are used by cities for the planning and construction of bicycle and pedestrian facilities. Up to two percent (2%) of the funds can be made available to counties and cities for facilities provided for the exclusive use of pedestrians and bicyclists.
- **State Bicycle Transportation Account:** Provides funding for city and county projects that improve safety and convenience for bicycle commuters.
- **San Joaquin Valley Air Pollution Control District (SJVAPCD):** Provides funding for a variety of local transportation related projects that support the goals of the SJVAPCD. These include funds for bike paths, electric vehicle charging stations, and public transportation subsidies.
- **Active Transportation Program (ATP):** The ATP is the only primary source of funds dedicated to increasing bicycling and walking in California. At \$120 million per year, it represents approximately 1% percent of the state's annual transportation budget. The ATP funds bike and pedestrian infrastructure projects, educational and promotional efforts, safe routes to school projects, and active transportation planning. The state awards half of the funds through a competitive grants process. 40% goes to metropolitan agencies to distribute and 10% goes to rural areas. At least 25% of all funds must benefit residents in disadvantaged communities.
- **Per Capita Grant Program:** The Per Capita Grant Program is intended to maintain a high quality of life for California's growing population by providing a continuing investment in parks and recreational facilities. Specifically, it is for the acquisition and development of neighborhood, community, and regional parks and recreation lands and facilities in urban and rural areas. Per Capita grant funds can only be used for capital outlay and may be used for bike paths and trails.
- **Roberti-Z'Berg-Harris (RZH) Grant Program Proposition 40:** Funds for this grant program are to be allocated for projects pursuant to the RZH Urban Open Space and Recreational Grant Program for a variety of uses related to parks and recreation needs. Bike paths and recreational trails are eligible uses of this grant program.

Local Funding Sources

- **San Joaquin Valley Air Pollution Control District (SJVAPCD):** Provides funding for a variety of local transportation related projects that support the goals of the SJVAPCD. These include funds for bike paths, electric vehicle charging stations, and public transportation subsidies.
- **Measure R ½ Cent Sales Tax:** A 30 year ½ cent sales tax increase was passed by Tulare County voters in November of 2006. The Expenditure Plan for the sales tax measure dedicates \$91.3 million or 14% of the funds to transit/bikes/environmental mitigation. The funding program requires matching funds from CMAW and TE. The Bike/Pedestrian projects funded by Measure R are listed in the 2006 ½ Cent Transportation Sales Tax Measure Expenditure Plan. An incentive will be provided to agencies who receive outside funds to pay for projects listed in the Expenditure Plan, with a 50% match from TCAG (all matches are eligible with the exception of CMAQ and TE). A Bike Fund Program was established in an amendment to the Expenditure Plan to include a match to grants received by member agencies for a maximum of \$2,000,000 over 30 years.
- **Impact Fees:** A potential local source of funding are developer impact fees. These fees are generally tied to trip generation rates and traffic impacts produced by a proposed project. A developer may reduce the number of trips by paying for an on or off-site bikeway improvements which will encourage residents to bicycle rather than drive. In-lieu, parking fees may be used to help construct new or improved bicycle parking. Establishing a clear nexus or connection between the impact fees and the project's impacts is critical in avoiding potential lawsuits.

Other local funding options may be reviewed and deemed appropriate including Benefit Assessment Districts, Property Taxes and Bonds, User Fees, Adopt-a-Path Programs, or General Funds. These alternatives among the State and Federal funding sources will be more thoroughly reviewed following the selections of the preferred design alternative and initiation of the Rocky Hill Bicycle/Pedestrian Path improvements project.

6. Evaluation

Introduction

The purpose of this section is to present the advantages and disadvantages of each design alternative to promote thoughtful decision making regarding the selection of one design alternative over the other. This section integrates information presented in previous sections to compare and contrast Design Options 1 and 2 based on the following:

- Consistency with Caltrans bikeway standards
- Design implications and User Experience
- Regulatory Requirements
- Community Input
- Cost Comparison

Consistency with Caltrans Bikeway Standards

Design Concepts 1 and 2 both utilize Caltrans design standards to facilitate bicycle and pedestrian travel on Rocky Hill Drive.

Caltrans Class I Bikeway Standards

Class 1 facilities are multi-use paths that are separated from the road. Because they can be used by both cyclists and pedestrians, it was determined that a Class I facility is an essential feature to meet the basic objectives of the Study. Class 1 facilities were incorporated into both design concepts because it is the only Caltrans standard that provides adequate pedestrian access.

Caltrans Class I bikeway standards are provided in Chapter 1000 of the Caltrans Highway Design Manual. A visual representation of these standards is shown in Figure 6-1 below, and a summary of how each design option meets Caltrans standards is provided in Table 6-1.

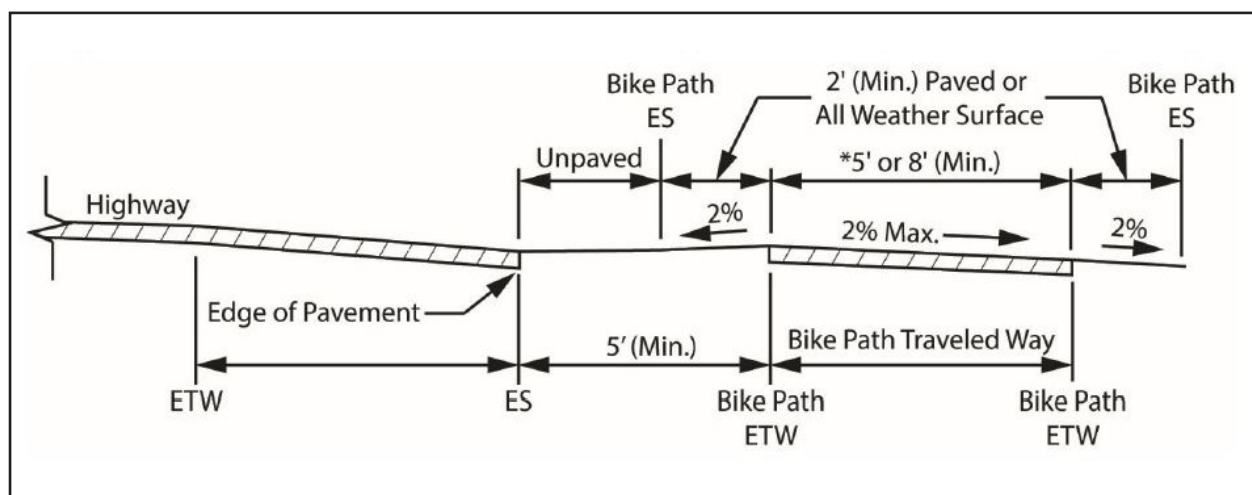


Figure 6-1. Caltrans Class I Bikeway cross section.

| Table 6-1. Consistency with Caltrans Class 1 Bikeway Standards | | |
|---|---|--|
| Caltrans Class 1 Bikeway Standard | Design Option 1 | Design Option 2 |
| Minimum paved width of travel way for two-way bike path shall be 8 feet | The proposed travel width of the multi-use trail is 8 feet. | The proposed travel width of the multi-use trail is 8 feet. |
| A 2' wide paved shoulder shall be required adjacent to the travel way. | 2' paved shoulder is included on both sides of proposed multi-use trail. | 2' paved shoulder is included on both sides of proposed multi-use trail. |
| A minimum 2-foot horizontal clearance from the paved edge of a bike path to obstructions shall be provided. | No obstructions are proposed within 2 feet of the proposed multi-use trail travel way. | No obstructions are proposed within 2 feet of the proposed multi-use trail travel way. |
| The vertical clearance to obstructions across the width of a bike path shall be a minimum of 8 feet and 7 feet over shoulder. | There are no existing or proposed obstructions that could impact vertical clearance along Rocky Hill Drive. | There are no existing or proposed obstructions that could impact vertical clearance along Rocky Hill Drive. |
| Signage and pavement markings must be applied per section 9B and 9C of the CA MUTCD. | Signage and pavement markings, discussed in Section 4 of this Study, will be applied in accordance with Sections 9B and 9C of the CA MUTCD. | Signage and pavement markings, discussed in Section 4 of this Study, will be applied in accordance with Sections 9B and 9C of the CA MUTCD. |
| The minimum separation between the edge of travel way of a one-way or two way bicycle path and the edge of travel way of a parallel road or street shall be 5 feet plus the standard shoulder widths. | The proposed multi-use trail includes 5 feet of separation between the trail travel way and a brief variance is required on Friant Kern Canal Bridge. | The proposed multi-use trail includes 5 feet of separation between the trail travel way and the road travel way, however a brief variance is required on Friant Kern Canal Bridge. |
| Separations less than 10 feet from the edge of the shoulder are to include landscaping or other continuous barrier. | Fencing is proposed between the proposed multi-use trail and pavement to provide a continuous barrier. | Fencing is proposed between the proposed multi-use trail and pavement to provide a continuous barrier. |
| Bike paths should not be placed in the median of a State highway or local road, and shall not be in the median of a freeway or expressway. | The proposed multi-use trail would not be located within a median. | The proposed multi-use trail would not be located within a median. |

The cantilever bridge extension proposed under both design concepts is the only segment of the design concept that is not consistent with Caltrans Class I bikeway design standards. Railing will be used to provide a continuous barrier between the path and the roadway. It was determined that the benefits of providing continuous pedestrian access along Rocky Hill Drive would outweigh potential problems associated with deviating from Caltrans design standards for this study area.

Caltrans Class II Bikeway Standards

Class II bikeways are designated bike lanes located adjacent to the vehicular traffic lane. These facilities delineate travel space for cyclists. Unlike Class I multi-use paths, Class II bike lanes do not require a buffer from the vehicular traffic lane and pedestrian travel is not permitted.

Class II bike lanes are proposed under Design Option 2 to provide separate travel space for vehicles, cyclists, and pedestrians. Caltrans design standards for Class II facilities are discussed throughout the Caltrans Highway Design Manual. A representation of a Caltrans standard Class II facility on a rural road is presented in Figure 6-2, below. Table 6-2 summarizes the Design Option 2's consistency with Caltrans Class II Bikeway Standards.

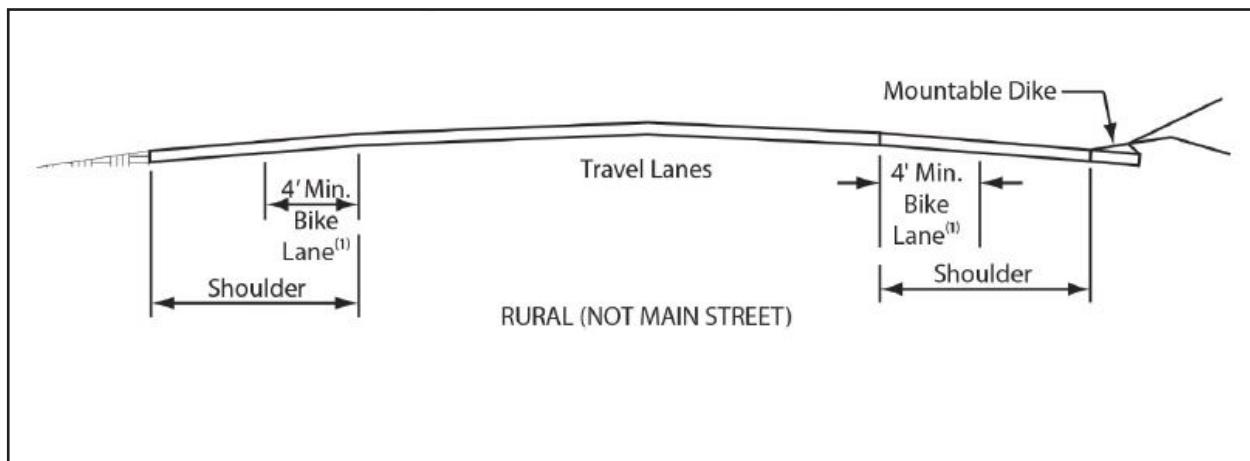


Figure 6-2. Caltrans Class II Bikeway cross section.

| Table 6-2. Consistency with Caltrans Class II Bikeway Standards | | |
|---|---|--|
| Caltrans Class II Bikeway Standard | Design Option 1 | Design Option 2 |
| Class II bike lanes shall be located immediately adjacent to a traffic lane | No Class II facilities are proposed under Design Option 1 | The proposed bicycle lanes are located immediately adjacent to the traffic lanes on Rocky Hill Drive. Flexible bollards will be used as a continuous barrier. |
| The minimum Class II bike lane width shall be 4 feet, except where adjacent to on-street parking, the minimum bike lane should be five feet. | No Class II facilities are proposed under Design Option 1 | 5-foot wide bicycle lanes are proposed. Bicycle lanes would reduce to 4-feet only where necessary. Bicycle lanes will be five feet in areas where on street parking is proposed. |
| On highways with concrete curb and gutter, a minimum width of 3 feet measured from the bike lane stripe to the joint between the shoulder pavement and the gutter shall be provided. | No Class II facilities are proposed under Design Option 1 | There are no existing or proposed curbs/gutters on Rocky Hill Drive, nor is Rocky Hill Drive classified as a highway. |
| Signage and pavement markings must be applied per section 9B and 9C of the CA MUTCD. | No Class II facilities are proposed under Design Option 1 | Signage and pavement markings, discussed in Section 4 of this Study, will be applied in accordance with Sections 9B and 9C of the CA MUTCD. |

Caltrans Class III Bikeway Standards

As discussed in Section 4 - Design Concepts, Class III bikeways are facilities that are shared with vehicles on the street. Caltrans Class III bikeway standards differ from Class I and II standards because cycling is already permitted on all roads (except prohibited freeways). The Class III designation is primarily intended to encourage bicycle travel with the use of signages and pavement markings, rather than physical roadway modifications. As such, Class III bikeway standards are intended to guide the decision to designate the route as a bikeway and do not involve specific design requirements.

Design Option 1 proposes the majority of Rocky Hill Drive to be classified as a Class III facility, while Design Option 2 proposes Class III facilities only in specific areas. Under Design Option 2, Class III facilities would be used only where class II facilities are not feasible. Chapter 1000 of the Caltrans Highway Design Manual states that a road should only be designated as a Class III bikeway if some of the factors discussed in Table 6-3, apply.

| Table 6-3. Consistency with Caltrans Class III Bikeway Standards | | |
|--|--|---|
| Caltrans Class III Bikeway Standard | Design Option 1 | Design Option 2 |
| The route provides for through and direct travel in bicycle-demand corridors. | Rocky Hill Drive is a high-demand bicycle corridor. Class III designation would provide for through and direct travel. | Not Applicable |
| The route connects discontinuous segments of bike lanes. | This route is intended to eventually connect to other bikeways in the City of Exeter. | Class III facilities are limited to the two bridges located on Rocky Hill Drive where implementation of Class II facilities is not feasible. Class III facilities at these locations would be used to connect discontinuous segments of bike lanes. |
| The route provides traffic actuated signals for bicycles and appropriate assignment of right of way at intersections to give greater priority to bicyclists, as compared with alternative streets. | Not Applicable | Not Applicable |
| Street parking has been removed or restricted in areas of critical width to provide improved safety. | Street parking is restricted to the eastern end of Rocky Hill Drive. | Street parking is restricted to the eastern end of Rocky Hill Drive. |
| Surface imperfections or irregularities have been corrected (e.g., utility covers adjusted to grade, potholes filled, etc.). | Implementation of Design Option 1 would involve re-paving to remove surface imperfections. | Implementation of Design Option 2 would involve re-paving to remove surface imperfections. |
| Maintenance of the route will be at a higher standard than that of other comparable streets (e.g., more frequent street sweeping). | Maintenance of the route will be determined by TCAG and Tulare County. | Maintenance of the route will be determined by TCAG and Tulare County. |

It was determined that Class III designation was appropriate for Rocky Hill Drive under Design Option 1 because it is a road with high bicycle demand. Class III signage and pavement markings would re-enforce public understanding that cyclists are allowed within the vehicular travel lanes and would warn motorists to watch out for cyclists in the road.

Under Design Option 2, Class III facilities are limited to the two bridges on Rocky Hill Drive where Class II facilities are not feasible. It is appropriate to designate these portions of Rocky Hill Drive as Class III because they would be used to connect discontinuous Class II facilities.

Design Implications and User Experience

Design Option 1 was developed to represent the least impactful way to provide bicycle and pedestrian access on Rocky Hill Drive, while Design Option 2 was developed to represent the ideal option to provide safe and comfortable multi-modal access on Rocky Hill Drive. While Design Option 2 was intended to represent the preferred option with regard to user experience, it was determined during public outreach that Design Option 1 is actually the alternative most preferred by the community.

Design Option 2 would create separate travel space for vehicles, cyclists and pedestrians through the implementation of a Class I multi-use trail and a Class II bike lane. However, implementation of Class II bike lanes would put cyclists on the edge of the roadway, which may be unsafe in certain areas due to the adjacent topography. Design Option 1 proposes for Rocky Hill Drive to be designated as a Class III bike route in-lieu of providing a separate bicycle travel lane. Because most casual/unconfident riders feel uncomfortable riding in traffic, these riders may end up using the Class I multi-use trail instead which could increase the risk of conflict between cyclists and pedestrians on the shared use trail. Regardless of these potential risks, the community unanimously preferred Design Option 1 at the 1/16/19 Final Open House Meeting.

Required Regulatory Permits

Design Alternative #1 will utilize the existing paved roadway and all proposed improvements will be within the existing Right-Of-Way. Full avoidance of all environmentally sensitive lands and waters is proposed to eliminate the need for regulatory permits. Design Alternative #2 will require Right-Of-Way acquisitions for the proposed trail improvements on both the northern and southern edges of Rocky Hill Drive which will encroach upon and potentially impact existing environmentally sensitive lands and waters.

Focused surveys are needed to confirm the potential for impacts, however the biological constraints report identifies the following potentially required reports and regulatory permits—“A wetland delineation is required to determine the extent of agency jurisdiction. Any impacts (e.g., dredge or fill) to wetlands or vernal pools will require a United States Army Corps of Engineers (USACOE) Section 404 Clean Water Act permit for regulation of discharge of dredged or fill

material into waters of the United States, including wetlands. A 401 Water Quality Certification for discharge of dredged and/or fill materials from the California Regional Water Quality Control Board (RWQCB) will also be required.

Additionally, any impacts to vernal swales may be considered an impact to a seasonal watercourse, subject to California Fish and Game Code Section 1600 Notification of Lake or Streambed Alteration. As a federal agency issuing the Section 404 permit, USACOE must consult with the USFWS under Section 7 of the Endangered Species Act (ESA). Section 7 of the ESA directs the USFWS to determine whether the proposed work will cause impacts to federally threatened or endangered species. If it is determined that impacts will occur, the USFWS will prepare a Biological Opinion for the site.” And – “If culvert replacement or extension is required for road widening, permitting with USACOE, RWQCB, and/or CDFW is anticipated. Any work causing disturbance will require a California Fish and Game Code Section 1600 Lake and Streambed Alteration notification, and potentially USACOE Section 404 and Regional Water Quality Control Board Section 401 Water Quality Certification permitting. Ground disturbance to any ephemeral streams, desert washes, or watercourses with subsurface flow will require agency notification and permitting.”

Community Input

A final open house meeting was held on Wednesday, January 16, 2019 from 6:00 PM to 7:30 PM at City Hall in Exeter to present Design Options 1 and 2 to the public. Attendees, which included recreational Rocky Hill Drive users, property owners, and other stakeholders, were asked to provide their opinions on the two design comments. The community unanimously Design Option 1 as the preferred alternative for the following reasons:

- Class II bicycle lanes would put cyclists on the edges of road, which could be dangerous due to adjacent cliffs and topography.
- There is little existing conflict between cyclists and motorists on Rocky Hill Drive. Removing pedestrians from Bicycle and vehicle travel way is more important than removing cyclists from vehicle traffic way.
- There is high potential for Illicit activity to occur at the proposed scenic outlook.



Figure 6-3. Rocky Hill Drive Final Open House



Figure 6-4. Members of local cyclist group attending Final Open House

Cost

Implementation of the design concepts proposed in this feasibility report will be largely dependent on project costs and availability of funding. For that reason, it is essential for decision makers to consider the difference in cost between the two design concepts in their selection of a design concept for implementation. The Table 6-4 identifies and discusses the cost differences between the two design concepts. A more detailed description of the costs associated with each design concept is provided in Section 5 - Action Plan and Implementation.

| Table 6-4. Cost Evaluation | | | | |
|--|---------------------|---------------------|-----------------|--|
| | Design Option 1 | Design Option 2 | Cost Difference | Discussion |
| Class I Multi-Use Trail (subtotal) | \$2,119,589 | \$1,707,027 | \$412,562 | A Class I multi-use trail is proposed under both Design Options 1 and 2. The difference in cost between the two design options is primarily due to the increased amount of dryscaping proposed under Design Option 1, which is provided en lieu of the Class II bike lane proposed under Design Option 2. |
| Class II and III Bicycle Facilities (subtotal) | \$136,558 | \$547,770 | \$411,212 | Design Option 1 proposes a Class III Bike Route for the duration of Rocky Hill Drive and Design Option 2 proposed Class II Bike Lanes for the large majority of the study area. The difference in cost between these two options is largely due to the paving required to implement Class II bike lanes on both sides of Rocky Hill Drive. |
| Friant Kern Canal Bridge Extension | \$150,000 | \$150,000 | \$150,000 | The cost of a bridge extension is the same under both design concepts. |
| Construction Grand Total | \$3,117,425 | \$3,307,915 | \$190,490 | The estimated total construction cost of Design Option 2 is approximately 6.1% greater than that of Design Option 1. |
| Maintenance | \$14,500 - \$19,200 | \$14,500 - \$19,200 | \$0 | Maintenance Costs are estimated to be approximately equal for both Design Options 1 and 2. |

Appendix A

Geotechnical Report



CONSOLIDATED TESTING LABORATORIES INC.

710 South Kaweah Avenue

Exeter, CA 93221

Telephone: 559.592.3555

PAVEMENT DESIGN SECTION RECOMMENDATIONS

ROCKY HILL BICYCLE/PEDESTRIAN PATH FEASIBILITY STUDY

EXETER, CALIFORNIA

FOR:



**324 S. Santa Fe Street, Suite A
Visalia, CA 93292**

August 3, 2018



August 3, 2018

4 Creeks, Inc.

David Duda

324 S. Santa Fe St. Suite A

Visalia, Ca 93291

**PROJECT: Pavement Design Section Recommendations
 Rocky Hill Bicycle/Pedestrian Path Feasibility Study
 Exeter, California**

Mr. Duda:

We have previously performed the drilling, sampling and laboratory testing for the proposed Rocky Hill Bicycle/Pedestrian Path Feasibility Study in Exeter, California. In addition, we are providing pavement design section recommendations for the subject project.

PURPOSE AND SCOPE OF WORK

The purpose of this report is to provide Pavement Design Section Recommendations for the Rocky Hill Bicycle/Pedestrian Path along Rocky Hill Drive from S. Spruce Road to Yokohl Drive in Exeter, California. The scope of work is as follows:

- Review the Drilling, Sampling and Laboratory Testing Report
- Preparation of a report for Pavement Section Design Recommendations

PAVEMENT AND SOIL CONDITIONS

On March 27, 2018, Consolidated Testing Laboratories, Inc. performed subsurface geologic exploration using a Mobile B-80 Drill Rig with an 8" O.D. hollow stem auger at the above referenced site. The existing pavement sections encountered consisted of .75 to 5 inches of asphaltic concrete with no aggregate base observed at any of the boring locations. The sub

surface soils encountered were continuously examined and visually classified in accordance with the Unified Soil Classification System to a maximum depth explored of 10 feet. The asphaltic concrete was underlain by moist sandy SILT, silty SAND, sandy CLAY, silty CLAY and rock. Auger refusal due to shallow rock ranged from 5 inches to 8 feet below the existing pavement surface.

Groundwater or perched groundwater was not encountered during our field exploration during and after drilling. It should be noted that groundwater level fluctuates due to variation in precipitation, land use, and other factors. The evaluation of these factors is beyond our scope of services.

The soil profile described above is generalized; therefore, the reader is advised to consult the Boring Logs for soils condition at the specific location or depths. Care should be exercised in interpolating or extrapolating subsurface conditions beyond the boring locations.

EXISTING PAVEMENT SECTIONS AND SOIL TYPES

| Sample No. | AC Thickness | Aggregate Base Thickness | Rock Present (BGS) | Soils Type |
|-------------------|---------------------|---------------------------------|---------------------------|-------------------|
| B1 | 5" | - | 5' | ML |
| B2 | 5" | - | NP | CL |
| B3 | 5" | - | NP | CL |
| B4 | 3" | - | NP | SM |
| B5 | 5" | - | 5" | ROCK |
| B6 | 4" | - | 1.5' | CL |
| B7 | 3" | - | 7.5' | CL |
| B8 | 3" | - | 8' | CL |
| B9 | 5" | - | 6' | CL |
| B10 | .75" | - | 5' | SC |

LABORATORY TEST RESULTS

Five subgrade soil samples were obtained from the project site during our field investigation and tested for sieve analysis per ASTM D422, Atterberg Limits per ASTM D4318 and Resistance R-Value per ASTM D2844. The test results are as follows:

| Sample No. | Depth | Description | PI | R-Value |
|------------|-------|--------------------------|----|---------|
| B1 | 1-3' | sandy SILT (ML) | 3 | 38.6 |
| B4 | 2-4' | Sandy silty CLAY (ML-CL) | 6 | 18.6 |
| B6 | 6-18" | sandy CLAY (CL) | 8 | 16.0 |
| B8 | 1-3' | sandy CLAY (CL) | 9 | < 5 |
| B10 | 1-3' | clayey SAND (SC) | - | 18.0 |

CONCLUSIONS AND RECOMMENDATIONS

1.0 GENERAL

Based on the previously performed field and laboratory test data and engineering analysis, the site is suitable for the proposed construction provided that the site is graded in accordance with the 2016 California Building Code, and that our recommendations are incorporated into the project design and are followed throughout construction. Overall, the R-Value test results are moderate to very low and indicate a medium to poor subgrade support characteristics under dynamic traffic loads. In order to improve the clayey subgrade to resist the applied traffic loads and to reduce the shrink/swell potential, the clay subgrade may be stabilized with lime. Detailed recommendations are presented in the following sections.

2.0 SITE PREPARATION

The proposed construction areas should be stripped of all existing asphalt pavements, imported fills and completely removed from the site. The existing pavement materials and underlying imported fills may be recycled, processed and stockpiled for used as aggregate base or aggregate subbase for the proposed new pavement construction. The evaluation of the quality and quantity of processed recycled materials is beyond our scope of services at this time. Based on the measurements taken from the 10 borings locations, the depth of clearing is approximately 5 inches in depth below the top of existing pavement. The limits of the clearing should be at least 2 feet beyond the limits of the proposed pavement construction.

Following the clearing and demolition activities, the exposed subgrade areas should be prepared by scarifying to a depth of 12 inches below the final subgrade, moisture conditioning to a minimum of 2 percent over optimum moisture content, and compacted to 90 percent of the maximum dry density. Clayey subgrade areas to be treated with lime require no further preparation after clearing before stabilization. The subgrade preparation should extend a minimum of 2 feet beyond the perimeter of the proposed pavement construction or surrounding developments. The subgrade preparation and any subsequent fills should be reviewed by CTL.

3.0 LIME STABILIZATION

Following the clearing, the areas with expansive clay subgrade may be improved by lime stabilization. This treatment will increase the soil strength and decrease the soils water sensitivity and volume change potential during wet/dry cycles. Lime should be quicklime and should conform to the requirements in ASTM C977. A clay unit weight of 110 pcf may be used for preliminary estimate purposes. The subgrade should be stabilized to the minimum depth recommended in the Pavement Design Section. The stabilized zone should extend a minimum of 2 feet beyond the perimeter of the proposed pavement construction or surrounding developments. If lime stabilized subgrade is elected, additional field sampling, laboratory testing, mix design analysis, and specification will be required and beyond our scope of services at this time.

4.0 PAVEMENT DESIGN SECTIONS

The following Pavement Design Recommendations are provided based on a Resistance Value (R-Value) of less than 5; and 16 for a 2-layer and 3-layer structural pavement section.

Detailed traffic loads and frequency information was not available for this report at this time, therefore a range of pavement section were provided from a Traffic Index of 5 through 7. The design engineer should select the Traffic Index (TI) appropriate for the traffic loading and use of the pavement areas for the project. The R-Value Less than 5 pavement section design should be used for the entire project. CTL should review the soils during the grading operations and provide limits for the applicability of alternative pavement section recommendations.

| Recommended Minimum Pavement Sections (R-Value Less than 5) | | | |
|---|-----------------------|------------------------------------|-----------------------|
| 2 Layer – AC/AB | | | |
| Traffic Index (TI) | Asphaltic Concrete | Aggregate Base (Min R-Value:78) | Compacted Subgrade |
| 5 or Less | 2.5" | 13.5" | 12" |
| 5.5 | 3.0" | 15" | 12" |
| 6.0 | 3.5" | 16" | 12" |
| 6.5 | 4.0" | 17.5" | 12" |
| 7.0 | 4.5" | 18" | 12" |

| Recommended Minimum Pavement Sections (R-Value Less than 5) | | | | |
|---|-----------------------|------------------------------------|--|-----------------------|
| 3 Layer – AC/AB/SB | | | | |
| Traffic Index (TI) | Asphaltic Concrete | Aggregate Base (Min R-Value:78) | Aggregate Sub-Base (Min R-Value:50) | Compacted Subgrade |
| 5 or Less | 2.5" | 4.0" | 12" | 12" |
| 5.5 | 3.0" | 4.5" | 12" | 12" |
| 6.0 | 3.5" | 5.0" | 12" | 12" |
| 6.5 | 4.0" | 6.5" | 12" | 12" |
| 7.0 | 4.5" | 7.0" | 12" | 12" |

| Recommended Minimum Pavement Sections (R-Value Less than 5) | | | |
|---|-----------------------|------------------------------------|-----------------------------|
| 3 Layer – AC/AB/LSS | | | |
| Traffic Index (TI) | Asphaltic Concrete | Aggregate Base (Min R-Value:78) | Lime Stabilized Subgrade |
| 5 or Less | 2.5" | 4.0" | 12" |
| 5.5 | 3.0" | 4.0" | 12" |
| 6.0 | 3.5" | 5.0" | 12" |
| 6.5 | 4.0" | 6.5" | 12" |
| 7.0 | 4.5" | 7.5" | 12" |

| Alternative Pavement Sections (R-Value≥16) | | | |
|--|-----------------------|------------------------------------|-----------------------|
| 2 Layer – AC/AB | | | |
| Traffic Index (TI) | Asphaltic Concrete | Aggregate Base (Min R-Value:78) | Compacted Subgrade |
| 5 or Less | 2.5" | 11.0" | 12" |
| 5.5 | 3.0" | 12.0" | 12" |
| 6.0 | 3.5" | 12.5" | 12" |
| 6.5 | 4.0" | 13.5" | 12" |
| 7.0 | 4.5" | 14.5" | 12" |

| Alternative Pavement Sections (R-Value≥16) | | | | |
|--|-----------------------|------------------------------------|--|-----------------------|
| 3 Layer – AC/AB/SB | | | | |
| Traffic Index (TI) | Asphaltic Concrete | Aggregate Base (Min R-Value:78) | Aggregate Sub-Base (Min R-Value:50) | Compacted Subgrade |
| 5 or Less | 2.5" | 4.0" | 8" | 12" |
| 5.5 | 3.0" | 4.5" | 8" | 12" |
| 6.0 | 3.5" | 5.5" | 8" | 12" |
| 6.5 | 4.0" | 6.5" | 8" | 12" |
| 7.0 | 4.5" | 7.0" | 8" | 12" |

| Alternative Pavement Sections (R-Value≥16) | | | |
|--|-----------------------|------------------------------------|-----------------------------|
| 3 Layer – AC/AB/LSS | | | |
| Traffic Index (TI) | Asphaltic Concrete | Aggregate Base (Min R-Value:78) | Lime Stabilized Subgrade |
| 5 or Less | 2.5" | 4.5" | 8" |
| 5.5 | 3.0" | 5.5" | 8" |
| 6.0 | 3.5" | 6.0" | 8" |
| 6.5 | 4.0" | 7.0" | 8" |
| 7.0 | 4.5" | 7.5" | 8" |

The thicknesses shown should be used as minimum thicknesses, i.e., no reduction in thickness for construction tolerances should be allowed.

The Asphalt Concrete, Class II Aggregate Base and Aggregate Subbase should conform to Section 39, 26, and 25 of the State of California, Caltrans Department of Standard Specifications, respectively. The asphalt should be compacted to a minimum of 92 percent of the theoretical maximum density as determined by California Test Method 308 or 95 percent of the laboratory compacted maximum density as determined by California Test Method 304. The Class 2 Aggregate Base and Subbases should be moisture conditioned within optimum moisture content and compacted to a minimum of 95 percent of the maximum dry density as determined by ASTM D1557.

LIMITATIONS

Consolidated Testing Laboratories, Inc. has prepared this report for the exclusive use of 4Creeks, Inc. and his consultants. The report has been prepared in accordance with generally accepted practices and our findings present a reasonable representative description of the condition observed, and the probable factors influencing these conditions. No other warranties, either expressed or implied, are made as the professional advice provided under the terms of this agreement and included in this report.

We appreciate the opportunity to be of service to you on this project. If you have any questions, please contact our office at (559) 592-3555.

Respectfully submitted,
Consolidated Testing Laboratories, Inc.



Shannon Bennett
Project Manager



Santiago Espinoza
Managing Engineer
RCE No 83299



Attachments

- Appendix A: Suggested Earthwork Specifications
- Drilling, Sampling and Laboratory Testing Report

APPENDIX A

SUGGESTED EARTHWORK SPECIFICATIONS

1. GENERAL

1.1 SCOPE

These specifications and plans include all earthwork pertaining to site rough grading including, but not limited to, furnishing all labor and equipment necessary for cleaning, grubbing, and stripping; and any other work necessary to bring ground elevation to the lines and grades shown on the project plans.

1.2 PERFORMANCE

It shall be the responsibility of the Contractor to complete all earthwork in accordance with project plans and specifications. No variance from plans and specifications shall be permitted without written approval of the Engineer-of-Record, hereinafter referred to as the “Soils Engineer.” Earthwork shall not be considered complete until the “Engineer” has issued a written statement conforming substantial compliance earthwork operations to these specifications and to project plans.

The Contractor shall assume sole responsibility for job site conditions during the course of earthwork operations on the project, including safety of all persons and preservations of all property; this requirement shall apply continuously and not be limited to normal working hours. The Contractor shall defend, indemnify, and hold harmless the Owners, Engineer, and Soil Engineer from any and all liability and claims, real or alleged, arising out of performance of earthwork on this project, except from liability incurred through sole negligence of the Owner, Engineers, or Soil Engineers.

2. DEFINITIONS

2.1 EXCAVATION

Excavation shall be defined within the context of these specifications as earth material excavated for the purpose of constructing fill embankment; grading the site to elevations shown on the project plans, or placing underground pipelines, conduits, or other subsurface utilities or minor structures.

Excavations shall be made true to the lines shown on project plans and to within plus or minus one-tenth (0.1) of a foot, of grades shown on the accepted site grading plans.

2.2 ENGINEERED FILL

Engineered fill shall be construed within the body of these specifications as soil or soil-rock mixtures placed to rise the grade of the site or to backfill excavations and upon which the soil Engineer has performed sufficient tests and has made sufficient observation during placement to enable him to issue a written statement confirming substantial conformance of the work to project earthwork specifications.

2.3 ON-SITE MATERIAL

On-site material is earth material obtained in excavation made on the project site.

2.4 IMPORTED MATERIAL

Imported material is earth material obtained off the site, hauled in, and placed as fill.

2.5 “COMPACTION” – OR – “COMPACTED”

Whenever expressed or implied within the context of these specifications shall be interpreted as compaction to specified percentage of the maximum density obtainable by Test Method ASTM D1557.

2.6 GRADING PLANE

The Grading Plane is the surface of the basement material upon which the lowest layer of sub-base, base, pavement, surfacing, or other specific layer, is placed.

3. SITE CONDITIONS

The contractor shall visit the site, prior to bid submittal, to determine existing soil and topographic conditions, and the nature of materials that may be encountered during the course of the work under this contract, and make his own interpretation of the contents of the Preliminary Soils Report as they pertain to said conditions.

The Contractor shall assume all liability under the contract for any loss sustained as a result of variations which may exist between specific soil boring locations or changed conditions resulting from natural or man-made circumstances occurring after the date of the Preliminary Field Investigations.

4. CLEARING AND GRUBBING

4.1 CLEARING AND GRUBBING

Clearing and grubbing shall consist of removing all debris such as metal, broken concrete, trash, vegetation growth and other biodegradable substances, from all areas to be graded.

Existing obstructions below shall be removed in accordance with the following procedure:

4.1.1 SLABS AND PAVEMENT

Shall be completely removed. Asphaltic or Portland cement, concrete fragments may be used in engineered fills provided they are broken down to a maximum dimensions of three (3") inches and thoroughly dispersed within a friable soil matrix. Engineered fill containing said fragments should not be placed above the elevation of the bottom of the lowest structure footing.

4.1.2 FOUNDATIONS

Existing at the time of grading shall be removed to a depth not less than two (2) feet below the bottom of the lowest structure footing.

4.1.3 BASEMENTS, SEPTIC TANKS

Buried concrete containers of similar construction located within areas destined to receive pavements, structures, or engineered fills should be completely removed and disposed of off the site. Basements, septic tanks, etc., situated outside structures, or structural fill areas shall be disposed of by breaking an opening in bottom to permit drainage, and by breaking walls down to not less than two (2) feet below finished subgrade.

4.1.4 BURIED UTILITIES

Buried utilities such as sewer, water and gas lines or electrical conduits to remain in service shall be re-routed to pass no closer than four (4) feet to the outside edge of proposed exterior footings of structures. Lines to be abandoned shall be completely removed to minimum depth of two (2) feet below finished building pad grade.

4.1.5 ROOT SYSTEMS

Root systems shall be completely removed to a minimum depth of two (2) feet below the bottom of the lowest structure footing or to two (2) feet below finished subgrade, whichever depth is lower. Root systems deeper than the elevation indicated above shall be excavated to allow no roots larger than two (2) inches in diameter.

4.1.6 CAVITIES

Cavities resulting from clearing and grubbing or cavities existing on the site as a result of man-made or natural activity shall be backfilled with earth materials placed and compacted in accordance with Sections 5.3 and 5.4 of these specifications.

**4.1.7 PRESERVATION OF MONUMENTS, CONSTRUCTION STAKES,
PROPERTY CORNER STAKES**

Preservation of monuments, construction stakes, property corner stakes, or other temporary or permanent horizontal or vertical control reference points shall be the responsibility of the contractor. Where these markers are disturbed, they shall be replaced at the contractor's expense.

5. SITE GRADING

Site grading shall consist of excavation and placement of fill to lines and grades shown on the project plans and in accordance with project specifications and recommendations of the Preliminary Soils Report.

5.1 AREAS TO RECEIVE FILL

5.1.1 Surface to receive fill shall be scarified to a depth of at least six (6) inches or as recommended until the surface is free from ruts, hummocks or other uneven features which would tend to prevent uniform compaction by the equipment to be used.

5.1.2 After the area to receive fill has been cleared and scarified, it shall be moistened and compacted to a depth of a least six (6) inches in accordance with specifications for compacting fill material in Paragraph 5.4, below.

5.2 EXCAVATION

5.2.1 Excavation shall be cut to elevations plus or minus 0.1 foot of the grades shown on the accepted plans.

5.2.2 When excavated material is to be used in engineered fill, the excavation shall be made in a manner to produce as much mixing of the excavated materials as practicable.

5.2.3 When excavations are to be backfilled and where surfaces exposed by excavation are to support structures or concrete floor slabs, the exposed surfaces shall be scarified, moistened and compacted as stated above for areas to receive fill. Over excavation below specified depth will not eliminate the requirement for exposed surface compaction.

5.3 FILL MATERIALS

5.3.1 Materials obtained from on-site excavations will be considered satisfactory for construction of on-site engineered fill unless otherwise stated in the Soils Report or Foundation Investigation. If unexpected pockets of poor or weak materials are encountered in excavations and they cannot be up-graded by mixing with other materials or by other means, they may be rejected by the Soils Engineer for use in engineered fill.

5.3.2 When imported fill materials are necessary to bring the site up to planned grades, no materials shall be imported prior to its approval and acceptance by the Soils Engineer.

5.3.3 The Soils Engineer shall be given notice of the proposed source of imported materials with adequate time allowance for his testing of the proposed materials. The time required for testing will vary with different types of materials, job conditions and ultimate function of filled areas. Under best conditions, the time requirement will not be less than 48 hours.

5.4 PLACING, SPREADING, AND COMPACTION FILL MATERIAL

5.4.1 The fill material shall be placed in layers which, when compacted, shall not exceed six (6) inches in thickness. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to insure uniformity of material in each layer. Increased thickness of layers may be approved by the Soil Engineer when conditions warrant.

5.4.2 All fills shall be placed in level layers; layers shall be continuous over the area of any structural unit, and all portions of the fill shall be brought up simultaneously within the area of any structural unit. When import material is used, it must be placed so its thickness is as uniform as possible within the area of any structural unit.

- 5.4.3** When materials are to be excavated and replaced in a compacted condition, segmented, or leap-frogging or cut-fill operation within the area of any structural unit will not be permitted unless the method is specifically described by the Soils Engineer.
- 5.4.4** When the moisture content of fill material is below the lower limit specified by the Soils Engineer, water shall be added until the moisture content is as specified; and when it is above the upper limit specified, the material shall be aerated by blading or other satisfactory methods until the moisture content is as specified.
- 5.4.5** After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to not less than ninety (90) percent of maximum density in accordance with Test Method ASTM D1557. Compaction shall be by equipment of such design that it will be able to compact the fill to specified density. When the Soil Engineer specifies type of compaction equipment to be used, such equipment to be used, such equipment shall be used as specified.
- 5.4.6** Compaction of each layer shall be continuous over its entire area and the equipment shall make sufficient trips to insure that the desired density has been obtained.

- 5.4.7** Field density tests shall be made by the Soils Engineer. The compaction of each layer of fill shall be subject to testing. Where sheepsfoot rollers are used, the soil may be disturbed to a depth of several inches. Density tests shall be taken in the compacted material below the disturbed surface. When tests indicated the density, the particular layer or portion thereof is below the required (90%) density, the particular layer or portion shall be re-worked until the required density has been obtained.
- 5.4.8** When the Soils Engineer specifies compaction to other standards or to percentages other than 90%, such specifications, with respect to the particular item shall supersede these specifications.
- 5.4.9** The fill operation shall be continued in six (6) inch compacted layers, as specified above, until the fill has been brought to within 0.1 foot, plus or minus of the finished surface of fill areas shall be graded or bladed to a smooth and uniform surface and no loose material shall be left on the surface.
- 5.4.10** No fill material shall be placed, spread, or compacted while it is frozen or thawing or during unfavorable weather conditions. When work is interrupted by weather conditions, fill operations shall not be resumed until the Soils Engineer indicates that moisture content and density of previously placed fill are satisfactory.

5.5 OBSERVATION AND TESTING

The Soils Engineer shall be provided a 24 hour advance notice in order that he may be present at the site during all earthwork activities related to excavation, tree removal, stripping, backfill, and compaction and filling of the site; and to perform periodic compaction tests so that substantial conformance to these recommendations can be established.



CONSOLIDATED TESTING LABORATORIES INC.

710 South Kaweah Avenue

Exeter, CA 93221

Telephone: 559.592.3555

DRILLING, SAMPLING AND LABORATORY TESTING

ROCKY HILL BICYCLE/PEDESTRIAN PATH FEASIBILITY STUDY

EXETER, CALIFORNIA

FOR:



**324 S. Santa Fe Street, Suite A
Visalia, CA 93292**

May 4, 2018

May 4, 2018

4 Creeks, Inc.

Mr. Chris Crawford

324 S. Santa Fe St. Suite A

Visalia, Ca 93291

PROJECT: Drilling, Sampling and Laboratory Testing
Rocky Hill Bicycle/Pedestrian Path Feasibility Study
Exeter, California

Mr. Crawford:

We have performed the drilling, sampling and laboratory testing for the proposed Rocky Hill Bicycle/Pedestrian Path Feasibility Study in Exeter, California.

PURPOSE AND SCOPE OF WORK

The purpose of this report was to observe and document the existing pavements and subsurface soils along Rocky Hill Drive from S. Spruce Road to Yokohl Drive in Exeter, California. The native subgrade soils were sampled for further classification and laboratory testing. The scope of work is as follows:

- 10 shallow geologic exploration borings along Rocky Hill Drive
- Pavement and subsurface soil observations
- Visual soil classification logging
- Laboratory testing
- Preparation of a report

PAVEMENT AND SOIL CONDITIONS

On March 27, 2018, Consolidated Testing Laboratories, Inc. performed subsurface geologic exploration using a Mobile B-80 Drill Rig with an 8" O.D. hollow stem auger at the above referenced site. The existing pavement sections encountered consisted of .75 to 5 inches of asphaltic concrete with no aggregate base observed at any of the boring locations. The subsurface soils encountered were continuously examined and visually classified in accordance with the Unified Soil Classification System to a maximum depth explored of 10 feet. The asphaltic concrete was underlain by sandy SILT, sandy CLAY, silty SAND, silty CLAY, clayey SAND and rock. Auger refusal due to shallow rock ranged from 5 inches to 8 feet below the existing pavement surface.

Groundwater or perched groundwater was not encountered during our field exploration during and after drilling. It should be noted that groundwater level fluctuates due to variation in precipitation, land use, and other factors. The evaluation of these factors is beyond our scope of services.

The soil profile described above is generalized; therefore, the reader is advised to consult the Boring Logs for soils condition at the specific location or depths. Care should be exercised in interpolating or extrapolating subsurface conditions beyond the boring locations.

LABORATORY TEST RESULTS

The five subgrade soil samples were obtained from the project site during our field investigation and tested for sieve analysis per ASTM D422, Atterberg Limits per ASTM D4318 and Resistance R-Value per ASTM D2844. The test results are as follows:

| Sample No. | Depth | Description | PI | R-Value |
|------------|-------|--------------------------|----|---------|
| B1 | 1-3' | sandy SILT (ML) | 3 | 38.6 |
| B4 | 2-4' | sandy silty CLAY (ML-CL) | 6 | 18.6 |
| B6 | 6-18" | sandy CLAY (CL) | 8 | 16.0 |
| B8 | 1-3' | sandy CLAY (CL) | 9 | < 5 |
| B10 | 1-3' | clayey SAND (SC) | - | 18.0 |

LIMITATIONS

Consolidated Testing Laboratories, Inc. has prepared this report for the exclusive use of 4Creeks, Inc. and his consultants. The report has been prepared in accordance with generally accepted practices and our findings present a reasonable representative description of the condition observed, and the probable factors influencing these conditions. No other warranties, either expressed or implied, are made as the professional advice provided under the terms of this agreement and included in this report.

Please find attached boring logs, laboratory test reports and a site location map.

We appreciate the opportunity to be of service to you on this project. If you have any questions, please contact our office at (559) 592-3555.

Respectfully submitted,
Consolidated Testing Laboratories, Inc.



Shannon Bennett
Project Manager



Santiago Espinoza
Managing Engineer
RCE No 83299

TEST BORING LOG LEGEND

| DEPTH | SAMPLES | SOIL GROUP | |
|-------|---------|------------|--|
| 0' | | | UNDISTURBED TUBE SAMPLE (2-3/8" INSIDE DIAMETER SPLIT SPOON SAMPLER OR 1-3/8" INSIDE DIAMETER OR STANDARD PENETRATION SAMPLER (SPLIT BARREL SAMPLER) |
| 1' | | | |
| 2' | | | |
| 3' | | | NO RECOVERY |
| 4' | | | |
| 5' | | | |
| 6' | | | PARTIAL RECOVERY |
| 7' | | | |
| 8' | | | |
| 9' | | | STANDARD PENETRATION BLOW COUNTS FOR 6" DRIVE OF SAMPLER USING 140LBS. DROP HAMMER WITH 30" DROP |
| 10' | | | |
| 11' | | | |
| 12' | | | SMALL DISTURBED SAMPLE COLLECTED FROM TESTHOLE CUTTINGS |
| 13' | | | |
| 14' | | | |
| 15' | | | LARGE BULK SAMPLE COLLECTED FROM TESTHOLE CUTTINGS |
| 16' | | | |
| 17' | | | |
| 18' | 1 | | HNU 101 PHOTOIONIZATION ANALYZER FIELD READING IN (PPM) |
| 19' | 2 | | |
| 20' | 3 | | |
| 21' | BAG | | SOIL SAMPLE NUMBER |
| 22' | SX. | | |
| 23' | (250) | | |
| 24' | | | |
| 25' | | | |
| 26' | #1669 | | |
| 27' | | | |
| 28' | | | |
| 29' | | | |
| 30' | | | |



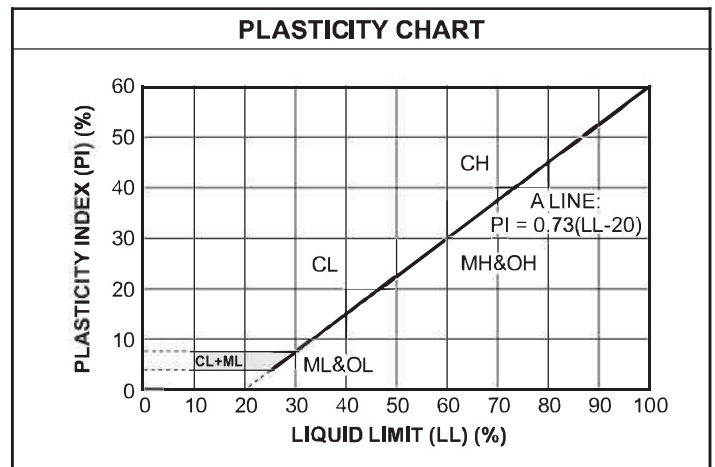
UNIFIED SOIL CLASSIFICATION SYSTEM

| UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART | | | |
|--|--|----|--|
| COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.) | | | |
| GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size | Clean Gravels (Less than 5% fines) | | |
| | | GW | Well-graded gravels, gravel-sand mixtures, little or no fines |
| | | GP | Poorly-graded gravels, gravel-sand mixtures, little or no fines |
| | Gravels with fines (More than 12% fines) | | |
| | | GM | Silty gravels, gravel-sand-silt mixtures |
| | | GC | Clayey gravels, gravel-sand-clay mixtures |
| SANDS 50% or more of coarse fraction smaller than No. 4 sieve size | Clean Sands (Less than 5% fines) | | |
| | | SW | Well-graded sands, gravelly sands, little or no fines |
| | | SP | Poorly graded sands, gravelly sands, little or no fines |
| | Sands with fines (More than 12% fines) | | |
| | | SM | Silty sands, sand-silt mixtures |
| | | SC | Clayey sands, sand-clay mixtures |
| FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.) | | | |
| SILTS AND CLAYS Liquid limit less than 50% | | ML | Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity |
| | | CL | Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays |
| | | OL | Organic silts and organic silty clays of low plasticity |
| SILTS AND CLAYS Liquid limit 50% or greater | | MH | Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts |
| | | CH | Inorganic clays of high plasticity, fat clays |
| | | OH | Organic clays of medium to high plasticity, organic silts |
| HIGHLY ORGANIC SOILS | | PT | Peat and other highly organic soils |

| LABORATORY CLASSIFICATION CRITERIA | | |
|------------------------------------|---|--|
| | | |
| GW | $C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3 | |
| GP | Not meeting all gradation requirements for GW | |
| GM | Atterberg limits below "A" line or P.I. less than 4 | Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols |
| GC | Atterberg limits above "A" line with P.I. greater than 7 | |
| SW | $C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3 | |
| SP | Not meeting all gradation requirements for GW | |
| SM | Atterberg limits below "A" line or P.I. less than 4 | Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols. |
| SC | Atterberg limits above "A" line with P.I. greater than 7 | |

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent GW, GP, SW, SP
More than 12 percent GM, GC, SM, SC
5 to 12 percent Borderline cases requiring dual symbols



PROJECT: Preliminary Soils
Investigation for Rocky Hill
Bicycle/Pedestrian Path, Exeter, Ca.

CTL, INC.
Consolidated Testing Laboratories
710 S. Kaweah Avenue, Exeter, Ca
559-592-3555 Fax 559-592-3553

JOB NO. E1962-18
DATE: 03/27/18
BY: Z. Boudreaux

BORING LOG NUMBER B1

| DEPTH | %REC | BLOW COUNTS | SAMPLE NO. | SOIL GROUP | SOIL DESCRIPTION | PERCENT MOISTURE | DRY DENSITY |
|-------|------|-------------|------------|------------|---|------------------|-------------|
| 0' | | | | | 0"-5" Asphalt concrete pavement. | | |
| | | | | ML | 5"-3' <u>Sandy silt</u> ; olive brown; moist; very fine to medium sand fraction; sub-angular; light clay binder. | | |
| 5' | | | | ML | 3'-5' <u>Sandy silt</u> ; light; olive brown; moist; very fine to medium grain size; sub-angular; light clay binder. | | |
| 10' | | | | | | | |
| 15' | | | | | | | |
| 20' | | | | | | | |
| 25' | | | | | | | |
| 30' | | | | | Auger refusal due to rock encountered. Terminated drilling at 5'.. No free standing ground water encountered. | | |

LOCATION: B1 (See location map)
EQUIPMENT: B-80 mobile drill rig with 3.25" I.D. hollow stem augers.

PROJECT: Preliminary Soils
 Investigation for Rocky Hill
 Bicycle/Pedestrian Path, Exeter, Ca.

CTL, INC.
Consolidated Testing Laboratories
 710 S. Kaweah Avenue, Exeter, Ca
 559-592-3555 Fax 559-592-3553

JOB NO. E1962-18
 DATE: 03/27/18
 BY: Z. Boudreaux

BORING LOG NUMBER B2

| DEPTH | %REC | BLOW COUNTS | SAMPLE NO. | SOIL GROUP | SOIL DESCRIPTION | PERCENT MOISTURE | DRY DENSITY |
|-------|------|-------------|------------|------------|--|------------------|-------------|
| 0' | | | | | 0-5" | | |
| | | | | | Asphalt concrete pavement. | | |
| 5' | | | | | | | |
| | | | | | 5"-10' | | |
| | | | | CL | <u>Sandy clay</u> ; dark olive brown; moist; very fine to fine sand fraction; medium plasticity. | | |
| 10' | | | | | | | |
| | | | | | | | |
| 15' | | | | | | | |
| | | | | | | | |
| 20' | | | | | | | |
| | | | | | | | |
| 25' | | | | | | | |
| | | | | | | | |
| 30' | | | | | Terminated drilling at 10' | | |
| | | | | | No free standing ground water encountered. | | |

LOCATION: B2 (See location map)
 EQUIPMENT: B-80 mobile drill rig with 3.25" I.D. hollow stem augers.

PROJECT: Preliminary Soils
Investigation for Rocky Hill
Bicycle/Pedestrian Path, Exeter, Ca.

CTL, INC.
Consolidated Testing Laboratories
710 S. Kaweah Avenue, Exeter, Ca
559-592-3555 Fax 559-592-3553

JOB NO. E1962-18
DATE: 03/27/18
BY: Z. Boudreaux

BORING LOG NUMBER B3

| DEPTH | %REC | BLOW COUNTS | SAMPLE NO. | SOIL GROUP | SOIL DESCRIPTION | PERCENT MOISTURE | DRY DENSITY |
|-------|------|----------------|---------------|---------------|--|---------------------|----------------|
| 0' | | | | | 0"-5" Asphalt concrete pavement | | |
| 5' | | | | | | | |
| | | | | CL | 5"-10' <u>Sandy clay</u> ; very dark brown; moist; very fine to fine sand fraction; medium plasticity. | | |
| 10' | | | | | | | |
| | | | | | | | |
| 15' | | | | | | | |
| | | | | | | | |
| 20' | | | | | | | |
| | | | | | | | |
| 25' | | | | | | | |
| | | | | | | | |
| 30' | | | | | Terminated drilling at 10' No free standing ground water encountered. | | |

LOCATION: B3 (See location map)
EQUIPMENT: B-80 mobile drill rig with 3.25" I.D. hollow stem augers.

PROJECT: Preliminary Soils
Investigation for Rocky Hill
Bicycle/Pedestrian Path, Exeter, Ca.

CTL, INC.
Consolidated Testing Laboratories
710 S. Kaweah Avenue, Exeter, Ca
559-592-3555 Fax 559-592-3553

JOB NO. E1962-18
DATE: 03/27/18
BY: Z. Boudreaux

BORING LOG NUMBER B4

| DEPTH | %REC | BLOW COUNTS | SAMPLE NO. | SOIL GROUP | SOIL DESCRIPTION | PERCENT MOISTURE | DRY DENSITY |
|-------|------|----------------|---------------|---------------|---|---------------------|----------------|
| 0' | | | | | 0-3" Asphalt concrete pavement. | | |
| | | | | SM | 3"-2' <u>Silty sand</u> ; very dark brown; moist; fine to coarse grain size with with asphalt fragments throughout. | | |
| 5' | | | | CL ML | 2'-8' <u>Sandy silty clay</u> ; very dark brown; moist; very fine to fine sand fraction; medium plasticity. | | |
| 10' | | | | CL | 8'-10' <u>Sandy clay</u> ; dark reddish brown; very fine to fine sand fraction; medium dense. | | |
| 15' | | | | | | | |
| 20' | | | | | | | |
| 25' | | | | | | | |
| 30' | | | | | Terminated drilling at 10' No free standing ground water encountered. | | |

LOCATION: B4 (See location map)
EQUIPMENT: B-80 mobile drill rig with 3.25" I.D. hollow stem augers.

PROJECT: Preliminary Soils
 Investigation for Rocky Hill
 Bicycle/Pedestrian Path, Exeter, Ca.

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JOB NO. E1962-18
 DATE: 03/27/18
 BY: Z. Boudreaux

BORING LOG NUMBER B5

| DEPTH | %REC | BLOW COUNTS | SAMPLE NO. | SOIL GROUP | SOIL DESCRIPTION | PERCENT MOISTURE | DRY DENSITY |
|-------|------|----------------|---------------|---------------|---|---------------------|----------------|
| 0' | | | | | 0-5" Asphalt | | |
| | | | | | NOTE: Auger refusal at 5" due to a large rock encountered. | | |
| 5' | | | | | | | |
| | | | | | | | |
| 10' | | | | | | | |
| | | | | | | | |
| 15' | | | | | | | |
| | | | | | | | |
| 20' | | | | | | | |
| | | | | | | | |
| 25' | | | | | | | |
| | | | | | Auger refusal due to large shallow rock encountered. CTL attempted to drill second borehole approximately 5' off-set however, refusal also was encountered at 5". | | |
| | | | | | Terminated drilling at 5' No free standing ground water encountered. | | |
| 30' | | | | | | | |

LOCATION: B5 (See location map)
 EQUIPMENT: B-80 mobile drill rig with 3.25" I.D. hollow stem augers.

PROJECT: Preliminary Soils
Investigation for Rocky Hill
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JOB NO. E1962-18
DATE: 03/27/18
BY: Z. Boudreaux

BORING LOG NUMBER B6

| DEPTH | %REC | BLOW COUNTS | SAMPLE NO. | SOIL GROUP | SOIL DESCRIPTION | PERCENT MOISTURE | DRY DENSITY |
|-------|------|----------------|---------------|---------------|--|---------------------|----------------|
| 0' | | | | | 0"-4" Asphalt concrete pavement | | |
| | | | | | 4"-1.5' CL <u>Sandy clay with cobbles</u> ; very dark brown; moist; medium plasticity. | | |
| 5' | | | | | | | |
| | | | | | | | |
| 10' | | | | | | | |
| | | | | | | | |
| 15' | | | | | | | |
| | | | | | | | |
| 20' | | | | | | | |
| | | | | | | | |
| 25' | | | | | | | |
| | | | | | | | |
| 30' | | | | | Auger refusal due to rock encountered. Terminated drilling at 1.5' No free standing ground water encountered. | | |

LOCATION: B6 (See location map)
EQUIPMENT: B-80 mobile drill rig with 3.25" I.D. hollow stem augers.

PROJECT: Preliminary Soils
Investigation for Rocky Hill
Bicycle/Pedestrian Path, Exeter, Ca.

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710 S. Kaweah Avenue, Exeter, Ca
559-592-3555 Fax 559-592-3553

JOB NO. E1962-18
DATE: 03/27/18
BY: Z. Boudreaux

BORING LOG NUMBER B7

| DEPTH | %REC | BLOW COUNTS | SAMPLE NO. | SOIL GROUP | SOIL DESCRIPTION | PERCENT MOISTURE | DRY DENSITY |
|-------|------|-------------|------------|------------|--|------------------|-------------|
| 0' | | | | | 0"-3" Asphalt concrete pavement | | |
| | | | | CL | 3"-6' <u>Sandy clay</u> ; dark brown; moist; very fine to medium sand fraction; medium plasticity. | | |
| 5' | | | | CL | 6'-7.5' <u>Silty clay</u> ; pale yellowish brown, moist, low plasticity. | | |
| 10' | | | | | | | |
| 15' | | | | | | | |
| 20' | | | | | | | |
| 25' | | | | | | | |
| 30' | | | | | Auger refusal due to rock encountered. Terminated drilling at 7.5' No free standing ground water encountered. | | |

LOCATION: B7 (See location map)
EQUIPMENT: B-80 mobile drill rig with 3.25" I.D. hollow stem augers.

PROJECT: Preliminary Soils
Investigation for Rocky Hill
Bicycle/Pedestrian Path, Exeter, Ca.

CTL, INC.
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710 S. Kaweah Avenue, Exeter, Ca
559-592-3555 Fax 559-592-3553

JOB NO. E1962-18
DATE: 03/27/18
BY: Z. Boudreaux

BORING LOG NUMBER B7

| DEPTH | %REC | BLOW COUNTS | SAMPLE NO. | SOIL GROUP | SOIL DESCRIPTION | PERCENT MOISTURE | DRY DENSITY |
|-------|------|----------------|---------------|---------------|--|---------------------|----------------|
| 0' | | | | | 0"-3" Asphalt concrete pavement | | |
| | | | | CL | 3"-6' <u>Sandy clay</u> ; dark brown; moist; very fine to medium sand fraction; medium plasticity. | | |
| 5' | | | | CL | 6'-7.5' <u>Silty clay</u> ; pale yellowish brown, moist, low plasticity. | | |
| 10' | | | | | | | |
| 15' | | | | | | | |
| 20' | | | | | | | |
| 25' | | | | | | | |
| 30' | | | | | Auger refusal due to rock encountered. Terminated drilling at 7.5' No free standing ground water encountered. | | |

LOCATION: B7 (See location map)
EQUIPMENT: B-80 mobile drill rig with 3.25" I.D. hollow stem augers.

PROJECT: Preliminary Soils
Investigation for Rocky Hill
Bicycle/Pedestrian Path, Exeter, Ca.

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JOB NO. E1962-18
DATE: 03/27/18
BY: Z. Boudreaux

BORING LOG NUMBER B8

| DEPTH | %REC | BLOW COUNTS | SAMPLE NO. | SOIL GROUP | SOIL DESCRIPTION | PERCENT MOISTURE | DRY DENSITY |
|-------|------|----------------|---------------|---------------|---|---------------------|----------------|
| 0' | | | | | 0"-3" Asphalt concrete pavement. | | |
| | | | | CL | 3"-3' <u>Sandy clay</u> ; dark brown; moist; fine to medium sand fraction; medium plasticity. | | |
| 5' | | | | CL | 3'-8' <u>Sandy clay</u> ; strong brown; moist; fine to medium sand fraction; medium plasticity. | | |
| 10' | | | | | | | |
| 15' | | | | | | | |
| 20' | | | | | | | |
| 25' | | | | | | | |
| 30' | | | | | Auger refusal due to rock encountered. Terminated drilling at 8'. No free standing ground water encountered. | | |

LOCATION: B8 (See location map)

EQUIPMENT: B-80 mobile drill rig with 3.25" I.D. hollow stem augers.

PROJECT: Preliminary Soils
Investigation for Rocky Hill
Bicycle/Pedestrian Path, Exeter, Ca.

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JOB NO. E1962-18
DATE: 03/27/18
BY: Z. Boudreaux

BORING LOG NUMBER B9

| DEPTH | %REC | BLOW COUNTS | SAMPLE NO. | SOIL GROUP | SOIL DESCRIPTION | PERCENT MOISTURE | DRY DENSITY |
|-------|------|----------------|---------------|---------------|---|---------------------|----------------|
| 0' | | | | | 0"-5" Asphalt concrete pavement. | | |
| 5' | | | | CL | 5"-6' <u>Sandy clay</u> ; dark brown; moist; very fine to medium sand fraction; medium plasticity. | | |
| 10' | | | | | | | |
| 15' | | | | | | | |
| 20' | | | | | | | |
| 25' | | | | | | | |
| 30' | | | | | Auger refusal due to rock encountered. Terminated drilling at 6'. No free standing ground water encountered. | | |

LOCATION: B9 (See location map)
EQUIPMENT: B-80 mobile drill rig with 3.25" I.D. hollow stem augers.

PROJECT: Preliminary Soils
Investigation for Rocky Hill
Bicycle/Pedestrian Path, Exeter, Ca.

CTL, INC.
Consolidated Testing Laboratories
710 S. Kaweah Avenue, Exeter, Ca
559-592-3555 Fax 559-592-3553

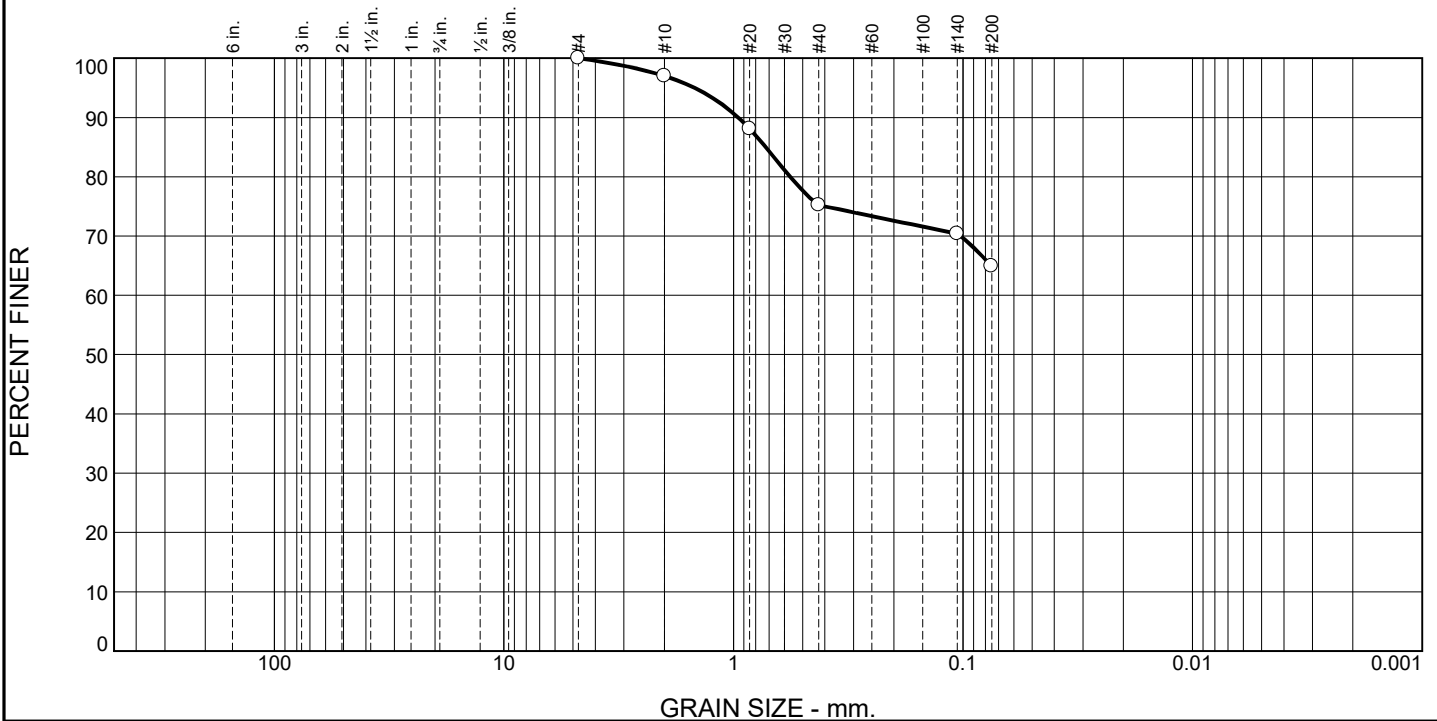
JOB NO. E1962-18
DATE: 03/27/18
BY: Z. Boudreaux

BORING LOG NUMBER B10

| DEPTH | %REC | BLOW COUNTS | SAMPLE NO. | SOIL GROUP | SOIL DESCRIPTION | PERCENT MOISTURE | DRY DENSITY |
|-------|------|----------------|---------------|---------------|--|---------------------|----------------|
| 0' | | | | | 0"-.75" Asphalt concrete pavement | | |
| | | | | | .75"-3' SC <u>Clayey sand</u> ; dark olive brown; moist; very fine to medium grain size; moderately cohesive. | | |
| 5' | | | | | 3'-5' SC <u>Clayey sand</u> ; light brown; dry; very fine to medium grain size; moderately cohesive. | | |
| 10' | | | | | | | |
| 15' | | | | | | | |
| 20' | | | | | | | |
| 25' | | | | | | | |
| 30' | | | | | Auger refusal due to rock encountered. Terminated drilling at 5'. No free standing ground water encountered. | | |

LOCATION: B10 (See location map)
EQUIPMENT: B-80 mobile drill rig with 3.25" I.D. hollow stem augers.

Particle Size Distribution Report



| % +3" | % Gravel | | % Sand | | | % Fines | |
|-------|----------|------|--------|--------|------|---------|------|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 3.0 | 21.8 | 10.3 | 64.9 | |

| TEST RESULTS | | | |
|--------------|---------------|------------------|----------------|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 100.0 | | |
| #10 | 97.0 | | |
| #20 | 88.1 | | |
| #40 | 75.2 | | |
| #140 | 70.4 | | |
| #200 | 64.9 | | |

* (no specification provided)

Material Description

Sandy silt; Olive brown fine to medium grained sand slight clay binder

Atterberg Limits (ASTM D 4318)

PL= 13 LL= 16 PI= 3

Classification

USCS (D 2487)= ML AASHTO (M 145)= A-4(0)

Coefficients

D₉₀= 0.9537 D₈₅= 0.7233 D₆₀=
D₅₀= D₃₀= D₁₅=
D₁₀= C_u= C_c=

Remarks

Date Received: _____ Date Tested: _____
Tested By: _____
Checked By: _____
Title: _____

Location: B1 Sample
Number: RV 1 Depth: 1'-3'

Date Sampled:

CTL, Inc.

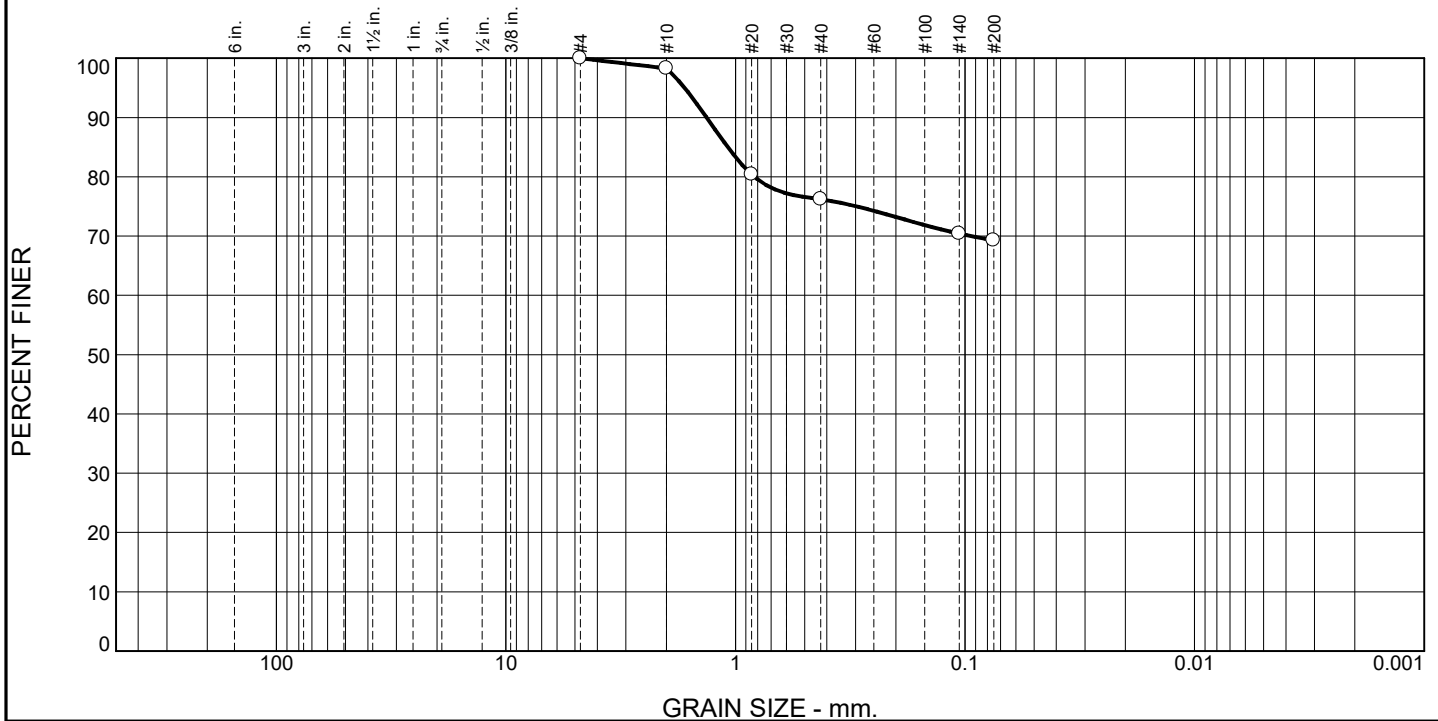
Exeter, California

Client: 4 Creeks, Inc.
Project: Rocky Hill Bicycle/Pedestrian Path Feasibility Study

Project No: E1962-18

Figure

Particle Size Distribution Report



| % +3" | % Gravel | | % Sand | | | % Fines | |
|-------|----------|------|--------|--------|------|---------|------|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 1.7 | 22.1 | 6.9 | 69.3 | |

| TEST RESULTS | | | |
|--------------|---------------|------------------|----------------|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 100.0 | | |
| #10 | 98.3 | | |
| #20 | 80.4 | | |
| #40 | 76.2 | | |
| #140 | 70.4 | | |
| #200 | 69.3 | | |

* (no specification provided)

Material Description

Sandy clay; dark brown very fine to fine grained sand

Atterberg Limits (ASTM D 4318)

PL= 11 LL= 17 PI= 6

Classification

USCS (D 2487)= CL-ML AASHTO (M 145)= A-4(1)

Coefficients

D₉₀= 1.3360 D₈₅= 1.0800 D₆₀=
D₅₀= D₃₀= D₁₅=
D₁₀= C_u= C_c=

Remarks

Date Received: Date Tested:
Tested By: _____
Checked By: _____
Title: _____

Location: B4
Sample Number: RV 2 Depth: 2'-4'

Date Sampled:

CTL, Inc.

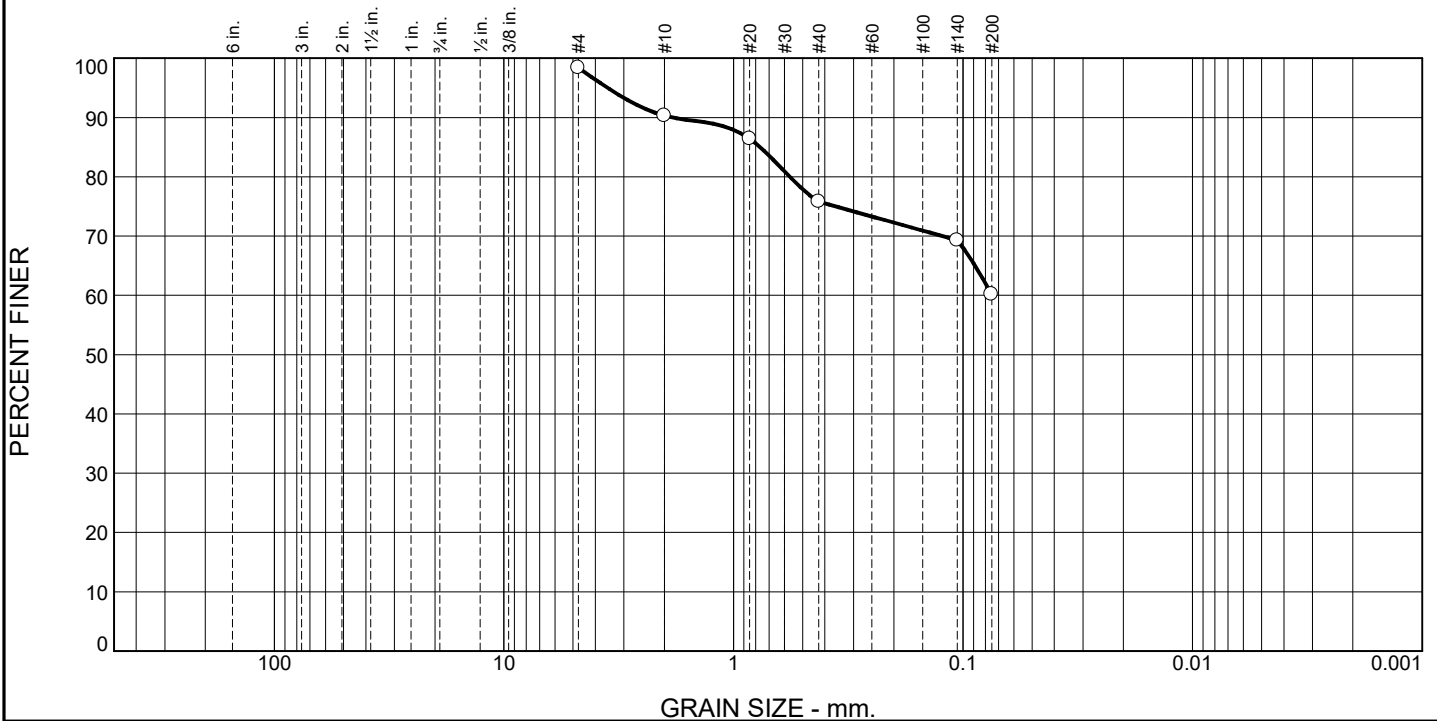
Exeter, California

Client: 4 Creeks, Inc.
Project: Rocky Hill Bicycle/Pedestrian Path Feasibility Study

Project No: E1962-18

Figure

Particle Size Distribution Report



| % +3" | % Gravel | | % Sand | | | % Fines | |
|-------|----------|------|--------|--------|------|---------|------|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| | | | 8.1 | 14.5 | 15.6 | 60.2 | |

| TEST RESULTS | | | |
|--------------|---------------|------------------|----------------|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 98.4 | | |
| #10 | 90.3 | | |
| #20 | 86.4 | | |
| #40 | 75.8 | | |
| #140 | 69.3 | | |
| #200 | 60.2 | | |

* (no specification provided)

Material Description

Sandy clay; dark brown very fine to fine grained sand

Atterberg Limits (ASTM D 4318)

PL= 9 LL= 17 PI= 8

Classification

USCS (D 2487)= CL AASHTO (M 145)= A-4(1)

Coefficients

D₉₀= 1.8525 D₈₅= 0.7660 D₆₀=
D₅₀= D₃₀= D₁₅=
D₁₀= C_u= C_c=

Remarks

Date Received: _____ Date Tested: _____
Tested By: _____
Checked By: _____
Title: _____

Location: B6
Sample Number: RV 3 Depth: 6"-18"

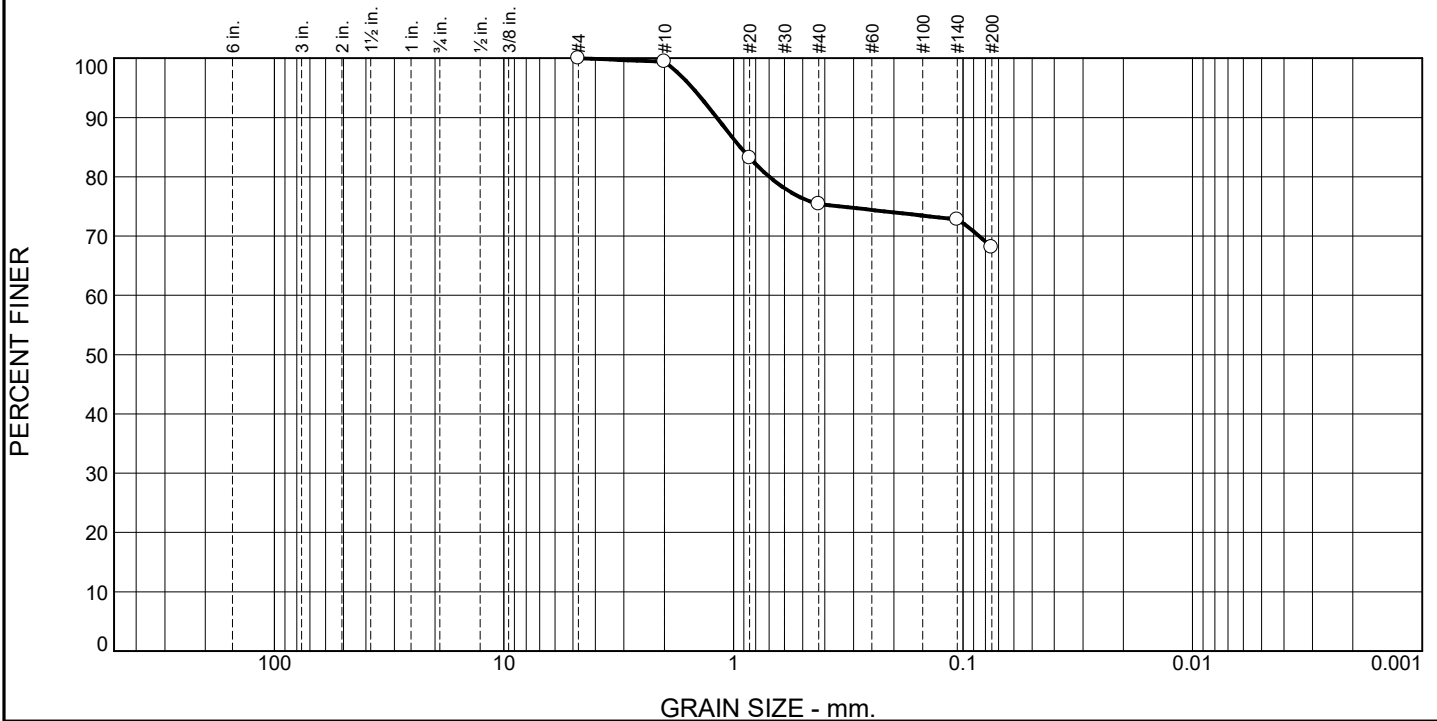
Date Sampled:

CTL, Inc.

Exeter, California

Client: 4 Creeks, Inc.
Project: Rocky Hill Bicycle/Pedestrian Path Feasibility Study
Project No: E1962-18 Figure

Particle Size Distribution Report



| % +3" | % Gravel | | % Sand | | | % Fines | |
|-------|----------|------|--------|--------|------|---------|------|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.6 | 24.0 | 7.3 | 68.1 | |

| TEST RESULTS | | | |
|--------------|---------------|------------------|----------------|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| #4 | 100.0 | | |
| #10 | 99.4 | | |
| #20 | 83.2 | | |
| #40 | 75.4 | | |
| #140 | 72.8 | | |
| #200 | 68.1 | | |

* (no specification provided)

Material Description

Sandy clay; dark brown very fine to fine grained sand

Atterberg Limits (ASTM D 4318)

PL= 14 LL= 23 PI= 9

Classification

USCS (D 2487)= CL AASHTO (M 145)= A-4(3)

Coefficients

D₉₀= 1.1845 D₈₅= 0.9337 D₆₀=
D₅₀= D₃₀= D₁₅=
D₁₀= C_u= C_c=

Remarks

Date Received: _____ Date Tested: _____
Tested By: _____
Checked By: _____
Title: _____

Location: B8
Sample Number: RV 4 Depth: 1'-3'

Date Sampled:

CTL, Inc.

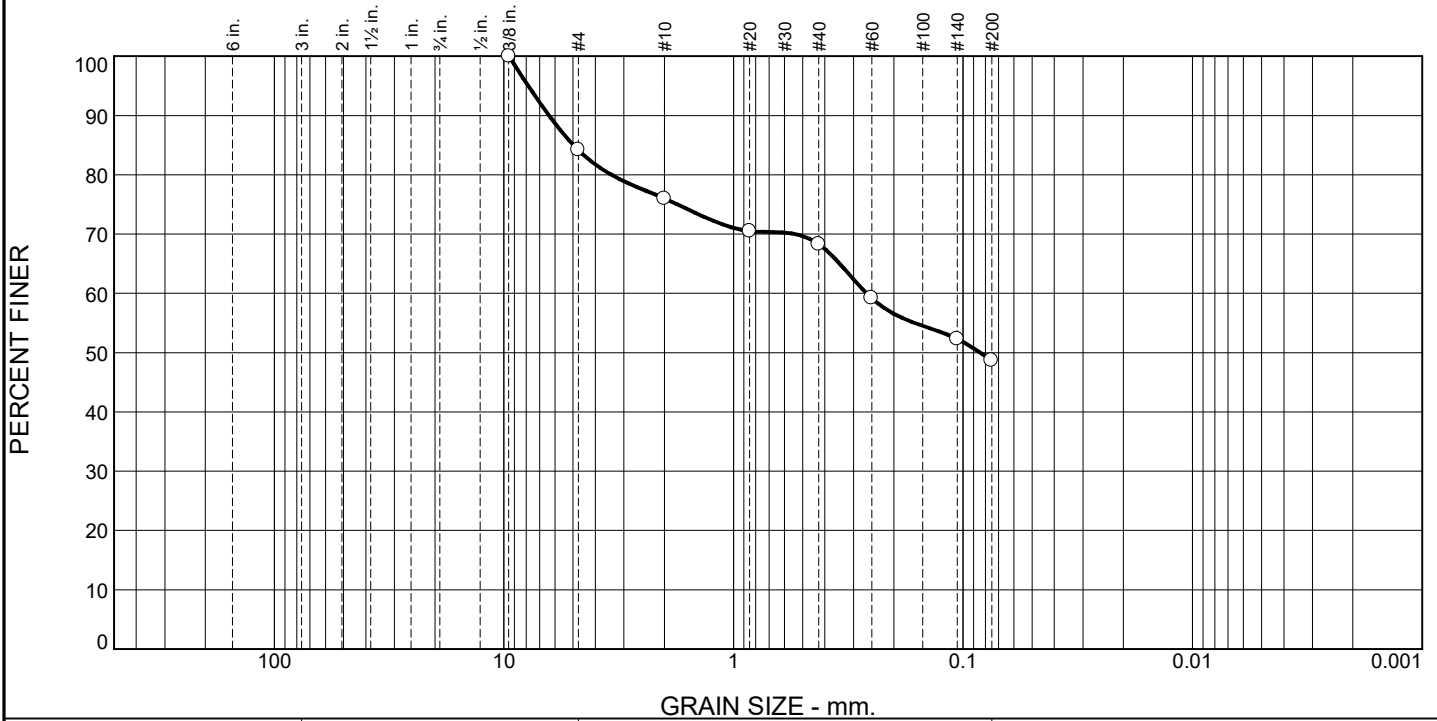
Exeter, California

Client: 4 Creeks, Inc.
Project: Rocky Hill Bicycle/Pedestrian Path Feasibility Study

Project No: E1962-18

Figure

Particle Size Distribution Report



| % +3" | % Gravel | | % Sand | | | % Fines | |
|-------|----------|------|--------|--------|------|---------|------|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 15.8 | 8.2 | 7.7 | 19.6 | 48.7 | |

| TEST RESULTS | | | |
|--------------|---------------|------------------|----------------|
| Opening Size | Percent Finer | Spec.* (Percent) | Pass? (X=Fail) |
| .375 | 100.0 | | |
| #4 | 84.2 | | |
| #10 | 76.0 | | |
| #20 | 70.5 | | |
| #40 | 68.3 | | |
| #60 | 59.2 | | |
| #140 | 52.3 | | |
| #200 | 48.7 | | |

* (no specification provided)

Material Description
clayey sand: dark olive brown, very fine to medium grained sand

Atterberg Limits (ASTM D 4318)
 PL= LL= PI=

Classification
 USCS (D 2487)= AASHTO (M 145)=

Coefficients
 D₉₀= 6.3639 D₈₅= 4.9783 D₆₀= 0.2628
 D₅₀= 0.0841 D₃₀= D₁₅=
 D₁₀= C_u= C_c=

Remarks

Date Received: Date Tested:
 Tested By: _____
 Checked By: _____
 Title: _____

Location: B10
 Sample Number: RV 5 Depth: 1'-3'

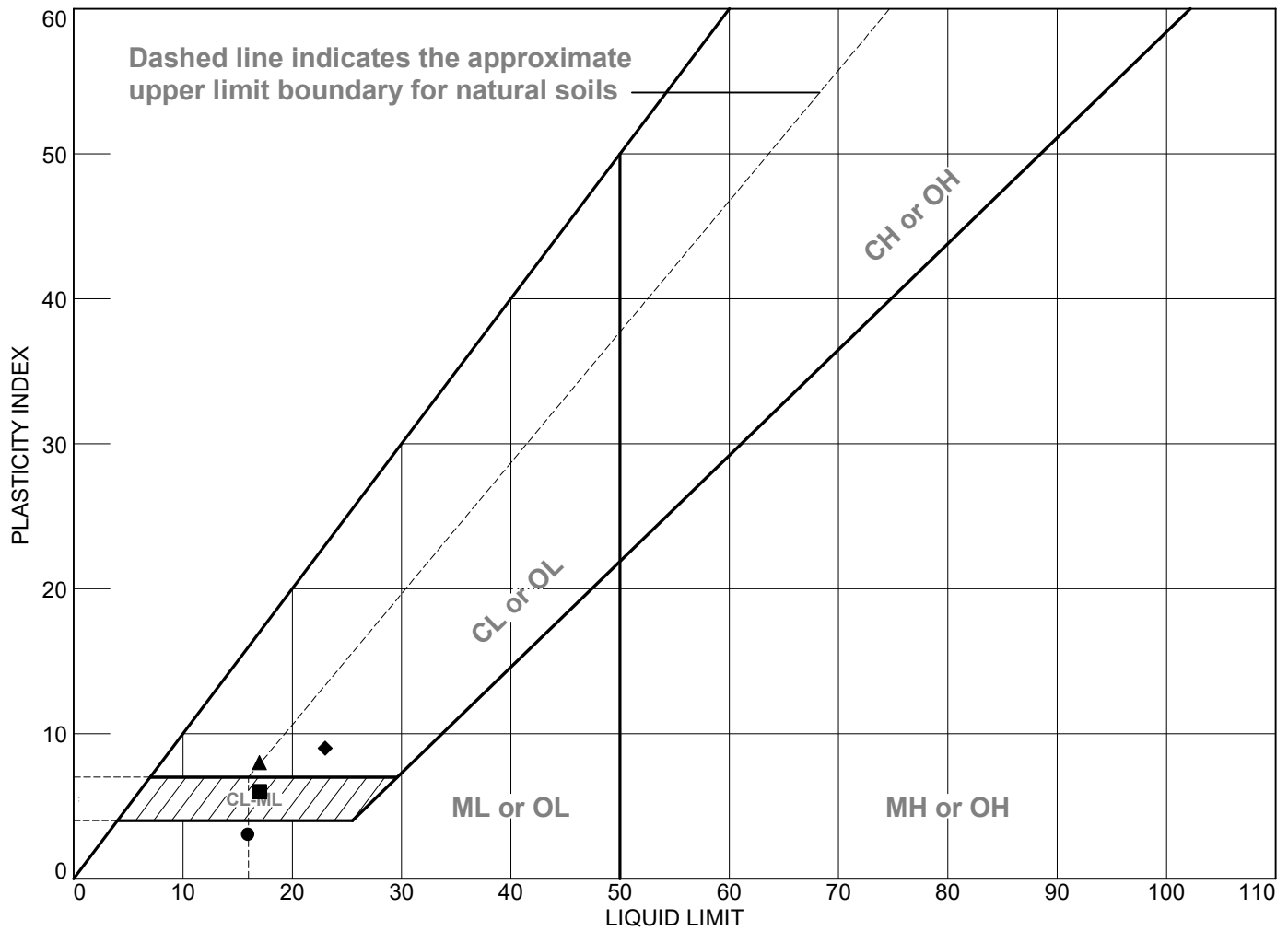
Date Sampled:

CTL, Inc.

Exeter, California

Client: 4 Creeks, Inc.
Project: Preliminary Soils Investigation Rocky Hill Bike Path
Project No: E1962-18 **Figure**

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

| SYMBOL | SOURCE | SAMPLE NO. | DEPTH | NATURAL WATER CONTENT (%) | PLASTIC LIMIT (%) | LIQUID LIMIT (%) | PLASTICITY INDEX (%) | USCS |
|--------|--------|------------|--------|---------------------------|-------------------|------------------|----------------------|-------|
| ● | | RV 1 | 1'-3' | | 13 | 16 | 3 | ML |
| ■ | | RV 2 | 2'-4' | | 11 | 17 | 6 | CL-ML |
| ▲ | | RV 3 | 6"-18" | | 9 | 17 | 8 | CL |
| ◆ | | RV 4 | 1'-3' | | 14 | 23 | 9 | CL |

CTL, Inc.

Exeter, California

Client: 4 Creeks, Inc.

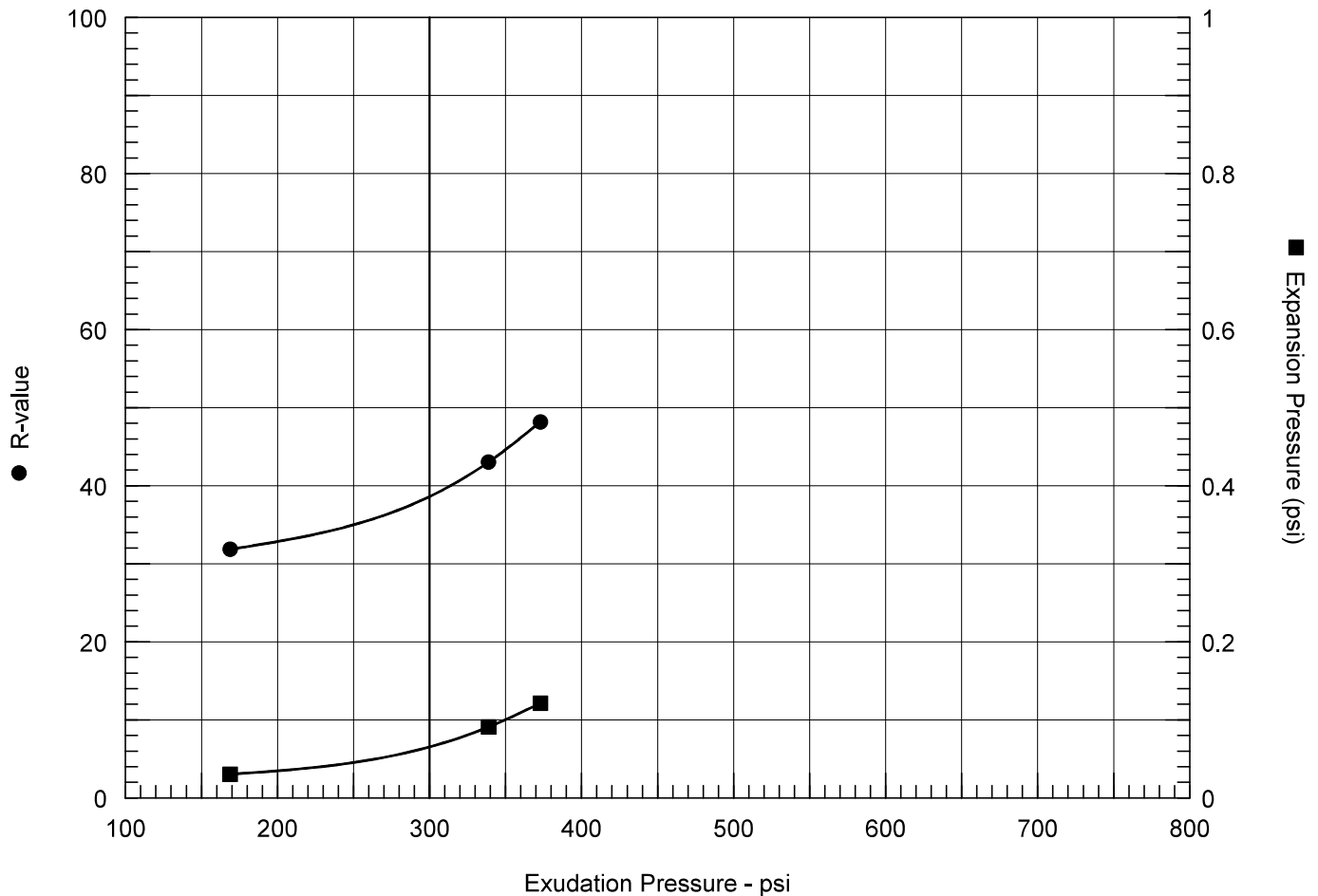
Project: Rocky Hill Bicycle/Pedestrian Path Feasibility Study

Project No.: E1962-18

Figure

Tested By: ○ S.B □ SB ▲ SB

R-VALUE TEST REPORT

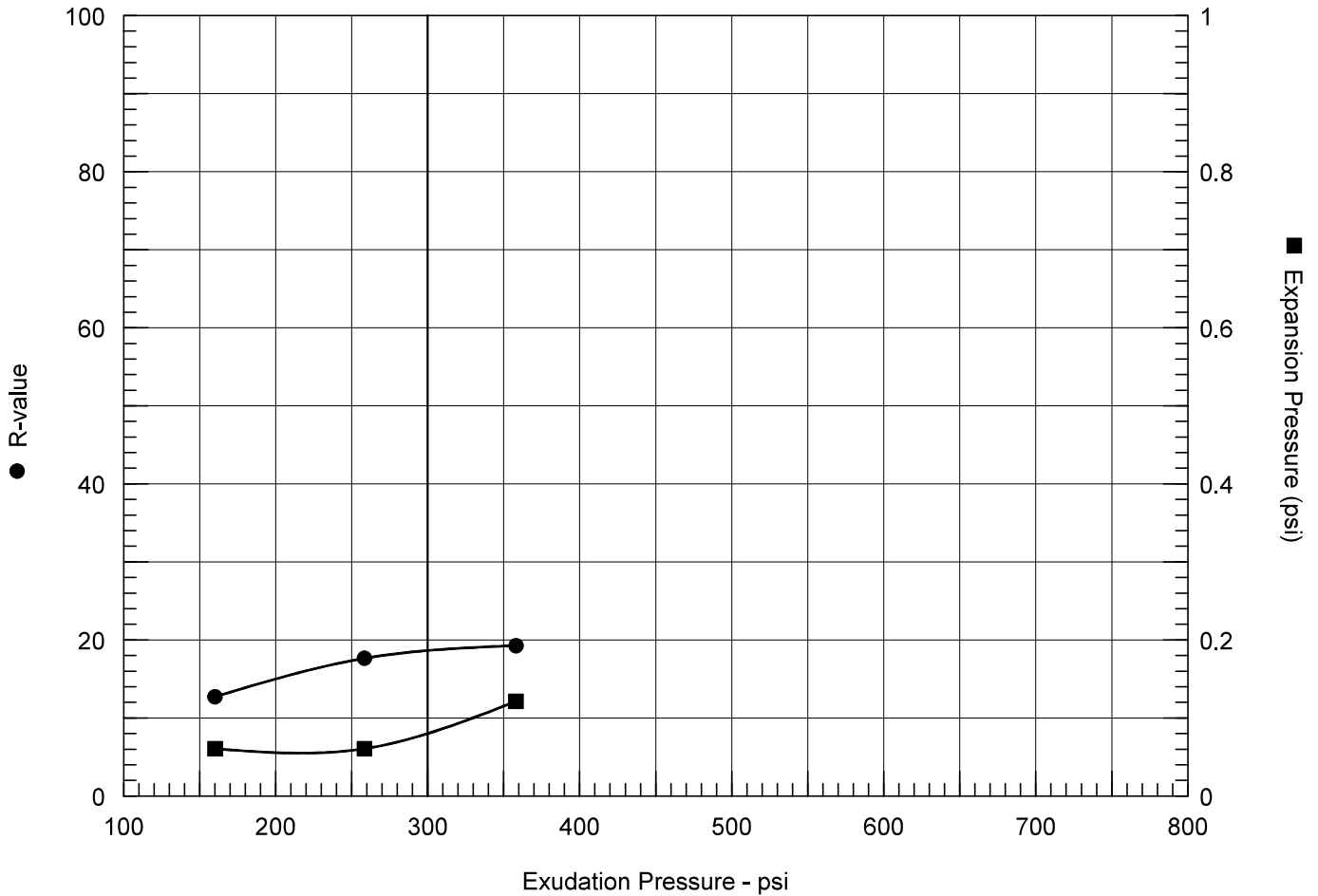


Resistance R-Value and Expansion Pressure - ASTM D2844

| No. | Compact Pressure psi | Density pcf | Moist. % | Expansion Pressure psi | Horizontal Press. psi @ 160 psi | Sample Height in. | Exud. Pressure psi | R Value | R Value Corr. |
|-----|-------------------------|----------------|-------------|---------------------------|------------------------------------|----------------------|-----------------------|---------|------------------|
| 1 | 250 | 119.8 | 11.6 | 0.12 | 62 | 2.45 | 373 | 48.2 | 48.2 |
| 2 | 200 | 116.3 | 13.0 | 0.09 | 75 | 2.56 | 339 | 41.5 | 43.0 |
| 3 | 150 | 116.7 | 13.9 | 0.03 | 93 | 2.55 | 169 | 31.9 | 31.9 |

| Test Results | Material Description |
|--|--|
| <p>R-value at 300 psi exudation pressure = 38.6</p> <p>Exp. pressure at 300 psi exudation pressure = 0.07 psi</p> | Sandy silt; Olive brown fine to medium grained sand slight clay binder |
| <p>Project No.: E1962-18</p> <p>Project: Rocky Hill Bicycle/Pedestrian Path Feasibility Study</p> <p>Location: B1</p> <p>Sample Number: RV 1 Depth: 1'-3'</p> <p>Date: 5/7/2018</p> | <p>Tested by:</p> <p>Checked by:</p> <p>Remarks:</p> |
| <p>R-VALUE TEST REPORT</p> <p>CTL, Inc.</p> | Figure _____ |

R-VALUE TEST REPORT

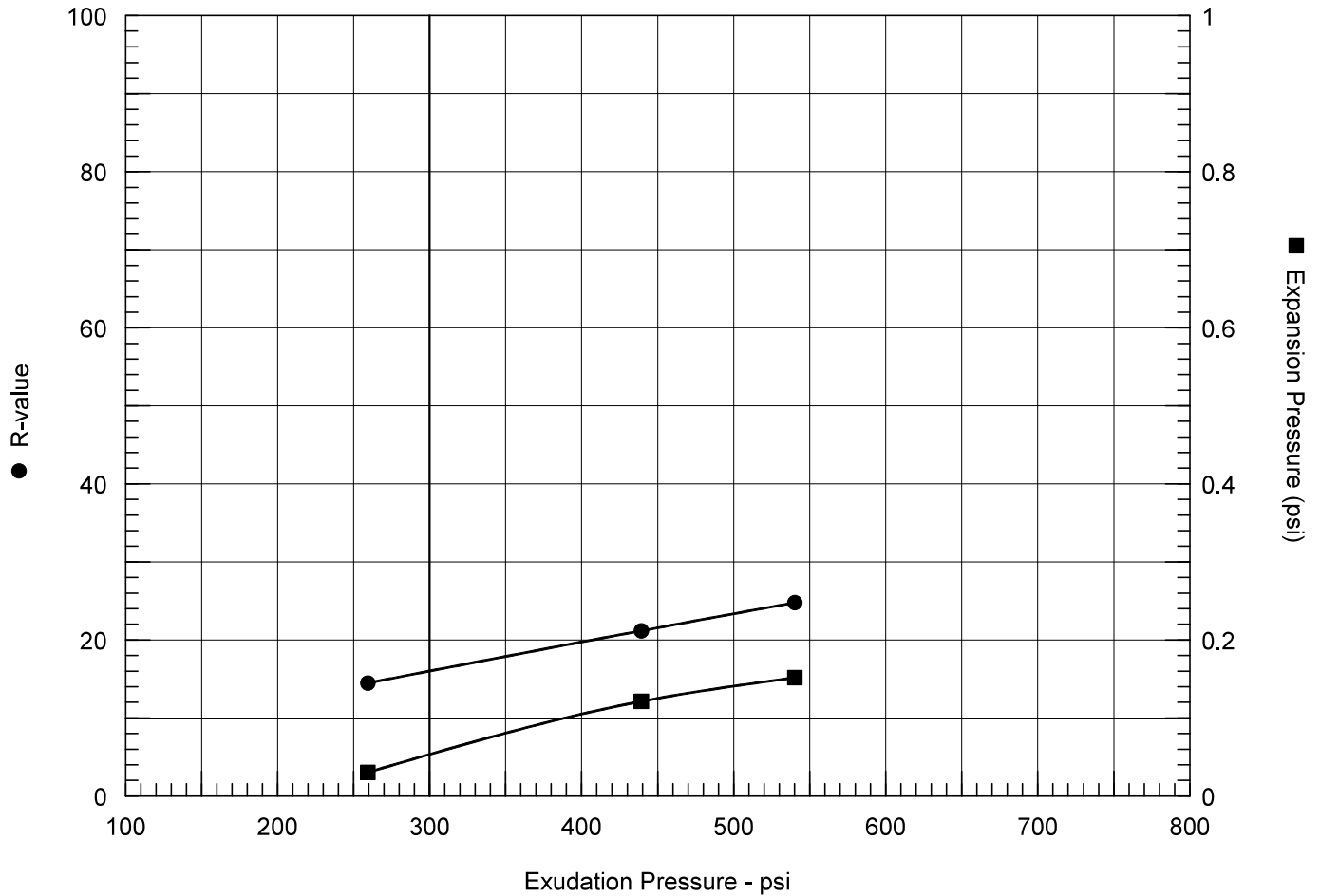


Resistance R-Value and Expansion Pressure - ASTM D2844

| No. | Compact. Pressure psi | Density pcf | Moist. % | Expansion Pressure psi | Horizontal Press. psi @ 160 psi | Sample Height in. | Exud. Pressure psi | R Value | R Value Corr. |
|-----|-----------------------|-------------|----------|------------------------|---------------------------------|-------------------|--------------------|---------|---------------|
| 1 | 200 | 103.8 | 13.7 | 0.12 | 117 | 2.45 | 358 | 19.3 | 19.3 |
| 2 | 150 | 101.5 | 14.5 | 0.06 | 120 | 2.51 | 258 | 17.6 | 17.6 |
| 3 | 100 | 97.9 | 15.4 | 0.06 | 130 | 2.55 | 160 | 12.7 | 12.7 |

| Test Results | Material Description |
|--|---|
| <p>R-value at 300 psi exudation pressure = 18.6</p> <p>Exp. pressure at 300 psi exudation pressure = 0.08 psi</p> | Sandy clay; dark brown very fine to fine grained sand |
| <p>Project No.: E1962-18</p> <p>Project: Rocky Hill Bicycle/Pedestrian Path Feasibility Study</p> <p>Location: B4</p> <p>Sample Number: RV 2 Depth: 2'-4'</p> <p>Date: 5/7/2018</p> | <p>Tested by: SB</p> <p>Checked by:</p> <p>Remarks:</p> |
| <p>R-VALUE TEST REPORT</p> <p>CTL, Inc.</p> | Figure _____ |

R-VALUE TEST REPORT



Resistance R-Value and Expansion Pressure - ASTM D2844

| No. | Compact. Pressure psi | Density pcf | Moist. % | Expansion Pressure psi | Horizontal Press. psi @ 160 psi | Sample Height in. | Exud. Pressure psi | R Value | R Value Corr. |
|-----|-----------------------|-------------|----------|------------------------|---------------------------------|-------------------|--------------------|---------|---------------|
| 1 | 200 | 113.6 | 13.0 | 0.15 | 110 | 2.55 | 540 | 24.8 | 24.8 |
| 2 | 200 | 113.1 | 13.9 | 0.12 | 119 | 2.61 | 439 | 19.7 | 21.2 |
| 3 | 125 | 107.9 | 15.2 | 0.03 | 129 | 2.62 | 259 | 13.4 | 14.5 |
| | | | | | | | | | |

Test Results

R-value at 300 psi exudation pressure = 16.0

Exp. pressure at 300 psi exudation pressure = 0.05 psi

Material Description

Sandy clay; dark brown very fine to fine grained sand

Project No.: E1962-18

Project: Rocky Hill Bicycle/Pedestrian Path Feasibility Study

Location: B6

Sample Number: RV 3 **Depth:** 6"-18"

Date: 5/7/2018

Tested by: SB

Checked by:

Remarks:

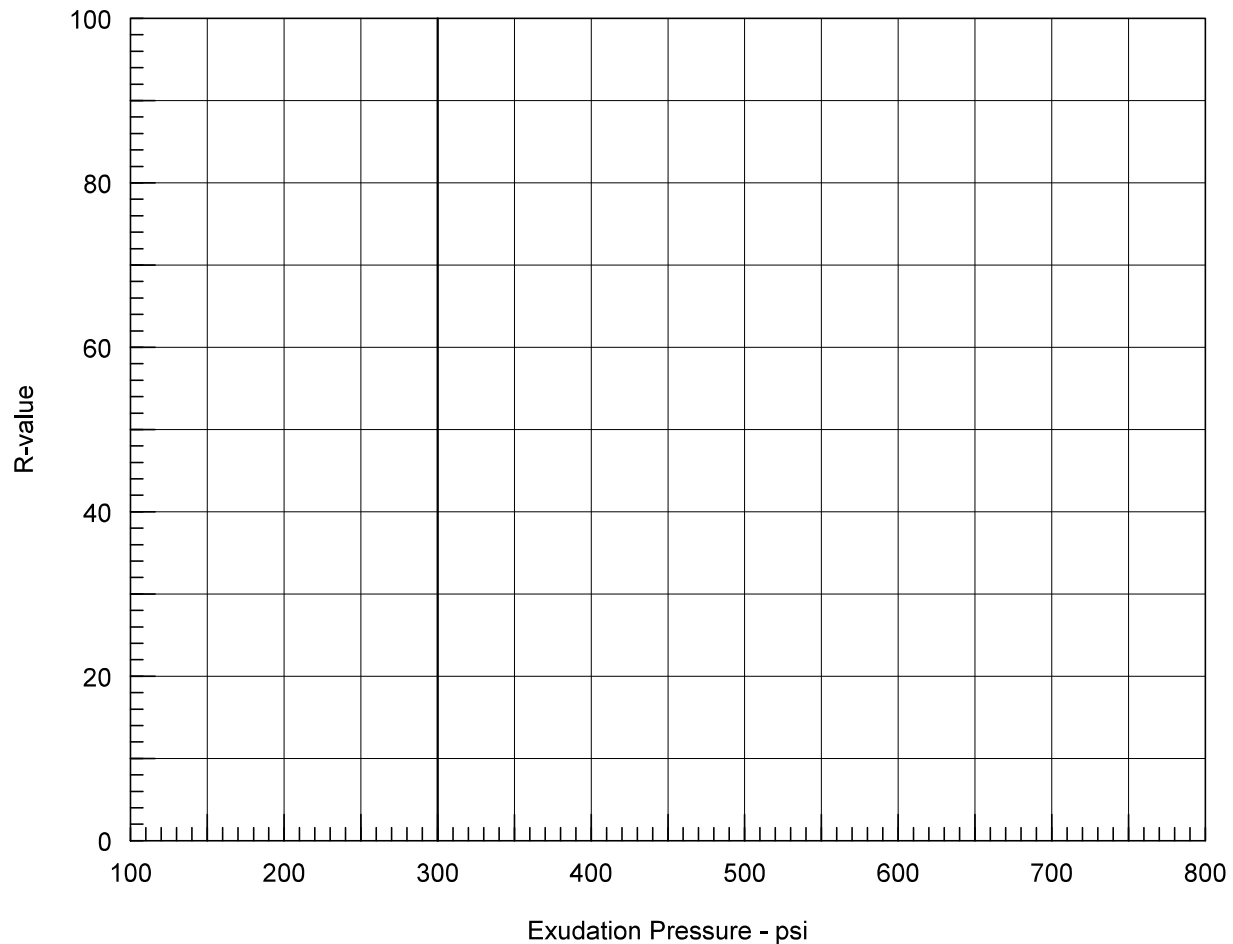
Sample was collected on shoulder due to auger refusal at boring location.

R-VALUE TEST REPORT

CTL, Inc.

Figure _____

R-VALUE TEST REPORT

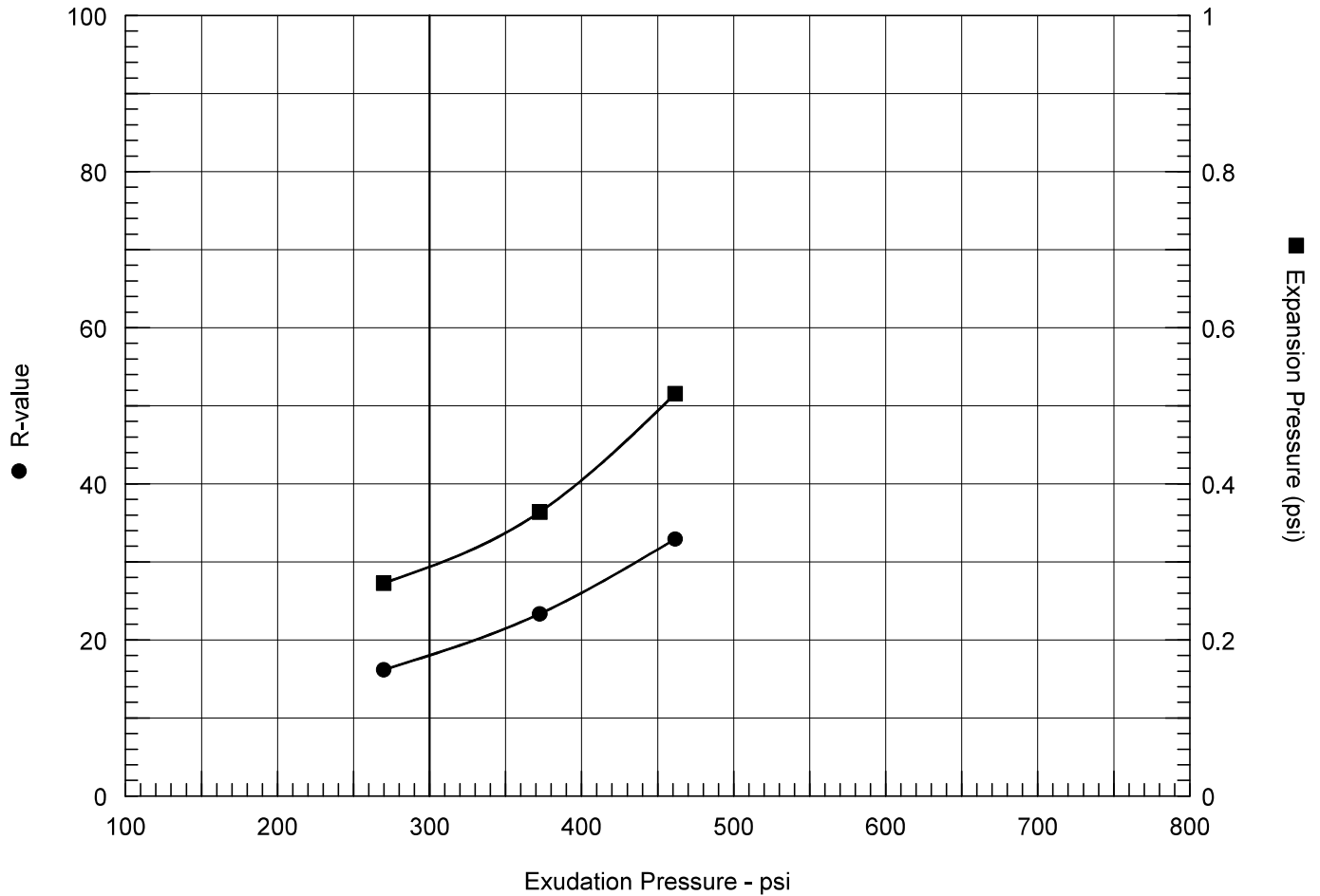


Resistance R-Value and Expansion Pressure - ASTM D2844

| No. | Compact. Pressure psi | Density pcf | Moist. % | Expansion Pressure psi | Horizontal Press. psi @ 160 psi | Sample Height in. | Exud. Pressure psi | R Value | R Value Corr. |
|-----|-----------------------------|----------------|-------------|------------------------------|---------------------------------------|-------------------------|--------------------------|------------|---------------------|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

| Test Results | Material Description |
|--|---|
| R-value at 300 psi exudation pressure = n/a | Sandy clay; dark brown very fine to fine grained sand |
| Project No.: E1962-18 Project: Rocky Hill Bicycle/Pedestrian Path Feasibility Study Location: B8 Sample Number: RV 4 Depth: 1'-3' Date: 5/7/2018 | Tested by: SB Checked by: Remarks: RV LESS THAN 5 |
| R-VALUE TEST REPORT CTL, Inc. | Figure _____ |

R-VALUE TEST REPORT



Resistance R-Value and Expansion Pressure - ASTM D2844

| No. | Compact. Pressure psi | Density pcf | Moist. % | Expansion Pressure psi | Horizontal Press. psi @ 160 psi | Sample Height in. | Exud. Pressure psi | R Value | R Value Corr. |
|-----|-----------------------|-------------|----------|------------------------|---------------------------------|-------------------|--------------------|---------|---------------|
| 1 | 350 | 129.6 | 9.0 | 0.52 | 88 | 2.37 | 462 | 36.0 | 32.9 |
| 2 | 250 | 128.0 | 9.8 | 0.36 | 109 | 2.50 | 372 | 23.3 | 23.3 |
| 3 | 200 | 123.3 | 11.3 | 0.27 | 122 | 2.53 | 270 | 16.2 | 16.2 |

Test Results

R-value at 300 psi exudation pressure = 18.0

Exp. pressure at 300 psi exudation pressure = 0.29 psi

Material Description

clayey sand: dark olive brown, very fine to medium grained sand

Project No.: E1962-18

Project: Preliminary Soils Investigation Rocky Hill Bike Path

Location: B10

Sample Number: RV 5 **Depth:** 1'-3'

Date: 8/3/2018

Tested by: SB

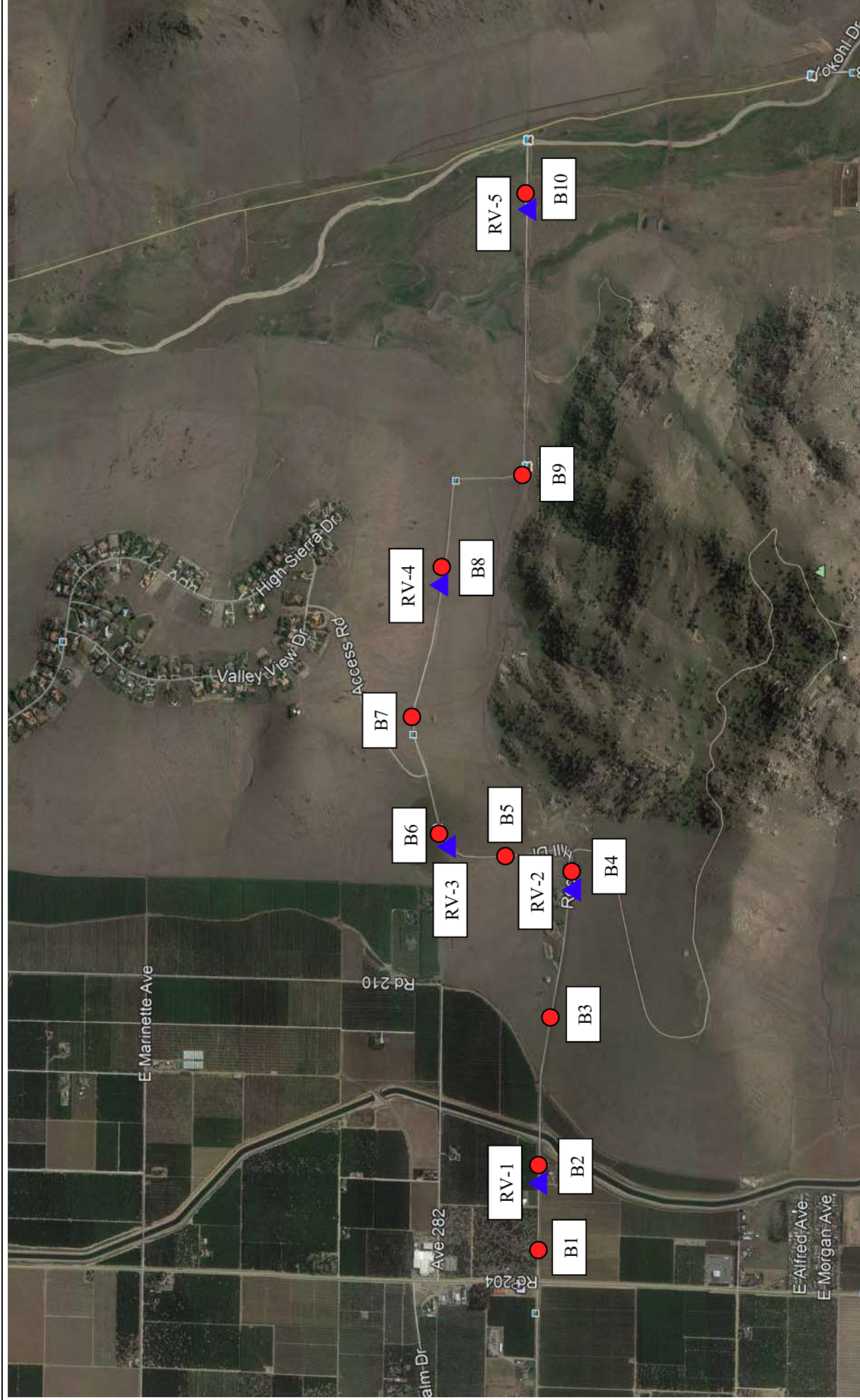
Checked by:

Remarks:


R-VALUE TEST REPORT

CTL, Inc.

Figure _____



● APPROXIMATE BORING LOCATIONS ▲ APPROXIMATE R-VALUE LOCATION

| SITE MAP | | Scale: | Date: |
|---|--|---|--------------|
| Drilling, Sampling and Laboratory Testing Rocky Hill Bicycle/Pedestrian Feasibility Study Exeter, California | | NTS | April 2018 |
| | | Drawn by: | Approved by: |
| | | Google Earth | SE |
| Project No. E1962-18 | | Figure No. 1 | |
| | |  Consolidated Testing Laboratories, Inc. | |

Photographs



Facing East at B1



Facing East at B2



Facing East at B3



Facing East at B4



Facing North at B5



Facing East at B6



Facing East at B7



Facing East at B8



Facing East at B9



Facing East at B10

Appendix B

Biological Evaluation

4CREEKS
ROCKY HILL ROAD WIDENING FEASIBILITY STUDY

Biological Constraints Report

March 2018

LOCATION:

Tulare, California

Latitude: 36.301103°, Longitude -119.091237°

Prepared for:

Contact Person: David Duda
Phone Number: (805) 904-4394
Email: david.duda@4-creeks.com



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Prepared by:

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APPENDICES

Appendix A U.S. Fish and Wildlife Service Information for Planning and Consultation Draft Report for Rocky Hill Road, Tulare County, California

1 Introduction

Sequoia Ecological Consulting, Inc. (Sequoia) understands that 4Creeks, Inc. (4Creeks) has been contracted to provide a Planning and Feasibility Study (Feasibility Study) for a potential bicycle and pedestrian path along Rocky Hill Drive, in eastern Tulare County, California, which may involve widening the current road alignment. 4Creeks has contracted Sequoia to develop this Biological Constraints Report (BCR) that considers the biological impacts of the proposed project. In support of the Feasibility Study, Sequoia conducted a desktop review and an on-site habitat assessment, and has prepared this report documenting the purpose, methods, and results of its investigation. This document contributes to project planning by listing protected habitats, waters of the state, and existing drainages, as well as the special-status species with potential to occur within the project area. A separate report by 4Creeks examines the potential cultural and archeological constraints at the project location and these subjects are not investigated further in this document. Sequoia has provided advice on strategies that would mitigate impacts to special-status species along with information on the state and federal permitting necessary to conduct the proposed work.

1.1 Project Description

The Tulare County Association of Governments (TCAG) intends to modify a 3.3-mile stretch of Rocky Hill Drive between South Spruce Road (Road 204) and Yokohl Drive in order to better accommodate recreational and vehicular traffic. In order to provide safe pedestrian and bicycle access along this section of road, TCAG has contracted 4Creeks to conduct a Feasibility Study and assess the options for road widening or augmentation. As currently proposed, the project may involve one of the following three options:

- 1) Little new ground disturbance – this option would close Rocky Hill Drive to two-way traffic east of Friant-Kern Canal and use the second vehicular lane as a recreational path;
- 2) Simple augmentation of the current roadway – this option would eliminate vehicular traffic altogether on the majority of this 3.3-mile stretch. Approximately .66 miles east of Friant-Kern Canal, Rocky Hill Drive would be open only to bicycle and foot traffic; or
- 3) Up to 30 feet of road widening - this option would widen the road up to 15 feet on either side in order to create independent bicycle and pedestrian paths in addition to maintaining vehicular traffic along the stretch's entire length.

Sequoia understands that developing this BCR will help assess the potential biological impacts of road widening and assist in the development of a final project description.

1.1.1 Project Location

The proposed project is located east of Exeter, California and approximately 20 miles west of Sequoia National Park (Figure 1). The proposed project area extends along Rocky Hill Drive from latitude 36.296895°, longitude -119.117508° at the western edge, continuing just over three miles east to latitude 36.297234°, longitude -119.065910° (Figure 2). Friant-Kern Canal, a lined aqueduct managed by the United States Bureau of Reclamation, crosses the project approximately .33 miles east of the project's west end. Yokohl Creek is an ephemeral, sandy-bottomed creek that runs through the project at its far east end. The site elevation varies from a low point of 400 feet above mean sea level (MSL) where Rocky Hill Drive meets Road 204 at the project's west end, to 820 feet MSL at the top of Rocky Hill pass, before dropping down to 500 feet MSL at Yokohl Drive on the east end of the project.



Figure 1. Rocky Hill Road project vicinity, east of Exeter, CA, and west of the Sierra Nevada foothills.

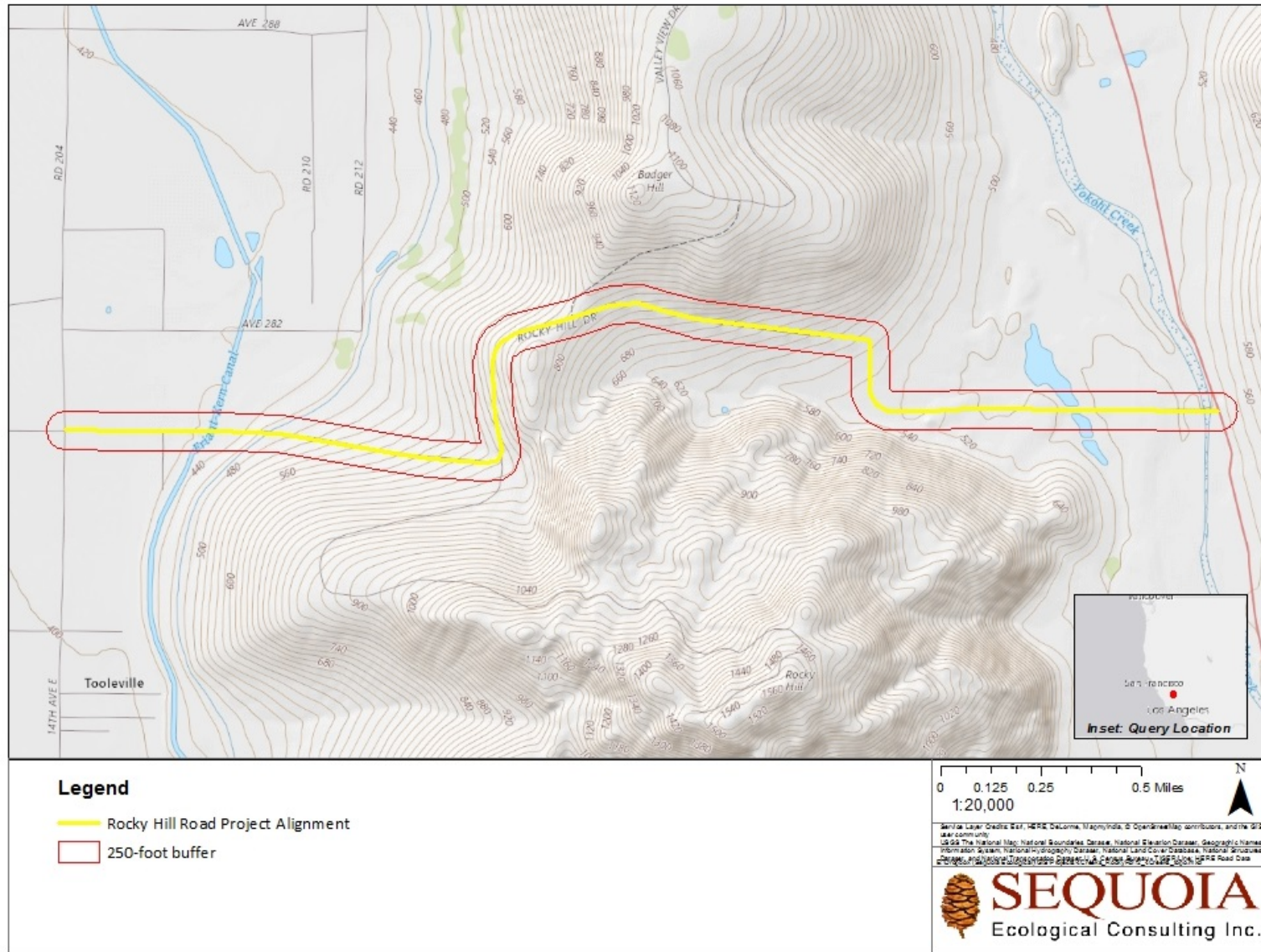


Figure 2. Project alignment and 250-foot buffer evaluated for potential direct effects to biological resources and sensitive habitats.

2 Methods

To determine whether the potential road widening could impact special-status species or sensitive resources, Sequoia performed a desktop review, field verification, and impact analysis, based on the current understanding of the potential project options.

2.1 Desktop Review

Sequoia performed a desktop review of the project area and surrounding environment to determine which federally- and state-listed species, as well as California Species of Special Concern (CSSC), California Native Plant Society (CNPS) rare plants, and federally designated Critical Habitats may be present on or around the project site. The desktop review was performed by analyzing existing databases from resource management agencies within various threshold distances from the project area.

Databases referenced include the United States Department of Agriculture Natural Resource Conservation Service Web Soil Survey, CNPS CalFlora, National Marine Fisheries Service (NMFS) range and Critical Habitat maps, U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation System (IPaC), USFWS National Wetlands Inventory (NWI), the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB), and the CDFW CalStreams geodatabase. The CNDDDB was reviewed for occurrences of federally- and state-listed plants and animals, rare plants, and CSSC within the project area and a 5-mile buffer around the site (CNDDDB 2017).

The USFWS IPaC database was queried by uploading a GIS shapefile of the approximate project area to the website, which generated a list of federally-listed species, Critical Habitats, and federally-protected habitats (e.g., wetlands) that may be impacted by the project.

The CNPS rare plant database was queried for all rare plants listed by their system. A “nine-quad” advanced search queried the United States Geologic Survey (USGS) quadrangle in which the proposed project is located and the eight quadrangles surrounding this quad for listed plant species. All listed plants known to grow within the elevation range of the work area were considered for potential project impact.

The USFWS NWI was reviewed to determine the presence, location, and extent of potentially jurisdictional wetlands within the project area and 5-mile buffer, to evaluate both the potential presence of jurisdictional features that might be impacted by project activities and the potential for breeding habitat for federally-listed amphibians within potential dispersal distance to the project area. The California statewide stream inventory was similarly reviewed to determine the presence, location, and extent of linear watercourses within and adjacent to the project area. The location and extent of wetlands were updated based on review of aerial imagery, including the use of the Google Earth “time machine” feature. Looking at past aerial

imagery provided information on the wetting of ephemeral pools and stock ponds going back to 1994.

2.2 Site Assessment

On February 15, 2018, Sequoia biologists Brett Hanshew and Alex Hirth performed a field-based habitat assessment survey to determine site-specific habitat suitability for the federally- and state-listed species, the CSSC, and the CNPS listed rare plant species identified in the desktop review, to document the presence of all special-status species observed on-site, and to document general habitat conditions for these species. No specific delineation of wetlands or focused species surveys were performed at this time. The survey consisted of driving the entire 3-mile project length several times, with the biologists exiting the vehicle approximately every 500 feet or whenever an area was determined to warrant closer survey. However, most areas more than 15 feet off of the roadside are designated private property. As such, a 250-foot project buffer was assessed from the roadside via high-powered (8-10x magnification) binoculars, with GPS locations marked for future focused survey. The biologists scanned the project length and buffer zone for habitat suitable for special-status species listed in the desktop review and logged all wildlife species observed. Sensitive habitats such as vernal features, swales, and stock ponds were GPS marked and photographed, as were potential nesting sites or refuges such as trees and representative burrows. Print out maps were used to mark observed changes in plant communities, obvious drainages and wetlands, rocky outcroppings, and topographical slope directions.

2.3 Impact Assessment

Following the site assessment, the biologists assessed the likelihood of the proposed project to impact special-status species and sensitive habitats based on site-specific habitat suitability, life history requirements, and Sequoia's understanding of the proposed project alternatives.

3 Results

3.1 Existing Environmental Setting

The project site sits just east of the town of Exeter, on largely undeveloped ranchland. Named for the hill covered in scattered granitic outcroppings located immediately to the south, Rocky Hill Drive east of South Spruce Road crests the first pass out of the Central Valley and into the Sierra foothills. Farther east, the mountains rise steeply to more than 8,000 feet MSL in Sequoia National Forest. Largely undisturbed until the mid-20th century, Rocky Hill is now mostly privately owned and sees heavy ranching use. Throughout the project area, Rocky Hill Drive is flanked to the north and south by private property. Several houses sit north of the road near the project's west end, and several small ranch buildings are located south of the road,

approximately two-thirds of the way east through the project area. The eastern 0.5 miles of Rocky Hill Drive runs through citrus orchards, crossing Friant-Kern canal before giving way to annual grassland. The road increases in grade, curving north to reach its highest elevation, some 820 feet MSL, at the Rocky Hill pass. The habitat here is annual grassland, with scattered rocks north, and Rocky Hill rising to its 1,580-foot MSL summit one mile south of the road. As Rocky Hill Drive continues east, it enters a shallow downgrade and curves briefly south, coming up to meet an ephemeral drainage at the toe of Rocky Hill's northern slope. From this point, the eastern mile of Rocky Hill Drive continues straight, bisecting many small vernal wetlands, several swales, and one large vernal feature before crossing Yokohl Creek and ending at Yokohl Drive.

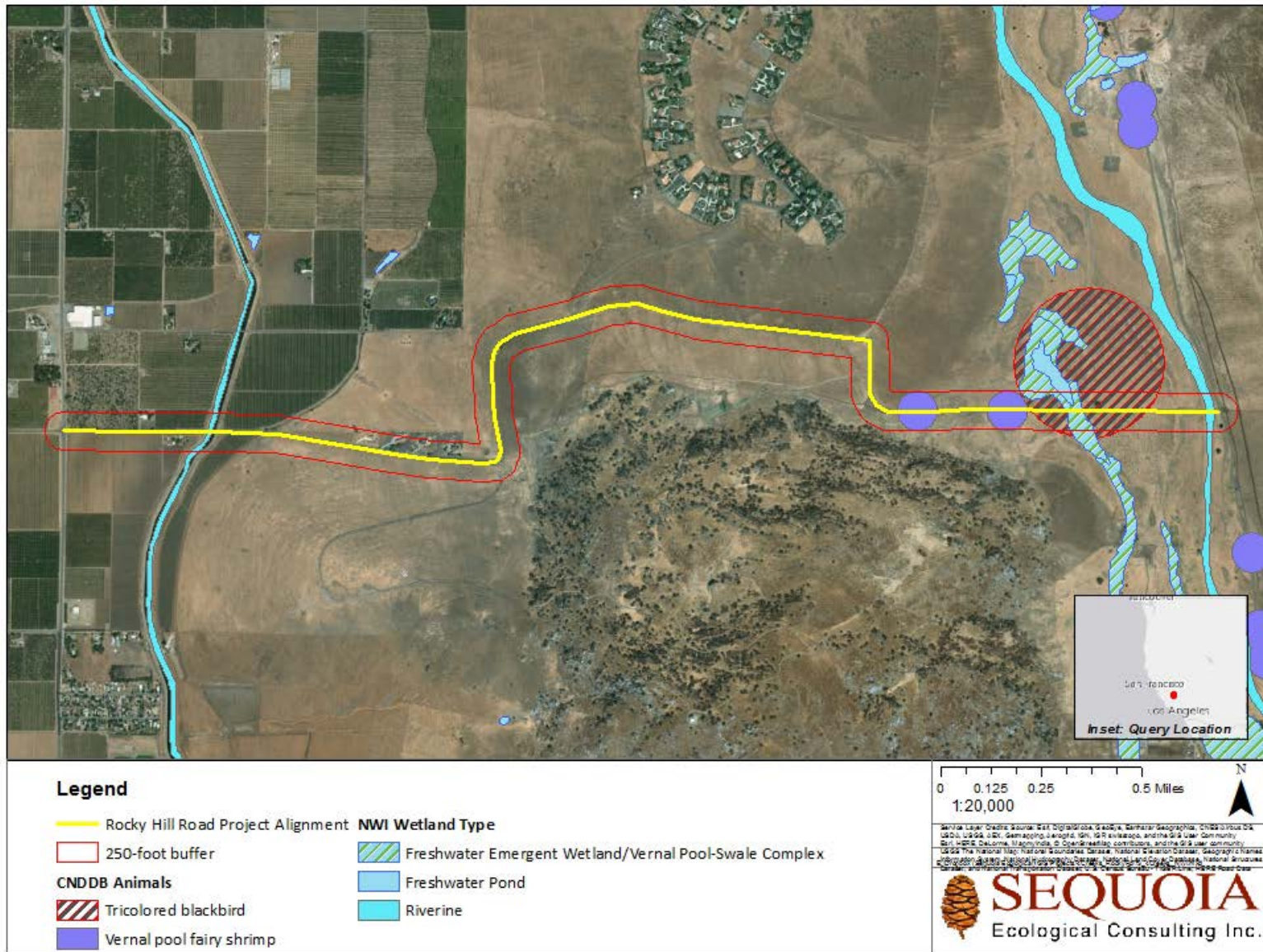


Figure 3. U.S. Fish and Wildlife Service National Wetlands Inventory and California Natural Diversity Database occurrences in vicinity of project area.

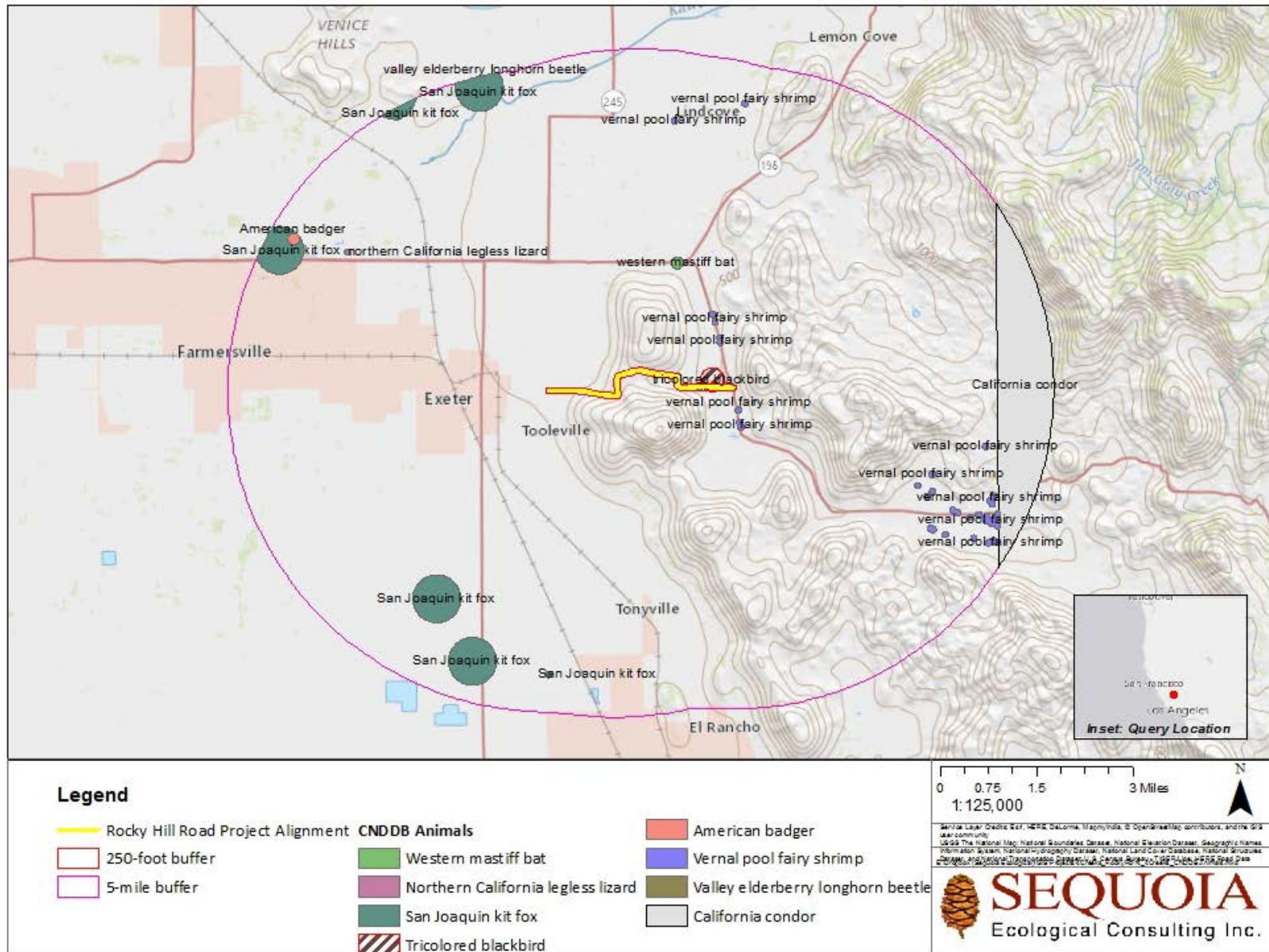


Figure 4. CNDDDB animal occurrences within 5 miles of project area.

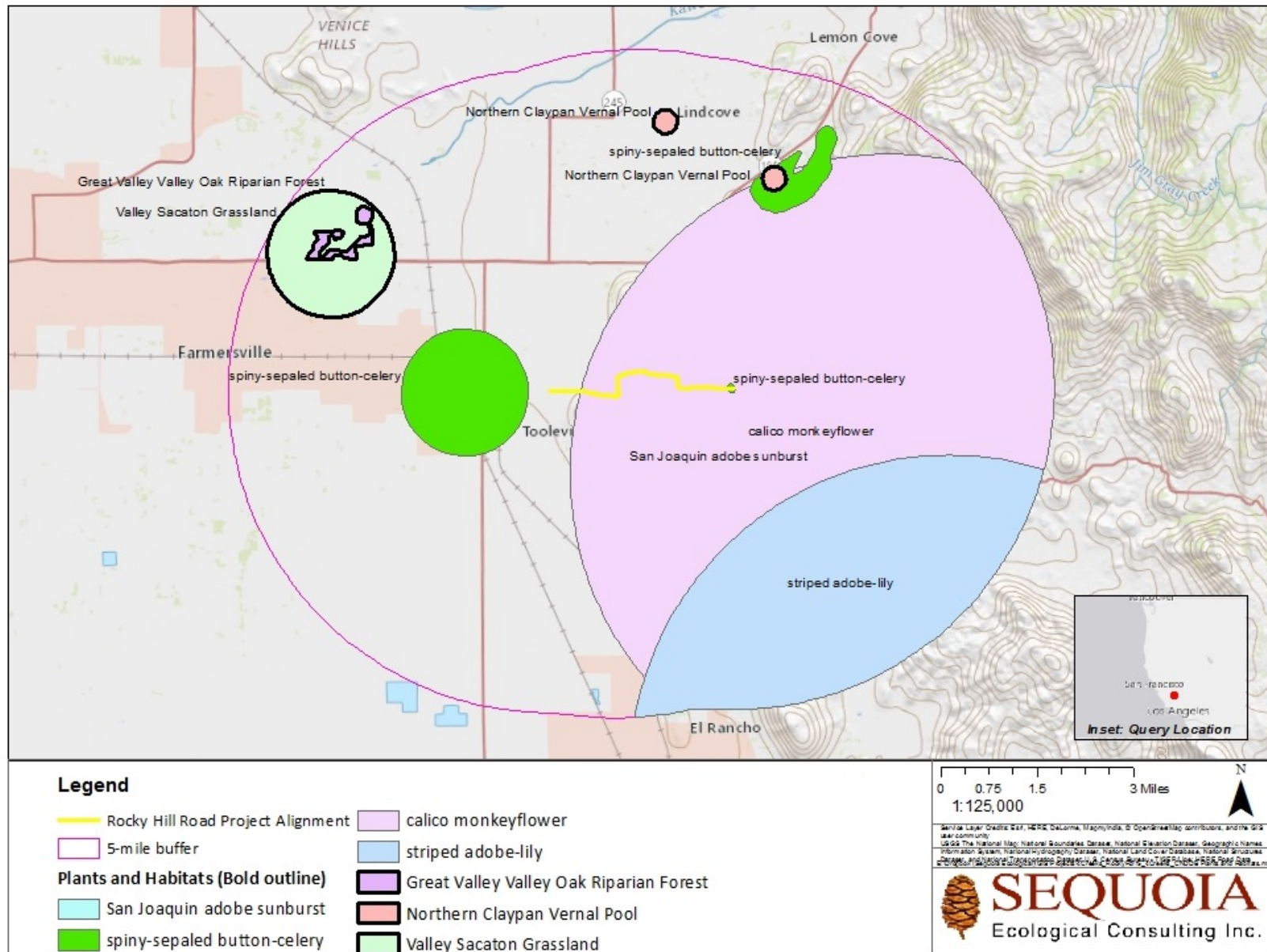


Figure 5. CNDDDB plants and sensitive habitats within 5 miles of project area. Sensitive habitats indicated with bold outline.

3.1.1 Habitat Types

The area surrounding the Rocky Hill Drive project supports a variety of habitat types that are well-adapted to a dry climate, including sensitive vernal pools.

Evergreen Orchard

This habitat is made up of straight rows of planted citrus, avocado, date, or olive trees grown for agricultural food use. Typically, undergrowth is a cover crop such as legumes, or bare soil is maintained in open areas between monocrop trees. The far western section of the site is bordered north and south by evergreen citrus orchard that runs east for approximately 0.5 miles before giving way to annual grassland.

Annual Grassland

This habitat is composed primarily of plant species that mature in spring and early summer, before spreading seed and dying in late summer and fall. Annual grassland is typically made up primarily of non-native European grasses including wild oats, soft chess, bromes, wild barley, and foxtails. In California's Central Valley, low-lying areas in annual grassland often give way to sensitive vernal pool habitat. East of evergreen orchards, Rocky Hill Drive is blanketed on both sides by annual grassland that serves as grazing land for cattle. Along the eastern third of the project, annual grassland habitat is interspersed with vernal features and small alkali sinks.

Vernal Pool

This unique and highly sensitive habitat is characterized by temporary wetland areas found in low-lying depressions where hard substrate prevents rapid draining of rainwater and runoff. These pools are filled ephemerally in the winter and spring, drying in the summer and fall. Many plants and animals have adapted to this vernal cycle and have life histories that are obligatorily linked to these pools. As a rare type of wetland supporting rare species, vernal pools are protected by state and federal laws. One large vernal feature crosses the project area in the eastern section of the site, and many small pools are situated in relative proximity to this large feature.

Fresh Emergent Wetland

This habitat is typically found on the margins of wetlands or waterways and is characterized by tall, straight growing vegetation rooted within wetted areas. Fresh emergent wetlands are made up of big leaf sedges, rushes, cattails, tules, and in alkali areas, saltgrass. Some limited emergent wetland exists adjacent the Rocky Hill site, occurring along the margins of the large vernal feature on the eastern side of the site.

Valley Oak Woodland

This habitat features a canopy dominated by valley oaks and ranges in tree density from dense and forest-like to open savannah with scattered trees. When associated with grazing, oak woodlands typically have little to no understory, while areas without grazing may be thick with shrubs. Vegetative growth also varies with soil quality and altitude. Rocky Hill itself, just south of the drive that defines the project area, is dominated by valley oak woodland interspersed with bare granite rock outcroppings.

Barren

This habitat is marked by a lack of vegetation, defined by less than 2% vegetative cover. Barren habitat varies in makeup from sandy beaches or washes, to mudflats, steep canyons, and open rock faces. Permanent ice or snow may also constitute barren habitat. Rocky Hill has scattered patches of barren habitat composed of granitic rock outcroppings, large boulders, slopes, and small cliffs. The dry, sandy bed of Yokohl Creek is also comprised of barren habitat.

3.1.2 Land Use

Rocky Hill, with its oak woodland and granitic outcroppings, stands out from the barren, grassland-dominated hills around it. The unique appearance of this hill is perhaps what first attracted the Foothill Yokut people, who have been frequenting for generations. Once a village, the site remains an active sacred site for the Yokut people of the area. On its southern slope, Rocky Hill has several ceremonial caves and collections of pictographs. This section of the hill is now a protected archeological site.

While still largely undeveloped, the late 20th century brought increased agricultural use and development to the hill and its surroundings. Several houses have been built adjacent to the orchards on the western side of the hill. Additional development of a 35,000-person community has been hotly disputed on the rise north of the project, and a ranch now sits at the toe of Rocky Hill. The north slope of Rocky Hill and both sides of Rocky Hill Drive are now heavily grazed ranchland where black angus cattle are run. Fast-flowing and concrete-lined, Friant-Kern Canal was completed in 1951 and now provides a large barrier to wildlife movement on the western side of the project area. Species must cross the canal via man-made bridges, which are usually narrow, two-lane structures with no shoulders. To the east, the land is almost completely undeveloped, with small hills quickly giving way to the steep southern Sierras and protected National Park and National Forest lands.

3.2 Sensitive Resources

Several of the habitat types identified within the proposed project alignment are considered sensitive resources that are likely to contain special-status species and are themselves

protected. The western and central section of the project area contain two stock ponds fed via culverts under Rocky Hill Drive by ephemeral drainages. These features are considered wetland habitat, protected by the state and federal government. Additionally, a number of vernal features sit within the eastern third of the site. These vernal pools support a variety of unique species that live nowhere else, and as such are also protected by state and federal regulations. Yokohl Creek, as part of the local watershed, is considered a water of the state by the CDFW. Under this jurisdiction, it is considered a sensitive resource and is protected against potential impacts.

3.3 Special-status Plants and Wildlife

A total of 14 plant and 15 wildlife species were identified in the desktop review as having some potential to occur. After conducting the site visit and assessing habitat conditions, only 10 plant and 5 wildlife species have moderate/high potential to occur within the project area. All plant and wildlife species identified during desktop review are listed below, along with their listed status and habitat requirements. Their potential to occur was assessed by reviewing CNDDDB records along with the results of the site visit conducted on February 15, 2018.

The only Critical Habitat within a 5-mile radius of the project area is for California condor, located approximately 4.5 miles due east, and is approximated by the CNDDDB polygon for the species depicted in Figure 4.

Table 1. Special-status animal species with potential to occur in the project area, curated from the U.S. Fish and Wildlife Service Information for Planning and Consultation System (IPaC) and the California Department of Fish and Wildlife California Natural Diversity Database (CNDDDB).

| Scientific Name | Common Name | Listed Status | Habitat Requirements | Potential for Occurrences |
|------------------------------------|---------------------|---------------|---|---|
| Mammals | | | | |
| <i>Eumops perotis californicus</i> | Western mastiff bat | CSSC | This species occurs in open semi-arid habitats including woodlands, grasslands and urban environments. Suitable habitat consists of extensive open areas with abundant roost locations provided by crevices in rock outcrops and buildings. Roosts in colonies. | Moderate potential to occur. One CNDDDB occurrence within five miles of project area. Potential to roost under canal bridge or in larger rock crevices on hillside. Focused survey of Rocky Hill recommended. |
| <i>Taxidea taxus</i> | American badger | CSSC | Abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. | High potential to occur. One CNDDDB occurrence within five miles of the project area. Neither American badger nor badger sign was observed during reconnaissance survey; however, dry open habitat with friable soil is present throughout project area. Potential Avoidance and Minimization Measures (AMMs) include pre-construction survey and possible camera trapping to determine presence/absence. |

| Scientific Name | Common Name | Listed Status | Habitat Requirements | Potential for Occurrences |
|---------------------------------|-----------------------------|---------------|--|--|
| <i>Vulpes macrotis mutica</i> | San Joaquin kit fox | FE, CT | Requires den for shelters. Loose textured soils associated with grasslands, alkali sink, scrubland, vernal pool, and alkali meadows are suitable requirements (ECOS, 2017). | High potential to occur. Five CNDDDB occurrences within five miles of project area. Project area is within the current range of the species. Neither San Joaquin kit fox nor fox sign was observed during reconnaissance survey; however, suitable burrows are present throughout project area. Focused surveys are recommended prior to permitting to determine presence/absence. |
| Fish | | | | |
| <i>Hypomesus transpacificus</i> | Delta smelt | FE, CE | Confined to aquatic habitats including bays, tidal rivers, channels, and sloughs. Most often found in the Sacramento and San Joaquin deltas. | No potential to occur. Outside of known range (Ref CalFish). No CNDDDB occurrences within five miles of project area. |
| Amphibians/Reptiles | | | | |
| <i>Ambystoma californiense</i> | California tiger salamander | FT, CT | This California endemic species is found in grasslands, oak savanna, and mixed woodland where there is suitable seasonal ponds for breeding and burrows for cover during the dry season. | Low potential to occur. Project area is within range of species, however the nearest CNDDDB record is 14.5 miles away and separated from the project alignment by Friant-Kern Canal as well as multiple highways that pose significant geophysical barriers to movement. Potentially suitable breeding and upland habitat is present for California tiger salamander within and |

| Scientific Name | Common Name | Listed Status | Habitat Requirements | Potential for Occurrences |
|-------------------------|------------------------------------|---------------|--|--|
| | | | | adjacent to the project site. California tiger salamander was not observed during reconnaissance survey, access to vernal features was not available. A focused survey is recommended to determine presence/absence. |
| <i>Anniella pulchra</i> | Northern California legless lizard | CSSC | This species prefers warm, loose soil with plant cover. Often occurs in moist, sparsely-vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces. Found under leaf litter, rocks, logs, etc. | Moderate potential to occur. One CNDDDB occurrence within five miles of the project area. Suitable habitat is present on east side of project in Yokohl Creek wash. Potential AMM includes pre-construction survey for species presence/absence prior to ground disturbance. |
| <i>Gambelia sila</i> | Blunt-nosed leopard lizard | FE, CFP | This species is found in grasslands, alkali flats, and washes, preferring flat, open areas. Avoids densely vegetated areas. Uses mammal dens and burrows for refuge, with available burrows determining population. | Unlikely to occur. Project outside of known range of species (CDFW 2012). Limited potential habitat is present in flat, heavily-grazed areas on the east side of the project site. Generally, vegetation appears too high for species presence. Potential AMM includes pre-construction survey species presence/absence prior to ground disturbance. |

| Scientific Name | Common Name | Listed Status | Habitat Requirements | Potential for Occurrences |
|--------------------------|----------------------------|--------------------|---|---|
| <i>Rana draytonii</i> | California red-legged frog | FE, CSSC | Lowlands and foothills in or near permanent sources of deep water with dense, shrubby, or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat. | Unlikely to occur. Project outside of known range of species (CDFW 2014). No CNDDDB records exist in Tulare County. Potential low-quality breeding habitat in stock ponds 100 and 200 feet from work area, however these ponds historically or typically do not hold water for enough of the year to be usable for California red-legged frog. Potential upland habitat is present. |
| <i>Thamnophis gigas</i> | Giant garter snake | FT, CT | This species is found in marshes, sloughs, drainage canals, and irrigation ditches, especially around rice fields. Prefers areas with vegetation close to the water for basking. | Unlikely to occur. Project outside of known range of species (CDFW 2012). Low suitability habitat is present in Friant-Kern Canal on west side of project site. Canal is lined and contains no vegetation; few burrows are present near canal edge. Presence of giant garter snake unlikely. |
| Birds | | | | |
| <i>Agelaius tricolor</i> | Tricolored blackbird | CSSC, Candidate CE | This species constructs nests in dense stands of tulle, cattail, or other dense marshland vegetation. They require protected nesting substrate and foraging areas within a few kilometers of the colony. | Moderate potential to occur. One CNDDDB occurrence within project area records approximately 1,800 birds nesting in cattails and bulrushes. Colonial nesting previously reported north of Rocky Hill Drive on eastern end of project alignment. No tricolored blackbirds observed during site visit. |

| Scientific Name | Common Name | Listed Status | Habitat Requirements | Potential for Occurrences |
|--|-----------------------------------|---------------|---|--|
| <i>Gymnogyps californianus</i> | California condor | FE, CFP | This species inhabits rocky shrubland, coniferous forests, and oak savannas. Nest on cliffs or large trees. | Low potential to occur (foraging). Project on edge of known range of species (CDFW 1995). Potential foraging habitat present throughout project area. No cliffs or large trees present for nesting within project area or survey buffer. |
| Invertebrates | | | | |
| <i>Branchinecta lynchi</i> | Vernal pool fairy shrimp | FT | This species is found only in vernal pools. Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains. | Presence assumed. Two CNDDDB records just east of large vernal feature along Rocky Hill Road and seven records along Yokohl Drive indicate that vernal pool fairy shrimp is extremely likely to be present in vernal pools and swales within and adjacent to the project site. |
| <i>Desmocerus californicus dimorphus</i> | Valley elderberry longhorn beetle | FT | This species is nearly always found on or near its host plant, elderberry (<i>Sambucus</i> spp.), which must have stems 2.5 cm or greater in diameter at ground level to facilitate use by the beetle. | No potential to occur. No elderberry host plant was observed during the reconnaissance survey. A rare plant survey is recommended to confirm presence/absence of elderberry. |

Table 2. Special-status plant species with potential to occur in the project area, curated from the CNPS, U.S Fish and Wildlife Service Information for Planning and Consultation System (IPaC), and the California Department of Fish and Wildlife California Natural Diversity Database (CNDDB).

| Scientific Name | Common Name | Listed Status | Habitat Requirements | Potential for Occurrence |
|------------------------------|-------------------|---------------|---|---|
| <i>Atriplex minuscula</i> | Lesser saltscare | 1B.1 | This species prefers sandy, saline, and alkaline soils and playa habitats, in shadescale shrub, valley grassland, and alkali sinks. Blooms May-October. | Moderate potential to occur. Potential to occur in vernal pool habitat present within/adjacent to project area. Lesser saltscare was not observed during reconnaissance survey; access to vernal features was not available. A rare plant survey is recommended to confirm presence/absence. |
| <i>Brodiaea insignis</i> | Kaweah brodiaea | CE, 1B.2 | This species prefers valley grassland and foothill woodland. Blooms April-June. | Moderate potential to occur. Valley grassland and foothill woodland communities present within/adjacent to project area. Kaweah brodiaea was not observed during reconnaissance survey; access to grassland and woodland habitat off of Rocky Hill Drive was not available. A rare plant survey is recommended to confirm presence/absence. |
| <i>Delphinium recurvatum</i> | Recurved larkspur | 1B.2 | This species prefers poorly-drained, fine, alkaline soils in grassland. Blooms March-June. | Low potential to occur. Soils may not be alkaline enough due to presence of vernal pool fairy shrimp, which tolerates a relatively neutral water pH of 6.3-8.5. A rare plant survey is recommended to confirm presence/absence. |

| Scientific Name | Common Name | Listed Status | Habitat Requirements | Potential for Occurrence |
|---|----------------------------|---------------|---|---|
| <i>Eriogonum nudum</i> <i>var. murinum</i> | Mouse buckwheat | 1B.2 | This subspecies grows in sand or gravel, preferring chaparral, grassland, and oak woodland habitats. Blooms June-November. | Moderate potential to occur. Potentially suitable habitat exists in the sandy wash of Yokohl Creek, near the east end of the project. A rare plant survey is recommended to confirm presence/absence. |
| <i>Eryngium spinosepalum</i> | Spiny-sepaed button-celery | 1B.2 | This species grows in vernal pools, moist grasslands, swales, roadside ditches, and other wetland habitats. Blooms April and May. | High potential to occur. Three CNDDDB occurrences within five miles of projects area, one at eastern end of project. Potential to occur in vernal pool habitat present within/adjacent to project area. Spiny-sepaed button-celery was not observed during reconnaissance survey; access to vernal features and upland grassland was not available. A rare plant survey is recommended to confirm presence/absence. |
| <i>Euphorbia hooveri</i> | Hoover's spurge | 1B.2 | This species grows only in vernal pools of the Central Valley. | Moderate potential to occur. Potential to occur in vernal pool habitat present within/adjacent to project area. Hoover's spurge was not observed during reconnaissance survey; access to vernal features and upland grassland was not available. A rare plant survey is recommended to confirm presence/absence. |

| Scientific Name | Common Name | Listed Status | Habitat Requirements | Potential for Occurrence |
|---|---------------------|---------------|--|--|
| <i>Fritillaria striata</i> | Striped adobe lily | 1B.1 | This species prefers adobe clay soils in valley grassland and foothill woodlands. Blooms February-April. | Low potential to occur. Once CNDDDB record from 1928-38 within five miles of project area, assumed extirpated by 1983. Valley grassland and foothill woodland communities present within/adjacent to project area. Striped adobe lily was not observed during reconnaissance survey; access to grassland and woodland habitat off of Rocky Hill Drive was not available. A rare plant survey is recommended to confirm presence/absence. |
| <i>Leptosiphon serrulatus</i> | Madera leptosiphon | 1B.2 | This species grows in openings in woodland, chaparral, and yellow pine forests. Blooms in April and May. | Moderate potential to occur. Suitable open woodland habitat for Madera leptosiphon is present south of the project area. A rare plant survey is recommended to confirm presence/absence. |
| <i>Mimulus norrisii</i> (SYM. <i>Erythranthe</i> spp.) | Kaweah monkeyflower | 1B.3 | This species grows in marble crevices in chaparral and foothill woodland. Blooms March-May. | Low potential to occur. Rocky area south of project site is granitic and not marble in nature. It is unlikely that suitable habitat for Kaweah monkeyflower exists within or adjacent to the project area. A rare plant survey is recommended to confirm presence/absence. |
| <i>Mimulus pictus</i> (SYM. <i>Diplacus</i> spp.) | Calico monkeyflower | 1B.2 | This species prefers bare, sunny, rocky soils, shrubby areas, and granite outcrops in | Moderate potential to occur. |

| Scientific Name | Common Name | Listed Status | Habitat Requirements | Potential for Occurrence |
|------------------------------|---------------------------------|---------------|---|--|
| | | | oak woodland. Blooms March-May. | One CNDDDB occurrence within five miles of project area. Suitable habitat for Calico monkeyflower is present in rocky, granitic area south of the project site. A rare plant survey is recommended to confirm presence/absence. |
| <i>Orcuttia inaequalis</i> | San Joaquin Valley Orcutt grass | 1B.1 | This species grows only in vernal pools. Blooming period is April-September. | Moderate potential to occur. Potential to occur in vernal pool habitat present within/adjacent to project area. San Joaquin Valley Orcutt grass was not observed during reconnaissance survey; access to vernal features was not available. A rare plant survey is recommended to confirm presence/absence. |
| <i>Pseudobahia peirsonii</i> | San Joaquin adobe sunburst | FT, CE, 1B.1 | This species grows in grassland and oak woodland habitat, prefers heavy adobe clay soils. Blooming period is March and April. | Moderate potential to occur. One CNDDDB record from inexact location within five miles of project area. Valley grassland and foothill woodland communities present within/adjacent to project area. San Joaquin adobe sunburst was not observed during reconnaissance survey; however, a substantial portion of the eastern project area contains clayey alluvium soil (117 SoilWeb). As access to grassland and woodland habitat off Rocky Hill Drive was not available, a rare plant |

| Scientific Name | Common Name | Listed Status | Habitat Requirements | Potential for Occurrence |
|----------------------------|-------------------------|---------------|---|--|
| | | | | survey is recommended to confirm presence/absence. |
| <i>Puccinellia simplex</i> | California alkali grass | 1B.2 | This species grows in mineral springs and moist habitats with saline soils. Blooms March-May. | Low potential to occur. Soils may not be alkaline enough due to presence of vernal pool fairy shrimp, which tolerates a relatively neutral water pH of 6.3-8.5. A rare plant survey is recommended to confirm presence/absence. |
| <i>Tuctoria greenei</i> | Greene's tuctoria | FE, 1B.1 | This species prefers vernal pools and open grassland. Blooms May-July. | Moderate potential to occur. Potential to occur in vernal pool habitat present within/adjacent to project area. Greene's tuctoria was not observed during reconnaissance survey; access to vernal features and upland grassland was not available. A rare plant survey is recommended to confirm presence/absence. |

Table 3. Key to species listing status.

| Code | Meaning |
|---|---|
| FE | Federally Endangered |
| FT | Federally Threatened |
| FC | Federal Candidate |
| CE | California Endangered |
| CT | California Threatened |
| CFP | California Fully Protected |
| CSSC | California Species of Special Concern |
| CR | California Rare |
| CNPS Listing | Meaning |
| 1A | Plants presumed extirpated in California, and either rare or extinct elsewhere |
| 1B | Plants rare, threatened, or endangered in California, or elsewhere |
| 2A | Plants presumed extirpated in California, but more common elsewhere |
| 2B | Plants rare, threatened, or endangered in California, but more common elsewhere |
| 3 | Plants about which more information is needed – a review list |
| 4 | Plants of limited distribution – a watch list |
| Note: CNPS ranks below 1B were excluded from this analysis. | |

4 Discussion/Constraints Analysis

4.1 Sensitive Habitats and Potentially Jurisdictional Waters

Wetlands/Vernal Pools

Vernal pools, swales and other wetland areas exist throughout the eastern third of the project area (Figure 3), extending from Yokhol Drive west approximately 4,000 feet. These include a large vernal feature that sits north and south of Rocky Hill Drive, as well as the swales and smaller short-lived pools east and west of the feature. A wetland delineation is required to determine the extent of agency jurisdiction. Any impacts (e.g., dredge or fill) to wetlands or vernal pools will require a United States Army Corps of Engineers (USACOE) Section 404 Clean Water Act permit for regulation of discharge of dredged or fill material into waters of the United States, including wetlands. A 401 Water Quality Certification for discharge of dredged

and/or fill materials from the California Regional Water Quality Control Board (RWQCB) will also be required. Additionally, any impacts to vernal swales may be considered an impact to a seasonal watercourse, subject to California Fish and Game Code Section 1600 Notification of Lake or Streambed Alteration

As a federal agency issuing the Section 404 permit, USACOE must consult with the USFWS under Section 7 of the Endangered Species Act (ESA). Section 7 of the ESA directs the USFWS to determine whether the proposed work will cause impacts to federally threatened or endangered species. If it is determined that impacts will occur, the USFWS will prepare a Biological Opinion for the site. In the event that a Section 7 consultation is required, potential constraints posed by federally-listed species are described later in this document.

Creeks and Streams

Yokhol Creek, located at the far eastern end of the project area approximately 20 feet west of Yokhol Road, will fall under the jurisdiction of the CDFW as a water of the state, and under the jurisdiction of the USACOE as a jurisdictional other water of the United States. Any impacts (e.g., piledriving or footing installation) within top-of-bank features will require permitting with one or more agencies. Given the construction of the current causeway-style bridge, it is anticipated that any widening or replacement of this bridge will require permitting with CDFW, USACOE and the Regional Water Quality Control Board (RWQCB), with subsequent consultation with the USFWS under Section 7 of the ESA. To avoid permitting, any widening or replacement would be required to clear-span jurisdictional features. A wetland delineation is required to determine the limits of agency jurisdictions and inform engineering and design.

CDFW and/or USACOE may also claim jurisdiction over smaller drainages within the project area that pass beneath Rocky Hill Road; however, a formal jurisdictional delineation has not been performed at this time. Culverts were identified at the following locations, from east to west, beneath Rocky Hill Road:

- Latitude: 36.297382°, Longitude: -119.067555°



Figure 6. Yokhol Creek, west of Yokhol Drive. Modifications to the Yokhol Creek crossing will likely require agency permitting.

- Drains vernal pool/swale complex, to vernal pool/swale complex, from south to north.
- Latitude: 36.297283°, Longitude: -119.072315°



Figure 7. Large vernal swale south of Rocky Hill Road. This swale passes beneath Rocky Hill Road by way of culvert and drains to a large vernal pool to the north.

- Drains vernal swale, to vernal pool via swale, from south to north.
- Latitude: 36.297341°, Longitude -119.079499°
 - Seasonal drainage, drains catchment on northeast aspect of Rocky Hill, from west-southwest to northeast, into vernal pool/swale complex.
- Latitude: 36.301258°, Longitude: -119.092386°



Figure 8. Outflow of culvert on south side of Rocky Hill Road, draining to seasonal stock pond.

- Seasonal drainage, drains catchment north/uphill of Rocky Road into seasonal stock pond impounded by earthen dam, located approximately 200 feet south/downhill of Rocky Hill Road.
- Latitude: 36.295725°, Longitude: -119.098087°



Figure 9. Seasonal drainage for catchment on northwest aspect of Rocky Hill, passing beneath Rocky Hill Road by way of culvert.

- Seasonal drainage, drains catchment on northwest aspect of Rocky Hill, from southeast to northwest, into seasonal stock pond impounded by earthen dam, located approximately 125 feet downstream and west-northwest of Rocky Hill Road.

If culvert replacement or extension is required for road widening, permitting with USACOE, RWQCB, and/or CDFW is anticipated. A wetland delineation is required to determine the extent of agency jurisdiction.

Any work causing disturbance will require a California Fish and Game Code Section 1600 Lake and Streambed Alteration notification, and potentially USACOE Section 404 and Regional Water Quality Control Board Section 401 Water Quality Certification permitting. Ground disturbance to any ephemeral streams, desert washes, or watercourses with subsurface flow will require agency notification and permitting.

Friant Canal

Rocky Hill Road crosses the Friant Canal by way of bridge approximately 1,900 feet east of Road 204. Canals may qualify as jurisdictional features for USACOE, RWQCB, and/or CDFW, depending on a variety of factors, including agreements between the canal owner and regulatory agencies. Additionally, permits from the canal owner (e.g., encroachment) are expected for work within their facilities.

4.2 Special-status Fish and Wildlife Species

Western Mastiff Bat (*Eumops perotis californicus*)

This species has a moderate potential to occur within the project area. There is one occurrence of western mastiff bat within five miles of the project area. The closest CNDDDB occurrence, from 1994, is located 1.8 miles north of the project area and records the presence of a western mastiff bat near where Yokohl Creek crosses Highway 198. These bats utilize a range of roost types, including cliff face crevices, tall trees or buildings, and tunnels, preferring to roost in proximity to water. Within the project area, bats may roost under the Friant-Kern canal bridge or in larger rock crevices on hillside; however, no roosts were observed during the site visit. Potential impacts to the western mastiff bat would occur if road widening extends across Friant-Kern Canal and the canal bridge is modified and/or rebuilt. A pre-construction survey would identify whether bats are present underneath bridges or in cliffs on Rocky Hill and whether these locations are day- or night-roosting sites. If bats are night roosting within the project area, impacts may be avoided by restricting work to daylight hours only. If bats are night-roosting under bridges, they may be evicted outside of the maternal season (generally March – August). It is unlikely that the species' roosting activity would be impacted if found in the cliffs on Rocky Hill. If present in cliffs, limiting work to daylight hours would reduce light and noise disturbance to the species' nighttime hunting activities.

American Badger (*Taxidea taxus*)

There is a high chance of this species occurring across the proposed project area, due to the ample open dry friable soil habitat preferred by badgers for burrowing and hunting. One CNDDDB occurrence of American badger was recorded 4.6 miles northwest of the project area in 1994. This species is presumed to be extant at the occurrence location which appears to be less suitable habitat than the project area. Proximity and open routes to Sequoia National Park,

make the project area easily accessible to badger. The Rocky Hill area provides suitable habitat for a variety of rodents and reptiles, the badger's main prey items, and as such is a likely foraging area for the species. Despite the high likelihood of occurrence within the project area, impact to this species is unlikely unless road widening impacts active badger dens. Focused pre-construction surveys for badger presence, and in particular active badger dens would determine presence of and potential impact to this species. If active badger dens are found within the project area, eviction outside of the maternal season (generally March – August) is possible.

San Joaquin Kit Fox (*Vulpes macrotis mutica*)

There is a high potential for this species to occur within the project area. Suitable foraging habitat and prey are present in the form of open, rodent-filled fields. The presence of loose, friable soil along with potentially suitable kit fox burrows observed during the site visit indicate that kit fox are likely to use the site for denning and raising young. Potentially suitable burrows were observed scattered within the 250 foot buffer of the current roadway, generally within the hilly, central portion of the alignment. Burrows were assessed visually from the roadway. No suitable burrows were observed immediately adjacent to the roadway. The project area is within the known range of the species, and six CNDDDB occurrences have been recorded for this species within five miles of the project area. The closest CNDDDB kit fox record is located 3.7 miles southwest of the project area and was recorded in 1975. Four additional records from 1975 exist north, northwest, and southwest, each almost five miles from the project's western edge. The most recent CNDDDB record is from 2001 and sits 4.5 miles south of the proposed project area. Given the multiple CNDDDB occurrences of San Joaquin kit fox within five miles and the availability of high quality annual grassland habitat for foraging and denning within the project area, this species has a high potential to occur. Impact to this species may occur if road widening impacts active dens. Focused pre-construction surveys for kit fox, associated sign, and active kit fox dens would determine whether this species is present. If present, foxes may be evicted outside of the maternal season (generally March – September) with proper permits from the USFWS and CDFW.

Delta Smelt (*Hypomesus transpacificus*)

The project area is outside the known range of this species. No suitable habitat for Delta smelt was observed on-site, and the species does not have any potential to occur. There are no CNDDDB records of this species within five miles of the proposed project. No impacts are expected to occur to this species or its habitat as a result of the proposed project.

California Tiger Salamander (*Ambystoma californiense*)

Restricted to vernal pools and seasonal ponds in grassland and oak savannah communities, there is a low potential for this species to occur in suitable microhabitats within the region and project area. Despite the project area being within known California tiger salamander range, the nearest CNDDDB occurrence for the species was recorded 14.5 miles northwest of the project area. California tiger salamanders breed only in vernal pools and rely on rodent burrows in upland habitat as refuge for most of their adult lives. While potentially suitable breeding and upland habitat is present for California tiger salamander within the project area, a lack of nearby occurrences makes the presence of this species unlikely. Large agricultural swathes, several busy highways, multiple fast-moving water bodies, including the Kaweah River and Friant-Kern Canal, separate the nearest CNDDDB occurrence from the project. These factors pose significant geophysical barriers to movement, as agricultural land provides no breeding habitat, and roadways and rivers prevent dispersal. California tiger salamander was not observed during the reconnaissance survey, as access to vernal features was not available. Suitable burrows (California ground squirrel burrows) for California tiger salamander were observed along the margins of Rocky Hill Road near the eastern end of the alignment, near Yokhol Drive. A pre-construction, focused dipnet survey conducted between March and May would identify whether this species is present within the vernal pools on the eastern side of the site. If present, mitigation and exclusion measures may then be implemented to protect this species during construction.

Northern California Legless Lizard (*Anniella pulchra*)

There is a moderate potential for this species to occur on the far eastern edge of the project site, within or adjacent to the mostly dry, coarsely sanded streambed of Yokohl Creek. One CNDDDB occurrence of this species was recorded 3.75 miles northwest of the project, in 2015. The sandy wash of Yokhol Creek on the far eastern side of the site provides habitat well suited to this species life history requirements. As a result, impacts to legless lizard are expected to occur to this species if it is found within the Yokhol Creek wash and the Rocky Hill Drive bridge over the creek is rebuilt during road widening. A pre-construction survey would identify whether legless lizards are present in the Yokohl Creek wash. Mitigation and exclusion measures may then be implemented to protect this species during construction.

Blunt-nosed Leopard Lizard (*Gambelia sila*)

This species is unlikely to occur in suitable microhabitats within both the region and the project area, as the project is outside of its known range. No CNDDDB records of this species exist within five miles of the proposed project. Minimal flat, open habitat with sparse vegetation and rodent burrow refuge exists in the eastern portion of the project area. Most of the annual grassland surrounding the project area contains vegetative growth that is too thick and tall, even when freshly grazed, to support the leopard lizard's hunting and anti-predation behaviors of high-speed ambush and escape. In marginal habitat, leopard lizard densities are usually very low. Given the small amount of very patchy habitat present, it is unlikely that a leopard lizard population could be sustained in the area surrounding the project site. No impacts to this species or its usable habitat are expected as a result of the proposed project.

California Red-legged Frog (*Rana draytonii*)

This species is unlikely to occur in microhabitats within the region, and there is very low potential for the species to seasonally occur in the project location. There are no CNDDDB occurrences of this species within five miles of the project area or in Tulare County as a whole, and the project area is outside of the known range of the California red-legged frog. While the project alignment contains suitable upland foraging habitat and dispersal habitat for use during dispersal events, no suitable breeding, year-round riparian, or deep water emergent vegetative habitat exists. A review of historic aerial imagery for the project area shows the on-site stock ponds typically do not hold water throughout the year. No impacts are expected to occur to this species or its habitat as a result of the proposed project.

Giant Garter Snake (*Thamnophis gigas*)

This species is unlikely to occur within the project area. No CNDDDB records exist for this species within five miles of the proposed worksite or in Tulare County, and the project area is outside the known range of the giant garter snake. Friant-Kern Canal provides the only potential habitat for this highly aquatic species. At the time of the site visit, this concrete lined canal was observed to be steep banked (45 degrees) and contained no vegetation. While rodent burrows suitable for estivation may be present within the orchards adjacent the canal, snakes have no emergent vegetation to use as cover for foraging and avoiding predation. No impacts to this species or its habitat are expected to occur as a result of the proposed project.

Tricolored Blackbird (*Aegialatus tricolor*)

There is moderate potential for this species to forage in or near the project area, and a small amount of potential breeding habitat within close proximity to the project area. One CNDDDB record exists at the large vernal feature on the eastern side of the project. The record describes

a colony first observed with approximately 2,500 birds in 1997, and last observed at 1,800 nesting birds in the spring of 2000. The record also states, however, that no birds were observed in 2014. While this vernal feature possesses emergent vegetation required for nesting, such as bulrush and cattail, the small amount of vegetation observed to be tall enough for nesting at the time of the site visit likely precludes its use as a nesting site. This species, which nests in colonies numbering up to several hundred thousand individuals, may have utilized the site in the past, when higher rainfall resulted in more vegetative growth, but is now unlikely to nest in the project area. No impacts are expected to occur to this species or its habitat as a result of the proposed project. A nesting bird survey conducted during nesting season (Mid-February – September) would determine whether this species utilizes the project area for nesting.

California Condor (*Gymnogyps californianus*)

There is moderate potential for this species to forage within the project area. One CNDDDB record from 1976 describes condors roosting approximately 4.5 miles east of the project site in the Blue Ridge Condor Area, and a USFWS Critical Habitat unit is located approximately 4.5 miles east of the project alignment. Given that in 1987 all wild condors were brought into captivity and the species has been in a careful breeding and reintroduction period since, this CNDDDB record provides little information on the current distribution of the species in this area. While the project area presents potential foraging habitat, the granitic outcroppings south of the site on Rocky Hill (which provide a maximum of 300-400 feet of relief) do not appear to contain cliffs high enough for this species to roost or nest. No impacts to this species or its habitat are expected to occur as a result of the proposed project. A pre-construction survey would determine whether this species utilizes the granite outcroppings south of the project area for roosting.

Nesting Birds

All birds native to North America are protected when nesting by the California Fish and Game Code, as well as the United States Migratory Bird Treaty Act (MBTA). Habitat within and near the project area may be potentially suitable nesting habitat for ground-, tree-, and shrub-nesting birds, and nesting birds have a high likelihood of occurrence within the project area. Birds typically nest from mid-February through August, with the majority of nesting activity occurring in the middle of that period. Several willows located adjacent the large vernal feature on the eastern side of the project site provide substrate for tree nesting species and may be impacted by road widening. Additionally, ground-nesting species may use areas along Rocky Hill Drive to nest and could be impacted by the proposed project. Depending on the final project description and timing, impacts to this group of species or their habitat may be possible. A

nesting bird survey conducted during nesting season (Mid-February – September) would determine whether this group utilizes the project area for nesting.

Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)

This species is not considered to have any potential to occur within the project area. One CNDDDB record describes this species occurring five miles north of the project area in 1991. This species is found exclusively in association with its host plant, elderberry (*Sambucus* spp.). No elderberry bushes were observed within the project area or survey buffer. While this species has been recorded within five miles of the project area, no suitable habitat for this species was observed on-site, and the species does not have any potential to occur. No impacts are expected to this species or its habitat as a result of the proposed project.

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)

This vernal pool obligate species is assumed to be present within all vernal features in the eastern section of the project area. Nine CNDDDB records show the presence of vernal pool fairy shrimp throughout the eastern portion of the project area and the surrounding area. When regionally present, vernal pool fairy shrimp are known to be locally hyperabundant (Eriksen and Belk 1999). One record states detection of adult shrimp in two pools along Rocky Hill Drive, between 0.5 - 0.75 miles from Yokhol Drive, on the site's east side. This occurrence dates from some time before 2011. Two further records, also from an unknown date, describe the presence of adult shrimp in four pools approximately 1 mile north and three pools approximately 0.5 miles south of the project along Yokohl Drive. Two additional records from 1993 are located approximately 4.5 miles north of the project and the final four records are approximately 4.5 miles southeast of the project. The presence of ample habitat for this species, along with extensive records of the species in the area, indicates that vernal pool fairy shrimp have a very high likelihood of presence in all vernal pools within the project area. Any ground-disturbing work within the eastern mile of the project site is expected to have impacts to this species and its habitat. Vernal pool sampling prior to construction can confirm the presence of this species within the project area. Mitigation measures may then be implemented to reduce and offset impact to the fairy shrimp.

4.3 Special-status Plant Species

Recurved Larkspur (*Delphinium recurvatum*) and California Alkali Grass (*Puccinellia simplex*)

Both of these species have a low potential for occurrence within the project area. Neither species has any CNDDDB records within five miles of the project. While some potential alkali habitat was observed during the site visit, these features were isolated and subdominant. Most of the vernal features onsite drain well and have a history of spending a large portion of the

year, or multiple years, completely dry. Vernal pool fairy shrimp also have a low tolerance to alkalinity; their assumed presence negates the possibility of these species occurring. Presence of these species would be confirmed by a rare plant survey. If presence is identified, impacts to these species would be expected to occur as a result of project activities and measures to either avoid or mitigate for impacts would be required.

San Joaquin Valley Orcutt Grass (*Orcuttia inaequalis*), Greene's Tuctoria (*Tuctoria greenei*), and Hoover's Spurge (*Euphorbia hooveri*)

These species are found exclusively in vernal pool habitat and have a moderate potential to occur within the project area. No CNDDDB records exist for these species within five miles of the project area. However, ample suitable vernal pool habitat is present across the eastern mile of the project area and CNDDDB only logs positive records of occurrence. Given the suitable habitat present, all of these species may be present in vernal pools onsite. Impacts to vernal pool habitat may impact these species. Presence of these species would be confirmed by a rare plant survey. If presence is identified, impacts to these species would be expected to occur as a result of project activities and measures to either avoid or mitigate for impacts would be required.

Lesser Saltscale (*Atriplex minuscula*)

This species has moderate potential to occur within the project area. No CNDDDB occurrences exist for lesser saltscale within five miles of the project area; however, some alkali playa habitat was observed in the eastern section of the project area during the site visit. Saltscapes grow in alkali and saline soils, therefore the presence of this alkaline area, along with the vernal pool and surrounding grassland habitat utilized by this species, indicates a moderate potential for occurrence. Presence of this species would be confirmed by a rare plant survey. If presence is identified, impacts to this species would be expected to occur as a result of project activities and measures to either avoid or mitigate for impacts would be required.

Kaweah Brodiaea (*Brodiaea insignis*)

This species is considered to have moderate potential to occur. No CNDDDB records exist for this species within five miles of the project area; however, the majority of habitat surrounding the site is a mixture of grassland and open oak woodland. Kaweah brodiaea is typically found in these habitat types, and therefore may grow along Rocky Hill Drive. Presence of this species would be confirmed by a rare plant survey. If presence is identified, impacts to this species would be expected to occur as a result of project activities and measures to either avoid or mitigate for impacts would be required.

Mouse Buckwheat (*Eriogonum nudum* var. *murinum*)

This species is considered to have moderate potential to occur. No CNDDDB records exist for this species within five miles of the project area; however, there is potentially suitable habitat in the sandy wash of Yokohl Creek, near the east end of the project. Presence of this species would be confirmed by a rare plant survey. If presence is identified, impacts to this species would be expected to occur as a result of project activities and measures to either avoid or mitigate for impacts would be required.

Spiny-sepaled Button-celery (*Eryngium spinosepalum*)

Given its preference for vernal pools, moist grasslands, swales, roadside ditches, and other wetland habitats, there is a high potential for this species to occur within the project area. Three CNDDDB records exist for this species within five miles of the proposed project site and the eastern section of the project alignment is made up almost entirely of vernal pool and swale habitat. Lining Rocky Hill Drive throughout this project section are shallow roadside ditches that present additional potential habitat for button-celery. One CNDDDB record also exists within the project area, located at the far eastern end of Rocky Hill Drive approximately 300 feet west of its intersection with Yokohl Drive. Several hundred plants were observed at this location in 1992. Additional records are located 3.5 miles northeast between 1983 and 1992, and 1.3 miles directly west of the project where the City of Exeter now lies, in 1905. Given the on-site record of this plant and its usage of the habitats found near Yokohl Creek Drive, this plant is likely to be found within the project area. Any ground disturbing work within the eastern mile of the project site is expected to have impacts to this species and/or its habitat. Presence of this species would be confirmed by a rare plant survey. If presence is identified, impacts to this species would be expected to occur as a result of project activities and measures to either avoid or mitigate for impacts would be required.

Striped Adobe Lily (*Fritillaria striata*)

This species has a low potential to occur in the project area. One CNDDDB record exists for this species in an inexact location approximately 4 miles southeast of the project area. This occurrence is from two collections, one in 1928 and another in 1938. This plant is assumed to have been extirpated by 1983, as the area was plowed, and all adobe soils are now gone. As the project and buffer areas have been left largely unplowed, there remains potential for suitable soil and this species to occur. Presence of this species would be confirmed by a rare plant survey. If presence is identified, impacts to this species would be expected to occur as a result of project activities and measures to either avoid or mitigate for impacts would be required.

Madera Leptosiphon (*Leptosiphon serrulatus*)

This species is considered to have moderate potential to occur. No CNDDDB records exist for this species within five miles of the project area, however there is potentially suitable habitat in the openings in the oak woodland south of the central part of the project. Presence of this species would be confirmed by a rare plant survey. If presence is identified, impacts to this species would be expected to occur as a result of project activities and measures to either avoid or mitigate for impacts would be required.

Kaweah Monkeyflower (*Mimulus norrisii* (SYM. *Erythranthe* spp.))

There is a low potential for this species to occur in the project area. No CNDDDB records exist for this species within five miles of the project area. Kaweah monkeyflower prefers to grow in marble crevices and all the rocky crevice habitat south of the site is granitic and not marble in makeup. Presence of this species would be confirmed by a rare plant survey. If presence is identified, impacts to this species would be expected to occur as a result of project activities and measures to either avoid or mitigate for impacts would be required.

Calico Monkeyflower (*Mimulus pictus* (SYM. *Diplacus* spp.))

This species has a moderate potential to occur within the project area. One CNDDDB record exists approximately 1.5 miles southeast of the project area. The location of the occurrence in the record is from 1935 and is vague. This species prefers bare, sunny, rocky soils, shrubby areas, and granite outcrops in oak woodland habitat, which is found just south of the project area on Rocky Hill itself. Near the center of the project alignment, this habitat type is close to the roadway. Presence of this species would be confirmed by a rare plant survey. If presence is identified, impacts to this species would be expected to occur as a result of project activities and measures to either avoid or mitigate for impacts would be required.

San Joaquin Adobe Sunburst (*Pseudobahia peirsonii*)

This species has moderate potential to occur within the project area. One CNDDDB record exists from a mapping of the entire Yokohl Valley that was performed in 1973 and 1974. The exact location of the record is unknown, but falls within a five-mile radius of the project area. The species also appears on the USFWS IPaC list for the project area. San Joaquin adobe sunburst was not observed during the site visit; however, the valley grassland and foothill woodland communities in which the plant grows are present along the entire length of Rocky Hill Drive. Presence of this species would be confirmed by a rare plant survey. If presence is identified, impacts to this species would be expected to occur as a result of project activities and measures to either avoid or mitigate for impacts would be required.

5 Conclusion and Recommendations

The proposed project area is suitable for special-status species within the region and includes several potentially jurisdictional aquatic features, including Yokohl Creek and vernal pools and swales. Based on the location, habitat, land use, and proximity and connectivity with surrounding open spaces, any road widening along the proposed 3.3 mile stretch of Rocky Hill Drive will impact wetlands and vernal features along with Yokohl Creek and several ephemeral drainages, and may additionally impact several special-status species and/or their habitats. Based on habitat impacts to Yokohl Creek, vernal pools, and surrounding annual grassland, species with potential to be impacted include American badger, San Joaquin kit fox, northern California legless lizard, tricolored blackbird, vernal pool fairy shrimp, and spiny-sepaled button-celery. Any impacts to wetlands or jurisdictional waterways (including vernal pools) will initiate a Section 7 consultation between the USACOE with the USFWS under the ESA due to the assumed presence of federally-listed species, including San Joaquin kit fox and vernal pool fairy shrimp. This consultation would likely result in the issuance of a Biological Opinion (BO) and may include incidental take coverage for the federally-listed species occurring within the project area. Additionally, permit conditions (including pre-construction surveys, construction monitoring, and compensatory mitigation) may be required from the USFWS, USACOE, RWQCB and/or CDFW for potential impacts to special-status species, waterways, and riparian habitats.

Depending on specifics of construction, potential project options may adversely impact numerous special-status species and sensitive resources, including vernal pools, streams, American badger, San Joaquin kit fox, northern California legless lizard, tricolored blackbird, vernal pool fairy shrimp, lesser saltscallion, Kaweah brodiaea, mouse buckwheat, spiny-sepaled button-celery, Hoover's spurge, maderia leptosiphon, Kaweah brodiaea, calico monkeyflower, San Joaquin Valley Orcutt grass, San Joaquin adobe sunburst, and Greene's tuctoria. Potential impacts would be most pronounced on the eastern end of the proposed project alignment at the bottom of the grade, where any road widening would impact streams and/or wetlands, and again initiate consultation with the USFWS under Section 7 of the ESA. Based on the assumed presence of vernal pool fairy shrimp and San Joaquin kit fox, at a minimum, compensatory measures would be anticipated.

Crossing the Friant-Kern Canal will likely involve permitting from federal, state, and local entities. The permitting process, similar to that of streams and waterways, would depend on the determination of jurisdiction over the canal by the agencies. If the canal is bridge is identified as a roosting location for the western mastiff bat, measures to mitigate for impacts to this species would also be required.

Given the conclusions of the desktop review, field verification, and impact analysis, Sequoia recommends designing the project to minimize impacts to jurisdictional resources and sensitive

species. Augmenting the existing road and dirt-trail shoulders rather than widening Rocky Hill Drive could avoid additional permitting and impacts to listed species. A wetland delineation will be required to determine jurisdictional boundaries for wetlands, vernal pools and swales, streams, and seasonal drainages. Focused surveys using scientifically rigorous and previously accepted agency guidelines are recommended to determine relative abundance of the listed species in this report. These further investigations would determine the need to implement avoidance and mitigation measures or offset impacts to species and habitats. A series of rare plant surveys, timed to cover all plant blooming periods, would identify which rare plants are present within the project footprint, and enable avoidance or mitigation where needed.

6 Literature Cited

- Ahlborn G. 1988-90. California Wildlife Habitat Relationships System. Sacramento (CA): California Department of Fish and Wildlife, California Interagency Wildlife Task Group.
- [CDFW] California Department of Fish and Wildlife. 2018. California Condor. CDFW Conservation and Management of Wildlife and Habitat Species Accounts; [accessed February 2018]. <https://www.wildlife.ca.gov/Conservation/Birds/California-Condor>
- CalFlora. 2018. Information of California Wild Plants. California Native Plant Society; [accessed February 2018]. <http://www.calflora.org>
- [CNPS] California Native Plant Society. 2018. Inventory of Rare and Endangered Plants (online edition, v8). California Native Plant Society; [accessed February 2018]. <http://www.cnps.org/inventory>
- [CNDDDB] California Natural Diversity Database. 2018. RareFind 5. Sacramento (CA): California Department of Fish and Wildlife; [accessed February 2018]. <https://www.wildlife.ca.gov/Data/CNDDDB>
- Dudek ICF. 2012. Species Accounts Western Mastiff Bat (*Eumops perotis*), ICF International.
- Duquette JM, Gehrt SD, Ver Steeg B, Warner RE. 2014. Badger (*Taxidea taxus*) Resource Selection and Spatial Ecology in Intensive Agricultural Landscapes. The American Midland Naturalist. 171(1):116-127.
- ECOS. 2017. Environmental Conservation Online System; [accessed February 2018]. <https://ecos.fws.gov/ecp/>
- Gerbic, MA. 2014. A Visit to Rocky Hill Archaeological Preserve Exeter, California – March 22-23, 2014. Santa Cruz Archeological Society Newsletter.
- Jepson Herbarium. 2018. The University and Jepson Herbaria. Berkeley (CA): University of California, Berkeley; [accessed February 2018]. <http://ucjeps.berkeley.edu>
- Johnston D. 2004. California Bat Mitigation Techniques, Solutions, and Effectiveness. H. T. Harvey & Associates. California Department of Transportation.
- Smith HJ, Stevenson JS. 2015. Best Management Practices for Bat Species Inhabiting Transportation Infrastructure. WNS Conservation and Recovery Working Group.
- Soilweb. 2017. SoilWeb: An Online Soil Survey Browser. California Soil Resource Lab; [accessed February 2018]. <https://casoilresource.lawr.ucdavis.edu/gmap/>
- Stebbins RC, McGinnis SN. 2012. Field Guide to Amphibians and Reptiles of California. Berkeley (CA): University of California Press.

Quinn, JH. 2008. The Ecology of the American Badger (*Taxidea taxus*) in California: Assessing Conservation Needs on Multiple Scales. Davis (CA): University of California, Davis.

[US EPA] United States Environmental Protection Agency. 2018. Section 404 Permit Program. US EPA; [accessed February 2018]. <https://www.epa.gov/cwa-404/section-404-permit-program>

[USFWS] United States Fish and Wildlife Service. 2018. Endangered Species Accounts. Sacramento (CA): United States Fish and Wildlife Service.

_____. 2007. Recovery Plan for the Giant Garter Snake. Sacramento (CA): United States Fish and Wildlife Service.

_____. 2007. Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) 5-Year Review: Summary and Evaluation. Sacramento (CA): United States Fish and Wildlife Service.

_____. 1998. Blunt-nosed Leopard Lizard (*Gambelia sila*) 5-Year Review: Summary and Evaluation. Sacramento (CA): United States Fish and Wildlife Service.

_____. 1998. San Joaquin Kit Fox (*Vulpes macrotis mutica*) 5-Year Review: Summary and Evaluation. Sacramento (CA): United States Fish and Wildlife Service.

7 Alphabetical List of Contacts/Contributors/Preparers

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Appendix A

U.S. Fish and Wildlife Service Information for Planning and Consultation System Draft Report for Rocky Hill Road, Tulare County, California

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Tulare County, California



Local office

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📠 (916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please [contact NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME

STATUS

San Joaquin Kit Fox *Vulpes macrotis mutica*

Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/2873>

Birds

| NAME | STATUS |
|--|------------|
| California Condor <i>Gymnogyps californianus</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8193 | Endangered |

Reptiles

| NAME | STATUS |
|--|------------|
| Blunt-nosed Leopard Lizard <i>Gambelia silus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/625 | Endangered |
| Giant Garter Snake <i>Thamnophis gigas</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482 | Threatened |

Amphibians

| NAME | STATUS |
|--|------------|
| California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2891 | Threatened |
| California Tiger Salamander <i>Ambystoma californiense</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2076 | Threatened |

Fishes

| NAME | STATUS |
|---|------------|
| Delta Smelt <i>Hypomesus transpacificus</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/321 | Threatened |

Crustaceans

| NAME | STATUS |
|--|------------|
| Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/498 | Threatened |

Flowering Plants

| NAME | STATUS |
|--|------------|
| San Joaquin Adobe Sunburst <i>Pseudobahia peirsonii</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2931 | Threatened |

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ

[below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see maps of where birders and the general public have sighted birds in and around your project area, visit E-bird tools such as the [E-bird data mapping tool](#) (search for the name of a bird on your list to see specific locations where that bird has been reported to occur within your project area over a certain timeframe) and the [E-bird Explore Data Tool](#) (perform a query to see a list of all birds sighted in your county or region and within a certain timeframe). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

| NAME | BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.) |
|---|--|
| Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626 | Breeds Jan 1 to Aug 31 |
| Black Swift <i>Cypseloides niger</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878 | Breeds Jun 15 to Sep 10 |
| Black-chinned Sparrow <i>Spizella atrogularis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9447 | Breeds Apr 15 to Jul 31 |

Burrowing Owl *Athene cunicularia*

Breeds Mar 15 to Aug 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/9737>

California Thrasher *Toxostoma redivivum*

Breeds Jan 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Clark's Grebe *Aechmophorus clarkii*

Breeds Jan 1 to Dec 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Costa's Hummingbird *Calypte costae*

Breeds Jan 15 to Jun 10

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/9470>

Golden Eagle *Aquila chrysaetos*

Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1680>

Lawrence's Goldfinch *Carduelis lawrencei*

Breeds Mar 20 to Sep 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9464>

Lewis's Woodpecker *Melanerpes lewis*

Breeds Apr 20 to Sep 30

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9408>

Long-billed Curlew *Numenius americanus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/5511>

Marbled Godwit *Limosa fedoa*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9481>

Mountain Plover *Charadrius montanus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3638>

Nuttall's Woodpecker *Picoides nuttallii*

Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/9410>

Oak Titmouse *Baeolophus inornatus*

Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9656>

Rufous Hummingbird *Selasphorus rufus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8002>

Short-billed Dowitcher *Limnodromus griseus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9480>

Tricolored Blackbird *Agelaius tricolor*

Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/3910>

Whimbrel *Numenius phaeopus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9483>

White Headed Woodpecker *Picoides albolarvatus*

Breeds May 1 to Aug 15

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/9411>

Willet *Tringa semipalmata*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wrentit *Chamaea fasciata*

Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in your project's counties during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the counties of your project area. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information.

■ probability of presence ■ breeding season | survey effort — no data

SPECIES

JAN

FEB

MAR

APR

MAY

JUN

JUL

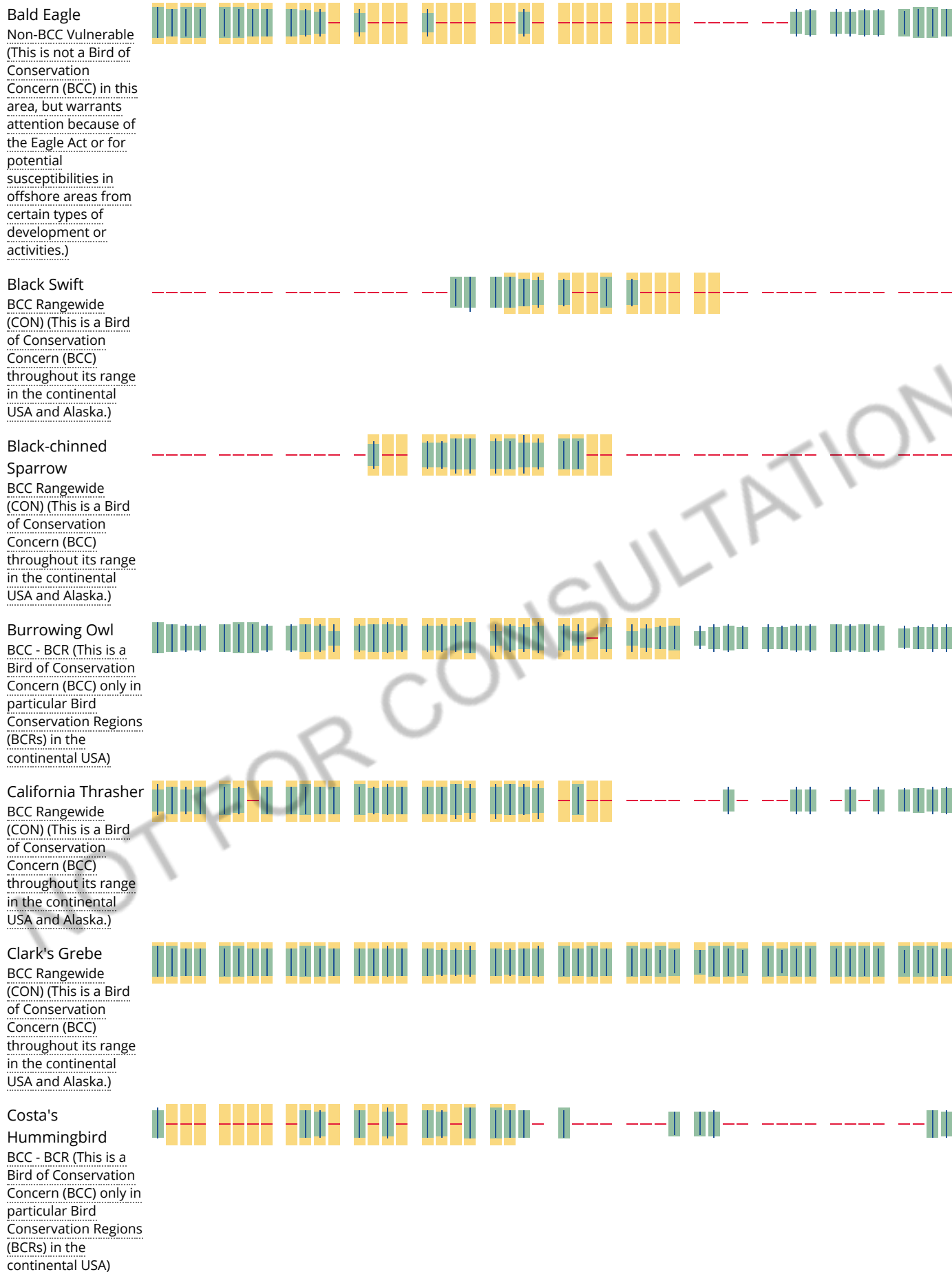
AUG

SEP

OCT

NOV

DEC



Golden Eagle
Non-BCC Vulnerable
(This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



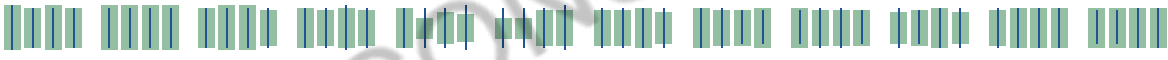
Lawrence's Goldfinch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Lewis's Woodpecker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Long-billed Curlew
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Marbled Godwit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



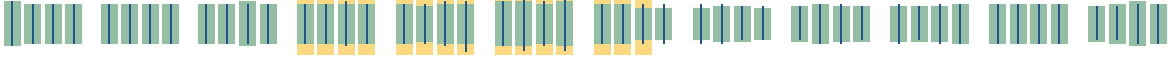
SPECIES

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Mountain Plover
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Nuttall's Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)





Wrentit

BCC Rangewide

(CON) (This is a Bird
of Conservation
Concern (BCC)
throughout its range
in the continental
USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the counties which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [E-bird Explore Data Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird entry on your migratory bird species list indicates a breeding season, it is probable that the bird breeds in your project's counties at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the BGEPA should such impacts occur.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[PEMFh](#)

FRESHWATER POND

[PUBFh](#)

RIVERINE

[R2UBKx](#)

[R4USC](#)

A full description for each wetland code can be found at the National Wetlands Inventory website: <https://ecos.fws.gov/ipac/wetlands/decoder>

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

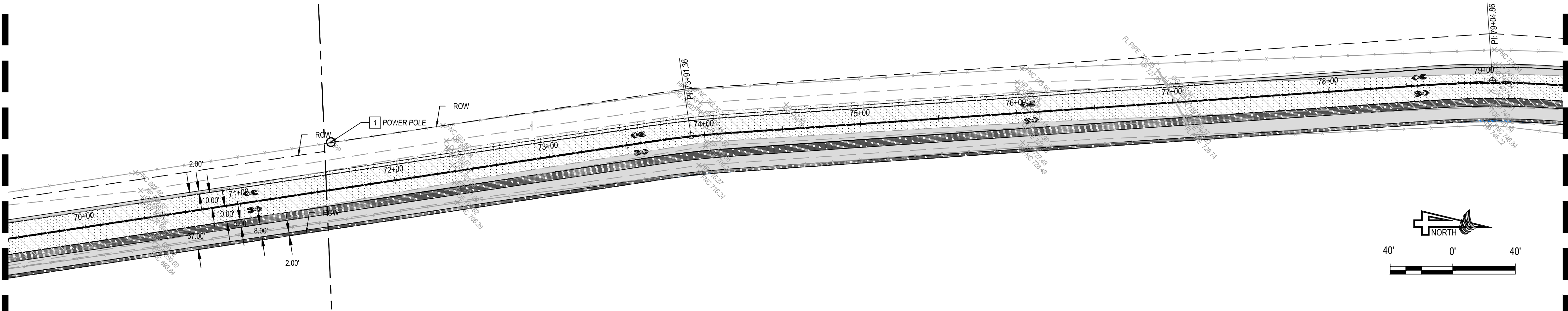
Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Appendix C

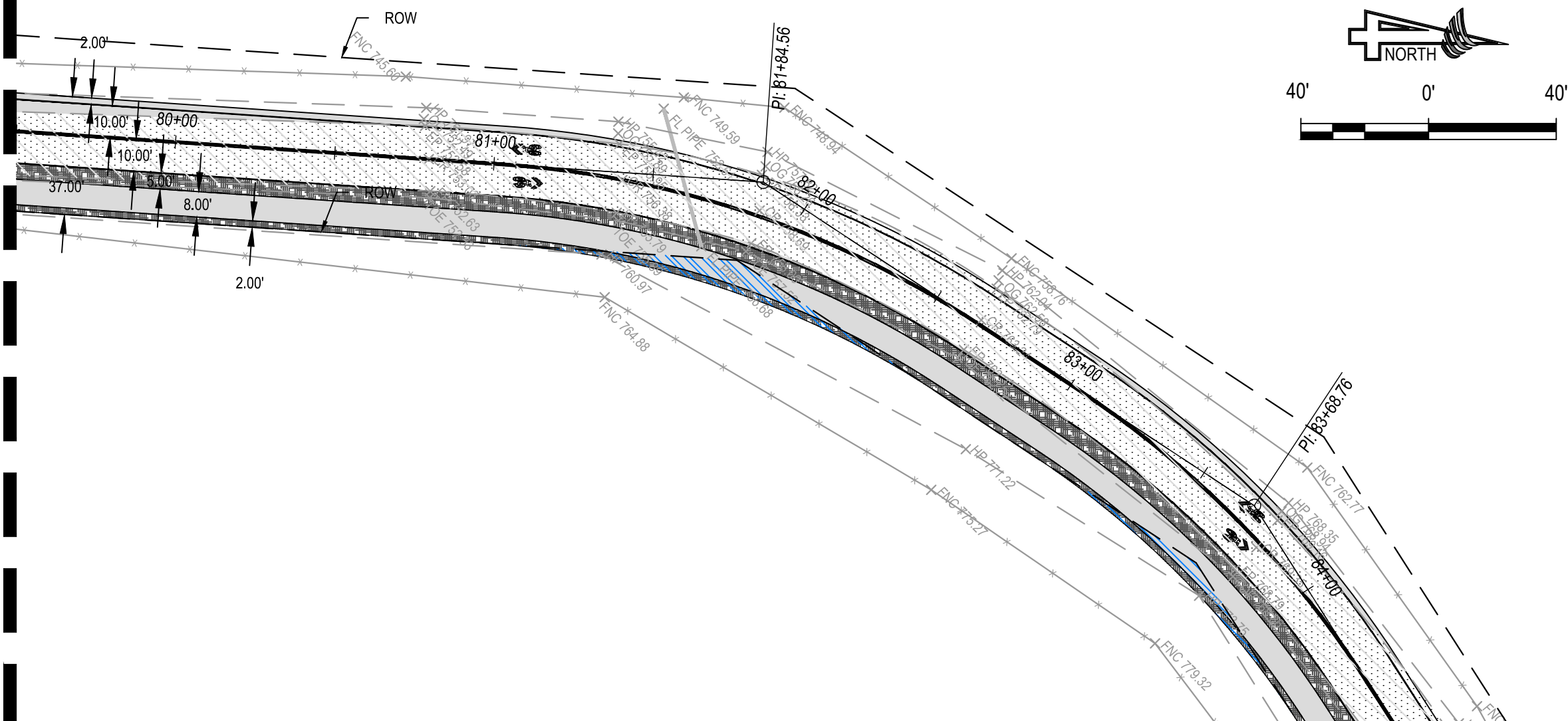
Preliminary Engineering Drawings

MATCHLINE 69+50, SEE SHEET 2



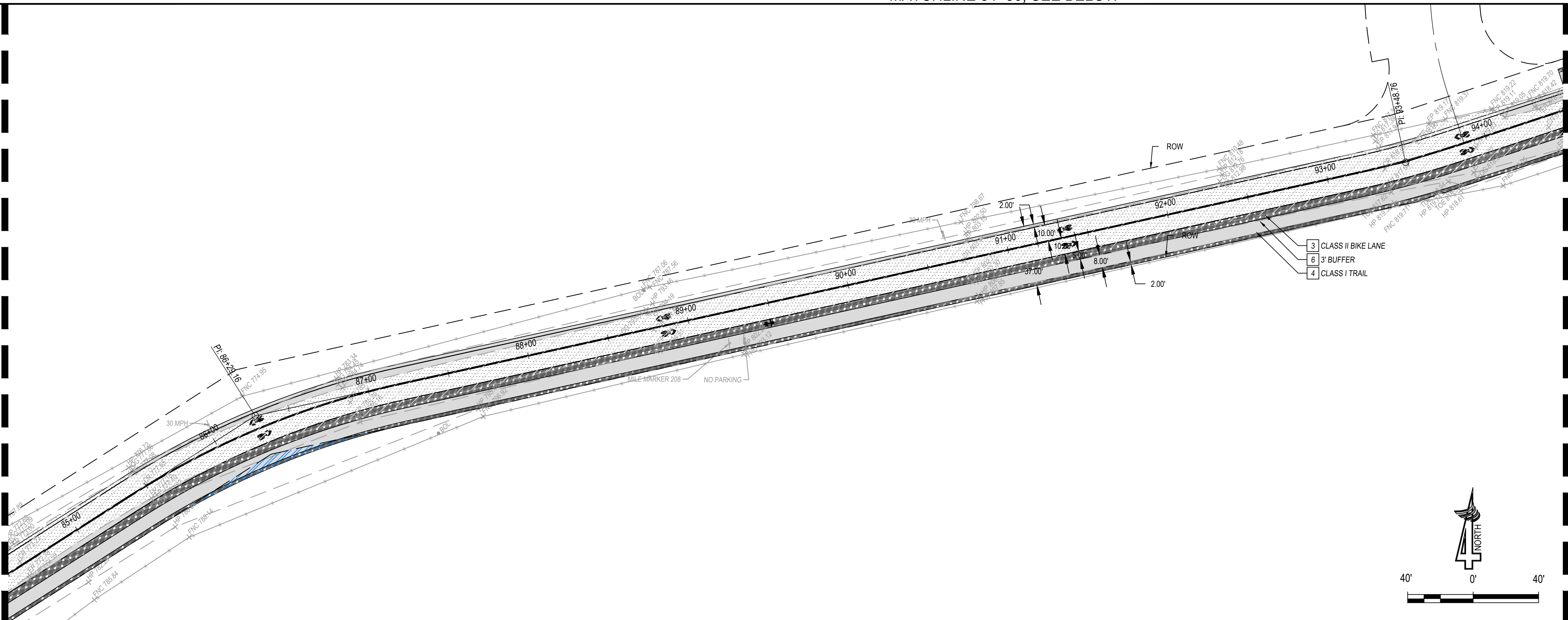
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MATCHLINE 84+50, SEE BELOW

MATCHLINE 84+50, SEE ABOVE



MATCHLINE 94+50, SEE SHEET 4

GENERAL PLAN NOTES:
1. (PLACE HOLDER)

GENERAL PLAN KEYNOTES:

- 1 XXXXXXX
1 XXXXXXX

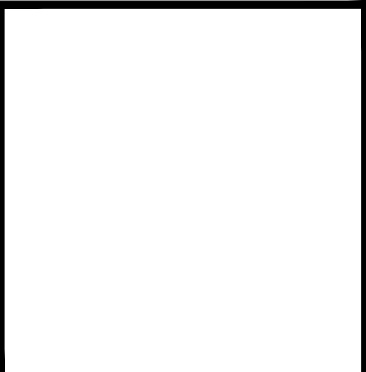
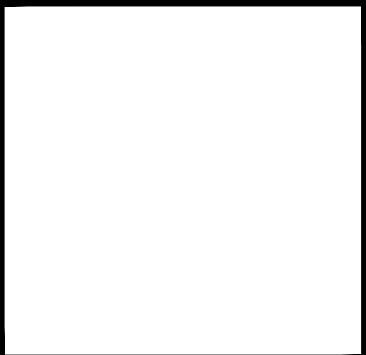
LEGEND:

- DETAIL REFERENCE
EXIST. ASPHALT CONCRETE
PROPOSED ASPHALT CONCRETE
PROPOSED SLURRY SEAL



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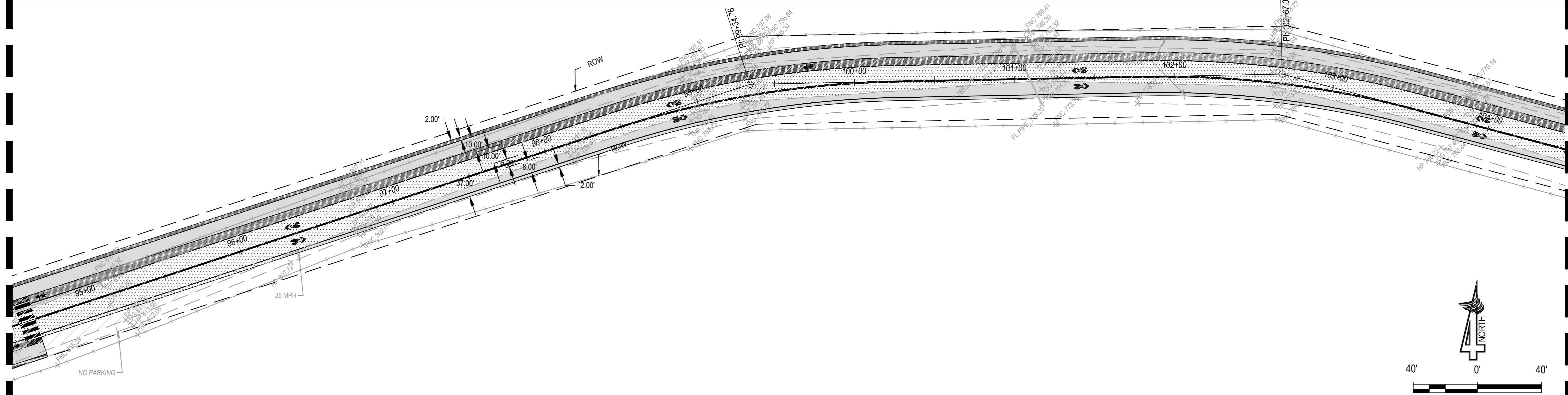
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| PREPARED BY: | 2025 W. MAIN ST., STE. A P.O. BOX 7593 VISALIA, CA 93281 TEL: 559.802.3052 FAX: 559.802.3215 | CHK BY: KJM |
| | | |
| DRW BY: BR | | |

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| IMPROVEMENT PLAN FOR: | |
| TCAG | 210 N. CHURCH ST., SUITE B VISALIA, CA 93281 559.863-0406 |
| ROCKY HILL FEASIBILITY STUDY | |

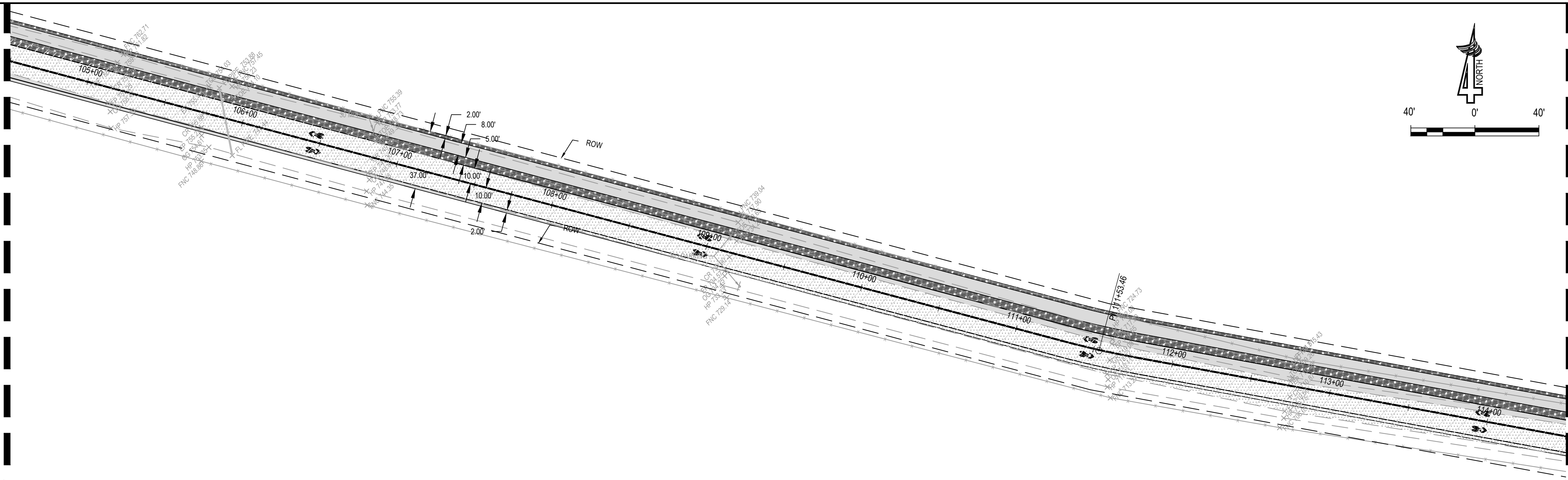
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| JOB NO.: 17321 |
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| SHEET NO.: 3 OF 7 |

MATCHLINE 94+50, SEE SHEET 3



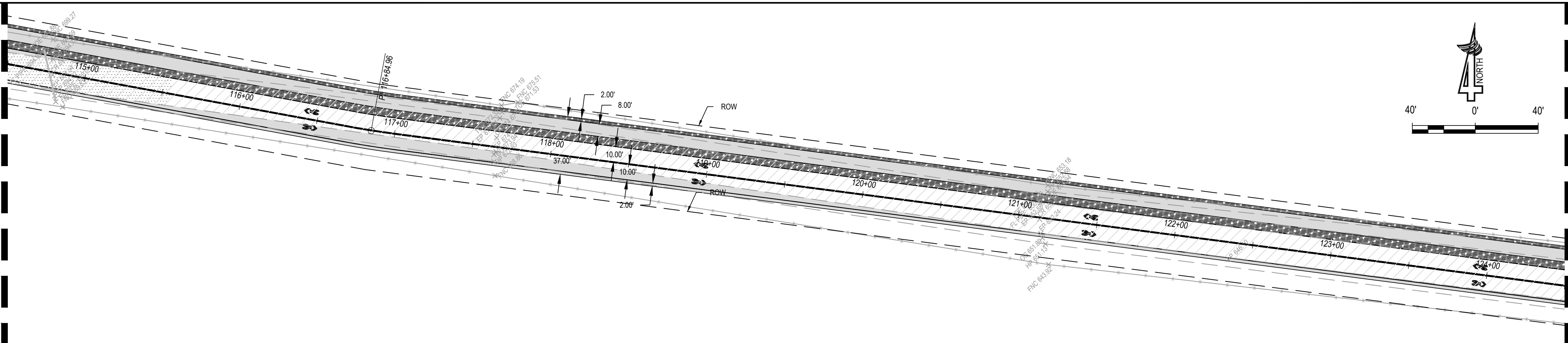
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MATCHLINE 104+50, SEE ABOVE



MATCHLINE 114+50, SEE BELOW

MATCHLINE 114+50, SEE ABOVE



MATCHLINE 124+50, SEE SHEET 5

GENERAL PLAN NOTES:
1. (PLACE HOLDER)

GENERAL PLAN KEYNOTES:

- 1 XXXXXXX
- 1 XXXXXXX

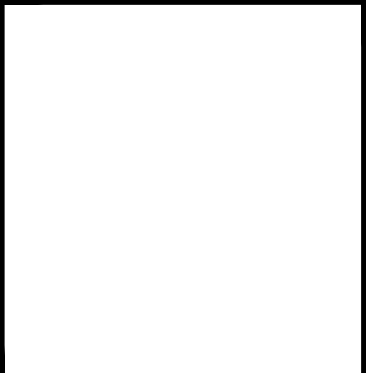
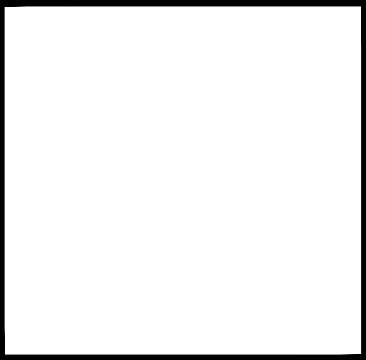
LEGEND:

- DETAIL REFERENCE
- EXIST. ASPHALT CONCRETE
- PROPOSED ASPHALT CONCRETE
- PROPOSED SLURRY SEAL



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PREPARED BY:

2029 W. MAIN ST., STE. A
P.O. BOX 7593
VISALIA, CA 93281
TEL 559.802.3052
FAX 559.802.3215

4CREEKS

DRW BY: BR

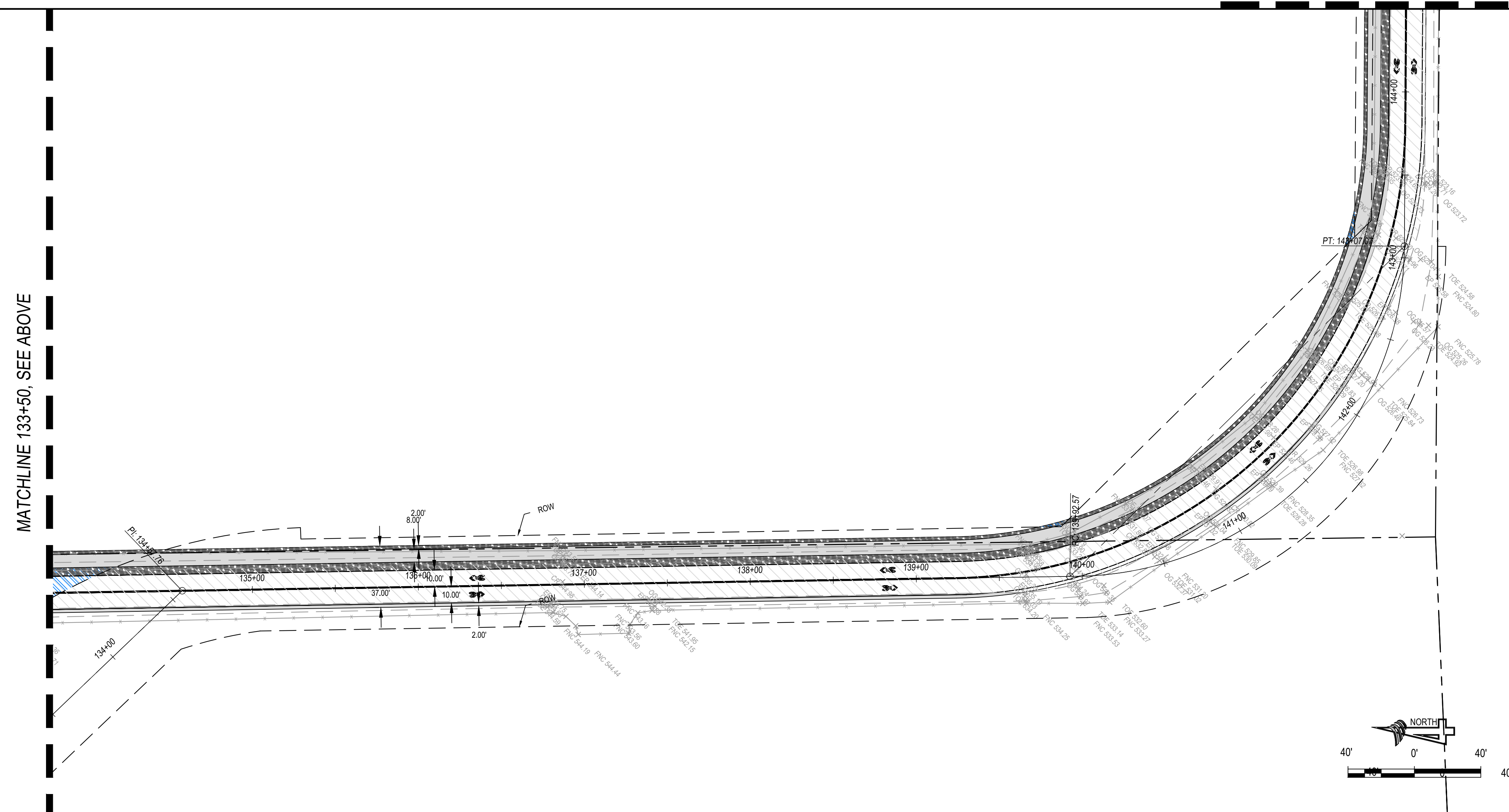
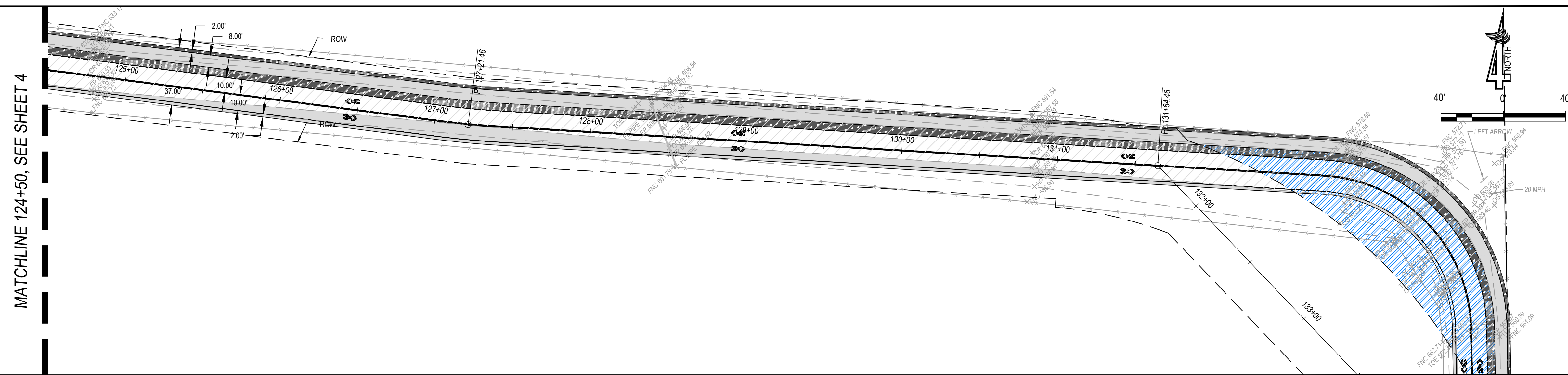
CHK BY: KJM

IMPROVEMENT PLAN FOR:

TCAG
210 N. CHURCH ST., SUITE B
VISALIA, CA 93281
559.802.3052

ROCKY HILL FEASIBILITY STUDY

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| PLOT DATE: | Jan 16, 2019 |
| JOB NO.: | 17321 |
| FILE NAME: | STREET-PP.DWG |
| SCALE: | 1"=40' |
| SHEET NO.: | 4 OF 7 |







GENERAL PLAN NOTES:

1. (PLACE HOLDER)

GENERAL PLAN KEYNOTES:

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| 1 | XXXXXXXX |
| 1 | XXXXXXXX |

LEGEND

-  DETAIL REFERENCE
 EXIST. ASPHALT CONCRETE
 PROPOSED ASPHALT CONCRETE
 PROPOSED SLURRY SEAL



Know what's **below**.
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| DATE | RCE 00000 |

PREPARED BY:



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2929 W. MAIN ST., STE. A
P.O. BOX 7593
VISA, CA 92081
TEL: 559.802.3152
FAX: 559.802.3215

ORDER NO. 00

QUANTITY 1/11

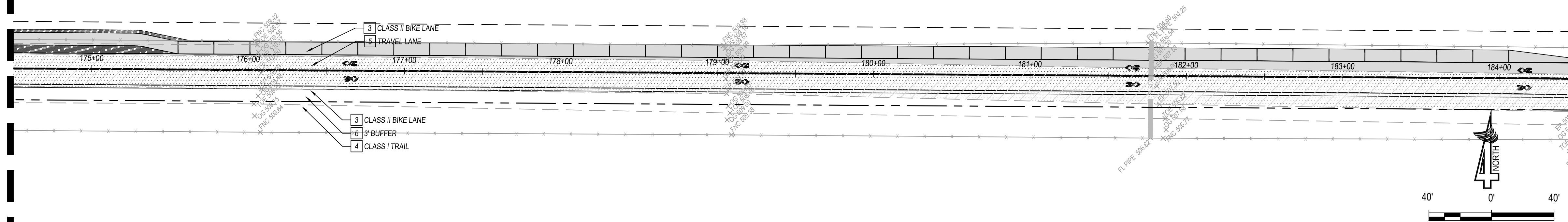
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TCAG

210 N. CHURCH ST., SUITE B
VISALIA, CA 93281
559-923-0450

ROCKY HILL FEASIBILITY STUDY

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| PLOT DATE: | Jan 16, 2019 |
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| FILE NAME: | STREET-PP.DWG |
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| SHEET NO.: | 5 OF 7 |



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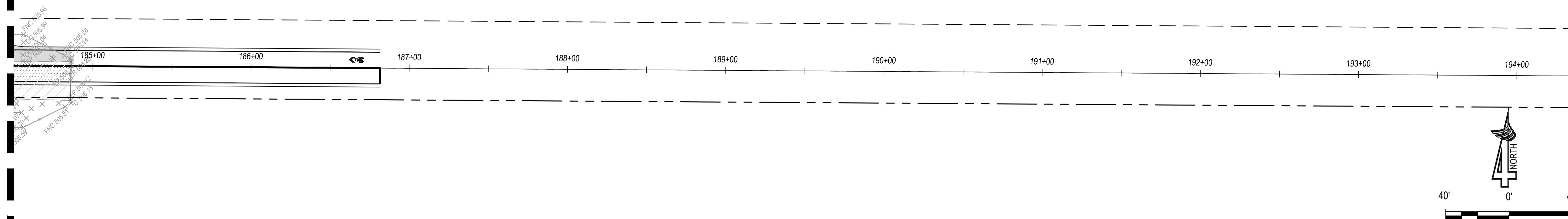
GENERAL PLAN NOTES:

1. (PLACE HOLDER)





GENERAL PLAN KEYNOTES:

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| 1 | XXXXXXXX |

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LEGEND

 DETAIL REFERENCE
 EXIST. ASPHALT CONCRETE
 PROPOSED ASPHALT CONCRETE
 PROPOSED SLURRY SEAL



Know what's **below**.
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| DATE _____ | |
| DATE _____ | RCE 00000 |

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VISA, CA 92081
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FAX: 559.802.3215

ORDER NO. 00

QUANTITY 1/11

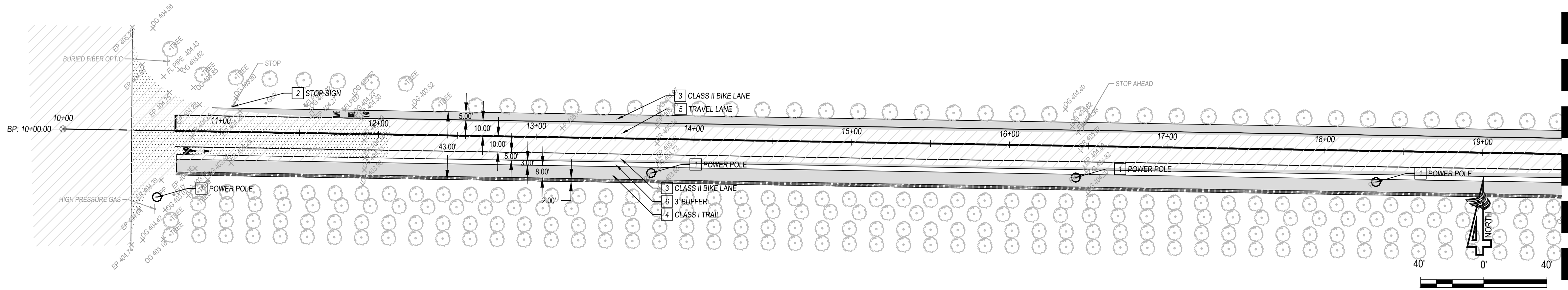
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TCAG

210 N. CHURCH ST., SUITE B
VISALIA, CA 93281
559-923-0450

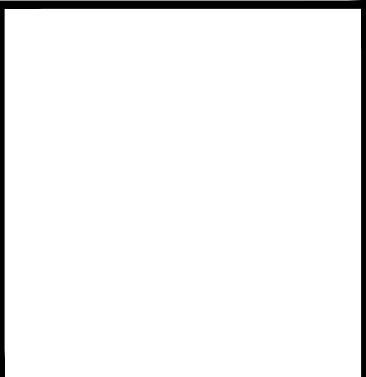
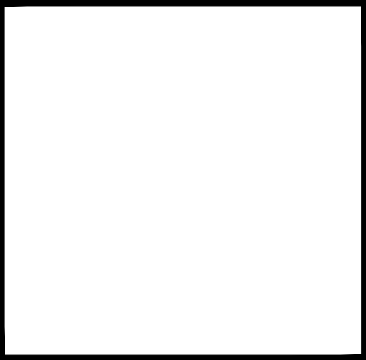
ROCKY HILL FEASIBILITY STUDY

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| FILE NAME: | STREET-PP.DWG |
| SCALE: | 1"=40' |
| SHEET NO.: | 7 OF 7 |



- KEYNOTES:
- 1 EXISTING POWER POLE
 - 2 EXISTING STOP SIGN
 - 3 CLASS II BIKE LANE
 - 4 CLASS I TRAIL
 - 5 TRAVEL LANE
 - 6 3' BUFFER
 - 7 PROPOSED BRIDGE EXTENSION (5') FOR TRAIL

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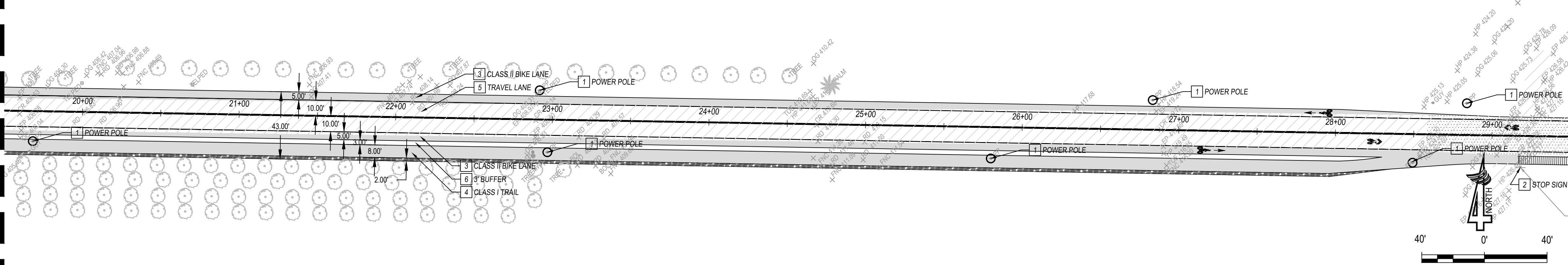
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| | DRW BY: BR | CHK BY: KJM | |

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| IMPROVEMENT PLAN FOR: | TCAG 210 N. CHURCH ST., SUITE B VISALIA, CA 93281 559-823-0406 | | |
| | ROCKY HILL FEASIBILITY STUDY | | |

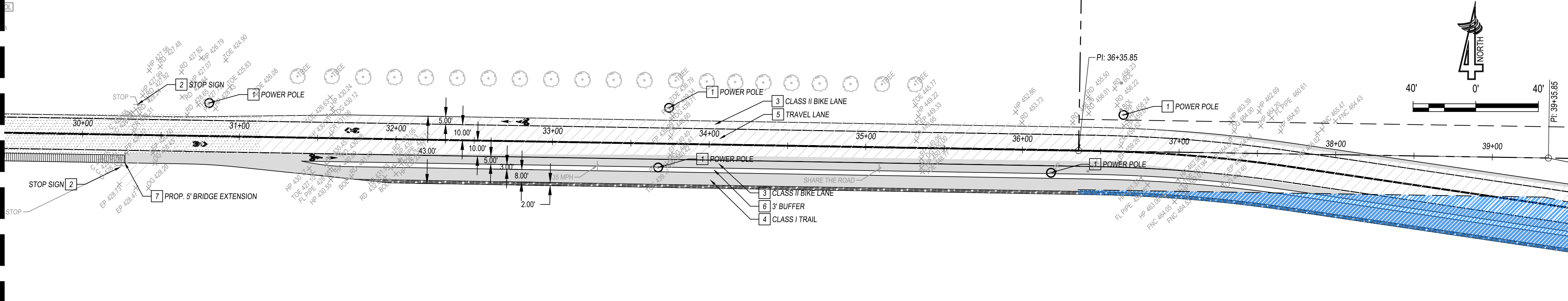
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MATCHLINE 19+50, SEE ABOVE

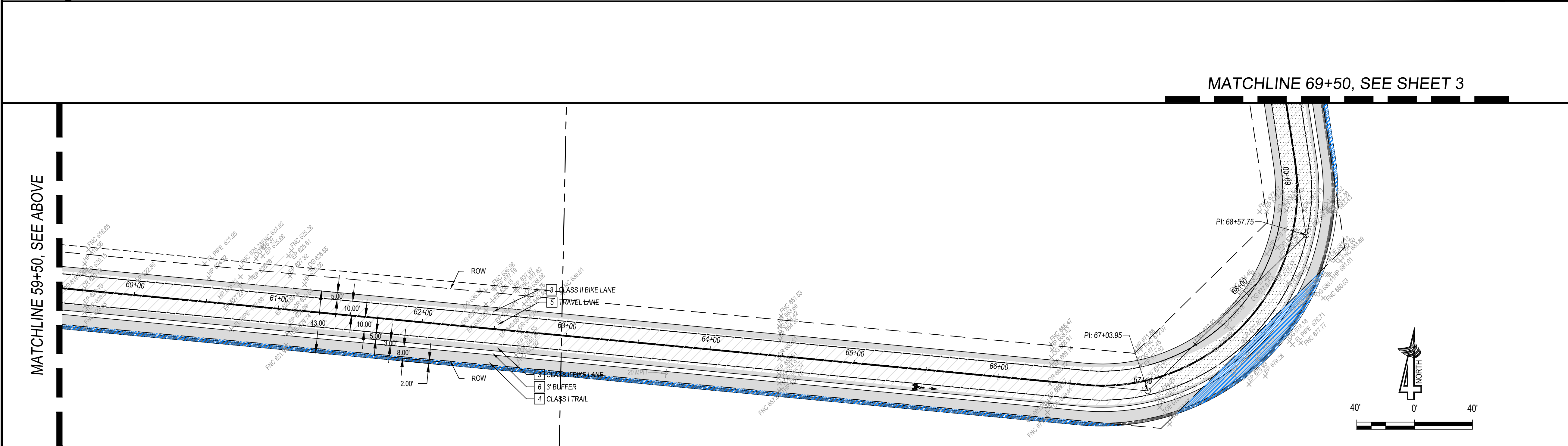
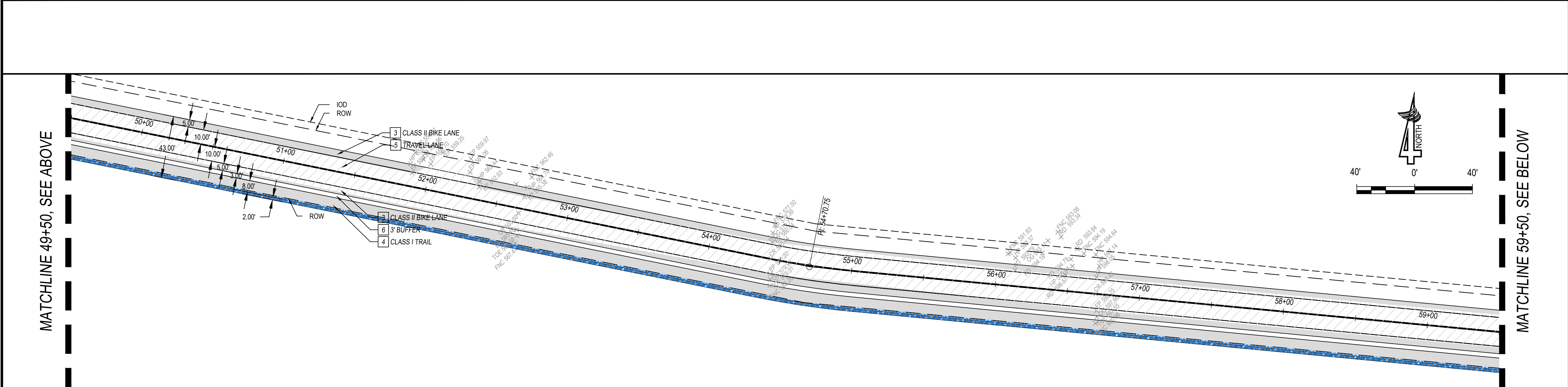
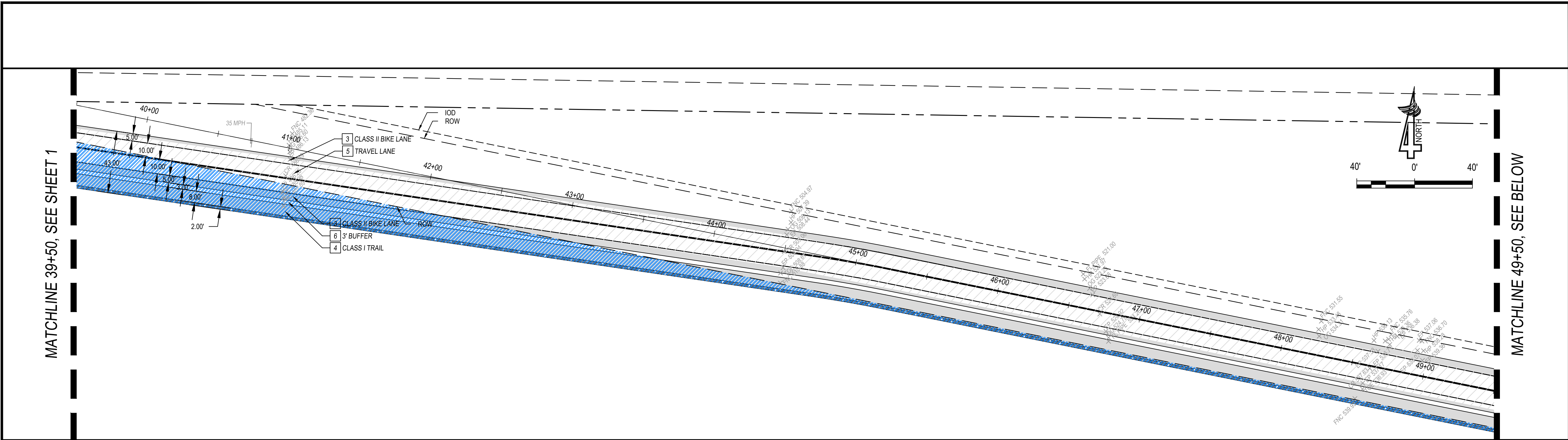


- LEGEND:
- DETAIL REFERENCE
 - EXIST. ASPHALT CONCRETE
 - PROPOSED ASPHALT CONCRETE
 - PROPOSED SLURRY SEAL
 - PROPOSED RIGHT-OF-WAY ACQUISITION
 - EXISTING POWER POLE

MATCHLINE 29+50, SEE ABOVE



Know what's below.
Call before you dig.



KEYNOTES:

- 1 EXISTING POWER POLE
- 2 EXISTING STOP SIGN
- 3 CLASS II BIKE LANE
- 4 CLASS I TRAIL
- 5 TRAVEL LANE
- 6 3' BUFFER
- 7 PROPOSED BRIDGE EXTENSION (5') FOR TRAIL

LEGEND:

- DETAIL REFERENCE
- EXIST. ASPHALT CONCRETE
- PROPOSED ASPHALT CONCRETE
- PROPOSED SLURRY SEAL
- PROPOSED RIGHT-OF-WAY ACQUISITION
- EXISTING POWER POLE

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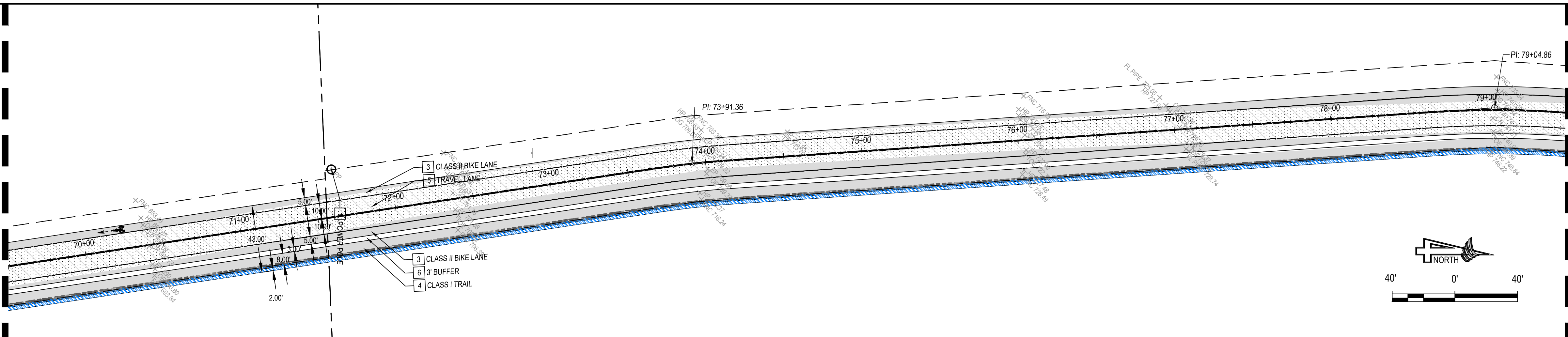
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| PREPARED BY: | 2029 W. MAIN ST., STE. A P.O. BOX 7593 VISALIA, CA 93281 TEL: 559-802-3052 FAX: 559-802-3215 | | CHK BY: KJM |
| | DRW BY: BR | | |

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| ROCKY HILL FEASIBILITY STUDY | |
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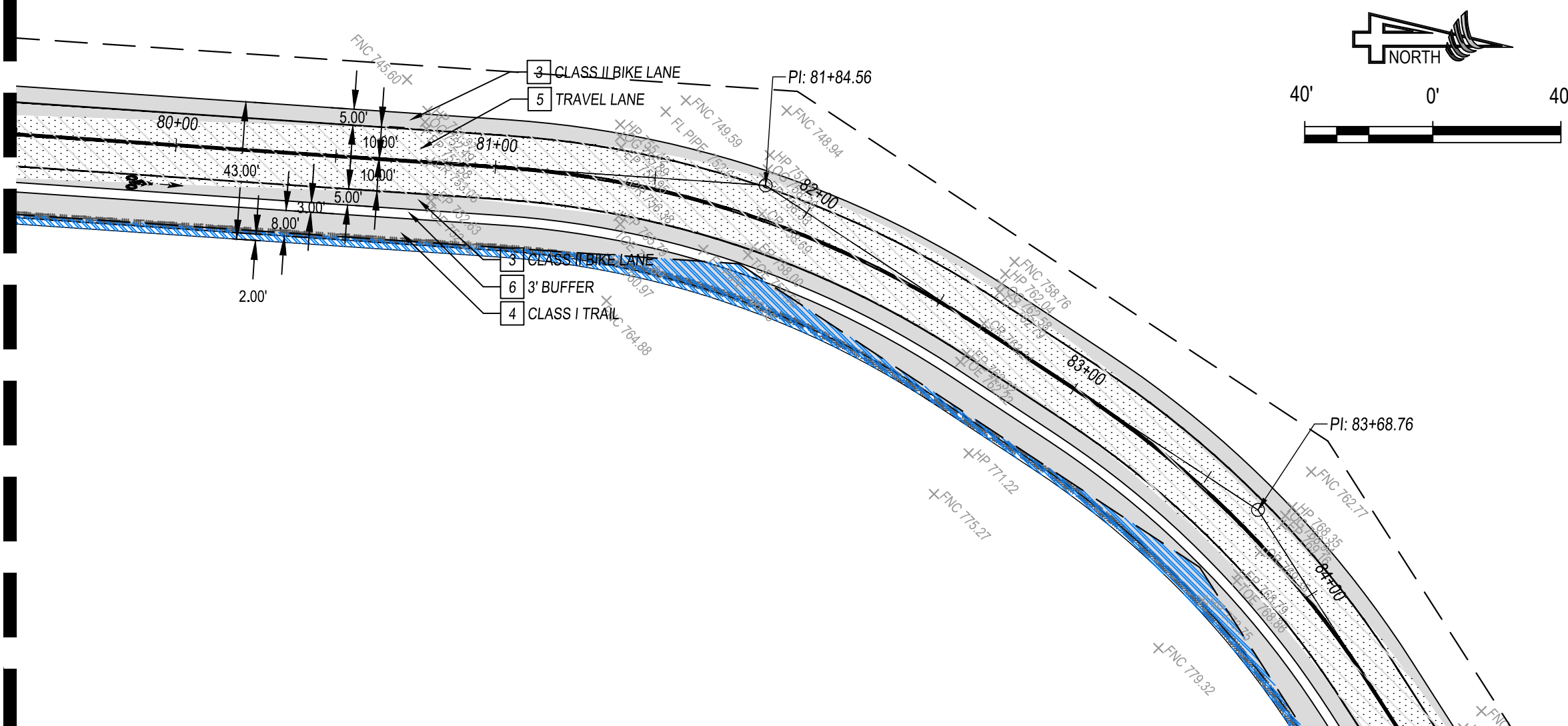
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MATCHLINE 69+50, SEE SHEET 2



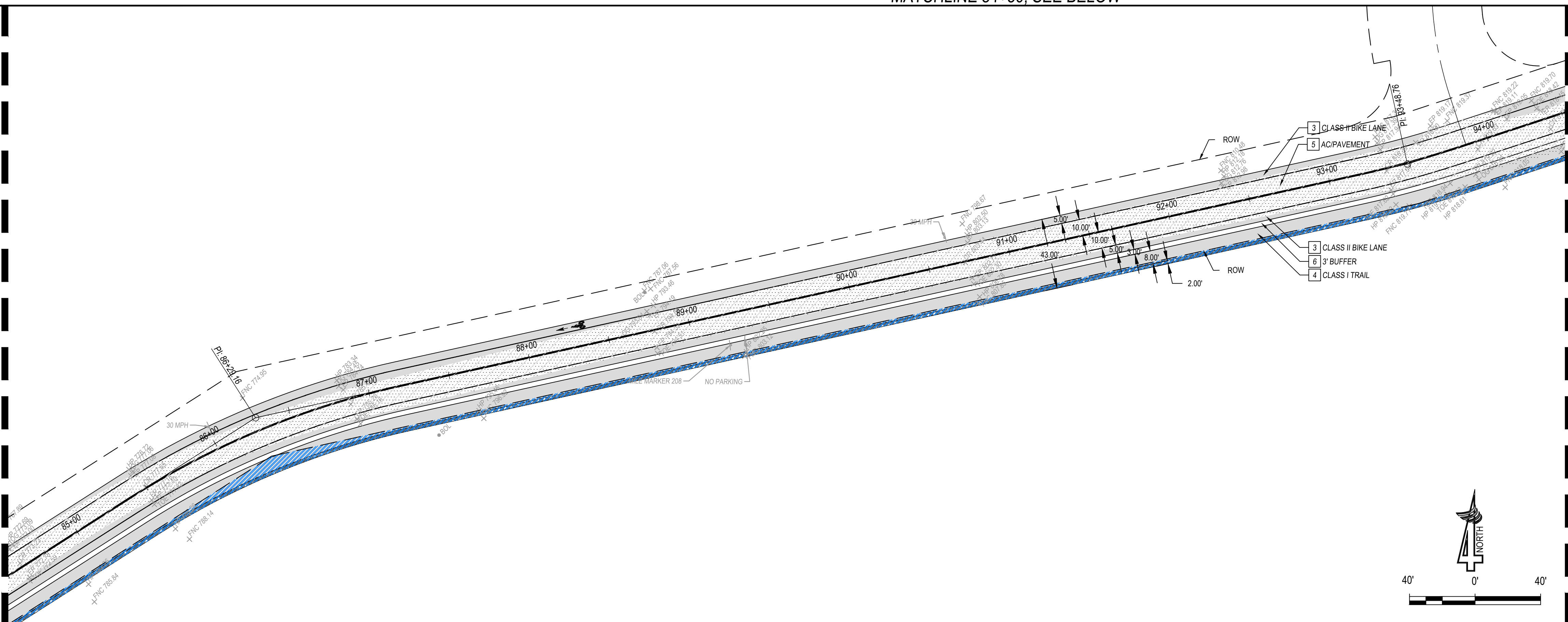
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MATCHLINE 84+50, SEE BELOW

MATCHLINE 84+50, SEE ABOVE



MATCHLINE 94+50, SEE SHEET 4

KEYNOTES:

- EXISTING POWER POLE
- EXISTING STOP SIGN
- CLASS II BIKE LANE
- CLASS I TRAIL
- TRAVEL LANE
- 3' BUFFER
- PROPOSED BRIDGE EXTENSION (5') FOR TRAIL

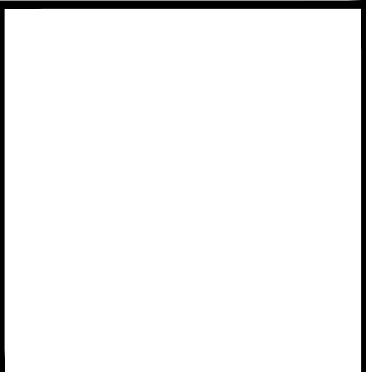
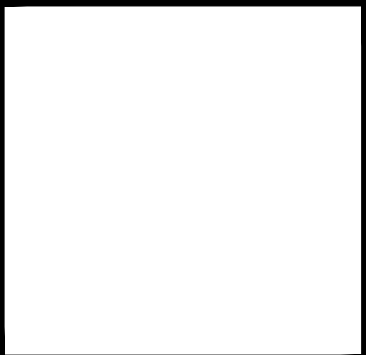
LEGEND:

- DETAIL REFERENCE
- EXIST. ASPHALT CONCRETE
- PROPOSED ASPHALT CONCRETE
- PROPOSED SLURRY SEAL
- PROPOSED RIGHT-OF-WAY ACQUISITION
- EXISTING POWER POLE



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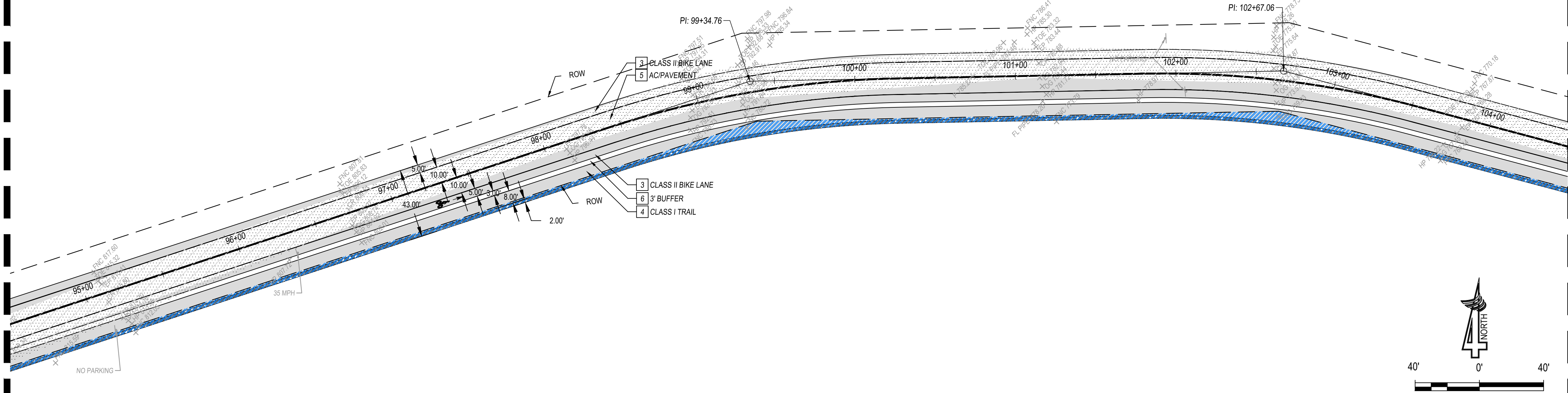
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| PREPARED BY: | | CHK BY: KJM | |
| 2025 W. MAIN ST., STE. A P.O. BOX 7593 VISALIA, CA 93281 TEL 559.802.3052 FAX 559.802.3215 | | DRW BY: BR | |

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| IMPROVEMENT PLAN FOR: | | ROCKY HILL FEASIBILITY STUDY | |
| TCAG 210 N. CHURCH ST., SUITE B VISALIA, CA 93281 559.862-5406 | | | |

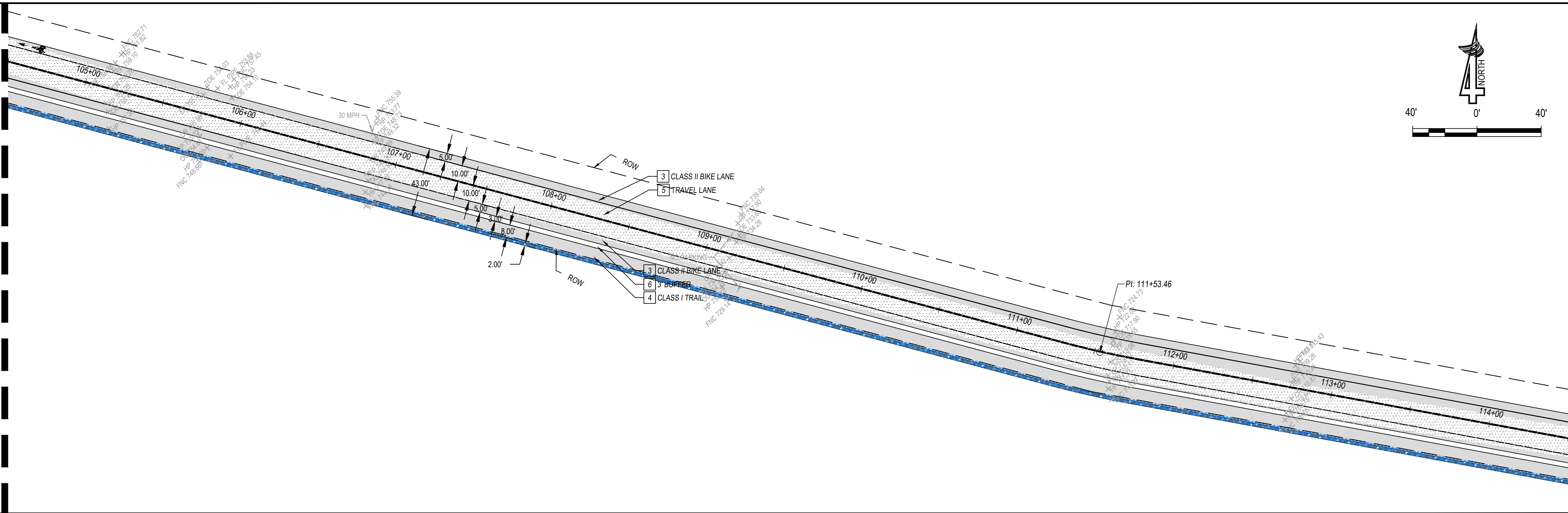
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| PLOT DATE: Jan 15, 2019 |
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| SCALE: 1"=40' |
| SHEET NO.: 3 OF 7 |

MATCHLINE 94+50, SEE SHEET 3



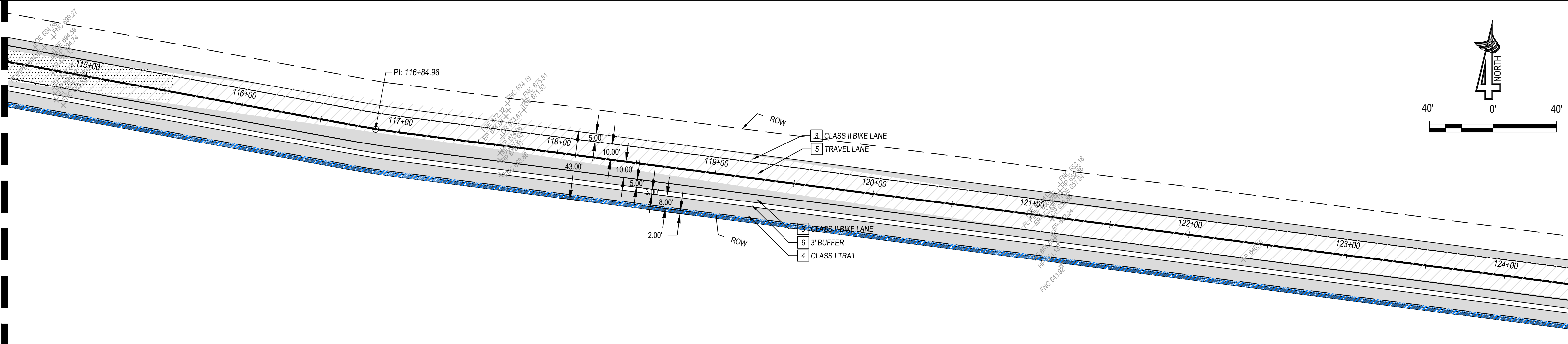
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MATCHLINE 114+50, SEE BELOW

MATCHLINE 114+50, SEE ABOVE



MATCHLINE 124+50, SEE SHEET 5

KEYNOTES:

- EXISTING POWER POLE
- EXISTING STOP SIGN
- CLASS II BIKE LANE
- CLASS I TRAIL
- TRAVEL LANE
- 3' BUFFER
- PROPOSED BRIDGE EXTENSION (5') FOR TRAIL

LEGEND:

- DETAIL REFERENCE
- EXIST. ASPHALT CONCRETE
- PROPOSED ASPHALT CONCRETE
- PROPOSED SLURRY SEAL
- PROPOSED RIGHT-OF-WAY ACQUISITION
- EXISTING POWER POLE



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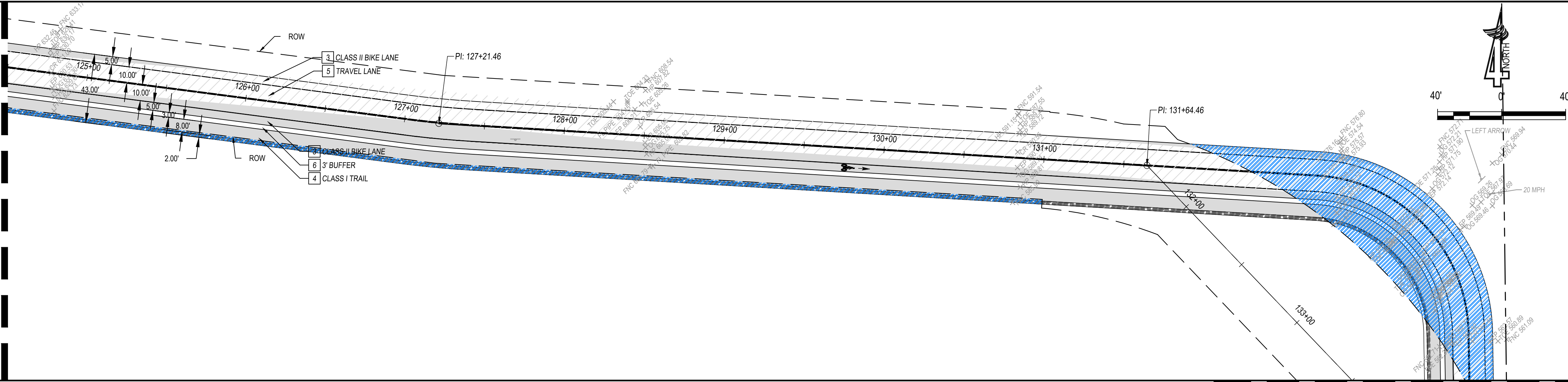
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| PREPARED BY: | 2029 W. MAIN ST., STE. A P.O. BOX 7593 VISALIA, CA 93281 TEL 559.802.3052 FAX 559.802.3215 |
| CHK BY: KJM | |
| DRW BY: BR | |

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| IMPROVEMENT PLAN FOR: | TCAG |
| 210 N. CHURCH ST., SUITE B VISALIA, CA 93281 559.863-0406 | ROCKY HILL FEASIBILITY STUDY |

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| PLOT DATE: Jan 15, 2019 |
| JOB NO.: 17321 |
| FILE NAME: STREET-PP.DWG |
| SCALE: 1"=40' |
| SHEET NO.: 4 OF 7 |

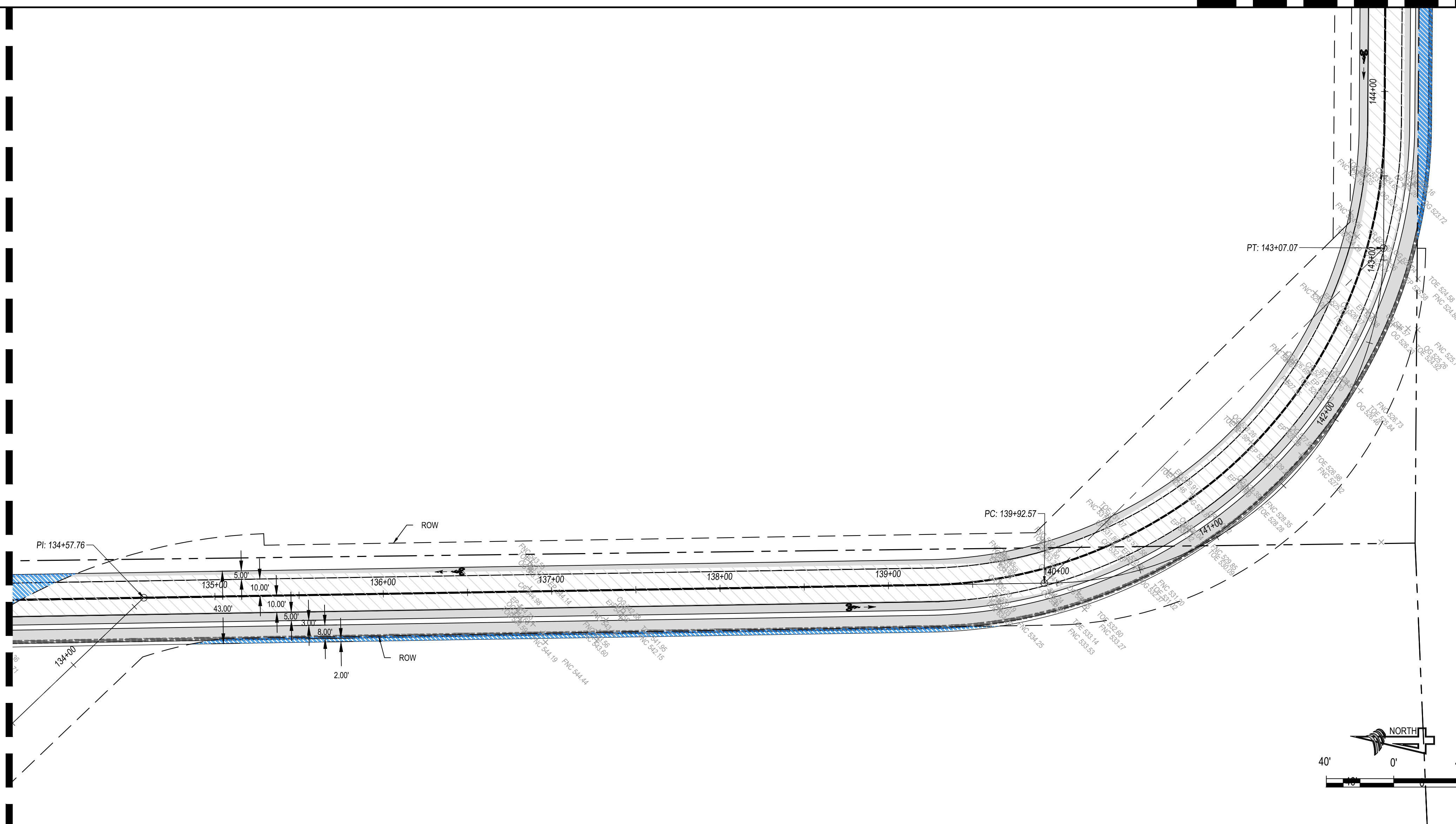
MATCHLINE 124+50, SEE SHEET 4



MATCHLINE 133+50, SEE BELOW

MATCHLINE 144+50, SEE SHEET 6

MATCHLINE 133+50, SEE ABOVE



KEYNOTES:

- 1 EXISTING POWER POLE
- 2 EXISTING STOP SIGN
- 3 CLASS II BIKE LANE
- 4 CLASS I TRAIL
- 5 TRAVEL LANE
- 6 3' BUFFER
- 7 PROPOSED BRIDGE EXTENSION (5') FOR TRAIL

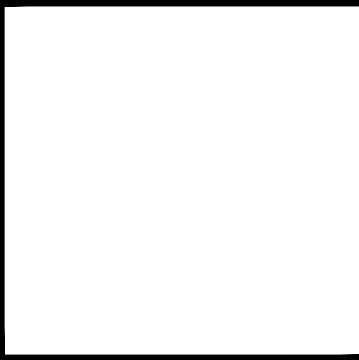
LEGEND:

- DETAIL REFERENCE
- EXIST. ASPHALT CONCRETE
- PROPOSED ASPHALT CONCRETE
- PROPOSED SLURRY SEAL
- PROPOSED RIGHT-OF-WAY ACQUISITION
- EXISTING POWER POLE



Know what's below.
Call before you dig.

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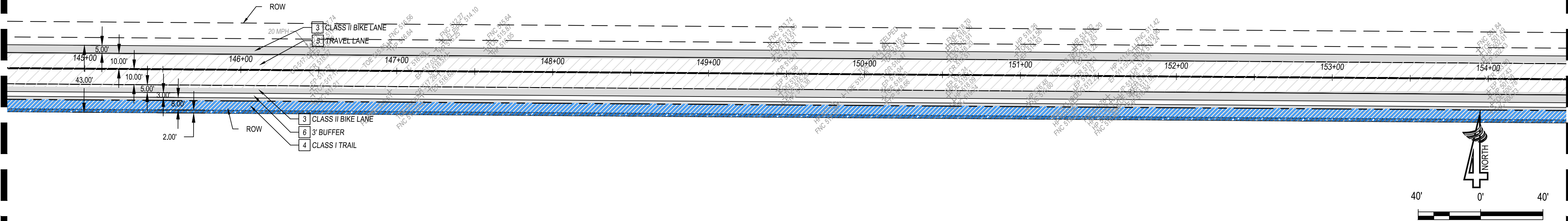
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| APPROVED BY: | | RCE 66233 | | RCE 00000 | |
| DATE | | DATE | | DATE | |

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| PREPARED BY: | | CHK BY: KJM | |
| 2025 W. MAIN ST., STE. A P.O. BOX 7583 VISALIA, CA 93281 TEL: 559.802.3052 FAX: 559.802.3215 | | DRW BY: BR | |

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| IMPROVEMENT PLAN FOR: | | ROCKY HILL FEASIBILITY STUDY | |
| TCAG 210 N. CHURCH ST., SUITE B VISALIA, CA 93281 559-862-5406 | | | |

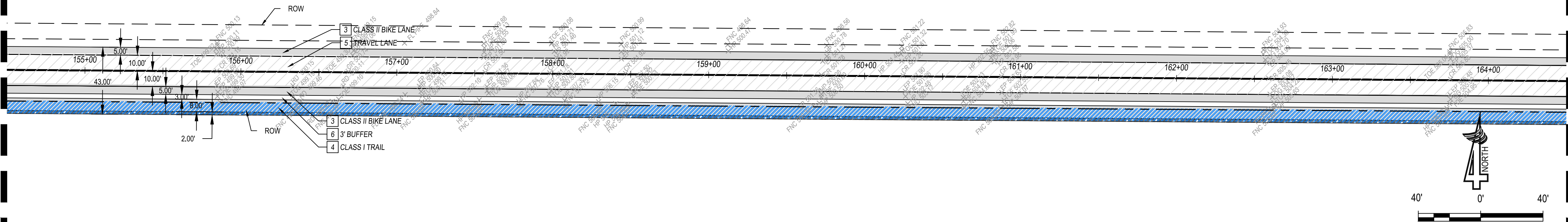
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| PLOT DATE: Jan 15, 2019 |
| JOB NO.: 17321 |
| FILE NAME: STREET-PP.DWG |
| SCALE: 1"=40' |
| SHEET NO.: 5 OF 7 |

MATCHLINE 144+50, SEE SHEET 5



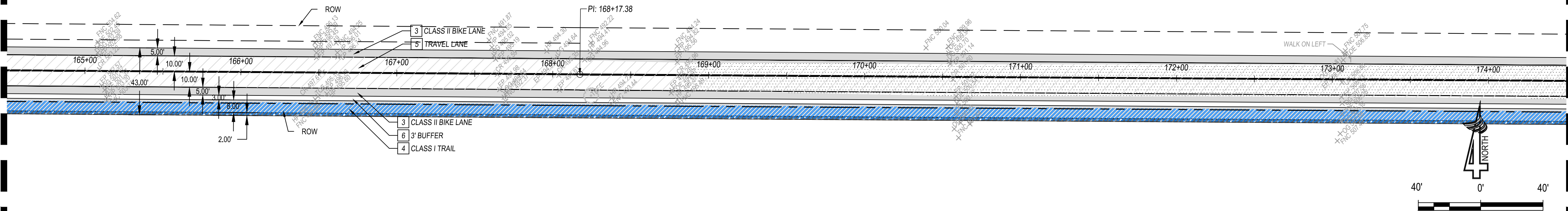
MATCHLINE 154+50, SEE BELOW

MATCHLINE 155+50, SEE ABOVE



MATCHLINE 164+50, SEE BELOW

MATCHLINE 164+50, SEE ABOVE



MATCHLINE 174+50, SEE SHEET 7

KEYNOTES:

- 1 EXISTING POWER POLE
- 2 EXISTING STOP SIGN
- 3 CLASS II BIKE LANE
- 4 CLASS I TRAIL
- 5 TRAVEL LANE
- 6 3' BUFFER
- 7 PROPOSED BRIDGE EXTENSION (5') FOR TRAIL

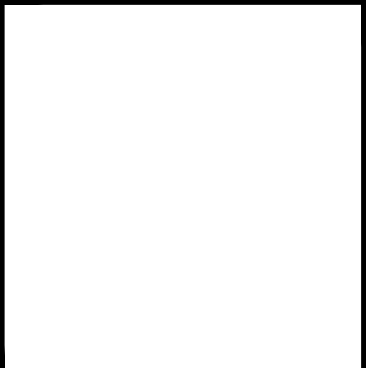
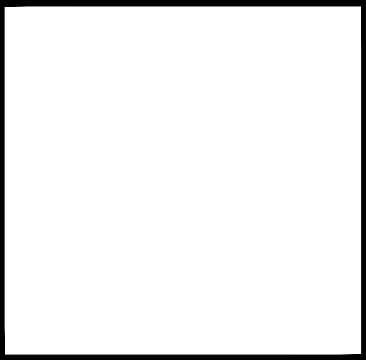
LEGEND:

- DETAIL REFERENCE
- EXIST. ASPHALT CONCRETE
- PROPOSED ASPHALT CONCRETE
- PROPOSED SLURRY SEAL
- PROPOSED RIGHT-OF-WAY ACQUISITION
- EXISTING POWER POLE



Know what's below.
Call before you dig.

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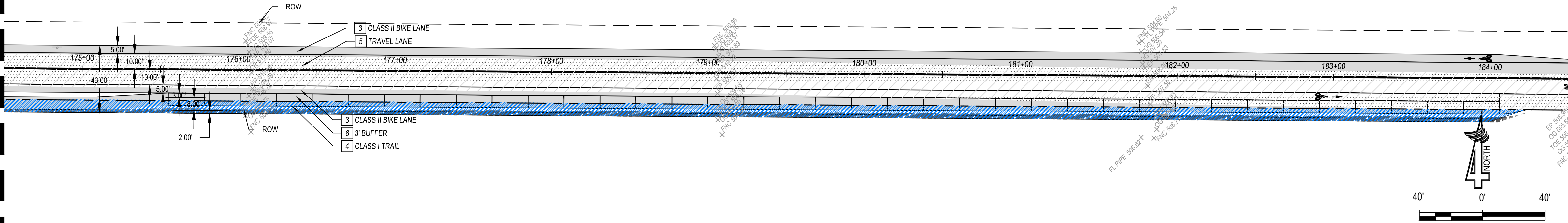
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| APPROVED BY: | | RCE 66233 |
| DATE | | |
| DATE | | RCE 00000 |

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| PREPARED BY: | | CHK BY: KJM |
| 2025 W. MAIN ST., STE. A P.O. BOX 7593 VISALIA, CA 93281 TEL 559.802.3052 FAX 559.802.3215 | | DRW BY: BR |

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| IMPROVEMENT PLAN FOR: | ROCKY HILL FEASIBILITY STUDY |
| TCAG 210 N. CHURCH ST., SUITE B VISALIA, CA 93281 559-862-0406 | |

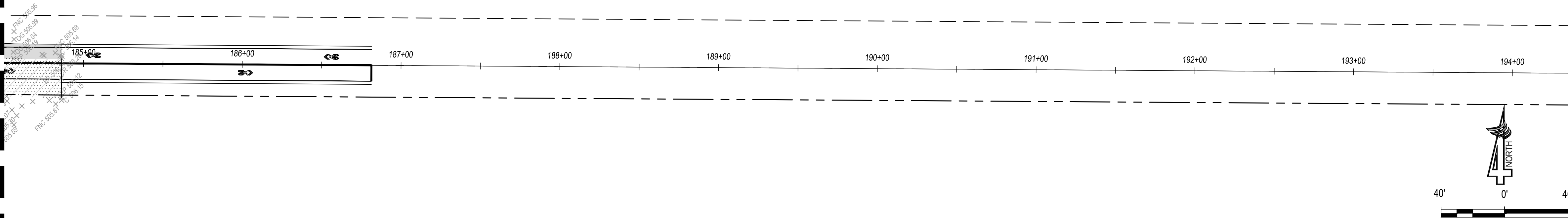
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| PLOT DATE: Jan 15, 2019 |
| JOB NO.: 17321 |
| FILE NAME: STREET-PP.DWG |
| SCALE: 1"=40' |
| SHEET NO.: 6 OF 7 |

MATCHLINE 174+50, SEE SHEET 6



MATCHLINE 184+50, SEE BELOW

MATCHLINE 184+50, SEE ABOVE

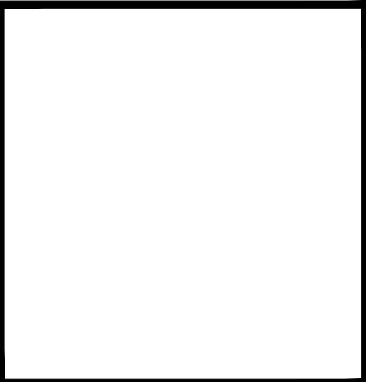
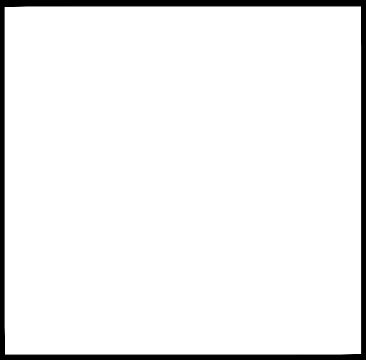


- KEYNOTES:
- 1 EXISTING POWER POLE
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 - 3 CLASS II BIKE LANE
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 - 5 TRAVEL LANE
 - 6 3' BUFFER
 - 7 PROPOSED BRIDGE EXTENSION (5') FOR TRAIL

- LEGEND:
- DETAIL REFERENCE
 - EXIST. ASPHALT CONCRETE
 - PROPOSED ASPHALT CONCRETE
 - PROPOSED SLURRY SEAL
 - PROPOSED RIGHT-OF-WAY ACQUISITION
 - EXISTING POWER POLE



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| 2025 W. MAIN ST., STE. A P.O. BOX 7593 VISALIA, CA 93281 TEL: 559.802.3052 FAX: 559.802.3215 | | CHK BY: KJM |
| PREPARED BY: | | DRW BY: BR |

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| IMPROVEMENT PLAN FOR: TCAG 210 N. CHURCH ST., SUITE B VISALIA, CA 93281 559.802.3052 | | ROCKY HILL FEASIBILITY STUDY |
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| PLOT DATE: Jan 15, 2019 |
| JOB NO.: 17321 |
| FILE NAME: STREET-PP.DWG |
| SCALE: 1"=40' |
| SHEET NO.: 7 OF 7 |

Appendix D

Cultural Resources Records Request Results



To: Molly McDonnel
4 Creeks, Inc.
324 S. Santa Fe, Suite A
Visalia, CA 93292

Record Search 18-161

Date: April 17, 2018

Re: Rocky Hill Bicycle/Pedestrian Path Feasibility Study

County: Tulare

Map(s): Exeter 7.5' & Rocky Hill 7.5'

CULTURAL RESOURCES RECORDS SEARCH

The California Office of Historic Preservation (OHP) contracts with the California Historical Resources Information System's (CHRIS) regional Information Centers (ICs) to maintain information in the CHRIS inventory and make it available to local, state, and federal agencies, cultural resource professionals, Native American tribes, researchers, and the public. Recommendations made by IC coordinators or their staff regarding the interpretation and application of this information are advisory only. Such recommendations do not necessarily represent the evaluation or opinion of the State Historic Preservation Officer in carrying out the OHP's regulatory authority under federal and state law.

The following are the results of a search of the cultural resource files at the Southern San Joaquin Valley Information Center. These files include known and recorded cultural resources sites, inventory and excavation reports filed with this office, and resources listed on the National Register of Historic Places, Historic Property Directory, California State Historical Landmarks, California Register of Historical Resources, California Inventory of Historic Resources, and California Points of Historical Interest. Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area.

PRIOR CULTURAL RESOURCE STUDIES CONDUCTED WITHIN THE PROJECT AREA AND WITHIN THE ONE-HALF MILE RADIUS

According to the information in our files, there has been one previous cultural resource study conducted within a portion of the project area, TU-01673. There have been five additional studies conducted within the one-half mile radius, TU-00001, 00261, 00526, 00978, and 01320.

KNOWN/RECORDED CULTURAL RESOURCES WITHIN THE PROJECT AREA AND WITHIN THE ONE-HALF MILE RADIUS

There is one recorded cultural resource within project area, P-54-004615, an historic era ditch. There are 12 recorded resources within the one-half mile radius, P-54-000063, 000088, 000089, 004034, 005168, 005169, 005170, 005171, 005172, 005173, 005174, and 005175. These resources consist of prehistoric ceramic and lithic scatters, prehistoric pictographs, an historic era railroad, and historic era buildings. Additionally there is one known but unrecorded prehistoric bedrock milling station.

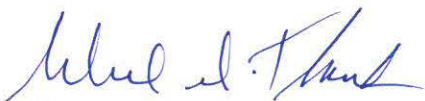
Resource P-54-005174 is the Thomas A. Pogue House, located at 1600 Palm Drive in the City of Exeter. This resource has been given a National Register status code of 2S2, indicating the property has been determined eligible for listing in the National Register of Historic Places by a consensus through the Section 106 process. It is also listed in the California Register of Historical Resources. There are no other recorded cultural resources within the project area or radius that are listed in the National Register of Historic Places, the California Register of Historical Resources, the California Points of Historical Interest, California Inventory of Historic Resources, or the California State Historic Landmarks.

COMMENTS AND RECOMMENDATIONS

We understand this project consists a feasibility study that could lead to the development of a bicycle/pedestrian path on Rocky Hill Drive in the City of Exeter. Further, we understand this project will exclusively take place in the existing right-of-way. As such, no further cultural resource investigation is recommended at this time. However, if cultural resources are unearthed during any ground disturbance activities, all work must halt in the area of the find and a qualified, professional archaeologist should be called out to assess the findings and make the appropriate mitigation recommendations. A list of qualified consultants can be found at www.chrisinfo.org.

We also recommend that you contact the Native American Heritage Commission in Sacramento. They will provide you with a current list of Native American individuals/organizations that can assist you with information regarding cultural resources that may not be included in the CHRIS Inventory and that may be of concern to the Native groups in the area. The Commission can consult their "Sacred Lands Inventory" file in order to determine what sacred resources, if any, exist within this project area and the way in which these resources might be managed. Finally, please consult with the lead agency on this project to determine if any other cultural resource investigation is required. If you need any additional information or have any questions or concerns, please contact our office at (661) 654-2289.

By:



Celeste M. Thomson, Coordinator

Date: April 17, 2018

Please note that invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.