Technical Studies

State Route 68/Corral de Tierra Road Intersection Improvement Project

Monterey County, California
05-MON-68-PM 12.8/13.2
Project ID: 05-0000-0085 (05-0H8230)

Volume 1 of 4

Prepared by the
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Technical Studies included in Vol. 1

Air Quality Analysis Report (February 2013) and Addendum (June 2015)

Geotechnical Design and Materials Report (December 2012) and Addendum (June 2015)

Growth-Related Impacts Technical Memorandum (July 2012) and Addendum (June 2015)

Historical Resources Compliance Report (June 2013) and Supplemental Historical Resources Compliance Report (June 2015)

Paleontology Identification Report (July 2013) and Addendum (June 2015)

AIR QUALITY ANALYSIS

SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
MONTEREY COUNTY, CALIFORNIA
05-MON-068-PM 12.8/13.2

EA#05-0H8230

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1.0 EXECUTIVE SUMMARY

The Monterey County Department of Public Works, in cooperation with the California Department of Transportation (Caltrans) proposes to improve the intersection of State Route 68 (SR-68) and Corral de Tierra Road.

This air quality study provides a discussion of the proposed project, the physical setting of the project area, and the regulatory framework for air quality. The report provides data on existing air quality, evaluates potential air quality impacts associated with the proposed project, and identifies mitigation measures.

The project area is in the North Central Coast Air Basin (NCCAB) as defined by the California Air Resources Board (ARB). Monterey Bay Unified Air Pollution Control District (MBUAPCD) is responsible for air quality in this basin. The NCCAB is in attainment or maintenance of all federal ambient air quality standards (AAQS), and is non-attainment of state AAQS for ozone and particulate matter smaller than 10 microns (PM_{10}).

Compliance with MBUAPCD Rules and Regulations during construction will reduce construction related air quality impacts from fugitive dust emissions and construction equipment emissions. Because the proposed intersection improvement project would improve traffic operations at the intersection and would not generate new regional vehicular trips, no new regional vehicular emissions would occur, and the project would have a beneficial effect in helping to reduce congestion related pollutant emissions on roadway links in the project vicinity.

The project is located in Monterey County, which is among the counties listed as containing serpentine and ultramafic rock. However, the project site is not in a region of the County that has been identified as containing serpentine or ultramafic rock. Therefore, the impact from Naturally Occurring Asbestos (NOA) during project construction would be minimal to none.

2.0 INTRODUCTION

The SR-68/Corral de Tierra Road Intersection Improvement project (proposed project) addresses operational improvements at the SR-68/Corral de Tierra Road intersection, located in the unincorporated area of Monterey County approximately 13 miles (mi) east of the City of Monterey and approximately 9 mi west of the City of Salinas. Figure 1 shows the regional location of the project and the project vicinity. The operational improvements will widen the SR-68/Corral de Tierra Road intersection to accommodate the construction of a second left-turn lane from westbound SR-68 to southbound Corral de Tierra Road and the construction of a second receiving lane on Corral de Tierra Road.

Caltrans District 5 will be the Lead Agency for California Environmental Quality Act (CEQA) compliance. The County of Monterey (County) Public Works Department will be a Responsible Agency under CEQA. Current funding for the project is local, and it is not anticipated that federal funds will be utilized.

3.0 PROJECT DESCRIPTION

One Build Alternative (as described below) and the No-Build Alternative are being considered for improving the SR-68/Corral de Tierra Road intersection.

No-Build Alternative

The No-Build Alternative assumes that no new improvements would be constructed, other than projects already approved in the area. Under the No-Build Alternative, the roadway's operational conditions will remain at or above the standard of Level of Service D (refer to Traffic Operations Technical Memorandum). Projections indicated that the unimproved intersection would have a Level of Service E in the a.m. peak hour and Level of Service F in the p.m. peak hour by 2024, and therefore, the No-Build Alternative fails to meet the purpose and need of this project.

Build Alternative: Operational Improvements

The proposed project would widen the SR-68/Corral de Tierra intersection to the north of the existing alignment to accommodate the construction of a second (additional) left turn lane from westbound SR-68 onto southbound Corral de Tierra Road. Both of the left turn lanes (in the median of SR-68) would have sufficient length to accommodate deceleration from 53 mi per hour. An additional receiving lane would also be constructed on southbound Corral de Tierra Road. The paved shoulders of Corral de Tierra Road within the project area would be widened to 8 feet (ft) to better accommodate pedestrians and facilitate the future addition of Class II bicycle lanes to Corral de Tierra Road.

About 520 ft of Steel Crib retaining wall (or equivalent) would be constructed west of Corral de Tierra Road along the north embankment of SR-68. The retaining wall would lie below the existing road grade and therefore would not be visible from SR-68. The retaining wall would minimize the footprint of the embankment needed to accommodate the widened road section.

A left turn lane would also be constructed from westbound SR-68 into the Corral de Tierra Country Club driveway. The Corral de Tierra County Club driveway is located east of Corral de Tierra Road on the south side of SR-68.

No provisions for left turns to or from the residential driveway on the north side of SR-68 would be made. As part of the proposed project, a painted median island would be created in front of the residential driveway restricting drivers to right-in, right-out access. Drivers needing to make left-in, left-out movements would need to make a U-turn at the traffic signal at either San Benancio Road or at Corral de Tierra Road. U-turn movements at these signalized intersections are both legal and safe.

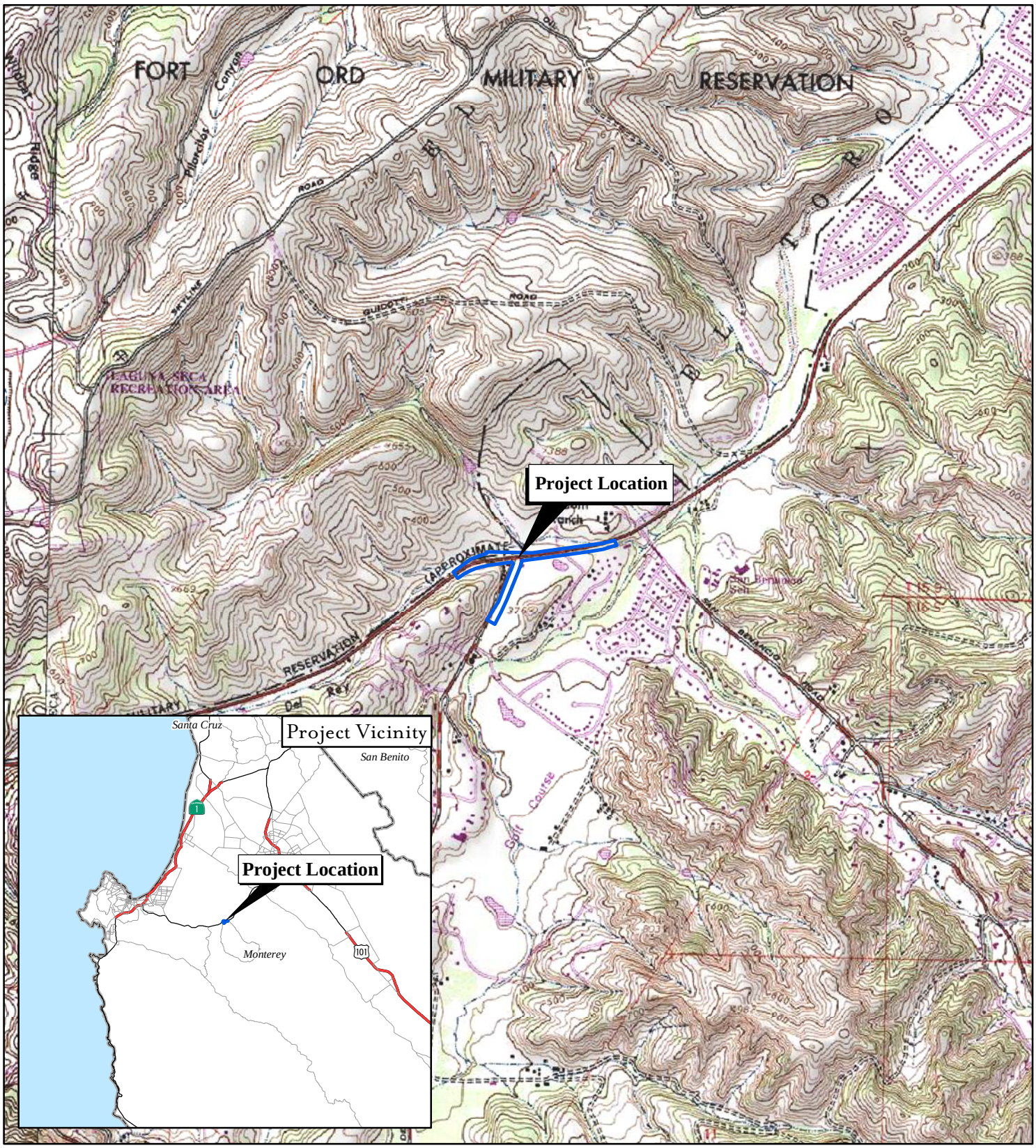

FIGURE 1

N

0 1,000 2,000 Feet

0 300 600 Meters

SR 68 / Corral de Tierra Road
Intersection Improvement Project
Project Location Map

SOURCE: USGS 7.5' QUAD, SPRECKELS, CA (1984); Wood Rodgers (2006)

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Construction of the retaining wall would require removal of any landscape vegetation present (including one young oak tree) along the north embankment of SR-68. The landscape vegetation is not visible to motorists traveling along SR-68 and does not provide any habitat value. As part of the proposed project native vegetation would be planted within the project limits. Additionally, the proposed project would relocate and replace the existing guardrails along the north side of SR-68 and west of the intersection of Corral de Tierra Road. If new or relocated guardrails are erected with metal posts, the posts would be darkened to reduce glare and reflectivity.

All of the work would be constructed within existing State and County rights-of-way, except for a small area of new State right-of-way that would be acquired on the north side of SR-68 just east of the intersection to accommodate relocation of a bus stop, widening and grading. Also, a temporary construction easements would be acquired along the east side of Corral de Tierra Road to accommodate grading near the edge of the County right-of-way (refer to Figure 2: Build Alternative Design Plan). Temporary staging areas for construction equipment and materials would be located in those areas of the existing State and County rights-of-way that are not designated as environmentally sensitive areas. Construction is expected to be completed in a single season.

Figure 2: Build Alternative Design Plan

4.0 SETTING

4.1 REGIONAL CLIMATE AND AIR QUALITY

The proposed project site is located in northern Monterey County. The study area is in the southern portion of the North Central Coast Air Basin (NCCAB), which encompasses Santa Cruz, San Benito, and Monterey Counties. Figure 3 shows the NCCAB Monitoring Stations. The NCCAB is generally bounded by the Diablo Range on the northeast with the southern portion of the Santa Cruz Mountains; this range forms the Santa Clara Valley, which extends into the northeastern tip of the NCCAB. Farther south, the Santa Clara Valley transitions into the San Benito Valley, which runs northwest-southeast and has the Gabilan Range as its western boundary. To the west of the Gabilan Range is Salinas Valley, which extends from Salinas at the northwest end to King City at the southeast end. The northwest portion of the NCCAB is dominated by the Santa Cruz Mountains.

The major source of air pollution in Monterey County is vehicle traffic and agricultural operations. On the Monterey Peninsula, the major source of air pollution in the area is vehicles; the limited agricultural operations in the area have a minimal effect on air quality.

Air quality is a function of topography, meteorology, and emissions. The semipermanent high pressure cell over the Pacific Ocean is the basic controlling factor of the climate in the region. Monterey Bay is an inlet 25 mi wide, which allows marine air at low levels to penetrate the interior.

In the summer, the high pressure cell is dominant, resulting in persistent west and northwest winds across the majority of coastal California. As air descends in the Pacific High, a stable temperature inversion is formed. As temperatures increase, the warmer air aloft expands, forcing the coastal layer of air to move on shore, producing a moderate sea breeze over the coastal plains and valleys. Temperature inversions inhibit vertical air movement and often result in increased transport of air pollutants to inland receptor areas.

The generally northwest-southeast orientation of mountainous ridges tends to restrict and channel the summer onshore air currents. Surface heating in the interior portion of the Salinas and San Benito Valleys creates a weak low pressure, which intensifies the onshore air flow during the afternoon and evening.

In the fall, surface winds become weak, and the marine layer grows shallow, dissipating altogether on some days. The air flow is occasionally reversed in a weak offshore movement, and the relatively stationary air mass is held in place by the Pacific High pressure cell, which allows pollutants to build over a period of a few days. It is most often during this season that the north or east winds transport pollutants from either the San Francisco Bay area or the Central Valley into the NCCAB.

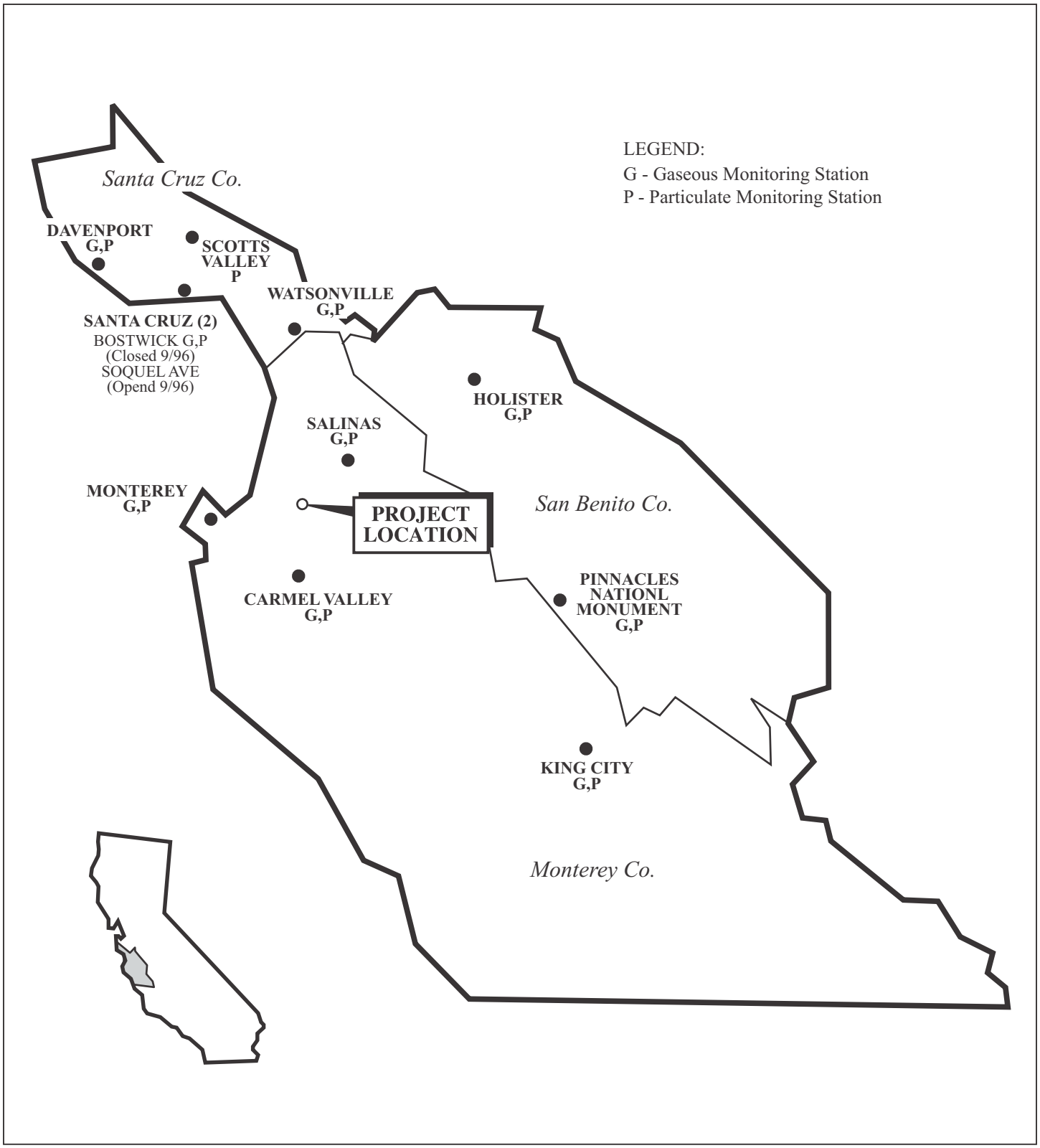

FIGURE 3

SR-68/Corral de Tierra Road
Intersection Improvement Project
Visual Impact Assessment
Monterey County, California

North Central Coast Air Basin
Monitoring Station

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In winter, the Pacific High migrates southward and has less influence on the NCCAB. Air frequently flows in a southeasterly direction out of the Salinas and San Benito Valleys, especially during night and morning hours. Northwest winds are nevertheless still dominant in winter, but easterly flow is more frequent. The general absence of deep persistent inversions, and the occasional storm systems usually result in good air quality for the NCCAB as a whole in winter and early spring.

Atmospheric particulates are made up of fine solids or liquids such as soot, dust, aerosols, fumes, and mists. A large portion of the total suspended particulate (TSP) in the atmosphere is PM_{10}. These small particulates cause the greatest health risk of all suspended particulates, since they more easily penetrate the defenses of the human respiratory system. Peak concentrations of PM_{10} occur downwind of precursor emission sources. As with ozone, a substantial fraction of PM_{10} forms in the atmosphere as a result of chemical reactions.

Air Pollution Constituents

Pursuant to the federal Clean Air Act (CAA) of 1970, the EPA established NAAQS. The NAAQS were established for six major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health. The NAAQS are two tiered: primary, to protect public health, and secondary, to prevent degradation to the environment (e.g., impairment of visibility, damage to vegetation and property).

The six criteria pollutants are ozone (O_3), CO, particulates less than 10 microns (PM_{10}), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). The EPA established new national air quality standards for ground-level O_3 and for fine particulate matter (particulate matter 2.5 microns or less in diameter, or $PM_{2.5}$) in 1997.

In April 2003, the EPA was cleared by the White House Office of Management & Budget (OMB) to implement the 8-hour ground-level O_3 standard. ARB provided the EPA with California's recommendations for 8-hour O_3 area designations on July 15, 2003. The recommendations and supporting data were an update to a report submitted to the EPA in July 2000. On December 3, 2003, the EPA published its proposed designations. EPA's proposal differs from the State's recommendations primarily on the appropriate boundaries for several nonattainment areas. ARB responded to the EPA's proposal on February 4, 2004. On April 15, 2004, EPA announced the new nonattainment areas for the 8-hour O_3 standard. The designation and classification became effective on June 15, 2004. The Transportation Conformity requirement became effective on June 15, 2005.

The EPA proposed a $PM_{2.5}$ implementation rule in September 2003 and made final designations in December 2004. The $PM_{2.5}$ standard complements existing national and State ambient air quality standards that target the full range of inhalable PM_{10}.

The primary standards for these pollutants are shown in Table A, and the health effects from exposure to the criteria pollutants are described later in this section.

Table A: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.07 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		–		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Nondispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Nondispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–		
Nitrogen Dioxide (NO_2)[8]	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.18 ppm (339 µg/m^3)		100 ppb (188 µg/m^3) [8]	None	
Lead[10,11]	30-day average	1.5 µg/m^3	Atomic Absorption	–	–	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m^3	Same as Primary Standard	
	Rolling 3-month Average[10]	–		0.15 µg/m^3		
Sulfur Dioxide (SO_2)[9]	Annual Arithmetic Mean	–	Ultraviolet Fluorescence	0.14 ppm (for certain areas)[9]	–	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 µg/m^3)		0.030 ppm (for certain areas)[9]	–	
	3-Hour	–		–	0.5 ppm (1300 µg/m^3)	
	1-Hour	0.25 ppm (655 µg/m^3)		75 ppb (196 µg/m^3)	–	
Visibility-Reducing Particles[12]	8-Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	**No Federal Standards**		
Sulfates	24-Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24-Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Source: ARB, June 7, 2012.

See footnotes on next page.

Footnotes:

[1] California standards for ozone; carbon monoxide (except Lake Tahoe); sulfur dioxide (1- and 24-hour); nitrogen dioxide; suspended particulate matter, PM_{10}; and visibility-reducing particles are values not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth-highest 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 mg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the EPA for further clarification and current federal policies.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Any equivalent procedure that can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

[5] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7] Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

[8] To attain the 1-hour standard, the 3-year average of the annual 98^{th} percentile of the 1-hour daily maximum 1-hour average at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[9] On June 2, 2010, the new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[10] The ARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[11] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.

[12] In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basins, respectively

ARB = California Air Resources Board
EPA = United States Environmental Protection Agency
mg/m^3 = milligrams per cubic meter
$\mu g/m^3$ = micrograms per cubic meter

Air quality monitoring stations are located throughout the nation and maintained by the local air districts and state air quality regulating agencies. Data collected at permanent monitoring stations are used by the EPA to identify regions as "attainment" or "nonattainment," depending on whether the regions met the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA. In addition, different classifications of attainment, such as marginal, moderate, serious, severe, and extreme, are used to classify each air basin in the state on a pollutant by pollutant basis. The classifications are used as a foundation to create air quality management strategies to improve air quality and comply with the NAAQS. The NCCAB's attainment status for each of the criteria pollutants is listed in Table B.

Table B: Attainment Status of Criteria Pollutants in the North Central Coast Air Basin

Pollutant	State	Federal
O_3 1-hour	Nonattainment	Revoked June 2005
O_3 8-hour	Nonattainment	Attainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Attainment	Attainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
All others	Attainment/Unclassified	Attainment/Unclassified

Source: ARB 2012 (http://www.arb.ca.gov/desig/desig.htm).

Ozone

O_3 (smog) is formed by photochemical reactions between NO_X and reactive organic gases (ROG) rather than being directly emitted. O_3 is a pungent, colorless gas typical of Southern California smog. Elevated O_3 concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, the elderly, and young children. O_3 levels peak during summer and early fall. Effective June 15, 2005, the EPA revoked in full the federal 1-hour O_3 ambient air quality standard, including associated designations and classifications, in all areas except 14 early action compacts all outside California. The entire NCCAB is designated as a nonattainment area for the State 1-hour and 8-hour O_3 standards. The NCCAB is in attainment for the federal 8-hour O_3 standard.

Carbon Monoxide

CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The NCCAB is in attainment for the federal and State CO standards.

Nitrogen Oxides

NO_2, a reddish brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NO_X. NO_X is a primary component of the photochemical smog reaction. It also contributes to other

pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition (i.e., acid rain). NO_2 decreases lung function and may reduce resistance to infection. The entire NCCAB has not exceeded either federal or State standards for nitrogen dioxide in the past 3 years with published monitoring data. It is designated as an attainment area under the federal and State standards.

Sulfur Dioxide

SO_2 is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. The NCCAB is in attainment with both federal and State SO_2 standards.

Reactive Organic Compounds

Reactive organic compounds (ROC) are formed from combustion of fuels and evaporation of organic solvents. ROC is a prime component of the photochemical smog reaction. Consequently, ROC accumulates in the atmosphere much quicker during the winter, when sunlight is limited and photochemical reactions are slower. ROC is regulated as a precursor to ozone with no federal or State attainment standards.

Particulate Matter

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles (all particles less than or equal to 10 micrometers in diameter, or PM_{10}) derive from a variety of sources, including windblown dust and grinding operations. Fuel combustion and resultant exhaust from power plants and diesel buses and trucks are primarily responsible for fine particle (less than 2.5 microns in diameter, or $PM_{2.5}$) levels. Fine particles can also be formed in the atmosphere through chemical reactions. Coarse particles (PM_{10}) can accumulate in the respiratory system and aggravate health problems such as asthma. The EPA's scientific review concluded that fine particles ($PM_{2.5}$), which penetrate deeply into the lungs, are more likely than coarse particles to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. The NCCAB is a nonattainment area for the for the State PM_{10} standards and in attainment for the federal PM_{10} standards. The NCCAB is in attainment for the federal and State $PM_{2.5}$ standards.

Lead

Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the bloodstream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The entire NCCAB is in attainment for federal and State lead standards.

Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases (GHGs), particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization's in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs related to human activity that include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (s, s, s, 2 –tetrafluoroethane), and HFC-152a (difluoroethane).

There are typically two terms used when discussing the impacts of climate change. "Greenhouse Gas (GHG) Mitigation" is a term for reducing GHG emissions in order to reduce or "mitigate" the impacts of climate change. "Adaptation," refers to the effort of planning for and adapting to impacts due to climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).[1]

Transportation sources (passenger cars, light duty trucks, other trucks, buses, and motorcycles) in the State of California make up the largest source (second to electricity generation) of GHG emitting sources. Conversely, the main source of GHG emissions in the United States (US) is electricity generation followed by transportation. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

There are four primary strategies for reducing GHG emissions from transportation sources: (1) improve system and operation efficiencies, (2) reduce growth of vehicle miles traveled (VMT), (3) transition to lower GHG fuels, and (4) improve vehicle technologies. To be most effective, all four should be pursued collectively. The following regulatory setting section outlines State and federal efforts to comprehensively reduce GHG emissions from transportation sources.

State. With the passage of several pieces of legislation, including State Senate and Assembly Bills and Executive Orders (EOs), California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the State level.

Assembly Bill 1493 (AB 1493), Pavley. Vehicular Emissions: Greenhouse Gases (AB 1493), 2002: requires the California Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009 model year. In June 2009, the EPA Administrator granted a CAA waiver of preemption to California. This waiver allowed California to implement its own GHG emission standards for motor vehicles beginning

[1] http://climatechange.transportation.org/ghg_mitigation/

with model year 2009. California agencies will be working with federal agencies to conduct joint rulemaking to reduce GHG emissions for passenger car model years 2017–2025.

EO S-3-05: Signed on June 1, 2005, by Governor Arnold Schwarzenegger, the goal of this EO is to reduce California's GHG emissions to: (1) 2000 levels by 2010, (2) 1990 levels by 2020, and (3) 80 percent below the 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of AB 32.

AB 32, the Global Warming Solutions Act of 2006: AB 32 sets the same overall GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that ARB create a plan that includes market mechanisms and implement rules to achieve "real, quantifiable, cost-effective reductions of GHGs." EO S-20-06 further directs State agencies to begin implementing AB 32, including the recommendations made by the State's Climate Action Team.

EO S-01-07: Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Senate Bill (SB) 97 (Chapter 185, 2007): SB 97 required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the State *CEQA Guidelines* for addressing GHG emissions. The Amendments became effective on March 18, 2010.

Caltrans Director's Policy 30 (DP-30) Climate Change (approved June 22, 2012): This policy is intended to ensure coordinated efforts to incorporate climate change into Caltrans decisions and activities. This policy contributes to Caltrans stewardship goal to preserve and enhance California's resources and assets.

Federal. Although climate change and GHG reduction is a concern at the federal level, currently there are no regulations or legislation that have been enacted specifically addressing GHG emission reductions and climate change at the project level. Neither the EPA nor FHWA has promulgated explicit guidance or methodology to conduct project-level GHG analysis. As stated on FHWA's climate change website,[1] climate change considerations should be integrated throughout the transportation decision-making process, from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will facilitate decision-making and improve efficiency at the program level and will inform the analysis and stewardship needs of project level decision-making. Climate change considerations can easily be integrated into many planning factors such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

[1] http://www.fhwa.dot.gov/hep/climate/index.htm

The four strategies set forth by FHWA to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours travelled.

Climate change and its associated effects are also being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and EO 13514- *Federal Leadership in Environmental, Energy and Economic Performance*.

EO 13514 is focused on reducing GHGs internally in federal agency missions, programs, and operations, but also directs federal agencies to participate in the interagency Climate Change Adaptation Task Force, which is engaged in developing a US strategy for adaptation to climate change.

On April 2, 2007, in *Massachusetts v. EPA*, 549 US 497 (2007), the Supreme Court found that GHGs are air pollutants covered by the CAA, and that the EPA has the authority to regulate GHGs. The Court held that the EPA Administrator must determine whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- **Endangerment Finding:** The Administrator found that the current and projected concentrations of the six key well-mixed GHGs, carbon dioxide (CO_2), CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6), in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing the EPA's Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles, which was published on September 15, 2009.[1] On May 7, 2010, the final Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards was published in the Federal Register.

The EPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations. These steps were outlined by President Obama in a memorandum on May 21, 2010.[2]

The final combined EPA and NHTSA standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon (mpg) if the

1 http://www.epa.gov/climatechange/endangerment.html
2 http://epa.gov/otaq/climate/regulations.htm

automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards will cut GHG emissions by an estimated 960 million metric tons (MMT) and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016).

On November 16, 2011, the EPA and NHTSA issued their joint proposal to extend this national program of coordinated greenhouse gas and fuel economy standards to model years 2017 through 2025 passenger vehicles.

4.2 LOCAL AIR QUALITY

The site is located within MBUAPCD jurisdiction. The MBUAPCD maintains ambient air quality monitoring stations throughout the NCCAB. The air quality monitoring station closest to the site that monitors all of the criteria pollutants is the Salinas Station. The criteria pollutants monitored at this station are presented in Table C. CO, NO_2, $PM_{2.5}$, and O_3 levels monitored at this station have not exceeded State and federal standards in the past five years. The State PM_{10} standard was exceeded twice in 2008. The federal PM_{10} standard was not exceeded in the past five years.

4.3 REGIONAL AIR QUALITY PLANS

The 1976 Lewis Air Quality Management Act established the MBUAPCD and other air districts throughout the State. The Federal CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the federal standards in nonattainment areas of the state.

ARB coordinates and oversees both State and federal air pollution control programs in California. ARB oversees activities of local air quality management agencies and is responsible for incorporating air quality management plans for local air basins into a State Implementation Plan (SIP) for federal EPA approval. ARB maintains air quality monitoring stations throughout the State in conjunction with local air districts. Data collected at these stations are used by ARB to classify air basins as

Table C: Ambient Air Quality Standards at the Salinas Air Monitoring Station

Pollutant	Standard	2007	2008	2009	2010	2011
CO						
Max 1-hr concentration (ppm)		2.0	2.2	1.6	1.3	1.4
No. days exceeded: State Federal	> 20 ppm/1-hr > 35 ppm/1-hr	0 0	0 0	0 0	0 0	0 0
Max 8-hr concentration (ppm)		1.2	0.9	0.9	0.8	1.0
No. days exceeded: State Federal	≥ 9 ppm/8-hr ≥ 9 ppm/8-hr	0 0	0 0	0 0	0 0	0 0
O_3						
Max 1-hr concentration (ppm)		0.067	0.078	0.077	0.073	0.065
No. days exceeded: State	> 0.09 ppm/1-hr	0	0	0	0	0
O_3						
Max 8-hr concentration (ppm)		0.058	0.067	0.067	0.061	0.056
No. days exceeded: State Federal	> 0.070 ppm/8-hr > 0.075 ppm/8-hr	0 0	0 0	0 0	0 0	0 0
PM_{10}						
Max 24-hr concentration (ppm)		37	52	41	39	18
No. days exceeded: State Federal	> 50 $\mu g/m^3$ > 150 $\mu g/m^3$	0 0	2 0	0 0	0 0	0 0
$PM_{2.5}$						
Max 24-hr concentration (ppm)		19..2	17.8	18.7	16.2	19.7
No. days exceeded: Federal	> 35 $\mu g/m^3$	0	0	0	0	0
NO_2						
Max 1-hr concentration (ppm): State	> 0.25 ppm/1-hr	0.050	0.049	0.040	0.036	0.040
No. days exceeded		0	0	0	0	0
Annual avg. concentration: Federal	0.053 ppm annual avg.	0.007	0.007	0.006	0.006	0.006
No. days exceeded		0	0	0	0	0

Source: EPA and ARB 2007 to 2011.

"attainment" or "nonattainment" with respect to each pollutant and to monitor progress in attaining air quality standards. ARB has divided the State into 15 air basins. Significant authority for air quality control within the air basins has been given to local air districts that regulate stationary source emissions and develop local nonattainment plans.

The California Clean Air Act (CCAA) provides the SCAQMD with the authority to manage transportation activities at indirect sources and regulate stationary source emissions. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. An example of this would be the motor vehicles at an intersection, at a mall, and on highways. As a State agency, ARB regulates motor vehicles and fuels for their emissions.

Regional Air Quality Management Plan

As required by the CCAA, the MBUAPCD adopted the 1991 AQMP for the Monterey Bay Region. The AQMP addressed attainment of the State AAQS for O_3. The AQMP recommended adoption of 20 measures to control emissions of reactive organic gases (ROG) from stationary sources, 5 measures for stationary sources of NO_X, and 8 transportation control measures. Since the 1991 AQMP was adopted, control requirements have been reduced. In December 1994, the MBUAPCD adopted the 1994 AQMP, which showed that the MBUAPCD could achieve the required 20 percent reduction in both ROG and NO_X emissions by 1997 without adopting any additional regulations. The 1997 AQMP was adopted in December 1997. The 2000 AQMP was adopted in May 2001. The 2004 AQMP was adopted in September 2004. The 2008 AQMP was adopted in August 2008. This is the fifth revision of the 1991 AQMP to address the O_3 attainment status for the Monterey Bay Region.

The CCAA requires that projects receiving federal funds demonstrate conformity to the local AQMP. Conformity guidelines for the AQMP extend these requirements to all regionally significant projects, regardless of whether federal funding is being sought. The AQMP contains guidelines on how to demonstrate conformity for population related, nonpopulation related, and indirect source (institutional, commercial, and industrial) projects.

In addition to the State-mandated AQMP, the MBUAPCD has prepared a number of federally required plans to meet its obligations under the federal CAA.

4.4 METHODOLOGY

This air quality assessment includes estimating emissions associated with short-term construction and long-term operation of the proposed project. Long-term mobile emissions associated with the proposed project would be less than the No Project Alternative due to improved traffic flow in the project area, with the same projected future trips in the project vicinity. However, emissions reductions associated with such improvements are difficult to quantify. Therefore, no emissions calculations are provided in this analysis for regional vehicular emissions.

4.5 THRESHOLDS OF SIGNIFICANCE

Construction Impacts

Emissions from construction activities represent temporary impacts that are typically short in duration, depending on the size, phasing, and type of project. Air quality impacts can nevertheless be acute during construction periods, resulting in significant localized impacts to air quality.

Construction activities (e.g., excavation, grading, on-site vehicles) that directly generate 82 pounds per day or more of PM_{10} would have a significant impact on local air quality when they are located nearby and upwind of sensitive receptors. However, MBUAPCD approved PM_{10} dispersion modeling can be used to refute (or validate) this determination. If modeling demonstrates that direct emissions under individual or cumulative conditions would not cause the exceedance of the State PM_{10} AAQS (50 $\mu g/m^3$) at existing receptors as averaged over 24 hours, the impact would not be considered significant. If ambient air quality already exceeds the State AAQS, a project would contribute substantially to this violation if it would emit 82 pounds per day or more. A construction site with minimal earthmoving activity would have potential significant PM_{10} impacts when active construction covers 8.1 acres or more per day. A construction site with earthmoving activity would have potential significant PM_{10} impacts when active construction covers 2.2 acres or more per day.

Construction projects using typical construction equipment such as dump trucks, scrapers, bulldozers, compactors, and front-end loaders, which temporarily emit precursors of O_3 (i.e., ROG or NO_X), are accommodated in the emission inventories of State and federally required air plans and would not have a significant impact on the attainment and maintenance of O_3 AAQS. The MBUAPCD should be consulted regarding emissions from nontypical equipment (e.g., grinders and portable equipment).

Construction projects that may cause or substantially contribute to the violation of other State or national AAQS or that could emit toxic air contaminants could result in temporary significant impacts.

Other Impacts

Emissions from long-term operations generally represent a project's most substantial air quality impact. Table D summarizes the project level threshold of significance for operational impacts by pollutant. An exceedance of any threshold would represent a significant impact on local or regional air quality. When comparing a project's emissions to the thresholds of significance, local conditions should be considered whenever possible.

Projects that would emit 137 pounds per day or more of direct and indirect ROG emissions would have a significant impact on regional air quality by emitting substantial amounts of O_3 precursors. Such projects would significantly impact attainment and maintenance of O_3 AAQS. Similarly, projects that would emit 137 pounds per day or more of direct and indirect NO_X emissions would generate substantial emissions and have a significant impact on regional air quality.

Projects that could generate 82 pounds per day or more of PM_{10} at the project site (e.g., quarries, truck stops) would result in substantial air emissions and have a significant impact on local air quality. However, District approved dispersion modeling can be used to refute (or validate) this determination. If modeling demonstrates that emissions would not cause an exceedance of the State PM_{10} standard (50 $\mu g/m^3$) at an existing or reasonably foreseeable receptor as averaged over 24 hours, the impact would not be considered significant. If ambient PM_{10} levels already exceed the State AAQS, the project would

contribute substantially to the violation if it would emit more than 82 pounds per day. This would be considered a significant individual and cumulative impact on local air quality, since the background concentration reflects the collective contribution of PM_{10} from nearby sources.

Table D: Thresholds of Significance for Criteria Pollutants of Concern: Operational Impacts[1]

Pollutant	Threshold(s) of Significance
ROG	137 lb/day (direct + indirect)
NO_X as NO_2	137 lb/day (direct + indirect)
PM_{10}	82 lb/day (on-site)[2]
	AAQS exceeded along unpaved roads (off-site)
CO	LOS at intersection/road segment degrades from D or better to E or F, or volume to capacity (V/C) ratio at intersection/road segment at LOS E or F increases by 0.05 or more, or delay at intersection at LOS E or F increases by 10 seconds or more, or reserve capacity at unsignalized intersection at LOS E or F decreases by 50 or more.
	550 lb/day (direct)[3]
SO_X as SO_2	150 lb/day (direct)

Source: MBUAPCD, 2008.

Projects that would indirectly generate PM_{10} from travel on unpaved roads could result in substantial off-site emissions and significantly impact local air quality. PM_{10} dispersion modeling should be undertaken to determine whether indirect emissions along one or more unpaved road would cause the exceedance of the State PM_{10} AAQS at an existing or reasonably foreseeable receptor as averaged over 24 hours. If so, the impact would be considered significant.

Carbon Monoxide

Indirect sources that would significantly affect levels of service at intersections or road segments could cause or substantially contribute to violation of State or national AAQS for CO. The following would represent a potentially significant impact to intersections or road segments after mitigation (references are to peak hour LOS):

[1] Projects that emit other criteria pollutant emissions would have a significant impact if emissions would cause or substantially contribute to the violation of State or national AAQS. Criteria pollutant emissions could also have a significant impact if they would alter air movement, moisture, temperature, or climate or create objectionable odors in substantial concentrations. When estimating project emissions, local or project specific conditions should be considered.

[2] District approved dispersion modeling can be used to refute (or validate) a determination of significance if modeling shows that emissions would not cause or substantially contribute to an exceedance of State and national AAQS.

[3] Modeling should be undertaken to determine whether the project would cause or substantially contribute (550 lb/day) the exceedance of CO AAQS. If not, the project would not have a significant impact.

- Intersections or road segments that operate at LOS D or better that would operate at LOS E or F with the project's traffic.
- Intersections or road segments that operate at LOS E or F where the V/C ratio would increase 0.05 or more with the project's traffic.
- Intersections that operate at LOS E or F where delay would increase by 10 seconds or more with the project's traffic.
- Unsignalized intersections that operate at LOS E or F where the reserve capacity would decrease by 50 or more with the project's traffic. This criterion is based on the turning movement with the worst reserve capacity.
- The project would generate substantial heavy-duty truck traffic or generate substantial traffic along urban street canyons or near a major stationary source of CO.

If any of these scenarios would occur, CO modeling should be undertaken to determine whether indirect source emissions would cause an exceedance of State or national AAQS at existing or reasonably foreseeable receptors. If modeling demonstrates that the project would not cause an exceedance of CO AAQS, the project would not have a significant impact on local air quality. If there is an existing or projected exceedance already, a project would substantially contribute to that violation if indirect sources would generate 550 lb/day.

For cumulative analyses, the traffic impact of the project should be combined with that of other closely related past, present, and reasonably foreseeable future projects. The cumulative impact should be compared to the same criteria above to determine whether cumulative development could cause an exceedance of State or national AAQS at existing or reasonably foreseeable receptors. If so, CO modeling should be undertaken.

Sources that directly emit 550 pounds or more per day of CO (e.g., industrial operations) would result in substantial air emissions and have a significant impact on local air quality. However, CO modeling can be used to refute (or validate) this determination. If modeling demonstrates that the source would not cause a violation of State or national AAQS (9 ppm [eight-hour average] or 20 ppm [one-hour average]) at existing or reasonably foreseeable receptors, the project would not have a significant impact on local air quality.

Oxides of Sulfur (SO_X)[1]

Sources that directly emit 150 pounds or more per day of SO_X as SO_2 (e.g., industrial operations) would result in substantial air emissions and have a significant impact on air quality. However, modeling can be used to refute (or validate) this determination. If modeling demonstrates that the source would not cause a violation of State or national AAQS at existing or reasonably foreseeable receptors, the project would not have a significant impact on air quality.

[1] SO_X as SO_2 is formed by the combustion of sulfur containing materials (e.g., coal fuel oil, tires). High levels of ambient SO_2 may increase the risk of adverse symptoms in asthmatic patients.

Other Pollutants

Projects that emit other criteria pollutants could have a significant impact if total emissions would cause or substantially contribute to the violation of State or national AAQS. Projects that have the potential to emit toxic air contaminants could also result in significant air quality impacts (Chapter 9). In addition, projects that alter air movement, moisture, temperature, or climate either locally or regionally could have significant air quality impacts.

Projects that would emit pollutants associated with objectional odors in substantial concentrations could result in significant impacts if odors would cause injury, nuisance, or annoyance to a considerable number of persons or would endanger the comfort, health, or safety of the public. Because people have mixed reactions to odors, the nuisance level of an odor varies. Estimation of potential odor impacts should be coordinated with the MBUAPCD.

Temporary Emissions

The significance of projects that emit pollutants on a temporary or infrequent basis is based on a variety of factors, including the pollutant(s) in question and potential to create a violation or contribute substantially to an existing or projected violation. Examples of such temporary projects include occasional military exercises or annual activities that generate substantial emissions for a short time, excluding construction projects. Temporary projects will be reviewed by the MBUAPCD on a case-by-case basis.

Indirect emissions come from mobile sources that access the project site but generally emit off site. Direct emissions are emitted on site (i.e., stationary sources, on-site mobile equipment). Stationary source emissions that comply with MBUAPCD regulations are presumed to be less than significant under most circumstances. However, if a project includes other sources that are exempt from MBUAPCD permit authority, all direct and indirect emissions should be compared to the threshold(s) of significance.

5.0 IMPACTS

Air quality impacts resulting from the proposed project development can be divided into both short-term and long-term effects. Short-term emissions are associated with project construction. Long-term impacts are typically associated with build out conditions and are from vehicle exhausts. The proposed project neither attracts vehicles nor creates direct emissions. While vehicles will use this segment of roadway, these vehicles are (or will be) on the road already and are not a direct result of project implementation. Thus, at the completion of construction, any potential impacts associated with the proposed project are directly related to local shifts in traffic patterns and local air quality (i.e., the creation of CO hot spots).

5.1 SHORT-TERM CONSTRUCTION IMPACTS

The CEQA Guidelines published by MBUAPCD note that construction activities (grading, excavation, and on-site vehicular traffic) would have a significant effect on local air quality when they emit greater than 82 pounds of PM_{10} near sensitive receptors. If MBUAPCD approved dispersion modeling demonstrates that direct emissions under individual or cumulative conditions would not cause an exceedance of state PM_{10} standards, the impact would not be considered significant. MBUAPCD has determined that when minimal earthmoving (grading) takes place, disturbance of greater than 8 acres can exceed the 82 pound per day threshold. When both grading and excavation occur, disturbance of greater than 2.2 acres can exceed the emissions threshold.

Construction projects that temporarily emit precursors of O_3 (i.e., ROG or NO_X) are accommodated in the emission inventories of State and federally required air plans and would not have a significant impact on the attainment and maintenance of O_3 AAQS. In addition, construction projects that may cause or substantially contribute to the violation of other State or national AAQS or that could emit toxic air contaminants could result in temporary significant impacts.

Heavy construction is a source of dust emissions that may have substantial temporary effects on local air quality. Building and road construction are the construction categories with the highest emissions potential. Construction emissions are associated with land clearing, blasting, ground excavation, cut and fill operations, and the construction of the particular facility itself. Dust emissions also vary substantially from day to day, depending on the level of activity, the specific operations, and the weather conditions. A large portion of the emissions results from equipment traveling over unpaved surfaces at the construction site.

The total area of disturbance (grading and excavation) for the SR-68/Corral de Tierra Road Intersection project is anticipated to be less than 2 acres. This level of activity is below the MBUAPCD threshold of significance for project's when both grading and excavation would occur. Table E (PM_{10} Minimization Measures) is attached as guidelines for the Resident Engineer in case the required daily watering is insufficient to keep visible dust from blowing or being tracked off-site.

Caltrans Standard Specifications pertaining to dust control and dust palliative requirements would further reduce dust emissions during construction. These specifications are part of all construction contracts and require conformance with all State and/or MBUAPCD Rules and Regulations.

Naturally Occurring Asbestos

The project is located in Monterey County, which is among the counties listed as containing serpentine and ultramafic rock. However, the project site is not in a region of the county that has been identified as containing serpentine or ultramafic rock (A General Location Guide for Ultramafic Rocks in California—Areas More Likely to Contain Naturally Occurring Asbestos, Department of Conservation, Division of Mines and Geology, August 2000). Therefore, the impact from Naturally Occurring Asbestos (NOA) during project construction would be minimal to none.

5.2 LONG-TERM REGIONAL IMPACTS

The proposed project would improve the flow of traffic through this intersection. The project would not add any additional population to the area and would not add additional traffic to the roadway. Therefore, no long-term regional project related air quality impacts are anticipated.

5.3 LONG-TERM MICROSCALE PROJECTIONS

CO Hot-Spot Analysis

Ambient local air quality is most affected directly by CO emissions from motor vehicles. CO is typically the contaminant of greatest concern because it is the pollutant created in greatest abundance by motor vehicles and does not readily disperse into the air. Because CO does not readily disperse into the atmosphere, areas of vehicle congestion create “pockets” of CO called “hot spots.” These pockets have the potential to exceed the State one-hour standard of 20 ppm and/or the eight-hour standard of 9.0 ppm.

The traffic data provided by Wood Rodgers (Project Study Report - Traffic Operations Analysis) demonstrates that the proposed project will improve the SR-68/Corral de Tierra Road intersection level of service. Based on the criteria listed in Table D, it is unlikely that the proposed project will result in a CO hot spot. Therefore, a detailed CO hot spot analysis is not required for this project.

Particulate Matter (PM_{10} and $PM_{2.5}$) Analysis

The proposed project is located within a federal attainment area for $PM_{2.5}$ and PM_{10}. Therefore, a particulate matter hot-spot analysis is not required for conformity purposes.

5.4 AIR QUALITY MANAGEMENT PLAN CONSISTENCY ANALYSIS

An AQMP describes air pollution control strategies to be taken by counties or regions classified as nonattainment areas. The AQMP’s main purpose is to bring the area into compliance with the requirements of federal and State air quality standards. The AQMP uses the assumptions and projections by local planning agencies to determine control strategies for regional compliance status. Therefore, any projects causing a significant impact on air quality would impede the progress of the

AQMP. For a project in the NCCAB to be consistent with the AQMP, the pollutants emitted from the project must not exceed the MBUAPCD significant threshold or cause a significant impact on air quality. If feasible mitigation measures can be implemented to reduce the project's impact level from significant to less than significant under CEQA, the project is considered to be consistent with the AQMP.

A consistency analysis determination plays an essential role in local agency project review by linking local planning and unique individual projects to the AQMP in the following ways: it fulfills the CEQA goal of fully informing local agency decision makers of the environmental costs of the project under consideration at a stage early enough to ensure that air quality concerns are fully addressed, and it provides the local agency with ongoing information, assuring local decision makers that they are making real contributions to clean air goals defined in the most current AQMP (adopted in August 2008). Since the AQMP is based on projections from local General Plans, projects that are consistent with the local General Plan are considered consistent with the AQMP.

Air quality models are used to demonstrate that the project's emissions will not contribute to the deterioration or impede the progress of air quality goals stated in the AQMP. The air quality models use project specific data to estimate the quantity of pollutants generated from the implementation of a project. The results for the without project and with project scenarios in the horizon year are compared to the AQMP's air quality projections.

As discussed above, the proposed project will not significantly contribute to or cause deterioration of existing air quality; therefore, mitigation measures are not required for the long-term operation of the project. Hence, the proposed project is considered to be consistent with the County of Monterey's General Plan and is therefore consistent with the AQMP.

5.5 CLIMATE CHANGE

An individual project does not generate enough GHG emissions to significantly influence global climate change (GCC). Rather, GCC is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of GHG.[1] In assessing cumulative impacts, it must be determined whether a project's incremental effect is "cumulatively considerable." See *CEQA Guidelines* Sections 15064(h)(1) and 15130. To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult if not impossible task.

The AB 32 Scoping Plan contains the main strategies California will use to reduce GHG. As part of its supporting documentation for the Draft Scoping Plan, ARB released the GHG inventory for California (forecast last updated: October 28, 2010). The forecast is an estimate of the emissions expected to occur in 2020 if none of the foreseeable measures included in the Scoping Plan were implemented (Figure 4). The base year used for forecasting emissions is the average of Statewide emissions in the GHG inventory for 2006, 2007, and 2008.

[1] This approach is supported by the AEP: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the SCAQMD (Chapter 6: The CEQA Guide, April 2011) and the US Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).

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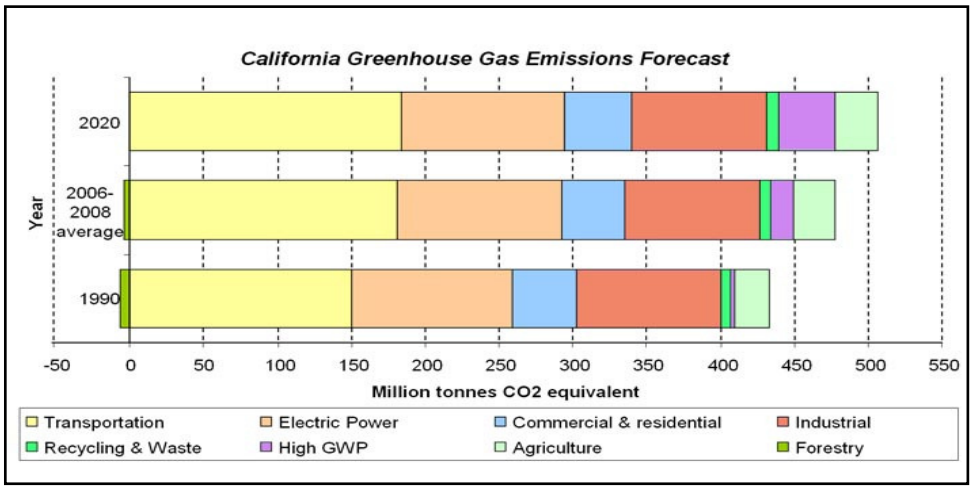

Source: http://www.arb.ca.gov/cc/inventory/data/forecast.htm

Figure 4: California Greenhouse Gas Forecast

The California Department of Transportation (Department) and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emissions reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation, the California Department of Transportation (Department) has created and is implementing the Climate Action Program at Caltrans that was published in December 2006 (see Climate Action Program at Caltrans (December 2006).[1]

One of the main strategies in the Caltrans Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of CO_2 from mobile sources, such as automobiles, occur at stop-and-go speeds (0–25 mph) and speeds over 55 mph; the most severe emissions occur from 0–25 mph (see Figure 5). To the extent that a project relieves congestion by enhancing operations and improving travel times in high-congestion travel corridors, GHG emissions, particularly CO_2, may be reduced.

The purpose of the project is to improve operational deficiencies at the intersection without increasing the capacity of SR-68 or Corral de Tierra Road. Therefore, implementation of the proposed project would not result in a substantial increase in CO_2 emissions compared to the No Build Alternative.

[1] Caltrans Climate Action Program is located at the following web address: http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf

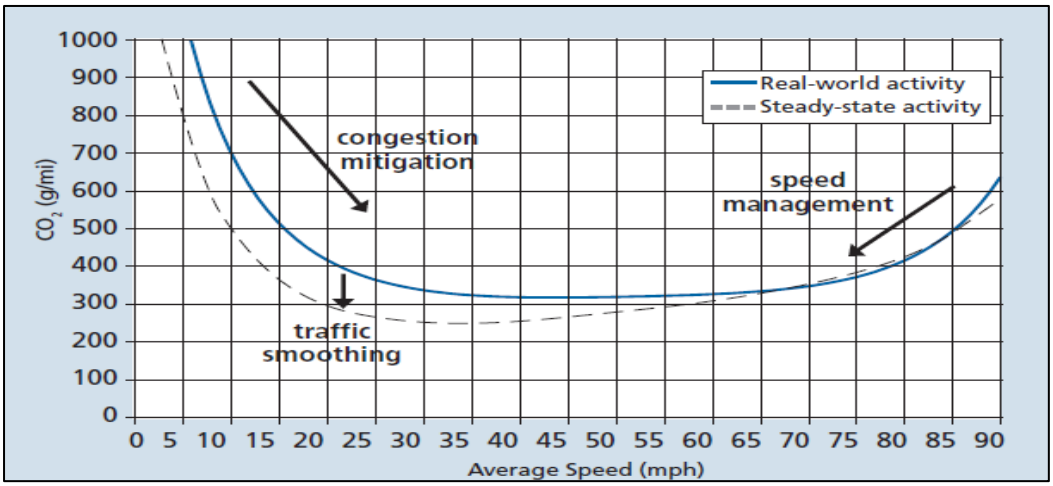

Figure 5: Possible Effect of Traffic Operation Strategies in Reducing On-Road CO2 Emission[1]

Construction Emissions. GHG emissions for transportation projects can be divided into those produced during construction and those produced during operation. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by on-site construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events. As discussed below, idling times would be restricted to 10 minutes in each direction for passenger cars during lane closures and 5 minutes for construction vehicles. Restricting idling times reduces harmful emissions from passenger cars and diesel-powered construction vehicles.

CEQA Conclusion. While construction would result in a slight increase in GHG emissions during construction, it is anticipated that any increase in GHG emissions due to construction would be offset by the improvement in operational GHG emissions. The regional GHG impact is thus considered less than significant. Therefore, the proposed project would not contribute cumulatively to climate change.

AB 32 Compliance. Caltrans continues to be actively involved in the Governor's Climate Action Team as the ARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. Many of the strategies Caltrans is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Former Governor Schwarzenegger's Strategic Growth Plan calls for a $222 billion infrastructure improvement program to fortify the State's transportation system, education, housing, and waterways, including $100.7 billion in transportation

[1] Traffic Congestion and Greenhouse Gases: Matthew Barth and Kanok Boriboonsomsin (TR News 268 May-June 2010)<http://onlinepubs.trb.org/onlinepubs/trnews/trnews268.pdf>

funding during the next decade. The Strategic Growth Plan targets a significant decrease in traffic congestion below today's level and a corresponding reduction in GHG emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that, combined, are expected to reduce congestion. The Strategic Growth Plan relies on a complete systems approach to attain CO_2 reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements, as depicted in Figure 6.

Figure 6: Mobility Pyramid

Caltrans is supporting efforts to reduce VMT by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. Caltrans is working closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority. Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars and light and heavy-duty trucks; Caltrans is doing this by supporting ongoing research efforts at universities, by supporting legislative efforts to increase fuel economy, and by its participation on the Climate Action Team. It is important to note, however, that control of the fuel economy standards is held by EPA and ARB. Lastly, the use of alternative fuels is also being considered; Caltrans is participating in funding for alternative fuel research at the University of California Davis.

Table E summarizes the Caltrans and Statewide efforts that Caltrans is implementing in order to reduce GHG emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

To the extent that it is applicable or feasible for the project and through coordination with the project development team, the following measures will also be included in the project to reduce the GHG emissions and potential climate change impacts from the project:

Table E: Climate Change Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO_2 Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	IGR	Department	Local governments	Review and seek to mitigate development proposals	Not estimated	Not estimated
	Planning Grants	Department	Local and regional agencies and other stakeholders	Competitive selection process	Not estimated	Not estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Department	Regional plans and application process	0.975	7.8
Operational Improvements and ITS Deployment	Strategic Growth Plan	Caltrans	Regional agencies	State ITS; Congestion Management Plan	0.007	2.17
Mainstream Energy and GHG into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not estimated	Not estimated
Educational and Information Program	Office of Policy Analysis & Research	Department, CalEPA, ARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not estimated	Not estimated
Fleet Greening and Fuel Diversification	Division of Equipment	Department of General Services		Fleet replacement B20 B100	0.0045	0.0065 0.45 0.0225
Nonvehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy conservation opportunities	0.117	0.34
Portland Cement	Office of Rigid Pavement	Cement and construction industries		2.5% limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 0.36	3.6
Goods Movement	Office of Goods Movement	CalEPA, ARB, BT&H, MPOs		Goods Movement Action Plan	Not estimated	Not estimated
Total					**2.66**	**18.67**

ARB = California Air Resources Board
BT&H = Business, Transportation, and Housing Agency
CalEPA = California Environmental Protection Agency
CEC = California Energy Commission
CO_2 = carbon dioxide
Department = California Department of Transportation
GHG = greenhouse gas
IGR = Intergovernmental Review
ITS = Intelligent Transportation Systems
MMT = million metric tons
MPOs = Metropolitan Planning Organizations

- Landscaping reduces surface warming and, through photosynthesis, decreases CO_2. Landscaping would be provided where necessary within the project area to provide aesthetic treatment, replacement planting, or mitigation planting for the project. The landscape planting would help offset any potential CO_2 emissions increase.
- The project would incorporate the use of energy-efficient lighting, such as light-emitting diode (LED) traffic signals, to the extent feasible. LED bulbs (or balls, in the stoplight vernacular) cost $60 to $70 apiece but last 5 to 6 years, compared to the 1-year average lifespan of the incandescent bulbs previously used. The LED balls themselves consume 10 percent of the electricity of traditional lights, which will also help reduce the project's CO_2 emissions.
- According to Caltrans' Standard Specification Provisions, idling time for lane closure during construction is restricted to 10 minutes in each direction. In addition, the contractor must comply with Title 13, California Code of Regulations §2449(d)(3), adopted by the ARB on June 15, 2008. This regulation restricts idling of construction vehicles to no longer than 5 consecutive minutes. Compliance with this regulation reduces harmful emissions from diesel-powered construction vehicles.

Adaption Strategies. "Adaptation strategies" refer to how Caltrans and others can plan for the effects of climate change on the State's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and increased intensity, and greater frequency and intensity of wildfires. These changes may affect transportation infrastructure in various ways, such as by damage to roadbeds due to longer periods of intense heat; increased storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to transportation infrastructure.

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the White House Council on Environmental Quality (CEQ), the Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA), released its interagency report on October 14, 2010, outlining recommendations to President Obama for how Federal Agency policies and programs can better prepare the US to respond to the impacts of climate change. The Progress Report of the Interagency Climate Change Adaptation Task Force recommends that the federal government implement actions to expand and strengthen the Nation's capacity to better understand, prepare for, and respond to climate change.

Climate change adaption must involve the natural environment as well. Efforts are underway on a Statewide level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, Governor Schwarzenegger signed EO S-13-08, which directed a number of State agencies to address California's vulnerability to sea level rise caused by climate change. This EO set in motion several agencies and actions to address the concern of sea level rise.

The California Natural Resources Agency (Resources Agency) was directed to coordinate with local, regional, State, and federal public and private entities to develop. The California Climate Adaptation Strategy (Dec 2009),[1] which summarizes the best known science on climate change impacts to California, assesses California's vulnerability to the identified impacts and then outlines solutions that can be implemented within and across State agencies to promote resiliency.

The strategy outline is in direct response to EO S-13-08, which specifically asked the Resources Agency to identify how State agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. Numerous other State agencies were involved in the creation of the Adaptation Strategy document, including the EPA; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture. The document is broken down into strategies for different sectors that include: Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. As data continues to be developed and collected, the State's adaptation strategy will be updated to reflect current findings.

The Resources Agency was also directed to request the National Academy of Science to prepare a Sea Level Rise Assessment Report by December 2010[2] to advise how California should plan for future sea level rise. The report is to include:

- Relative sea level rise projections for California, Oregon, and Washington, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates;
- The range of uncertainty in selected sea level rise projections;
- A synthesis of existing information on projected sea level rise impacts to State infrastructure (such as roads, public facilities, and beaches), natural areas, and coastal and marine ecosystems;
- A discussion of future research needs regarding sea level rise.

Prior to the release of the final Sea Level Rise Assessment Report, all State agencies that are planning to construct projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for 2050 and 2100 in order to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. Sea level rise estimates should also be used in conjunction with information regarding local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge, and storm wave data.

Until the final report from the National Academy of Sciences is released, interim guidance has been released by the Coastal Ocean Climate Action Team (CO-CAT) as well as Caltrans as a method to initiate action and discussion of potential risks to the State's infrastructure due to projected sea level rise.

[1] http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF

[2] The Sea Level Rise Assessment report is currently due to be completed in 2012 and will include information for Oregon and Washington State as well as California.

All projects for which a Notice of Preparation has been filed, and/or are programmed for construction funding from 2008 through 2013, or are routine maintenance projects as of the date of EO S-13-08, may, but are not required to, consider these planning guidelines.

Furthermore, EO S-13-08 directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level affecting safety, maintenance, and operational improvements of the system and economy of the State. Caltrans continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Currently, Caltrans is working to assess which transportation facilities are at greatest risk from climate change effects. However, without Statewide planning scenarios for relative sea level rise and other climate change impacts, Caltrans has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once Statewide planning scenarios become available, Caltrans will be able to review its current design standards to determine what changes, if any, may be warranted in order to protect the transportation system from sea level rise.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. Caltrans is an active participant in the efforts being conducted in response to EO S-13-08 and is mobilizing to be able to respond to the National Academy of Science report on Sea Level Rise Assessment, which is due to be released in 2012.

While estimates vary, sea level is expected to rise an additional 22 to 35 inches by 2100.[1] Although these projections are on a global scale, the rate of sea level rise along California's coast is relatively consistent with the worldwide average rate observed over the past century. Therefore, it is reasonable to assume that changes in worldwide sea level rise will also be experienced along California's coast.[2] The area of the project would not be affected by a 1-meter (approximately 39-inch) rise in sea level. Therefore, the potential effects of climate change on the proposed project would not be significant.

1 California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* CEC-500-2006-077. July.

2 California, State of. Department of Water Resources, 2006. *Progress on Incorporating Climate Change into Management of California's Water Resources*. July.

6.0 STANDARD CONDITIONS

Provisions for the regulation of construction related vehicle and dust emissions are incorporated into the Caltrans Standard Specifications, which must be followed by all contractors. Compliance with these specifications will further reduce construction related air quality impacts. The MBUAPCD CEQA Air Quality Guidelines have a list of dust minimization measures, as shown in Table F, which should be implemented by every project during construction.

Other standard measures recommended for reduction of air pollutants generated by vehicle and equipment exhaust during construction include:

- The construction contractor shall select the construction equipment used on site based on low emission factors and high energy efficiency. The construction contractor shall ensure that construction grading plans include a statement that all construction equipment will be tuned and maintained in accordance with the manufacturer's specifications.
- The construction contractor shall ensure that construction grading plans include a statement that work crews will shut off equipment when not in use.
- The construction contractor shall time the construction activities so as not to interfere with peak hour traffic and to minimize obstruction of through traffic lanes adjacent to the site; if necessary, a flagperson shall be retained to maintain safety adjacent to existing roadways.
- The construction contractor shall support and encourage ridesharing and transit incentives for the construction crew.
- ARB-approved on-road diesel fuel shall be used in all diesel construction equipment when available.

Table F: Minimization Measures: Construction Emission Pollutant: PM_{10}

Minimization Measure	Source Category	Effectiveness	Source
Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.	Fugitive emissions from active, unpaved construction areas	50%	U.S. EPA, "AP-42, Vol. 1" P. 11.2.4-1.
Prohibit all grading activities during periods of high wind (over 15 mph)	Grading Emissions	Reduces potential for exceedance	SCAQMD, "SIP for PM10 in the Coachella Valley" 1990. P. 5-15
Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).	Wind erosion from inactive areas	Up to 80%	U.S. EPA, "AP-42, Vol. 1" P. 11.2.4-1.
Apply nontoxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydroseed area.	Wind erosion from inactive areas	Up to 80%	U.S. EPA, "AP-42, Vol. 1" P. 11.2.4-1.
Haul trucks shall maintain at least 2'0" of freeboard	Spills from haul trucks	90%	MBUAPCD
Cover all trucks hauling dirt, sand, or loose materials.	Spills from haul trucks	90%	MBUAPCD
Plant tree windbreaks on the windward perimeter of the construction project if adjacent to open land.	Wind erosion from inactive areas	4% (15% for mature trees)	SCAQMD, "SIP for PM_{10} in the Coachella Valley" 1990. P. 5-15.
Plant vegetative ground cover in disturbed areas as soon as possible.	Wind erosion from inactive areas	5–99% (based on planting plan)	SCAQMD, "SIP for PM_{10} in the Coachella Valley" 1990. P. 5-15.
Cover inactive storage piles.	Wind erosion from storage piles	Up to 90%	U.S. EPA "AP-42, Vol. 1." P. 11.2.3-4.
Install wheel washers at the entrance to construction sites for all exiting trucks.	On-road entrained PM_{10}	50%	SCAQMD, SIP for PM_{10} in the Coachella Valley" 1990. P. 4-11.
Pave all roads at construction sites.	On-road entrained PM_{10}	90%	SCAQMD, SIP for PM_{10} in the Coachella Valley" 1990. P. 4-12.
Sweep streets if visible soil material is carried out from the	On-road entrained	34%	SCAQMD, SIP for

construction site.	PM_{10}		PM_{10} in the Coachella Valley" 1990. P. 5-18.
Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the MBUAPCD shall also be visible to ensure compliance with Rule 402 (nuisance)	All Emissions	Minimizes nuisance levels	MBUAPCD
Limit the area under construction at any one time. *(Limit grading to six acres per day.)*	Fugitive emissions from active, unpaved construction areas	71 lbs/acre/day	U.S. EPA "AP -42 Vol. 1."
Note: These effectiveness estimates are not additive within a source category (i.e., the benefit of two or more mitigation measures that address the same source of emissions would not be the sum of both measures).			

Source: MBUAPCD CEQA Air Quality Guidelines, February 2008.

7.0 REFERENCES

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ATTACHMENT A

CONCEPT PLANS

ROUTE 68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENTS

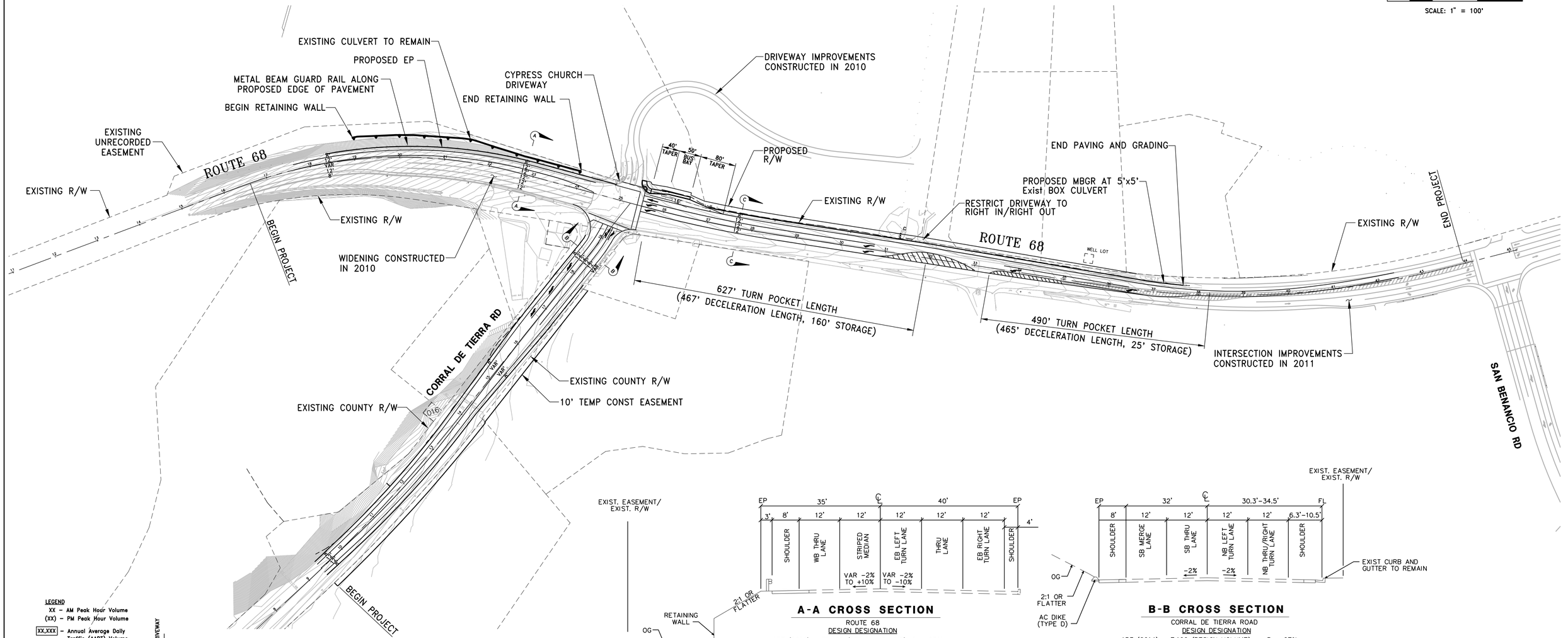
BUILD ALTERNATIVE

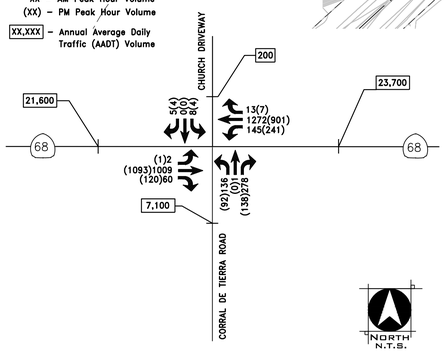
COUNTY OF MONTEREY CALIFORNIA

JANUARY, 2013

100' 50' 0 100' 200'

SCALE: 1" = 100'





*NOTE: This volume scenario does not include traffic volumes from the proposed Shopping Center on the south-east quadrant of the project intersection.

TRAFFIC DESIGN VOLUME YEAR 2014

A-A CROSS SECTION

ROUTE 68

DESIGN DESIGNATION

ADT (2014) = 21,600 (DESIGN VOLUME)
ADT (20 YEAR) = 38,500
DHV = 2,484
ESAL = 5,775,045

D = 57%
T = 4.0%
V = 55 MPH
TI_{20} = 11.0

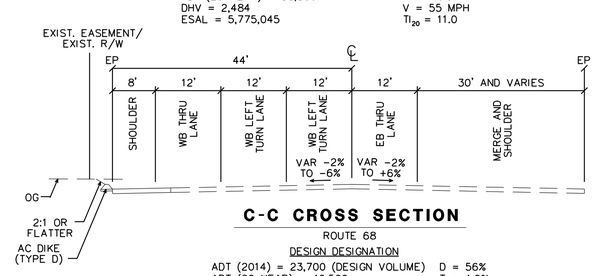
B-B CROSS SECTION

CORRAL DE TIERRA ROAD

DESIGN DESIGNATION

ADT (2014) = 7,100 (DESIGN VOLUME)
ADT (20 YEAR) = 8,900
DHV = 619
ESAL = 735,017

D = 67%
T = 2.0%
V = 55 MPH
TI_{20} = 8.5



C-C CROSS SECTION

ROUTE 68

DESIGN DESIGNATION

ADT (2014) = 23,700 (DESIGN VOLUME)
ADT (20 YEAR) = 40,500
DHV = 2,725
ESAL = 6,060,788

D = 56%
T = 4.0%
V = 55 MPH
TI_{20} = 11.0

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AIR QUALITY ANALYSIS

ADDENDUM

STATE ROUTE 68/CORRAL DE TIERRA INTERSECTION IMPROVEMENT PROJECT

Monterey County, California

05-Mon-68 PM 12.8/13.2

EA 05-0H8230

JUNE 2015

PURPOSE OF THE AIR QUALITY ANALYSIS ADDENDUM

After the circulation of the Draft Initial Study with Proposed Mitigated Negative Declaration (Draft IS/MND) and in response to public comments, the County of Monterey and the California Department of Transportation (Caltrans) adopted project design modifications. The project design modifications included land outside of the previously analyzed project study area as identified in the Air Quality Analysis, February 2013. This Addendum was prepared to address the expanded project study area. The expanded project study area, Figure 1, is provided at the end of this Addendum.

CHANGE IN PROJECT DESIGN

The project design modifications are shown in yellow in the Build Alternative Design Plan provided at the end of this Addendum and described in detail below.

CHANGE IN PROJECT DESCRIPTION

The project design modifications included the following components:

- The shoulder widening of Corral de Tierra Road in the southbound direction would be reduced from 8 feet to 6 feet.
- The driveway that serves the five homes on the north side of State Route 68 would be realigned so that access to these homes would be shared with the Cypress Community Church's driveway.
- A 110 foot-long merge lane on State Route 68 for vehicles turning left out of The Villas driveway would be provided.
- The existing gutter on Corral de Tierra Road would be replaced with a flatter gutter.

The project design modifications resulted in the following changes to the Air Quality Analysis. Deletions are shown with strikethrough (~~strikethrough~~) and additions are shown with underline (<u>underline</u>).

Paragraph one, sentence four in the Build Alternative: Operational Improvements subsection in Chapter 3, Project Description, in the Air Quality Analysis has been revised as follows:

> ~~*The paved shoulders of Corral de Tierra Road within the project area would be widened to 8 feet (ft) to better accommodate pedestrians and facilitate the future addition of Class II bicycle lanes to Corral de Tierra Road.*~~ *The shoulder of Corral de Tierra Road in the northbound direction would be widened to at least 8 feet within the project area (except at one point where existing curb, sidewalk and utilities preclude widening). The shoulder of Corral de Tierra Road in the southbound direction would be widened to at least 6 feet within the project area.*

Paragraph two, sentence one in the Build Alternative: Operational Improvements subsection in Chapter 3, Project Description, in the Air Quality Analysis has been revised as follows:

> *About 520 ft of ~~S~~steel bin~~Crib~~ retaining wall (or equivalent) would be constructed west of Corral de Tierra Road along the north embankment of SR-68.*

Paragraph three, in the Build Alternative: Operational Improvements subsection in Chapter 3, Project Description, in the Air Quality Analysis has been revised as follows:

> ~~*A left turn lane would also be constructed from westbound SR-68 into the Corral de Tierra Country Club driveway. The Corral de Tierra County Club driveway is located east of Corral de Tierra Road on the south side of SR-68.*~~ *A left-turn lane to the driveway of The Villas on the south side of SR-68 would be constructed. A 110-foot-long merge lane would be provided for vehicles that turn left onto SR-68 from The Villas driveway heading westbound on SR-68.*

Paragraph four, in the Build Alternative: Operational Improvements subsection in Chapter 3, Project Description, in the Air Quality Analysis has been revised as follows:

> ~~*No provisions for left turns to or from the residential driveway on the north side of SR-68 would be made. As part of the proposed project, a painted median island would be created in front of the residential driveway restricting drivers to right-in, right-out access. Drivers needing to make left-in, left-out movements would need to make a U-turn at the traffic signal at either San Benancio Road or at Corral de Tierra Road. U-turn movements at these signalized intersections are both legal and safe.*~~ *On the north side of SR-68 the there is an existing private driveway that serves*

five homes. This driveway would be removed as part of the proposed project. The private road that leads to the homes would be realigned to connect to the driveway that currently serves the Cypress Community Church. With implementation of the proposed project, vehicles would share a portion of the church's driveway and the traffic signal at Corral de Tierra Road/SR-68 to access the homes.

The following sentence has been added to the end of paragraph five in the Build Alternative: Operational Improvements subsection in Chapter 3, Project Description, in the Air Quality Analysis:

The proposed project would also replace the existing drainage gutter on Corral de Tierra Road with a flatter gutter.

Paragraph six, sentence two in the Build Alternative: Operational Improvements subsection in Chapter 3, Project Description, in the Air Quality Analysis has been revised as follows:

Also, ~~a~~temporary construction easements would be acquired along the east side of Corral de Tierra Road to accommodate grading near the edge of the County right-of-way and on the north side of SR-68 for construction of the residential driveway realignment (refer to Figure 2: Build Alternative Design Plan).

ENVIRONMENTAL SETTING

The expanded project study area is located adjacent to the previously identified project study area and therefore shares the same environmental setting. The proposed project's existing environmental setting and regulatory setting as described in the Air Quality Analysis remains the same. Furthermore, construction equipment utilized for the proposed driveway realignment would be similar to the equipment utilized for the proposed project as analyzed in the Air Quality Analysis.

PROJECT-RELATED IMPACTS

The proposed driveway realignment will require additional earthwork including approximately 4,015 square feet of new pavement and the removal of approximately 2,024

square feet of existing pavement. The total area of disturbance (grading and excavation) for the proposed project (including the additional project study area) is still anticipated to be less than 2 acres as concluded in the Air Quality Analysis. This level of activity is below the Monterey Bay Unified Air Pollution Control District (MBUAPCD) threshold of significance for project's when both grading and excavation would occur.

As concluded in the Air Quality Analysis, the traffic data provide in the Project Study Report demonstrates that the proposed project will improve the SR-68/Corral de Tierra Road intersection Level of Service. The proposed project would not increase population in the project area and would not add additional traffic to the roadway; therefore, no long-term regional project-related air quality impacts are anticipated.

As concluded in the Air Quality Analysis, while construction of the proposed project would result in a slight increase in GHG emissions during construction, it is anticipated that any increase in GHG emissions due to construction would be offset by the improvement in operational GHG emissions. The regional GHG impact is therefore, considered less than significant and the proposed project would not contribute cumulatively to climate change.

STANDARD CONDITIONS

The standard conditions identified in the Air Quality Analysis, February 2013, remain applicable to the expanded project study area and no additional standard conditions or mitigation measures are required.

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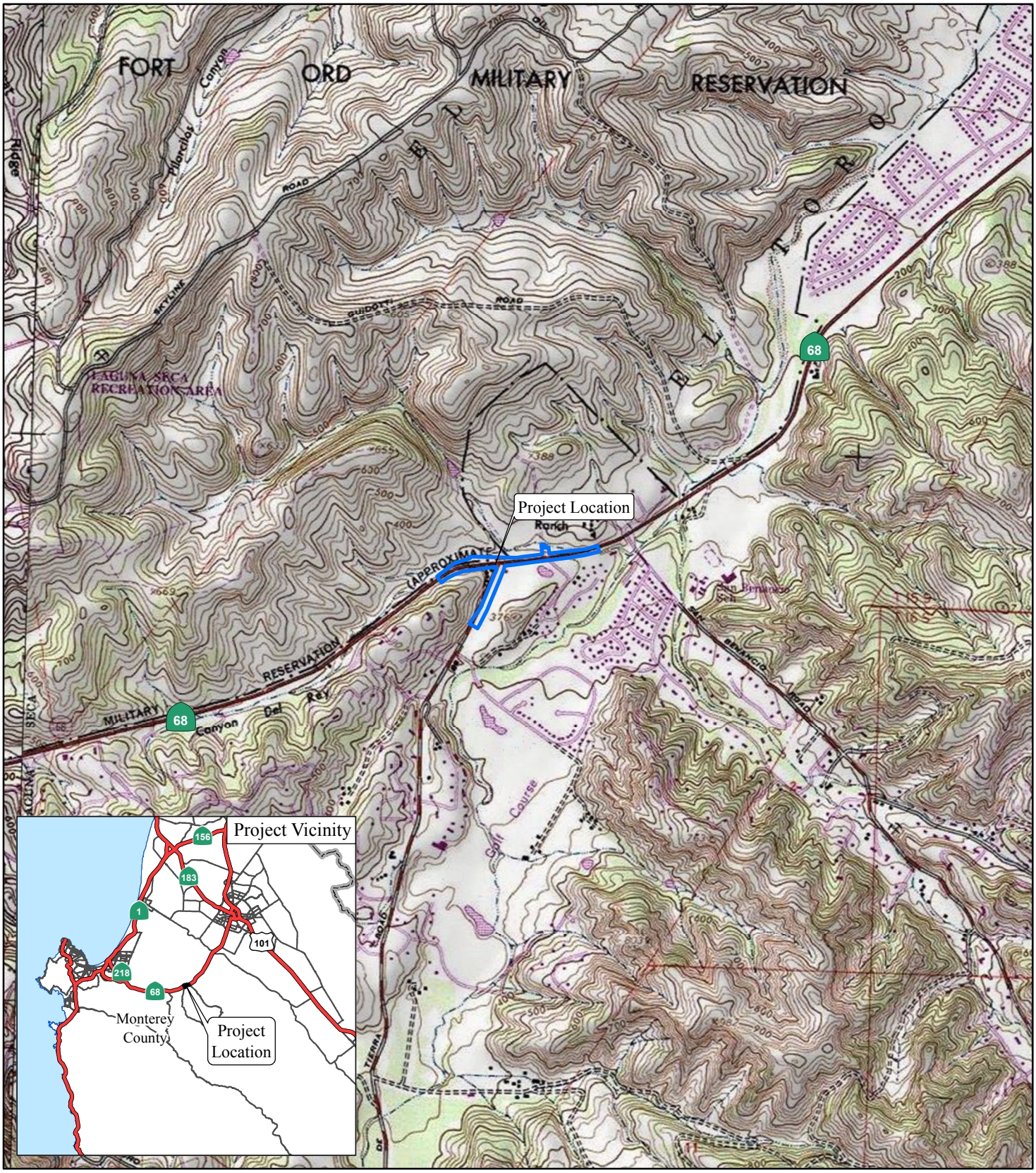

LEGEND

Project Location

FIGURE 1

N

0 1000 2000

FEET

SOURCE: USGS 7.5' Quad - Spreckels (1984), CA

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SR 68 / Corral de Tierra Road
Intersection Improvement Project

Project Location Map

MON-68, P.M. 12.8/13.2
05-OH8230

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ROUTE 68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENTS

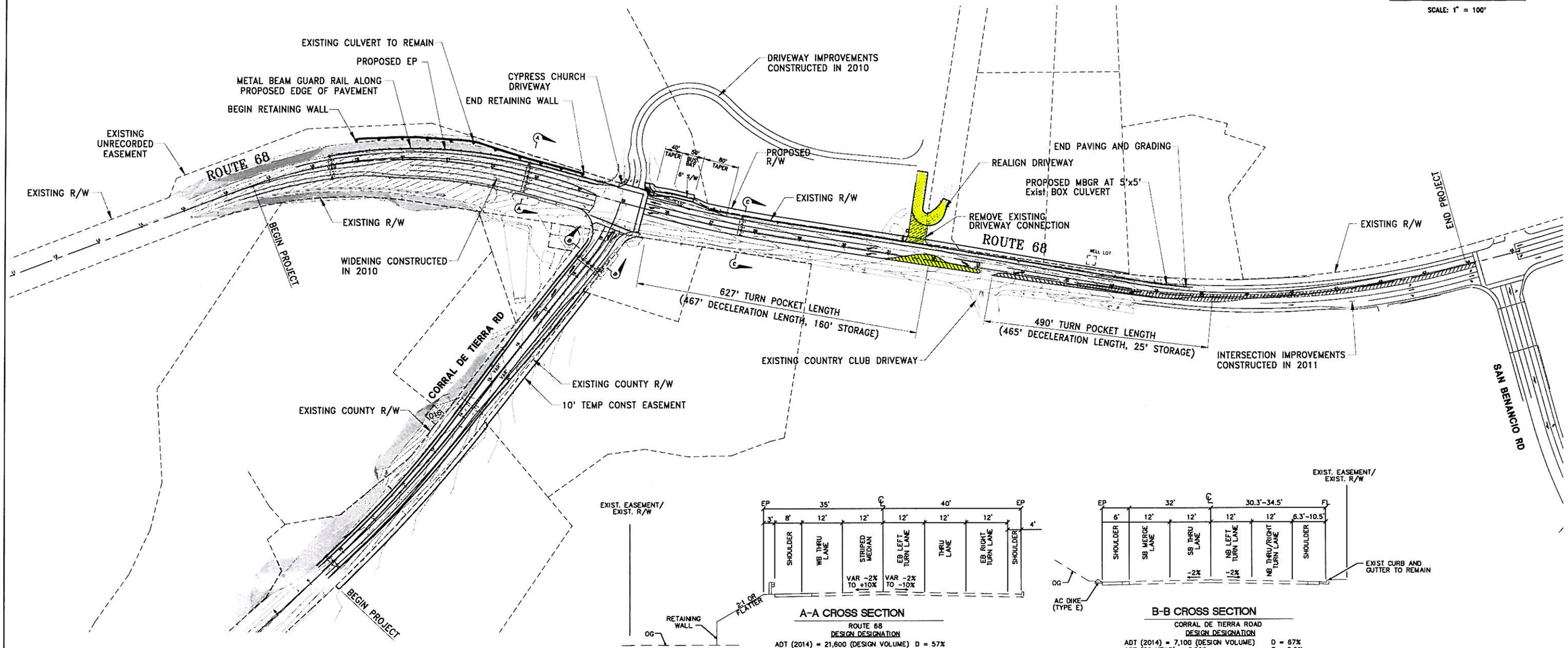
BUILD ALTERNATIVE

COUNTY OF MONTEREY CALIFORNIA

MAY, 2015

100' 50' 0 100' 200'

SCALE: 1" = 100'



A-A CROSS SECTION

ROUTE 68

DESIGN DESIGNATION

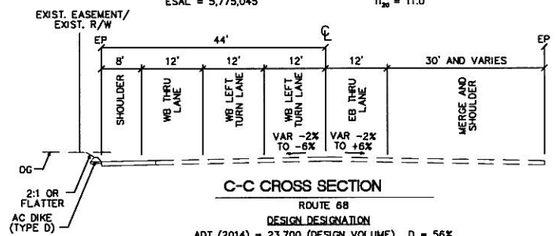
ADT (2014) = 21,600 (DESIGN VOLUME) D = 57%
ADT (20 YEAR) = 38,500 T = 4.0%
DHV = 2,484 V = 55 MPH
ESAL = 5,775,045 TI_{20} = 11.0

B-B CROSS SECTION

CORRAL DE TIERRA ROAD

DESIGN DESIGNATION

ADT (2014) = 7,100 (DESIGN VOLUME) D = 67%
ADT (20 YEAR) = 8,900 T = 2.0%
DHV = 619 V = 55 MPH
ESAL = 735,017 TI_{20} = 8.5



C-C CROSS SECTION

ROUTE 68

DESIGN DESIGNATION

ADT (2014) = 23,700 (DESIGN VOLUME) D = 56%
ADT (20 YEAR) = 40,500 T = 4.0%
DHV = 2,725 V = 55 MPH
ESAL = 6,060,788 TI_{20} = 11.0

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GEOTECHNICAL DESIGN & MATERIALS REPORT
SR-68/CORRAL DE TIERRA ROAD
INTERSECTION IMPROVEMENT PROJECT
MONTEREY COUNTY, CA
05-Mon-68 PM 12.8/13.2
EA 05-0H8230
ID No. 05 0000 0085

For

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December 4, 2012
(updated from 10/2009 version)

Job No. 206148.10

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Wood Rodgers, Inc.
3301 C Street Bldg 100-B
Sacramento, CA 95816

Job No.: 206148.10
December 4, 2012
(updated from 10/2009 version)

Attn: Mr. Keith Hallsten

Sub: GEOTECHNICAL DESIGN & MATERIALS REPORT
SR-68/Corral De Tierra Road Intersection Improvement Project,
Monterey County, CA 05-Mon-68 PM 12.8/13.2
EA 05-0H8230 ID No. 05 0000 0085

Dear Mr. Hallsten:

Transmitted herewith is the Geotechnical Design & Materials Report for the subject project. The report was prepared in accordance with the scope of work outlined in our proposal.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning our findings or conclusions, please feel free to contact this office at (408) 452-9000.

Very truly yours,
PARIKH Consultants, Inc.

V. David Wright for
Gary Parikh, P.E., G.E.
President

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1. INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed improvements on the SR-68/Corral de Tierra Road Intersection in Monterey County. The general location of the project site and its limits are shown in Plate 1, Project Location Map.

This report addresses the design of structural pavement sections, and corrosion investigation recommendations. The investigation included review of readily available soils and geologic literature pertaining to the site including as-built information, site reconnaissance, obtaining representative samples and logging soil materials encountered in exploratory borings, laboratory testing of the representative samples, performing engineering analyses, and preparation of this report.

The purpose of this report is to document subsurface geotechnical conditions, provide analyses of anticipated site conditions as they pertain to the project described herein, and to recommend design and construction criteria for the project. This report also establishes a geotechnical baseline to be used in assessing the existence and scope of changed site conditions, if any.

The report is intended for use by the project roadway design engineer, construction personnel, bidders, and contractors for information and reference purposes only and should not be construed directly as project specifications.

Due to limitations inherent in geotechnical investigations, it is neither uncommon to encounter unforeseen variations in the soil conditions during construction nor is it practical to determine all such variations during an acceptable program of drilling and sampling for a project of this scope. Such variations, when encountered, generally require additional engineering services to attain a properly constructed project. We, therefore recommend that a contingency fund be provided to accommodate any additional charges resulting from technical services that may be required during construction.

2. EXISTING FACILITIES AND PROPOSED IMPROVEMENTS

SR-68 is the main connector between City of Salinas and the Monterey Peninsula, the County's two principal urbanized areas. SR-68 has one traffic lane in each direction. It serves as the main connector between the Monterey Peninsula, including Carmel Valley and the former Fort Ord area, and Southern California via US 101 and is the main commuter route between Salinas and Monterey providing access to residential developments, schools and businesses adjacent to the SR-68 corridor. The SR-68/Corral de Tierra Road Intersection is currently experiencing significant traffic congestion and needs traffic operation improvements. Based on the information provided, the proposed project consists of following improvements:

- Widening SR-68 on the north side for a distance of approximate 1,200 feet to the east of the Corral de Tierra Road intersection to accommodate a second westbound SR-68 left turn lane to southbound Corral de Tierra Road,
- Widening SR-68 on the north side for a distance of approximately 600 feet west of the intersection with Corral de Tierra Road. In order to avoid impact to potential habitat for the federally-threatened California Tiger Salamander, the designer is proposing to incorporate a retaining wall to widen the steep mechanically-stabilized embankment slope on the north side of SR-68, west of Corral de Tierra Road,
- Widening Corral de Tierra Road, primarily on the east side, from the intersection with SR-68 for a distance of approximately 1,000 feet south.
- Potentially constructing drainage system improvements on the north side of SR-68 & relocating existing utilities located on the east side of the Corral de Tierra Road and on the north side of SR-68.

3. PERTINENT REPORTS AND INVESTIGATION

Except Traffic Index (TI) value provided by the designer, no other report or investigation pertinent to the site was available.

4. PHYSICAL SETTING

4.1 Climate

The climate in the project area is characterized by moderate climatic conditions, which consists of mild winters, mild summers, small daily and seasonal temperature ranges, and mild humidity. Based on the statistical data from "Western Regional Climate Center", the average total annual precipitation along the project vicinity is approximately 9.5 inches and is principally during the months of December through February. January usually has the most precipitation accumulation and July the least. Extreme temperature ranges from location and the average minimum temperature is approximately 50.0° F in January to average maximum temperature of 70.0° F in July.

4.2 Topography and Drainage

The topography within the project site along SR-68/ Corral de Tierra Road Intersection is mainly at level with existing grade ranging from Elev. 271.6 to 308.6 ft. The site drainage is generally by sheet flow, or collected by local drainage systems.

4.3 Man-Made and Natural Features of Engineering and Construction Significance

The subject was considered and was determined to be not significant for the project.

4.4 Regional Geology and Seismicity

General geologic features pertaining to the site were evaluated by reference to the Geologic Map of Spreckels 7.5 Minute Quadrangle; Monterey County, CA (Joseph C. Clark, Earl E. Brabb, and Lewis I. Rosenberg 1997). The Spreckels Quadrangle lies at the north end of the Sierra De Salinas and extends from the Salinas Valley on the northeast across Los Laurelles Ridge south to Carmel Valley, an Intermontane Valley that separates the Santa Lucia Range from the Sierra De Salinas. The Toro Regional Park occupies the east-central part of the Quadrangle, whereas the former Fort Ord Military Reservation covers the northwestern part of the area. Subdivisions largely occupy the older floodplain of Toro Creek and the adjacent foothills, with less dense development along the narrower canyons of the Corral de Tierra and San Benancio Gulch to the south. The foothills

southwest of the Salinas River are the sites of active residential development. A geologic map of the general project area is shown on Plate 3.

Liquefaction, which seriously affected the Spreckels area in the 1906 San Francisco earthquake (Lawson, 1908), and landsliding are the two major geological hazards in the area. The landslides consist mainly of older larger slides in the southern and younger debris flows in the northern part of the Quadrangle.

The regional structure of the area is similar to the other portions of the California Coast Ranges, consisting of a complex series of steeply dipping, northwesterly striking faults extends into the Spreckels Quadrangle from the south and locally bounds Salinian granitic rocks. Significant earthquakes, which have occurred in this area, are generally associated with crustal movements along well-defined active fault zones. The attached Fault Map (Plate 4) presents the locations of the fault systems relative to the project site. Maximum Credible Earthquake Magnitudes (MCE) for the major faults in the area are determined by Mualchin (California Seismic Hazard Map 1996). These magnitudes represent the largest earthquakes that could occur on the given fault based on the current understanding of the regional tectonic structure. Faults in the vicinity include the King City Reliz fault and Zayante Vergales fault. Based on Caltrans updated map and readily available geological data, the governing fault for the structure is the Zayante Vergales (a strike-slip fault, Mw = 7.25).

5. EXPLORATION

5.1 Drilling and Sampling

Based on the preliminary plans, discussions with the design team, and readily available geotechnical data in the area, 6 borings were drilled at selected locations to a depth of 5 ft below the existing ground surface.

- Six borings, namely A-07-B1 through A-07-B6 were drilled in the vicinity for the design of roadway. Bulk Samples were collected at shallow depth (approximately 5ft).

Borings A-07-B1 through A-07-B6 was drilled by a Jeep Rig on March 14th, 2007 under the supervision of our field engineer. The borings were advanced using a Jeep-mounted rig using 8" auger. The boring locations are shown on Plate 2, Site Plan. The descriptions of the soils encountered and relevant boring information are presented on the Log of Test Boring (LOTB) in Appendix A. The samples were sealed and transported to our laboratory for further evaluation and testing. The field investigation was conducted under the supervision of our field engineer who logged the test borings and prepared the samples for subsequent laboratory testing and evaluation. Table 1 below summarizes the boring program.

TABLE 1 – BORING PROGRAM

Boring No.	Station (ft.)	Offset (ft.) From "SR 68" line	Description
A-07-B1	20+41	Lt. 29	SILTY SAND (SM), brown, moist
A-07-B2	29+00	Lt. 31	SILTY SAND (SM), brown, moist
A-07-B3	34+85	Lt. 38	SILTY SAND (SM), brown, moist
A-07-B4	38+20	Lt. 18	SILTY SAND (SM), brown, moist
A-07-B5	24+14	Rt. 391	SILTY SAND (SM), brown, moist
A-07-B6	22+52	Rt. 719	SILTY SAND (SM), brown, moist

5.2 Geologic Mapping

No site-specific geologic mapping was conducted. However, general geologic features pertaining to the site were evaluated by reference to Spreckels 7.5 Minute Quadrangle Geology of Monterey County, California by Joseph C. Clark, Earl E. Brabb, and Lewis I. Rosenberg 1997 (Plate 3). Detailed descriptions of the geology are described in Sections 4.4 & 7.1.

5.3 Geophysical Studies

The subject was considered and was determined to be not applicable to the project.

5.4 Instrumentation

The subject was considered and was determined to be not applicable to the project.

5.5 Exploration Notes

The exploratory borings mainly encountered older flood plain deposits (Holocene). Drilling conditions using augers were considered normal for this site.

6. GEOTECHNICAL TESTING

6.1 In-Situ Testing

The subject was considered and was determined to be not applicable to the project. The borings were drilled using a jeep rig with solid stem auger to collect bulk samples.

6.2 Laboratory Testing

Laboratory tests performed for the study include the following: R-value Test (California Test Method 301), and Corrosion Test (California Test Method 643). The laboratory test results are attached in Appendix B.

7. GEOTECHNICAL CONDITIONS

7.1 Site Geology

General geologic features pertaining to the site were evaluated by reference to the Geologic Map of Spreckels 7.5 Minute Quadrangle; Monterey County, CA (Joseph C. Clark, Earl E. Brabb, and Lewis I. Rosenberg 1997). Based on the map, the site subsoil's consist of Older Flood Plain Deposits (Qof) and Continental Deposits, undivided (QTc). A geologic map of the project vicinity is shown on Plate 3.

Qof – Older flood-plain Deposits (Holocene) – Older flood-plain Deposits are stratigraphically between terrace deposits and younger flood-plain deposits and are Holocene in age. Older flood-plain deposits consist of unconsolidated, relatively fine-grained, heterogenous deposits of sand and silt, commonly including relatively thin layers of clay. The grain size of levee deposits decreases away from abandoned channel-fill deposits. Interpretation of well log data suggests that the older flood-plain deposits are typically less than 60 ft thick in the study area, but locally may

be as much as much as 40 m thick.

7.1.1 *Lithology*

The site consists of older flood-plain deposits. The subject was considered and was determined to be not applicable for the project. Detailed description of subsoil conditions are presented in Section 7.2.

7.1.2 *Structure*

The subject was considered and was determined to be not applicable for the project

7.2 Subsurface Soil Conditions

Based on the boring data, the subsurface soil conditions of the site generally consist of silty sand with some clay and gravel to the maximum depth explored (5 ft below existing grade). Detailed descriptions of the materials encountered in the exploratory borings are presented in the LOTB in Appendix A "Log of Test Borings". It should be noted that these descriptions and related information depict subsurface conditions only at the locations indicated and on the particular date noted on the LOTB. Because of the variability from place to place within soil/rock in general, subsurface soil conditions at other locations may differ from conditions occurring at the locations explored. The abrupt stratum changes shown on the logs may be gradational and relatively minor changes in soil types within a stratum may not be noted due to field limitations. Also, the passage of time may result in a change in the soil conditions at the locations due to environmental changes.

7.3 Water

7.3.1 *Surface Water*

There is no surface water body at the site.

7.3.1.1 *Scour*

The subject was considered and was determined to be not applicable for the roadway project.

7.3.1.2 *Erosion*

Based on the U.S. Department of Agricultural Soil Survey for the project site area, following soil

type exists:

- Gorgonio sandy loam (GkB): Texturally it is defined as gravelly sandy loam and has high conductivity, high infiltration or water transmission rate, excessively draining capability and low runoff potential. Erosion hazard in this soil is generally considered moderately high.
- Santa Ynez sandy loam (ShE): Texturally it is defined as fine sandy loam and has moderately high conductivity, moderately high draining capability, very slow infiltration or water transmission rate and high runoff potential. Erosion hazard in this soil is also considered moderately high.

Majority of the road way alignment is generally in level area, covered with vegetation and appears to be in good condition. Normal erosion control measures should be applied to prevent erosion on the newly constructed embankment.

7.3.2 *Groundwater*

Groundwater was not encountered to the depth of 5 ft. It is anticipated that groundwater level will vary with the passage of time due to seasonal runoff, groundwater fluctuations, surface and subsurface flow, ground surface run-off, and other factors that were not existent at the time of investigation.

7.4 Project Site Seismicity

7.4.1 *Ground Motions*

The project is located in a seismically active part of northern California. Many faults in the Monterey County Area are capable of producing earthquakes, which may cause strong ground shaking at the site. The attached Fault Map (Plate 4) presents the locations of the fault systems relative to the project site.

Maximum Credible Earthquake (MCE) magnitudes for some of the major faults in the area determined by Mualchin (California Seismic Hazard Map 1996) are summarized below. These maximum credible earthquake magnitudes represent the largest earthquakes that could occur on the given fault based on the current understanding of the regional tectonic structure.

TABLE 2 - EARTHQUAKE DATA

Fault	Estimated Closest Distance to the Project Area (miles)	Maximum Credible Earthquake
Zayante Vergales (strike - slip)	5.9	7.25
King City Reliz (strike – slip)	6.5	7.0
Monterey Bay Zone (Reverse-Oblique)	12.4	6.5
Sargent (strike – slip)	13.1	6.75
Tularcitos Navy (strike – slip)	13.4	7.0
Cypress Point (Unknown)	18.0	6.0
San Gregorio-Palo Colorado (strike – slip)	21.1	7.5

7.4.2 *Ground Rupture*

Since no active faults pass through the project site, the potential for fault rupture is low.

8. GEOTECHNICAL ANALYSIS AND DESIGN

8.1 Dynamic Analysis

8.1.1 *Parameter Selection*

Based on the seismic hazard map prepared by Mualchin (1996) and the attenuation relationship by Sadigh et al. (1997), the Peak Bedrock Acceleration (PBA) at the project site is 0.41 g.

8.1.2 *Liquefaction Potential*

Liquefaction is a phenomenon in which saturated cohesionless soils are subject to a temporary but essentially total loss of shear strength under the reversing, cyclic shear stresses associated with earthquake shaking. Submerged cohesionless sands and silts of low relative density are the type of soils that usually are susceptible to liquefaction. Clays are generally not susceptible to liquefaction. For relatively low risk improvements (pavement widening), the liquefaction potential at the project site is generally considered low.

8.2 Cuts and Excavations

Based on the plans and profiles provided by the designer, the proposed SR-68/Corral de Tierra Road Intersection widening work is generally at grade and no deep cuts or excavations are required.

8.2.1 *Stability*

The proposed road way alignment is at existing grade. No cut slopes are proposed for the project.

8.2.2 *Rippability*

Based on the investigation, rippability does not appear to be a concern for construction.

8.2.3 *Grading*

Typical grading specifications should conform to Caltrans Standards. A representative from our office or regulatory agency should observe all grading operations and perform moisture and density tests on prepared subgrade, base rock and asphalt concrete. Should there be any alterations of the proposed construction that will affect the stated bases of our recommendations, we should be informed so that we can review such changes and amend or submit additional recommendations.

8.3 Embankments

Based on the plans and profiles, majority of the project work is at existing grade, generally in level area. The existing small embankment fill northwest of the intersection will be widened with a small retaining wall (Section 8.4). The maximum height of the slope face is about 8 feet. The depth of the new fill under the proposed pavement is relatively small. Settlement resulting from this fill is expected to be negligible and most of it should occur during construction.

8.4 Earth Retaining System

In order to avoid impact to potential habitat for the federally-threatened California Tiger Salamander (CTS), the designer proposes to incorporate a retaining wall to widen the existing steep mechanically-stabilized embankment slope on the north side of SR-68, west of Corral de

Tierra road. The existing embankment slope, constructed in 1993, is steeper than 2H:1V and is mechanically stabilized per as-built information.

Per the designer, the wall height varies from 4 to 8 ft. This assumes a 2.5H:1V fill slope on top of the wall. The wall face would not be visible from SR-68 or any other public road or residence, so the aesthetics of the wall face are not a significant design consideration. The designer considers a Steel Crib Wall per Caltrans 2010 standard plans. This a MSE type of application, similar to the existing mechanically stabilized slope. The subsoil is sandy and the height is relatively low to moderate, we believe the proposed crib wall is feasible. The wall subgrade should be scarified and recompacted to 95% relative compaction per Caltrans standards.

8.5 Culverts

It is our understanding that small diameter culverts (2 ft and under) can be designed and constructed using Standard Plans and Specifications, and no specific geotechnical investigation is required per Caltrans guidelines.

8.5.1 *Corrosion Investigation*

The corrosion investigation for this project was performed in general accordance with the provisions of California Test Method 643. Chemical test was performed on a representative soil sample of Boring R-1, to evaluate the corrosion potential of the subsurface soil. A summary of the corrosion test results is presented in Table 3.

TABLE 3 - SUMMARY OF CORROSION TEST RESULTS

Boring No.	Depth (ft)	Resistivity (ohm-cm)	pH	Sulfate (ppm)	Chloride (ppm)
A-07-B3	0' – 5'	6700	7.70	12.5	6.9
A-07-B6	0' – 5'	9650	7.05	0.2	4.5

Based on the Corrosion Guidelines by Caltrans Division of Engineering Services, the test results indicate that the soil is not corrosive. CULVERT 4 analysis result is attached in Appendix D.

Standard reinforced concrete pipe design is suitable. Thermoplastic pipe can be used as an alternative and should not have corrosion concerns.

9. STRUCTURAL PAVEMENTS

R-value tests were conducted on representative samples collected at proposed subgrade level. The test results are summarized in Table 4.

TABLE 4 - SUMMARY OF R-VALUE TEST RESULTS

Boring No.	Station (ft.)	Offset (ft.) From "SR 68" line	Date Drilled	Description	R-value
A-07-B1	20+41	Lt. 29	03/14/2007	Brown SILTY SAND (SM)	-
A-07-B2	29+00	Lt. 31	03/14/2007	Brown SILTY SAND (SM)	28
A-07-B3	34+85	Lt. 38	03/14/2007	Brown SILTY SAND (SM)	-
A-07-B4	38+20	Lt. 18	03/14/2007	Brown SILTY SAND (SM)	38
A-07-B5	24+14	Rt. 391	03/14/2007	Brown SILTY SAND (SM)	-
A-07-B6	22+52	Rt. 719	03/14/2007	Brown SILTY SAND (SM)	52

Based on these results a design R-value of 25 is considered reasonable for native soils. Based on discussion with the designer, the anticipated Traffic Index (TI) values are 7.5, 8.0 and 8.5 for Corral de Tierra Road and 10.0, 10.5 and 11.0 for SR-68. Based on discussion with the designer, we understand that it is preferred to use a pavement section consisting of HMA, base and subbase for the project.

The following pavement sections are provided in accordance with anticipated 20-year design TIs for the roadway:

TABLE 5 – RECOMMENDED (MINIMUM) STRUCTURAL PAVEMENT SECTIONS

Location	R-Value	TI	Structural Pavement Section					
			Option 1			Option 2	Option 3	
			HMA	AB	AS	HMA (Full Depth)	HMA	AB
Corral de Tierra Road	25	7.5	0.40'	0.55'	0.40'	0.85'	0.40'	0.90'
		8.0	0.40'	0.65'	0.45'	0.90'	0.40'	1.05'
		8.5	0.45'	0.65'	0.45'	0.95'	0.45'	1.10'
SR-68	25	10.0	0.50'	0.75'	0.60'	1.10'	0.50'	1.30'
		10.5	0.55'	0.85'	0.65'	1.20'	0.55'	1.45'
		11.0	0.60'	0.85'	0.65'	1.25'	0.60'	1.45'

Design R-value = 25
HMA: Hot Mix Asphalt;
AB: Class 3 Aggregate Base with R-value equal to 78;
AS: Class 4 Aggregate Sub-base with the R-value equal to 50;
Design values are based on the Highway Design Manual Tables (empirical method).

10. MATERIAL SOURCES

There are several commercial sources of asphalt, concrete, and aggregate products in the area. Table 6 lists available commercial suppliers in the area.

TABLE 6 - SOURCES OF ASPHALT AND AGGREGATE MATERIAL

Source	Location	Approx. Haul Dist. (One way, miles)
RMC Pacific Material, Inc.	54 Summers St, Salinas, CA	8.5
Antuzzi Concrete, Inc.	17583 Winding Creek Rd, Salinas, CA	6.5
ABC Supply Comp Inc.	11180 Commercial Pkwy, Castroville, CA	17.0
Granite Rock	1755 Del Monte Blvd SE, Monterey CA	10.0

11. MATERIAL DISPOSAL

Majority of the project will require fill for the proposed widening. Based on our understanding, the project will require minimal disposal of the excess materials.

12. CONSTRUCTION CONSIDERATIONS

12.1 Construction Advisories

The sections are written primarily for the engineer responsible for the preparation of plans and specifications. Since these sections identify potential construction issues related to the project, it may also be of use to the Agency's representatives involved in monitoring of construction activity. The field investigation performed by us primarily addresses design issues and was not planned specifically to identify construction issues.

The project site is located along the existing US Route 68/Corral de Tierra Road junction. Therefore, traffic control is required to maintain traffic flow along Route 68 and the respective local streets. Several underground utilities exist at the site. The contractor should verify the utility lines, be aware of the existing conditions and plan the construction activities accordingly.

In our opinion, conventional equipment may be used to excavate the on-site soil materials. The materials to be excavated may consist of predominantly sandy material. Localized subgrade pumping may be encountered during earthwork construction depending on the weather, moisture condition of the subsurface soils, and surface drainage conditions. Equipment mobility may also be difficult if the subgrade is wet. In which case, the subgrade soils may require reworking, aeration, or over-excavation and replacing with dry granular fill to facilitate earthwork construction. It is possible that unknown old buried utilities or abandoned structures, concrete rubble etc. are located along the alignment. It might require special equipment and additional efforts to remove these buried objects.

Prospective contractors for the project must evaluate construction-related issues on the basis of their own knowledge and experience in the local area, on the basis of similar projects in other localities, or on the basis of field investigation on the site performed by them, taking into account their proposed construction methods and procedures. In addition, construction activities related to excavation and lateral earth support must conform to safety requirements of OSHA and other applicable municipal and Stage regulatory agencies.

12.2 Construction Consideration that Influence Specifications

The contractor should verify the conditions of the existing utility lines. These locations should not be used for stockpiling of borrow materials. Any conflicts with proposed construction should also be reviewed prior to construction.

12.3 Hazardous Waste Considerations

The project environmental study report should be referred to for further details about any potential hazardous materials within the project site.

12.4 Differing Site Conditions

The soil conditions described in this report are based on available boring data. It should be noted that these borings depict subsurface conditions only at the locations drilled. Because of the variability from place to place within soils in general, and the nature of geologic depositions, subsurface conditions could change between the explored locations.

Early communication should be made between the Resident Engineer, the Contractor, and the Geotechnical Engineer as soon as conditions that differ from those established in this report are recognized by any of the parties. Additional recommendations could be provided if such conditions arise.

13. RECOMMENDATIONS AND SPECIFICATIONS

13.1 Summary of Recommendations

If the designer has questions or concerns with any of these recommendations, or, if conditions are found to be different during construction, the Geotechnical Engineer who prepared this report should be contacted. Additional fieldwork, analysis or changes in recommendations may be required. These services may be provided under a separate authorization, as necessary. A concise summary of the geotechnical recommendations is presented below:

- The subsoils consist of silty sand.
- Based on investigation, groundwater was not encountered during exploration below the existing ground surface. The impact of liquefaction is considered low at the site. (Ref: Section 8)
- Pavement Sections (Ref: Section 9). Refer to Tables 5 for the design structural pavement sections.

13.2 Recommended Materials Specifications

13.2.1 *Standard Specifications*

Unless otherwise stated in the special provisions, all materials specifications should conform to Caltrans Standard Specifications, May 2006 edition, including but not limited to the following: Earthwork, Structure Backfill, Pervious Backfill Material, Reinforcing Geofabric, Thermoplastic Pipes, Asphalt Concrete, Aggregate Base, Aggregate Subbase, Cement Treated Base, etc.

13.2.2 *Special Provisions*

Imported Borrow:
Imported material should be in accordance with the specifications set forth in Caltrans Section 19. In particular, for new embankment/roadway construction, the material placed within 4 ft of the finish pavement subgrade should meet the following requirements:

1. Free of organic or other deleterious materials.
2. An R-value of no less than 25.

Aggregate Base: Class 3 aggregate base shall conform to the provisions in Section 26 of the Standard Specifications and to these Special Provisions. It shall also be clean and free from organic matter and other deleterious substances. The percentage composition by weight of Class 3 aggregate base shall conform to the following grading as determined by California Test Method No. 202.

Gradation Requirement (Percent Passing)

Sieve Sizes	1-1/2 inch Maximum		¾ inch Maximum	
	Operating Range	Contract Compliance	Operating Range	Contract Compliance
2"	100	100		
1-1/2"	90 – 100	87 - 100		
1"	--	--	100	100
¾"	50 – 85	45 – 90	90 – 100	87 – 100
No. 4	24 - 45	20 – 50	35 – 60	30 – 65
No. 30	10 – 25	6 – 29	10 – 30	5 – 35
No. 200	2 -11	0 -14	2 -11	0 - 14

Quality requirements

California Test Method	Operating Range	Contract Compliance
Sand Equivalent (217)	25 Min.	22 Min.
Resistance (R-value) (301)	-	78 Min.
Durability Index	-	35 Min.

Aggregate Subbase: Aggregate Subbase shall be Class 4 and shall conform to the provisions in Section 25 of the Standard Specifications and to these Special Provisions. Class 4 aggregate subbase shall be clean and free from organic matter and other deleterious substances. The percentage composition by weight of Class 4 aggregate subbase shall conform to the following grading as determined by California Test Method No. 202.

Gradation Requirement (Percent Passing)

Sieve Sizes	Operating Range	Contract Compliance
2-1/2"	100	100
No. 4	30 – 65	25 – 70
No. 200	0 – 15	0 – 18

Class 4 aggregate subbase shall also conform to the quality requirements given on the following table:

Quality requirements

California Test Method	Operating Range	Contract Compliance
Sand Equivalent (217)	21 Min.	18 Min.
Resistance (R-value) (301)	50	50 Min.

14. INVESTIGATION LIMITATIONS

Our services consist of professional opinions and recommendations made in accordance with generally accepted geotechnical engineering principles and practices and are based on our field exploration and the assumption that the soil conditions do not deviate from observed conditions.

No warranty, expressed or implied, of merchantability or fitness, is made or intended in connection with our work or by the furnishing of oral or written reports or findings. The scope of our services did not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in structures, soil, surface water, groundwater or air, below or around

this site. Unanticipated soil conditions are commonly encountered and cannot be fully determined by taking soil samples and excavating test borings; different soil conditions may require that additional expenditures be made during construction to attain a properly constructed project. Some contingency fund is thus recommended to accommodate these possible extra costs.

This report has been prepared for the proposed project as described earlier, to assist the engineer in the design of this project. In the event any changes in the design or location of the facilities are planned, or if any variations or undesirable conditions are encountered during construction, our findings and recommendations shall not be considered valid unless the changes or variations are reviewed and our recommendations modified or approved by us in writing.

This report is issued with the understanding that it is the designer's responsibility to ensure that the information and recommendations contained herein are incorporated into the project and that necessary steps are also taken to see that the recommendations are carried out in the field.

The findings in this report are valid as of the present date. However, changes in the soil conditions can occur with the passage of time, whether they are due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control.

Respectfully submitted,
PARIKH CONSULTANTS, INC.

Y. David Wang, Ph.D., P.E., 52911
Senior Engineer

Gary Parikh, P.E., G.E. 666
Project Manager

S:/ONGOING PROJECTS/2006/206148.10

REFERENCES

1. California Department of Transportation, May 2006, Standard Plans, 284p.

2. California Department of Transportation, May 2006, Standard Specifications, Sections 1 through 95.

3. California Department of Transportation, Highway Design Manual, July 2008.

4. Geologic Map of Spreckles 7.5 Minute Quadrangle; Monterey County, CA (Joseph C. Clark, Earl E. Brabb, and Lewis I. Rosenberg 1997).

5. Mualchin, L., A Technical Report To Accompany the Caltrans California Seismic Hazard Map (1996).

6. Mualchin, L., 1996, The Caltrans California Seismic Hazard Map.

7. Sadigh, K., Chang, C.Y., Egan, J.A., Makdisi, and Youngs, R.R., 1997, "Attenuation Relationships for Shallow Crustal Earthquakes Based on California Strong Motion Data", Seismological Research Letters, Volume 68, No. 1, January/February 1997.

PARIKH CONSULTANTS, INC.
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SR-68 / CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
MONTEREY COUNTY, CALIFORNIA

JOB NO.: 206148.10	PLATE NO.: 1

SITE PLAN

LEGEND

07-B-1

Approx. Boring Location

0 1 2

PLAN

1" = 100'

Note: All units are in feet unless otherwise specified
Reference Map was provided by Wood Rodgers Inc.

PARIKH CONSULTANTS, INC.
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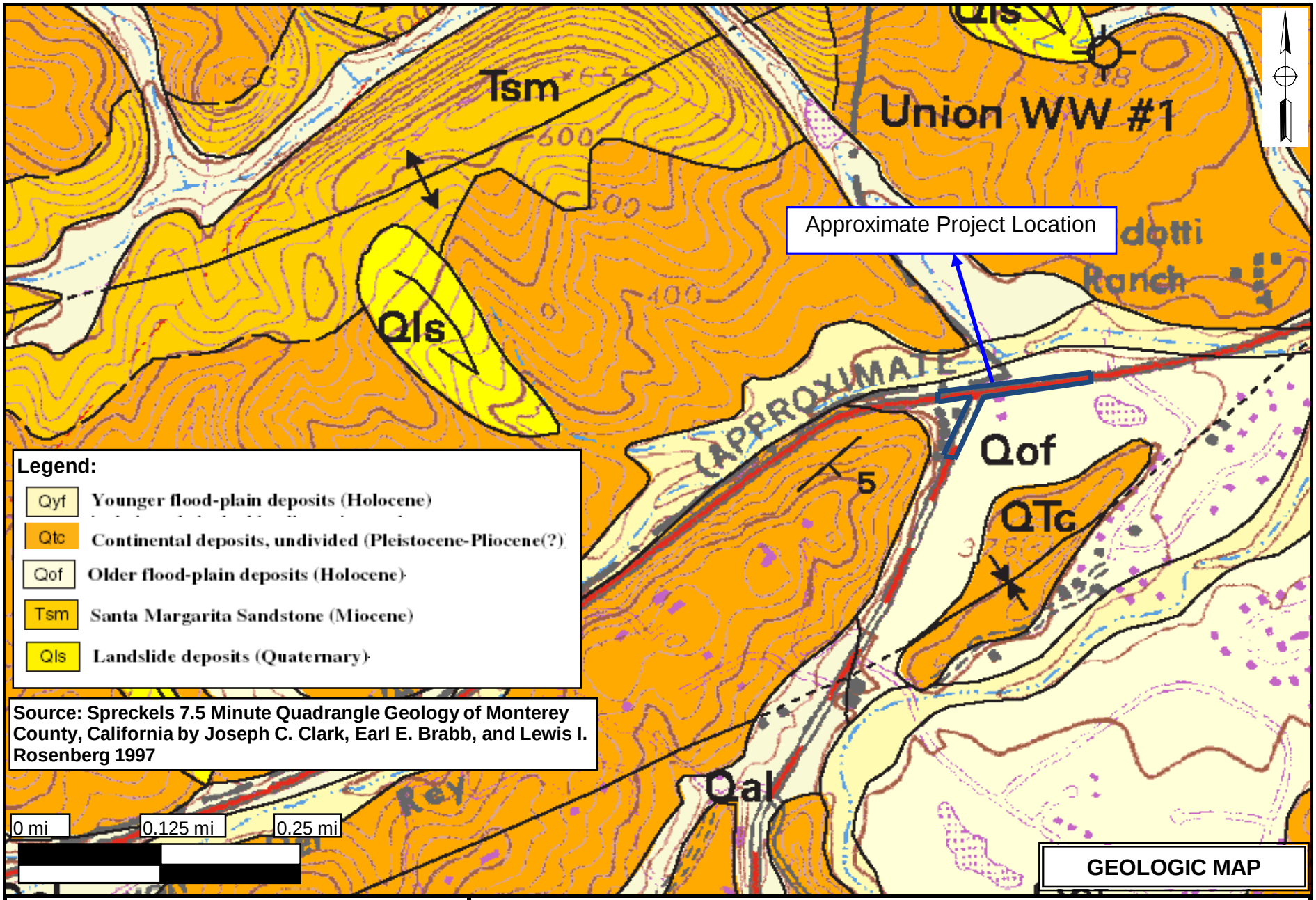
MATERIALS ENGINEERING

SR-68/CORRAL DE TIERRA ROAD
MONTEREY COUNTY, CALIFORNIA

JOB NO.:206148.10

PLATE NO: 2



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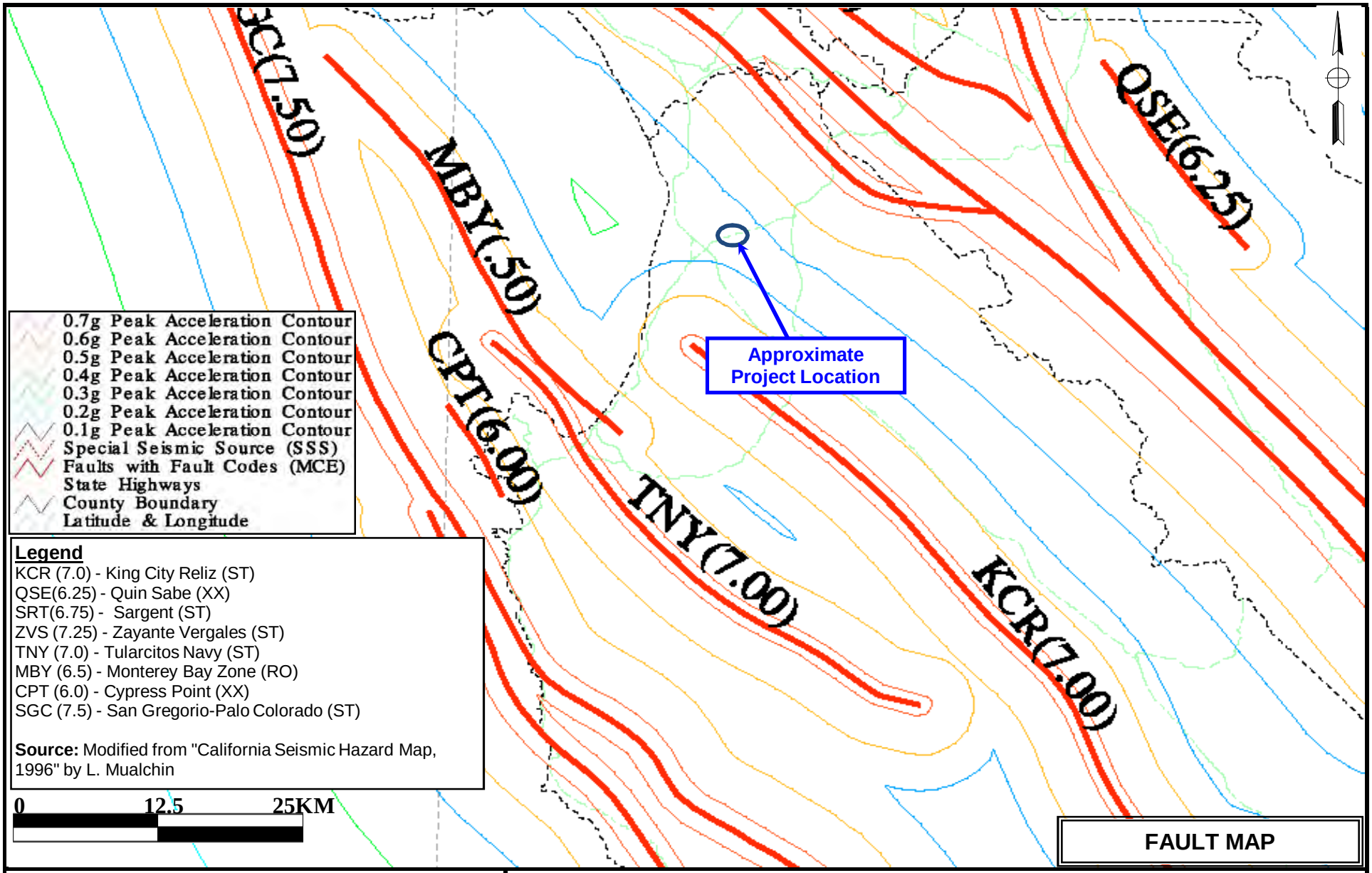
GEOTECHNICAL CONSULTANTS
MATERIALS TESTING

SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
MONTEREY COUNTY, CALIFORNIA

JOB NO.: 206148.10	PLATE NO.: 3



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MATERIALS TESTING

SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
MONTEREY COUNTY, CALIFORNIA

JOB NO.: 206148.10

PLATE NO.: 4

Attenuation Relationships for Shallow Crustal Earthquakes (Sadigh, et al, 1997)

Fault = Zayante Vergales (ST) - Strike Slip

Mw = 7.25 **Rrup = 9.5** **km**

M>=6.5 *ROCK SITE:*

C1 = -1.274 C2 = 1.1 C3 = 0 C4 = -2.1

C5 = -0.48451 C6 = 0.524 C7 = 0

A=C1+C2M+C3(8.5M)^2.5= 6.701

B=C4*Ln(Rrup+exp(C5+C6M))= -7.583

C=C7*Ln(Rrup+2)= 0

Ln(y) = A+B+C = -0.882

y = Exp(Ln(y)) = 0.41 **Peak Bed Rock Acceleration (PBA = 0.41g)**

Fault = King City Reliz (ST) -Strike-Slip

Mw = 7 **Rrup = 10.5** **km**

A= 6.426

B= -7.444

C= 0

Ln(y) = -1.018

y = 0.36 **Peak Bed Rock Acceleration PBA = 0.36g**

Fault = Monterey Bay Zone (RO) - Reverse-Oblique

Mw = 6.5 **Rrup = 20** **km**

A= 5.876

B= -7.670

C= 0

Ln(y) = -1.794

y = 0.17 **Peak Bed Rock Acceleration PBA = 0.17*1.2 = 0.20g**

APPENDIX A

REFERENCE: CALTRANS SOIL & ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL (JUNE 2007)

GROUP SYMBOLS AND NAMES

Graphic/Symbol	Group Names	Graphic/Symbol	Group Names
GW	Well-graded GRAVEL Well-graded GRAVEL with SAND	CL	Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
GP	Poorly graded GRAVEL Poorly graded GRAVEL with SAND		
GW-GM	Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND	CL-ML	SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
GW-GC	Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GP-GM	Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND	ML	SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
GP-GC	Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		
GM	SILTY GRAVEL SILTY GRAVEL with SAND	OL	ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
GC	CLAYEY GRAVEL CLAYEY GRAVEL with SAND		
GC-GM	SILTY, CLAYEY GRAVEL SILTY, CLAYEY GRAVEL with SAND	OL	ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
SW	Well-graded SAND Well-graded SAND with GRAVEL		
SP	Poorly graded SAND Poorly graded SAND with GRAVEL	CH	Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
SW-SM	Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL		
SW-SC	Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	MH	Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
SP-SM	Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL		
SP-SC	Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)	OH	ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
SM	SILTY SAND SILTY SAND with GRAVEL		
SC	CLAYEY SAND CLAYEY SAND with GRAVEL	OH	ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY ORGANIC elastic SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
SC-SM	SILTY, CLAYEY SAND SILTY, CLAYEY SAND with GRAVEL		
PT	PEAT	OL/OH	ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	COBBLES COBBLES and BOULDERS BOULDERS		

FIELD AND LABORATORY TESTING

- (C) Consolidation (ASTM D 2435)
- (CL) Collapse Potential (ASTM D 5333)
- (CP) Compaction Curve (CTM 216)
- (CR) Corrosivity Testing (CTM 643, CTM 422, CTM 417)
- (CU) Consolidated Undrained Triaxial (ASTM D 4767)
- (DS) Direct Shear (ASTM D 3080)
- (EI) Expansion Index (ASTM D 4829)
- (M) Moisture Content (ASTM D 2216)
- (OC) Organic Content-% (ASTM D 2974)
- (P) Permeability (CTM 220)
- (PA) Particle Size Analysis (ASTM D 422)
- (PI) Plasticity Index (AASHTO T 90) Liquid Limit (AASHTO T 89)
- (PL) Point Load Index (ASTM D 5731)
- (PM) Pressure Meter
- (PP) Pocket Penetrometer
- (R) R-Value (CTM 301)
- (SE) Sand Equivalent (CTM 217)
- (SG) Specific Gravity (AASHTO T 100)
- (SL) Shrinkage Limit (ASTM D 427)
- (SW) Swell Potential (ASTM D 4546)
- (TV) Pocket Torvane
- (UC) Unconfined Compression-Soil (ASTM D 2166) Unconfined Compression-Rock (ASTM D 2938)
- (UU) Unconsolidated Undrained Triaxial (ASTM D 2850)
- (UW) Unit Weight (ASTM D 4767)
- (VS) Vane Shear (AASHTO T 223)

APPARENT DENSITY OF COHESIONLESS SOILS

Description	SPT N_{60} (Blows / 12 inches)
Very loose	0 – 4
Loose	5 – 10
Medium Dense	11 – 30
Dense	31 – 50
Very Dense	> 50

MOISTURE

Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS

Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

PARTICLE SIZE

Description		Size
Boulder		> 12"
Cobble		3" to 12"
Gravel	Coarse	3/4" to 3"
	Fine	No. 4 to 3/4"
Sand	Coarse	No. 10 to No. 4
	Medium	No. 40 to No. 10
	Fine	No. 200 to No. 40

CEMENTATION

Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

CONSISTENCY OF COHESIVE SOILS

Description	Unconfined Compressive Strength (tsf)	Pocket Penetrometer Measurement (tsf)	Torvane Measurement (tsf)	Field Approximation
Very Soft	< 0.25	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	0.25 to 0.50	0.25 to 0.50	0.12 to 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 to 1.0	0.50 to 1.0	0.25 to 0.50	Penetrated several inches by thumb with moderate effort
Stiff	1 to 2	1 to 2	0.50 to 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2 to 4	2 to 4	1.0 to 2.0	Readily indented by thumbnail
Hard	> 4.0	> 4.0	> 2.0	Indented by thumbnail with difficulty

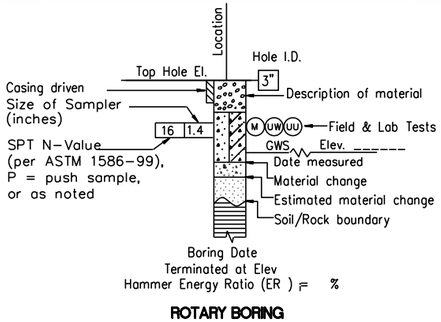
PLASTICITY OF FINE-GRAINED SOILS

Description	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

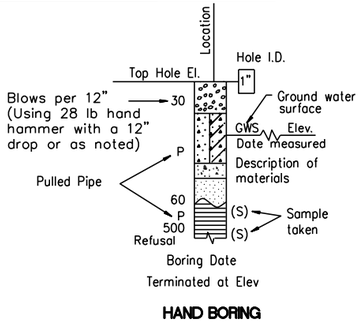
BOREHOLE IDENTIFICATION

Symbol	Hole Type	Description
Size	A	Auger Boring
Size	R P	Rotary drilled boring Rotary percussion boring (air)
Size	R	Rotary drilled diamond core
Size	HD HA	Hand driven (1-inch soil tube) Hand Auger
●	D	Dynamic Cone Penetration Boring
▲	CPT	Cone Penetration Test (ASTM D 5778-95)
□	O	Other

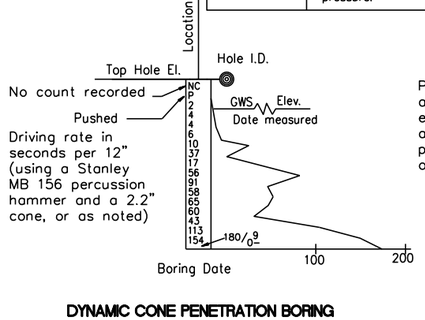
Note: Size in inches.



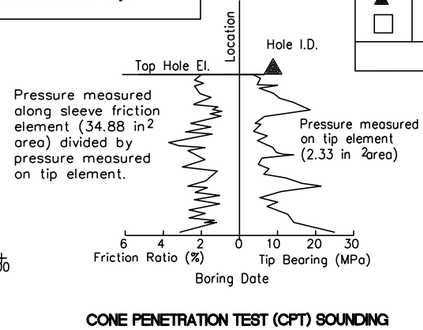
ROTARY BORING



HAND BORING



DYNAMIC CONE PENETRATION BORING



CONE PENETRATION TEST (CPT) SOUNDING

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	MON	SR 68	12.8 TO 13.2		

REGISTERED ENGINEER-GEOTECHNICAL

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — GARY PARIKH — No. G.E. 666 — Exp. 12/31/13 — GEOTECHNICAL — STATE OF CALIFORNIA

PARIKH CONSULTANTS, INC.
2360 QUME DRIVE, SUITE A
SAN JOSE, CA 95131

WOOD RODGERS, INC.
3301 C STREET, BLDG 100-B
SACRAMENTO, CALIFORNIA

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

ENGINEERING SERVICES	GEOTECHNICAL SERVICES
PREPARED BY	L. Duddu
CHECKED BY	D. WANG

GS LOTB SOIL LEGEND

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH

CU --------
EA --------

BRIDGE NO. --------
POST MILE 12.8/13.2

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES | SHEET | OF

SR-68/CORRAL DE TIERRA ROAD

SOIL LEGEND

USERNAME => $USER

FILE => $REQUEST

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	MON	SR 68	12.8 TO 13.2	____	_____

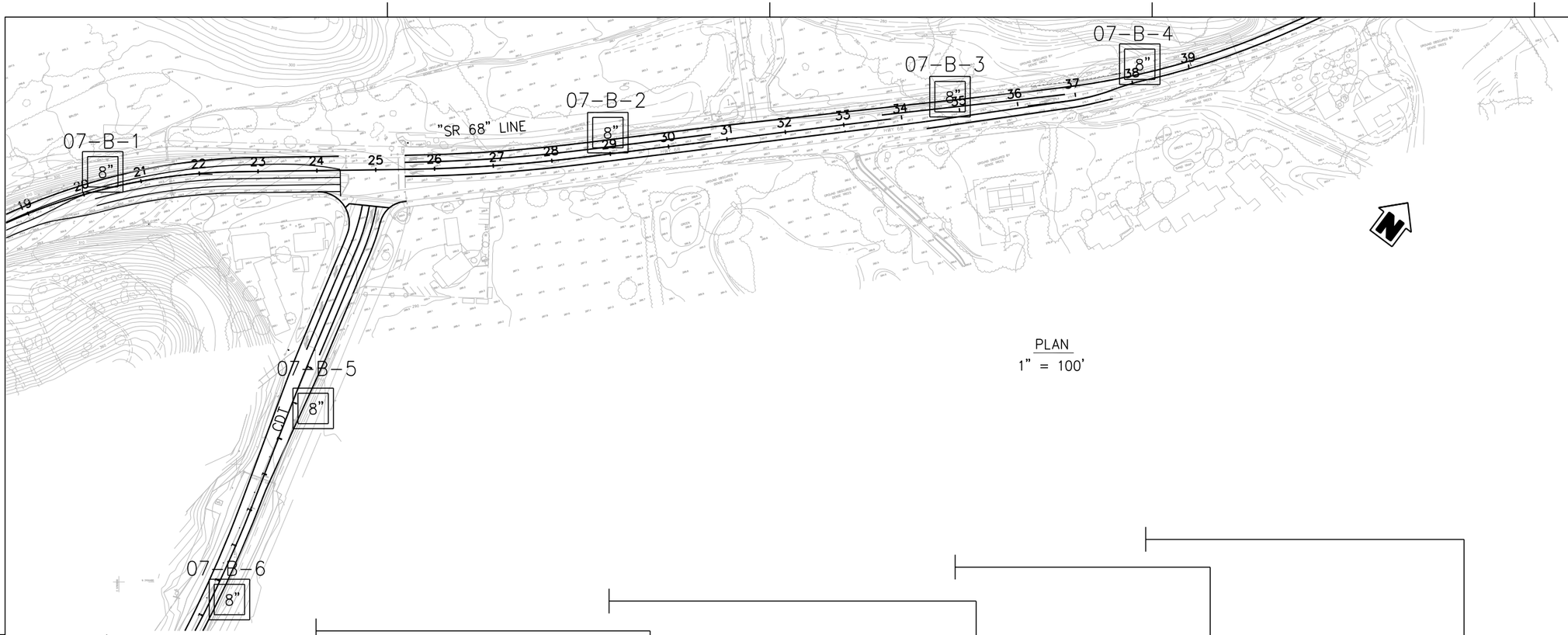
REGISTERED ENGINEER–GEOTECHNICAL

PLANS APPROVAL DATE

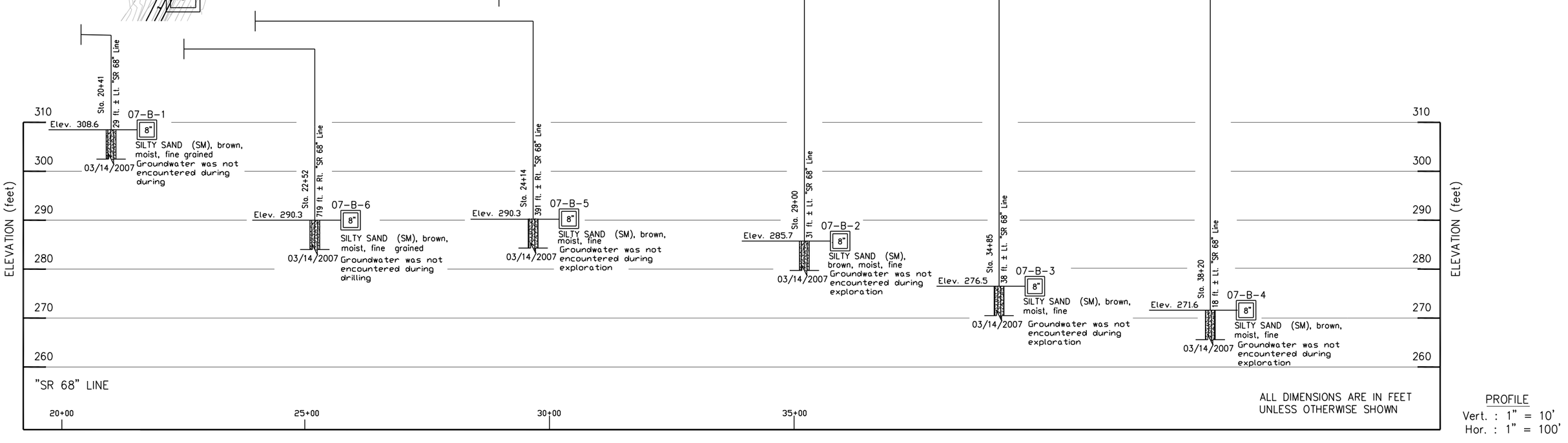
REGISTERED PROFESSIONAL ENGINEER
GARY PARIKH
No. G.E. 666
Exp 12/31/13
GEOTECHNICAL
STATE OF CALIFORNIA

PARIKH CONSULTANTS, INC.
2360 QUME DRIVE, SUITE A
SAN JOSE, CALIFORNIA 95131

WOOD RODGERS, INC.
3301 C STREET, BLDG 100–B
SACRAMENTO, CALIFORNIA



PLAN
1" = 100'



ALL DIMENSIONS ARE IN FEET
UNLESS OTHERWISE SHOWN

PROFILE
Vert. : 1" = 10'
Hor. : 1" = 100'

ENGINEERING SERVICES		GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN	BRIDGE NO.	SR-68/CORRAL DE TIERRA ROAD
FUNCTIONAL SUPERVISOR	DRAWN BY: L. Duddu	FIELD INVESTIGATION BY:				
NAME: Gary Parikh	CHECKED BY: David Wang	G. Tripathi		DESIGN BRANCH	POST MILES 12.8/13.2	LOG OF TEST BORINGS

OGS CIVIL LOG OF TEST BORINGS SHEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU _____
EA _____

FILE => $REQUEST

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES									SHEET	OF
06/28/07	07/21/09								___	___

July 21, 2009 - 9:59am S:\VCAD\206148.10\LOTB (072109).dwg
tduddu

APPENDIX B

APPENDIX B

LABORATORY TESTS

Classification Tests

The field classification of the samples was visually verified in the laboratory according to the Unified Soil Classification System. The results are presented in "Log of Test Borings", Appendix A.

R-value Tests

R-value tests were performed on representative bulk samples for pavement design. The tests were performed according to California Test Method 301. The test results are presented on Plates B-2A, B-2B and B-2C.

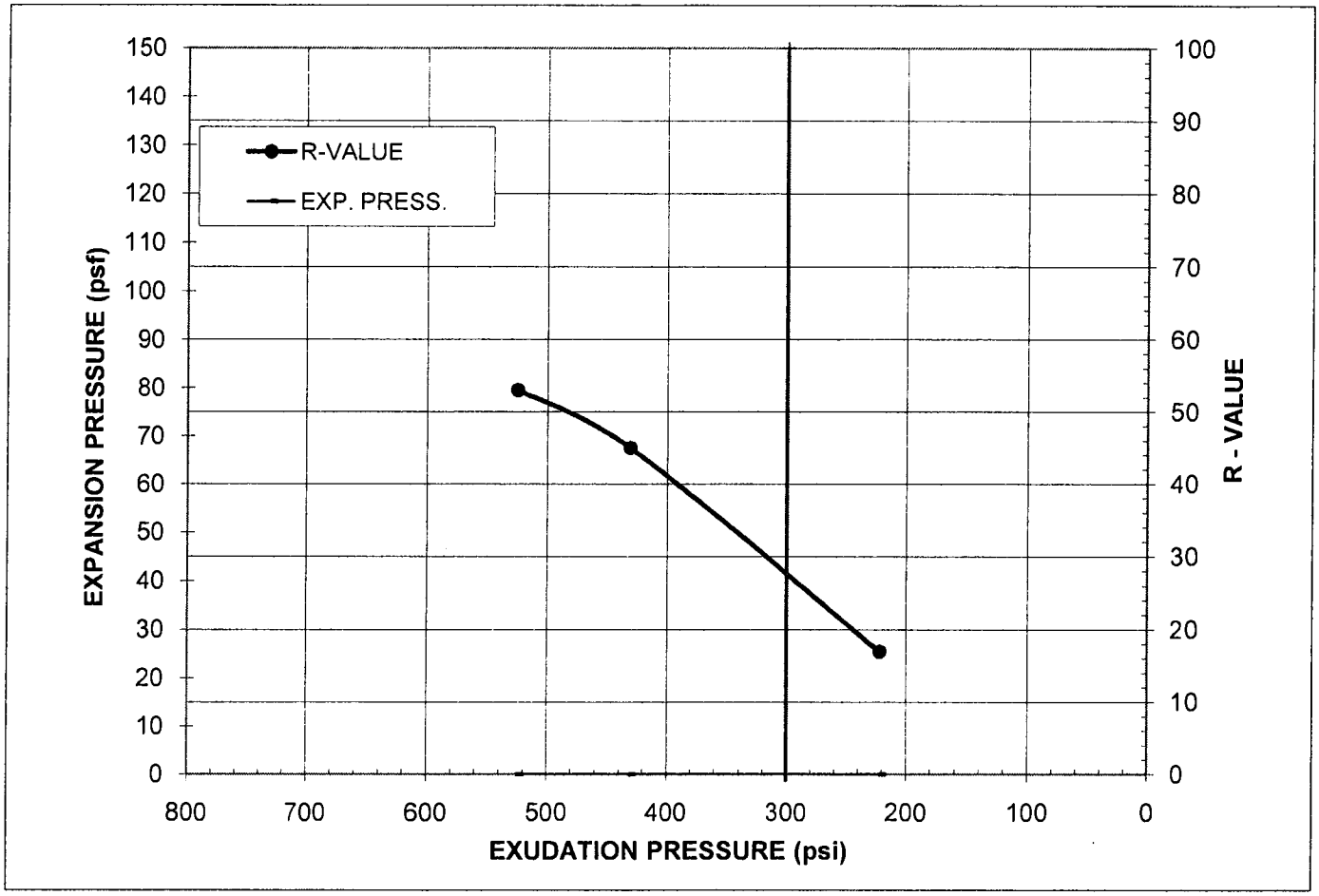
Corrosion Tests

Corrosion tests were performed on a selected sample to determine the corrosion potential of the soils. The pH and minimum resistively tests were performed according to California Test Method 643. The tests were performed by Sunland Analytical. The test results are presented on Plates B-3A and B-3B.

R-VALUE REPORT

Parikh Consultants, Inc. **ASTM D2844 or CTM 301** (408) 945-1011

Project Name:	SR 68 / Corral De Tierra Intersection Improvements			Date:	3/20/07
Client:	Wood Rodgers			Project #:	206148.10
Sample #:	B2	Depth:	0' - 5'	Lab #:	M613
Location / Source:		Hiway 68 / Salinas		Sample Date:	
Material :	Silty sand with clay lumps, brown			Sampled By:	



	Specimen No.	A	B	C
	Exudation Pressure, psi	222	431	525
	Expansion Pressure, psf	0	0	0
	R-Value	17	45	53
	Moisture Content at Test, %	13.8	13.4	12.9
	Dry Density at Test, pcf	114.8	115.3	116.9

R-Value @ 300 psi Exudation Pressure = 28

Expansion Pressure @300 psi Exudation, psf = **0**

Minimum R-Value Requirement:

Comments:

Report By: Prav Dayah

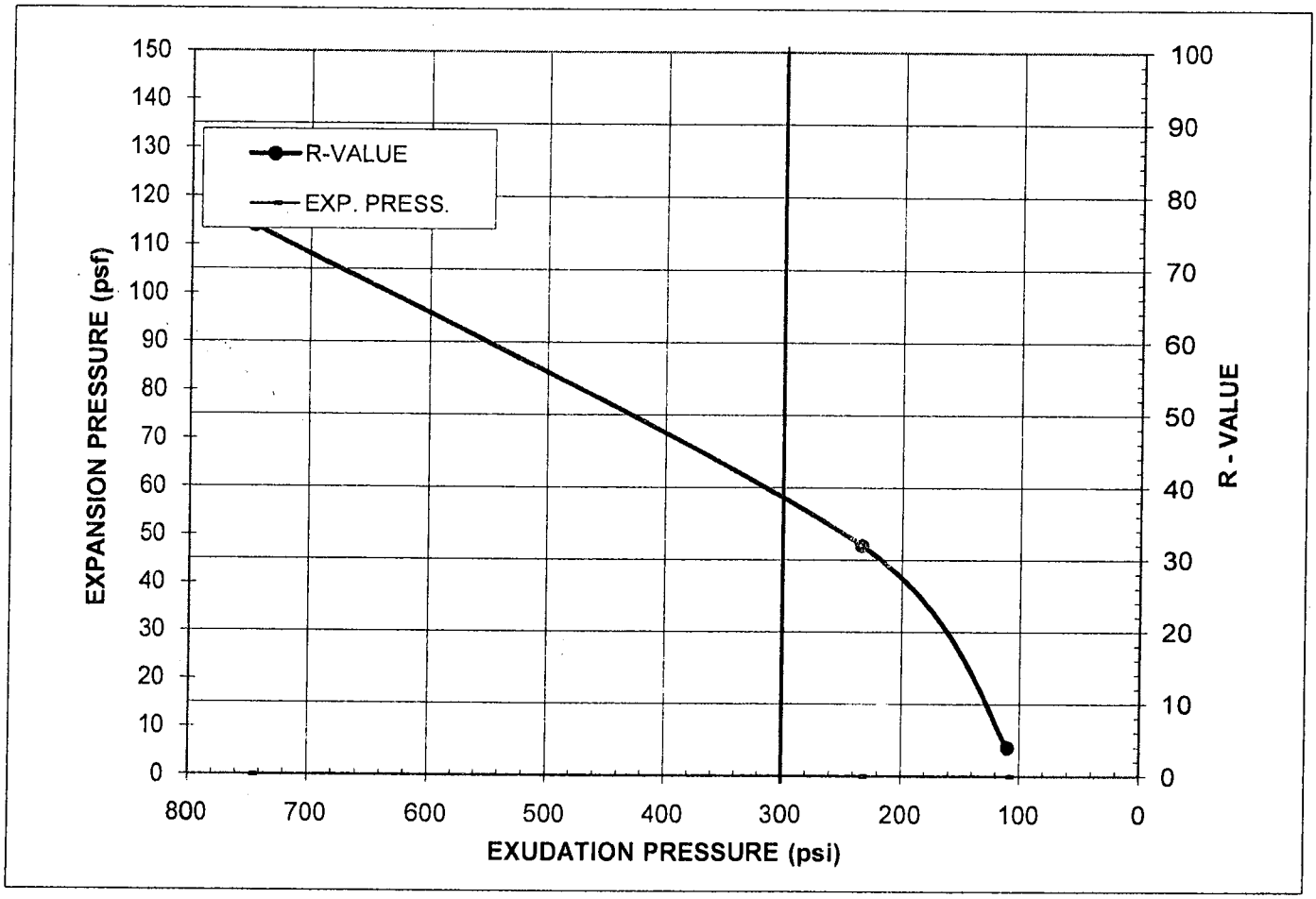
RVALUE with calcs pdp

PLATE NO: B-2A

R-VALUE REPORT

Parikh Consultants, Inc. | ASTM D2844 or CTM 301 | (408) 945-1011

Project Name:	SR 68 / Corral De Tierra Intersection Improvements			Date:	3/21/07
Client:	Wood Rodgers			Project #:	206148.10
Sample #:	B4	Depth:	0' - 5'	Lab #:	M613
Location / Source:	Hiway 68 / Salinas			Sample Date:	
Material :	Silty sand with gravel and some clay lumps, brown			Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	110	234	747
Expansion Pressure, psf	0	0	0
R-Value	4	32	76
Moisture Content at Test, %	14.1	12.2	10.8
Dry Density at Test, pcf	114.5	118.2	120.0

R-Value @ 300 psi Exudation Pressure = **38**

Expansion Pressure @300 psi Exudation, psf = **0**

Minimum R-Value Requirement:

Comments:

Report By: Prav Dayah

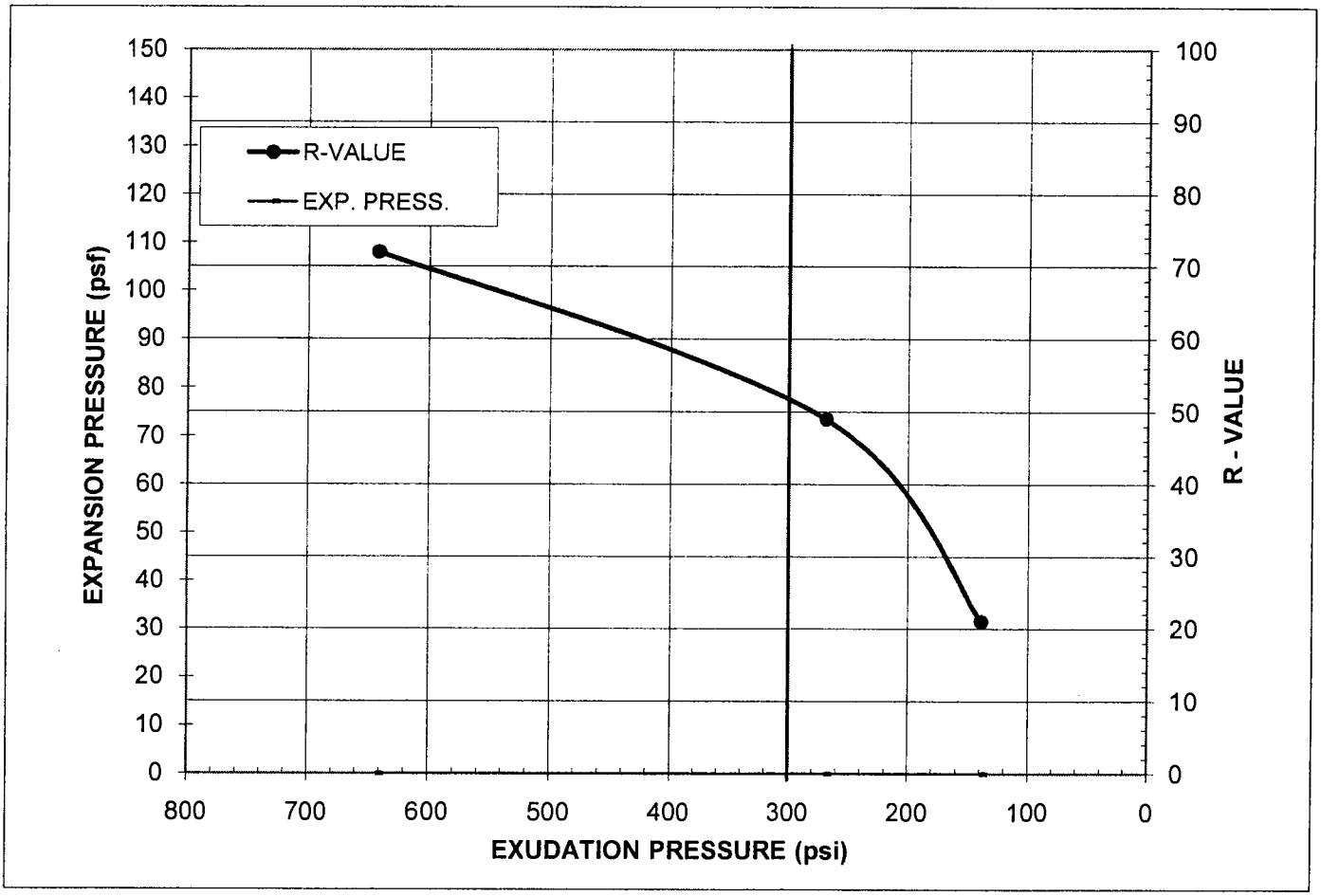
RVALUE with calcs pdp

PLATE NO: B-2B

R-VALUE REPORT

Parikh Consultants, Inc. | ASTM D2844 or CTM 301 | (408) 945-1011

Project Name:	SR 68 / Corral De Tierra Intersection Improvements			Date:	3/20/07
Client:	Wood Rodgers			Project #:	206148.10
Sample #:	B6	Depth:	0' - 5'	Lab #:	M613
Location / Source:		Hiway 68 / Salinas		Sample Date:	
Material :	Silty sand with gravel, dark grayish brown			Sampled By:	



Specimen No.	A	B	C
Exudation Pressure, psi	139	269	642
Expansion Pressure, psf	0	0	0
R-Value	21	49	72
Moisture Content at Test, %	12.8	11.9	11.0
Dry Density at Test, pcf	117.0	119.5	121.4

R-Value @ 300 psi Exudation Pressure = **52**

Expansion Pressure @300 psi Exudation, psf = **0**

Minimum R-Value Requirement:

Comments:

Report By: Prav Dayah

RVALUE with calcs pdp

PLATE NO: B-2C

Sunland Analytical
11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 04/04/2007
Date Submitted 03/30/2007

To: Prav Dayah
Parikh Consultants, Inc.
356 S. Milpitas Blvd.
Milpitas, Ca 95035

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 206148.10/SR68 Site ID : B3 @ 0-5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 50187-99965.

EVALUATION FOR SOIL CORROSION

Soil pH	7.71	
Minimum Resistivity	6.70 ohm-cm (x1000)	
Chloride	5.9 ppm	00.00059 %
Sulfate	12.5 ppm	00.00125 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

PLATE NO: B-3A

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 04/04/2007
Date Submitted 03/30/2007

To: Prav Dayah
Parikh Consultants, Inc.
356 S. Milpitas Blvd.
Milpitas, Ca 95035

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : 206148.10/SR68 Site ID : B6 @ 0-5'.
Thank you for your business.

* For future reference to this analysis please use SUN # 50187-99966.

EVALUATION FOR SOIL CORROSION

Soil pH	7.05	
Minimum Resistivity	9.65 ohm-cm (x1000)	
Chloride	4.5 ppm	00.00045 %
Sulfate	0.2 ppm	00.00002 %

METHODS
pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

PLATE NO: B-3B

APPENDIX C

PAVEMENT DESIGN (CORRAL DE TIERRA ROAD)

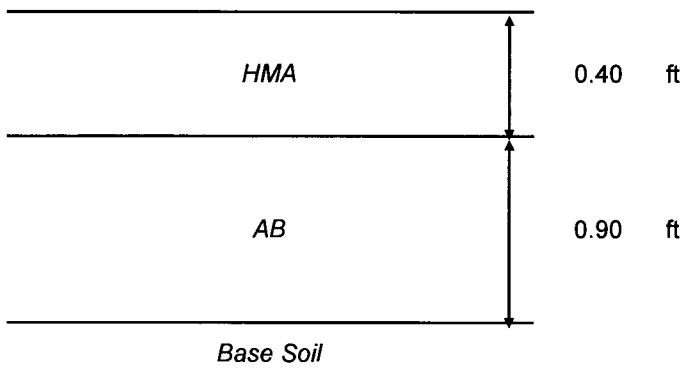
PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 206148.10

Design Case: AC over AB

Design TI=	***7.5***	input	
R_{BS}=	***25***	input	
R_{AB}=	78		
$GE_{AC+AB} = 0.0032*TI*(100-R_{BS}) =$		1.80	
$GE_{HMA} = 0.0032*TI*(100-R_{AB}) =$		0.53	
=> GE'_{HMA} =		0.73	(add 0.2 ft safety factor)
AC Thickness =		0.35	ft
=> AC Thickness =		**0.40**	ft (round up to the nearest 0.05 ft)
$G_{f, HMA}$ =		2.07	
GE_{HMA} =		0.83	
$GE_{AB} = GE_{HMA+AB} - GE_{HMA}$ =		0.97	
AB thickness=		0.88	ft
=> AB Thickness=		**0.90**	ft (round up to the nearest 0.05 ft)
GE_{AB}=		0.99	$G_{f, AB}$=1.1

Design Section:



PAVEMENT DESIGN (CORRAL DE TIERRA ROAD)

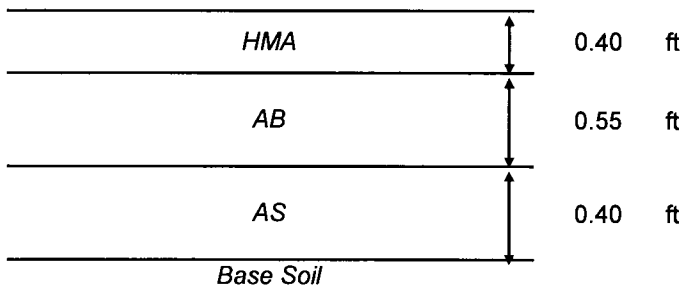
PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 207132.10

Design Case: AC over AB over AS

Design TI=		***7.5***	input	
R_{BS}=		***25***	input	
R_{AB}=		78		
R_{AS}=		50	check	
$GE_{TOTAL} = 0..0032*TI*(100-R_{BS}) =$			1.80	
$GE_{HMA} = 0.0032*TI*(100-R_{AB}) =$			0.53	
	=>	GE'_{HMA} =	0.73	(add 0.2 ft safety factor)
		AC thickness =	0.35	ft
	=>	HMA Thickness=	**0.40**	ft (round up to the nearest 0.05 ft)
		$G_{f, HMA}$=	2.07	
		GE_{HMA}=	0.83	
$GE_{AB+HMA} = 0.0032*TI*(100-R_{AS}) =$			1.20	
	=>	GE_{HMA+AB}=	1.40	(add 0.2 ft safety factor)
$GE_{AB} = GE_{HMA+AB} - GE_{HMA} =$			0.57	
	=>	AB thickness=	0.52	
	=>	AB Thickness=	**0.55**	ft (round up to the nearest 0.05 ft)
		GE_{AB}=	0.61	$G_{f, AB}$=1.1
$GE_{AS} = GE_{TOTAL} - GE_{AB} - GE_{HMA} =$			0.37	
	=>	AS Thickness=	**0.40**	ft (round up to the nearest 0.05 ft)

Design Section:



PAVEMENT DESIGN (CORRAL DE TIERRA ROAD)

PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 207132.10

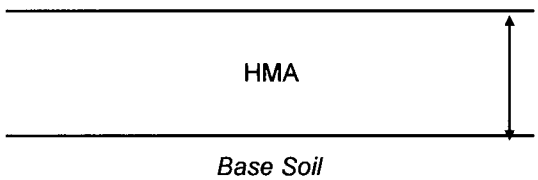
Design Case: Full depth AC

Design TI= ***7.5*** input
R_{BS}= ***25*** input

$GE_{HMA} = 0.0032*TI*(100-R_{BS}) =$ 1.80
=> GE'_{HMA}= 1.90 (add 0.1 ft safety factor)
=> HMA Thickness= 0.80

=> HMA Thickness= **0.85** ft (round up to the nearest 0.05 ft)

Design Section:



PAVEMENT DESIGN (CORRAL DE TIERRA ROAD)

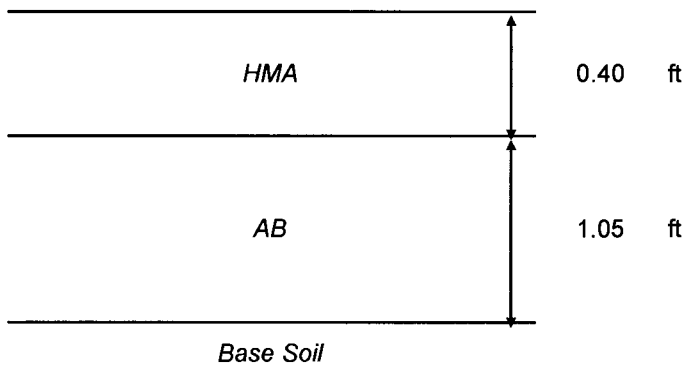
PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 206148.10

Design Case: AC over AB

Design TI=	***8***	input	
R_{BS}=	***25***	input	
R_{AB}=	78		
$GE_{AC+AB} = 0.0032*TI*(100-R_{BS}) =$		1.92	
$GE_{HMA} = 0.0032*TI*(100-R_{AB}) =$		0.56	
=>	GE'_{HMA}=	0.76	(add 0.2 ft safety factor)
	AC Thickness =	0.38	ft
=>	AC Thickness =	**0.40**	ft (round up to the nearest 0.05 ft)
	$G_{f, HMA}$ =	2.00	
	GE_{HMA} =	0.80	
$GE_{AB} = GE_{HMA+AB} - GE_{HMA} =$		1.12	
	AB thickness=	1.02	ft
=>	AB Thickness=	**1.05**	ft (round up to the nearest 0.05 ft)
	GE_{AB}=	1.16	$G_{f, AB}$=1.1

Design Section:



PAVEMENT DESIGN (CORRAL DE TIERRA ROAD)

PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 207132.10

Design Case: AC over AB over AS

Design TI=	***8***	input
R_{BS}=	***25***	input
R_{AB}=	78	
R_{AS}=	50	check

$GE_{TOTAL} = 0..0032*TI*(100-R_{BS}) =$ 1.92

$GE_{HMA} = 0.0032*TI*(100-R_{AB}) =$ 0.56

=> GE'_{HMA} = 0.76 (add 0.2 ft safety factor)

AC thickness = 0.38 ft

=> HMA Thickness= **0.40** ft (round up to the nearest 0.05 ft)

$G_{f, HMA}$= 2.00

GE_{HMA}= 0.80

$GE_{AB+HMA} = 0.0032*TI*(100-R_{AS}) =$ 1.28

=> GE_{HMA+AB}= 1.48 (add 0.2 ft safety factor)

$GE_{AB} = GE_{HMA+AB} - GE_{HMA} =$ 0.68

=> AB thickness= 0.62

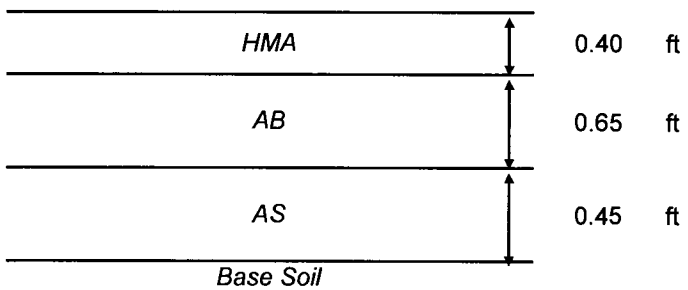
=> AB Thickness= **0.65** ft (round up to the nearest 0.05 ft)

GE_{AB}= 0.72 $G_{f, AB}$=1.1

$GE_{AS} = GE_{TOTAL} - GE_{AB} - GE_{HMA} =$ 0.40

=> AS Thickness= **0.45** ft (round up to the nearest 0.05 ft)

Design Section:



0.40 ft

0.65 ft

0.45 ft

PAVEMENT DESIGN (CORRAL DE TIERRA ROAD)

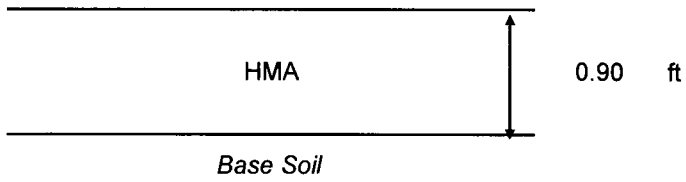
PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 207132.10

Design Case: Full depth AC

Design TI=	***8***	input	
R_{BS}=	***25***	input	
$GE_{HMA} = 0.0032*TI*(100-R_{BS}) =$		1.92	
=>	GE'_{HMA}=	2.02	(add 0.1 ft safety factor)
=>	HMA Thickness=	0.86	
=>	HMA Thickness=	**0.90**	ft (round up to the nearest 0.05 ft)

Design Section:



PAVEMENT DESIGN (CORRAL DE TIERRA ROAD)

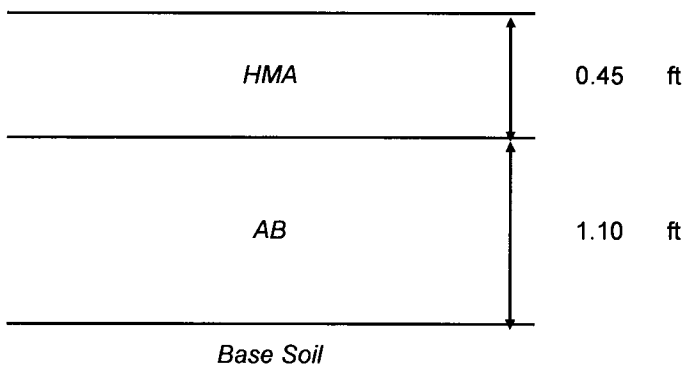
PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 206148.10

Design Case: AC over AB

Design TI=	***8.5***	input	
R_{BS}=	***25***	input	
R_{AB}=	78		
$GE_{AC+AB} = 0.0032*TI*(100-R_{BS})$ =		2.04	
$GE_{HMA} = 0.0032*TI*(100-R_{AB})$ =		0.60	
=> GE'_{HMA} =		0.80	(add 0.2 ft safety factor)
AC Thickness =		0.41	ft
=> AC Thickness =		**0.45**	ft (round up to the nearest 0.05 ft)
$G_{f, HMA}$ =		1.94	
GE_{HMA} =		0.88	
$GE_{AB} = GE_{HMA+AB} - GE_{HMA}$ =		1.16	
AB thickness=		1.06	ft
=> AB Thickness=		**1.10**	ft (round up to the nearest 0.05 ft)
GE_{AB}=		1.21	$G_{f, AB}$=1.1

Design Section:



PAVEMENT DESIGN (CORRAL DE TIERRA ROAD)

PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 207132.10

Design Case: AC over AB over AS

Design TI=	***8.5***	input
R_{BS}=	***25***	input
R_{AB}=	78	
R_{AS}=	50	check

$GE_{TOTAL} = 0..0032*TI*(100-R_{BS}) =$ 2.04

$GE_{HMA} = 0.0032*TI*(100-R_{AB}) =$ 0.60

=> GE'_{HMA} = 0.80 (add 0.2 ft safety factor)

AC thickness = 0.41 ft

=> HMA Thickness= **0.45** ft (round up to the nearest 0.05 ft)

$G_{f, HMA}$= 1.94

GE_{HMA}= 0.88

$GE_{AB+HMA} = 0.0032*TI*(100-R_{AS}) =$ 1.36

=> GE_{HMA+AB}= 1.56 (add 0.2 ft safety factor)

$GE_{AB} = GE_{HMA+AB} - GE_{HMA} =$ 0.68

=> AB thickness= 0.62

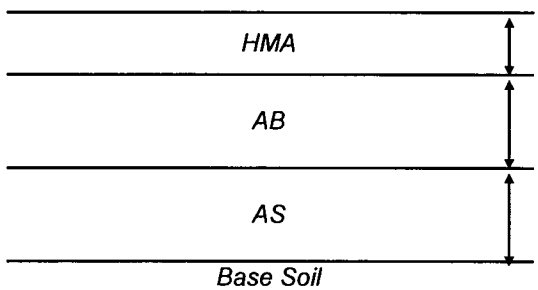
=> AB Thickness= **0.65** ft (round up to the nearest 0.05 ft)

GE_{AB}= 0.72 $G_{f, AB}$=1.1

$GE_{AS} = GE_{TOTAL} - GE_{AB} - GE_{HMA} =$ 0.45

=> AS Thickness= **0.45** ft (round up to the nearest 0.05 ft)

Design Section:



0.45 ft

0.65 ft

0.45 ft

PAVEMENT DESIGN (CORRAL DE TIERRA ROAD)

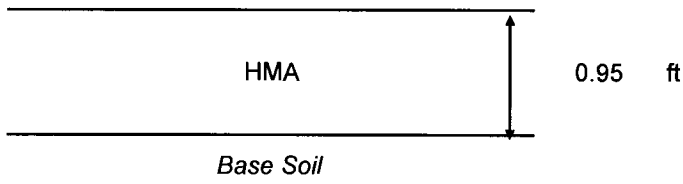
PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 207132.10

Design Case: Full depth AC

Design TI=	***8.5***	input	
R_{BS}=	***25***	input	
$GE_{HMA} = 0.0032*TI*(100-R_{BS}) =$		2.04	
=>	GE'_{HMA}=	2.14	(add 0.1 ft safety factor)
=>	HMA Thickness=	0.92	
=>	HMA Thickness=	**0.95**	ft (round up to the nearest 0.05 ft)

Design Section:



PAVEMENT DESIGN (SR-68)

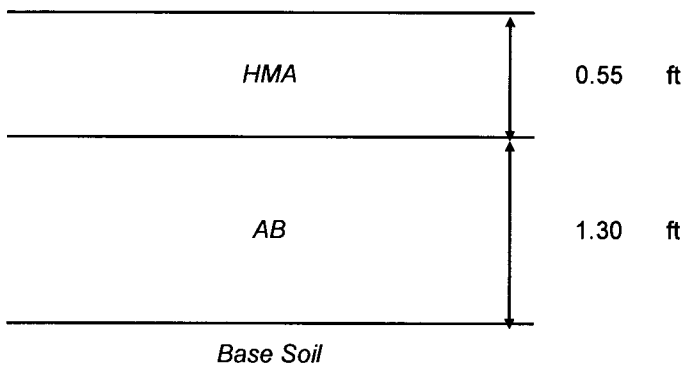
PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 206148.10

Design Case: AC over AB

Design TI=	***10***	input	
R_{BS}=	***25***	input	
R_{AB}=	78		
$GE_{AC+AB} = 0.0032*TI*(100-R_{BS})$ =		2.40	
$GE_{HMA} = 0.0032*TI*(100-R_{AB})$ =		0.70	
=>	GE'_{HMA} =	0.90	(add 0.2 ft safety factor)
	AC Thickness =	0.51	ft
=>	AC Thickness =	**0.55**	ft (round up to the nearest 0.05 ft)
	$G_{f, HMA}$ =	1.81	
	GE_{HMA} =	1.00	
$GE_{AB} = GE_{HMA+AB} - GE_{HMA}$ =		1.40	
	AB thickness=	1.27	ft
=>	AB Thickness=	**1.30**	ft (round up to the nearest 0.05 ft)
	GE_{AB}=	1.43	$G_{f, AB}$=1.1

Design Section:



PAVEMENT DESIGN (SR-68)

PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 207132.10

Design Case: AC over AB over AS

Design TI=	***10***	input	
R_{BS}=	***25***	input	
R_{AB}=	78		
R_{AS}=	50	check	

$GE_{TOTAL} = 0..0032*TI*(100-R_{BS}) =$ 2.40

$GE_{HMA} = 0.0032*TI*(100-R_{AB}) =$ 0.70

=> GE'_{HMA} = 0.90 (add 0.2 ft safety factor)

AC thickness = 0.51 ft

=> HMA Thickness= **0.55** ft (round up to the nearest 0.05 ft)

$G_{f, HMA}$= 1.81

GE_{HMA}= 1.00

$GE_{AB+HMA} = 0.0032*TI*(100-R_{AS}) =$ 1.60

=> GE_{HMA+AB}= 1.80 (add 0.2 ft safety factor)

$GE_{AB} = GE_{HMA+AB} - GE_{HMA} =$ 0.80

=> AB thickness= 0.73

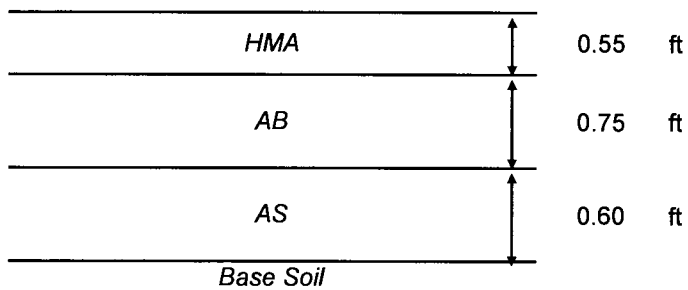
=> AB Thickness= **0.75** ft (round up to the nearest 0.05 ft)

GE_{AB}= 0.83 $G_{f, AB}$=1.1

$GE_{AS} = GE_{TOTAL} - GE_{AB} - GE_{HMA} =$ 0.58

=> AS Thickness= **0.60** ft (round up to the nearest 0.05 ft)

Design Section:



0.55 ft

0.75 ft

0.60 ft

PAVEMENT DESIGN (SR-68)

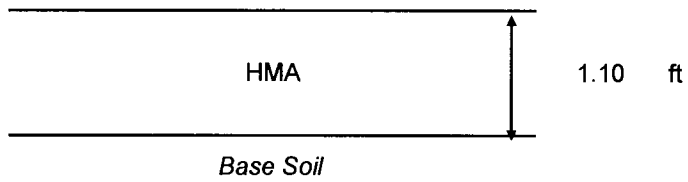
PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 207132.10

Design Case: Full depth AC

Design TI=	***10***	input	
R_{BS}=	***25***	input	
$GE_{HMA} = 0.0032*TI*(100-R_{BS}) =$		2.40	
=>	GE'_{HMA}=	2.50	(add 0.1 ft safety factor)
=>	HMA Thickness=	1.10	
=>	HMA Thickness=	**1.10**	ft (round up to the nearest 0.05 ft)

Design Section:



PAVEMENT DESIGN (SR-68)

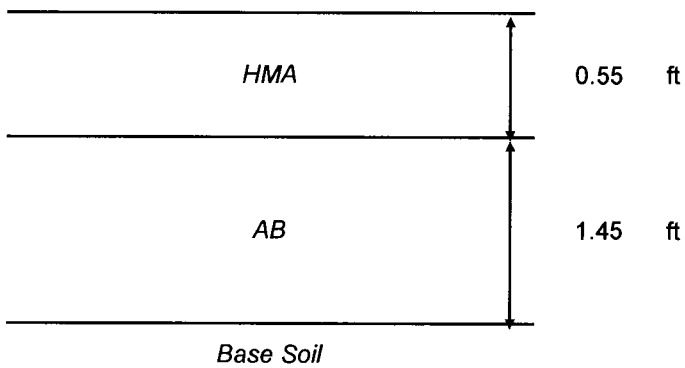
PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 206148.10

Design Case: AC over AB

Design TI=	***10.5***	input	
R_{BS}=	***25***	input	
R_{AB}=	78		
$GE_{AC+AB} = 0.0032*TI*(100-R_{BS}) =$	2.52		
$GE_{HMA} = 0.0032*TI*(100-R_{AB}) =$	0.74		
=> GE'_{HMA} =	0.94	(add 0.2 ft safety factor)	
AC Thickness =	0.54	ft	
=> AC Thickness =	**0.55**	ft (round up to the nearest 0.05 ft)	
$G_{f, HMA}$ =	1.77		
GE_{HMA} =	0.97		
$GE_{AB} = GE_{HMA+AB} - GE_{HMA}$ =	1.55		
AB thickness=	1.41	ft	
=> AB Thickness=	**1.45**	ft (round up to the nearest 0.05 ft)	
GE_{AB}=	1.60	$G_{f, AB}$=1.1	

Design Section:



PAVEMENT DESIGN (SR-68)

PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 207132.10

Design Case: AC over AB over AS

Design TI=	***10.5***	input	
R_{BS}=	***25***	input	
R_{AB}=	78		
R_{AS}=	50	check	

$GE_{TOTAL} = 0..0032*TI*(100-R_{BS}) =$ 2.52

$GE_{HMA} = 0.0032*TI*(100-R_{AB}) =$ 0.74

=> GE'_{HMA} = 0.94 (add 0.2 ft safety factor)

AC thickness = 0.54 ft

=> HMA Thickness= **0.55** ft (round up to the nearest 0.05 ft)

$G_{f, HMA}$= 1.77

GE_{HMA}= 0.97

$GE_{AB+HMA} = 0.0032*TI*(100-R_{AS}) =$ 1.68

=> GE_{HMA+AB}= 1.88 (add 0.2 ft safety factor)

$GE_{AB} = GE_{HMA+AB} - GE_{HMA} =$ 0.91

=> AB thickness= 0.82

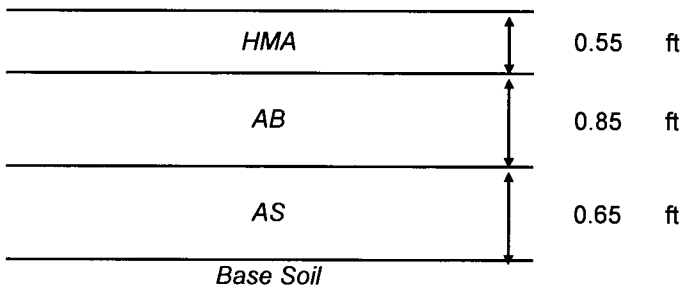
=> AB Thickness= **0.85** ft (round up to the nearest 0.05 ft)

GE_{AB}= 0.94 $G_{f, AB}$=1.1

$GE_{AS} = GE_{TOTAL} - GE_{AB} - GE_{HMA} =$ 0.61

=> AS Thickness= **0.65** ft (round up to the nearest 0.05 ft)

Design Section:



0.55 ft

0.85 ft

0.65 ft

PAVEMENT DESIGN (SR-68)

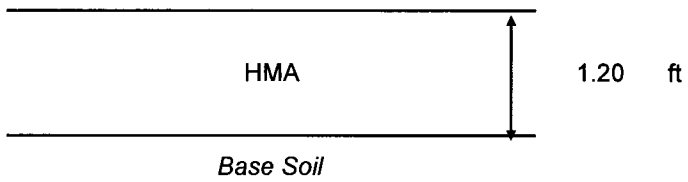
PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 207132.10

Design Case: Full depth AC

Design TI=	***10.5***	input	
R_{BS}=	***25***	input	
GE_{HMA} = 0.0032*TI*(100-R_{BS}) =		2.52	
=>	GE'_{HMA}=	2.62	(add 0.1 ft safety factor)
=>	HMA Thickness=	1.16	
=>	HMA Thickness=	**1.20**	ft (round up to the nearest 0.05 ft)

Design Section:



PAVEMENT DESIGN (SR-68)

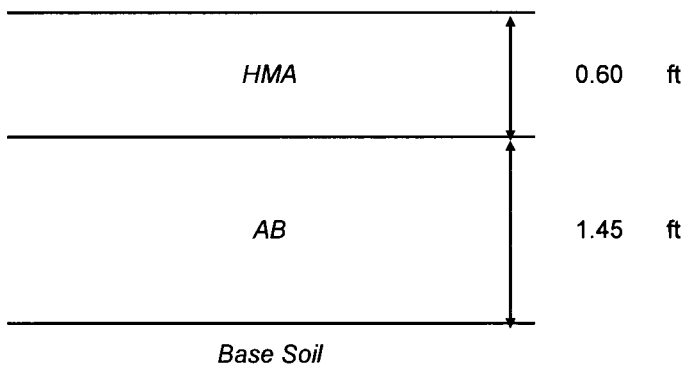
PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 206148.10

Design Case: AC over AB

Design TI=	***11***	input	
R_{BS}=	***25***	input	
R_{AB}=	78		
$GE_{AC+AB} = 0.0032*TI*(100-R_{BS}) =$		2.64	
$GE_{HMA} = 0.0032*TI*(100-R_{AB}) =$		0.77	
=> GE'_{HMA} =		0.97	(add 0.2 ft safety factor)
AC Thickness =		0.56	ft
=> AC Thickness =		**0.60**	ft (round up to the nearest 0.05 ft)
$G_{f, HMA}$ =		1.78	
GE_{HMA} =		1.07	
$GE_{AB} = GE_{HMA+AB} - GE_{HMA}$ =		1.57	
AB thickness=		1.43	ft
=> AB Thickness=		**1.45**	ft (round up to the nearest 0.05 ft)
GE_{AB}=		1.60	$G_{f, AB}$=1.1

Design Section:



PAVEMENT DESIGN (SR-68)

PER HIGHWAY DESIGN MANUAL, CHAP. 600

PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 207132.10

Design Case: AC over AB over AS

Design TI=	***11***	input
R_{BS}=	***25***	input
R_{AB}=	78	
R_{AS}=	50	check

$GE_{TOTAL} = 0..0032*TI*(100-R_{BS}) =$ 2.64

$GE_{HMA} = 0.0032*TI*(100-R_{AB}) =$ 0.77

=> GE'_{HMA}= 0.97 (add 0.2 ft safety factor)

AC thickness = 0.56 ft

=> HMA Thickness= **0.60** ft (round up to the nearest 0.05 ft)

$G_{f, HMA}$= 1.78

GE_{HMA}= 1.07

$GE_{AB+HMA} = 0.0032*TI*(100-R_{AS}) =$ 1.76

=> GE_{HMA+AB}= 1.96 (add 0.2 ft safety factor)

$GE_{AB} = GE_{HMA+AB} - GE_{HMA} =$ 0.89

=> AB thickness= 0.81

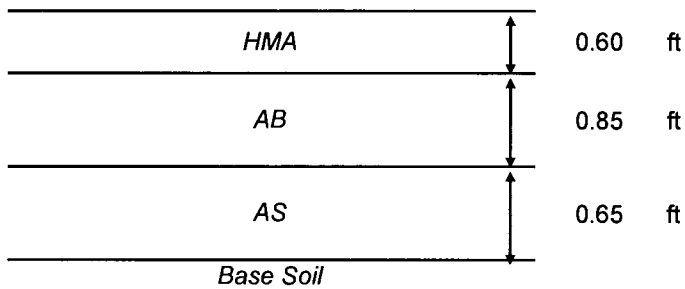
=> AB Thickness= **0.85** ft (round up to the nearest 0.05 ft)

GE_{AB}= 0.94 $G_{f, AB}$=1.1

$GE_{AS} = GE_{TOTAL} - GE_{AB} - GE_{HMA} =$ 0.64

=> AS Thickness= **0.65** ft (round up to the nearest 0.05 ft)

Design Section:



0.60 ft

0.85 ft

0.65 ft

PAVEMENT DESIGN (SR-68)

PER HIGHWAY DESIGN MANUAL, CHAP. 600

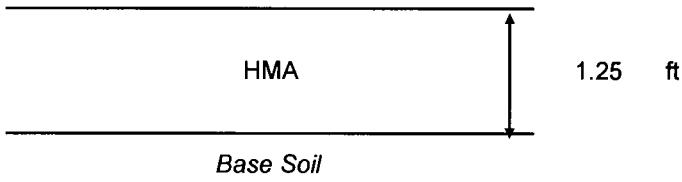
PROJECT NAME: SR-68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT
PROJECT NO.: 207132.10

Design Case: Full depth AC

Design TI=	***11***	input
R_{BS}=	***25***	input

$GE_{HMA} = 0.0032*TI*(100-R_{BS}) =$		2.64	
=>	GE'_{HMA}=	2.74	(add 0.1 ft safety factor)
=>	HMA Thickness=	1.22	
=>	HMA Thickness=	**1.25**	ft (round up to the nearest 0.05 ft)

Design Section:



APPENDIX D

MAINTENANCE-FREE SERVICE DESIGN ESTIMATES FOR DRAINAGE FACILITIES USING:
CALIFORNIA CULVERT CRITERIA AND CULVERT4.EXE, (RELEASE DATE 04-16-98)

PROJECT LOCATION...206148-SR 68/Corral

PROJECT ACCOUNT NO.206148.10

SAMPLE LOCATION....B 3 @ 0-5'

TEST SAMPLE NO.....

OPERATOR.....Ganga

TEST DATE.....04-05-07

********** A DATA VALUE OF ZERO INDICATES NO DATA INPUT **********

CSP SITE pH = 7.7 , WATER pH = 0.0 , SOIL pH = 7.7

MINIMUM RESISTIVITY, OHM-CM: CSP SITE = 6700 , WATER = 0 , SOIL = 6700

****

ESTIMATED SERVICE LIFE OF CSP CULVERTS, YEARS
SEE CALTRANS HIGHWAY DESIGN MANUAL CHAPTER 850

CSP THICK Gage & mm	GALV. 57 g	GALV.+ BIT COAT. (WATER SIDE)	GALV.+ BIT COAT & PAVED INV. (ABRASION)	GALV.+ BIT COAT (SOIL SIDE)	GALV.+ POLYMER 90 DEG INVERT
18 1.3	54	62	69	79	104
16 1.6	70	78	85	95	120
14 2.0	87	95	102	112	137
12 2.8	119	127	134	144	169
10 3.5	152	160	167	177	202
8 4.3	185	193	200	210	235

FLOW VEL. <1.5 m/s WITH NON-ABRASIVE CONDITIONS, (DEFAULT VALUES)
CAP, 18 GAGE (1.3 mm) CSP AND CASP MAY BE USED WITH THESE FLOW VELOCITIES

STANDARD REINFORCED CONCRETE PIPE DESIGN SHOULD BE
SUITABLE FOR THIS USER DEFINED LEVEL OF CHLORIDES

CONCRETE AND RCP MITIGATION MEASURES FOR pH
TYPE IP (MS) MODIFIED CEMENT OR TYPE II MODIFIED CEMENT
MINIMUM REQUIRED BY CALTRANS STD. SPECS. 90-1.01

A CORRUGATED ALUMINUM PIPE, CAP, MAY BE USED
IF ABRASIVE CONDITIONS DO NOT EXIST
SITE CONDITIONS MEET CORROSION REQUIREMENTS

A CORRUGATED ALUMINIZED STEEL PIPE, CASP, MAY BE USED
SITE CONDITIONS MEET CORROSION REQUIREMENTS

PLASTIC PIPE IS APPROVED FOR 50 YEARS SERVICE LIFE FOR
CORROSIVE CONDITIONS. ABRASION MUST BE EVALUATED. ALSO,
CONSIDER CONCRETE HEADWALLS AND CONCRETE OR METAL END
TREATMENT WHERE HIGH FIRE POTENTIAL EXISTS.

MAINTENANCE-FREE SERVICE DESIGN ESTIMATES FOR DRAINAGE FACILITIES USING:
CALIFORNIA CULVERT CRITERIA AND CULVERT4.EXE, (RELEASE DATE 04-16-98)

PROJECT LOCATION...206148-SR 68/Corral

PROJECT ACCOUNT NO.206148.10

SAMPLE LOCATION....B 6 @ 0-5'

TEST SAMPLE NO.....

OPERATOR.....Ganga

TEST DATE.....04-05-07

********** A DATA VALUE OF ZERO INDICATES NO DATA INPUT **********

CSP SITE pH = 7.1 , WATER pH = 0.0 , SOIL pH = 7.1

MINIMUM RESISTIVITY, OHM-CM: CSP SITE = 9650 , WATER = 0 , SOIL = 9650

****

ESTIMATED SERVICE LIFE OF CSP CULVERTS, YEARS
SEE CALTRANS HIGHWAY DESIGN MANUAL CHAPTER 850

CSP THICK Gage & mm	GALV. 57 g	GALV.+ BIT COAT. (WATER SIDE)	GALV.+ BIT COAT & PAVED INV. (ABRASION)	GALV.+ BIT COAT (SOIL SIDE)	GALV.+ POLYMER 90 DEG INVERT
18 1.3	31	39	46	56	81
16 1.6	41	49	56	66	91
14 2.0	50	58	65	75	100
12 2.8	69	77	84	94	119
10 3.5	88	96	103	113	138
8 4.3	107	115	122	132	157

FLOW VEL. <1.5 m/s WITH NON-ABRASIVE CONDITIONS, (DEFAULT VALUES)
CAP, 18 GAGE (1.3 mm) CSP AND CASP MAY BE USED WITH THESE FLOW VELOCITIES

STANDARD REINFORCED CONCRETE PIPE DESIGN SHOULD BE
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CONCRETE AND RCP MITIGATION MEASURES FOR pH
TYPE IP (MS) MODIFIED CEMENT OR TYPE II MODIFIED CEMENT
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CONSIDER CONCRETE HEADWALLS AND CONCRETE OR METAL END
TREATMENT WHERE HIGH FIRE POTENTIAL EXISTS.

GEOTECHNICAL DESIGN & MATERIALS REPORT ADDENDUM

STATE ROUTE 68/CORRAL DE TIERRA INTERSECTION IMPROVEMENT PROJECT

Monterey County, California

05-Mon-68 PM 12.8/13.2

EA 05-0H8230

JUNE 2015

PURPOSE OF THE GEOTECHNICAL DESIGN & MATERIAL REPORT ADDENDUM

After the circulation of the Draft Initial Study with Proposed Mitigated Negative Declaration (Draft IS/MND) and in response to public comments received, the County of Monterey and the California Department of Transportation (Caltrans) adopted project design modifications. The project design modifications included land outside of the previously analyzed project study area as identified in the Geotechnical Design & Materials Report, December 2012. This Addendum was prepared to address the expanded project study area. The expanded project study area, Figure 1, is provided at the end of this Addendum.

CHANGE IN PROJECT DESIGN

The project design modifications are shown in yellow in the Build Alternative Design Plan provided at the end of this Addendum and described in detail below.

CHANGE IN PROJECT DESCRIPTION

The project design modifications included the following components:

- The shoulder widening of Corral de Tierra Road in the southbound direction would be reduced from 8 feet to 6 feet.
- The driveway that serves the five homes on the north side of State Route 68 would be realigned so that access to these homes would be shared with the Cypress Community Church's driveway.
- A 110 foot-long merge lane on State Route 68 for vehicles turning left out of The Villas driveway would be provided.
- The existing gutter on Corral de Tierra Road would be replaced with a flatter gutter.

PROJECT SETTING

The expanded project study area is located adjacent to the previously identified project study area and therefore shares the same project setting. The proposed project's existing environmental setting and regulatory setting as described in the Geotechnical Design and Material Report remains the same.

GEOTECHNICAL ANALYSIS

As stated in the Geotechnical Design and Materials Report, the proposed project is located in a seismically active part of northern California; however, no active faults pass through the project study area. Additionally, the liquefaction potential at the project study area is generally considered low. The project design modifications are similar in type and nature (i.e., pavement/roadway improvements) to the proposed project improvements; therefore, Caltrans standards for grading specifications associated with the proposed project would also be applicable to the driveway realignment. Implementation of the project design modifications would not alter the conclusions presented in the Geotechnical Design and Materials Report.

RECOMMENDATIONS AND SPECIFICATIONS

The recommendations and specifications identified in the Geotechnical Design & Materials Report, December 2012, remain applicable to the expanded project study area and no additional recommendations, specifications, or mitigation measures are required.

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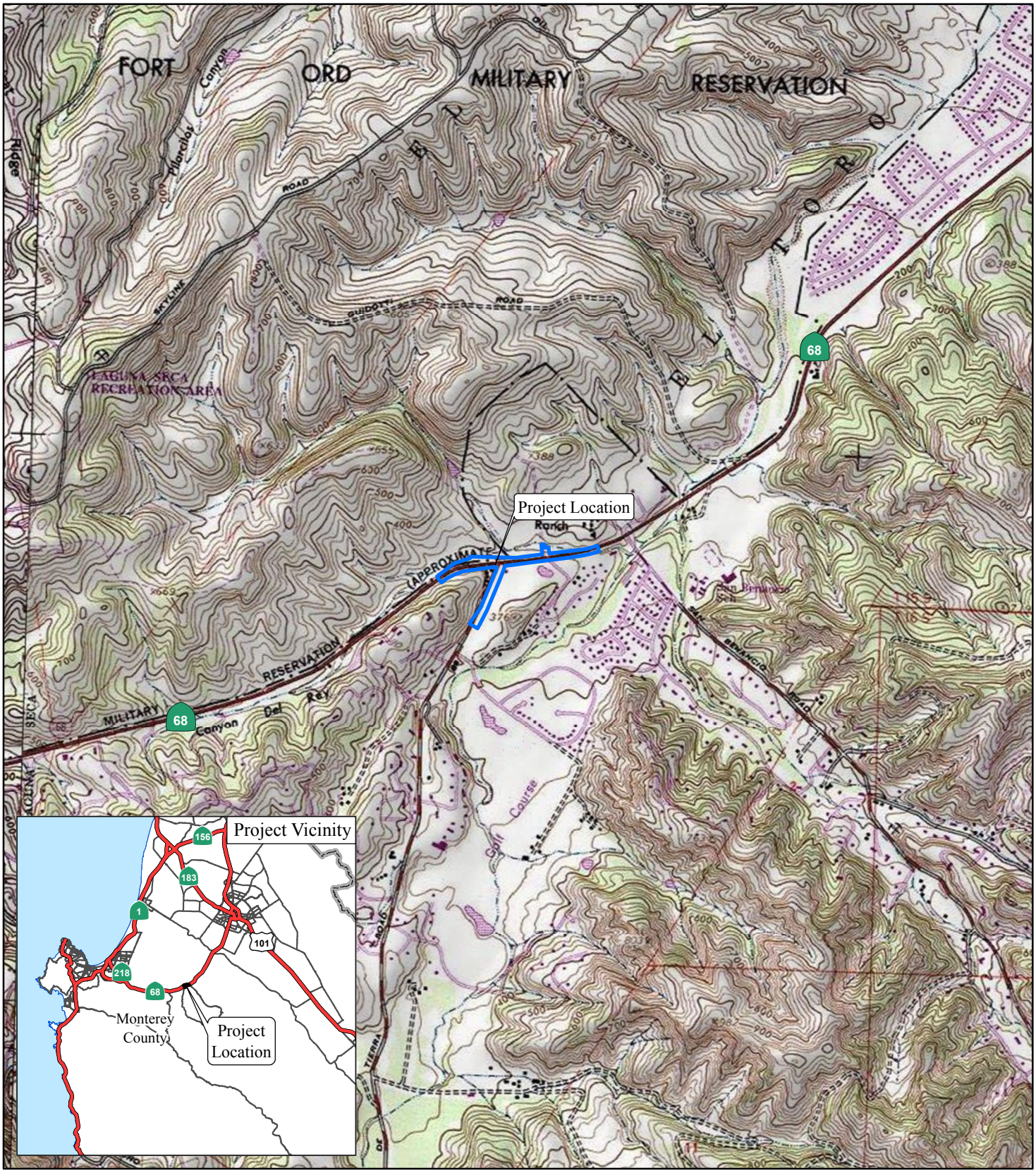

LEGEND

Project Location

FIGURE 1

N

0 1000 2000

FEET

SOURCE: USGS 7.5' Quad - Spreckels (1984), CA

I:\WRS0605\GIS\ProjectLocation_USGS.mxd (6/4/2015)

SR 68 / Corral de Tierra Road
Intersection Improvement Project

Project Location Map

MON-68, P.M. 12.8/13.2
05-OH8230

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ROUTE 68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENTS

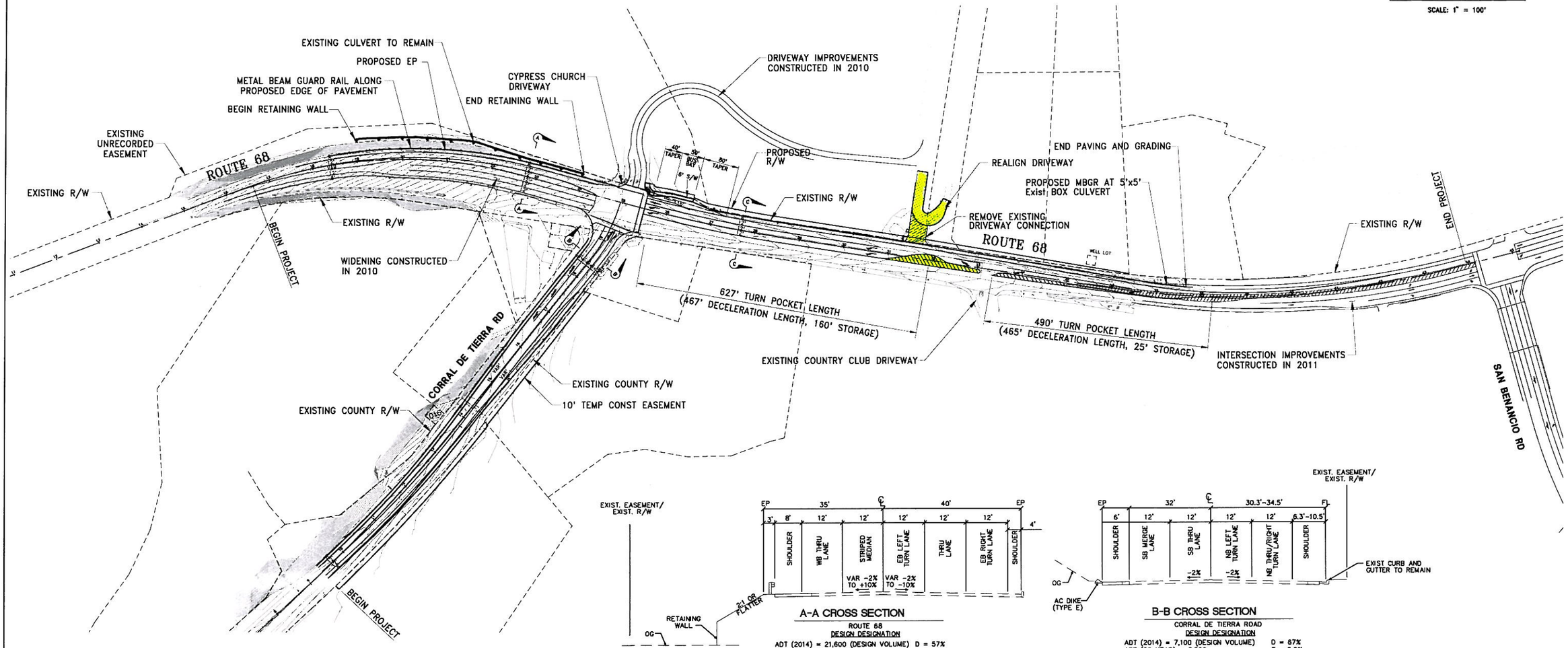
BUILD ALTERNATIVE

COUNTY OF MONTEREY CALIFORNIA

MAY, 2015

100' 50' 0 100' 200'

SCALE: 1" = 100'



A-A CROSS SECTION

ROUTE 68

DESIGN DESIGNATION

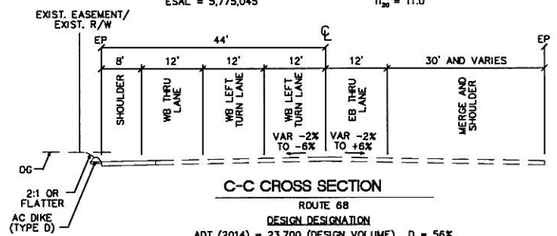
ADT (2014) = 21,600 (DESIGN VOLUME) D = 57%
ADT (20 YEAR) = 38,500 T = 4.0%
DHV = 2,484 V = 55 MPH
ESAL = 5,775,045 TI_{20} = 11.0

B-B CROSS SECTION

CORRAL DE TIERRA ROAD

DESIGN DESIGNATION

ADT (2014) = 7,100 (DESIGN VOLUME) D = 67%
ADT (20 YEAR) = 8,900 T = 2.0%
DHV = 619 V = 55 MPH
ESAL = 735,017 TI_{20} = 8.5



C-C CROSS SECTION

ROUTE 68

DESIGN DESIGNATION

ADT (2014) = 23,700 (DESIGN VOLUME) D = 56%
ADT (20 YEAR) = 40,500 T = 4.0%
DHV = 2,725 V = 55 MPH
ESAL = 6,060,788 TI_{20} = 11.0

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Sacramento, CA 95816 Fax 916.341.7767

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BERKELEY
CARLSBAD
FORT COLLINS

FRESNO
IRVINE
PALM SPRINGS

PT. RICHMOND
RIVERSIDE
ROCKLIN
SOUTH SAN FRANCISCO

GROWTH-RELATED IMPACTS TECHNICAL MEMORANDUM

DATE: July 10, 2012

TO: Kelso Vidal, Environmental Planner
Caltrans- District 5
50 Higuera Street
San Luis Obispo, CA 93401

FROM: Laurel Frakes, LSA Associates, Inc.

SUBJECT: SR-68/Corral de Tierra Intersection Improvement Project Growth-Related Impacts Technical Memorandum

The California Department of Transportation (Caltrans) requires that a determination on whether a project has growth-related impacts be made for all proposed transportation projects. This determination can be made using the First-cut Screening (refer to Caltrans Standard Environmental Reference [SER], Guidance for Preparers of Growth-related, Indirect Impact Analyses, Chapter 5). The First-cut Screening utilizes three initial questions to determine if growth-related impacts are or/are not reasonably foreseeable for a proposed project. If the outcome of the First-cut Screening is that growth-related impacts are not reasonably foreseeable for a proposed project then a growth-related impact analysis is not required. The results of the First-cut Screening completed for the State Route 68 (SR-68)/Corral de Tierra Intersection Improvement Project (proposed project) are documented below.

FIRST-CUT SCREENING

The following questions were analyzed for the proposed project:

1. To what extent would travel times, travel cost, or accessibility to employment, shopping, or other destinations be changed? Would this change affect travel behavior, trip patterns, or the attractiveness of some areas to development over others?

   Implementation of the proposed project would result in a nominal decrease in delay for through movements along SR-68 because less signal "green" time would need to be allocated to turning traffic onto Corral de Tierra Road; however, this decrease would not constitute a new or significantly improved access to residences or other destinations along SR-68 or Corral de Tierra Road. The nominal decrease in delay would not result in a significant change in travel speed, travel cost, or Level of Service along SR-68.

   The project would also restrict left-turn movements both to and from the residential driveway located on the north side of SR-68 adjacent to the Cypress Community Church driveway. Restricting left-turn movements to and from the residential driveway would result in a nominal decrease in access to this residential driveway. The residential driveway provides access to five residences which accounts for only three or four vehicles during peak travel

hours along SR-68. Vehicles which would otherwise make the prohibited left-turn movements would instead make a U-turn at either the Corral de Tierra Road intersection or the San Benancio Road intersection to complete the desired access via a right-turn movement at the driveway. Access restrictions at the residential driveway would not affect access to the adjacent Cypress Community Church driveway.

Furthermore, the project area is surrounded by residential uses. The market at the north end of Corral de Tierra Road, the Corral de Tierra Country Club, and the Cypress Community Church provide only limited employment opportunities. The nearest industrial and commercial uses which would provide significant employment opportunities are located in the nearby cities of Salinas, Del Rey Oak, and Monterey. These nearby cities are approximately 7 to 11 miles from the project area; therefore, accessibility to employment and/or shopping and trip patterns would not be affected by the proposed project.

2. To what extent would change in accessibility affect growth or land use change- its location, rate, type, or amount?

   The nominal change in accessibility to the residential driveway would not affect growth or land use changes within the project area. SR-68 provides access between the cities of Monterey and Salinas and provides access to Corral de Tierra Road and its associated neighborhoods. The nominal decrease in delay for through traffic along SR-68 would not encourage travelers who do not currently utilize SR-68 to do so. Furthermore, the proposed project would not add vehicular capacity to the roadway and therefore would not promote or facilitate land use changes within the project area.

3. To what extent would resources of concern be affected by this growth or land use change?

   The proposed project would not affect growth or land use changes as discussed above; therefore, it would not affect resources of concern.

As noted in the discussion above, the proposed project would result in nominal impacts to accessibility which would not affect growth, land use, or resources of concern within the project area. The results of the First-cut Screening conclude that growth-related impacts are not reasonably foreseeable for the proposed project; therefore, a growth-related impact analysis is not required for the proposed project.

GROWTH-RELATED IMPACTS TECHNICAL MEMORANDUM

ADDENDUM

STATE ROUTE 68/CORRAL DE TIERRA INTERSECTION IMPROVEMENT PROJECT

Monterey County, California

05-Mon-68 PM 12.8/13.2

EA 05-0H8230

JUNE 2015

PURPOSE OF THE GROWTH-RELATED IMPACTS TECHNICAL MEMORANDUM ADDENDUM

After the circulation of the Draft Initial Study with Proposed Mitigated Negative Declaration (Draft IS/MND) and in response to public comments received, the County of Monterey and the California Department of Transportation (Caltrans) adopted project design modifications. The project design modifications included land outside of the previously analyzed project study area as identified in the Growth-Related Impacts Technical Memorandum, July 2012. This Addendum was prepared to address the expanded project study area.

CHANGE IN PROJECT DESIGN

The project design modifications are shown in yellow in the Build Alternative Design Plan provided at the end of this Addendum and described in detail below.

CHANGE IN PROJECT DESCRIPTION

The project design modifications included the following components:

- The shoulder widening of Corral de Tierra Road in the southbound direction would be reduced from 8 feet to 6 feet.
- The driveway that serves the five homes on the north side of State Route 68 would be realigned so that access to these homes would be shared with the Cypress Community Church's driveway.
- A 110 foot-long merge lane on State Route 68 for vehicles turning left out of The Villas driveway would be provided.
- The existing gutter on Corral de Tierra Road would be replaced with a flatter gutter.

PROJECT IMPACTS

As stated in the Growth-Related Impacts Technical Memorandum, a First-cut Screening was prepared for the proposed project to determine if growth-related impacts are or/are not reasonably foreseeable for the proposed project. The First-cut Screening concluded that growth-related impacts were not reasonably foreseeable for the proposed project; therefore a growth-related impact analysis was not required for the proposed project.

Implementation of the proposed driveway realignment would not significantly affect travel times, travel cost, or accessibility to employment, shopping, or other destinations to the private residences serviced by this driveway. The original project design would have restricted left-turn movements both to and from the residential driveway resulting in a nominal decrease in access to the residences serviced by the driveway. Implementation of the proposed driveway realignment (i.e., connecting the residential driveway with the driveway servicing the Cypress Community Church which forms the fourth leg of the SR-68/Corral de Tierra intersection) would provide signalized access to the residences serviced by the driveway, thereby, improving access to the driveway above the existing condition and original project design condition. The proposed driveway realignment (and nominal change in accessibility to the residential driveway) would not add vehicular capacity to SR-68 and therefore would not promote or facilitate land use changes within the project area.

Implementation of the 110 foot-long merge lane along SR-68 to facilitate left turn movements onto SR-68 from The Villa's driveway on the south side of SR-68 would not significantly affect travel times, travel cost, or accessibility to employment, shopping, or other destinations to The Villa's. Furthermore, the merge lane would not add vehicular capacity to SR-68 and therefore would not promote or facilitate land use changes within the project area.

Consistent with the conclusions provided in the Growth-Related Impacts Technical Memorandum, the project design modifications would not affect growth, land use, or resources of concern within the project area. Growth-related impacts are not reasonably foreseeable for the proposed project; therefore, a growth-related impact analysis is not required for the proposed project.

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ROUTE 68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENTS

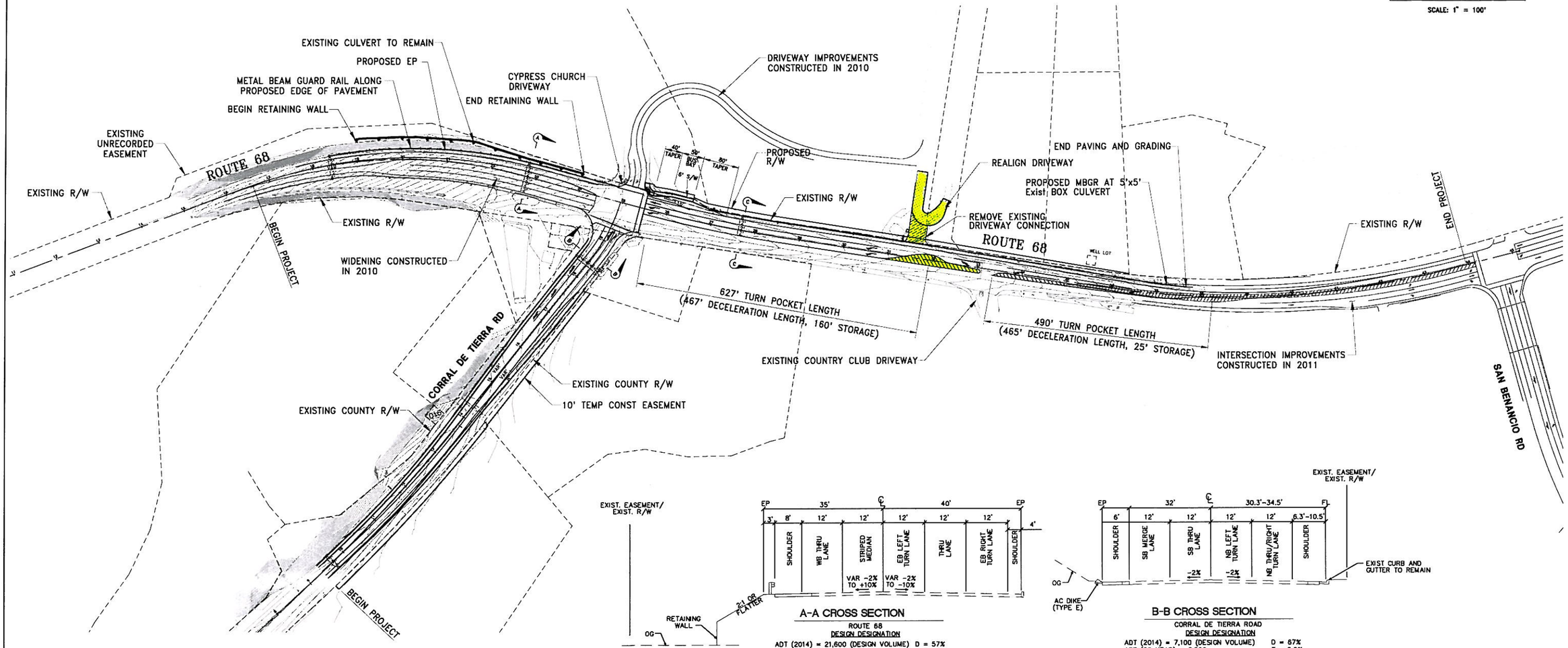
BUILD ALTERNATIVE

COUNTY OF MONTEREY CALIFORNIA

MAY, 2015

100' 50' 0 100' 200'

SCALE: 1" = 100'



A-A CROSS SECTION

ROUTE 68

DESIGN DESIGNATION

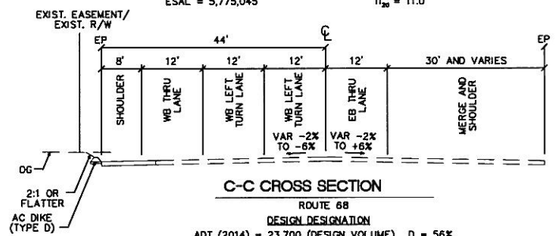
ADT (2014) = 21,600 (DESIGN VOLUME) D = 57%
ADT (20 YEAR) = 38,500 T = 4.0%
DHV = 2,484 V = 55 MPH
ESAL = 5,775,045 TI_{20} = 11.0

B-B CROSS SECTION

CORRAL DE TIERRA ROAD

DESIGN DESIGNATION

ADT (2014) = 7,100 (DESIGN VOLUME) D = 67%
ADT (20 YEAR) = 8,900 T = 2.0%
DHV = 619 V = 55 MPH
ESAL = 735,017 TI_{20} = 8.5



C-C CROSS SECTION

ROUTE 68

DESIGN DESIGNATION

ADT (2014) = 23,700 (DESIGN VOLUME) D = 56%
ADT (20 YEAR) = 40,500 T = 4.0%
DHV = 2,725 V = 55 MPH
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Sacramento, CA 95816 Fax 916.341.7767

HISTORICAL RESOURCES COMPLIANCE REPORT FOR THE STATE ROUTE 68/ CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT, NEAR SALINAS, MONTEREY COUNTY, CALIFORNIA

EXPENDITURE AUTHORIZATION 05-0H8230
05-MON-68, P.M. 12.8-13.2
CALTRANS DISTRICT 5

June 2013

Cover photo:
Intersection of State Route 68 and Corral de Tierra Road; view to north-northwest.

HISTORICAL RESOURCES COMPLIANCE REPORT FOR THE STATE ROUTE 68/ CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT, NEAR SALINAS, MONTEREY COUNTY, CALIFORNIA

EXPENDITURE AUTHORIZATION #05-0H8230
05-MON-68, P.M. 12.8-13.2
CALTRANS DISTRICT 5

Prepared by
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Senior Environmental Planner (Cultural Resources)
Caltrans District 5
50 Higuera Street
San Luis Obispo, California 93401
(805) 549-3669

LSA Project #WRS0605A

June 2013

TABLE OF CONTENTS

HISTORICAL RESOURCES COMPLIANCE REPORT

State of California Business, Transportation and Housing Agency
Department of Transportation

1. PROJECT / ACTIVITY DESCRIPTION AND LOCATION						
District	County	Route	Kilo Posts	Post Miles	Charge Unit	Expenditure Authorization
05	Mon	SR 68	20.6 to 21.3	12.8 to 13.2	N/A	05-0H8230

(Both kilometer posts and post miles must be completed above.

Project Description: (*Insert project description below; refer reader to location and vicinity maps in HRCR)*

The California Department of Transportation (Caltrans) and the County of Monterey Public Works Department (County) propose to widen the intersection at the State Route 68/Corral de Tierra Road intersection, near Salinas, Monterey County, California (Attachment 1: Figures 1 and 2). The 9.5-acre Project Area Limits (PAL) is approximately 2,500 feet long, east-to-west along State Route 68 (SR-68) and approximately 200 feet at its widest, and 1,000 feet long north-to-south along Corral de Tierra Road and approximately 150 feet at its widest.

The proposed project would widen the SR-68/Corral de Tierra intersection to the north of the existing alignment to accommodate the construction of a second (additional) left turn lane from westbound SR-68 onto southbound Corral de Tierra Road. Both of the left turn lanes (in the median of SR-68) would have sufficient length to accommodate deceleration from 53 miles per hour. An additional receiving lane would also be constructed on southbound Corral de Tierra Road. The paved shoulders of Corral de Tierra Road within the project area would be widened to 8 feet to better accommodate pedestrians and facilitate the future addition of Class II bicycle lanes to Corral de Tierra Road.

About 520 feet of Steel Crib retaining wall (or equivalent) would be constructed west of Corral de Tierra Road along the north embankment of SR-68. The retaining wall would lie below the existing road grade and therefore would not be visible from SR-68. The retaining wall would minimize the footprint of the embankment needed to accommodate the widened road section.

A left turn lane would also be constructed from westbound SR-68 into the Corral de Tierra Country Club driveway. The Corral de Tierra County Club driveway is located east of Corral de Tierra Road on the south side of SR-68.

No provisions for left turns to or from the residential driveway on the north side of SR-68 would be made. As part of the proposed project, a painted median island would be created in front of the residential driveway restricting drivers to right-in, right-out access. Drivers needing to make left-in, left-out movements would need to make a U-turn at the traffic signal at either San Benancio Road or at Corral de Tierra Road. U-turn movements at these signalized intersections are both legal and safe.

The proposed project would require an excavation depth of 3 feet for the widening of the roadway approaches. Shallow trenching, less than 3 feet deep, will be required to install conduits for the traffic signals. Retaining wall construction would excavate into the mechanically-stabilized embankment on the north side of SR-68 west of Corral de Tierra Road, but that embankment was constructed in 1993, so excavation for the retaining wall would not remove previously-undisturbed soils. The maximum vertical extent of the PAL is 10 feet deep, but only at the locations of the major traffic signal poles, which will be on cast-in-drilled-hole piles. No driven piles are required for this project.

All of the work would be constructed within existing State and County rights-of-way, except for a small area of new State right-of-way that would be acquired on the north side of SR-68 just east of the intersection to accommodate relocation of a bus stop, widening and grading. Also, a temporary construction easements would be acquired along the east side of Corral de Tierra Road to accommodate grading near the edge of the County right-of-way. Temporary staging areas for construction equipment and materials would be located in those areas of the existing State and County rights-of-way that are not

designated as environmentally sensitive areas. Construction is expected to be completed in a single season.

2. PROJECT AREA LIMITS

The PAL limits for the project were established in consultation with Valerie Levulett, Caltrans District 5 Environmental Branch Chief, and Caltrans Project Manager Dave Rasmussen, on June 12, 2013. The PAL map is located in Attachment 1 of this Historical Resources Compliance Report (HRCR).

The 9.5-acre PAL is approximately 2,500 feet long, east-to-west along SR-68 and approximately 200 feet at its widest, and 1,000 feet long north-to-south along Corral de Tierra Road and approximately 150 feet at its widest.

3. CONSULTING PARTIES / PUBLIC PARTICIPATION

(For the following, check the appropriate line, list names, dates, and locations and results of contacts, as appropriate. List organizations/persons contacted and attach correspondence and summarize verbal comments received as appropriate. Consulting parties that are not applicable may be deleted)

✔ Native American Tribes, Groups and Individuals

On March 13, 2007, LSA sent a letter describing the project and a map depicting the APE to the Native American contacts on the list provided by the NAHC, asking for any information or concerns they might have about the APE (Attachment 4). On April 9, 2007, LSA placed follow-up phone calls. A record of this correspondence is presented below:

- Ramona Garibay, Representative, Trina Marine Ruano Family. Ms. Garibay stated she did not know the area and knows of no sacred sites.
- Louise Miranda-Ramirez, Chairperson, Ohlone/Costanoan-Esselen Nation. Ms. Miranda-Ramirez stated she "did not know of any sites, but if we find any, please call her."
- Al Rodriguez, Vice Chairperson, Ohlone/Costanoan-Esselen Nation. LSA received the following message when a phone call was made: "The number you dialed is not a working number. Please check the number and dial again." Subsequent calls resulted in the same message.
- Rudy Rosales, Chairperson, Ohlone/Costanoan-Esselen Nation. LSA made a follow-up phone call, but the number was a fax number.

✔ Native American Heritage Commission

On February 13, 2007, LSA sent a letter describing the project and maps the depicting the APE to the Native American Heritage Commission (NAHC) in Sacramento asking the commission to review their sacred lands file for any Native American cultural resources that might be affected by the proposed project. Also requested were the names of Native Americans who might have information or concerns about the APE. Ms. Debbie Pilas-Treadway, NAHC Environmental Specialist III, replied in a fax dated February 22, 2007 that a review of the sacred lands file does not indicate "any Native American cultural resources in the immediate project area." Ms. Pilas-Treadway also provided a list of Native American contacts (Attachment 3).

✔ Local Historical Society / Historic Preservation Group *(also if applicable, city archives, etc.)*

On February 13, 2007, LSA sent a letter describing the project and a map depicting the APE to the Monterey County Historical Society, Salinas, asking for any concerns they might have regarding the APE (Attachment 5). On April 9, 2007, LSA made a follow-up phone call reiterating our request for information and concerns in a voice message. No response has been received to date.

(For the following, check the appropriate line, list names, dates, and locations and results of contacts, as appropriate. List organizations/persons contacted and attach correspondence and summarize verbal comments received as appropriate. Consulting parties that are not applicable may be deleted)

✔ Public Information Meetings *(list locations, dates below and attach copies of notices)*

A public information meeting was held on April 17, 2007, at San Benancio Middle School, Salinas, California (see Attachment 6: Public Meeting Notice).

4. SUMMARY OF IDENTIFICATION EFFORTS

✔	National Register of Historic Places	Month & Year: 1979-2002 & supplements
✔	California Register of Historical Resources	Year: 1992 & supplemental information to date
✔	California Inventory of Historic Resources	Year: 1976
✔	California Historical Landmarks	Year: 1995 & supplemental information to date
✔	California Points of Historical Interest	Year: 1992 & supplemental information to date
_	State Historic Resources Commission	Year: 1980-present, minutes from quarterly meetings
_	Caltrans Historic Highway Bridge Inventory	Year: 2003 & supplemental information to date

✔ Archaeological Site Records [*List names of Institutions & date below*]

- Northwest Information Center, Sonoma State University, Rohnert Park, California. February 8, 2007.

✔ Other sources consulted *[e.g., historical societies, city archives, etc. List names and dates below]*

- Monterey County Historical Society

✔ Results: *(provide a brief summary of records search and research results, as well as inventory findings)*
No recorded cultural resources were identified within the APE. Adjacent to the PAL at the intersection of SR 68 and Corral de Tierra Road, Lee (1995) evaluated several architectural properties that included the "Food Center," a combination gas station-mini-mart-flower stand complex. These buildings do not appear to be eligible for listing on the National Register of Historic Places or the California Register of Historical Resources. In addition, a 1953 California Ranch style residence and associated garage and shed adjacent to the APE were evaluated and do not appear to meet any of the National Register criteria of significance and thus the resource is not eligible for listing on the National Register (Marvin 2007:1).

This study identified the PAL along Corral de Tierra Road and much of the eastern portion of SR 68 as possibly sensitive for buried archaeological resources.

5. EXEMPT / NO CEQA RESOURCES IDENTIFIED

✔ There are **no cultural resources** in the Project Area limits.

6. HISTORICAL RESOURCES IDENTIFIED

✔ Not applicable.

7. CEQA IMPACT FINDINGS

✔ Caltrans has determined a **finding of no impact** is appropriate because there are no historical resources within the Project Area limits, or there are no impacts to historical resource(s), pursuant to CEQA Guidelines §15064.5(b)(3).

8. MITIGATION PLAN

(List the impacted historical resource and describe its mitigation plan below or indicate below the title of the HRCR attachment that contains the description. Archaeological sites: summarize proposed data recovery. For mitigation plans that are not complete, describe the range of suitable mitigation options.)

✔ None.

9. FINDINGS FOR STATE-OWNED HISTORICAL RESOURCES

✔ Caltrans has determined that there are **no State-owned historical resources** within the Project Area Limits.

10. LIST OF ATTACHED DOCUMENTATION

(Provide the author/date and peer reviewer/date of the technical report. Documentation that is not applicable may be deleted)

✔ Figure 1: Project Location Map (Attachment 1)
Figure 2: Area of Potential Effects

✔ Archaeological Survey Report (ASR) (Attachment 2)
Goetter, Karin
2012 *Archaeological Survey Report for the State Route 68/Corral de Tierra Road Intersection Improvement Project.* LSA Associates, Inc., Point Richmond.

✔ Other *(Specify below)*

- Native American Heritage Commission (Attachment 3)
- Native American Contacts Consultation Letters (Attachment 4)
- Historical Society Consultation Letter (Attachment 5)
- Public Meeting Notice (Attachment 6)

11. HRCR PREPARATION AND DEPARTMENT APPROVAL

Prepared by *(sign on line)*:	N/A	
District Caltrans PQS/Generalist:	[PQS level and discipline]	Date
Prepared by: *(sign on line)*	Neal Kaptain for	12/3/12
Consultant / discipline:	Karin Goetter Co-Principal Investigator - Prehistoric and Historical Archaeology	Date
Affiliation	LSA Associates, Inc.	
Reviewed for approval by: *(sign on line)*	Anita Kaha for TJ	1/5/13
District 5 Caltrans PQS discipline/level:	Terry L. Joslin	Date
Approved by: *(sign on line)*	Anita Kaha for VAL	1/5/13
District 5 EBC:	Valerie Levulett	Date

ATTACHMENT 1

Figure 1: Project Location Map
Figure 2: Project Area Limits

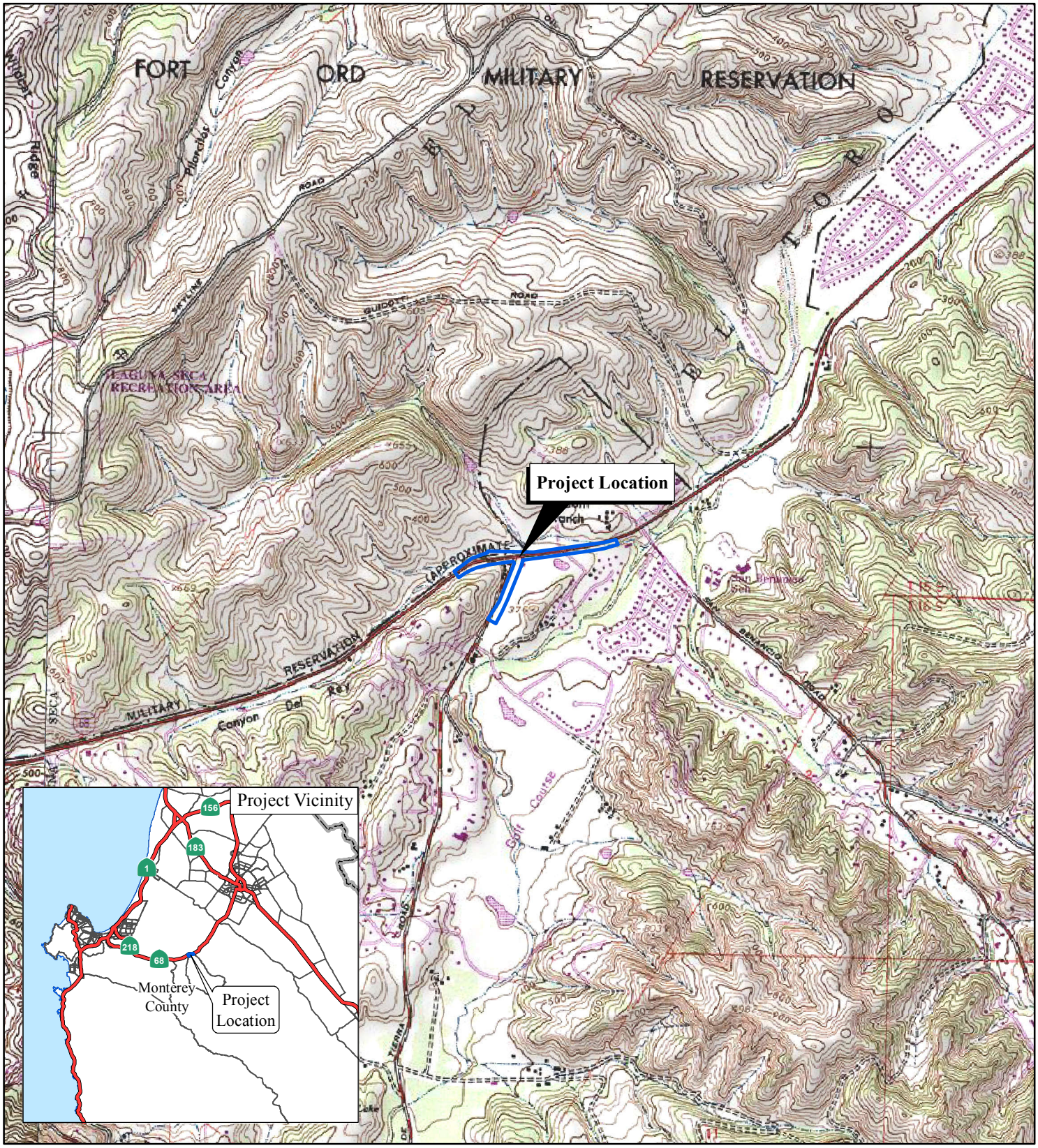


FIGURE 1

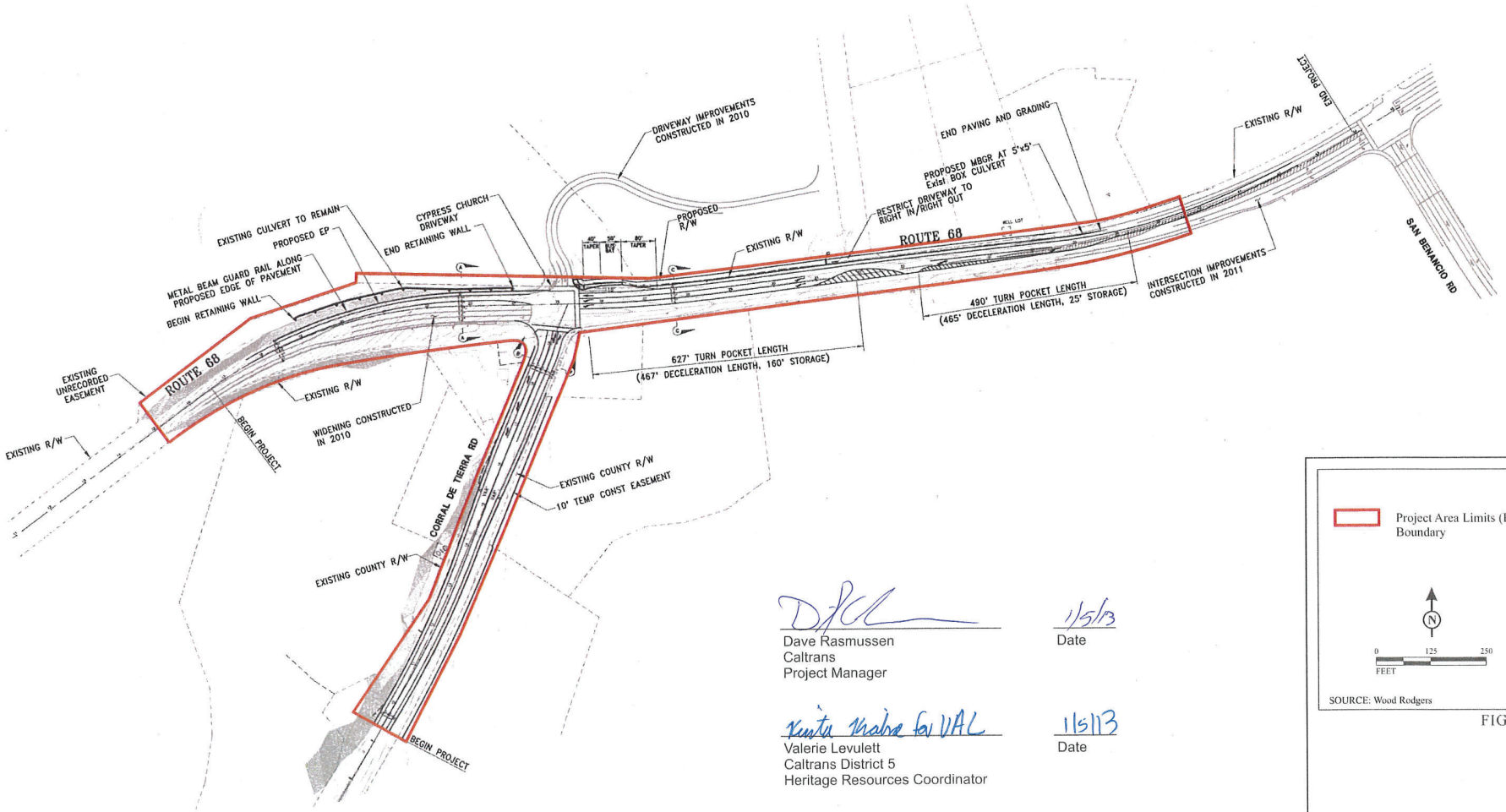
SR 68 / Corral de Tierra Road
Intersection Improvement Project

Project Location Map

MON-68, P.M. 12.8/13.2
05-OH8230

SOURCE: USGS 7.5' QUAD, SPRECKELS, CA (1984); Wood Rodgers (2006)

I:\WRS0605\GIS\Fig1.mxd (4/18/2007)



Project Area Limits (PAL) Boundary

N

0 125 250
FEET

SOURCE: Wood Rodgers

FIGURE 2

Dave Rasmussen
Caltrans
Project Manager

1/5/13
Date

Kristie Malone for VAL

Valerie Levulett
Caltrans District 5
Heritage Resources Coordinator

1/5/13
Date

SR-68/Corral de Tierra Road
Intersection Improvement Project

Project Area Limits

MON-68, P.M. 12.8/13.2
05-OH8230

I:\WRS0605\G\Paleo Cultural\PAL Boundary.cdr (3/13/13)

ATTACHMENT 2

Archaeological Survey Report

The Archaeological Survey Report is not available due to resource confidentiality. Refer to California Government Code Sections 6254.10 and 6254(r); California Code of Regulations Section 15120(d); and Section 304 of the National Historic Preservation Act of 1966.

ATTACHMENT 3

Native American Heritage Commission Consultation

LSA

LSA ASSOCIATES, INC.
157 PARK PLACE
PT. RICHMOND, CALIFORNIA 94801

510.236.6810 TEL
510.236.3480 FAX

BERKELEY
CARLSBAD
COLMA
FORT COLLINS
IRVINE
PALM SPRINGS
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO

February 13, 2007

Larry Myers
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

Subject: Corral de Tierra Road Improvements Project, Salinas, Monterey County
LSA Project #WRS0605

Dear Mr. Myers:

The County of Monterey is proposing intersection improvements for State Highway 68 at Corral de Tierra Road, near Salinas, Monterey County. LSA Associates, Inc. is conducting a study to determine if the project might affect cultural resources. Please review the sacred lands files for any Native American cultural resources that may be within or adjacent to the study area. The study area is on State Highway 68 at Corral de Tierra Road, Township 15 South/Range 2 East, Mount Diablo Baseline and Meridian, as depicted on the accompanying portion of the USGS *Spreckels, Calif.* 7.5' topographic map. There is no section number on the map.

We also request a list of Native American individuals and organizations who may have knowledge of cultural resources in the project area. Please notify us if you have any information or concerns. Please contact me at the address and phone number above or via e-mail (karin.goetter@lsa-assoc.com). We look forward to hearing from you. Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Karin Goetter
Cultural Resources Analyst

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390
Web Site www.nahc.ca.gov

February 22, 2007

Karen Goetter
Cultural Resources Analyst
LSA

Sent by Fax: 510-236-3480
Number of Pages: 3

Re: Proposed Corral de Tierra road Improvements project, Salinas, Monterey County

Dear Ms. Goetter:

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these Individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4038.

Sincerely,

Debbie Pilas-Treadway
Environmental Specialist III

Native American Contacts
Monterey County
February 21, 2007

Linda G. Yamane
1585 Mira Mar Ave. Ohlone/Costanoan
Seaside , CA 93955-3326
(831) 394-5915

Amah/Mutsun Tribal Band
Michelle Zimmer, Cultural Resource Coordinator
PO Box 62-558 Ohlone/Costanoan
Woodside , CA 94062
408-375-4281

Jakki Kehl
720 North 2nd Street Ohlone/Costanoan
Patterson , CA 95363
jakki@bigvalley.net
(209) 892-2436
(209) 892-2435 - Fax

Amah/MutsunTribal Band
Irene Zwierlein, Chairperson
789 Canada Road Ohlone/Costanoan
Woodside , CA 94062
amah_mutsun@yahoo.com
(650) 851-7747 - Home
(650) 851-7489 - Fax

Amah MutsunTribal Band
Valentin Lopez, Chairperson
3015 Eastern Ave, #40 Ohlone/Costanoan
Sacramento , CA 95821
vlopez@amahmutsun.org
(916) 481-5785

Coastanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
3929 Riverside Drive Ohlone/Costanoan
Chino , CA 91710
(909) 622-1564
(909) 464-2074

Amah MutsunTribal Band
Edward Ketchum
35867 Yosemite Ave Ohlone/Costanoan
Davis , CA 95616 Northern Valley Yokuts
aerieways@aol.com

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28 Ohlone/Costanoan
Hollister , CA 95024

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Corral de Tierra Road Improvements project, Salinas, MOnterey County.

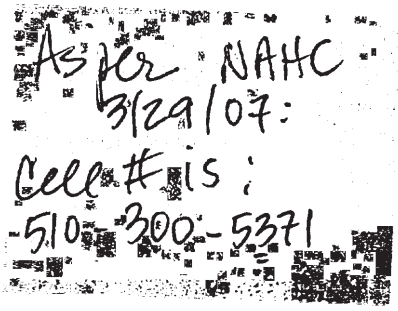
Native American Contacts
Monterey County
February 21, 2007

Ohlone/Coastanoan-Esselen Nation
Louise Miranda-Ramirez, Chairperson
PO Box 1301 Esselen
Monterey , CA 93942 Ohlone/Costanoan
ljramirez132@sbcglobal.net
408-629-5189
408-205-7579 - cell

Ohlone/Coastanoan-Esselen Nation
Al Rodriguez, Vice Chairperson
PO Box 1301 Esselen
Monterey , CA 93942 Ohlone/Costanoan
805-720-1264 -cell
805-614-4171 - work

Ohlone/Coastanoan-Esselen Nation
Rudy Rosales, Cultural Resources Committee Chair
PO Box 1301 Esselen
Monterey , CA 93942 Ohlone/Costanoan
esselennation46@aol.com
(831) 659-5831
(831) 917-1866 - cell

Trina Marine Ruano Family
Ramona Garibay, Representative
16010 Halmar Lane Ohlone/Costanoan
Lathrop , CA 95330 Bay Miwok
510-300-5971 - cell Plains Miwok
Patwin


As per NAHC 3/29/07: Cell # is: -510-300-5371

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Corral de Tierra Road Improvements project, Salinas, MOnterey County.

ATTACHMENT 4

Native American Representative Consultation

LSA

LSA ASSOCIATES, INC.
157 PARK PLACE
PT. RICHMOND, CA 94801

510.236.6810 TEL
510.236.3480 FAX

BERKELEY
CARLSBAD
COLMA
FORT COLLINS
IRVINE
PALM SPRINGS
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO

March 13, 2007

Trina Marine Ruano Family
Ramona Garibay, Representative
16010 Halmar Lane
Lathrop, California 95330

Subject: State Route 68/Corral de Tierra Road Intersection Improvements Project, Salinas, Monterey County. LSA Project #WRS0605.

Dear Ms. Garibay:

The County of Monterey is proposing improvements to the State Highway 68/Corral de Tierra Road intersection, near Salinas, Monterey County. LSA Associates, Inc. is conducting a study to determine if the project might affect cultural resources. The project area is on State Highway 68 at Corral de Tierra Road, Township 15 South/Range 2 East, Mount Diablo Baseline and Meridian, as depicted on the accompanying portion of the USGS *Spreckels, Calif.*, 7.5' topographic map.

Please notify us if you or your organization has any information or concerns about the study area. To reach us, please contact me at the address and phone number above or via email (karin.goetter@lsa-assoc.com). We look forward to hearing from you. Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Karin Goetter

Karin Goetter, M.A., RPA, RPH
Archaeologist

LSA

LSA ASSOCIATES, INC.
157 PARK PLACE
PT. RICHMOND, CA 94801

510.236.6810 TEL
510.236.3480 FAX

BERKELEY
CARLSBAD
COLMA
FORT COLLINS
IRVINE
PALM SPRINGS
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO

March 13, 2007

Louise Miranda-Ramirez, Chairperson
Ohlone/Costanoan-Esselen Nation
P.O. Box 1301
Monterey, California 93942

Subject: State Route 68/Corral de Tierra Road Intersection Improvements Project, Salinas, Monterey County. LSA Project #WRS0605.

Dear Ms. Miranda-Ramirez:

The County of Monterey is proposing improvements to the State Highway 68/Corral de Tierra Road intersection, near Salinas, Monterey County. LSA Associates, Inc. is conducting a study to determine if the project might affect cultural resources. The project area is on State Highway 68 at Corral de Tierra Road, Township 15 South/Range 2 East, Mount Diablo Baseline and Meridian, as depicted on the accompanying portion of the USGS *Spreckels, Calif.*, 7.5' topographic map.

Please notify us if you or your organization has any information or concerns about the project area. To reach us, please contact me at the address and phone number above or via email (karin.goetter@lsa-assoc.com). We look forward to hearing from you. Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Karin Goetter

Karin Goetter, M.A., RPA, RPH
Archaeologist

LSA

LSA ASSOCIATES, INC.
157 PARK PLACE
PT. RICHMOND, CA 94801

510.236.6810 TEL
510.236.3480 FAX

BERKELEY
CARLSBAD
COLMA
FORT COLLINS
IRVINE
PALM SPRINGS
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO

March 13, 2007

Al Rodriguez, Vice Chairperson
Ohlone/Costanoan-Esselen Nation
P.O. Box 1301
Monterey, California 93942

Subject: State Route 68/Corral de Tierra Road Intersection Improvements Project, Salinas, Monterey County. LSA Project #WRS0605.

Dear Mr. Rodriguez:

The County of Monterey is proposing improvements to the State Highway 68/Corral de Tierra Road intersection, near Salinas, Monterey County. LSA Associates, Inc. is conducting a study to determine if the project might affect cultural resources. The project area is on State Highway 68 at Corral de Tierra Road, Township 15 South/Range 2 East, Mount Diablo Baseline and Meridian, as depicted on the accompanying portion of the USGS *Spreckels, Calif.*, 7.5' topographic map.

Please notify us if you or your organization has any information or concerns about the project area. To reach us, please contact me at the address and phone number above or via email (karin.goetter@lsa-assoc.com). We look forward to hearing from you. Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Karin Goetter

Karin Goetter, M.A., RPA, RPH
Archaeologist

LSA

LSA ASSOCIATES, INC.
157 PARK PLACE
PT. RICHMOND, CA 94801

510.236.6810 TEL
510.236.3480 FAX

BERKELEY
CARLSBAD
COLMA
FORT COLLINS
IRVINE
PALM SPRINGS
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO

March 13, 2007

Rudy Rosales, Chairperson
Ohlone/Costanoan-Esselen Nation
P.O. Box 1301
Monterey, California 93942

Subject: State Route 68/Corral de Tierra Road Intersection Improvements Project, Salinas, Monterey County. LSA Project #WRS0605.

Dear Mr. Rosales:

The County of Monterey is proposing improvements to the State Highway 68/Corral de Tierra Road intersection, near Salinas, Monterey County. LSA Associates, Inc. is conducting a study to determine if the project might affect cultural resources. The project area is on State Highway 68 at Corral de Tierra Road, Township 15 South/Range 2 East, Mount Diablo Baseline and Meridian, as depicted on the accompanying portion of the USGS *Spreckels, Calif.*, 7.5' topographic map.

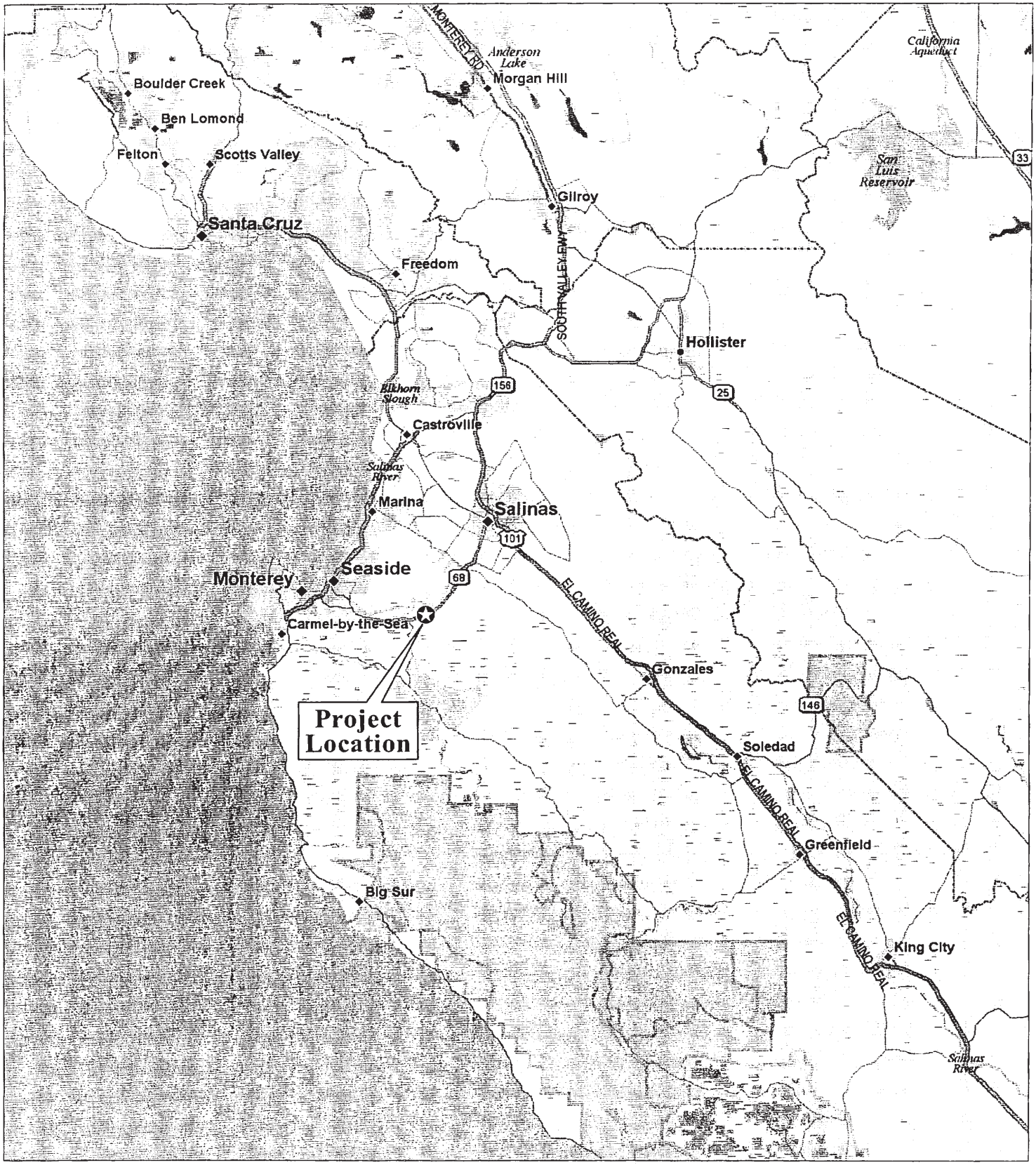
Please notify us if you or your organization has any information or concerns about the project area. To reach us, please contact me at the address and phone number above or via email (karin.goetter@lsa-assoc.com). We look forward to hearing from you. Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Karin Goetter

Karin Goetter, M.A., RPA, RPH
Archaeologist



LSA

FIGURE 1

State Route 68/Corral de Tierra
Intersection Improvements Project
Monterey County, California

Project Location and Vicinity

N

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MILES

SOURCE: ©2006 DeLORME. STREET ATLAS USA®2006.

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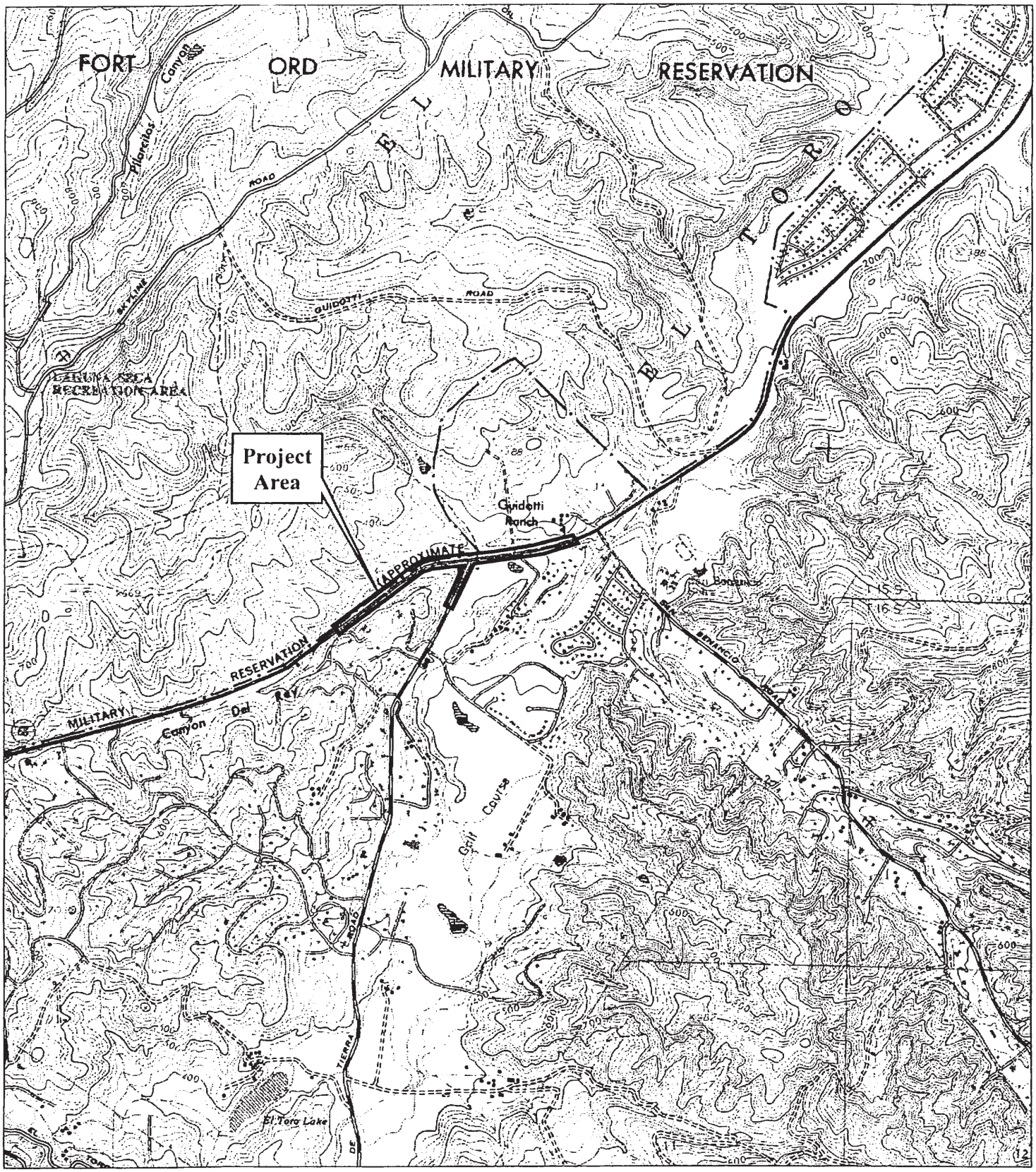


LSA

FIGURE 2

State Route 68/Corral De Tierra Intersection Improvements Project
Monterey County, California

Project Area

USGS 7.5' Quad: Spreckels, Calif. 1955 (pr 1984)

I:\WRS0605\GIS\Maps\Figure2.mxd (2/2/2007)

ATTACHMENT 5

Historical Society Consultation

LSA

LSA ASSOCIATES, INC.
157 PARK PLACE
PT. RICHMOND, CALIFORNIA 94801

510.236.6810 TEL
510.236.3480 FAX

BERKELEY
CARLSBAD
COLMA
FORT COLLINS
IRVINE
PALM SPRINGS
RIVERSIDE
ROCKLIN
SAN LUIS OBISPO

February 13, 2007

Monterey County Historical Society
P.O. Box 3576
Salinas, California 93912

Subject: State Route 68/Corral de Tierra Road Intersection Improvements Project, Salinas, Monterey County. LSA Project #WRS0605.

Dear Historical Society:

The County of Monterey is proposing improvements to the State Highway 68/Corral de Tierra Road intersection, near Salinas, Monterey County. LSA Associates, Inc. is conducting a study to determine if the project might affect cultural resources. The study area is on State Highway 68 at Corral de Tierra Road, Township 15 South/Range 2 East, Mount Diablo Baseline and Meridian, as depicted on the accompanying portion of the USGS *Spreckels, Calif.*, 7.5' topographic map.

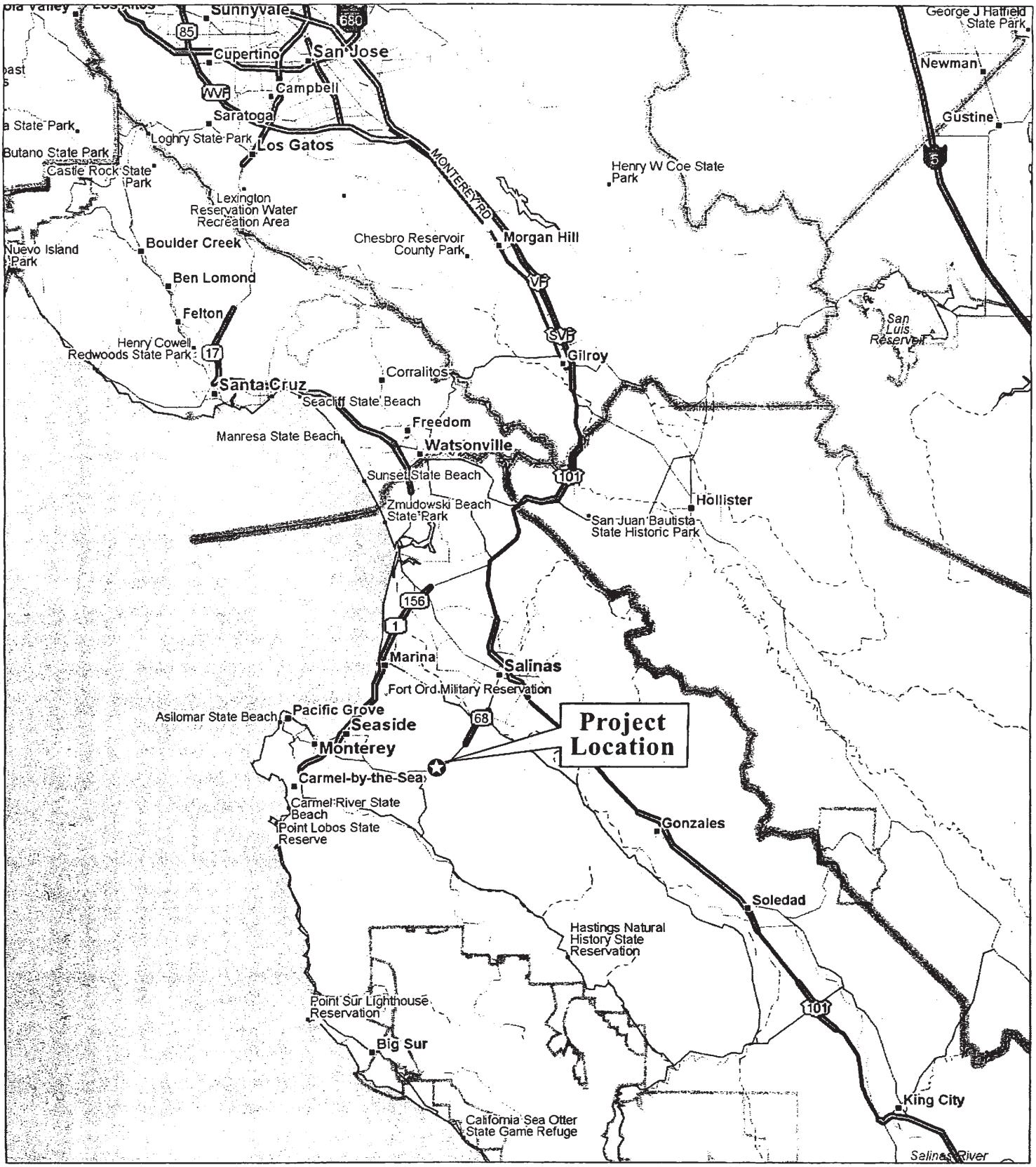
Please notify us if your organization has any concerns about historical sites in the study area. This is not a request for research; it is solely a request for public input for any concerns that the historical society may have. Please contact me at the address and phone number above or via e-mail (karin.goetter@lsa-assoc.com). We look forward to hearing from you. Thank you.

Sincerely,

LSA ASSOCIATES, INC.

Karin Goetter

Karin Goetter
Cultural Resources Analyst



LSA

FIGURE 1

State Route 68/Corral De Tierra Intersection Improvements Project
Monterey County, California

Project Location and Vicinity

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MILES

SOURCE: ©2002 DeLORME. STREET ATLAS USA® 2003.

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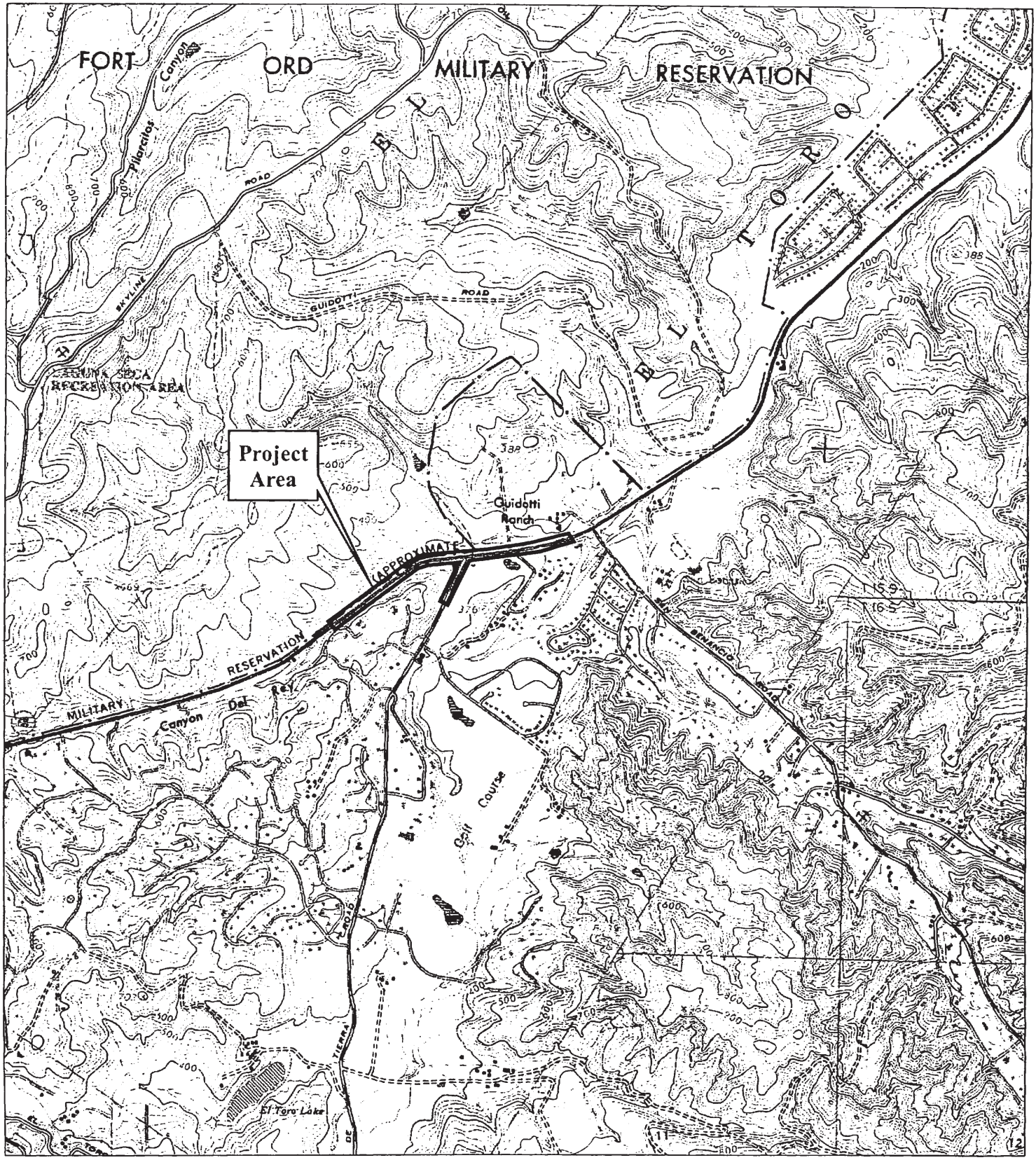


LSA

FIGURE 2

State Route 68/Corral De Tierra Intersection Improvements Project
Monterey County, California

Project Area

N

0 500 1,000 2,000
FEET

USGS 7.5' Quad: Spreckels, Calif. 1955 (pr 1984)

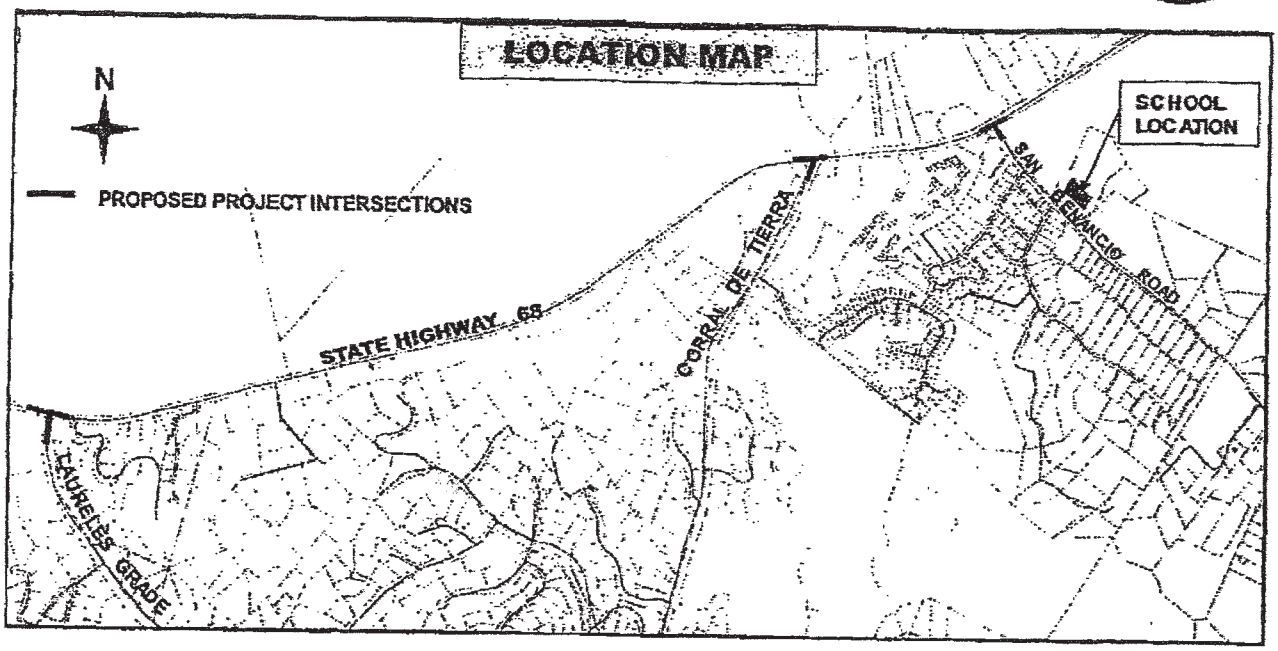
I:\WRS0605\GIS\Maps\Figure2.mxd (2/2/2007)

ATTACHMENT 6

Public Meeting Notice

NOTICE OF PUBLIC INFORMATIONAL MEETING

PROPOSED INTERSECTION IMPROVEMENT PROJECT SAN BENANCIO, CORRAL DE TIERRA, AND LAURELES GRADE INTERSECTIONS WITH STATE HIGHWAY 68



WHEN & WHERE **TUESDAY, APRIL 17, 2007 5 - 8 p.m.**
San Benancio Middle School - Room 10
San Benancio Road Salinas CA

WHAT IS PLANNED? Monterey County Resource Management Agency – Public Works Department is proposing to construct safety and operational improvements at the San Benancio, Corral De Tierra, and Laureles Grade intersections with State Highway 68.

WHY THIS MEETING? The Public Works Department wishes to present various project alternatives and welcomes input from the community relating to environmental, design, and right-of-way aspects of the proposed project. A preferred alternative has been selected for public consideration. An "Open House/Graphic Display" format will be used to provide information to the public. Project Engineers will be available to respond to questions and/or receive written comments.

CONTACT: For additional information, please contact:

Enrique Saavedra, P.E.
Senior Transportation Engineer
Monterey County Public Works Department
168 W Alisal St FL2
Salinas CA 93901-2438
(831)755-8970

OR

Arturo Adlawan, P.E.
Senior Design Engineer
Monterey County Public Works Department
168 W Alisal St FL2
Salinas CA 93901-2438
(831)755-4823

ACTION ALERT

April 7, 2007

Dear Highway 68 Coalition,

We need your help. There are threats to our scenic highway. Your Highway 68 Coalition co-Chairs and Secretary Treasurer have requested that the County of Monterey review their plans for the highway with the local residents, at a "local" location, PRIOR to carving up the highway and mowing down some Oak Trees.

Where: San Benancio School
When: April 17th from 5 PM until 8 PM, Room number 10
The attached letter received by some local residents will briefly explain a bit about it.

Here is a brief history and some of our concerns:
* State Highway 68 was declared a State Scenic Highway in 1968 by Ladybird Johnson and former California State Senator Fred Farr. The roadway from the Salinas River Bridge west to Highway 1 is officially a State Scenic Highway. For some reason, the roadway from the Salinas River Bridge to Highway 101 has been eligible for Scenic Highway Status since that time, but despite our requests, has been ignored by our County Government when asked for it's inclusion into official Scenic Highway Status.
* State Highway 68 reached its design capacity of 16,000 vehicles per day in 1984.
* For years our County Government allowed this highway to become increasingly congested without any real plans in place. Current traffic is approximately 25,000 vehicle trips per day. This number can be upwards of 30,000 per day on a big event weekend.
* With the approval of the 1,031 houses at Las Palmas, the County agreed a traffic mitigation measure was to be the "Corral de Tierra Bypass". This was a proposal for a bypass from approximately the Toro Café to past Corral de Tierra, leaving the existing road as a "frontage" road. The County adopted "plan lines" for this, the developer was to contribute "traffic impact fees" that were to fund 10% of the estimated total cost of this. The County spent taxpayer dollars acquiring "right of way". The project was never done. The County never put aside moneys for the other 90% of the mitigation measure they deemed as a necessary mitigation for the increased traffic.
* An early study proposed a possible four-lane "Scenicway" between the Cities of Monterey and Salinas. It was called a Scenicway as it proposed preserving the views along this corridor. Later an alternative was proposed that came to be known as the South-West Alternative. This was to be a bypass that went through former Fort Ord. Building this bypass was declared a necessary mitigation for the build out of the Fort Ord Reuse Plan of 1997. Since that time the Fort Ord Reuse Authority (FOR A) has basically erased this South-West Alternative from their plans. Deciding it was too expensive, this bypass, previously determined to be crucial, has been scrapped, at least for the next twenty years or so. Indeed, FOR A scrapped much of the offsite traffic mitigation measures that were determined to be necessary, but have not scrapped any of the traffic impact building plans. There is now talk of an Eastside bypass through former Fort Ord.

* With the additions of Pasadera, Monterra Ranch, and the San Benancio Oaks Subdivision developments, the County has collected Traffic Impact Fees they are waiting to use. They believe that putting big wide intersections in, similar to what they did in front of Ryan Ranch near Highway 218 (Del Rey Oaks), is the answer. The plan is to install double left turn lanes (heading westbound) at the San Benancio, Corral de Tierra, and Laureles Grade intersections. Is it for safety? Well, no, not really. It is for capacity. Double stacking those wanting to turn left, then giving them the green, they figure these cars can sort of drag race their way through the intersections faster. This will leave more "green light" time available for the through traffic going from Salinas to Monterey, or vice versa. These plans will necessitate removing dozens of Oak Trees near Laureles Grade. It will necessitate widening the San Benancio Bridge, (recently rebuilt), and it will create a confusing gateway to the proposed shopping center at Corral de Tierra that is planned for being three times larger than the Stone Creek Shopping Center near Del Rey Oaks (at 218 X 68).

The question is, what is this going to do for the Scenic Highway? We will grant you that it is crowded, but hasn't the failure of our County Government contributed to this? The "crisis" has been created, now they want to come in with some band-aids that threaten the appearance of our rural area. With all that is being proposed around us, and nearby, if the County's General Plan passes (GPU4), we won't even be any better off if we give up rural character for Santa Monica type intersections! You can count on looking back ten years from now and remembering the "good old days", when traffic on Highway 68 was only Level of Service F during peak hours.

So, the Highway 68 Coalition needs you to attend this meeting to view the sketches and express your concerns to the Public Works officials who are nice enough to come out here after hours, on a business day. PLEASE express your concerns. What are the long-term benefits? (If any). What are we giving up for them? When does a Scenic Highway stop being scenic? Will carving up some hills, straightening curves, widening intersections, painting numerous arrows and putting up more signs endanger the State of California's designation of this highway being scenic?

Oh, and by the way, The State of California, CalTrans, District 5, has backed off of input on this at the County's urging. The County has asked for and has LEAD AGENCY STATUS. The State will eventually have to sign off on anything the County proposes as IT IS THEIR HIGHWAY! However, CalTrans sees a storm brewing. CalTrans has, over the years, repeatedly advised our Monterey County Government to be careful of development plans. Mostly, CalTrans advice has been ignored by our Monterey County Government over the years.

Now we come to this. Please attend this informal meeting and have a look at the displays that will be there. This will probably be your ONLY opportunity to see just what it is that is being proposed.

Thank you very much!
Mike Weaver and Marit Evans, Co-Chairs, The Highway 68 Coalition

SUPPLEMENTAL HISTORICAL RESOURCES COMPLIANCE REPORT

1. PROJECT / ACTIVITY DESCRIPTION AND LOCATION						
District	County	Route	Post Miles	Unit	E-FIS Project Number	Phase
5	MNT	68	12.8-13.2	N/A	N/A	N/A

Project Description:

The California Department of Transportation and the County of Monterey Public Works Department propose to widen the intersection at the State Route 68/Corral de Tierra Road, near Salinas, Monterey County, California (Attachment 1: Figures 1 and 2). The 9.76-acre Project Area Limits (PAL) is approximately 2,500 feet long, east-to-west along State Route 68 (SR-68) and approximately 200 feet at its widest, and 1,000 feet long north-to-south along Corral de Tierra Road and approximately 150 feet at its widest.

The proposed project would widen the SR-68/Corral de Tierra intersection to the north of the existing alignment to accommodate the construction of a second (additional) left turn lane from westbound SR-68 onto southbound Corral de Tierra Road. Both of the left turn lanes (in the median of SR-68) would have sufficient length to accommodate deceleration from 53 miles per hour. An additional receiving lane would also be constructed on southbound Corral de Tierra Road. The shoulder of Corral de Tierra Road in the northbound direction would be widened to at least 8 feet within the PAL (except at one point where existing curb, sidewalk and utilities preclude widening). The shoulder of Corral de Tierra Road in the southbound direction would be widened to at least 6 feet within the PAL.

About 520 feet of steel bin retaining wall (or equivalent) would be constructed west of Corral de Tierra Road along the north embankment of SR-68. The retaining wall would lie below the existing road grade and therefore would not be visible from SR-68. The retaining wall would minimize the footprint of the embankment needed to accommodate the widened road section. The existing drainage gutter on Corral de Tierra Road would be replaced with a flatter gutter. A left-turn lane to the driveway of The Villas on the south side of SR-68 would be constructed. A 110-foot-long merge lane would be provided for vehicles that turn left onto SR-68 from The Villas driveway heading westbound on SR-68.

On the north side of SR-68 there is an existing private driveway that serves five homes. This driveway would be removed as part of the proposed project. The private road that leads to the homes would be realigned to connect to the driveway that currently serves the Cypress Community Church. With implementation of the proposed project, vehicles would share a portion of the church's driveway and the traffic signal at Corral de Tierra Road/SR-68 to access the homes.

The proposed project would require an excavation depth of 3 feet for the widening of the roadway approaches. Shallow trenching, less than 3 feet deep, will be required to install conduits for the traffic signals. Retaining wall construction would excavate into the mechanically-stabilized embankment on the north side of SR-68 west of Corral de Tierra Road, but that embankment was constructed in 1993, so excavation for the retaining wall would not remove previously-undisturbed soils. The maximum vertical extent of the PAL is 10 feet deep, but only at the locations of the major traffic signal poles, which will be on cast-in-drilled-hole piles. No driven piles are required for this project.

All of the work would be constructed within existing State and County rights-of-way, except for a small area of new State right-of-way that would be acquired on the north side of SR-68 just

east of the intersection to accommodate relocation of the existing bus stop, widening and grading. Also, temporary construction easements would be acquired along the east side of Corral de Tierra Road to accommodate grading near the edge of the County right-of-way and on the north side of SR-68 for construction of the residential driveway realignment.

2. PROJECT AREA LIMITS

The PAL for the project was established in consultation with Dave Rasmussen, Project Manager/Local Assistance Engineer, and Krista Kiaha, District 5 Heritage Resources Coordinator, on August 27, 2015. The PAL map is located in Attachment 1 of this Historical Resources Compliance Report (HRCR).

The 9.76-acre PAL is approximately 2,500 feet long, east-to-west along SR-68 and approximately 200 feet at its widest, and 1,000 feet long north-to-south along Corral de Tierra Road and approximately 150 feet at its widest.

3. CONSULTING PARTIES / PUBLIC PARTICIPATION

For consultation conducted for this project, please see the previously prepared HRCR:

Goetter, Karin, 2013

Historical Resources Compliance Report for the State Route 68/Corral De Tierra Road Intersection Improvement Project, Near Salinas, Monterey County, California. LSA Associates, Inc., Point Richmond, California.

4. SUMMARY OF IDENTIFICATION EFFORTS

X	National Register of Historic Places	X	California Points of Historical Interest
X	California Register of Historical Resources	X	California Historical Resources Information System (CHRIS)
X	California Inventory of Historic Resources	_	Caltrans Historic Highway Bridge Inventory
X	California Historical Landmarks	_	Caltrans Cultural Resources Database (CCRD)

X Archaeological Site Records Northwest Information Center, Rohnert Park, California. February 8, 2007.

X Other sources consulted Monterey County Historical Society

X Results: No cultural resources were identified in the PAL in the June 2013 Historical Resources Compliance Report.

In 2015, approximately 600 square feet of project area was added to the PAL. On May 14, 2015, LSA archaeologist and architectural historian Neal Kaptain, M.A., RPA, conducted a pedestrian survey of the additional PAL. The survey was done in 20-foot-wide parallel transects. Ground visibility ranged from 80% in bare soil to 20% in grasses. In areas where ground visibility was limited, multiple trowel scrapes were done and rodent back dirt was examined for evidence of cultural resources. In addition, the side walls of a 5-foot-deep by 20-foot-long utility trench were examined. No cultural resources were identified.

5. EXEMPT FROM EVALUATION / NO CEQA HISTORICAL RESOURCES IDENTIFIED

X There are **no cultural resources** in the Project Area Limits.

6. CEQA Historical Resources Identified

X Not applicable.

7. CEQA Considerations

X Not applicable; Caltrans is not the lead agency under CEQA.

8. Mitigation Plan

X Not applicable.

9. State-Owned Historical Resources Findings

HRCR to District File

X Not applicable; project does not involve Caltrans right-of-way or there are no Caltrans-owned cultural resources within the Project Area Limits.

HRCR to SHPO

X Not applicable.

HRCR to CSO

X Not applicable.

10. List of Attached Documentation

X Project Location Map and Project Area Limits Map (Attachment 1)

11. HRCR Preparation and Caltrans Approval

Prepared by:

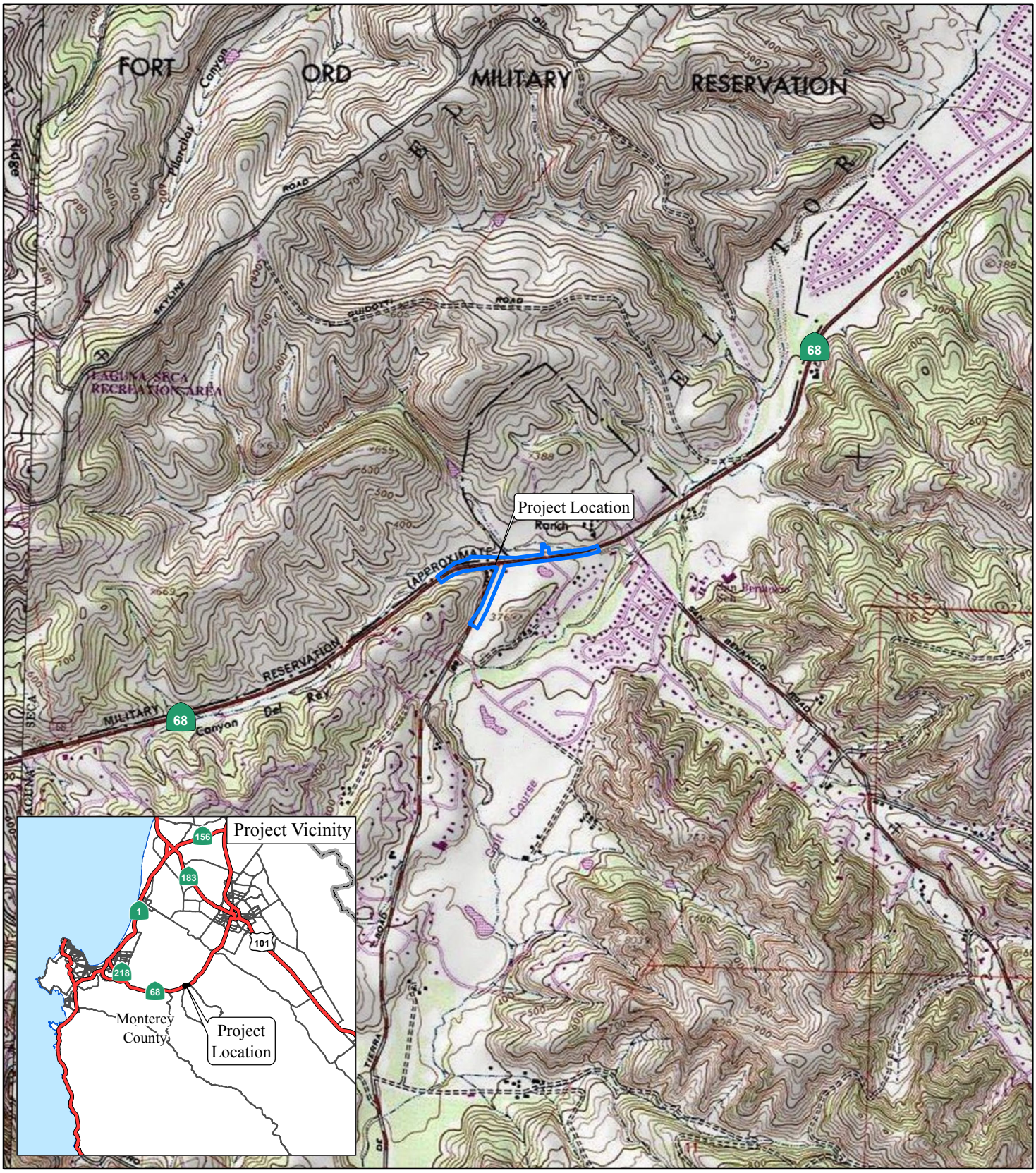
Consultant / discipline:	Neal Kaptain Neal Kaptain, M.A., RPA Consultant Principal Investigator, Archaeology and Architectural History	8/27/15 Date
Affiliation	LSA Associates, Inc. Pt. Richmond, CA	

Reviewed for approval by:

District 5 Caltrans PQS discipline/level:	Nieta Kraha PQS Principal Investigator (Prehistoric Archaeology)	8/27/15 Date
Approved by:		
District 5 EBC:	Nieta Kraha	8/27/15 Date

Attachment 1

Figure 1: Project Location Map
Figure 2: Project Area Limits



LEGEND

Project Location

FIGURE 1

N

0 1000 2000

FEET

SOURCE: USGS 7.5' Quad - Spreckels (1984), CA

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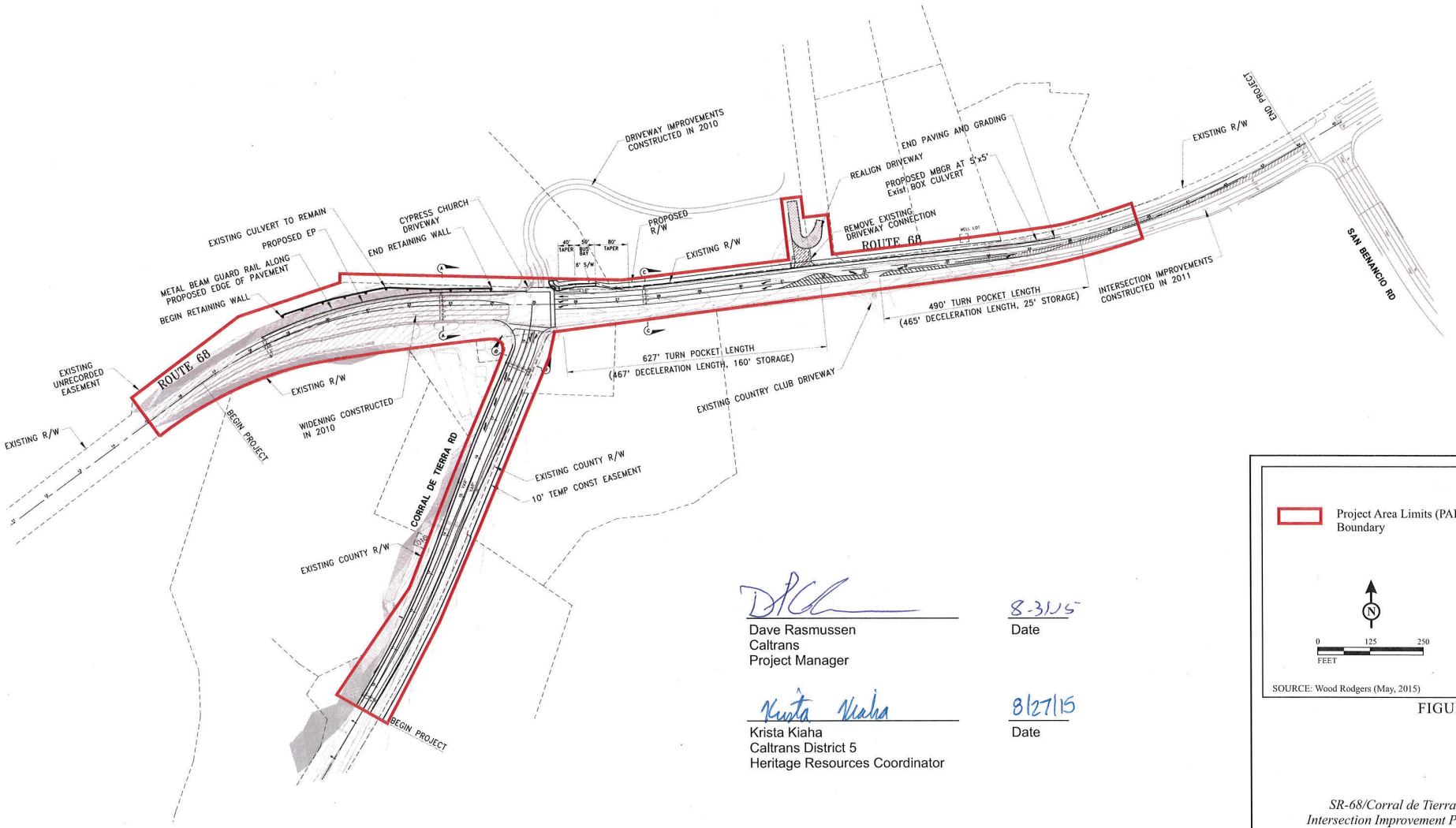
SR 68 / Corral de Tierra Road
Intersection Improvement Project

Project Location Map

MON-68, P.M. 12.8/13.2
05-OH8230



SOURCE: Wood Rodgers (May, 2015)

FIGURE 2

Dave Rasmussen
Caltrans
Project Manager

8-31-15
Date

Krista Kiaha
Caltrans District 5
Heritage Resources Coordinator

8/27/15
Date

SR-68/Corral de Tierra Road Intersection Improvement Project

Project Area Limits

MON-68, P.M. 12.8/13.2
05-OH8230

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PALEONTOLOGICAL IDENTIFICATION REPORT FOR THE STATE ROUTE 68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENT PROJECT

EXPENDITURE AUTHORIZATION 05-0H8230
CALTRANS DISTRICT 5
MONTEREY COUNTY, CALIFORNIA
Mon-68-PM 12.8/13.2

Prepared by
Andrew Grass, B.S.
Paleontologist
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Approved by
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(805) 549-3669

Reviewed by
Isaac Leyva, Caltrans District 5, Environmental Engineer (Paleontological Resources)
50 Higuera Street
San Luis Obispo, CA 93401
(805) 549-3487

LSA Project WRS0605

July 2013

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ATTACHMENTS

FIGURES

INTRODUCTION

The California Department of Transportation (Caltrans) and the County of Monterey Public Works Department (County) propose to improve the intersection of State Route 68 (SR 68) and Corral de Tierra Road, SR 68 (post mile 12.8 to 13.2), Expenditure Authorization #05-0H8230.
The SR 68/Corral de Tierra Road Intersection Improvement Project Area Limits (PAL) is 8.4 miles southwest of the City of Salinas, in northeastern Monterey County, California (Figures 1). Caltrans is the Lead Agency for the California Environmental Quality Act (CEQA), and the County is a Responsible Agency. Although current funding for the project is local, there is a potential for federal funds. If federal funds are provided, it will be necessary to comply with the National Environmental Policy Act (NEPA) in addition to CEQA. The Federal Highway Administration (FHWA) will be the Lead Agency for NEPA, with oversight provided by Caltrans.

The project objective is to improve the operation and safety of the signalized SR 68 intersection with Corral de Tierra Road. The 9.5-acre PAL is approximately 2,500 feet long, east-to-west along SR 68 and approximately 200 feet at its widest, and 1,000 feet long north-to-south along Corral de Tierra Road and approximately 150 feet at its widest (Figure 2).

The proposed roadway improvements would widen the approaches to the SR 68/Corral de Tierra Road intersection to accommodate the construction of a second left turn lane from westbound SR 68 to southbound Corral de Tierra Road by shifting the through lane to the north. In addition, a second southbound receiving lane would also be constructed on Corral de Tierra Road departing the intersection to receive traffic from the second left-turn lane. The proposed project would not change the existing eastbound SR 68 approach, northbound Corral de Tierra Road approach, or southbound Cypress Community Church driveway approach. The paved shoulders of Corral de Tierra Road within the PAL would be widened to 8 feet to better accommodate pedestrians and facilitate the future addition of Class II bicycle lanes to Corral de Tierra Road. The intersection traffic signal system would be modified to accommodate the widening on the north side of SR 68 to relocate the westbound through lane and the second west-to-southbound left-turn lane.

The proposed project would require an excavation depth of 3 feet for the widening of the roadway approaches. Shallow trenching, less than 3 feet deep, will be required to install conduits for the traffic signals. Retaining wall construction would excavate into the mechanically-stabilized embankment on the north side of SR-68 west of Corral de Tierra Road, but that embankment was constructed in 1993, so excavation for the retaining wall would not remove previously-undisturbed soils. The maximum vertical extent of the PAL is 10 feet deep, but only at the locations of the major traffic signal poles, which would be on cast-in-drilled-hole piles. No driven piles are required for this project.

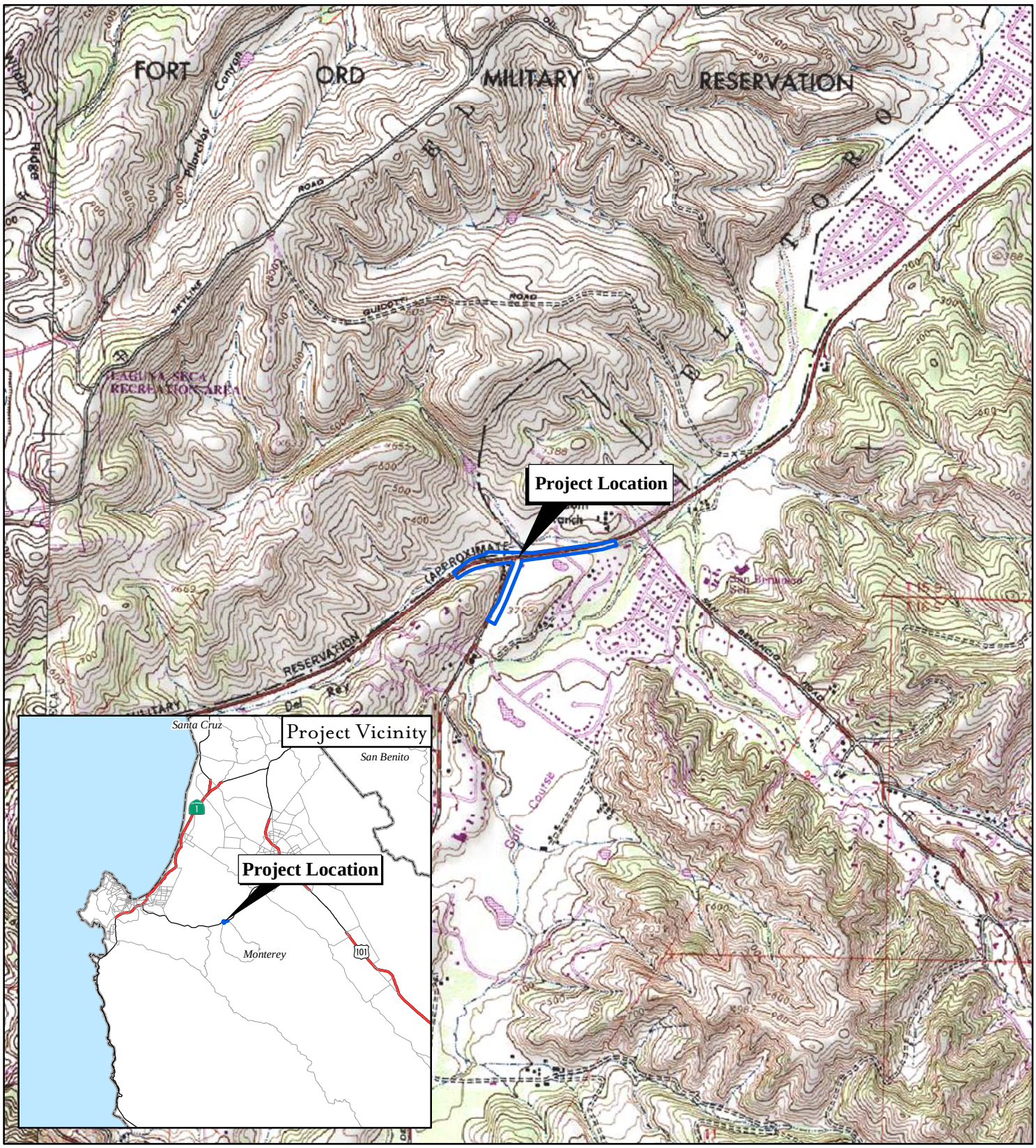

FIGURE 1

N

0 1,000 2,000 Feet

0 300 600 Meters

SR 68 / Corral de Tierra Road
Intersection Improvement Project
Project Location Map

SOURCE: USGS 7.5' QUAD, SPRECKELS, CA (1984); Wood Rodgers (2006)

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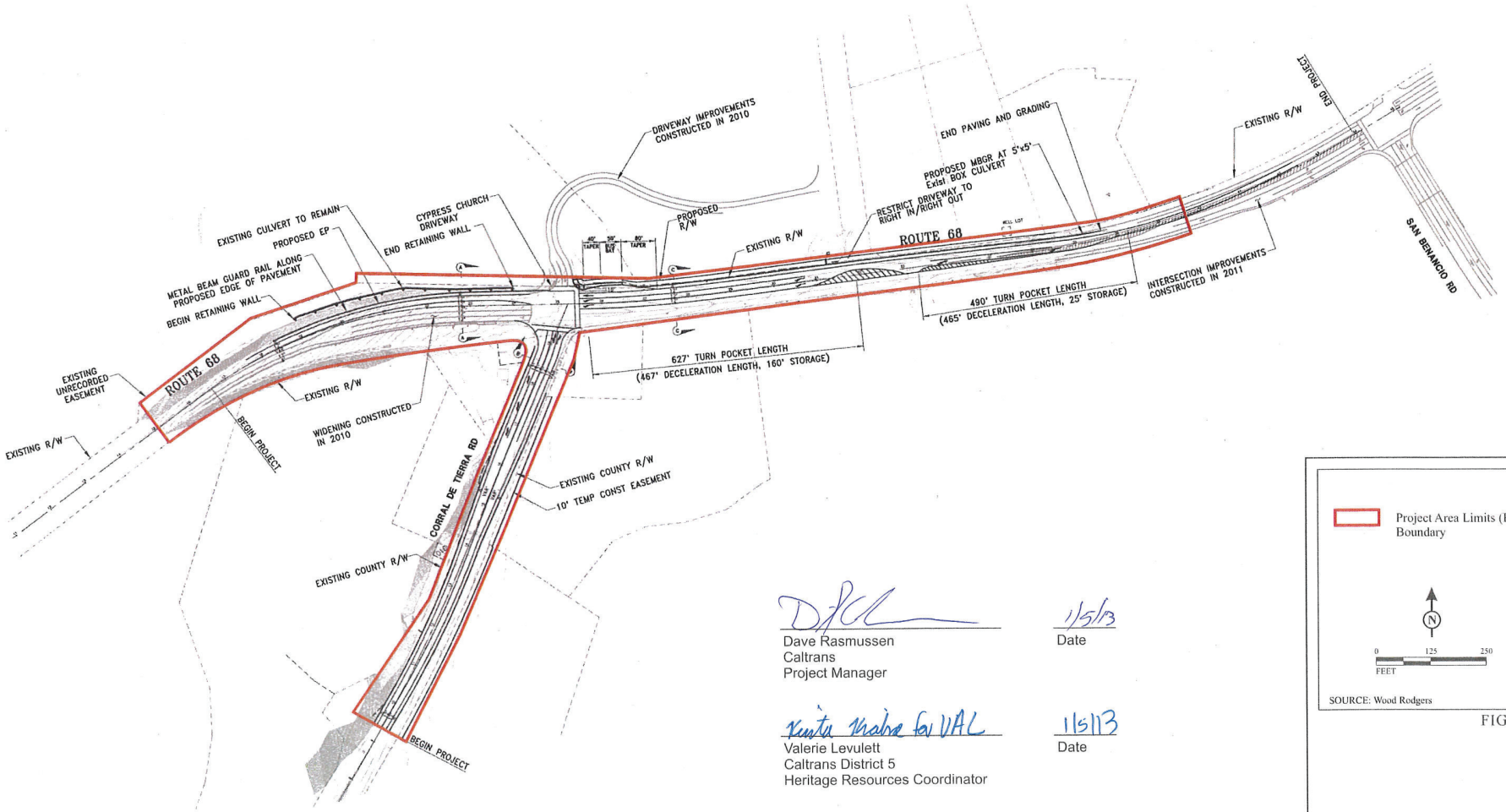

Project Area Limits (PAL) Boundary

N

0 125 250
FEET

SOURCE: Wood Rodgers

FIGURE 2

Dave Rasmussen
Caltrans
Project Manager

1/5/13
Date

Kristie Malone for VAL

Valerie Levulett
Caltrans District 5
Heritage Resources Coordinator

1/5/13
Date

SR-68/Corral de Tierra Road
Intersection Improvement Project

Project Area Limits

MON-68, P.M. 12.8/13.2
05-OH8230

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LSA Associates, Inc. (LSA), prepared this Paleontological Identification Report (PIR) to document paleontological resources identification efforts in the PAL to address requirements of the CEQA.

This study consisted of archival and background research which included a review of the relevant literature; fossil locality searches; and a field survey. LSA paleontologist Andrew Grass conducted a field survey of the PAL on March 30, 2007.

No recorded paleontological resources were identified within the PAL. Adjacent to the PAL south of SR 68 and west of Corral de Tierra Road there are outcrops of the paleontologically sensitive Paso Robles Formation. In addition a fossil locality search identified a fossil locality in the hills north of SR 68 in which a fossil sea lion was discovered in the Santa Margarita Sandstone.

It is Caltrans' policy to avoid paleontological resources whenever possible. Further investigations may be needed if the site(s) cannot be avoided by the project. If buried paleontological materials are encountered during construction, it is Caltrans' policy that work stop in that area until a qualified paleontologist can evaluate the nature and significance of the find. Additional survey will be required if the project changes to include areas not previously surveyed.

LEGISLATIVE AND REGULATORY CONTEXTS

Paleontology is the study of life from past geologic ages. Several laws regulate impacts to paleontological resources. Some of these regulations are

- *The Antiquities Act of 1906* requires permission for collecting 'objects of antiquity" on public lands.
- *The National Environmental Policy Act* requires federal agencies to use "all practicable means to preserve important historic, cultural and natural aspects of our national heritage when projects occur on federal land. The level of consideration may vary with the agency involved.
- *The California Environmental Quality Act* states that projects should not be approved if there are feasible alternatives that would avoid "significant effect" to the environment. This statement includes effects to sensitive paleontological resources.
- *Public Resource Code 5097.5* requires permission from the regulating agency to "excavate upon, remove, destroy, injure or deface…" paleontological remains on public land

HIGHWAY PROJECT LOCATION AND DESCRIPTION

Caltrans and the County propose to improve the intersection of SR 68 and Corral de Tierra Road, SR 68 post mile PM 12.8 to 13.2, Expenditure Authorization 05-0H8230. The project objective is to improve the operation and safety of the signalized SR 68 intersection with Corral de Tierra Road.

Build Alternative

The proposed project would widen the SR 68/Corral de Tierra intersection to the north of the existing alignment to accommodate the construction of a second (additional) left turn lane from westbound SR 68 onto southbound Corral de Tierra Road. Both of the left turn lanes (in the median of SR 68) would have sufficient length to accommodate deceleration from 53 miles per hour. An

additional receiving lane would also be constructed on southbound Corral de Tierra Road. The paved shoulders of Corral de Tierra Road within the project area would be widened to 8 feet to better accommodate pedestrians and facilitate the future addition of Class II bicycle lanes to Corral de Tierra Road.

About 520 feet of Steel Crib retaining wall (or equivalent) would be constructed west of Corral de Tierra Road along the north embankment of SR 68. The retaining wall would lie below the existing road grade and therefore would not be visible from SR 68. The retaining wall would minimize the footprint of the embankment needed to accommodate the widened road section.

A left turn lane would also be constructed from westbound SR 68 into the Corral de Tierra Country Club driveway. The Corral de Tierra County Club driveway is located east of Corral de Tierra Road on the south side of SR 68.

No provisions for left turns to or from the residential driveway on the north side of SR 68 would be made. As part of the proposed project, a painted median island would be created in front of the residential driveway restricting drivers to right-in, right-out access. Drivers needing to make left-in, left-out movements would need to make a U-turn at the traffic signal at either San Benancio Road or at Corral de Tierra Road. U-turn movements at these signalized intersections are both legal and safe.

The proposed project would require an excavation depth of 3 feet for the widening of the roadway approaches. Shallow trenching, less than 3 feet deep, will be required to install conduits for the traffic signals. Retaining wall construction would excavate into the mechanically-stabilized embankment on the north side of SR-68 west of Corral de Tierra Road, but that embankment was constructed in 1993, so excavation for the retaining wall would not remove previously-undisturbed soils. The maximum vertical extent of the PAL is 10 feet deep, but only at the locations of the major traffic signal poles, which will be on cast-in-drilled-hole piles. No driven piles are required for this project.

BACKGROUND RESEARCH

Background research was done to determine if paleontological resources (fossils) and geologic units known to contain fossils are within or adjacent to the PAL. This research, which consisted of fossil locality searches, a literature review, and correspondence with Caltrans paleontologist Wayne Mills was done to identify the geologic units, paleontological studies, fossil localities (i.e. a location at which paleontological resources have been documented), and the types of fossils that may be within or adjacent to the PAL.

Fossil Locality Searches. A fossil locality search conducted by the staff of the University of California Museum of Paleontology (UCMP), Berkeley, identified no fossil localities within or adjacent to the PAL. Fossil locality V 6627 (*Pithanoteria starri)*, a fossil of the earliest member yet known of the sea lion family (Otariidae), was identified approximately 360 feet north of SR 68 and approximately 780 feet west of SR 68's intersection with Corral de Tierra Road (Figure 3). V 6627 consists of an impression of a partial cranium (Repenning and Tedford 1977). There may be additional pieces of the animal in the vicinity of the initial discovery.

A fossil locality search conducted by the staff at the Natural History Museum of Los Angeles County identified no vertebrate fossil localities within or adjacent to the PAL. The search identified localities

to the south in San Luis Obispo County in the Paso Robles Formation, which also underlies parts of the PAL. See Attachment A for copies of the locality search correspondence.

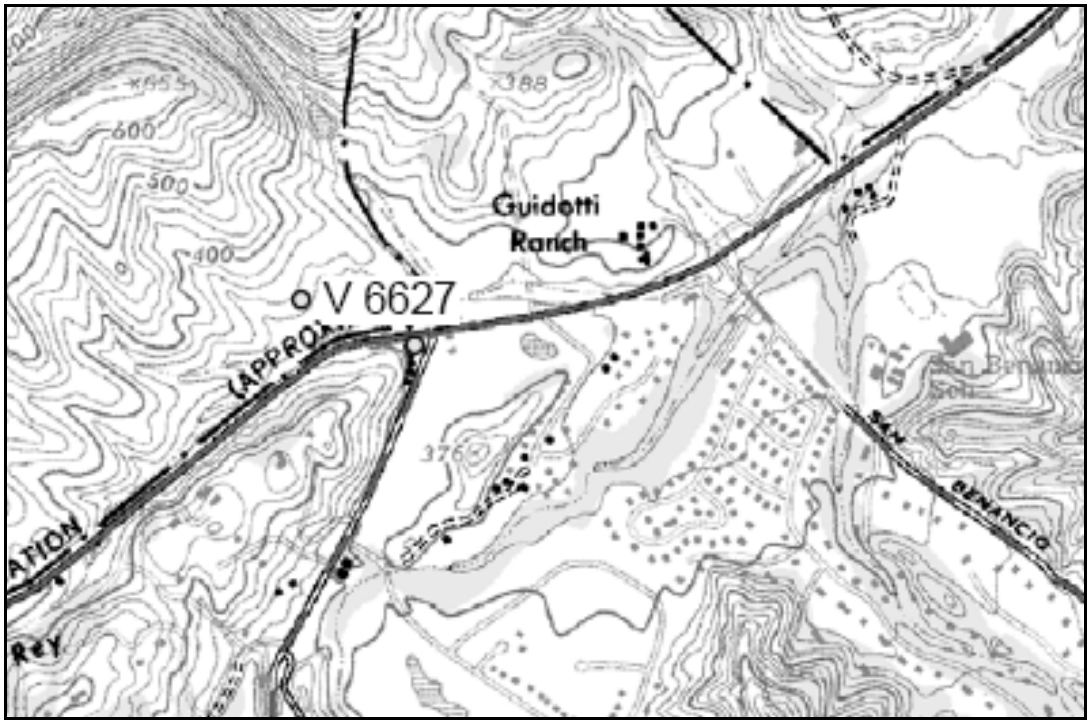


Figure 3: Fossil Locality V 6627

Literature Review. LSA reviewed paleontological and geological literature relevant to the PAL and its vicinity. This review identified the majority of the PAL as being underlain by Holocene-aged (present to 10,000 years old) flood deposits, which are not paleontologically sensitive. Small parts of the PAL are underlain by the Plio-Pleistocene aged (1.5-5.3 million years old) Paso Robles Formation, which is known to contain fossils. See References for a list of literature reviewed.

Information from the Paleontology Sensitivity Mapping Project (PSMP) was obtained through correspondence with Wayne Mills, Paleontologist, Caltrans District 5, San Luis Obispo. To assist with the identification of sensitive paleontological resources, Caltrans and California State University Fresno published Paleontology Sensitivity Mapping Project (PSMP) in June 2000. This work studied fossil occurrences throughout the Central Region, and assigned potentials for highways in the Central Region to contain sensitive paleontological resources. Since PSMP is necessarily general in nature, it is a good tool for initial studies, but often smaller scale geologic maps need to be consulted to accurately determine if further work needs to be done to preserve sensitive resources on individual projects. Mr. Mills stated that the PSMP considered the Paso Robles Formation in the PAL to be paleontologically sensitive. See Attachment B for copies of the correspondence with Mr. Mills.

PALEONTOLOGICAL SETTING

Soils. Soils in the PAL west of the SR 68/Corral de Tierra Road intersection are Santa Ynez fine sandy loam, which are a deep (>5 feet), well-drained, and well developed soil (A-Bt-C profile) formed in alluvium on terraces and foot slopes (Cook 1978:72). Soils in the eastern portion of the

PAL are Gorgonio sandy loam, which are deep (>5 feet), well-drained, weak to moderately developed soils (A-C profile), and are typically stratified from several periods of deposition (Cook 1978:34).

Holocene Flood Deposits. Younger flood deposits (Qyf) occur along the north side of SR 68, mainly west of the intersection with Corral de Tierra Road. They consist of unconsolidated, relatively fine grained heterogeneous sand and silt with thin, discontinuous layers of clay, and are generally less than 18 feet thick. Older flood deposits (Qof) are present along the both sides of SR 68 east of the intersection with Corral de Tierra Road, and on the east side of Corral de Tierra Road. These deposits consist of unconsolidated, relatively fine grained heterogeneous sand and silt with frequent thin layers of clay. They are generally less than 54 feet thick (Clark et al. 2000). These deposits are not sensitive for significant paleontological resources.

Paso Robles Formation. The Paso Robles Formation (QTc) is made up of Plio-Pleistocene aged (1.5 to 5.3 million years old) sediments composed mainly of conglomerate and sandstone (Burch and Durham 1970). The Paso Robles Formation is estimated to be 1,000 feet or more thick and conformably overlies the upper Miocene aged (5.3 to 11.2 million years old) marine Santa Margarita Sandstone Formation (Burch and Durham 1970), and locally unconformably overlies the middle Miocene aged (11.2 to 16.6 million years old) marine Monterey Shale (Addicott and Galehouse 1973; Burch and Durham 1970). Although the Paso Robles Formation is predominantly non-marine (Burch and Durham 1970), it is known to locally contain abundant invertebrate marine fossils, as well as an isolated incident of a pinniped (seals and sea lions) 8 miles south of Santa Margarita (Addicott and Galehouse 1973).

Santa Margarita Formation. The Santa Margarita Formation (Tsm) is an upper Miocene aged (5.3 to 11.2 million years old) thick-bedded calcareous sandstone that outcrops in the hills approximately 1,500 feet north of the PAL. This unit also contains areas of mudstone and conglomerate. It varies from 100-500 feet thick in different areas, and conformably overlies the middle Miocene aged Monterey Shale. Large amounts of marine invertebrate fossils have been recovered from the Santa Margarita Formation, including a new species of bivalve (*Lucinisca? Brabbi* n. sp.) (Burch and Durham 1970; Powell 2001).

FIELD SURVEY

LSA paleontologist Andrew Grass conducted a field survey of the PAL on March 30, 2007.

Field Methods. The entire PAL and adjacent lands was surveyed on foot. Due to the thickness of the overlying Holocene flood deposits and alluvium the paleontologically sensitive Paso Robles Formation was only directly observable in a small area.

An outcrop of the Paso Robles Formation was identified on the south side of SR 68, west of the intersection at the very end, and extending beyond the PAL (Figure 4). The outcrop is approximately 20-30 feet up on the hillside directly south of the western end of the PAL. The outcrop was heavily weathered, poorly consolidated and showed signs of animal habitation (burrows). A review of the outcrop identified no fossils, although due to the terrain the entire outcrop was not accessible.

The survey was documented in field notes, maps, and photographs.

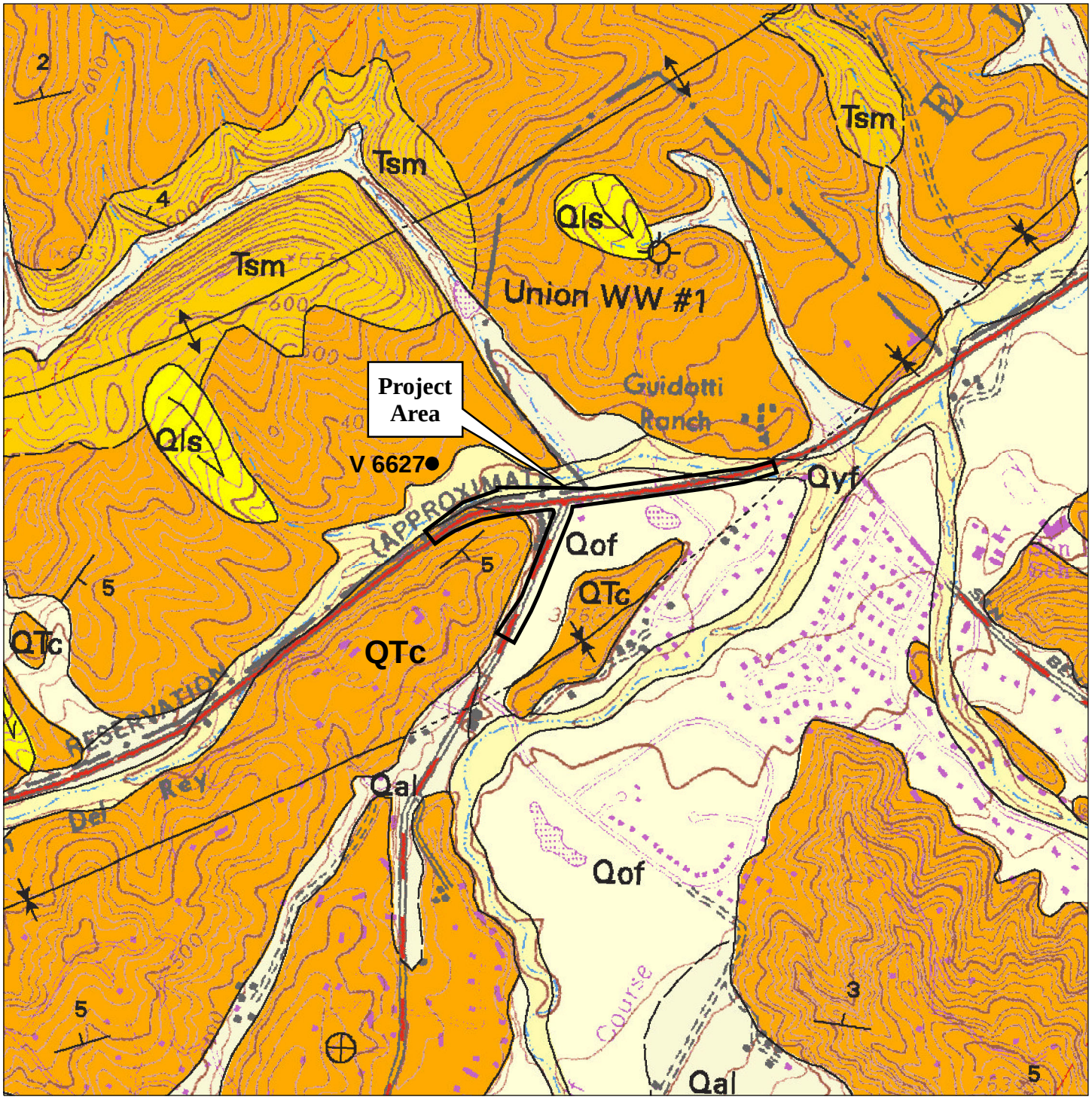
Figure 4: Paso Robles outcrop along south side of SR68

STUDY RESULTS

The PAL is underlain by Holocene-aged flood plain deposits, and the hills directly adjacent are composed of Pliocene/Pleistocene aged Paso Robles Formation and the upper Miocene aged Santa Margarita Sandstone Formation. The PSMP lists the Plio-Pleistocene aged Paso Robles Formation as having a high potential for significant paleontological resources. The Santa Margarita Sandstone is not listed as paleontologically sensitive in the PAL. There is, however, a Santa Margarita Sandstone locality relatively close to the highway, and, for this project, the Santa Margarita Sandstone should be considered sensitive.

The majority of the PAL does not contain any outcrops of paleontologically sensitive formations and is situated on Quaternary flood plain deposits which are not sensitive for significant paleontological resources. Outcrops of the paleontologically sensitive Paso Robles Formation intersect the PAL at small areas on the west side of Corral de Tierra Road, and both sides of SR 68 in the western end of the PAL (Figure 5).

In consideration of the above, the western portion of the project's PAL is considered sensitive for paleontological resources, and depending on excavation depth, the rest of the PAL is possibly sensitive.



Qal	Alluvial deposits, undivided (Holocene)
Qyf	Younger flood-plain deposits (Holocene)
Qls	Landslide deposits (Quaternary)
Qof	Older flood-plain deposits (Holocene)
Qtc	Continental deposits, undivided (Pleistocene)
Tsm	Santa Margarita Sandstone (Miocene)
V 6627	Fossil Locality (*Pithonotaria storri* UCMP 74813)

FIGURE 5

State Route 68/Corral de Tierra Intersection Improvement Project Monterey County, California

Project Area Geology

N

0 250 500 1,000
FEET

USGS *Geologic Map of the Spreckels 7.5' Quadrangle, Monterey California*. 2000

I:\WRS0605\GIS\Maps\Figure_paleo.mxd (6/07/2007)

PROJECT IMPACTS AND RECOMMENDATIONS

The majority of the PAL contains Holocene aged flood deposits which are not paleontologically sensitive (Figure 5). The scope of the project indicates that work will only be done on the north side of SR 68 and the east side of Corral de Tierra Road. If project activities only involve work on and near the surface, significant paleontological resources are not likely to be affected. If project activities are to include deeper excavation past the flood deposits and into the underlying Paso Robles Formation or Santa Margarita Formation, (greater than 5 foot deep excavations), there is a possibility that significant paleontological resources will be affected, and these excavations shall be monitored by a qualified paleontologist to identify, evaluate, and provide recommendations for the treatment of any sensitive fossil resources that may be uncovered by the project.

Since sensitive paleontological resources (vertebrate or plant fossils) may occur in low sensitivity formations, the following statement should be included in the Resident Engineer's Instructions.

"*If any sensitive paleontological resources (vertebrate or plant fossils) are discovered during construction, it is required that construction be halted in the immediate vicinity of the discovery (33-foot radius), until the District Archaeologist or District Paleontology Coordinator have the opportunity to review the discovery. Contact names and telephone numbers are:*

District Paleontology Coordinators, Wayne Mills (805) 549-3777 and
Isaac Leyva (805) 549-3487

Remediation of any sensitive resources encountered before or during construction can include removal, preparation and curation of any significant remains."

REFERENCES

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1973 Pliocene Marine Fossils in the Paso Robles Formation, California. *Journal of Research of the U.S. Geological Survey*, vol. 1, No. 5, pg. 509-514.

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Cook, Terry D.
1978 *Soil Survey of Monterey County, California.* U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the U.S. Forest Service and the University of California Agricultural Experiment Station.

Hart, Earl W.
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1977 *Otarioid Seals of the Neogene*. U.S. Geological Survey Professional Paper 992, pp. 58.

Attachment A

Fossil Locality Search Correspondence

Andy Grass

From: pholroyd@berkeley.edu
Sent: Thursday, March 01, 2007 10:04 AM
To: Andy Grass
Cc: mark@berkeley.edu
Subject: Re: Fossil locality search Corral De Tierra Road LSA project WRS0605

Attachments: ATM_ 1-Antioch South Pt1; CA.pdf

ATM_ 1-Antioch South Pt1; CA.p...

Dear Mr. Grass,

Our records indicate that there is a vertebrate fossil locality in your project area, and I have attached a map indicating it's location. It's a marine mammal from the Santa Margarita Formation, and you can get additional information on the locality and specimen from our online database at ucmpdb.berkeley.edu.

> 2/23/2007
>
> LSA Associates, Inc.
> 157 Park Place
> Point Richmond, Ca 94801
> 510-236-6810
>
> Dear Dr. Holroyd,
>
> I've got another locality search for you. This time centered around
> coordinates 36º 34' 42" N, 121º 43' 36" W, at the intersection of state
> route 68 and Corral De Tierra Road in Monterey County, east of Monterey.
> The billing information can again be sent to George McKale at the address
> above.
> I've got two more for you, but I'll send them in separate emails so you
> can keep records of them easier.
>
>
>
>
> <<Figure2_fossil.pdf>>
>
>

--
Pat Holroyd, Ph.D.
Museum of Paleontology
University of California
Berkeley, CA 94720
pholroyd@berkeley.edu

LSA

LSA ASSOCIATES, INC.
1500 IOWA AVENUE, SUITE 200
RIVERSIDE, CALIFORNIA 92507

951.781.9310 TEL
951.781.4277 FAX

BERKELEY
CARLSBAD
COLMA
FORT COLLINS
IRVINE
PALM SPRINGS
POINT RICHMOND
ROCKLIN
SAN LUIS OBISPO

April 16, 2007

Dr. Sam McLeod
Vertebrate Paleontology
Natural History Museum of Los Angeles County
900 Exposition Boulevard
Los Angeles, California 90007

Subject: Request for Paleontological Resources Records Search for the Corral De Tierra Intersection Project, Fort Ord Area, Monterey County, California (LSA Project No. WRS0605)

Dear Dr. McLeod:

LSA Associates, Inc. (LSA) would like to obtain a paleontological resource records search for sediments around the Corral De Tierra Intersection project at State Route 68, near Fort Ord, Monterey County, California. The locality is shown on the *Spreckels* 7.5-minute U.S. Geological Survey (USGS) quadrangle map (attached). The project is located on older Holocene sediments (Qof) that cover Pleistocene deposits (Qtc) and the Miocene Santa Margareta Sandstone (Tsm).

LSA requests that you search for paleontological resource locality records within ten miles of this project. If localities are found, please plot on a map and forward to my office (fax 951-781-4277). LSA would appreciate the results of the search by May 3, 2007. Please reference LSA project number WRS0605 on your invoice.

Sincerely,

LSA ASSOCIATES, INC.

Robert E. Reynolds
Paleontology, Senior Cultural Resource Manager

Attachment: *Spreckels* Quadrangle Map
Geologic map

4/16/2007 (R:\WRS0605\paleo\Corral De Tierra Records Search.doc)

Natural History
of Los Angeles County
900 Exposition Boulevard • Los Angeles, CA 90007

Vertebrate Paleontology Section
Telephone: (213) 763-3325
FAX: (213) 746-7431
e-mail: smcleod@nhm.org

20 April 2007

LSA Associates, Inc.
1500 Iowa Avenue, Suite 200
Riverside, California 92507

Attn: Robert E. Reynolds, Paleontology

re: Paleontological Resources Records Check for the proposed Corral De Tierra Intersection Project, Fort Ord Area, Monterey County, LSA Project No. WRS0605, project area

Dear Robert:

I have conducted a careful check of our paleontology collection records for the locality and specimen data for the proposed Corral De Tierra Intersection Project, Fort Ord Area, Monterey County, LSA Project No. WRS0605, project area as outlined on the section of the Spreckels USGS topographic quadrangle map that you sent to me on 16 April 2007. We do not have any vertebrate fossil localities directly within the proposed project area, but we do have vertebrate fossil localities, although at some distance, from the same sedimentary deposits that occur in the proposed project area.

Although there may be some younger Quaternary gravels in the Canyon Del Rey drainage that runs parallel to the Monterey Salinas Highway (Highway 68), deposits that are unlikely to contain significant vertebrate fossils, otherwise the entire proposed project area has exposures of the Plio-Pleistocene Paso Robles Formation. We have a few fossil vertebrate localities from the Paso Robles Formation including LACM 4964, 5659, 5799, and 5840, all situated far to the south of the proposed project area in San Luis Obispo County east and southeast of Templeton. These localities have produced a composite fossil fauna of terrestrial vertebrates including giant tortoise, *Geochelone*, extinct elephantoid, Gomphotheriidae, mastodon, *Mammut*, horse, Equidae, camel, *Camelops hesternus*, and bison, *Bison latifrons*.

Surface grading or shallow excavations in the younger Quaternary gravels possibly exposed in the lowest lying portions of the proposed project area probably will not encounter significant fossil vertebrate remains. Deeper excavations that extend down into older Quaternary deposits, and any excavations in the Paso Robles Formation exposed elsewhere in the proposed project area, however, may well uncover significant vertebrate fossils. Any substantial excavations in the proposed project area, therefore, should be monitored closely to quickly and

professionally recover any fossil remains discovered while not impeding development. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

Attachment B

California Department of Transportation Correspondence

Andy Grass

From: Wayne Mills [wayne_mills@dot.ca.gov]
Sent: Wednesday, March 07, 2007 9:23 AM
To: Andy Grass
Subject: RE: SR 68/Corral de Tierra project, paleo issues

Sorry, I neglected to answer your questions.

Yes, PSMP mentions the Santa Margarita formation, but only between PM 10.0 /11.6, and 15.5/16.5
where it is within 1 mile of the highway (although your map shows it a lot closer than 1 mile...).
I think the Qtc is the equivalent of the Paso Robles Formation, at least in age and origin
(Plio-Pleistocene nonmarine).

Wayne W. Mills
Caltrans District 5
Environmental Engineering
(805) 549-3193, (8) 629-3193
Wayne_mills@dot.ca.gov

-----Original Message-----
From: "Andy Grass" <Andy.Grass@lsa-assoc.com>
To: "Wayne Mills" <wayne_mills@dot.ca.gov>
Sent: 03/06/2007 04:40PM
Subject: RE: SR 68/Corral de Tierra project, paleo issues

I actually have a much finer scale map of the Spreckels quadrangle. You can see it at http://geopubs.wr.usgs.gov/map-mf/mf2349/skmap.pdf if you'd like. According to that map the intersection is mainly in Qyf and Qof, flood-plain deposits. Very near the road there is Qtc, continental deposits, and Tsm, Santa Margarita Sandstone (which is what the UCMP locality search showed had a fossil locality in). The Santa Margarita is my main concern, but until I actually get out there and look around I won't know if it intersects the road in anyway. Are any of these formations mentioned in the PSMP?

As for the LACMNH, I think I've heard of using their database here before, but I'm not sure. It may be something that has to be worked into the budget of the project. I'll bring it up with my superiors.

Thanks for your help!

-----Original Message-----
From: Wayne Mills [mailto:wayne_mills@dot.ca.gov]
Sent: Tuesday, March 06, 2007 4:23PM
To: Andy Grass
Subject: Re: SR 68/Corral de Tierra project, paleo issues

Hi Andy:

Permanent Impacts continue after the conclusion of construction.
Short-term impacts only occur during construction,
Therefore, if any impacts to sensitive paleo resources occur, they are both short and long-term, by my logic. Corral De Tierra is Mon-68-PM 12.95. PSMP is a general guide based on
The appropriate sheet from the 1:250,000 scale Geologic Map of California (Santa Cruz Sheet, in the case of
Corral De Tierra). If you can find larger scale maps, they would be much more useful for evaluating individual projects
like this one. PSMP defines the following formations and sensitivities in the project

area.

PM 4.0/22.0 Quaternary alluvium low potential
PM 7.9/17.9 Paso Robles Formation (Plio-Pleistocene non-marine) high potential
PM 11.7/17.1 Aromas Sand, Dos Picachos Gravels (Pleistocene) low potential

These are supposedly the formations that occur within 1-mile of the highway. PSMP also considers Qal to be sensitive if it is within a radius of one mile of a known find.
The Geologic Map of California- Santa Cruz Sheet suggests that the intersection is mostly in Qal.

I would hope to see a larger scale geologic map in the report, showing the proposed improvements relative to the geology.

If you have any further questions, I will do what I can to help. BTW, do you have a way of checking the vertebrate database for LACMNH? That would be the next place I would look.

Wayne W. Mills
Caltrans District 5
Environmental Engineering
(805) 549-3193, (8) 629-3193
Wayne_mills@dot.ca.gov

-----Original Message-----
From: "Andy Grass" <Andy.Grass@lsa-assoc.com>
To: <wayne_mills@dot.ca.gov>
Sent: 03/06/2007 03:34PM
Subject: SR 68/Corral de Tierra project, paleo issues

Hello. My name is Andy Grass and I'm a paleontologist working with LSA Assoc. on the Paleontological Identification Report for the SR 68/Corral de Tierra Road intersection project. I was given your name as a contact with Caltrans, and I had a couple of questions. I was given an example of a report from Mill Creek to work from, and I was wondering what exactly is meant by "permanent" and "short term" impacts, what exactly the difference is between them?

Also, do I go through you to request information from the Paleontology Sensitivity Mapping Project? A locality search with the University of California Museum of Paleontology showed a fossil locality very near the project site, so if this mapping project has more information that would be great.

I apologize if you're not the correct person to address these questions too. If this is the case could you please forward it to the correct party?

Thankyou.

PALEONTOLOGICAL IDENTIFICATION REPORT

ADDENDUM

STATE ROUTE 68/CORRAL DE TIERRA INTERSECTION IMPROVEMENT PROJECT

Monterey County, California

05-Mon-68 PM 12.8/13.2

EA 05-0H8230

JUNE 2015

PURPOSE OF THE PALEONTOLOGICAL IDENTIFICATION REPORT ADDENDUM

After the circulation of the Draft Initial Study with Proposed Mitigated Negative Declaration (Draft IS/MND) and in response to public comments, the County of Monterey and the California Department of Transportation (Caltrans) adopted project design modifications. The project design modifications included land outside of the previously analyzed project study area as identified in the Paleontological Identification Report, July 2013. This Addendum was prepared to address the expanded project study area. The expanded project study area, Figure 1, is provided at the end of this Addendum. The expanded Project Area Limits (PAL), Figure 2, is also provided at the end of this Addendum.

CHANGE IN PROJECT DESIGN

The project design modifications are shown in yellow in the Build Alternative Design Plan provided at the end of this Addendum and described in detail below.

CHANGE IN PROJECT DESCRIPTION

The project design modifications included the following components:

- The shoulder widening of Corral de Tierra Road in the southbound direction would be reduced from 8 feet to 6 feet.
- The driveway that serves the five homes on the north side of State Route 68 would be realigned so that access to these homes would be shared with the Cypress Community Church's driveway.
- A 110 foot-long merge lane on State Route 68 for vehicles turning left out of The Villas driveway would be provided.
- The existing gutter on Corral de Tierra Road would be replaced with a flatter gutter.

The design modifications resulted in the following changes to the Paleontological Identification Report. Deletions are shown with strikethrough ~~(strikethrough)~~ and additions are shown with underline (underline).

Paragraph two, sentence two in the Introduction section has been revised as follows:

> *The 9.~~5~~76-acre PAL is approximately 2,500 feet long, east-to-west along SR 68 and approximately 200 feet at its widest, and 1,000 feet long north-to-south along Corral de Tierra Road and approximately 150 feet at its widest (Figure 2).*

Paragraph three, sentence four in the Introduction section has been revised as follows:

> ~~*The paved shoulders of Corral de Tierra Road within the PAL would be widened to 8 feet to better accommodate pedestrians and facilitate the future addition of Class II bicycle lanes to Corral de Tierra Road.*~~ *The shoulder of Corral de Tierra Road in the northbound direction would be widened to at least 8 feet within the project area (except at one point where existing curb, sidewalk and utilities preclude widening). The shoulder of Corral de Tierra Road in the southbound direction would be widened to at least 6 feet within the project area.*

Paragraph one, sentence three in the Build Alternative description under the Highway Project Location and Description section has been revised as follows:

> ~~*The paved shoulders of Corral de Tierra Road within the PAL would be widened to 8 feet to better accommodate pedestrians and facilitate the future addition of Class II bicycle lanes to Corral de Tierra Road.*~~ *The shoulder of Corral de Tierra Road in the northbound direction would be widened to at least 8 feet within the project area (except at one point where existing curb, sidewalk and utilities preclude widening). The shoulder of Corral de Tierra Road in the southbound direction would be widened to at least 6 feet within the project area.*

Paragraph two, sentence one in the Build Alternative description under the Highway Project Location and Description section has been revised as follows:

About 520 feet of ~~S~~steel bin ~~Crib~~ retaining wall (or equivalent) would be constructed west of Corral de Tierra Road along the north embankment of SR 68.

Paragraph three in the Build Alternative description under the Highway Project Location and Description section has been revised as follows:

~~A left turn lane would also be constructed from westbound SR 68 into the Corral de Tierra Country Club driveway. The Corral de Tierra Country Club driveway is located east of Corral de Tierra Road on the south side of SR 68.~~

A left-turn lane to the driveway of The Villas on the south side of SR-68 would be constructed. A 110-foot-long merge lane would be provided for vehicles that turn left onto SR-68 from The Villas driveway heading westbound on SR-68.

Paragraph four in the Build Alternative description under the Highway Project Location and Description section has been revised as follows:

~~No provision for left turns to or from the residential driveway on the north side of SR 68 would be made. As part of the proposed project, a painted median island would be created in front of the residential driveway restricting drivers to right in, right-out access. Drivers needing to make left-in, left-out movements would need to make a U-turn at the traffic signal at either San Benancio Road or at Corral de Tierra Road. U-turn movements at these signalized intersections are both legal and safe.~~ On the north side of SR-68 the there is an existing private driveway that serves five homes. This driveway would be removed as part of the proposed project. The private road that leads to the homes would be realigned to connect to the driveway that currently serves the Cypress Community Church. With implementation of the proposed project, vehicles would share a portion of the church's driveway and the traffic signal at Corral de Tierra Road/SR-68 to access the homes.

PALEONTOLOGICAL SETTING

The expanded PAL is located adjacent to the previously identified PAL and therefore shares the same paleontological setting. The proposed project's existing paleontological setting and regulatory setting as described in the Paleontological Identification Report remains the same.

FIELD SURVEY RESULTS

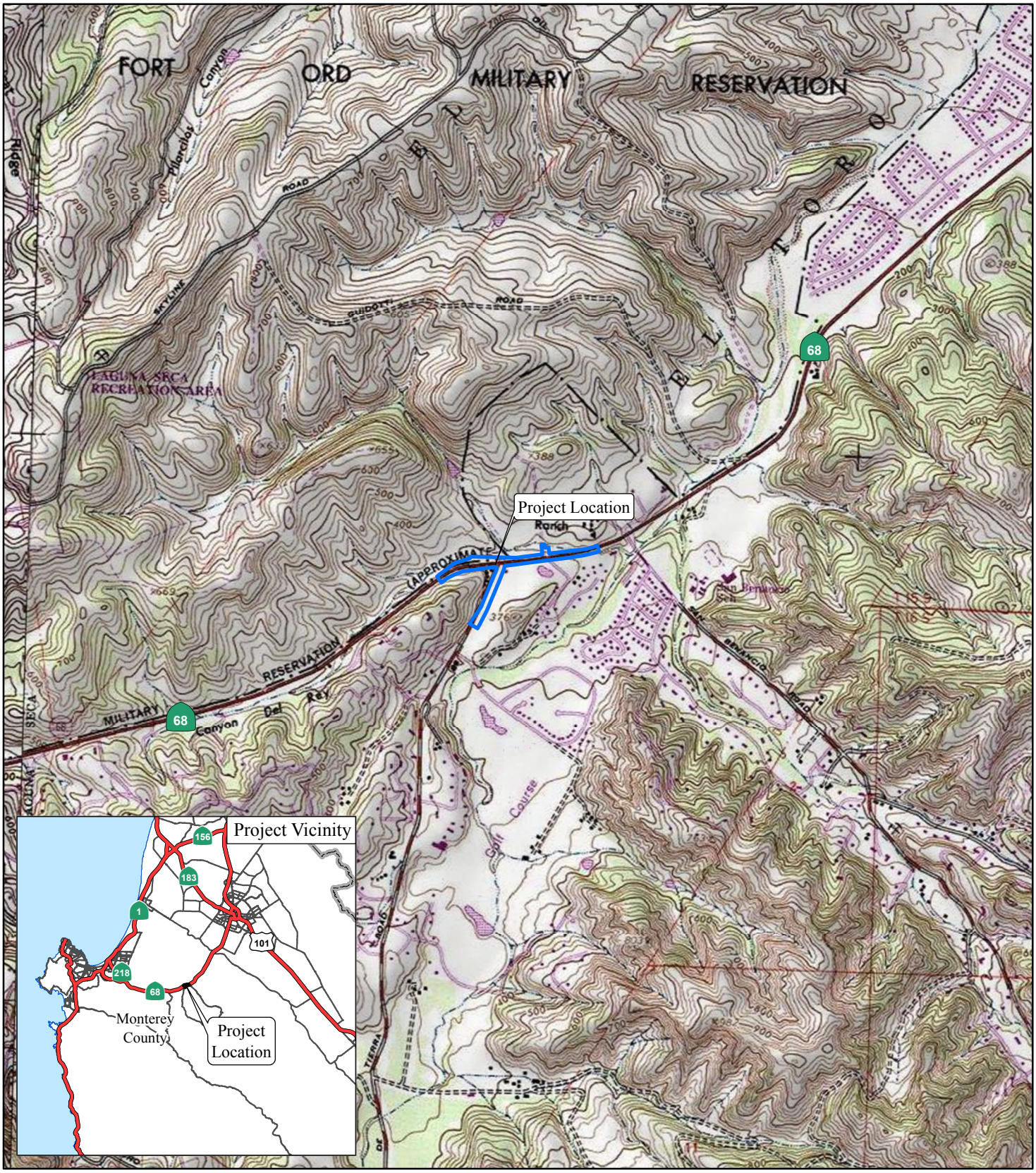
The project design modifications included land outside of the previously analyzed PAL Boundary as identified in the Paleontological Identification Report, July 2013. As a result, approximately 600 square feet of project area was added to the PAL (refer to revised Figure 2). On May 14, 2015, a survey was conducted of the additional PAL by LSA archaeologist and architectural historian Neal Kaptain, M.A., RPA, whose background includes paleontology coursework at UCLA as well as paleontological field survey. The survey was done in 20-foot-wide parallel transects. Ground visibility ranged from 80% to 20% in grasses. In areas where ground visibility was limited, multiple trowel scrapes were done and rodent back dirt was examined for evidence of cultural resources. In addition, the side walls of a five-foot-deep utility trench were examined. No rock outcrops are or adjacent to the additional PAL. Soils within the additional PAL consist of sandy loam. No paleontological resources were identified.

PROJECT IMPACTS

As stated in the Paleontological Identification Report, the majority of the PAL contains Holocene aged flood deposits which are not paleontologically sensitive. Construction-related activities would only be conducted on the north side of SR 68 and the east side of Corral de Tierra Road. Project-related activities would only involve work on and near the surface; therefore, significant paleontological resources are not likely to be affected. Implementation of the project design modifications would not alter the conclusions presented in the Paleontological Identification Report.

RECOMMENDATIONS

The recommendations identified in the Paleontological Identification Report, July 2013, remain applicable to the expanded PAL and no additional recommendations or mitigation measures are required.



LEGEND

Project Location

FIGURE 1

N

0 1000 2000

FEET

SOURCE: USGS 7.5' Quad - Spreckels (1984), CA

I:\WRS0605\GIS\ProjectLocation_USGS.mxd (6/4/2015)

SR 68 / Corral de Tierra Road
Intersection Improvement Project

Project Location Map

MON-68, P.M. 12.8/13.2
05-OH8230

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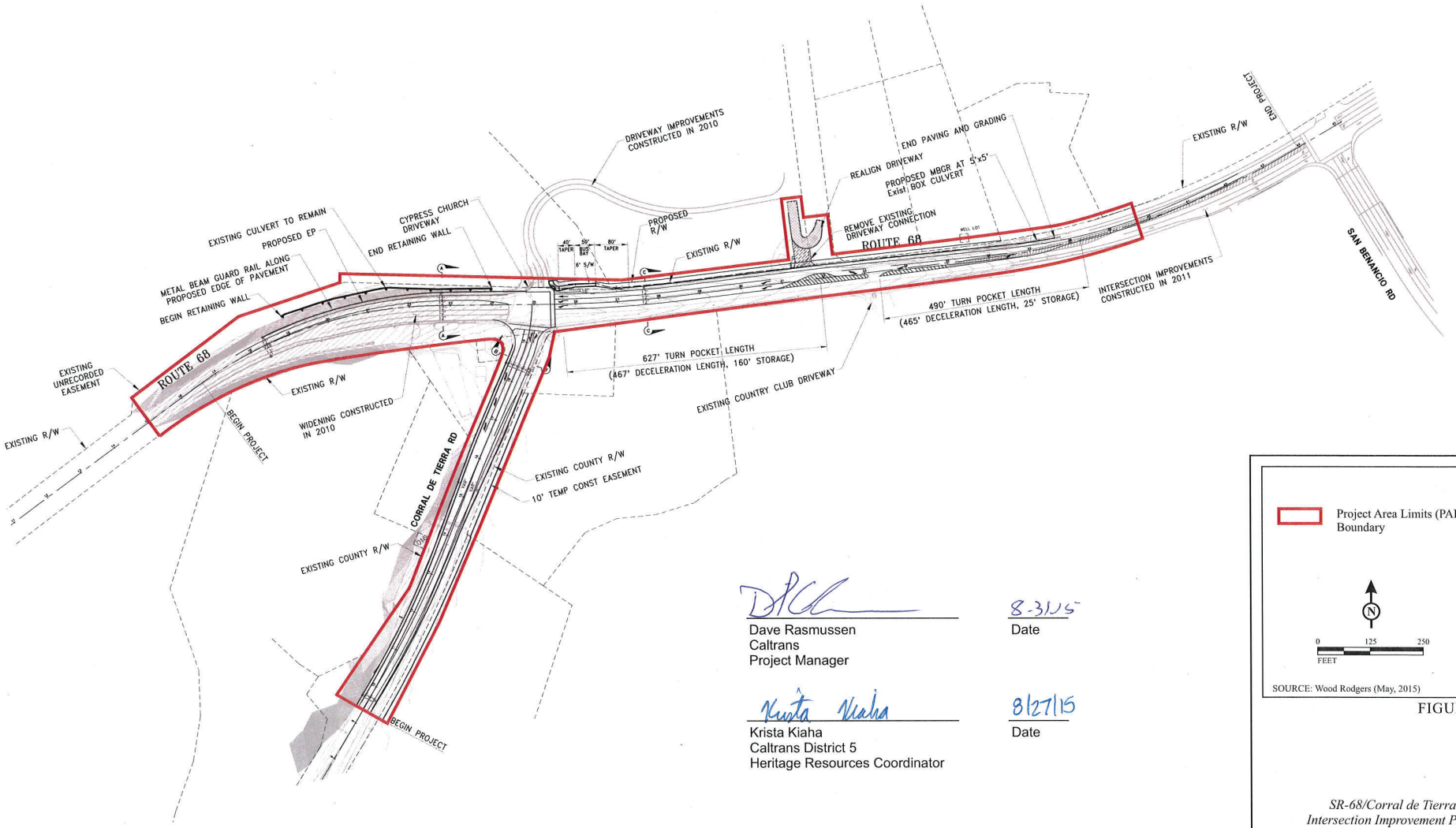

SOURCE: Wood Rodgers (May, 2015)

FIGURE 2

Dave Rasmussen
Caltrans
Project Manager

8-31-15
Date

Krista Kiaha
Caltrans District 5
Heritage Resources Coordinator

8/27/15
Date

SR-68/Corral de Tierra Road Intersection Improvement Project

Project Area Limits

MON-68, P.M. 12.8/13.2
05-OH8230

I:\WRS0605\G\Paleo Cultural\PAL Boundary.cdr (8/27/15)

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ROUTE 68/CORRAL DE TIERRA ROAD INTERSECTION IMPROVEMENTS

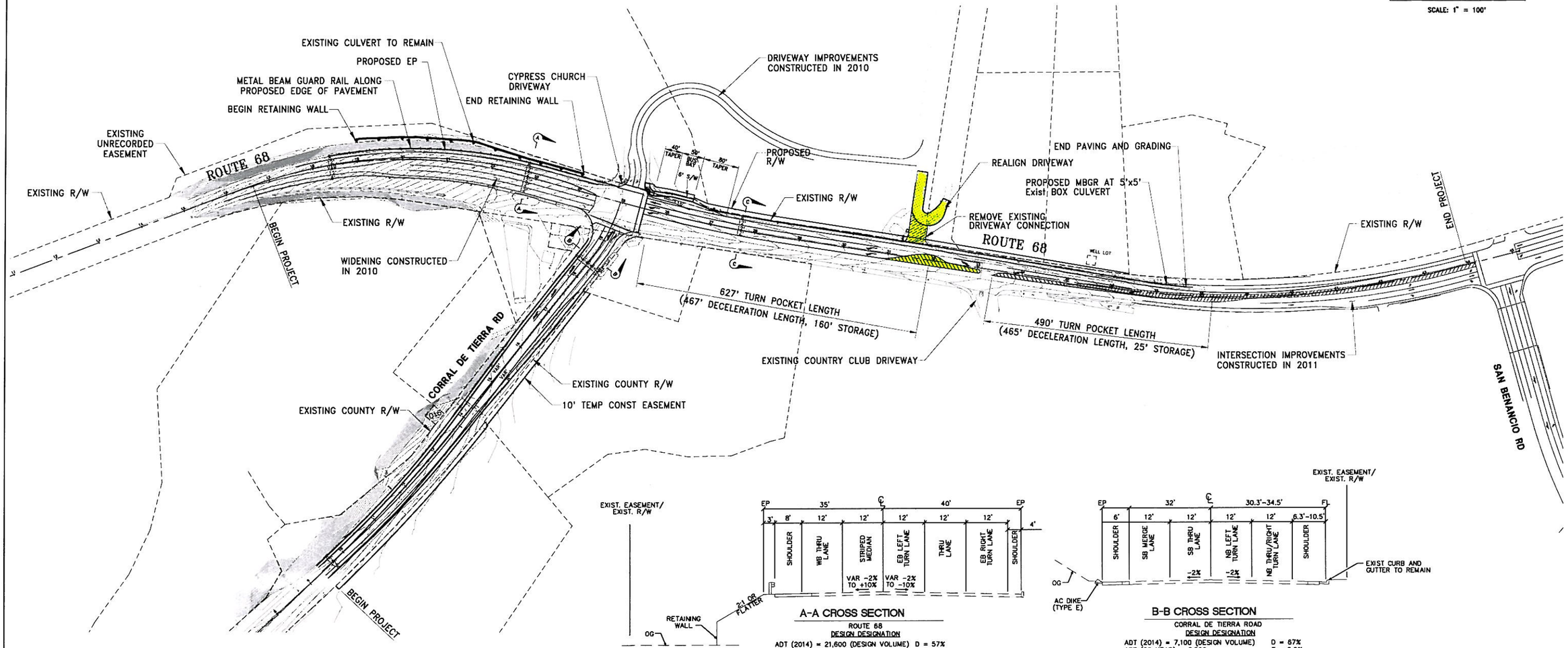
BUILD ALTERNATIVE

COUNTY OF MONTEREY CALIFORNIA

MAY, 2015

100' 50' 0 100' 200'

SCALE: 1" = 100'



A-A CROSS SECTION

ROUTE 68

DESIGN DESIGNATION

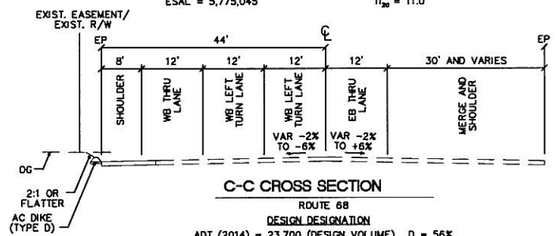
ADT (2014) = 21,600 (DESIGN VOLUME) D = 57%
ADT (20 YEAR) = 38,500 T = 4.0%
DHV = 2,484 V = 55 MPH
ESAL = 5,775,045 TI_{20} = 11.0

B-B CROSS SECTION

CORRAL DE TIERRA ROAD

DESIGN DESIGNATION

ADT (2014) = 7,100 (DESIGN VOLUME) D = 67%
ADT (20 YEAR) = 8,900 T = 2.0%
DHV = 619 V = 55 MPH
ESAL = 735,017 TI_{20} = 8.5



C-C CROSS SECTION

ROUTE 68

DESIGN DESIGNATION

ADT (2014) = 23,700 (DESIGN VOLUME) D = 56%
ADT (20 YEAR) = 40,500 T = 4.0%
DHV = 2,725 V = 55 MPH
ESAL = 6,060,788 TI_{20} = 11.0

WOOD RODGERS
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Sacramento, CA 95816 Fax 916.341.7767