

Project Study Report
To
Request Programming in the 2016 SHOPP

On Route 101

Between 0.4 mile north of Marsh Street Bridge

And 0.1 mile south of Chorro Street Undercrossing

And On Route 41

Between Old Morro Road

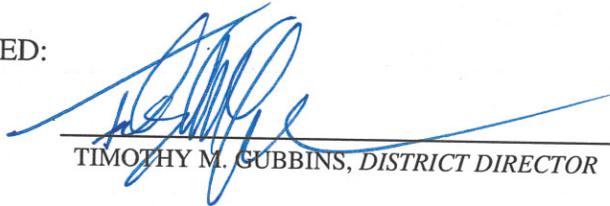
And Atascadero Creek Bridge (Br No. 49-51)

APPROVAL RECOMMENDED:



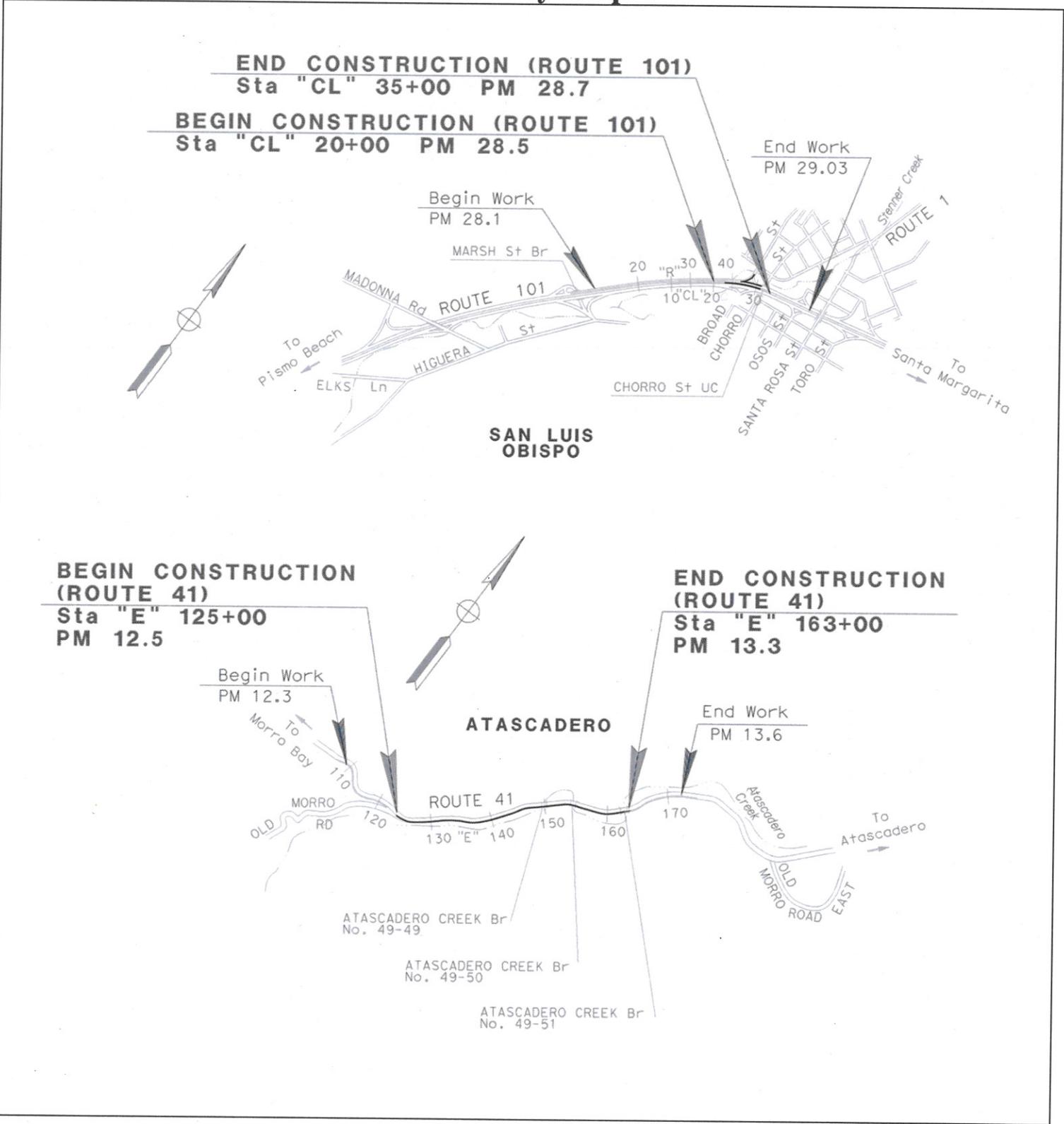
STEVEN DIGRAZIA, PROJECT MANAGER

APPROVED:


TIMOTHY M. GUBBINS, DISTRICT DIRECTOR

6/26/15
DATE

Vicinity Map



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



Joseph J. Erwin - REGISTERED CIVIL ENGINEER

MAY 28, 2015
DATE



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1. INTRODUCTION

This project proposes to reduce the potential and severity of collisions on Routes 101 and 41 within San Luis Obispo County by improving the operations of the Broad Street ramps with southbound Route 101 and by constructing guardrail along Route 41. There are currently six alternatives for this project. Only two of these alternatives are viable and costs associated with them range from \$1,614,000 to \$2,750,000 (March 2015). This project is considered a Category 3 project due to the potential for interchange and local road modifications. This project is part of the Collision Severity Reduction (201.015) Program within the State Highway Operational Protection Program (SHOPP). In order to complete this project, Caltrans requires project approval and environmental document (PA&ED) approval, and funding.

Table 1: Project Facts

Project Limits	05 - SLO - 101 & 41 - 28.5/28.7 & 12.5/13.3	
Number of Alternatives	Alternative 1: "No Build" Alternative 2: Widen Broad Street Ramp with Cut & Guardrail on Route 41 Alternative 3: Widen Broad Street Ramp with Retaining Wall & Guardrail on Route 41 Alternative 4: Realign Route 101 & Guardrail on Route 41 Alternative 5: Close Broad Street Ramps & Guardrail on Route 41 Alternative 6: Meter Broad Street On-Ramp & Guardrail on Route 41	
Alternative Recommended for Programming Purposes	Alternative 5: Close Broad Street Ramps & Guardrail on Route 41	
	Current Cost Estimate:	Escalated Cost Estimate:
Capital Outlay Support	\$2,364,000	\$2,739,000
Capital Outlay Construction	\$2,950,000	\$3,800,000
Capital Outlay Right-of-Way	\$5,195	\$7,000
Funding Source	SHOPP - Collision Severity Reduction (201.015) Program	
Funding Year	2016	
Type of Facility	Ramps and Conventional Highway	
Number of Structures	0	
SHOPP Project Output	33 Collisions Reduced	
Anticipated Environmental Determination or Document	Mitigated Negative Declaration (CEQA) Categorical Exclusion (NEPA)	
Legal Description	In San Luis Obispo County On Route 101 From 0.4 mile north of Marsh Street Bridge To 0.1 mile south of Chorro Street Undercrossing And On Route 41 From Old Morro Road To Atascadero Creek Bridge (Br No. 49-51)	
Project Development Category	Category 3	

2. BACKGROUND

Route 101

Route 101 within the project limits is a 4-lane access-controlled urban principal arterial freeway in the City of San Luis Obispo. It is the main north-south corridor through San Luis Obispo County as well as a major north-south coastal route between San Francisco and Los Angeles. Route 101 accommodates interregional, tourist, goods movement and commuter traffic. Route 101 has 12-foot lanes with 5-foot inside shoulders and 10-foot outside shoulders. The original construction of the 4-lane freeway was in the early 1950's. The last major rehabilitation was in 2008. Route 101 through the project limits is designated part of the National Highway System (NHS), Strategic Highway Network (STRAHNET), and Surface Transportation Assistance Act (STAA). It is also part of the Interregional Road System (IRRS), a High Emphasis Route, and a Focus Route and eligible to be part of the Scenic Highway System. This portion of US 101 is closed to bicyclists.

The project limits at this location are comprised of the Broad Street southbound on and off ramps. The Broad Street on and off ramps are type L-6 "hook" ramps and are typical of downtown San Luis Obispo. The hooks of the on and off ramps have curve radii of 150 and 100 feet, respectively. There is guardrail along the outside shoulders of both ramps. A maintenance vehicle pullout (MVP) is located along the on-ramp.

Broad Street is a north-south running residential collector. It has a 4-way stop controlled intersection with Lincoln Street just north of the on and off ramps with Route 101. The segment of Broad Street in between the ramps and Lincoln Street is narrow with varying widths. A mix of residences and businesses are in the immediate vicinity of the project limits. When Route 101 was realigned through San Luis Obispo in the 1950's, Broad Street was bisected with ramps constructed to both directions of the highway. The portion of Broad Street south of Route 101 continues through downtown San Luis Obispo towards the Edna Valley.

Other local facilities near the project limits include Chorro Street, Lincoln Street, Santa Rosa Street, and Olive Street. Chorro Street, like Broad Street, is a north-south running residential collector. It crosses under Route 101 to the east of the Broad Street ramps. This undercrossing was constructed during the 1950's realignment and consists of two structures; one for the northbound direction and one for the southbound direction. Chorro Street then intersects with Lincoln Street north of the undercrossing at a 4-way stop controlled intersection. Lincoln Street is a short residential street which runs east-west and allows access from Chorro Street to Broad Street. Santa Rosa Street is a north-south running 4-lane conventional highway in an urban setting and is also signed as Route 1. It has an overcrossing with Route 101 to the east of the project location. Just north of this overcrossing is an intersection with Olive Street. Olive Street serves as a connector from Santa Rosa Street to southbound Route 101. The on-ramp at the end of Olive Street ties into an auxiliary lane which leads to the exit at Broad Street.

To the west of the project is the mountain Cerro San Luis. The toe of the mountain's slope runs into Caltrans right of way near the western portion of the project limits. Stenner Creek crosses under Broad Street in between the ramps and the 4-way stop controlled intersection with Lincoln Street. The structure was widened in the 1950's during the construction of Broad Street ramps with Route 101. Stenner Creek then crosses under Route 101 through a large culvert which was also widened in the 1950's.

Traffic data indicates that volumes will increase along Route 101 moderately. There will be an increase in congestion along Route 101 south of the project and, as a result, the level of service decrease.

Table 2: Route 101 Traffic Forecast

Route	Begin PM	End PM	Design Hourly Volume (DHV)			Annual Average Daily Traffic (AADT)		
			2016	2026	2036	2016	2026	2036
101	28.1	29.1	6,177	6,746	7,314	63,868	70,287	76,706

Table 3: Route 101 Traffic Information

Route	Begin PM	End PM	TI 10 Yr	TI 20 Yr	D % DHV in Peak Direction	T % Trucks In AADT	V Design Designated Speed
101	28.1	29.1	13	14	54.0%	9.0%	70 mph

The ramp volume in the project location varies from year to year but remains relatively consistent. Due to limited new development along the Santa Rosa corridor, there has not been a sharp increase in traffic over the last 10 years.

Table 4: Ramp Traffic Data

Ramp Name	AADT		
	2007	2009	2012
Broad SB On	2820	3000	2584
Broad SB Off	1020	1180	1292
Osos (Olive St) SB On	8470	7290*	6190

*AADT count from 2010

Route 41

Route 41 within the project limits is a 2-lane conventional highway in a rural and mountainous setting within the city limits of Atascadero. It is the main east-west route for traffic travelling in between Atascadero in the east and Morro Bay in the west. It primarily serves commuter traffic as well as recreational and tourist traffic for those heading to coastal destinations. Route 41 at this location has 12-foot lanes

with 4-foot outside shoulders. The original construction of the highway occurred in the 1930's. Route 41 is designated a Terminal Access Route for STAA and Non-Interstate for STRAHNET. The route is also part of the IRRS, functionally classified as a "Minor Arterial", and eligible to be part of the Scenic Highway System. Even though the functional classification is a conventional highway, the Streets and Highways code for the State of California lists this portion of Route 41 as a part of the Freeway and Expressways System. Route 41 through the project area is open to bicyclists.

Side slopes adjacent to Route 41 are steep along both sides. Towards the western portion of this location there are cut sections off the westbound shoulder and fill sections off the eastbound shoulder. Atascadero Creek parallels the highway here on the eastbound side of Route 41 and is beneath the highway down a steep embankment. Numerous trees and utility poles are located off of the eastbound shoulder as well. At the eastern end of this location, Atascadero Creek crosses under the highway three separate times. Three bridges carry Route 41 over the creek. With each creek crossing, the side of the highway on which the cut and fill sections are located switch. Near PM 13.1, there are sections of temporary railing that have been placed at the toe of a steep cut section along the eastbound shoulder that act as a rockfall catchment device.

Traffic data indicates that volumes will increase along Route 41 significantly. The City of Atascadero plans to increase housing near the project area over a 20-year time frame. An increase in population will increase the demands and volumes of this section of Route 41.

Table 5: Route 41 Traffic Forecast

Route	Begin PM	End PM	Design Hourly Volume (DHV)			Annual Average Daily Traffic (AADT)		
			2016	2026	2036	2016	2026	2036
41	7.2	14.5	1,429	2,500	3,571	9,480	13,104	16,729

Table 6: Route 41 Traffic Information

Route	Begin PM	End PM	TI 10 Yr	TI 20 Yr	D % DHV in Peak Direction	T % Trucks In AADT	V Design Designated Speed
41	7.2	14.5	8	9	42.6%	4.1%	40 mph

This project was initiated by District 5 Traffic Safety on November 21, 2012 and is a candidate for the Collision Severity Reduction Projects (201.015) Program.

3. PURPOSE AND NEED

Purpose:

This project proposes to reduce the number and severity of collisions by improving the operations of the highway and by installing countermeasures to address vehicles that leave the traveled way.

Need:

Records show a pattern of run-off-road (ROR) collisions caused by merging traffic at the Broad Street on-ramp to southbound Route 101. A non-recoverable slope and fixed objects are within the Clear Recovery Zone (CRZ) along Route 41.

4. DEFICIENCIES

During the three-year period from January 2009 to December 2011, a total of twenty two (22) collisions occurred on this segment of Route 101 and nine (9) on Route 41. Shown below is a comparison of actual collision rates with statewide average collision rates for similar facilities.

Table 7: Collision Data

LOCATION	POST MILE	NUMBER OF COLLISIONS			ACCIDENT RATES	
		TOTAL	FATAL	INJURIES	ACTUAL TOTAL (MVM)	AVERAGE * TOTAL (MVM)
Rte 101	28.5/29.0	22	1	3	0.71	0.39
Rte 41	12.6/13.3	9	0	3	1.39	1.29

Rates are collisions per million vehicle miles (MVM)

* State wide average collision rate for similar facilities

At the Route 101 location, 43% of the collisions that are occurring are those related to the merging movements of vehicles enter the freeway at the Broad Street on-ramp. These types of collision include vehicles on the mainline striking the median barrier, sideswipes between vehicles on the mainline and those entering from the on-ramp, and rear-end collisions between vehicles. When volumes are high on the mainline there are instances when gaps between vehicles on the mainline are limited for vehicles merging from Broad Street. During times when multiple cars are merging from the Broad Street on-ramp in close proximity to each other, there is not enough room to merge efficiently. This causes drivers on the mainline to take evasive action or causes the merging vehicles to brake. These types of reactions correlate with the types of collisions that are occurring at this location.

Along with the collision history, there are a number of existing geometric deficiencies within the project limits when compared to the standards in the Highway Design Manual (HDM). Along Route 101 in San Luis Obispo, interchange spacing is less than the 1 mile minimum stated under HDM **Index 501.3 Spacing**. The distance from the Broad Street ramps to the Route 1 interchange with Route 101 is 0.2 miles.

Additionally, the deceleration length provided prior to the first curve of the off-ramp at Broad Street is less than the minimum required under **HDM Index 504.2 Freeway Entrances and Exits (2) Standard Designs**. According to that standard, 570 feet should be provided from the tip of the gore to the beginning of the first curve in an off-ramp. The existing distance is 270 feet. The on and off ramps also do not match Figures 504.2A and 504.2B, as specified under **HDM Index 504.2 Freeway Entrances and Exits (2) Standard Designs**. Broad Street, north of the ramps, shoulder widths do not match the minimums stated under **HDM Index 308.1 City Street and County Roads**. For a local road terminating at a ramp, the shoulders shall match the approaching roadway, but not be less than 4 feet. There are no shoulders along Broad Street north of the ramps.

5. CORRIDOR AND SYSTEM COORDINATION

District System Management Plan (DSMP)

According to the DSMP, the first among 6 major Goals of Caltrans' Vision of the California Transportation System is to "Enhance Public Safety and Security." It is Caltrans' goal to ensure the safety and security of people, goods, information, and services for all modes of transportation. This project's primary goal of providing safe and efficient operation at the two locations is consistent with the goals of the state and District.

Transportation Concept Report (TCR)

The TCR for Route 101 through San Luis Obispo indicates that operational improvements will be needed. Specifically, the report cites interchange, ramp and auxiliary lane improvements as concepts for this portion of the highway. This project's goal is consistent with this concept of the TCR for Route 101. Furthermore, the TCR requests that these improvements be identified in partnership with the San Luis Obispo Council of Governments (SLOCOG). Improvements to the ramps operations and metering are supported by the US 101 Corridor Mobility Master Plan which was produced by SLOCOG in December 2014. Additionally, closing the ramps is supported in the same document. The City of San Luis Obispo is consistent with this as their Circulation Element cites the Broad Street ramps as those that could be closed. However, these are not immediate concerns of the City or SLOCOG. They are considered medium to long term recommended enhancements.

The TCR for Route 41 states improvements for this portion of the highway should be consistent with a 2-lane conventional highway. The addition of guardrail would not conflict with the concept for Route 41 and would improve the safety and operations of the highway by reducing the severity of collisions in the area. While Route 41 is listed as a part of the Freeway and Expressway System, there are no plans to improve it to those standards.

6. ALTERNATIVES

This project has a total of six alternatives. Of these alternatives, two are viable. The

proposed improvement along Route 41 is the same through all of the alternatives, except for the "No Build" which would propose no work at any location. Rejected alternatives include those which might affect the stability of the slope of Cerro San Luis and a realignment of Route 101. A constructability review meeting for this project was held on May 19th, 2015. Individual features and impacts of each alternative will be reviewed separately during the next phase of this project. If the Project Development Team (PDT) believes that specific features of one alternative, such as closing an individual ramp, can be combined with other features of other alternatives, then these will form a new preferred alternative. Alternatives comprised of different variations of the features in the viable alternatives are not included in this report.

The rejected Alternatives 2 and 3 were discussed with the Mike Janzen from HQ Design Office of Project Support in September and November of 2013. It was determined no design exceptions would be required for these alternatives and that the shoulder width of Route 41 met Design Information Bulletin 79-03. Alternative 4 was discussed with him in November 2014. It was determined that an advisory design exception for shoulder width would be required for this alternative. At this time it appears that there may be design exceptions for non-standard features for Alternative 5. Policy exceptions for Alternative 6 may be required. At this phase of the project, no specific design exceptions have been identified for any of the alternatives. Additional studies will be conducted during the next phase of this project to determine which design or policy exceptions will be required. Mike Janzen concurred with the strategy of delaying processing of design exceptions.

6A. Viable Alternatives

Alternative 5: Close Broad Street Ramps & Guardrail on Route 41

Alternative 5 would improve the operations and improve the safety of Route 101 near the Broad Street on-ramp by eliminating access at the on and off ramps and would improve the safety of Route 41 by constructing guardrail. This alternative would cost \$2,950,000 (May 2015). For a more detailed breakdown of this estimate, please refer to Attachment F.1.

Engineering Features

Engineering features of this alternative would include removing or obliterating the on and off ramps at Broad Street and replacing them with a cul-de-sac for local traffic. The existing southbound ramp from Route 1 at Olive Street would be lengthened and widened to improve the merging operation for traffic entering southbound Route 101. Minor drainage modifications would be required and curb and gutter would be added to the new cul-de-sac at the end of Broad Street. Planting and guardrail around the cul-de-sac would be placed to help delineate and separate Broad Street from Route 101.

At the Route 41 location, guardrail would be installed along the eastbound shoulder and would conform to the latest standards. No shoulder widening is required. Breaks in the guardrail would be included to allow maintenance access to areas alongside the eastbound shoulder. End treatments would be placed to protect any blunt ends. Standard end treatments would be installed at the end sections of bridge railing along with appropriate transitional railing. No existing driveways would be blocked by the new end treatments. Additionally, the preliminary geotechnical design report recommends a double twisted wire mesh drapery system to replace existing temporary railing along the eastbound shoulder to control rockfall.

Constructability issues with this alternative include detouring local traffic away from the Broad Street on-ramp while construction occurs. For the guardrail at Route 41, no major constructability issues are anticipated. Bicycles and motorists would be accommodated through the construction limits. Stage construction is not anticipated at either location. An informational campaign would need to be conducted prior to construction in order to inform traffic of the upcoming change to Route 101 access at Broad Street. A preliminary Traffic Management Plan (TMP) identifies some of the available elements that could reduce or manage delay due to construction. Any lane or ramp closures along Route 101 would be restricted to night time hours. Temporary railing will be placed along Route 101 to protect motorists from construction activities including the excavation for the subgrade, structural section work, and paving along the Olive Street on-ramp extension. After the on-ramp extension work is completed, the temporary railing can be removed and the final lifts of pavement can be placed. More information regarding this can be found under Attachment H.

This alternative would have an impact on traffic using the local streets and other ramps in the area. However, the operations of Route 101 have the potential to improve with a longer merging and weaving section from the Route 1 on-ramp at Olive Street. A special study would need to analyze the impacts on the local streets that result from the closure of the Broad Street on and off ramps.

Potential issues with this alternative include changes to the freeway agreement to document the loss of access at Broad Street. Discussions and agreements with the appropriate representatives of the City of San Luis Obispo will be conducted to document this change. Additionally, mitigation for the impact to the local facilities may have to be determined. At this phase of the project, it is unknown what those impacts are and if there are any, what the appropriate mitigation would be.

Right of Way and Utilities

There is no acquisition required for this alternative. The location of the guardrail along Route 41 and the work at Broad Street is within the State's right of way. Excavation required at Broad Street would be above any existing underground utilities so no impact is anticipated. Impacts to aerial utilities will be avoided when possible by modifying the layout of the cul-de-sac as necessary. If avoidance is not feasible, relocation may have to occur. Along Route 41, electrical and

telecommunication utilities are on poles that parallel the highway off the eastbound shoulder. Preliminary field visits indicate there are some underground electrical utilities in the area as well. The utilities poles are within the CRZ and must be relocated further from the highway in order to construct guardrail. Once completed, the guardrail would shield motorists from these poles but would not prevent utility companies from using equipment to work on them. More information on right of way impacts for this alternative can be found under Attachment E.1.

Environmental

Preliminary environmental studies of the project area under this alternative were conducted using a Mini-Preliminary Environmental Analysis Report (Mini-PEAR). Field studies were not conducted and have been deferred until the PA&ED phase. It is anticipated that this project will not have the potential for significant impacts. Below is a summary of the individual impacts associated with this alternative. Complete information can be found within the Mini-PEAR under Attachment C.

- Traffic Operations – Diverted ramp traffic will occur and may impact the adjacent city streets and intersections. Evaluation of the circulation effects as well as studying potential modifications to existing operations may be required.
- Community Impacts – There is potential for community impacts due to the ramp closure that will include public outreach to both the immediate neighborhood as well as the neighborhoods to the north of the project location. Further assessment will be required.
- Visual Resources – This project may have visual impacts if there is tree removal along Route 41. At this time no removal is anticipated. Further assessment is required.
- Cultural Resources – There are no anticipated impacts to cultural resources. Due to the anticipated environmental document type, it is anticipated that there will be ongoing Assembly Bill 52 consultation.
- Biological Resources – The Mini-PEAR indicated no anticipated impacts to biological resources. However, a wire mesh blanket system recommended for a slide area along Route 41 may require further analysis. Prior to installation, the slope should have pre-construction surveys performed to determine whether native shrubs are present. Environmentally sensitive area fencing may be needed in the vicinity of the dirt pullout to prevent grading from occurring beyond the shoulder toward top of the bank.
- Noise – There are no long term impacts due to noise. Temporary impacts due to construction are anticipated but will be mitigated.

Alternative 6: Meter Broad Street On-Ramp & Guardrail on Route 41

Alternative 6 would improve the operations of Route 101 and the Broad Street on-ramp by adding a metering system and would improve the safety of Route 41 by constructing guardrail. This alternative would cost \$1,850,000 (May 2015). For a more detailed breakdown of this estimate, please refer to Attachment F.2.

Engineering Features

Engineering features for Broad Street location include adding the electrical components for the signal and detectors of the metering system. Additionally, some minor grading would be required to accommodate a future enforcement area that may be required. No widening to the ramp would be needed with this alternative as the shoulder width is standard along the ramp after the bridge over Stenner Creek. No drainage improvements or guardrail updates would be required at the Broad Street location as a rehabilitation project in 2008 already completed this work.

At the Route 41 location, guardrail would be installed along the eastbound shoulder and would conform to the latest standards. No shoulder widening is required. Breaks in the guardrail would be included to allow maintenance access to areas alongside the eastbound shoulder. End treatments would be placed at any blunt ends. Standard end treatments would be installed at the end sections of bridge railing along with appropriate transitional railing. No existing driveways would be blocked by the new end treatments. Additionally, the preliminary geotechnical design report recommends a double twisted wire mesh drapery system to replace existing temporary railing along the eastbound shoulder to control rockfall.

Constructability issues with this alternative include detouring local traffic away from the Broad Street on-ramp while construction occurs. For the guardrail, no major constructability issues are anticipated. Bicycles and motorists would be accommodated through the construction limits. Stage construction is not anticipated at either location. A preliminary Traffic Management Plan (TMP) identifies some of the available elements that could reduce or manage delay due to construction. Any lane closures along Route 101 would be restricted to night time hours. More information regarding this can be found under Attachment H.

A special study for this alternative during the PA&ED phase would need to include the local surface streets which might be impacted by the change in the Broad Street on-ramp operations. This would include the surface streets that lead up to the Route 1 on-ramp at the end of Olive Street. Traffic Operations would have to determine if the impact on the local streets would adversely impact the level of service of traffic and other users.

Right of Way and Utilities

Acquisition of new right of way would not be an issue with this alternative. The ramp at Broad Street and the location of the guardrail along Route 41 are completely within the State's right of way. Utilities would not be impacted with the Broad Street location. There is minimal excavation required at Broad Street so no impact to any underground utility is anticipated. Along Route 41, electrical and telecommunication utilities are on poles that parallel the highway off the eastbound shoulder. Preliminary field visits indicate there are some underground electrical utilities in the

area as well. The utility poles are within the CRZ and must be relocated further from the highway in order to construct guardrail. Once completed, the guardrail would shield motorists from these poles but would not prevent utility companies from using equipment to work on them. More information on right of way impacts can be found under Attachment E.

Environmental

Preliminary environmental studies of the project area were conducted using a Mini-PEAR. Field studies were not conducted and have been deferred until the PA&ED phase. It is anticipated that this project will not have the potential for significant impacts. Below is a summary of the individual impacts associated with this alternative. Complete information can be found within the Mini-PEAR under Attachment C.

- Traffic Operations – Queues that form along local streets due to the new ramp meters will be evaluated during the next phase of this project.
- Community Impacts – There is potential for community impacts due to the ramp modifications that will include public outreach to both the immediate neighborhood as well as the neighborhoods to the north of the project location. Further assessment will be required.
- Visual Resources – This project may have visual impacts if there is tree removal along Route 41. At this time no removal is anticipated. Further assessment is required.
- Cultural Resources – There are no anticipated impacts to cultural resources. Due to the anticipated environmental document type, it is anticipated that there will be ongoing Assembly Bill 52 consultation.
- Biological Resources – The Mini-PEAR indicated no anticipated impacts to biological resources. However, a wire mesh blanket system recommended for a slide area along Route 41 may require further analysis. Prior to installation, the slope should have pre-construction surveys performed to determine whether native shrubs are present. Environmentally sensitive area fencing may be needed in the vicinity of the dirt pullout to prevent grading from occurring beyond the shoulder toward top of the bank.
- Noise – There are no long term impacts due to noise. Temporary impacts due to construction are anticipated but will be mitigated.

6B. Non-Viable Alternative

Alternative 1: "No Build"

The only non-viable alternative for this project is the "No Build" alternative. This alternative would not accomplish the purpose of the project. The deficiencies at each location outlined in this report would continue to exist with this alternative. There would be no cost associated with this alternative.

6C. Rejected Alternatives

Alternatives 2 and 3: Widen Broad Street On-Ramp with Cut (Alternative 2) or Retaining Wall (Alternative 3) & Guardrail on Route 41

Alternatives 2 and 3 proposed to accomplish the purpose of this project by widening and lengthening the Broad Street on-ramp. These alternatives would have to cut into the side slope adjacent to the ramp in order to accomplish the widening. A retaining wall or steep cut section would then be used to create the needed width to fit a full standard on-ramp at this location. For Alternative 2, the cut slope would extend 20 feet into the base of the slope adjacent to the southbound outside shoulder. For Alternative 3, a retaining wall would have to be located 30 feet from the ETW in order to provide adequate CRZ. The guardrail along Route 41, as with all of the alternatives, would be installed along the eastbound shoulder. An increased amount of vegetation removal would be required with these alternatives as the earthwork would continue further down Route 101 than with the other viable alternatives.

Reasons for Rejection

These two alternatives were rejected due to the instability of the side slope along the southbound lanes of Route 101. According to the preliminary geotechnical design report, any modification to the side slope could impact a paleo-landslide located on the side of Cerro San Luis. This slide extends approximately 1,600 feet upslope of the highway with a maximum width of 1,000 feet. A local street located above the highway in the area of this slide has evidence of subsidence and cracking can be seen on the surface of that roadway. At least one residence on this street has structural deformation. For more information on the geotechnical design issues with these alternatives, please refer to Attachment D. The proposed improvements from Alternatives 2 and 3 would risk compromising the geologic stability of the side slope and therefore were formally rejected by the PDT.

Alternative 4: Realign Route 101 & Guardrail on Route 41

Alternative 4 proposed to realign southbound Route 101 towards the median in order to make room for an extension of the Broad Street on-ramp. The result would be a narrower median through the project limits as the northbound lanes would have remained in their current location. There would be no impact to the unstable side slope adjacent to the southbound lanes as the construction would occur further to the south of the slopes. The southbound lanes would have been completely rebuilt based off of new structural section recommendations. The Chorro Street Undercrossing would have to be replaced in order to meet the vertical clearance requirement of the HDM. According to **Index 309.2 Vertical Clearances (c) ...Local Facilities...** "15 feet shall be the minimum vertical clearance over the traveled way..." This would require both the northbound and southbound profiles to be raised. The on-ramp at Olive Street and the adjoining auxiliary lane connecting it to the Broad Street off-ramp would also be realigned. The interchange spacing would remain the same. The

capital cost of Alternative 4 was estimated at \$10,000,000.

Reasons for Rejection

This alternative was rejected due to the high cost of realigning the highway as well as well as the uncertainty of obtaining mandatory design exceptions for vertical clearances, off-ramp deceleration length, and interchange spacing. The vertical clearance under Route 101 at Chorro Street is 14 feet 9 inches. The deceleration length leading into the southbound Broad Street off-ramp is only 270 feet and the interchange spacing between Broad Street and the Olive Street on-ramp would be 0.2 miles. For these reasons, the PDT formally rejected the realignment alternative.

7. COMMUNITY INVOLVEMENT

There has been some contact with local agencies for this project. There was a discussion with the Atascadero Police Department regarding potential guardrail along Route 41. Their request was part of the initiation for this project. Members of the PDT have also discussed the issues with the Broad Street ramps with the City of San Luis Obispo and SLOCOG in the past. The City was contacted last fall and the potential improvements at Broad Street were discussed. The City asked that more public outreach be conducted.

The Broad Street southbound on-ramp location was analyzed in SLOCOG's *US 101 Corridor Mobility Master Plan*. The study determined this ramp currently operates at LOS B on AM weekdays, LOS C on PM weekdays, and LOS C on PM Fridays. The study recommended extending the length of on and off ramps and additional ramp-to-ramp auxiliary lanes to reduce restrictions, improve traffic flow, and to maintain efficient operations on US 101 in the most congestion-prone areas. These improvements would be implemented in the medium to long-term (10-20 years) range. The corridor study included extensive public involvement meetings, including seven local workshops, 30 community presentations, two web-based interactive tools, numerous stakeholder meetings and several SLOCOG board presentations. The study team included SLOCOG, Caltrans, County of San Luis Obispo and the cities of San Luis Obispo, Arroyo Grande, Atascadero, Grover Beach, Paso Robles, Pismo Beach, Regional Transit Authority and the County Air Pollution Control District.

As this project proceeds into the next phase, additional meetings with the appropriate representatives of the City and SLOCOG will be held in order to study the viable alternatives. Along with the meetings held with public officials, meetings with local residences will occur to obtain their input on the project. Discussions regarding the access rights around Broad Street will be discussed if Alternative 5 is the preferred alternative selected by the PDT.

8. ENVIRONMENTAL DETERMINATION/DOCUMENT

In order to identify environmental issues and constraints associated with this project and its alternatives, a Mini-PEAR was prepared. Potential impacts due to changes in traffic patterns, noise during construction, and loss of visual resources were preliminarily analyzed during the preparation of the document. Further investigation will be required during the PA&ED phase in order to verify the initial assumptions made in the Mini-PEAR. Additional studies have also been identified in the Mini-PEAR and have been deferred to the PA&ED phase.

The anticipated environmental document for this project is a Mitigated Negative Declaration/Categorical Exclusion (MND/CE). This document level has been selected based on the lack of potential significant impacts to the various resources in the project limits. Caltrans would act as the lead agency in preparing the MND/CE.

9. FUNDING/PROGRAMMING

It is anticipated that the proposed project would be programmed into the 2016 SHOPP to be funded by the Collision Severity Reduction (20.xx.201.015) Program using the estimate for Alternative 5. Funds for Construction Capital would be allocated in the 2019/2020 fiscal year. The current un-escalated estimated capital outlay cost is \$2,950,000 (May 2015). See Attachment F.1 for more information regarding the preliminary cost estimate for Alternative 5. The escalated Right of Way Capital estimate is \$7,000. This project is eligible for Federal-aid funding.

Table 8: Capital Outlay Support and Project Estimate for Alternative 5

Project Cost Component	Fiscal Years						Grand Total
	2016/17	2017/18	2018/19	2019/20	2020/21	Future	
R/W Capital			\$7				\$7
Construction Capital				\$3,800			\$3,800
PA&ED Support	\$834						\$834
PS&E Support			\$970				\$970
R/W Support			\$92				\$92
Construction Support				\$843			\$843
Total Each Column	\$834		\$1,069	\$4,643			\$6,546

Note: All costs X 1,000. Support categories are the same as those identified by SB 45. Support Costs escalated at 3%. Construction Capital escalated at 5% per year. Support Cost ratio: 72% (All Support Costs divided by the sum of the escalated Construction Capital and escalated R/W Capital).

10. SCHEDULE

Project Milestones		Milestone Date (Month/Day/Year)
PROGRAM PROJECT	M015	7/1/2016
BEGIN ENVIRONMENTAL	M020	8/29/2016
PA & ED	M200	7/3/2018
PS&E TO DOE	M377	12/4/2019
RIGHT OF WAY CERTIFICATION	M410	3/20/2020
READY TO LIST	M460	4/1/2020
FUND ALLOCATION	M470	6/25/2020
HEADQUARTERS ADVERTISE	M480	7/16/2020
AWARD	M495	9/11/2020
APPROVE CONTRACT	M500	12/16/2020
CONTRACT ACCEPTANCE	M600	3/22/2021
END PROJECT	M800	11/23/2022

11. RISKS

Various risks associated with these alternatives could impact the scope, schedule and cost of the project. In order to program this project judiciously, certain assumptions have been made and further studies have been delayed to the PA&ED phase. Some of these include the environmental studies mentioned earlier in this report as well as traffic impacts due to diverted traffic from the Broad Street ramps. If these studies indicate that impacts due to this project are more significant than what has been assumed in this report, delays to the schedules and increases to the budget may occur.

This project also assumes that there will be design exceptions required due to the existing deficiencies previously mentioned in this report or due to those that have yet to be identified. The scale and scope of most of these exceptions are unknown at this time. One potential non-standard feature requiring an exception is superelevation along the proposed extended on-ramp from Route 1 in Alternative 5. The cost of correcting the superelevation could potentially include reconstructing the outside most portion of the Chorro Street Undercrossing to match the standard superelevation. The existing superelevation across the structure meets Figure 202.2 of the HDM by providing a maximum comfortable speed that is higher than the proposed design speed. Therefore, it is assumed that a design exception may be attainable during the next phase of the project.

Additionally, no exceptions to current Caltrans Traffic policies involving the ramp metering system have been obtained at this time. Potential issues regarding the inclusion of high occupancy vehicle lanes and other mandatory features of metered ramps have not been discussed during this phase. Exceptions to those policies have been deferred to the next phase of the project. The scope and schedule will be impacted if design or policy exceptions are required and approval is not obtained during the PA&ED phase.

During the PA&ED phase, public input will be solicited. If there is more public opposition to any of the alternatives than is currently anticipated there could be a risk to the schedule and support costs. Also, depending on how the Broad Street alternatives are accepted by the representatives of the City and SLOCOG there could be an impact on the scope, schedule, and costs. Access denial discussions regarding closing Broad Street under Alternative 5 could be a risk to the schedule as well depending on how well it will be received by the City of San Luis Obispo.

12. FHWA COORDINATION

This project is considered to be an Assigned Project in accordance with the current FHWA and Department of Transportation (Caltrans) Joint Stewardship and Oversight Agreement.

13. PROJECT REVIEWS

District Program Advisor	<u>Deb Larson</u>	Date	<u>05/19/2015</u>
HQ SHOPP Program Advisor	<u>John Holzhauser</u>	Date	<u>05/19/2015</u>
District Maintenance	<u>Art Dueck</u>	Date	<u>10/01/2013</u>
HQ Project Delivery Coordinator	<u>Paul Gennaro</u>	Date	<u>05/19/2015</u>
Project Manager	<u>Steven Digrazia</u>	Date	<u>04/29/2015</u>
Constructability Review	<u>Berkeley Lindt</u>	Date	<u>05/19/2015</u>
Peer Review	<u>John Fouche</u>	Date	<u>05/01/2015</u>

14. PROJECT PERSONNEL

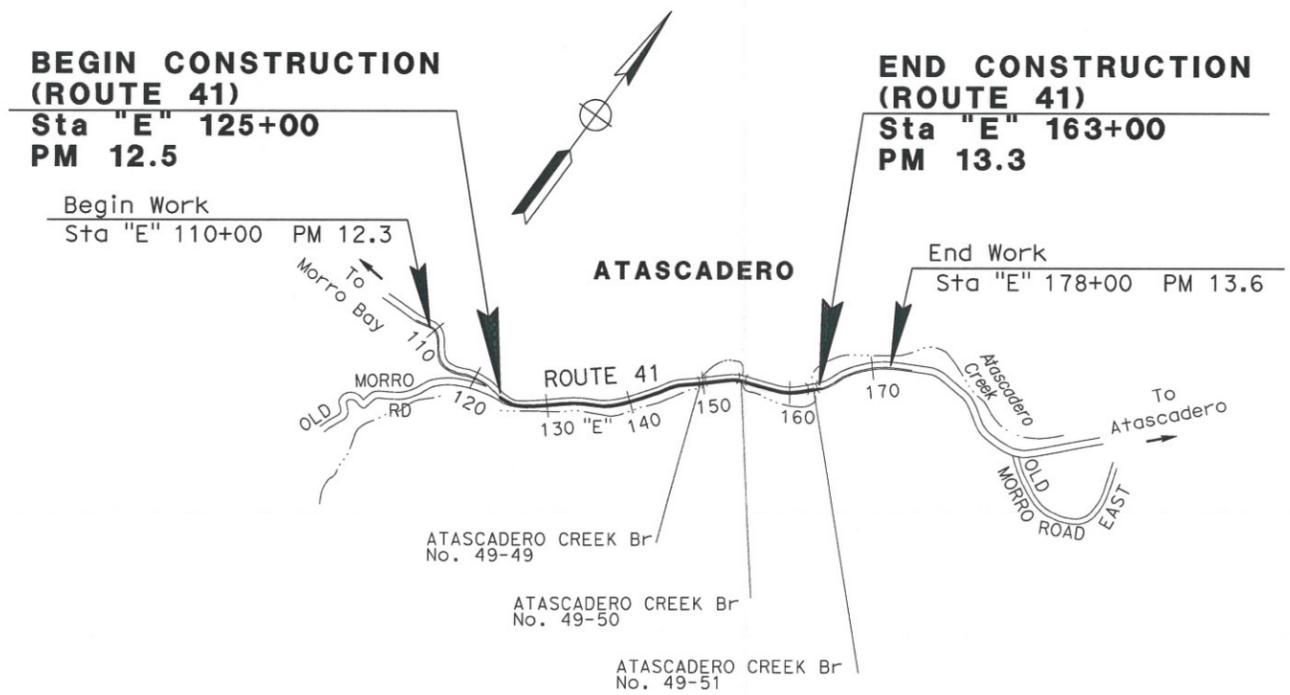
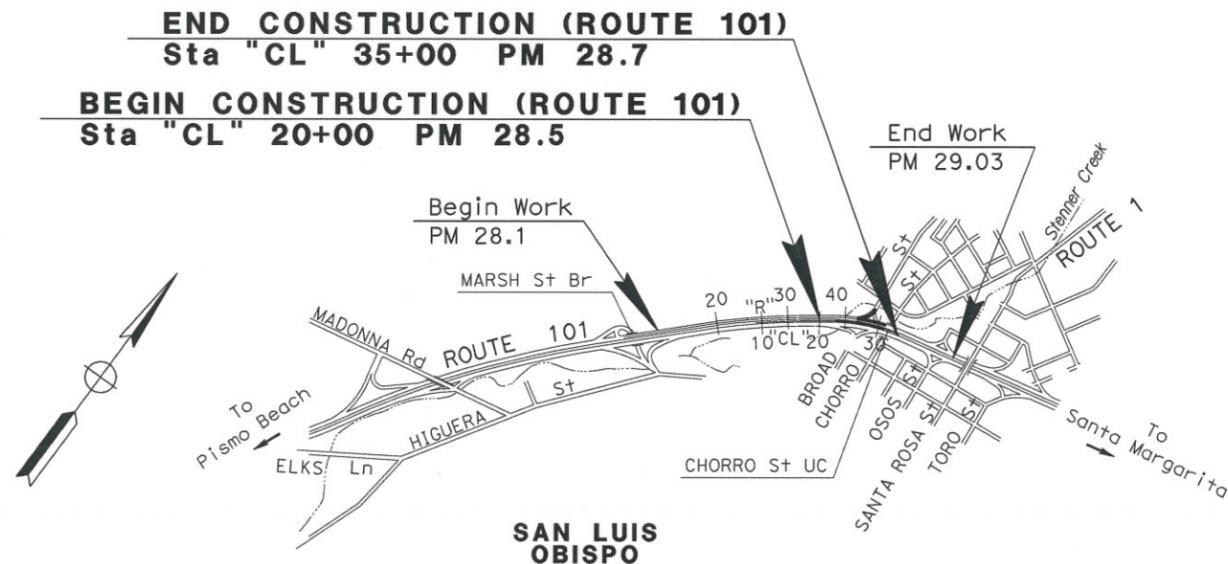
Steve Digrazia	Project Manager	(805) 549-3437
Steve Wyatt	Design Manager	(805) 549-3079
Michael O'Neal	Project Engineer	(805) 549-3114
Joe Erwin	Project Engineer	(805) 549-3489
Jason Wilkinson	Environmental Planning	(805) 542-4663
Debra Larson	Traffic Safety	(805) 549-3017
Steve Talbert	Traffic Safety	(805) 549-3484
Mike Janzen	HQ Design Office of Project Support	(559) 243-3887
Patrick Bolger	Landscape Architecture	(805) 594-3001
Lance Gorman	Maintenance Engineering	(805) 549-3315
Pete Riegelhuth	District Storm Water Coord.	(805) 594-3375
John Magorian	Right of Way/Utility Coord.	(805) 549-3002

15. ATTACHMENTS

- A. Location Map (1 page, 11 x 17)
- B. Preliminary Layouts
 - 1. Route 101 - Alternative 5 (1 page, 11 x 17)
 - 2. Route 101 - Alternative 6 (1 page, 11 x 17)
 - 3. Route 41 - Both Alternatives 5 and 6 (1 page, 11 x 17)
- C. Preliminary Environmental Analysis Report (6 pages, 8½ x 11)
- D. Preliminary Geotechnical Design Report (21 pages, 8½ x 11 with 11 x 17 attachments)
- E. Right of Way Data Sheet
 - 1. Alternative 5 (3 pages, 8½ x 11)
 - 2. Alternative 6 (3 pages, 8½ x 11)
- F. Project Report Cost Estimate
 - 1. Alternative 5 (9 pages, 8½ x 11)
 - 2. Alternative 6 (9 pages, 8½ x 11)
- G. Storm Water Data Report Cover Sheet (1 page, 8½ x 11)
- H. Traffic Management Plan (1 page, 8½ x 11)
- I. Risk Management Plan (1 page, 8½ x 11)
- J. Final Distribution List (1 page, 8½ x 11)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY
IN SAN LUIS OBISPO COUNTY
ON ROUTE 101 FROM 0.4 MILE NORTH OF MARSH St Br TO
0.1 MILE SOUTH OF CHORRO St UC AND ON ROUTE 41
FROM OLD MORRO Rd TO ATASCADERO CREEK Br No. 49-51

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010



PROJECT MANAGER
STEVE DIGRAZIA

DESIGN ENGINEER
JOSEPH ERWIN

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES)
OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

NO SCALE

CONTRACT No.	05-1F370K
PROJECT ID	0513000135K

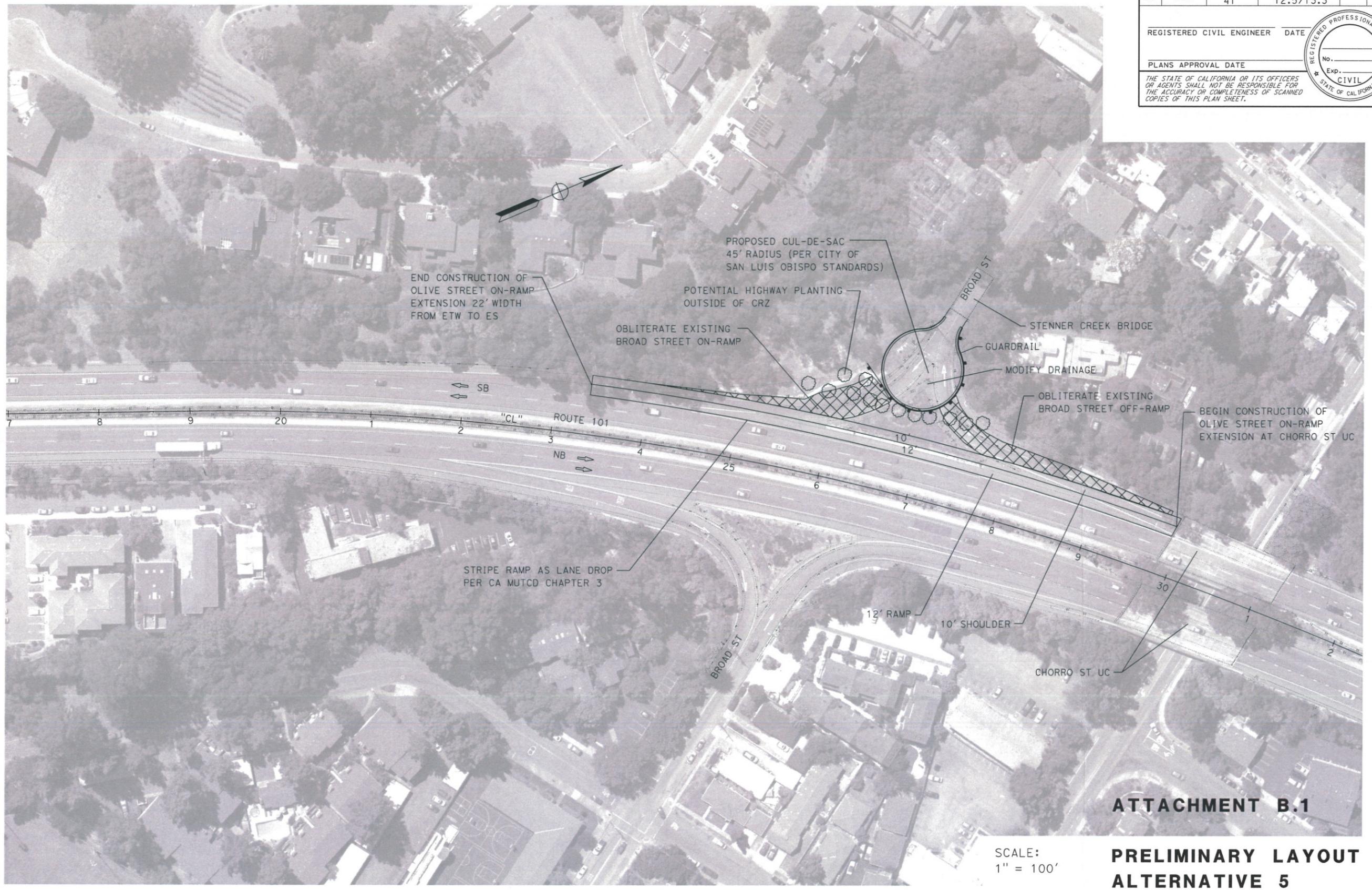
ATTACHMENT A

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101, 41	28.5/28.7, 12.5/13.3		

REGISTERED CIVIL ENGINEER DATE _____

PLANS APPROVAL DATE _____

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



ATTACHMENT B.1

PRELIMINARY LAYOUT

ALTERNATIVE 5

SCALE:
1" = 100'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans DESIGN

FUNCTIONAL SUPERVISOR
STEVE WYATT

CALCULATED-DESIGNED BY
CHECKED BY

JOE ERWIN

REVISED BY
DATE REVISED

x

x

x

x

x

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
St. Gobans DESIGN

FUNCTIONAL SUPERVISOR
 STEVE WYATT

CALCULATED-DESIGNED BY
 CHECKED BY

JOE ERWIN

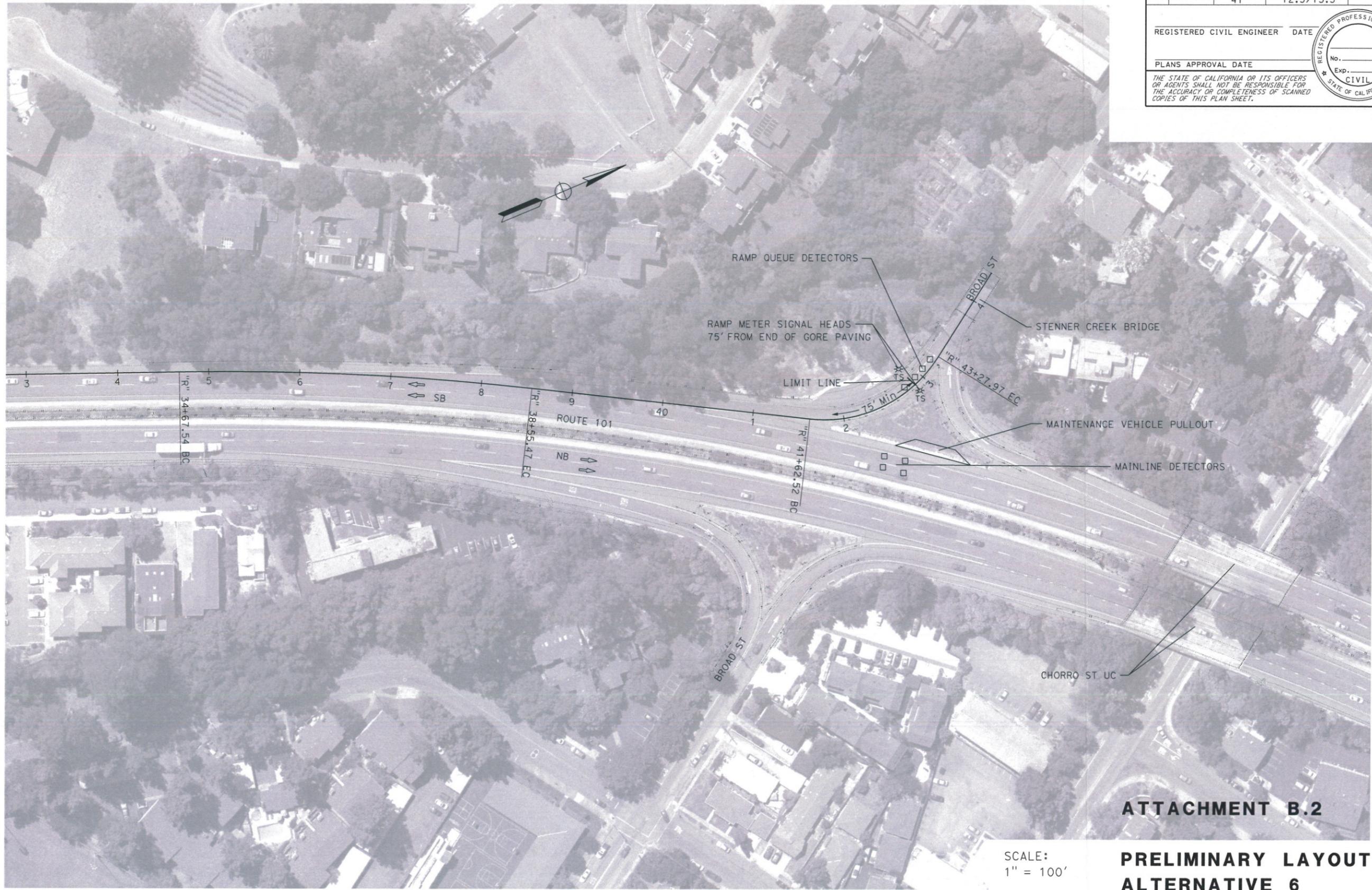
REVISED BY
 DATE REVISED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101, 41	28.5/28.7, 12.5/13.3		

REGISTERED CIVIL ENGINEER DATE _____

PLANS APPROVAL DATE _____

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



ATTACHMENT B.2
PRELIMINARY LAYOUT
ALTERNATIVE 6

SCALE:
 1" = 100'



Mini-Preliminary Environmental Analysis Report

Project Information

District: 5 County: SLO Route: 101 & 41 PM: 28.5/28.7 & 12.5/13.3
EA: 05-1F370K EFIS Project ID: 0513000135K
Project Title: SLO Broad St. SB Ramp & 41 Guardrail
Project Manager: Steve DiGrazia Phone # 805-549-3437
Project Engineer: Joe Erwin Phone # 805-549-3489
Environmental Office Chief: Janet Newland Phone # 805-542-4691

Project Description

This project proposes to reduce the potential and severity of collisions on Routes 101 and 41 within San Luis Obispo County by improving the operations at the Route 101 southbound Broad Street on-and-off ramps and by constructing guardrail along Route 41 between Old Morro Rd. and Atascadero Creek Bridge (Br. No. 49-51) located in the City of Atascadero. There are currently six alternatives for this project. Only two of these alternatives are viable and are described below:

Alternative 5: This alternative proposes to close the existing Route 101 Broad Street southbound ramps, either a partial or full closure, and extend the Olive Street onramp option under the full closure. It would also install a guardrail system along a 0.8 mile section of Route 41 to prevent errant vehicles from running off the highway.

Alternative 6: This alternative proposes to install an intelligent ramp meter at the southbound on-ramp entering Hwy 101 and to install a guardrail system along a 0.8 mile section of Route 41 to prevent errant vehicles from running off the highway.

The following is a list of alternatives that were considered and rejected:

- Alternative 2 proposed a cut slope to widen the shoulder and extend the Broad Street on-ramp;
- Alternative 3 proposed a retaining wall to mitigate for a known landslide;
- Alternative 4 proposed to realign southbound Route 101 in order to achieve the Broad Street ramp extension.

For a more detailed description of these alternatives, please refer to the Project Study Report (PSR).

Neither proposed alternative requires realignment or acquisition of additional right of way. The guardrail system installation on Route 41 will require utility relocation and some vegetation removal and tree trimming. However, at this time we do not anticipate any tree removal.

Purpose and Need

Purpose: This project proposes to reduce the number and severity of collisions by improving the operations of the highway and by installing countermeasures to address vehicles that leave the traveled way.

5/1/2015

Need: The project is needed because records show a pattern of run-off-road (ROR) collisions caused by merging traffic at the Broad Street on-ramp to southbound Route 101. A non-recoverable slope and fixed objects are within the Clear Recovery Zone (CRZ) along Route 41.

Anticipated Environmental Approval¹

CEQA

- Categorical Exemption
- Statutory Exemption
- Initial Study/Negative Declaration
- Initial Study/Mitigated Negative Declaration
- Environmental Impact Report (EIR)

NEPA

- Categorical Exclusion
- "Routine" EA/FONSI
- "Complex" EA/FONSI
- Environmental Impact Statement (EIS)

PSR Summary Statement

In order to identify environmental issues, constraints, costs, and resource needs, a Mini-PEAR was prepared for the project. Potential disposal, staging, and borrow sites will need to be identified in the PA&ED phase for complete environmental review. Field studies were not conducted and technical studies have been deferred to the PA&ED phase.

The California Department of Transportation would act as the lead agency for NEPA/CEQA (National Environmental Policy Act/California Environmental Quality Act) environmental approval process. Caltrans will serve as the NEPA lead agency under its assumption of responsibility pursuant to 23 U.S. Code 327. The anticipated environmental document for the proposed project is a Mitigated Negative Declaration (CEQA) and a Categorical Exclusion (NEPA). This document level has been selected based upon a preliminary review of the potential resources within the project limits, which indicates the project does not have the potential for significant impacts.

The estimated time to obtain environmental approval is 22 months from the start of PA/ED. It is anticipated that environmental studies would begin after project preliminary maps and permits to enter are completed. Draft and final environmental documents would be anticipated in 16 months and 22 months, respectively.

Special Considerations

Biology

The proposed project is not anticipated to have significant biological impacts. General wildlife and botanical surveys will be required. Botanical surveys that must be completed between March and June and general wildlife surveys that must be completed between April and September. Additional surveys may be required to determine presence or absence of special-status species.

¹ If the anticipated environmental document is an EIR and/or EIS, the preparation of a standard PEAR is recommended to avoid unanticipated costs and project delays.

5/1/2015

Required Permits:

No permits are anticipated for this project.

Assumptions:

It is assumed that the project:

- Will use appropriate stormwater BMPs to avoid stormwater impacts to jurisdictional waters, steelhead and steelhead critical habitat.
- Will not require work within the boundaries of jurisdictional waters.
- Will avoid impacts to critical habitat, listed plant and animal species.
- Will not require biological mitigation.
- Will not remove any trees.

Risk Assessment:

Risk Statement	Risk Probability	Risk Impact
As a result of changes to the project, impacts to the creek at either location could result in impacts to CRLF and/or Southern Steelhead, which would require Section 7 consultation, negatively impacting the scope (hours) and schedule for the project.	2	Scope-Low Schedule-High
As a result of changes to the project, work may need to be performed within jurisdictional areas, which would require permits from the CDFW, ACOE, and RWQCB, negatively impacting the scope (hours) and schedule for the project.	2	Scope-Low Schedule-Low
As a result of changes to the project, trees may need to be removed, which would require mitigation and plant establishment, negatively impacting the scope and schedule for the project.	2	Scope-Mod. Schedule-Low

Traffic Operations

For Alternative 5, it is anticipated that ramp traffic diverted to other city streets and intersections will occur, hence evaluation of the circulation effects will be needed in the next phase of the project. Possible evaluation may include signal timing and phasing adjustment at the intersections of US101/Route 1 interchange. Per the San Luis Obispo City draft Land Use and Circulation updates, Hwy1/Hwy101 & Broad Street ramp closure improvement concept should be advanced.

For Alternative 6, evaluation of the queue effect from a Universal Ramp Meter System (URMS) will be needed for the southbound Broad Street on-ramp during the next phase of the project.

Cultural resources

The proposed project is not anticipated to impact cultural resources because it is located in an area with low sensitivity for both built-environment and archeological resources. Archaeological Survey and Historic Property Survey Reports will be required. There is a minor risk (Risk Probability 1) that project could identify cultural resources in the project APE., which will require more work and time to study.

5/1/2015

Community Impacts

The proposed project may have potential community impacts due to the southbound Broad Street ramp closure and a Community Impact Assessment will be required.

Noise

The proposed project will not result in long term noise impacts. Temporary noise and vibration associated with construction equipment is anticipated. A combination of mitigation measures with equipment noise control and administrative measures will be implemented to minimize construction related noise and vibration impacts.

Visual Resources

The proposed project may result in impacts on scenic resources due to potential tree and vegetation removal related to construction activities and utility poles relocation at the Hwy 41 location. A Visual Impact Assessment will be required.

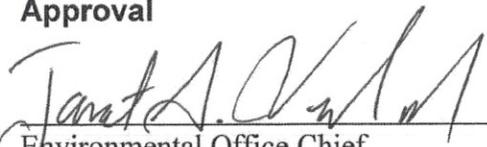
Other Resources

The proposed project will not impact the following resources: land use, growth, farmlands/timberlands, floodplain, water quality and storm water runoff, hazardous waste, paleontology, air quality, geology, soils, topography, cumulative impacts, and climate change.

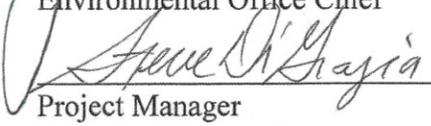
Disclaimer

This report is not an environmental document or determination. The above information and recommendations are based on the project description provided in this report. The discussion and conclusions provided by this Mini-PEAR are approximate and based on a *cursory* review of existing records, databases, and mapping tools to estimate the potential for probable environmental effects. The purpose of this report is to provide a preliminary level of environmental analysis to support the Project Initiation Document. Changes in project scope, alternatives, existing environmental conditions, and/or environmental laws or regulations will require a re-evaluation of this report.

Approval



Environmental Office Chief



Project Manager

Date: 4-22-2015

Date: 4/28/15

Headquarters Coordinator's Class of Action Concurrence has been obtained (e-mail concurrence is attached)—required for environmental documents only and not CEs.

5/1/2015

REQUIRED ATTACHMENTS:

Attachment A: PEAR Environmental Studies Checklist

Rev. 11/08

Environmental Studies for PA&ED Checklist					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Land Use	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Growth	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Farmlands/Timberlands	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Community Impacts	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	M	
Community Character and Cohesion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Relocations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Environmental Justice	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Utilities/Emergency Services	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Visual/Aesthetics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Cultural Resources:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Archaeological Survey Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Historic Resources Evaluation Report	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Historic Property Survey Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Historic Resource Compliance Report	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Section 106 / PRC 5024 & 5024.5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Native American Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Finding of Effect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Data Recovery Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Memorandum of Agreement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Hydrology and Floodplain	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Water Quality and Stormwater Runoff	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Geology, Soils, Seismic and Topography	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Paleontology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
PER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
PMP	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Hazardous Waste/Materials:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
ISA (Additional)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
PSI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Air Quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Noise and Vibration	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Energy and Climate Change	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Biological Environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Natural Environment Study	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Section 7:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Formal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Informal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	

Environmental Studies for PA&ED Checklist					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
No effect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Section 10	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
USFWS Consultation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
NMFS Consultation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Species of Concern (CNPS, USFS, BLM, S, F)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>L</u>	
Wetlands & Other Waters/Delineation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
404(b)(1) Alternatives Analysis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Invasive Species	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Wild & Scenic River Consistency	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Coastal Management Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
HMMP	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
DFG Consistency Determination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
2081	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Cumulative Impacts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Context Sensitive Solutions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Section 4(f) Evaluation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Permits:					
401 Certification Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
404 Permit Coordination, IP, NWP, or LOP	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
1602 Agreement Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>L</u>	
Local Coastal Development Permit Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
State Coastal Development Permit Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
NPDES Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
US Coast Guard (Section 10)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
TRPA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
BCDC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Memorandum

Flex your power!
Be energy efficient!

To: STEVE WYATT
Design Engineer, Branch S
Design Office II
Central Region-Project Development Division

Date: January 28, 2014

File: SLO-101 PM 28.5/28.7,
041 PM 12.5/13.3
SLO Collision Severity Reduction
EA 05-1F370K

Attn: Michael O'Neal

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

Subject: District Preliminary Geotechnical Design Report

1. Executive Summary

This report presents the results of a preliminary geotechnical investigation for a Collision Severity Reduction project at two locations: Location 1, on Route 101 from PM 28.5/28.7 and Location 2, on Route 41 between PM 12.5/13.3. The project would reduce run-off-the-road (ROR) collisions at Location 1 by doubling the existing 500-ft long acceleration lane to 1,067-ft, increasing weaving length and time to attain mainline speeds before merging into oncoming traffic. Installation of metal beam guard rail (MBGR) is proposed for Location 2, where steep embankments next to the highway are non-recoverable, resulting in aberrant vehicles into Atascadero Creek. Increasing the length of the acceleration lane at Location 1 would require a 20-ft set back of the existing 1:1 cut slope, which occurs through the toe of a paleo-landslide mapped by Wiegers (2010). The slide extends approximately 1,600-ft upslope of the highway, with a maximum width of about 1,000-ft, and occurs within the Franciscan Complex. Structural deformation to at least one residence on Hill Street, subsidence and cracking along Hill Street, and leaning trees above the existing Broad Street cut slope were observed within the mapped slide limits. A slope stability investigation, including geotechnical borings and slope inclinometers followed by periodic monitoring should be conducted before the design phase to determine project feasibility. Embankment slopes along Route 41 within project boundaries appear stable and suitable for construction of MBGR. Minor rock fall is evident at the end of the proposed MBGR near PM 13.1 where a 1:1 rock cut slope, approximately 300-ft long, with maximum slope face length of 90-ft exists. A double twisted wire mesh drapery system is recommended in replacement of the existing K-rail.

2. Introduction

A District Preliminary Geotechnical Report (DPGR) is provided for the above referenced project requested October 30, 2013. This preliminary geotechnical investigation supports safety project (EA 05-1F370K), funded under the Collision Severity Reduction program in San Luis Obispo County. This project proposes to reduce collisions at the Broad Street onramp and southbound Highway 101 (Location 1) in San Luis Obispo, and Route 41, PM 12.5 to 13.3 (Location 2) in Atascadero (ATTACHMENT 1). Extension of the Broad Street onramp acceleration lane from 500-ft to 1,067-ft would allow more time for motorists to accelerate to mainline speeds in order to safely merge into 101-traffic. Extension of the acceleration lane would require setback of the existing 1.5:1 to 1:1 cut slope by 20-ft. The second location on Highway 41 would reduce collisions into Atascadero Creek where steep embankment slopes exist, by addition of MBGR.

3. Pertinent Reports and Investigations

Site conditions were assessed by use of topographic and geologic maps, historic land use data, aerial photographs and pertinent geotechnical reports. Information regarding local surface conditions such as topography, soils, erosion, drainage, and geomorphic features were collected on a field reconnaissance conducted during November 2013. Actual conditions may vary from those assumed in this report.

1. County of San Luis Obispo (2000), Planning and Building, Geographic Technology and Design, Geology and Landslide Susceptibility.
2. Merriam, M., and Shantz, T., *2007 Caltrans Deterministic PGA Map*.
3. Wieggers, M. O. (2010), Geologic Map of the San Luis Obispo 7.5' Quadrangle, San Luis Obispo County, CA., California Geological Survey.
4. Richman, R., (2000), Geotechnical Design Report, SLO-101-27.5/28.1
5. Report on the Analysis of the Shoreline Fault Zone, Central Coastal California, Report to the U.S. Nuclear Regulatory Commission, Pacific Gas & Electric, January 2011.
6. Correlation of Seismic Velocities with Earthwork Factors, Caltrans Report Number CA-HY-MR-2103-4-72-37, Final Report, November 1972.
7. Lot 9, Tract 939, Hill Street, San Luis Obispo, California, Response to Grading Plan Comments by the City of San Luis Obispo, Pacific Geoscience, Inc., July 2, 1989.

8. Plan review for proposed Tract 939, San Luis Obispo, California, letter addressed to Lindenthaler and Courtney, Associates by Central Coast Laboratories, March 11, 1981.

4. Description of Project Alternatives and Existing Facilities

At Location 1, Route 101 is a two-lane divided highway with 12 foot wide lanes and 8 foot wide outside shoulders in both directions. The existing cut slopes immediately south of the Broad Street onramp range from 1.5:1 to 1:1. An average 30-foot slope length exists between stations 35+00 and 38+50. A topographic bench ranging between 8 and 20-feet wide occurs at the top of the cut slope, and tapers to the north. This bench in part serves to redirect drainage from residences along Hill Street directly above. At Location 2, Route 41 is a two-lane conventional highway, winding through canyons and hilly terrain (ATTACHMENT 2). Within the proposed project limits, 2:1 or steeper embankment slopes exist on the northbound side. At the eastern end of the project limits (PM 13.1), 60-feet of K-rail consumes part of the shoulder, serving as a catchment barrier for minor (low energy/ mostly < 3-inch diameter) rock-fall. A 1:1 rock cut slope is located at the eastern end of the project at PM 13.1. The cut slope extends about 300-ft, with a slope length of approximately 90-ft. A 60-foot segment of shoulder at this location is being used as catchment with the use of K-rail barrier. A minor volume of scattered 3-inch or less-diameter rock was found behind these barriers during the field visit December, 2013.

No alternatives can be recommended at this time for Location 1 until an extensive geotechnical investigation of the subsurface conditions and causes of slope movement is conducted.

Placing new MBGR is the only alternative considered at Location 2 on Route 41. The MBGR would be a minimum distance of 4-feet out from the ETW. PG&E poles between Stations 127 to 139 at PM 12.73 would also be moved a minimum distance of 4-feet from the ES, requiring placement near the top of the existing 2:1 embankment slopes. The collision recovery zone may additionally be augmented near the end treatment of MBGR at PM 13.1 by replacement of the K-rail barrier with a double twisted wire mesh drapery.

5. Physical Setting

5.1 Climate

The regional climate of San Luis Obispo County is influenced by the Pacific Ocean. Onshore winds are common in the afternoons and evenings as a result of a localized development of high pressure over the ocean. San Luis Obispo receives an average 50 days of measureable (>0.01-inches) precipitation per year with an annual average of 31 inches. Annual temperatures vary from 40F to 79F with warmest temperatures between June and October. Summer temperatures are commonly moderated by an influx of fog carried by the onshore winds. Mild temperatures are common during the winters with occasional below-freezing periods.

5.2 Topography and Drainage

San Luis Obispo county lies within the southern Coast Range Geomorphic Province, characterized by northwest-southeast trending mountain ranges, valleys, faults, and folds. San Luis Obispo City lies within a 3-mile wide valley bounded by the southern flanks of the Santa Lucia Range. The valley between San Luis Obispo and Morro Bay is divided centrally by a linear series of volcanic plugs ranging in elevation from 576-feet to 1,559-feet above mean sea level (msl). The project lies within the San Luis Obispo Creek watershed, a large dendritic drainage system with its headwaters along the southern flanks of the Santa Lucia Range (Cuesta Ridge) and its confluence south of San Luis Obispo at Avilla Beach. Locally, Stenner Creek joins San Luis Obispo Creek at the Broad Street-101 SB onramp, entering a large culvert beneath the freeway.

5.3 Prior Land Use

Prior land use in the vicinity of Location 1, was mostly agricultural and farming. The historic Villa residence (adobe) existed upslope of the current Hill Street above the Broad Street onramp. The area is presently occupied by numerous residential properties along the lower flanks of Cerro San Luis, open space, and ranch land. The open space upslope of the residential properties off Hill Street, is a multi-use recreational space used by hikers, horseback riders, and mountain bikers. Location 2 has a history of rural farming and grazing land with sparse, associated residences.

5.4 Man-made and Natural Features of Engineering and Construction Significance

Several preexisting constructed features exist within the limits of Location 1; Stenner Creek crosses beneath Broad Street and through a large diameter culvert beneath 101 and the beginning of the onramp, an Electrolier is located at Sta 39+50, and residential properties are located upslope of the onramp. No widening of the onramp is currently proposed at the Stenner Creek culvert. Five residences accessed by Hill Street, directly above the onramp were constructed in the 1980s on lots consisting of cut and fill. Fill slopes appear to terminate along a topographic bench which tapers to the north. The only geotechnical document found, indicates that a shallow (slide plane about 20-feet below surface) landslide was removed and fill material keyed in, presumably at the topographic bench.

The Broad Street onramp crosses the toe of a paleo-landside. The slide extends from a head scarp within the fractured rhyodacite volcanic plug and is shown to terminate beneath the 101. The exact dimensions and geometry of this slide are currently unknown. The slide is discussed in more detail in the following sections of this report. At Location 2, a small landslide is mapped

between approximate postmiles 12.9 and 13.0. This location appeared stable from recent field observation.

6. Geology

6.1 Regional

San Luis Obispo County lies within the southern Coast Range Geomorphic Province, bounded to the south by the Transverse Ranges Geomorphic Province. The Coast Ranges are thought to be underlain by the Jurassic-age Franciscan Complex (KJfme), which has been tectonically emplaced into overlying Tertiary-age marine and non marine sedimentary formations. The Franciscan Complex represents an accretionary-prism of fore-arc sediments (mostly marine sediments and volcanic detritus), accreted to the edge of the North American plate during subduction of the Farallon plate. Nine Oligocene-age, rhyodacite-volcanic plugs, pierced Franciscan Complex rocks in a northwest alignment between the southeastern-most plug of Islay Hill (near the county airport) and Morro Rock, partly submerged in the bay. Jurassic-age serpentinite (sp) and Coast Range Ophiolite Complex rocks outcrop in the Santa Lucia Range to the north and the Irish Hills to the south. Paleolandslides (Qls) are mapped within the pervasively sheared mudstone matrix of the Franciscan and randomly distributed greywacke sandstone and meta-volcanic rocks of the Franciscan Complex. The sedimentary rocks, which are folded and faulted with a northwestern trend, are composed mostly of shale, and sandstone. Quaternary-age surficial sediments (Qal) transported by the natural drainage systems have filled valleys and basins to variable thicknesses (ATTACHMENT 3).

6.2 Site

The proposed cut slope at Location 1, would occur through the toe of a prominent paleo-landslide mapped (Wieggers, 2010) on the flanks of Cerro San Luis. Evidence from borings and test pits, geomorphology, and slide geometry indicates this slide is an earth flow, which is comparatively shallow compared to a circular type failure. A longitudinal cross section of the slide measured in the field in November, 2013, is shown in ATTACHMENT 4. The landslide occurs in the Franciscan Complex, characterized by pervasively sheared mudstone and randomly distributed blocks of greywacke sandstone and meta-volcanic blocks. Geomorphology and debris composition show that the slide originated approximately 1,600 feet upslope within the fractured rhyodacite core of Cerro San Luis (above the "M").

A series of geotechnical studies conducted between 1974 and 1991 for residential development on Hill Street, describe the soils and rock at depths up to 21-ft below the surface within the mapped boundaries of the slide complex. The soils are generally described as expansive, sandy, silty clays. Test pits excavated at the former Madonna residence on 655 Hill Street in 1988, showed up to two feet of black clay overlying fractured, intensely weathered (Franciscan Complex) volcanic. Recent deformation has been observed locally in the vicinity of the

proposed cut slope, including cracking and subsidence of Hill Street, known structural damage to residences between Hill Street and the Broad Street onramp, and leaning trees above the onramp cut slope. It is unclear at this time if reported cracking in Hill street and damage to residential properties is attributed to settlement, expansive soils, slide movement, or another unforeseen cause.

Location 2 along Highway 41 between PM 12.5/13.3 traverses through the Late Cretaceous Atascadero Formation, composed of turbidite (submarine fan deposit) sandstone with interbedded siltstone, mudstone, and conglomerate. Route 41 appears to be dominantly a cut section within the project limits. Embankment slopes are anticipated to have shallow (1-2-ft) depths of artificial fill, or side casted material. A paleo-landslide is mapped along the highway between approximately PM 12.9 and 13.0, extending from the cut-slopes above, across the highway. No field evidence currently suggests that the above segment of highway is unstable. The 1:1 cut slope at the east end of the project limit (PM 13.1), where active but minor rock fall occurs, is also Atascadero Formation.

6.3 Soils

The soils at Location 1 are divided between the Los Osos-Diablo Complex, forming on the body of the mapped landslide above the highway, and generally on 30-50% slopes. The Salinas silty clay loam forms on the slopes below the residential lots off Hill Street and across the 101 (ATTACHMENT 5). Both soils are classified as hydrologic group C soils, characterized by low infiltration rates (≤ 0.57 to > 0.06 in/h) when thoroughly wetted and consists mainly of soils forming an impermeable (clay rich) layer at depths between 20 to 40 inches.

6.4 Faulting and Seismicity

Active faults may cause structural damage by ground acceleration and/or ground rupture. The intensity of damage caused by ground acceleration, depends on such factors as the magnitude of the seismic event, distance of epicenter to the site, soil and/or rock type, and ground water conditions. Caltrans defines a fault as seismically active if activity occurred within the Holocene or if ground rupture occurs within the last 15,000 years. The seismic data summarized below and in Table 1.0, are referenced to Location 1 of the project only. Regional faults and Peak ground acceleration (PGA) are estimated from the Caltrans adopted peak acceleration curves (Mualchin, 2007) and shown on the regional seismic map (ATTACHMENT 6).

The Los Osos Fault is a reverse fault capable of a moment magnitude of maximum credible earthquake (MCE) of 6.9. This fault trends west-northwest for approximately 27 miles from Huasna Valley, where it joins the Oceanic-West Huasna Fault, following the flanks of Irish Hills along Los Osos Valley, and through Estero Bay. It's nearest trace is approximately 2.7 miles south of the Broad Street onramp. Fault trenches studied by PG&E and private development

within the valley, determined Holocene offset, categorizing the Los Osos fault as an Alquist Priolo Earthquake Fault. Bedrock peak ground acceleration is estimated to be 0.53g.

The Late Quaternary age Oceanic-West Huasna Fault is a reverse fault extending approximately 76 miles north west from the Santa Maria River-Foxen Canyon Fault north east of San Luis Obispo, bending westward through the Santa Lucia Range and north of Cambria. The fault traverses within 3.5 miles of the proposed project area of Location 1 and has a MCE of 7.2.

The Rinconada Fault is a dextral strike-slip fault trending northwest from the Big Pine Fault in the San Rafael Mountains behind Santa Barbara to a point 7 miles west of King City. It has a MCE of 7.4 and is approximately 8.5 miles to the north east of Location 1 at its nearest point. The Rinconada fault parallels the San Andreas Fault Zone and is identified as one of the major strands of this system.

The Hosgri fault is a reverse-dextral strike slip off-shore fault approximately 15 miles west of Location 1. The Hosgri fault is divided into a west and east strand, extending northwest an estimated 87 miles sub-parallel to the coast line, merging with the Sur-Arroyo Laguna-San Simeon Fault about 37 miles north of San Simeon. The Hosgri-East segment has a MCE of 7.5.

The San Andreas Fault Zone (Parkfield section) is the furthest fault from the project area (36.6 miles to Location 1), though most significant fault, serving as a boundary between the North American and Pacific plates. The SAFZ extends northwest more than 800 miles from the Gulf of California, through the Coast Ranges and San Francisco Bay, terminating at the Mendocino Triple Junction to the north. The San Andreas Fault Zone is an active fault transferring stress through a system of adjacent faults of variable displacement rates. The Parkfield section experiences frequent seismic activity with moderate earthquakes (M=6) on a consistent interval.

Table 1.0 – Seismic Data

<i>Fault</i>	<i>Shortest Distance from the Project Site to the Fault (mi)¹</i>	<i>Moment Magnitude of Maximum Credible Earthquake¹</i>	<i>Peak Ground Acceleration (g)</i>
Los Osos -2011	2.7	6.9	0.53
Oceanic-W. Huasna	3.5	7.2	0.48
Rinconada-2011 CFM	8.5	7.4	0.35
Hosgri-East	14.9	7.5	0.27
San Andreas Fault Zone (Parkfield)	36.6 ²	7.9	0.19

1. Distances to faults are for Location 1 only.
2. San Andreas not shown on regional fault map

7. Geotechnical Considerations

7.1 Groundwater Regime

The main water table at highway elevation, is controlled by the baseline flow of Stenner Creek, which flows beneath Broad Street at the onramp. At highway level, groundwater is estimated to be at depths between 20-30-feet below the surface. Groundwater conditions within the boundaries of the mapped slide complex which include the existing onramp cut slope, are unknown and will require further subsurface investigation during the design phase.

7.1.2 Groundwater Regime Effects

The main water table is controlled by the baseline flow of Stenner Creek, which crosses beneath Broad Street at the onramp and beneath Highway 101 and has a base flow line estimated to be less than 20-feet below the onramp. The groundwater regime upslope at Location 1 is anticipated to be controlled by variable hydraulic conductivities associated with randomly distributed, rhyodacite boulders, fractured Franciscan Complex rock, and soil types (ATTACHMENT 5). Shallow cut slopes made within the slide debris at 655 Hill Street (Lot 10) for retaining walls intersected reported springs, and geotechnical borings made several hundred feet above Lot 9 reported groundwater between 12 to 16-feet below the surface.

7.2 Erosion

The soil-erodibility factor (K) accounts for the influence of soil properties on soil loss on sloped terrain during storm events and is determined from the Revised Universal Soil Loss Equation

(RUSLE). Higher values reflect higher erosion potential. The mechanical variables include initial impact of rain on the surface, runoff, and infiltration rates. The USDA published k-factors for the Los Osos and Diablo series soils are 0.32 and 0.15 respectively. The USDA factors are likely on the conservative side based on a survey study conducted in the Los Osos-Diablo complex soils over a smaller area (Tilligkeit, 2012).

Erosion is evident at Location 2 on Highway 41, near post mile 13.1 by minor accumulation of small diameter (mostly < 3-inches) rock behind the existing K-rail. Water likely contributes to accelerated rates by erosion and undermining of poorly indurated inter-layered siltstone/claystone component.

7.4 Slope Stability and Rockfall

The Broad Street onramp at Location 1 traverses the toe of a paleo-landslide which geomorphically appears to have reached global equilibrium. Tilted trees at the top of the existing cut slope, over-steepened slope face, and cracking with subsidence along Hill Street above the onramp, indicate that locally, slopes may still be creeping. The slide referenced in this report and several other paleo-landslides flanking Cerro San Luis were identified by the County of San Luis Obispo to have a "very high potential" of landslide susceptibility (ATTACHMENT 7).

Two references to landslides in the vicinity of Hill Street were found on file at the City of San Luis Obispo, Public Works: 1) Pacific Geoscience, Inc. and 2) Central Coast Laboratories. The letter from Pacific Geoscience, Inc. responds to grading plan comments made by the City of San Luis Obispo and references a Soil Engineering and Engineering Geology Investigation on Lot 9, Tract 939 Hill Street (see ATTACHMENT 4 for location), conducted by Buena Engineers, Inc. on October 24, 1988. Buena Engineers, Inc. identified a basal slide plane approximately 20-feet below the surface on the property being investigated. This slide material was said to be removed during remedial grading operations, and replaced with backfill and sub-drainage. In 2011, piers were installed beneath the foundation of the residence at 640 Hill Street. Approximately 0.5 feet of vertical displacement occurred per conversation with the property owner. It is unclear if this movement is attributed to slide movement and/or settlement of fill material.

The report by Central Coast Laboratories on the geological conditions of Tract 939 references geological and soils investigations of Tract 735 (approximately 60 acres), which envelops the smaller 13 acre-Tract 939. This letter discusses the geologic conditions of the site in more depth and covers the region later mapped by (Wieggers, 2010). Most of the proposed lots along Hill Street are described to lie on a "rubble mass" of rhyodacite boulders overlying Franciscan Formation (Complex). The "dacite rubble" (which flowed down slope from the prominent head scarp presently marked by an "M") was described as a 'coherent mass ranging from silt sized grains to boulders ten-feet in diameter'. A maximum thickness of slide debris was estimated to

be up to 70-feet beneath Lot 10 and approximately 35-feet thick beneath Lot 3 (ATTACHMENTS 4 and 8).

The Atascadero formation along Highway 41 is known to produce landslides, based on intrinsically weak, inter-layered siltstone and mudstone. The paleo-landslide mapped between approximately PM 12.9 and 13.0 is small in size and did not appear to affect the highway structurally. No cracking, subsidence, or other signs of instability were recognized along embankment slopes where the proposed MBGR would be placed. At the east end of the alignment near PM 13.1, 60-feet of K-rail is consuming the shoulder area and serving as a catchment for minor rock fall. This barrier system may be eliminated by installation of a double-twisted wire mesh drapery system, which would be anchored at the top of the slope and extend to the base, along the entire (300-foot) length of the slope, to capture mostly <0.25-foot diameter rock that would otherwise bounce into the highway lanes. This drapery system would be open ended and allow for easy removal of debris following winter storms.

7.5 Excavation Characteristics

Excavation characteristics at Location 1, are anticipated to be rippable since materials have been transported by gravity, and observed blocks of harder material (greywacke and rhyodacite boulders) are either intensely fractured (as observed in cut slope) or limited in diameter between 2 to 3-feet.

9. Preliminary Recommendations and Conclusions

No recommendations can be made at Location 1 until a more extensive geotechnical investigation is performed. This investigation is summarized below. A double twisted wire drapery system is recommended for rock fall mitigation at Location 2 (existing K-rail).

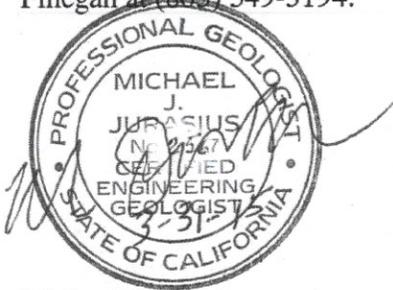
9.1 Future Exploration and Investigations

Site exploration at the Geotechnical Design Report (GDR) level will include field mapping, verification of rock type, and collection of pertinent structural data for slope stability analysis. Determining the cause of continued slope movement in the vicinity of Hill Street above the onramp should be investigated ideally before the design phase to allow for necessary monitoring of potential slope movement through several seasons. Proposed subsurface investigations include mud rotary drilling and seismic refraction surveying for rippability and exploration of groundwater conditions. Drilling would be performed both in the existing RW along the Broad Street onramp and on Hill Street. Drilling on Hill Street will require a city permit. Lab testing will include gradation testing, possible compression testing of rock, Atterberg Limits, corrosion, and slake testing to characterize engineering properties and constructability issues.

9.2 Excavations

The proposed excavation would occur is what is mapped as an existing landslide and identified by the county of San Luis Obispo as having very high potential risk of failure. The current excavation would also encroach on the toe of existing fill slopes of residential properties off of Hill Street.

If you have any questions or comments, please contact Mike Jurasius at (805) 549-3729 or Mike Finegan at (805) 549-3194.

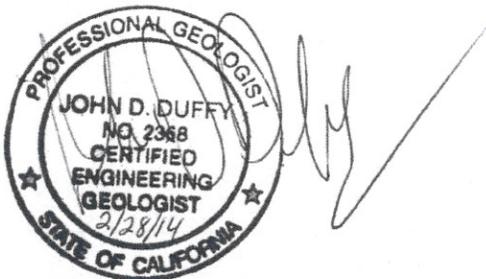


Michael J. Jurasius
Engineering Geologist
Geotechnical Design – North
Branch D

Supervised by,

A handwritten signature in black ink, appearing to read "Mike Finegan".

MICHAEL S. FINEGAN, PE, Chief
Geotechnical Design - North
Branch D



J JOHN D. DUFFY
Senior Engineering Geologist
Geotechnical Design – North
Branch D

- c: GDN File
Job File / Branch D Records
Andrew Tan/ Project Coordinator Engineer- electronic copy
Geodog

Attachments

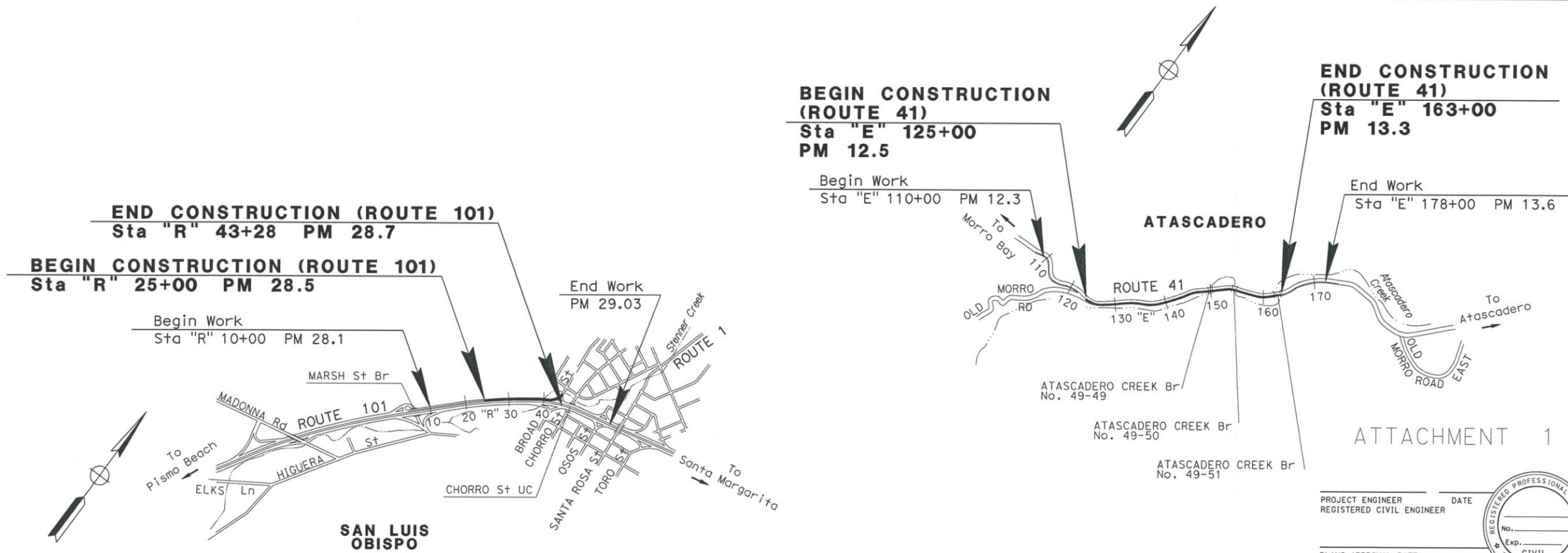
- | | |
|---------------|---|
| Attachment 1: | Project Location Map |
| Attachment 2: | Preliminary Typical Cross Sections |
| Attachment 3: | Regional Geologic Map |
| Attachment 4: | Geologic Cross Section |
| Attachment 5: | Soils and Hydrologic Group Map |
| Attachment 6: | Regional Seismic Map |
| Attachment 7: | Landslide Susceptibility Map |
| Attachment 8: | Land Development Reference Map, Tract 939 |

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY
 IN SAN LUIS OBISPO COUNTY
ON ROUTE 101 FROM 0.4 MILE NORTH OF MARSH St Br TO
0.1 MILE SOUTH OF CHORRO St UC AND ON ROUTE 41
FROM OLD MORRO Rd TO ATASCADERO CREEK Br No. 49-51

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101, 41	28.5/28.7, 12.5/13.3		

LOCATION MAP



ATTACHMENT 1

PROJECT ENGINEER _____ DATE _____
 REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE _____

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

REGISTERED PROFESSIONAL ENGINEER
 No. _____
 Exp. _____
 CIVIL
 STATE OF CALIFORNIA

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

ATTACHMENT D CONT'D NO SCALE

CONTRACT No.	00-000004
PROJECT ID	0000000000

DATE PLOTTED => 28-JAN-2014 TIME PLOTTED => 10:06

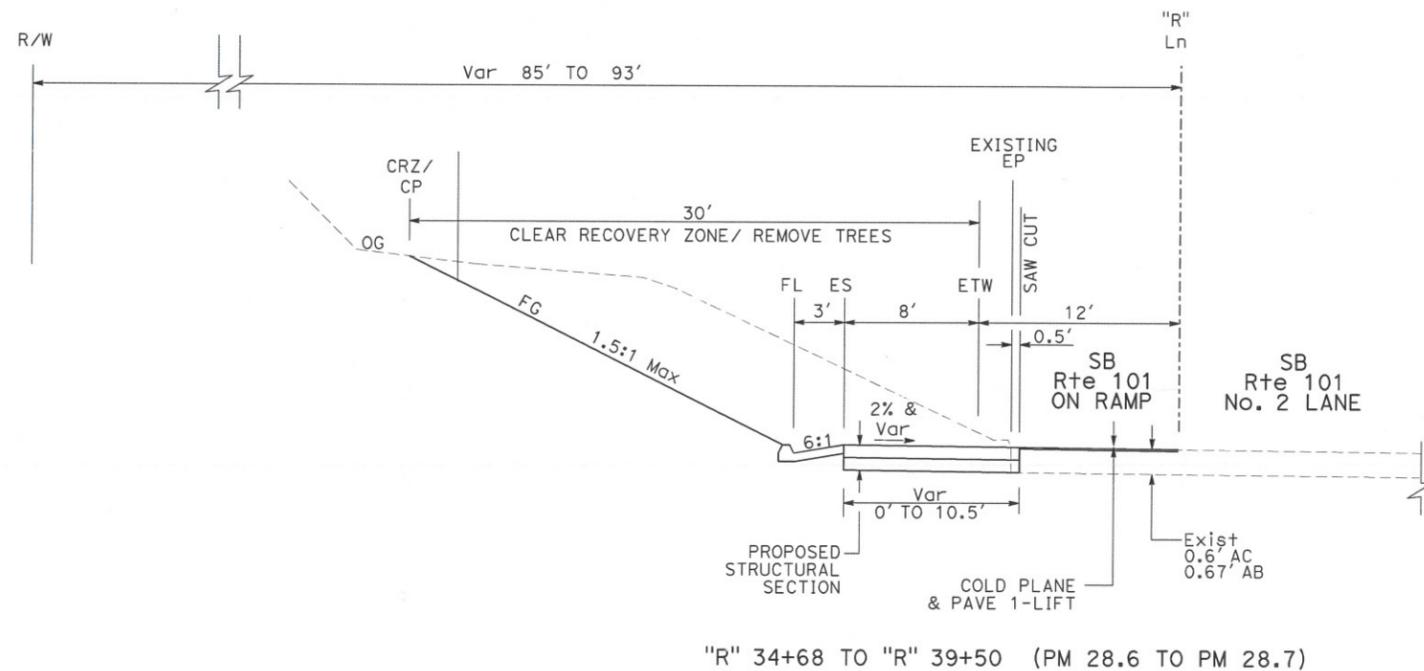
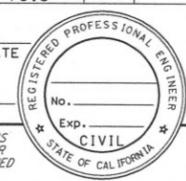
ABBREVIATIONS
 CRZ = CLEAR RECOVERY ZONE
 MVP = MAINTENANCE VEHICLE PULLOUT

DIS#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	SLO	101, 41	28.5/28.7, 12.5/13.3		

REGISTERED CIVIL ENGINEER DATE _____

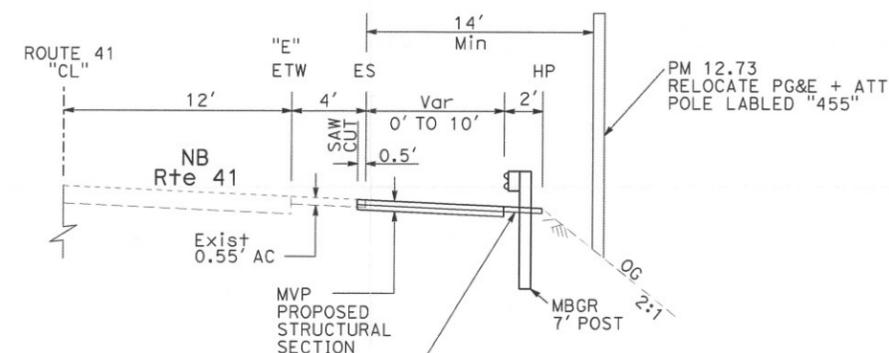
PLANS APPROVAL DATE _____

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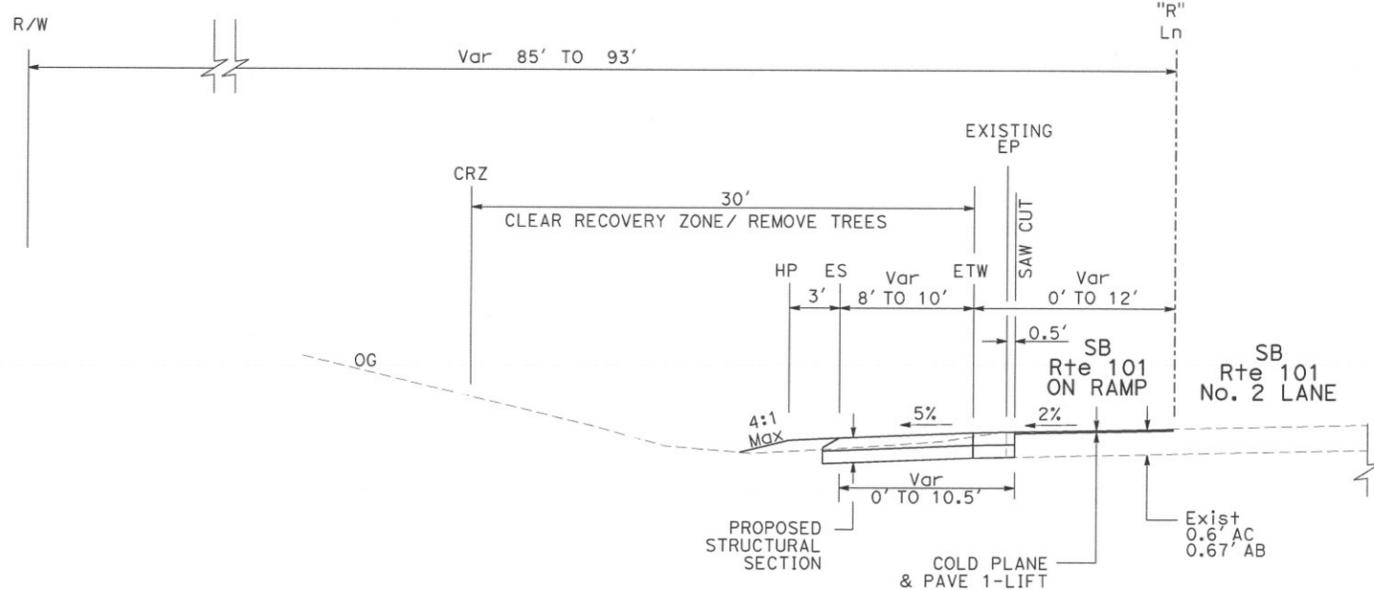
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ROUTE 101



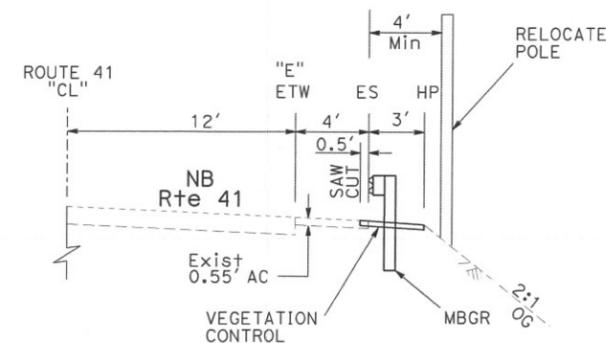
"E" 131+63 TO "E" 132+34 (PM 12.7)
 "E" 143+47 TO "E" 144+17 (PM 12.9)
 "E" 146+60 TO "E" 148+16 (PM 13.0)

ROUTE 41



"R" 28+68 TO "R" 34+68 (PM 28.5 TO PM 28.6)

ROUTE 101



"E" 125+42 TO "E" 131+63 (PM 12.6 TO PM 12.7)
 "E" 132+34 TO "E" 143+47 (PM 12.7 TO PM 12.9)
 "E" 144+17 TO "E" 146+60 (PM 12.9 TO PM 13.0)

ROUTE 41

ATTACHMENT 2

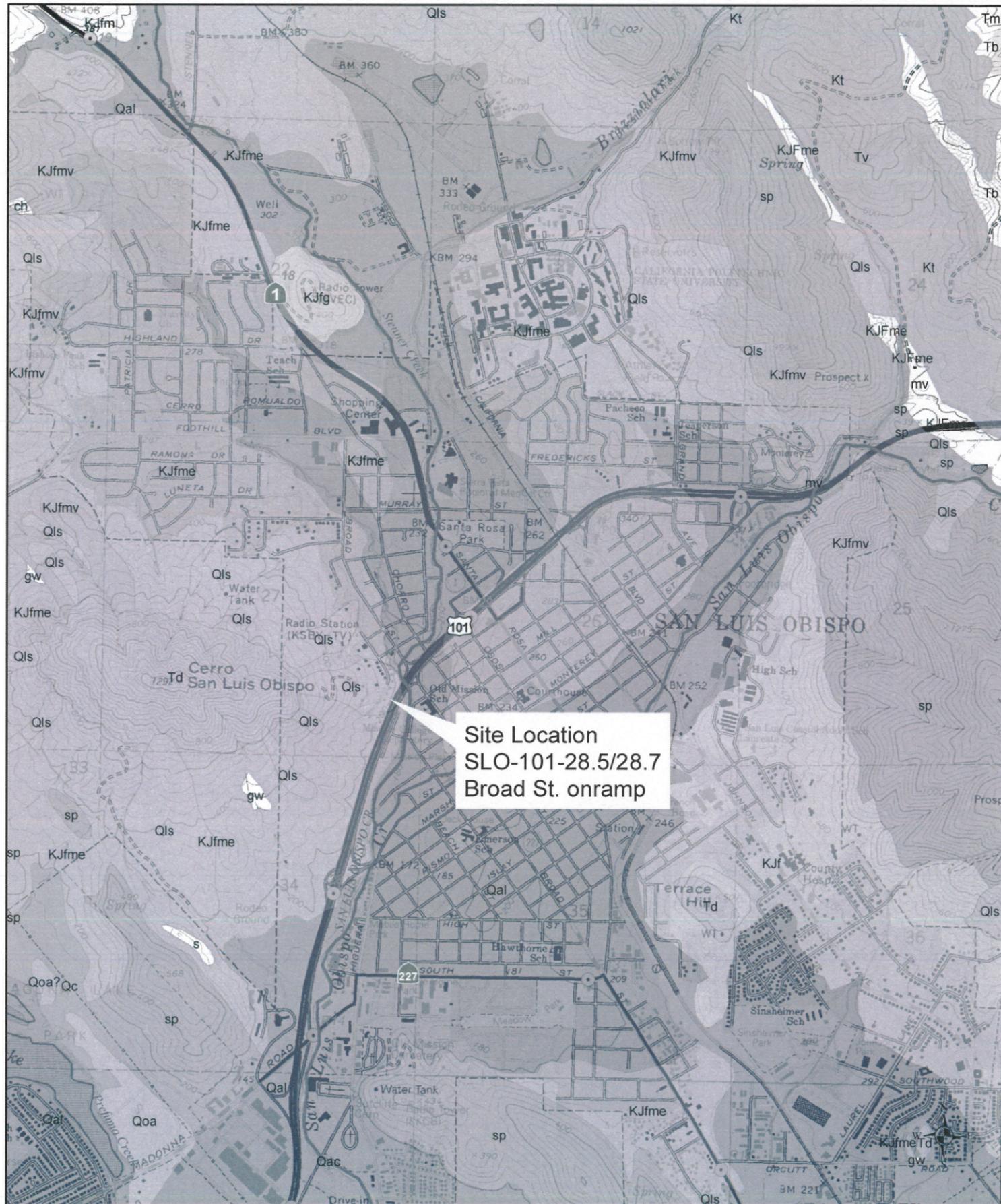
**PRELIMINARY
 TYPICAL CROSS SECTIONS**

ATTACHMENT D CONT'D NO SCALE

X-1

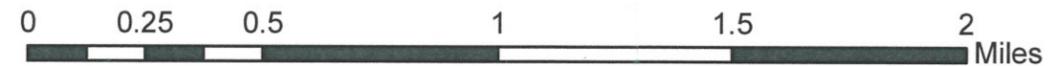
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 Functional Supervisor
 REVISIONS: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

LAST REVISION: DATE PLOTTED => 28-JAN-2014 00-00-00 TIME PLOTTED => 10:05



Legend

-  KJf -Franciscan Complex, Chaotic mixture of fragmented rock masses embedded in a penetratively sheared matrix of argillite and crushed metasandstone.
-  KJfg -Franciscan Complex, greenstone (after basalt)
-  KJfme -Melange (Franciscan Complex)-Chaotic mixture of fragmented rock masses embedded in a penetratively sheared matrix of argillite and crushed metasandstone.
-  KJfmv -Franciscan, metavolcanic rocks, Primarily greenstone, metamorphosed from basalt. Includes massive to pillowed basalt flows, breccia, tuff and diabase. Commonly deeply weathered
-  Kt -Toro Formation, undifferentiated
-  Qac -active stream channel
-  Qal -Latest Pleistocene to Holocene alluvium, undifferentiated
-  Qc -Colluvium, (Holocene to late Peistocene) - Poorly sorted sandy and silty slope wash deposits.
-  Qls -Landslide Deposits-(Holocene and Pleistocene) - Highly fragmented to largely coherent landslide deposits. Notable landslides include deep-seated rock slides and earth flows in Franciscan mélange and large rock fall/debris flow complexes on the flanks of prominent dacite peaks.
-  Qoa -Early to late Pleistocene alluvial deposits, undifferentiated
-  Qoa? -Early to late Pleistocene alluvial deposits, undifferentiated
-  Td -porphyritic-aphanitic dacite
-  Tv -Vaqueros Formation, (Oligocene) Gray to brown, medium to coarse sandstone, poorly to well indurated, with silty, calcareous matrix.
-  sp -serpentine

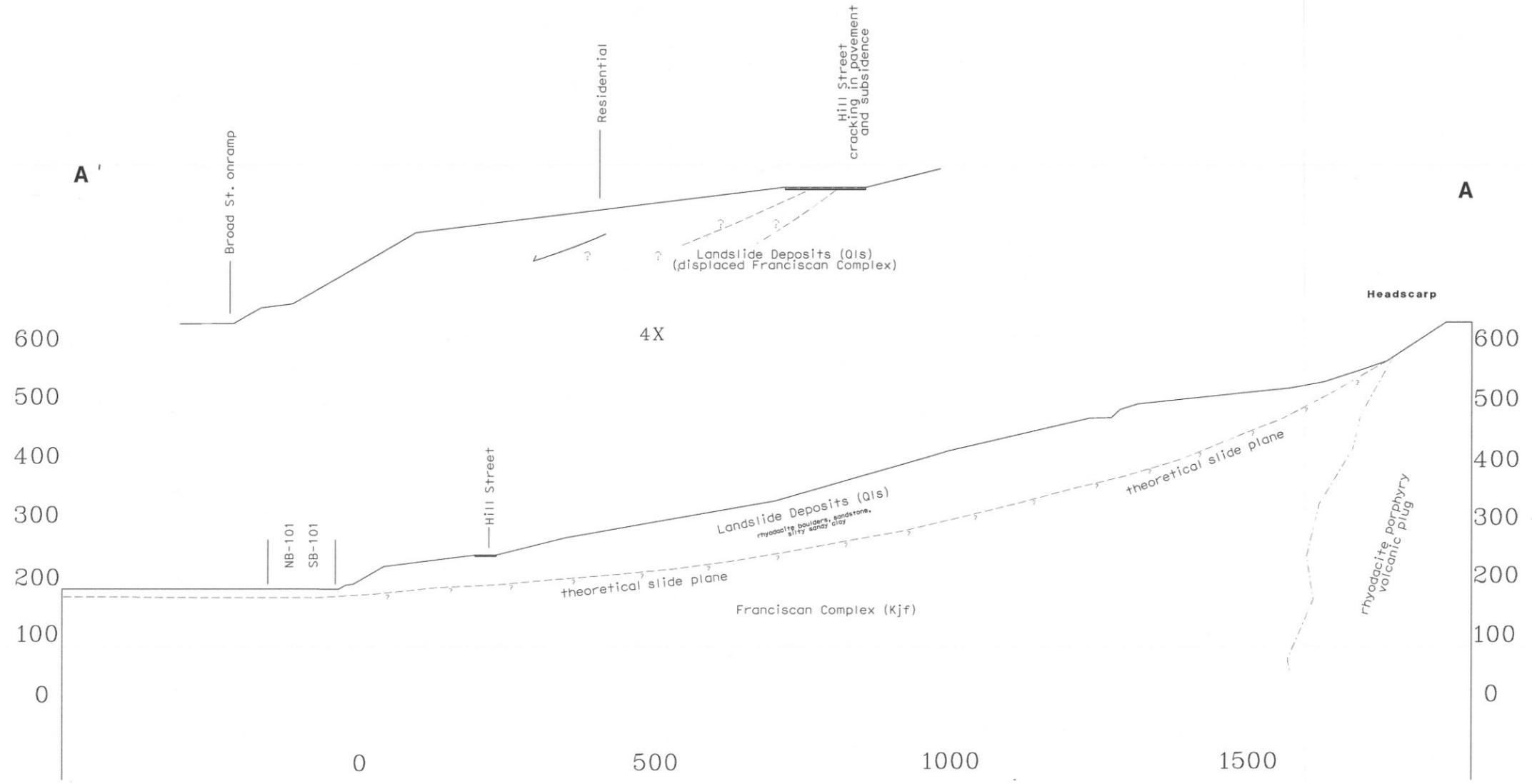


ATTACHMENT D CONT'D

ATTACHMENT 3
Regional Geologic Map
SLO-101-28.5/28.7
05-1F370- Cut Slope

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
REGISTERED CIVIL ENGINEER			DATE		
PLANS APPROVAL DATE			REGISTERED PROFESSIONAL ENGINEER		
			No. _____		
			EXP. _____		
			CIVIL		
			STATE OF CALIFORNIA		
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					

Geologic Cross Section Cerro San Luis Landslide



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
St. Gobans
 CONSULTANT FUNCTIONAL SUPERVISOR
 CALCULATED-DESIGNED BY
 CHECKED BY
 REVISED BY
 DATE REVISED

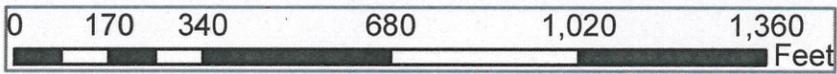
ATTACHMENT 4
GEOLOGIC CROSS SECTION

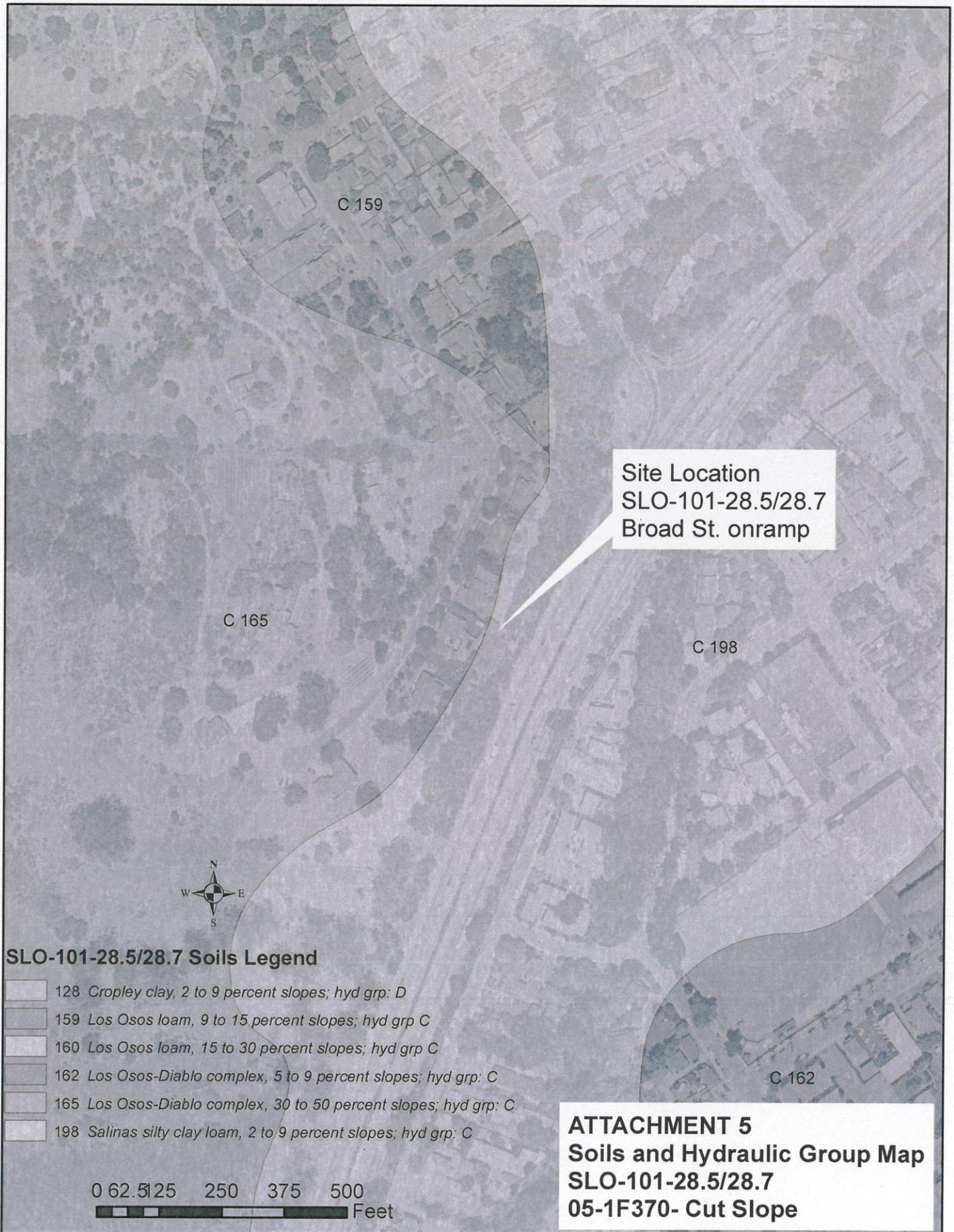
ATTACHMENT D CONT'D

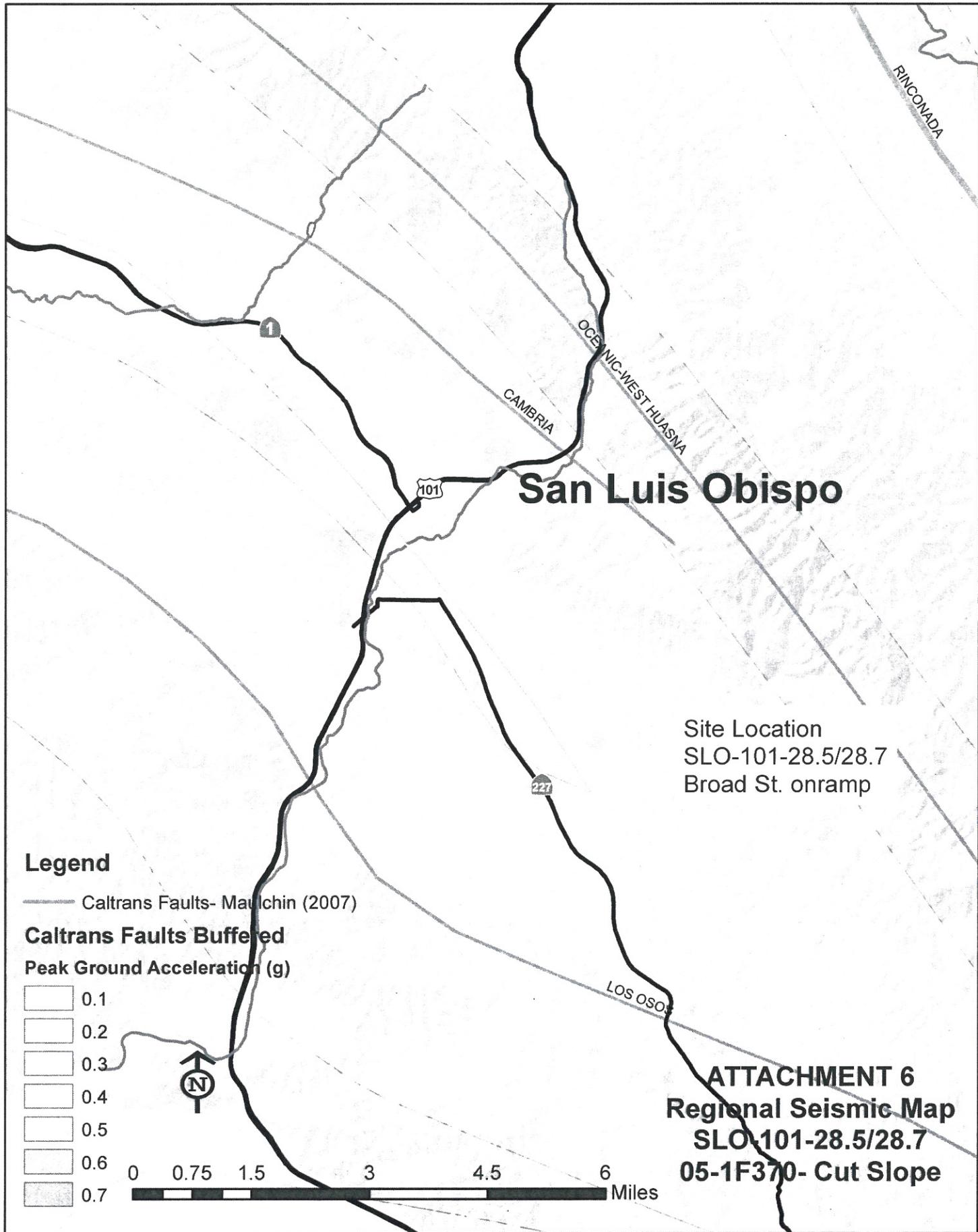
LAST REVISION
 DATE PLOTTED => 28-JAN-2014
 TIME PLOTTED => 10:10

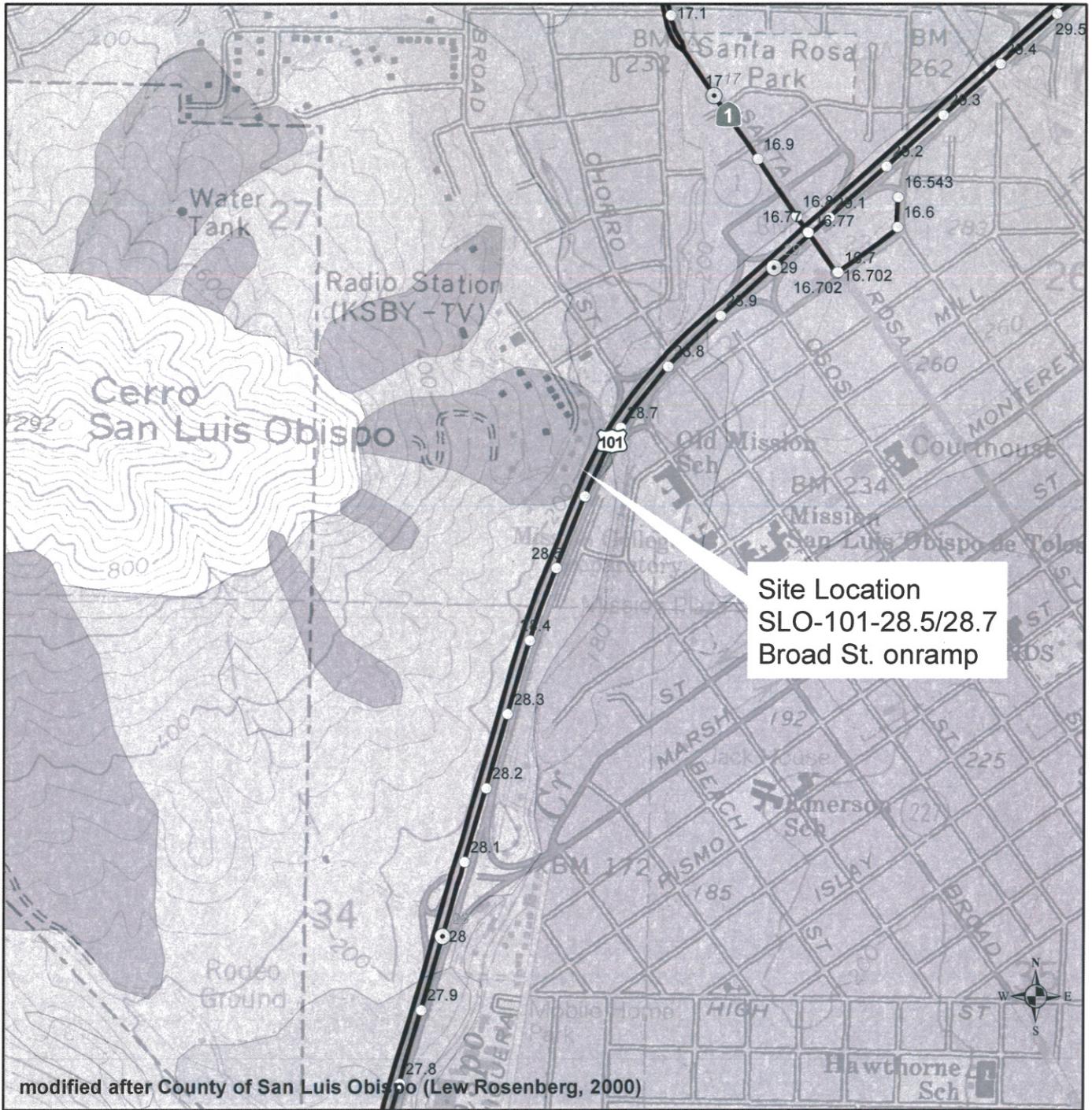


ATTACHMENT 4
 Cerro San Luis Landslide
 SLO-101-28.5/28.7
 05-1F370- Cut Slope



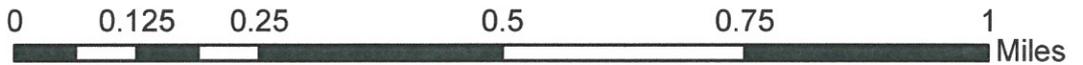






Site Location
 SLO-101-28.5/28.7
 Broad St. onramp

Legend



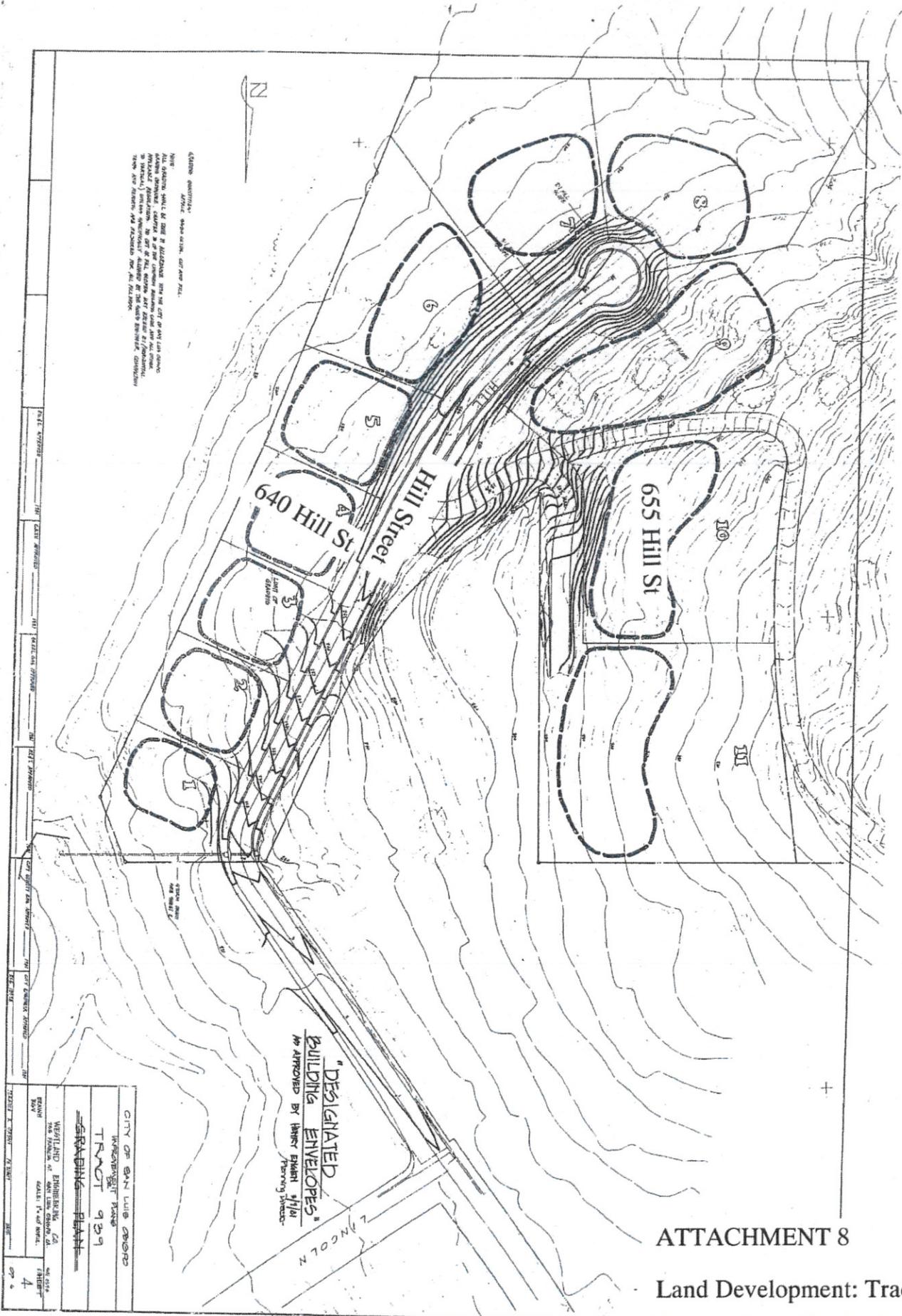
Landslide Susceptibility

SlideRisk

- Very High Potential
- High Potential
- Moderate Potential
- Low Potential
- Unknown

ATTACHMENT 7
Landslide Susceptibility Map
SLO-101-28.5/28.7
05-1F370- Cut Slope

ATTACHMENT D CONT'D



ATTACHMENT 8

Land Development: Tract 939

Memorandum

To: Steve DiGrazia
PPM - SLO

Date: 4/14/2015

Attn Michael O'Neal
Design - SLO
Steve Wyatt
Design - SLO

File: CD 05 EA 1F370K Alt 5
Co SLO RTE 101

DESCRIPTION:

Extend Route 101 Broad Street southbound On-Ramp &
place MBGR on Route 041.

From: Department of Transportation
Division of Right of Way Central Region

Subject: RIGHT OF WAY DATA SHEET

We have completed an estimate of the right of way costs for the above-referenced project based on the Right of Way Data Sheet Request Form dated 3/11/2015

The following assumptions and limiting conditions were identified:

Appraisal

Utility

The PE indicates on the Right of Way Data Sheet Request Form, item# 5: Utility permit search completed YES (X), Utility involvement and/or relocation REQUIRED (X), Potholing required YES (X). A review of the permit database shows the Route 101 portion has eight utilities located in the project limits. A permit database review for the MBGR replacement project on Route 41 shows three utilities within the project limit. Relocation of 4 AT&T poles and 2 AT&T/PG&E joint utility poles may be required. If oil or gas lines are in the project limits, it is advisable to consider potholing. Any adjustment of facilities constitutes involvement and a R/W utility process and timeline would be necessary before the project could be certified. Avoid and protect in place all existing buried and aerial utility facilities in the project area. Comply with USA alert requirements, including at construction sign locations. Utility verification may be advisable.

Right of Way Lead Time will require a minimum of 18 months after we receive Certified Appraisal Maps and/or Utility Conflict Plans, obtained necessary environmental clearance and applicable freeway agreements have been approved.



Marshall Garcia, Sr. Right of Way Agent
San Luis Obispo Field Office
(805) 549-3471

Right Of Way Cost Estimate

	Current Year 2015	Contingency Rate	Right of Way Escalation Rate	Escalated Year 2017
Acquisition:	\$0	25%	5%	\$0
Mitigation:	\$2,695	25%	5%	\$2,971
State Share of Utilities:	\$2,500	25%	5%	\$2,756
Expert Witness:	\$0	25%	5%	\$0
Relocation Assistance:	\$0	25%	5%	\$0
Demolition and Clearance:	\$0	25%	5%	\$0
Title and Escrow:	\$0	25%	5%	\$0
Ad Signs:	\$0	25%	5%	\$0
Total Current Value:	\$5,195			\$5,727

If RW Cost Est fields are blank, Costs = \$0

Estimated Construction Contract Work (CCW):

R/W LEAD TIME/Mo. 18

Cost Break Down	
Pot Hole	2,000
Mitigation	
Land Bank	
Permit Fees	2,156

RR Involvement

Railroad Facilities or Right of Way Affected?	no
Const/Maint Agreement:	no
Service Contract:	no
Right of Entry:	no
Clauses:	no
Estimated Lead-time	0 mon

Parcel Data

# of Parcel Type X:			
# of Parcel Type A: less than \$10,000 non-complex			
# of Parcel Type B: more than \$10,000 non-complex			
# of Parcel Type C: complex, special valuation			
# of Parcel Type D: most complex and time consuming		# of Duals Needed:	
Totals:	0	Totals:	0

of Excess Parcels:

Misc R/W Work

# of RAP Displacements:	0
# of Clearance/Demos:	
# of Const Permits:	
# of Condemnations:	

Utilities

U4-1: Owner Expense	6
U4-2: State Expense, Conventional no Fed Aid	0
U4-3: State Expense, Freeway no Fed Aid	0
U4-4: State Expense, both with Fed Aid	0
U5-7: Utility verification, no relocation/potholing	8
U5-8: Utility verification, w/ some relocation/potholing	0
U5-9: Utility verifications, relocation/potholing required	6

Parcel Area

Total R/W Required:
Total Excess Area:

General Description of R/W and Excess Lands Required (zoning, use, major improvements, critical or sensitive parcels, etc.):

General Description of Utility Involvement:

This is a Collision Severity Reduction project in San Luis Obispo County. The project will extend the Route 101 Broad Street SB on-ramp and replace Metal Beam Guardrail on Route 41. Route 101 is designated Freeway within the project limits. Facilities identified in or near the project limits on Route 101 include: Southern California Gas 4" gas line at PM 28.7; AT&T underground cable and fiber optic at PM 28.8; PG&E aerial electric transmission lines throughout the limits; Charter TV cable at 28.7; SLO City sewer and water throughout the limits and a SLO County aerial line crossing over Route 101 at PM 28.7. Route 41 is designated Conventional Highway in the project limits. Facilities identified in or near the project limits on Route 41 include: AT&T aerial telecommunication cables throughout the project limits; Chevron 12" gas crossing throughout the limits, and PG&E electrical transmission throughout the limits.

Is there a significant effect on assessed valuation:

No

Were any previously unidentified sites with hazardous waste or material found:

No

Are RAP displacements required:

No

of single family:

of muliti-family:

of business/nonprofit:

of farms:

Sufficient replacement housing will be available without last resort housing:

Are material borrow or disposal sites required:

No

Are there potential relinquishments or abandonments:

No

Are there any existing or potential airspace sites:

No

Are environmental mitigation parcels required:

Yes

Data for evaluation provided by:

Estimator:	Danny Millsap	4/8/2015
Railroad Liaison Agent:	sah	4/7/2015
Utiltiy Relocation Coordinator:	Martin Miller	4/8/2015

I have personally reviewed this Right of Way Sheet and all supporting information. I find this Data Sheet complete and current, subject to the limiting conditions set forth.

Date

ENTERED PMCS 4/9/2015

BY: Danny Millsap


 Marshall Garcia
 Sr. Right of Way Agent, Right of Way

Memorandum

To: Steve DiGrazia
PPM - SLO

Date: 4/14/2015

Attn: Michael O'Neal
Design - SLO
Steve Wyatt
Desing - SLO

File: CD 05 EA 1F370K Alt 6
Co SLO RTE 101

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R/W LEAD TIME/Mo. 18

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Pot Hole	2,000
Mitigation	
Land	
Bank	
Permit Fees	2,156

RR Involvement

Railroad Facilities or Right of Way Affected?	no
Const/Maint Agreement:	no
Service Contract:	no
Right of Entry:	no
Clauses:	no
Estimated Lead-time	0 mon

Parcel Data

# of Parcel Type X:			
# of Parcel Type A: less than \$10,000 non-complex			
# of Parcel Type B: more than \$10,000 non-complex			
# of Parcel Type C: complex, special valuation			
# of Parcel Type D: most complex and time consuming		# of Duals Needed:	
Totals:	0	Totals:	0

of Excess Parcels:

Misc R/W Work

# of RAP Displacements:	0
# of Clearance/Demos:	
# of Const Permits:	
# of Condemnations:	

Utilities

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of single family: # of multi-family: # of business/nonprofit: # of farms:

Sufficient replacement housing will be available without last resort housing:

Are material borrow or disposal sites required:

Are there potential relinquishments or abandonments:

Are there any existing or potential airspace sites:

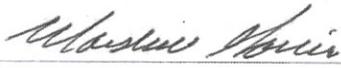
Are environmental mitigation parcels required:

Data for evaluation provided by:

Estimator:	Danny Millsap	4/8/2015
Railroad Liaison Agent:	sah	4/7/2015
Utility Relocation Coordinator:	Martin Miller	4/8/2015

I have personally reviewed this Right of Way Sheet and all supporting information. I find this Data Sheet complete and current, subject to the limiting conditions set forth.

Date
ENTERED PMCS 4/9/2015
BY: Danny Millsap



Marshall Garcia
Sr. Right of Way Agent, Right of Way

PRELIMINARY
PROJECT COST ESTIMATE

Project Study Report Cost Estimate

Project ID: 0513000135

Type of Estimate : Project Study Report Cost Estimate
Program Code : 201.015
Project Limits : ON ROUTE 101 FROM 0.4 MILE NORTH OF MARSH St Br TO 0.1 MILE SOUTH OF CHORRO St UC AND ON ROUTE 41 FROM OLD MORRO Rd TO ATASCADERO CREEK Br No. 49-51
Description: Improving the operations of the Broad Street ramps with southbound Route 101 and construct guardrail along Route 41
Scope : Remove on and off ramps, construct guardrail
Alternative : 5 (Programmable Alternative)

	Current Cost	Escalated Cost
ROADWAY ITEMS	\$ 2,938,300	\$ 3,750,098
STRUCTURE ITEMS	\$ -	\$ -
SUBTOTAL CONSTRUCTION COST	\$ 2,938,300	\$ 3,750,098
RIGHT OF WAY	\$ 5,195	\$ 5,727
TOTAL CAPITAL OUTLAY COST	\$ 2,944,000	\$ 3,756,000
PR/ED SUPPORT	\$ 900	\$ 900
PS&E SUPPORT	\$ 1,000	\$ 1,000
RIGHT OF WAY SUPPORT	\$ 100	\$ 100
CONSTRUCTION SUPPORT	\$ 900	\$ 900
TOTAL CAPITAL OUTLAY SUPPORT COST*	\$ 2,900	\$ 2,900
TOTAL PROJECT COST	\$ 2,950,000	\$ 3,800,000

If Project has been programmed enter Programmed Amount

\$ -

Date of Estimate (Month/Year) Month / Year
5 / 2015

Estimated Date of Construction Start (Month/Year) 12 / 2020

Number of Working Days 80 Working Days

Estimated Mid-Point of Construction (Month/Year) Month / Year
2 / 2021

Number of Plant Establishment Days 0 Days

Estimated Project Schedule

PID Approval 7/1/2016
 PA/ED Approval 7/3/2018
 PS&E 12/4/2019
 RTL 4/1/2020
 Begin Construction 12/16/2020

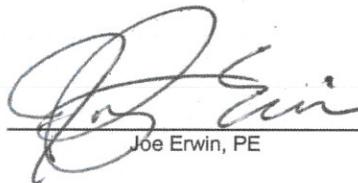
Approved by Project
Manager

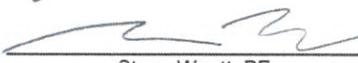

Project Manager

5/28/15 (805) 549-3437
Date Phone

I. ROADWAY ITEMS SUMMARY

Section	Cost
1 Earthwork	\$ 257,500
2 Pavement Structural Section	\$ 299,800
3 Drainage	\$ 57,200
4 Specialty Items	\$ 458,500
5 Environmental	\$ 157,000
6 Traffic Items	\$ 348,400
7 Detours	\$ -
8 Minor Items	\$ 157,900
9 Roadway Mobilization	\$ 173,700
10 Supplemental Work	\$ 139,900
11 State Furnished	\$ 300,700
12 Contingencies	\$ 587,700
13 Overhead	\$ -
TOTAL ROADWAY ITEMS	
	\$ 2,938,300

Estimate Prepared By  5/28/15 (805) 549-3489
 Joe Erwin, PE Date Phone

Estimate Reviewed By  5/28/15 (805) 549-3079
 Steve Wyatt, PE Date Phone

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

PRELIMINARY
PROJECT COST ESTIMATE

SECTION 1: EARTHWORK

Item code	Unit	Quantity		Unit Price (\$)		Cost
160101 Clearing & Grubbing	LS	1	x	20,000.00	= \$	20,000
190101 Roadway Excavation	CY	200	x	100.00	= \$	20,000
190103 Roadway Excavation (Type Y) ADL	CY	2,500	x	80.00	= \$	200,000
194001 Ditch Excavation	CY	50	x	100.00	= \$	5,000
198001 Impored Borrow	CY	250	x	50.00	= \$	12,500

TOTAL EARTHWORK SECTION ITEMS	\$ 257,500
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SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code	Unit	Quantity		Unit Price (\$)		Cost
150771 Remove Asphalt Concrete Dike	LF	700	x	5.00	= \$	3,500
150860 Remove Base and Surfacing	CY	600	x	50.00	= \$	30,000
153103 Cold Plane Asphalt Concrete Pavement	SQYD	1,000	x	2.00	= \$	2,000
1532XX Remove Concrete (type)	CY	5	x	100.00	= \$	500
260201 Class 2 Aggregate Base	CY	1,500	x	45.00	= \$	67,500
390132 Hot Mix Asphalt (Type A)	TON	750	x	133.00	= \$	99,750
390137 Rubberized Hot Mix Asphalt (Gap Graded)	TON	250	x	160.00	= \$	40,000
390136 Minor Hot Mix Asphalt	TON	50	x	200.00	= \$	10,000
394071 Place Hot Mix Asphalt Dike	LF	700	x	5.00	= \$	3,500
394090 Place Hot Mix Asphalt (Misc. Area)	SQYD	100	x	10.00	= \$	1,000
397005 Tack Coat	TON	1	x	2,000.00	= \$	2,000
731502 Minor Concrete (Misc. Const)	CY	100	x	400.00	= \$	40,000

TOTAL STRUCTURAL SECTION ITEMS	\$ 299,800
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PRELIMINARY
PROJECT COST ESTIMATE

SECTION 3: DRAINAGE

Item code	Unit	Quantity		Unit Price (\$)		Cost
150805 Remove Culvert	LF	200	x	30.00	= \$	6,000
155003 Cap Inlet	EA	1	x	800.00	= \$	800
510502 Minor Concrete (Minor Structure)	CY	8	x	500.00	= \$	4,000
62XXXX XXX" APC Pipe	LF	150	x	80.00	= \$	12,000
72XXXX Rock Slope Protection (Type and Method)	CY	20	x	200.00	= \$	4,000
729010 Rock Slope Protection Fabric	SQYD	10	x	40.00	= \$	400
750001 Miscellaneous Iron and Steel	LB	1,000	x	5.00	= \$	5,000
XXXXXX Additional Drainage	LS	1	x	25,000.00	= \$	25,000

TOTAL DRAINAGE ITEMS	\$ 57,200
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SECTION 4: SPECIALTY ITEMS

Item code	Unit	Quantity		Unit Price (\$)		Cost
150662 Remove Metal Beam Guard Railing	LF	1,000	x	15.00	= \$	15,000
150668 Remove Terminal Systems	EA	14	x	1,000.00	= \$	14,000
190110 Lead Compliance Plan	LS	1	x	5,000.00	= \$	5,000
80XXXX Fence (Insert Type)	LF	300	x	25.00	= \$	7,500
XXXXXX Double Twisted Wire Mesh Drapery System	SQFT	5,000		10.00	= \$	50,000
832001 Metal Beam Guard Railing	LF	2,000	x	40.00	= \$	80,000
83954X Transition Railing (Insert Type)	EA	17	x	5,000.00	= \$	85,000
8395XX Terminal System	EA	7	x	10,000.00	= \$	70,000
8395XX Alternative Flared Terminal System	EA	10	x	3,000.00	= \$	30,000
8395XX End Anchor Assembly (Insert Type)	EA	2	x	1,500.00	= \$	3,000
839XXX Crash Cushion (Insert Type)	EA	3	x	25,000.00	= \$	75,000
83XXXX Concrete Barrier (Insert Type)	LF	300	x	80.00	= \$	24,000

TOTAL SPECIALTY ITEMS	\$ 458,500
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PRELIMINARY
PROJECT COST ESTIMATE

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code	Unit	Quantity		Unit Price (\$)	=	Cost
071325 TEMPORARY REINFORCED SILT FENCE	LF	2,000	x	10.00	= \$	20,000
071325 Temporary Fence (Type ESA)	LF	2,000	x	5.00	= \$	10,000
<u>Subtotal Environmental</u>						<u>\$ 30,000</u>

5B - LANDSCAPE AND IRRIGATION

Item code	Unit	Quantity		Unit Price (\$)	=	Cost
200001 Highway Planting	LS	1	x	15,000.00	= \$	15,000
201700 Imported Topsoil	CY	1,000	x	25.00	= \$	25,000
203021 Fiber Rolls	LF	750	x	20.00	= \$	15,000
204099 Plant Establishment Work	LS	1	x	30,000.00	= \$	30,000
208000 Irrigation System	LS	1	x	10,000.00	= \$	10,000
<u>Subtotal Landscape and Irrigation</u>						<u>\$ 95,000</u>

5C - NPDES

Item code	Unit	Quantity		Unit Price (\$)	=	Cost
130100 Construction Site Management	LS	1	x	10,000.00	= \$	10,000
130200 Prepare WPCP	LS	1	x	2,000.00	= \$	2,000
130530 Temporary Hydraulic Mulch (BFM)	SQYD	1,000	x	5.00	= \$	5,000
130640 Temporary Fiber Roll	LF	1,000	x	4.00	= \$	4,000
130620 Temporary Drainage Inlet Protection	EA	5	x	200.00	= \$	1,000
130610 Temporary Check Dam	LF	500		10.00	= \$	5,000
130900 Temporary Concrete Washout	LS	1	x	5,000.00	= \$	5,000

Supplemental Work for NPDES

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

066595 Water Pollution Control Maintenance Sharing	LS	1	x	5,000.00	= \$	5,000
066596 Additional Water Pollution Control**	LS	1	x	3,000.00	= \$	3,000

Subtotal NPDES (Without Supplemental Work) \$ 32,000

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

**Applies to both SWPPPs and WPCP projects.

*** Applies only to project with SWPPPs.

TOTAL ENVIRONMENTAL	\$ 157,000
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PRELIMINARY
PROJECT COST ESTIMATE

SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Item code	Unit	Quantity	Unit Price (\$)	Cost
860090 Maintain Existing Traffic Management	LS	x	= \$	-
860XXX Signals & Lighting	LS	x	= \$	-
<u>Subtotal Traffic Electrical</u>				<u>\$ -</u>

6B - Traffic Signing and Striping

Item code	Unit	Quantity	Unit Price (\$)	Cost
120090 Construction Area Signs	LS	1	x 15,000.00 = \$	15,000
150710 Remove Traffic Stripe	LF	3,700	x 1.00 = \$	3,700
150742 Remove Roadside Sign	EA	15	x 100.00 = \$	1,500
566011 Roadside Sign (One Post)	EA	1	x 250.00 = \$	250
566012 Roadside Sign (Two Post)	EA	1	x 500.00 = \$	500
560XXX Furnish Sign Panels	SQFT	600	x 10.00 = \$	6,000
560XXX Install Sign Panels	SQFT	600	x 1.00 = \$	600
82010X Delineator (Class X)	EA	20	x 50.00 = \$	1,000
84XXXX Permanent Pavement Delineation	LS	1	x 10,000.00 = \$	10,000
<u>Subtotal Traffic Signing and Striping</u>				<u>\$ 38,550</u>

6C - Stage Construction and Traffic Handling

Item code	Unit	Quantity	Unit Price (\$)	Cost
120100 Traffic Control System	LS	1	x 75,000.00 = \$	75,000
120120 Type III Barricade	EA	6	x 200.00 = \$	1,200
120143 Temporary Pavement Delineation	LF	3,000	x 5.00 = \$	15,000
128650 Portable Changeable Message Signs	EA	6	x 20,000.00 = \$	120,000
129000 Temporary Railing (Type K)	LF	1,680	x 20.00 = \$	33,600
129100 Temp. Crash Cushion Module	EA	13	x 5,000.00 = \$	65,000
<u>Subtotal Stage Construction and Traffic Handling</u>				<u>\$ 309,800</u>

TOTAL TRAFFIC ITEMS	\$ 348,400
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PRELIMINARY
PROJECT COST ESTIMATE

SECTION 7: DETOURS

Include constructing, maintaining, and removal
Item code

Unit Quantity Unit Price (\$) Cost

TOTAL DETOURS	\$ -
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SUBTOTAL SECTIONS 1-7 \$ 1,578,400

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items

ADA Items

0.0% \$ -

8B - Bike Path Items

Bike Path Items

0.0% \$ -

8C - Other Minor Items

Other Minor Items

0.0% \$ -

Total of Section 1-7 \$ 1,578,400 x 10.0% = \$ 157,840

TOTAL MINOR ITEMS	\$ 157,900
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SECTIONS 9: MOBILIZATION

item
code

999990 Total Section 1-8 \$ 1,736,300 x 10% = \$ 173,630

TOTAL MOBILIZATION	\$ 173,700
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SECTION 10: SUPPLEMENTAL WORK

Item code

<i>Item code</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
066090 Maintain Traffic	LS	1	x 35,000.00 = \$	35,000
066670 Payment Adjustments For Price Index Fluct	LS	1	x 10,000.00 = \$	10,000

Cost of NPDES Supplemental Work specified in Section 5C = \$ 8,000

Total Section 1-8 \$ 1,736,300 5% = \$ 86,815

TOTAL SUPPLEMENTAL WORK	\$ 139,900
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II. STRUCTURE ITEMS

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

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

COST OF EACH STRUCTURE	\$0.00	\$0.00	\$0.00
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TOTAL COST OF BRIDGES	\$0.00
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TOTAL COST OF BUILDINGS	\$0.00
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TOTAL COST OF STRUCTURES¹	\$0.00
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Estimate Prepared By: _____
XXXXXXXXXXXXXXXXXXXX ----- Division of Structures

_____ Date

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

PRELIMINARY
PROJECT COST ESTIMATE

Project Study Report Cost Estimate

Project ID: 0513000135

Type of Estimate : Project Study Report Cost Estimate
Program Code : 201.015
Project Limits : ON ROUTE 101 FROM 0.4 MILE NORTH OF MARSH St Br TO 0.1 MILE SOUTH OF CHORRO St UC AND ON ROUTE 41 FROM OLD MORRO Rd TO ATASCADERO CREEK Br No. 49-51
Description: Improving the operations of the Broad Street ramps with southbound Route 101 and construct guardrail along Route 41
Scope : Meter on-ramp, construct guardrail
Alternative : 6

	Current Cost	Escalated Cost
ROADWAY ITEMS	\$ 1,797,800	\$ 2,294,499
STRUCTURE ITEMS	\$ -	\$ -
SUBTOTAL CONSTRUCTION COST	\$ 1,797,800	\$ 2,294,499
RIGHT OF WAY	\$ 5,195	\$ 5,727
TOTAL CAPITAL OUTLAY COST	\$ 1,803,000	\$ 2,301,000
PR/ED SUPPORT	\$ 900	\$ 900
PS&E SUPPORT	\$ 1,000	\$ 1,000
RIGHT OF WAY SUPPORT	\$ 100	\$ 100
CONSTRUCTION SUPPORT	\$ 900	\$ 900
TOTAL CAPITAL OUTLAY SUPPORT COST*	\$ 2,900	\$ 2,900
TOTAL PROJECT COST	\$ 1,850,000	\$ 2,350,000

If Project has been programmed enter Programmed Amount

\$ -

Date of Estimate (Month/Year) Month / Year
3 / 2015

Estimated Date of Construction Start (Month/Year) /

Number of Working Days 40 Working Days
Month / Year

Estimated Mid-Point of Construction (Month/Year)

Number of Plant Establishment Days Days

Estimated Project Schedule

PID Approval

PA/ED Approval

PS&E

RTL

Begin Construction

Approved by Project
Manager

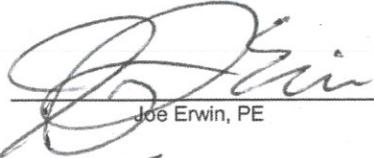

Project Manager

5/28/15 (805) 549-3437
Date Phone

PRELIMINARY
PROJECT COST ESTIMATE

I. ROADWAY ITEMS SUMMARY

Section	Cost
1 Earthwork	\$ 35,000
2 Pavement Structural Section	\$ 62,500
3 Drainage	\$ 25,000
4 Specialty Items	\$ 429,000
5 Environmental	\$ 61,500
6 Traffic Items	\$ 391,800
7 Detours	\$ -
8 Minor Items	\$ 100,500
9 Roadway Mobilization	\$ -
10 Supplemental Work	\$ 85,300
11 State Furnished	\$ 247,600
12 Contingencies	\$ 359,600
13 Overhead	\$ -
TOTAL ROADWAY ITEMS	\$ 1,797,800

Estimate Prepared By  5/28/15 (805) 549-3489
Joe Erwin, PE Date Phone

Estimate Reviewed By  5/28/15 (805) 549-3079
Steve Wyatt, PE Date Phone

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

PRELIMINARY
PROJECT COST ESTIMATE

SECTION 1: EARTHWORK

Item code	Unit	Quantity	Unit Price (\$)	Cost
160101 Clearing & Grubbing	LS	1 x	15,000.00 = \$	15,000
190101 Roadway Excavation	CY	100 x	200.00 = \$	20,000

TOTAL EARTHWORK SECTION ITEMS \$ 35,000

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code	Unit	Quantity	Unit Price (\$)	Cost
260201 Class 2 Aggregate Base	CY	250 x	60.00 = \$	15,000
390132 Hot Mix Asphalt (Type A)	TON	50 x	150.00 = \$	7,500
731502 Minor Concrete (Misc. Const)	CY	100 x	400.00 = \$	40,000

TOTAL STRUCTURAL SECTION ITEMS \$ 62,500

PRELIMINARY
PROJECT COST ESTIMATE

SECTION 3: DRAINAGE

Item code	Unit	Quantity	Unit Price (\$)	Cost
XXXXXX Additional Drainage	LS	1	x 25,000.00	= \$ 25,000

TOTAL DRAINAGE ITEMS	\$ 25,000
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SECTION 4: SPECIALTY ITEMS

Item code	Unit	Quantity	Unit Price (\$)	Cost
150662 Remove Metal Beam Guard Railing	LF	750	x 20.00	= \$ 15,000
150668 Remove Terminal Systems	EA	13	x 1,000.00	= \$ 13,000
190110 Lead Compliance Plan	LS	1	x 2,000.00	= \$ 2,000
XXXXXX Double Twisted Wire Mesh Drapery System	SQFT	5,000	10.00	\$ 50,000
832001 Metal Beam Guard Railing	LF	2,000	x 40.00	= \$ 80,000
83954X Transition Railing (<i>Insert Type</i>)	EA	16	x 5,000.00	= \$ 80,000
8395XX Terminal System	EA	6	x 10,000.00	= \$ 60,000
8395XX Alternative Flared Terminal System	EA	10	x 3,000.00	= \$ 30,000
839XXX Crash Cushion (<i>Insert Type</i>)	EA	3	x 25,000.00	= \$ 75,000
83XXXX Concrete Barrier (<i>Insert Type</i>)	LF	300	x 80.00	= \$ 24,000

TOTAL SPECIALTY ITEMS	\$ 429,000
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PRELIMINARY
PROJECT COST ESTIMATE

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code	Unit	Quantity		Unit Price (\$)	=	Cost
071325 TEMPORARY REINFORCED SILT FENCE	LF	2,000	x	10.00	= \$	20,000
071325 Temporary Fence (Type ESA)	LF	2,000	x	5.00	= \$	10,000
<u>Subtotal Environmental</u>						<u>\$ 30,000</u>

5B - LANDSCAPE AND IRRIGATION

Item code	Unit	Quantity		Unit Price (\$)	=	Cost
209801 Maintenance Vehicle Pullout	EA	1	x	15,000.00	= \$	15,000
<u>Subtotal Landscape and Irrigation</u>						<u>\$ 15,000</u>

5C - NPDES

Item code	Unit	Quantity		Unit Price (\$)	=	Cost
130100 Construction Site Management	LS	1	x	5,000.00	= \$	5,000
130200 Prepare WPCP	LS	1	x	2,000.00	= \$	2,000
130530 Temporary Hydraulic Mulch (BFM)	SQYD	200	x	10.00	= \$	2,000
130640 Temporary Fiber Roll	LF	1,000	x	4.00	= \$	4,000
130620 Temporary Drainage Inlet Protection	EA	5	x	200.00	= \$	1,000
130610 Temporary Check Dam	LF	250		10.00	= \$	2,500
130900 Temporary Concrete Washout	LS	1	x	5,000.00	= \$	5,000

Supplemental Work for NPDES

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

066595 Water Pollution Control Maintenance Sharing	LS	1	x	2,000.00	= \$	2,000
066596 Additional Water Pollution Control**	LS	1	x	2,000.00	= \$	2,000

Subtotal NPDES (Without Supplemental Work) \$ 16,500

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

**Applies to both SWPPPs and WPCP projects.

*** Applies only to project with SWPPPs.

TOTAL ENVIRONMENTAL	\$ 61,500
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PRELIMINARY
PROJECT COST ESTIMATE

SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
860XXX Signals & Lighting	LS	1	x 30,000.00 = \$	30,000
8611XX Ramp Metering System (Location X)	LS	1	x 100,000.00 = \$	100,000
<u>Subtotal Traffic Electrical</u>				<u>\$ 130,000</u>

6B - Traffic Signing and Striping

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
120090 Construction Area Signs	LS	1	x 15,000.00 = \$	15,000
566011 Roadside Sign (One Post)	EA	5	x 250.00 = \$	1,250
560XXX Furnish Sign Panels	SQFT	50	x 15.00 = \$	750
560XXX Install Sign Panels	SQFT	50	x 3.00 = \$	150
84XXXX Permanent Pavement Delineation	LS	1	x 5,000.00 = \$	5,000
<u>Subtotal Traffic Signing and Striping</u>				<u>\$ 22,150</u>

6C - Stage Construction and Traffic Handling

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
120100 Traffic Control System	LS	1	x 50,000.00 = \$	50,000
128650 Portable Changeable Message Signs	EA	6	x 20,000.00 = \$	120,000
129000 Temporary Railing (Type K)	LF	480	x 20.00 = \$	9,600
129100 Temp. Crash Cushion Module	EA	12	x 5,000.00 = \$	60,000
<u>Subtotal Stage Construction and Traffic Handling</u>				<u>\$ 239,600</u>

PRELIMINARY
PROJECT COST ESTIMATE

SECTION 7: DETOURS

Include constructing, maintaining, and removal

Item code	Unit	Quantity	Unit Price (\$)	Cost
0713XX Temporary Fence (Type X)	LF	x	= \$	-
07XXXX Temporary Drainage	LS	x	= \$	-
120143 Temporary Pavement Delineation	LF	x	= \$	-
1286XX Temporary Signals	EA	x	= \$	-
129000 Temporary Railing (Type K)	LF	x	= \$	-
190101 Roadway Excavation	CY	x	= \$	-
198001 Imported Borrow	CY	x	= \$	-
198050 Embankment	CY	x	= \$	-
250401 Class 4 Aggregate Subbase	CY	x	= \$	-
260201 Class 2 Aggregate Base	CY	x	= \$	-
390132 Hot Mix Asphalt (Type A)	TON	x	= \$	-
XXXXXX Some Item	LS	x	= \$	-
TOTAL DETOURS				\$ -
SUBTOTAL SECTIONS 1-7				\$ 1,004,800

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items				
ADA Items			0.0%	\$ -
8B - Bike Path Items				
Bike Path Items			0.0%	\$ -
8C - Other Minor Items				
Other Minor Items			0.0%	\$ -
Total of Section 1-7	\$	1,004,800	x 10.0%	= \$ 100,480
TOTAL MINOR ITEMS				\$ 100,500

SECTIONS 9: MOBILIZATION

Item code				
999990	Total Section 1-8	\$	1,105,300	x 10% = \$ -
TOTAL MOBILIZATION				\$ -

SECTION 10: SUPPLEMENTAL WORK

Item code	Unit	Quantity	Unit Price (\$)	Cost
066090 Maintain Traffic	LS	1	x 25,000.00 = \$	25,000
066670 Payment Adjustments For Price Index Fluct	LS	1	x 1,000.00 = \$	1,000
<i>Cost of NPDES Supplemental Work specified in Section 5C</i>				= \$ 4,000
Total Section 1-8	\$	1,105,300	5%	= \$ 55,265
TOTAL SUPPLEMENTAL WORK				\$ 85,300

PRELIMINARY
PROJECT COST ESTIMATE

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
066063 Public Information	LS	1	x 15,000.00 =	\$15,000
066105 RE Office	LS	1	x 52,000.00 =	\$52,000
066062A COZEEP Expenses	LS	1	x 60,000.00 =	\$60,000
06684X Ramp Meter Controller Assembly	LS	1	x 10,000.00 =	\$10,000
Total Section 1-8	\$	1,105,300	10% =	\$ 110,530

TOTAL STATE FURNISHED	\$247,600
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SECTION 12: TIME-RELATED OVERHEAD

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

Item code	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price (\$)</i>	<i>Cost</i>
070018 Time-Related Overhead	WD	40	X 0 =	\$0

TOTAL TIME-RELATED OVERHEAD	\$0
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SECTION 13: CONTINGENCY

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

Total Section 1-11	\$	1,438,200	x 25%	=	\$359,550
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TOTAL CONTINGENCY	\$359,600
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II. STRUCTURE ITEMS

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

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

COST OF EACH STRUCTURE	\$0.00	\$0.00	\$0.00
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TOTAL COST OF BRIDGES	\$0.00
TOTAL COST OF BUILDINGS	\$0.00

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

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



Dist-County-Route: SLO-101 & 41
 Post Mile Limits: 28.5/28.7 & 12.5/13.3
 Project Type: Collision Severity Reduction
 Project ID (or EA): 05-1300-00135-K (05-1F370K)
 Program Identification: 201.015

Phase: PID
 PA/ED
 PS&E

Regional Water Quality Control Board(s): Central Coast, Region 3

1. Does the project propose to create 1 ac or more of new/replaced new impervious surfaces (TBMP consideration required)? Yes No
2. Does the project disturb 5 or more acres of soil? Yes No
3. Does the project disturb more than 1 acre of soil and not qualify for the Rainfall Erosivity Waiver? Yes No
4. Does the project potentially create permanent water quality impacts? Yes No

If the answer to any of the preceding questions is "Yes", prepare a Long Form - Storm Water Data Report.

Estimate Construction Start Date: 12/16/2020 Construction Completion Date: 3/22/2021
 Separate Dewatering Permit (if yes, permit number) Yes Permit # _____ No
 Erosivity Waiver Yes Date: _____ No

This Short Form - Storm Water Data Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the data upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.


 Joe Erwin, Registered Project Engineer
 Date: 5/28/15
 I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:


 For James Espinosa, Regional SW Coordinator or Designee
 Date: 5/28/2015

DISTRICT 5

TRANSPORTATION MANAGEMENT PLAN DATA SHEET/CHECKLIST

District / EA: 1F370K
 Project Engineer: Michael O'Neal
 Date Prepared: 4/22/2015

Co.-Rte-PM: SLO-101-28.5/28.7 and SLO-41-12.5/13.3
 Description: SLO Collision Severity Reduction
 Working Days: 65 days

Check each box and reference your attachments to the item(s) number(s) shown on the list.

Required	Recommended	Not required	COMMENTS
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1.0 Public Information

- 1.1 Public Awareness Campaign
- 1.2 Other Strategies

x			Estimate \$4000
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2.0 Motorist Information Strategies

- 2.1 Changeable Message Signs - Portable
- 2.2 Construction Area Signs
- 2.3 Highway Advisory Radio (fixed and mobile)
- 2.4 Planned Lane Closure Web Site
- 2.5 Caltrans Highway Information Network (CHIN)

x			Estimate \$200/day per sign
x			
		x	
x			Construction to provide information to TMC
		x	Construction to provide information to TMC

3.0 Incident Management

- 3.1 COZEEP (during k-rail moving & work in live traffic)
- 3.2 Freeway Service Patrol

x			Required for paving 101 section @ night.
		x	

4.0 Traffic Management Strategies

- 4.1 Lane/Ramp Closures Charts
- 4.2 Total Facility Closure
- 4.3 Coordination with adjacent construction
- 4.4 Contingency Plan
 - 4.4.1 Material/Equipment Standby
 - 4.4.2 Emergency Detour Plan
 - 4.4.3 Emergency Notification Plan
- 4.5 SSP 12-220 and Others
- 4.6 Speed Limits
- 4.7 Other Strategies:
 - Provide 5 days advance notification for ramp closures.

x			To be provided during PS&E. No daytime main-line closures on 101.
		x	
x			Standard SSP
		x	Construction/Contractor to provide
		x	Construction/Contractor to provide
		x	Construction/Contractor to provide
x			

Special Days:

5.0 Anticipated Delays

- 5.1 Lane Closure Review Committee (for anticipated delays over 30 minutes)
- 5.2 Planned freeway closures

- 5.3 Minimal delay anticipated - no further action required

yes no If no, explain additional measures on attached sheet.

6.0 Placement of CMS

			Per RE

Shayne Sandeman
 District 5 TMP Coordinator

PROJECT RISK MANAGEMENT PLAN

Dist - E.A 05-1F370_ Project Name SLO 101-41 Safety Improvements
 Co-Rte-PM SLO 101 & 41 28.5/28.7 & 12.5/13.3
 Date 5/20/2015
 Project Mngr S. DiGrazia Telephone Number 805-549-3437

PROJECT RISK MANAGEMENT PLAN																		
Priority	Identification						Qualitative Analysis				Quantitative Analysis				Risk Response Plan		Monitoring and Control	
	Status	ID #	Date Identified Project Phase	Functional Assignment	Threat/Opportunity Event	Risk Trigger	Type	Probability	Impact	Risk Matrix	Probability (%)	Impact (\$ or days)	Effect or days (\$)	Strategy	Response Actions including advantages and disadvantages	Responsibility (Risk Manager)	Last date changes made to risk and Comments	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)=(12)x(13)	(15)	(16)	(17)	(18)
2	Active	1	5/20/2015 PID	EM	Scope change leads to impacts to jurisdictional waters	Additional studies reveal the need for a scope change	Schedule Scope	High	High					Avoidance	The project team is confident that a scope change can be avoided. They will actively strive to maintain the existing scope as described in the PID.	EM	5/20/2015	
2	Active	2	5/20/2015 PID	EM	Scope change leads to impacts to jurisdictional waters that lead to the need for permits	Additional studies reveal the need for a scope change	Schedule Scope	Low	Low					Avoidance	The project team is confident that a scope change can be avoided. They will actively strive to maintain the existing scope as described in the PID.	EM	5/20/2015	
2	Active	3	5/20/2015 PID	EM	Scope change leads to impacts to jurisdictional waters that lead to the need remove trees	Additional studies reveal the need for a scope change	Schedule Scope	Moderate	Low					Avoidance	The project team is confident that a scope change can be avoided. They will actively strive to maintain the existing scope as described in the PID.	EM	5/20/2015	
1	Active	4	5/20/2015 PID	DM, PM	Community Involvement reveals strong opposition to closing the Broad Street Ramp	Community Involvement meetings conducted.	Schedule Cost	High	High					Acceptance	The project team will conduct community involvement meetings early in the PA&ED phase so impacts of the risk can be identified as early as possible.	DM, PM	5/20/2015	
1	Active	5	5/20/2015 PID	DM, PM	Responding to the effects of traffic reallocation due to the closure Broad Street Ramp exceed capital budget	Estimating the cost of responding to the effects of traffic reallocation due to the closure of the Broad Street ramps.	Cost	High	High					Acceptance	The project team will conduct the needed additional studies needed to determine the scope and cost of responding to reallocated traffic early in the PA&ED phase so that this risk can be identified as early as possible. A cost increase PCR may be needed.	DM, PM	5/20/2015	
3	Active	6	5/20/2015 PID	PM	Change in ICRP rate exceeds escalations used for the PID support estimate	Implementation of new ICRP rates.	Cost	Moderate	Moderate					Acceptance	The PM will monitor the effect of changes in the ICRP rate and implement change management as necessary.	PM	5/20/2015	
3	Active	7	5/20/2015 PID	DM	Unforseen utility impacts that require relocation or protection.	Utility verification process.	Schedule Cost	Moderate	Low					Acceptance	Utility verification process will be started as early as possible in the project development process and positive location utilized as needed. Resources for positive location have been included in the workplan.	DM	5/20/2015	
3	Active	8	5/20/2015 PID	DM	Design/Traffic standards may not be met leading to the need to utilize the design exception process.	Topo surveys complete and design detail is developed.	Schedule Cost	Moderate	Low					Acceptance	Topo surveys will be completed and detailed design will be performed to determine the need for design exceptions	DM	5/20/2015	

CENTRAL REGION PID DISTRIBUTION LIST

Division / Program / Office	Project Type	D5	
HQ Division of Design	All Projects	Design Report Routing	1
HQ Division of Engineering Serv	All Projects	Division of Engineering Services	5
HQ Transportation Programming	SHOPP	Rick Guevel	1
HQ Environmental	All Projects	Bob Pavlik	1
HQ Traffic Ops/Traffic Safety Pgm	HB1	John Holzhauser	1
Project Manager	All Projects	Steve DiGrazia	1
Design Manager	All Projects	Steve Wyatt	2
Resident Engineer	All Projects	Resident Engineer	1
District Maintenance	All Projects	Lance Gorman	1
	SHOPP	Kelly McClain	1
District Traffic Management	All Projects	Jacques Van Zeventer	1
District Traffic Safety	201.010 & 201.015	Deb Larson	1
	SLO/SBT	Steve Talbert	1
Region Traffic Design	All Projects	Mohammed Qatami	1
District Traffic Operations	All Projects	Paul McClintic	1
Region Materials	All Projects	Doug Lambert	1
Region Environmental	All Projects	Susan Schilder	1
Region Landscape	All Projects	Dennis Reeves	1
Region Right of Way	All Projects	Marshall Garcia	1
Distict Planning	All Projects	Claudia Espino	1
PPM	All Projects	Linda Araujo	1
District Single Focal Point	All Projects	No Copy	0
Surveys	All Projects	Jeremy Villegas	1
	SB/SLO	Nick Tatarian	1
District Records	All Projects	Pat Duty (electronic copy only)	0
TOTAL COPIES		District 5 = 28	
CR PJD Support			Last Revised 6-8-2015