

**PROJECT STUDY REPORT
(Project Development Support)
PSR (PDS)**

This report will identify local funding and programming for Project Approval and Environmental Documentation (PA&ED) while also coordinating with the Yuba County General Plan Update for the conceptual approval of alternatives for the Yuba River Parkway (aka Goldfields Parkway) that would be funded by others.

**For the Yuba River Parkway Interchange Connections at State Routes 65/70 Interchange, State Route 65/McGowan Parkway Interchange, and State Route 70/Erle Road Interchange
In the County of Yuba**

On State Route 65 & 70
Between PM 7.5 and 9.2 on State Route 65
And PM 7.0 and 9.0 on State Route 70

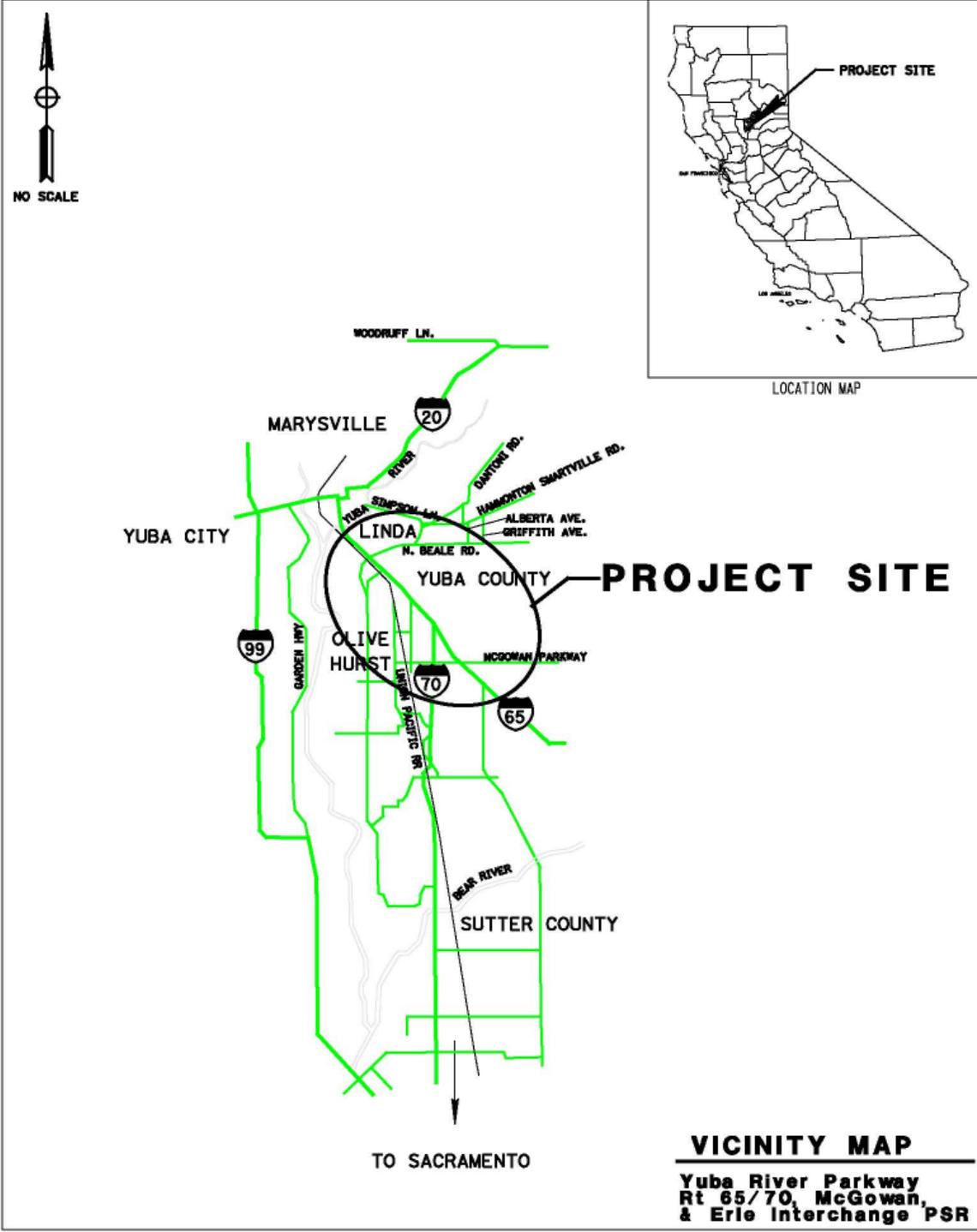
APPROVAL RECOMMENDED:

REBECCA MOWRY, PROJECT MANAGER 2/4/09
DATE

APPROVED:

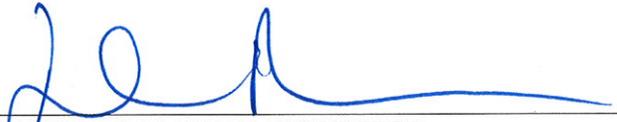
JODY JONES, DISTRICT DIRECTOR 2/9/09
DATE

Vicinity Map



03 - YUB - 65, PM 7.5/9.2
03 - YUB - 70, PM 7.0/9.0
EA 03-3E810K
February 2009

This Project Study Report (Project Development Support) has been prepared under the direction of the following Registered Engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.


REGISTERED CIVIL ENGINEER

2/4/09
DATE



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1 INTRODUCTION

The Erle Rd, McGowan Pkwy, SR 65/70, and Yuba River Pkwy Interchange Projects propose to improve the interchange at each of these three locations. These interchange improvements are necessary to provide traffic circulation to and from the southerly terminus of the Yuba River Pkwy (aka Goldfields Parkway). Yuba River Pkwy is a proposed arterial roadway located in Yuba County (the County) with a southern terminus in East Linda near State Routes (SR) 65/70 interchange and extending north to SR 20. (See Attachment A – Yuba River Pkwy Corridor Layout). This Project Study Report (Project Development Support) (PSR (PDS)) is initiated and sponsored by the County to improve local and interregional traffic circulation. This document will coordinate planning between the County and the California Department of Transportation (Caltrans), as well as assist in identifying funding needs for the Project Approval and Environmental Document (PA&ED) phase, and subsequent development phases. This document can not be used to fund capital construction costs. The total estimated capital construction cost for the proposed interchange alternatives range from \$95 to \$135 million (including right-of-way (ROW) costs). The no-build alternative would not have any costs. These estimates exclude project development costs and escalation. Project funding has not been established but the majority of project funds have been identified as part of developer impact fees. This project is a Category 3 project because of new and revised freeway connections.

The SR 70/Erle Road Interchange, SR 65/McGowan Pkwy Interchange, and the Yuba River Pkwy/SR 65 & 70 Interchange options in this document will be used for planning and funding purposes with the intent of developing more details during PA&ED. This document will assist in the phasing of these three interchange improvements which would proceed to PA&ED separately. Right of Way Data Sheets and Storm Water Data Report are postponed until PA&ED.

Based on the results of this PSR (PDS), Alternative 4 (including SR 65/McGowan Pkwy Interchange Option A, Yuba River Pkwy/SR 70 Connectors Option A, and SR 70/Erle Rd Interchange Option D) meets the Need and Purpose and is therefore recommended (for planning and funding estimates) for the PA&ED project phase for further study.

2 BACKGROUND

Yuba River Pkwy was originally planned to be constructed as part of a Caltrans project called the Marysville to Oroville Freeway and commonly referred to as the Marysville Bypass. The Marysville Bypass was to be a 4 lane freeway extension of SR 70, with connectivity via direct connectors at the 65/70 interchange to the south, connectivity at SR 20 just north of the Yuba River crossing, and termination in Oroville. Caltrans completed a PSR (PDS) in 1993, but funds were not programmed for the future project phases. Two other studies were also completed: corridor studies prepared by the Sacramento Area Council of Governments (SACOG) and the Butte County Association of Governments (BCAG) with input from Caltrans, completed in December 1987 and in July 1990, respectively. All prior

studies emphasized the need to preserve right-of-way for the corridor, address current traffic congestion, and accommodate traffic impacts from projected growth. The California Transportation Commission (CTC) is in support of the corridor improvements, with a strong emphasis on local funding contribution as the pivotal factor.

Despite an extensive history of overwhelming interest in the corridor, Caltrans is no longer pursuing the Marysville Bypass project and has abandoned the project development due to funding shortfalls. However, the segment between SR 70 and SR 20 is regionally significant in the County. As a result, the Yuba County Department of Public Works has decided to pursue the corridor as a local 4 to 6 lane expressway facility that will be predominately access controlled, entitled Yuba River Pkwy. The County is not interested in extending the corridor north of SR 20 at this time. Yuba River Pkwy will terminate at SR 20, whereas the Marysville Bypass was intended to extend north.

The Yuba River Pkwy alignment is identified and established from Erle Rd to Hammonton-Smartville Rd per the East Linda Specific Plan; a portion of the expressway in this segment has been constructed. The segment south and west of Erle Rd will be determined by this project and surrounding area development.

2.1 Existing Facilities

SR 65 and 70 are currently four lane freeways with graded medians, relatively straight horizontal alignments, flat grades due to the flat terrain, and standard lane and shoulder widths. The SR 65/70 interchange at post mile (P.M.) 9.177 on SR 65 and P.M. 8.293 on SR 70 is a grade-separated (Type F-7) freeway-to-freeway connector. Union Pacific Railroad (UPRR) parallels the north side of SR 65 throughout the length of the project and SR 70 from the SR 65/70 interchange to the Yuba River. There is currently one grade separation where northbound (NB) SR 70 passes beneath southbound (SB) SR 65 (Br # 16-42) via three span cast-in-place concrete box girders.

SR 65/McGowan Pkwy Interchange at P.M. 8.028 on SR 65 is a compact diamond interchange (Type L-1) configuration. SR 65 is depressed and the McGowan Pkwy vertical overcrossing alignment is flat through the interchange. The existing structure (Br #16-47) is a two span cast-in-place pre-stressed concrete box girder. There is an at-grade rail road crossing to access the frontage road, which runs parallel to the north side of SR 65. The main design features are the stop-controlled single lane ramp terminus and the standard two-lane and shoulder widths on McGowan Pkwy.

SR 70/Erle Rd Interchange at P.M. 10.155 on SR 70 is a combination compact diamond interchange configuration on the south side (Type L-1), and a hook ramp interchange configuration on the north side (Type L-6). The Erle Rd overcrossing is raised over both SR 70 and the UPRR tracks approximately 400 feet to the north. The existing SR 70 overcrossing structure (Br #16-49) is a two span cast-in-place pre-stressed concrete box girder and the existing UPRR overhead structure (Br #16C-61) is a three span cast-in-place concrete box girder. There is a frontage road between SR 70 and the UPRR. The main design features are the ramps with standard lane and shoulder widths and the standard lane and varying shoulder widths on Erle Rd and the frontage roads.

The Yuba River Pkwy corridor extends north of the SR 65/70 Interchange to SR 20. The ROW is dedicated from Erle Rd to North Beale Rd and is partially constructed in this segment as a four-lane section with standard shoulders and wide buffered sidewalks.

3 NEED AND PURPOSE

3.1 Need

State Routes 20 and 70 through Marysville currently experience recurrent traffic congestion and safety issues that are exacerbated by truck traffic. A direct Marysville bypass between SR 20 at the northerly terminus and SR 65 and SR 70 at the southerly terminus designed to safely integrate truck traffic is needed to alleviate traffic congestion and safety issues in Marysville.

Furthermore, planned development in the County, particularly in the Linda and Olivehurst areas, will increase traffic demands beyond capacity at the existing SR 65/McGowan Pkwy, SR 65/70, and SR 70/Erle Rd interchanges. Improvements at these interchanges are needed to alleviate traffic congestion resulting from planned development as well as the increased demand from traffic using the Yuba River Pkwy as a Marysville bypass.

3.2 Purpose

This project's purpose is to alleviate existing and future traffic congestion and safety issues in Marysville by constructing the southerly terminus of a Marysville bypass that would accommodate and integrate safe truck traffic design standards on SR 65 and SR 70. The Yuba River Pkwy southerly terminus would incorporate the most reasonably direct route of travel between SR 20, SR 65, and SR 70 to encourage drivers to use Yuba River Pkwy as parallel capacity to SR 20 and SR 70 through Marysville. This project would improve the SR 65/McGowan Pkwy, SR 65/70, and SR 70/Erle Rd interchanges to accommodate bypass traffic as well as planned development in the Linda and Olivehurst areas. Each of these interchanges would operate at Level of Service (LOS) D or better using a 20-year traffic forecast (design year 2030).

4 DEFICIENCIES

4.1 Existing Traffic Congestion

Existing traffic conditions negatively affect traffic circulation on SR 20 and SR 70 from the Olivehurst/Linda area through the City of Marysville. Regional traffic on SR 20 and SR 70 is currently forced to pass through the City of Marysville, which has limited capacity due to cross traffic and signals, resulting in heavy traffic congestion during peak periods. Traffic congestion can be attributed to the Marysville "bottleneck" that occurs on SR 70 through Marysville. Capacity improvement opportunities are limited due to ROW constraints, particularly in all the businesses and residences adjacent to SR 70. The proposed Yuba River Pkwy would provide a Marysville bypass and would significantly relieve traffic circulation through the Marysville "bottleneck."

The existing SR 70/Erle Road Interchange experiences traffic congestion during peak hour periods. As development proceeds in the Linda and Olivehurst areas, traffic congestion will continue to degrade the LOS at the SR/70 Erle Rd Interchange. Erle Rd is the primary access point to SR 65 and SR 70 for traffic generated in the Linda and Olivehurst areas.

4.2 Truck Traffic

The 2007 Caltrans Annual Daily Truck Traffic on California State Highways manual indicates over 4,800 trucks use SR 70 through the city of Marysville each day. Approximately 46% are five-axle trucks, and many logging and aggregate trucks come from SR 20 east of Marysville. Trucks significantly contribute to the current traffic congestion and operational deficiencies including noise and air pollution within the Marysville city limits. Most of the truck demand is to the south via SR 65 and SR 70. In addition, large trucks have difficulty negotiating the three 90 degree turns while staying in their lanes in Marysville. Furthermore, SR 70 traffic congestion and the large volume of truck traffic disrupt local circulation to such an extent that people are deterred from shopping in the Marysville downtown area.

North Beale Rd, Simpson Dantoni Rd, and Hammonton Smartville Rd are the main corridors for aggregate trucks accessing aggregate mining operations located on the south side of the Yuba River, as well as trucks originating east of the Marysville and Linda areas. The existing and developing neighborhoods in East Linda experience many safety, operational, noise, and air quality issues associated with these trucks. These roads were not designed or intended to handle these types of traffic and vehicles, especially alongside residences, pedestrians, and bicyclists. The narrow shoulders and outdated geometric design features of these roads further exacerbate the problems.

The proposed Yuba River Pkwy would address many of these issues in Marysville by providing a more direct route for trucks to access SR 65 and SR 70. Trucks would still pass through the Linda area, but on a facility designed to accommodate all modes that would optimize safety and traffic operations.

4.3 Future Capacity

The Northern Sacramento Valley will continue to experience development in the foreseeable future. Numerous planned developments are proceeding in Lincoln, Wheatland, Plumas Lake, Linda, and the surrounding areas. This increase in population and industry will contribute significant traffic to an already congested system for the locations mentioned. Yuba River Pkwy will provide an alternative route, partially mitigating the increased traffic generated by these planned developments.

Development in the Linda area directly impacts the ability to construct the planned bypass. Developers are currently planning a large tract development in the East Linda area that could preclude or limit the ability to purchase the ROW needed for the bypass. A corridor footprint should be established in the near term for the purpose of preserving the necessary future corridor ROW requirements.

Development of the East Linda area will also require north-south and east-west arterials to provide access and circulation to local traffic. Yuba River Pkwy will be the main arterial for this traffic circulation.

4.4 Safety Improvements

Existing roadways such as Erle Rd and McGowan Pkwy currently have non-standard shoulders and lanes, steep roadside ditches, non-standard alignments, and other similar geometric design features. Additionally, the lack of pedestrian/bicycle facilities and crossing opportunities pose safety issues from vehicular traffic with large truck volumes. Erle Rd and McGowan Pkwy will be designed reasonably close to current design standards within the project limits. Yuba River Pkwy will be designed to current geometric standards to provide safety to all users.

5 CORRIDOR AND SYSTEM COORDINATION

5.1 Caltrans Transportation Concept Report (TCR)

The SR 65 Transportation Concept Report (TCR) was last updated in July 2001. It reflects both the raceway (Arciero) and the amphitheater (Sleep Train) and recognizes traffic issues during events. A major project at the SR 65/Forty Mile Rd Interchange is noted for access to the raceway; however, the project is not currently programmed and is not under consideration at this time. There are no TCR improvements identified for the SR 70/McGowan Pkwy Interchange. No future expansion is projected for SR 65, as it has sufficient ROW to accommodate long-term growth. Twenty-year projections identify a four-lane freeway with a LOS C.

Similar to the SR 65 TCR, the SR 70 TCR identifies traffic issues during events at the amphitheater and raceway. The SR 70 TCR was last updated in September 2000, and identifies the Caltrans Marysville Bypass project as the concept for SR 70. Although a freeway extension of SR 70 is no longer under planning consideration, the proposed Yuba River Pkwy would accomplish the same goals and objectives and is therefore in conformance with SR 70 planning. There are no TCR interchange improvements identified for the SR70/Olivehurst Ave or SR70/Erle Rd interchanges. Twenty-year projections identify a four-lane freeway with a LOS F for the no-build but have identified a concept LOS of C or better for this facility.

Although not stated in the TCR, the need for an expansion of Route 70 should be considered. The proposed connectors between Route 70 and Yuba River Pkwy would not preclude expansion of Route 70. Approval of this new interchange connection is contingent upon a demonstration during PA&ED that construction of the interchange will not preclude future planned improvements to SR-70.

5.2 Regional Planning

Yuba River Pkwy is included in the 2006 Sacramento Area Metropolitan Transportation Plan (MTP). The MTP is a 28-year horizon-planning document used to identify transportation

improvements in a six-county region, and is based on projections for growth in population, housing, and jobs. SACOG, BCAG and CTC support the MTP as described in Section 2, Background.

Yuba River Pkwy’s southerly terminus completes the circulatory elements necessary to distribute traffic to/from Yuba River Pkwy and the Linda area to other areas to the south, such as south Yuba County, Sacramento County, and south Placer County (Wheatland, Lincoln, and Roseville).

5.3 Local Planning

The Yuba County Board of Supervisors voted on and supports the Yuba River Pkwy and its connections to SR 65, SR 70, and SR 20. The Yuba River Pkwy corridor is identified in the Yuba County General Plan. However, the current General Plan classifies the corridor as a freeway. Likewise, the East Linda Specific Plan currently classifies the corridor as a freeway. The General Plan is currently being revised, classifying the corridor as a local arterial. This PSR (PDS) will be incorporated into the General Plan update and will be considered for future programming to the PA&ED phase.

6 ALTERNATIVES

Project Alternatives and Interchange Options Overview Matrix											
Interchange	Erle Intc				McGowan Intc			Route 65/70			
Option	A	B	C	D	A	B	C	A	B	C	D
Project Alternative											
1											
2	X	X	X	X							
3	X	X	X	X	X						
4	X	X	X	X	X			X	X		
5	X	X	X	X						X	X
6	X	X	X	X	X					X	X

6.1 Alternative 1 – No-Build

Under this alternative, no new connections would be made with SR 65 and SR 70, and there would be no interchange improvements at Erle Rd and McGowan Pkwy. As shown in the Traffic Analysis, the SR/70 Erle Rd Interchange would continue having increased traffic congestion, and would result in ultimate traffic circulation failure at and near the interchanges. Yuba River Pkwy would not have adequate distribution to SR 65 and SR 70, thereby preventing its function as a Marysville bypass. Congestion and truck traffic will continue to cause problems in Marysville and Linda. SR 20 westbound (WB) and SB truck

traffic will continue to circulate through Marysville. Continued regional development is forecasted to incrementally increase traffic congestion and exacerbate existing regional traffic circulation.

Based on the Traffic Analysis, Alternative 1 is not recommended, as it does not address the Need and Purpose. Therefore, further study of the three interchange upgrades is recommended to proceed to PA&ED.

6.2 Current Design Standard Alternatives

Alternatives will attempt to meet the current Caltrans Highway Design Manual (HDM) Sixth Edition mandatory and advisory design standards. Any deviations from design standards will be documented in the design exception fact sheets during the PA&ED phase. Due to the improvement types and the many project component locations, which include three separate interchanges with varying degrees of improvement, a “Current Design Alternative” is not the best practical approach to addressing the projects’ need and purpose. The recommended approach is mentioned in the “Minimum Build Alternative” section of this report. See Attachment M for a summary of design exceptions for each of the interchange options.

6.3 Minimum Build Alternative

The concept of a Minimum Build Alternative is not directly applicable to this project because this project is intended to identify long term corridor planning and County General Plan build-out needs. The PSR (PDS) project approach recommends considering minimum build alternative for each interchange during PA&ED.

6.4 Alternative 2 – Improvements at Erle Rd Only (Rejected)

Alternative 2 is rejected because it is not a reasonable direct bypass route alignment and fails to operate at LOS D or better. Therefore, Alternative 2 does not meet the project’s Need and Purpose. All intersections would operate unsatisfactorily; in particular the WB Erle Rd to SB SR 70 on-ramp move is problematic because it would experience a 1,200 Peak Hour Volume (PHV) in 2030.

As illustrated in the attached layout (see Attachment C), Alternative 2 would provide improvements at the SR 70/Erle Rd Interchange only.

- SR 70/Erle Rd Interchange Option A. As illustrated in the attached layout (see Attachment D), Option A would maintain the existing interchange configuration on the west side as a compact diamond (Type L-1) interchange configuration. The east side would convert the existing hook ramps (Type L-6) to a tight diamond (Type L-1) configuration. The new NB ramps would intersect with Erle Rd at the existing Lindhurst intersection. Erle Rd is widened and the frontage road is realigned further east and grade-separated with the UPRR tracks. The existing SR 70 overcrossing and UPRR overhead (OH) would be widened to the maximum extent possible to comply with vertical clearance standards. Option A maximizes the widths of the existing bridges and constrains traffic operations based on this assumption.
- SR 70/Erle Rd Interchange Option B. As illustrated in the attached layout (see Attachment D), Option B is the same configuration as Option A except that Option B

would upgrade the interchange to accommodate operations at LOS C. Option B requires complete reconstruction of the entire interchange and Erle Rd approaches. The vertical alignments of all roadways and ramps would be raised to accommodate reconstruction of the existing bridges in accordance with vertical clearance standards and would include complicated construction staging needs.

- SR 70/Erle Rd Interchange Option C (Rejected). As illustrated in the attached layout (see Attachment D), Option C would maintain the existing interchange configuration, which is a combination compact diamond interchange configuration on the west side (Type L-1), and a hook ramp interchange configuration on the east side (Type L-6) with one exception. A new WB Erle to NB SR 70 diagonal on-ramp would be added for an Erle Rd exit east of the UPRR OH, and is grade-separated with the UPRR OH and Lindhurst Ave. Other improvements would consist of widening the existing ramps, frontage road, and Erle Rd. Existing structures would be widened to the maximum width possible to achieve vertical clearance standards.

SR 70/Erle Rd Interchange Option C is rejected based on the LOS of the interchange configuration. The LOS is projected to be D-F at the intersection of Erle Rd and the SB ramps and at the intersection of Erle Rd and Lindhurst Ave. Option C improvement capital and ROW cost is estimated to be in the range of \$20 to \$25 million. This estimated cost range is nearly as expensive as Option D, but with half the LOS benefits. In summary, the LOS and cost of Option C does not effectively address the project's need and purpose of alleviating existing and future traffic congestion and safety issues.

- SR 70/Erle Rd Interchange Option D (Recommended for Planning and Funding Estimates) (Attachment G). Option D would convert the existing west side of the interchange from a compact diamond (Type L-1) interchange configuration to a partial clover leaf (Type L-9) configuration. The east side would maintain the existing interchange configuration on the south side (Type L-6), which consists of hook ramps intersecting Lindhurst Ave. The existing NB hook on-ramp would remain with the addition of a new WB Erle Rd to NB SR 70 diagonal on-ramp that exits Erle Rd east of the UPRR OH and is grade separated with the UPRR OH and Lindhurst Ave. Other improvements would consist of widening the existing ramps, frontage road, and Erle Rd. Existing structures would be widened to the maximum width possible to achieve vertical clearance standards (see Attachment D).

Although the Erle Rd SB loop on-ramp geometrics are not comprised of standard typical geometrics, the added operational benefits to the overall system offset any minor geometric deviations. Standard geometrics would require less than 200-foot intersection spacing between the SB off-ramp intersection and the adjacent frontage road intersection, which would not operate acceptably. The only other option would require closing the frontage road to the north, which is not a viable option as this is the only access point to the properties currently served by this road. Alternate access is not viable because it would result in a new RR crossing and connection to a low volume residential street, which would force higher volume commercial traffic onto the residential street. Other than intersection spacing, exceptions to advisory or mandatory design standards are not

required. However, it is worth mentioning the following design concepts have been incorporated:

- A 240-foot storage lane between ramp and next intersection works because the RR tracks limit the amount of traffic originating from the SW.
- A 75° intersection skew helps the SB ramps because the off-ramp has better line of sight for Corner Sight Distance (CSD) to the east.
- A 130-foot loop on-ramp radius will operate at lower speeds than a 150-foot radius, but the grade will be between 0.63 to 2.00 % instead of the usual 8% downgrade.
- Rather than relocate the existing SB diagonal on-ramp to the opposite side of the new off-ramp, it can stay in its existing location because the traffic volume is very low (50 to 100 vehicles per hour (VPH)).

The new NB on-ramp assumes a new UPRR OH and Lindhurst Ave undercrossing. However, per a meeting with UPRR, passing beneath UPRR is a possibility and should not preclude this option from further project studies. Railroad underpasses are less desirable for UPRR, but even with the cost of around \$1 million, it may be more cost effective due to the smaller footprint and short bridge span lengths (approximately 30-feet). The profile would be less affected because the RR tracks and Lindhurst Ave are elevated, and a passage below would have a much smaller footprint. The underpass would require long-term maintenance costs for pumping storm drainage. This concept should be considered as an alternative during PA&ED.

One possibility that was not studied in this project phase, but worthy of consideration during PA&ED, is the removal of the existing NB hook off-ramp. This would allow better operations by closing the median on NB Lindhurst Ave to NB SR 70 on-ramp left turn movements. This approach would have minimal impact on drivers because the majority of NB SR 70 exiting vehicles is destined for the SR70/Erle Road Interchange exit from the SR 70/Olivehurst Ave Interchange. Traffic originating from Lindhurst Ave between the SR 70/Erle Rd and SR 70/Olivehurst interchanges would enter NB 70 at the SR 70/Olivehurst Ave Interchange with little disruption or out-of-direction travel. This would also improve safety by removing a known feature that has about three times the average accident rate for similar facilities based on Caltrans Traffic Accident Surveillance and Analysis System (TASAS). If a signal becomes necessary, it would be a two-phase signal.

Additionally, removing the off-ramp would allow the existing hook on-ramp to intersect Lindhurst Avenue further to the south for greater distance between Erle/Lindhurst intersection and the Lindhurst/hook ramp tee intersection. Existing spacing is approximately 750 feet, and with the improvement it is approximately 950 feet.

The existing stop-controlled SB SR 70 off-ramp at the Erle Rd intersection currently operates at LOS F during both peak hours. The adjacent signalized Erle Rd/Lindhurst Ave intersection currently operates at LOS D during the AM peak hour and LOS E during the PM peak hour.

6.4.1 Structures Considerations

Although the Advanced Planning Study (APS), layouts, and cost estimate show the NB Erle Rd on-ramp structure over the UPRR and Lindhurst Ave only, the cost to make the entire ramp on structure from Erle Rd to SR 70 may be comparable due to the high cost of the fill slopes and large ROW footprint. Since an all-structure ramp would have less impact, this should be considered during PA&ED. Based on the Planning Study for this PSR (PDS), the NB Erle Rd on-ramp is a Cast-In-Place Post-tensioned (CIP P/S) box girder type with a depth of 6 ft, width of 26 ft and 10 inches, and a bridge length of 6478 ft. Minimum vertical clearance over the railroad is 25 ft and 4 inches and 21 ft and 6 inches over Lindhurst Ave (See Attachment B; Erle Road Connector Planning Study).

Options A, C, and D assume widening can be accomplished but requires the UPRR to approve an exception to UPRR's new vertical clearance standards. The existing OH was originally constructed to minimum permanent vertical clearance standards (23'-1"). However, that standard was recently changed to 23'-4". A conversation with UPRR staff indicates that an exception would be reasonable since widening would not reduce the existing vertical clearance of 23'-1". The Erle Road Overhead widening will use CIP P/S with a depth of 3 ft with a bridge length of 143 ft – 3 5/8 inches. Width of widening on both sides of the bridge will vary (See Attachment B; Erle Road OH Planning Study). This exception is contingent upon the scope being confined to widening only. If the structure is replaced, then the new structure would be required to meet new construction standards with a higher profile and wider horizontal clearances and bridge span lengths. The existing structure is a three span cast-in-place box girder with flares.

The existing SR 70 overcrossing is a two-span cast-in-place concrete box girder with flares. Bridge widening is proposed only on the south side of the existing bridge. The Erle Road Overcrossing widening will use CIP P/S with a depth of 6 ft and a bridge length of 253 ft – 10 5/8 inches. Minimum vertical clearance is anticipated to be 16 ft – 6 inches at the existing structure and 19 ft – 2 inches at the widening section (See Attachment B; Erle Road OC Planning Study).

6.4.2 Constructability and Staging (SR 70/Erle Rd Interchange Only)

A Project Initiation Document (PID) phase Traffic Management Plan (TMP) checklist was produced for the SR 70/Erle Rd Interchange Option D (see attachment L). A more refined TMP would need to be prepared for this alternative or the chosen "preferred" alternative during PA&ED, which would detail the staging for both the overcrossing and overhead structure widening at this location and analyze the effect on Erle Rd traffic during construction.

6.4.3 Right-of -Way (SR 70/Erle Rd Interchange Only)

Right-of-way, UPRR, and utility involvement would be limited to electrical for street lighting and signalization, extending storm drain laterals and inlet reconstruction, electrical service relocation for parcels, and electrical and water service disruptions. Additional utilities are pending at this location until further development of the chosen "preferred" alternative during PA&ED.

Option C and D would have the least ROW impacts to adjacent land and properties while Options A and B would have the greatest impacts. Options A and B would limit and remove much access to the adjacent land and properties as a result of the re-alignment of Lindhurst. This would require the purchase of approximately six properties along Lindhurst while Option C and D would not require any “Full” takes.

6.4.4 Exceptions to Design Standards (SR 70/Erle Rd Interchange Only)

Existing SR 70/Erle Rd Interchange consists of a few exceptions to design standards. The interchange spacing between Olivehurst Ave and Erle Rd is approximately 0.87 miles, which is less than the mandatory design standard of 1 mile. The existing overcrossing stopping sight distance on a vertical crest accommodates a design speed of 43 mph, which meets the mandatory standard of 35 mph, but not the advisory standard of 45 mph. There is an advisory non-standard design for superelevation transition for the Erle Rd SB on-ramp between the two successive horizontal curves along the ramp alignment. The tangent length between the two curves allows for the mandatory standard transition, but not the advisory standard.

The proposed SR 70/Erle Rd Interchange Options A, B, and D have fill slopes steeper than the advisory standard side slope of 4:1. The intersection spacing on Erle Rd between the ramp and Chestnut Rd does not meet the advisory or the mandatory spacing of 500 feet and 400 feet, respectively. For a more detailed spreadsheet of the design standards, see Attachment M.:

6.5 Alternative 3 – Improvements at Erle Rd and McGowan Pkwy

The attached layout (see Attachment C: Alt 3) illustrates a SR 70/Erle Rd Interchange improvement, as described in Alternative 2 and a McGowan Parkway Interchange improvements. A future local arterial or frontage road would be built in a latter project phase that would extend from the future SR 65/70 Interchange to the SR 65/McGowan Pkwy Interchange.

6.5.1 Yuba River Pkwy

As illustrated in the attached layouts (see Attachment C: Alt 4), the two Yuba River Pkwy alignments are designed to accommodate the possibility of future ramp connectors between Yuba River Pkwy and SR 70. The main difference between the two alignments is that Option A acts as a frontage road and would better meet expectations for drivers seeking SB SR 65, since it parallels SR 65. Option B is intended to avoid acquiring the existing ROW at the truss manufacturing plant and allows for development to occur between SR 65 and Yuba River Pkwy.

The alignment of this segment of Yuba River Pkwy is subject to change depending upon development, but would generally follow the two alignments illustrated.

6.5.2 SR 65/McGowan Pkwy Interchange

The SR 65/McGowan Pkwy Interchange upgrade includes three options:

1. SR 65/McGowan Pkwy Interchange Option A. As illustrated in the attached layout (see Attachment E and Attachment G), Option A would provide an extension of McGowan Pkwy to the NE and a grade separation over the UPRR. The McGowan Pkwy overcrossing and ramps would be widened, while maintaining the existing diamond (Type L-1) configuration and the same general horizontal and vertical alignments within the interchange.
2. SR 65/McGowan Pkwy Interchange Option B (Rejected). As illustrated in the attached layout (see Attachment E), Option B would provide an extension of McGowan Pkwy to the NE and a grade separation over the UPRR (same as Option A). The McGowan Pkwy overcrossing and ramps would be widened, and the NW quadrant would be converted from a diamond (Type L-1) to a partial clover leaf (Type L-7, 9) configuration by adding a loop ramp. This option was rejected early in the process because it requires closing Olive Ave, which is the primary access point to the high school and cemetery to the north.
3. SR 65/McGowan Pkwy Interchange Option C (Interim Phase). As illustrated in the attached layout (see Attachment E), Option C would maintain the existing two-lane at-grade UPRR crossing, widen the off ramp termini, and place signals at the existing ramp intersections. This option could be considered a possible phasing for interim improvements that would provide relief until the ultimate interchange improvements could be constructed. Another option that should be considered is an all way stop control at the intersection.

Options for Consideration during PA&ED. Should future traffic patterns change and cause the interchange to operate at unacceptable levels, the conversion to a Single Point Interchange (SPI) is a viable option for this interchange. The flat overcrossing configuration and wide ramp spacing make this an ideal location for an SPI. A SPI configuration was not developed for this PSR (PDS) because the operations do not justify the need to spend the large cost generally associated with SPI configurations.

6.5.3 Structures Considerations (SR 65/McGowan Pkwy Interchange Only)

The existing SR 65 overcrossing is a two-span cast-in-place box girder. This project propose to widening the existing north side of the structure with CIP P/S box girders with a structure depth of 7 ft. The propose bridge widening length is 295 ft – 11 ¾ inches and the minimum vertical clearance is 17 ft -7 inches for the existing structure and 18 ft – 2 inches for the widening section (See Attachment B; McGowan Overcrossing Planning Study).

The illustrated layout assumes standard construction practices for the new UPRR overpass. There are other staging practices that should be considered in detail during PA&ED for the construction of the UPRR overpass on McGowan Parkway. Falsework clearance requires the vertical alignment to be 5 feet higher than required for permanent clearance requirements. It may be possible to construct the bridge above minimum clearances and lower it into place, or use pre-cast beams. This is worth consideration because lowering the profile reduces the overall footprint and the impacts to the existing creek and adjacent developed properties. The PSR (PDS) assumes a more conventional and conservative approach to reduce risk during PA&ED.

6.5.4 Constructability and Staging (SR 65/McGowan Pkwy Interchange Only)

A PID phase TMP checklist was produced for the McGowan Pkwy Interchange Option A (see Attachment L). A more refined TMP would need to be prepared for this alternative or the chosen “preferred” alternative during PA&ED, which would detail the staging for the overcrossing and the potential overhead structure at this location and analyze the effect on local road traffic during construction.

6.5.5 Right-of-Way (SR 65/McGowan Pkwy Interchange Only)

Right-of-way, UPRR, and utility involvement would be limited to electrical for street lighting and signalization, extending storm drain laterals and inlet reconstruction, electrical service relocation for parcels and electrical and water service disruptions. Additional utilities are pending at this location until further development of the chosen “preferred” alternative during PA&ED.

There is no “Full” takes on right-of-way for the McGowan Interchange options. Many of the ROW needs will be sliver takes to accommodate the widening on McGowan Parkway and all ramp improvements will remain within STATE ROW.

6.5.6 Exceptions to Design Standards (SR 65/McGowan Pkwy Interchange Only)

Existing SR 65/McGowan Pkwy Interchange consists of a few exceptions to design standards. The spacing between the SR 65/70 freeway-to-freeway interchange and the SR 70/McGowan Pkwy Interchange is approximately 1.14 miles, which is less than the mandatory standard spacing of 2 miles. The intersection of the existing ramp with McGowan Pkwy is at a skew angle of less than the advisory standard 75°. The existing intersection spacing between the SB ramp intersection and Olive Ave tee intersection is approximately 350 feet, which is less than both the mandatory standard and the advisory standard spacing distance of 400 feet and 500 feet, respectively. This option proposes cut and fill slopes that will be steeper than the advisory standard side slope of 4:1.

6.6 Alternative 4 – Improvements at Erle Rd, McGowan Pkwy, and SR 65/70

As illustrated in the attached layout (see Attachment C: Alt 4), Alternative 4 is identical to Alternative 3 with the exception of Yuba River Pkwy connecting to SR 70 via direct connectors (no direct connector ramps between Yuba River Pkwy and SR 65).

The extension of Yuba River Pkwy to the SR 70/McGowan Pkwy interchange begins at the north end at a grade separation with the SR 70 direct connectors. As illustrated in the layout, the proposed design would consist of SB Yuba River Pkwy diverging left, and then crossing under the connector bridge. This configuration was chosen because the SR 70 connector carries higher volumes than Yuba River Pkwy. If during PA&ED it is decided to have the SR 70 connector diverge left, then the SR 70 connector structure would be shorter in length because the Yuba River Pkwy would no longer pass beneath the SR 70 connector. If this design feature was to advance forward, additional ROW would not be required because the footprint would not change the existing ROW.

6.6.1 SR 65/70 Interchange

- SR 65/70 Interchange Option A. As illustrated in the attached layout (see Attachment C under Alternative 4 and Attachment G), Yuba River Pkwy would connect to SR 70 via two-lane direct ramp connections. Yuba River Pkwy acts as a frontage road and would better meet expectations for drivers seeking SB SR 65, since it parallels SR 65. The two-lane direct connectors from Yuba River Pkwy to SR 70 to the south utilize auxiliary lanes to the McGowan Pkwy NB on- and SB off-ramps. The NB SR 70 exit would be two lanes and the SB SR 70 exit to McGowan Pkwy would be two lanes. Also, a third lane is required on mainline SB SR 70 to reduce weaving issues between the SB connector entrance to SR 70 and SB exit to McGowan Pkwy. All connectors would be grade-separated above SR 65 and SR 70, as well as the existing UPRR. Caltrans will maintain access control along the Yuba River Pkwy for approximately a half mile north of the existing SR 70 ROW, and a quarter mile south of the NB merge point between NB Yuba River Pkwy and the NB connector.
- SR 65/70 Interchange Option B. As illustrated in the attached layout (see Attachment C under Alternative 4), this option is identical to Option A in that Yuba River Pkwy would connect to SR 70 via two-lane direct ramp connections. However, after passing beneath the connector ramps, Yuba River Pkwy diverts east, away from SR 65, and avoids the existing truss manufacturing plant. The connector ramps would remain on structure further east in order to grade-separate with the Yuba River Pkwy.

6.6.2 Structures Considerations (SR 65/70 Interchange Only)

The proposed SR 65/70 Ramp Connector OC is a CIP P/S box girder with a depth of 10 ft and width of 38 ft – 10 inches. Lengths of these connector range from 2085 ft to 2150 ft with vertical clearance meeting Caltrans standards (See Attachment B; SB Connector 65/70 and NB Connector 65/70 OC Planning Study). These connectors will provide connectivity between SR 65/70 and the future Yuba River Parkway.

6.6.3 Constructability and Staging (SR 65/70 Interchange Only)

A PID phase TMP checklist was produced for SR 65/70 Interchange Connector Option A (see attachment L). A more refined TMP would need to be prepared for this alternative during PA&ED, which would detail the staging for the construction of the proposed connectors.

6.6.4 Right-of-Way (SR 65/70 Interchange Only)

Right-of-way, UPRR, and utility involvement would be limited to electrical for street lighting and signalization, extending storm drain laterals and inlet reconstruction, electrical service relocation for parcels and electrical and water service disruptions.

Vacant land from the cemetery will be needed for these improvements as well as vacant farmlands on the east side of SR 70.

6.6.5 Exceptions to Design Standards (SR 65/70 Interchange Only)

The proposed SR 65/70 Interchange features one exception to the design standards, which is a weaving distance of 1,660 feet on mainline SR 70 between the new connector and the SR 70/McGowan Pkwy Interchange. The advisory standard weaving distance is 2,000 feet.

6.7 Alternative 5 – Improvements at Erle Rd and SR 65/70 (Rejected)

As illustrated in the attached layout (see Attachment C), Alternative 5 would include improvements at the SR 70/Erle Rd Interchange (See Alternative 2) and would have two-lane direct connectors from Yuba River Pkwy to SR 70 to the south, utilizing auxiliary lanes to the McGowan Pkwy NB on- and SB off-ramps and one-lane direct connectors from Yuba River Pkwy to SR 65 to the southwest. All connectors would be grade-separated above existing SR 65 and 70 as well as the existing UPRR. Yuba River Pkwy would not be extended to the SR 65/McGowan Pkwy Interchange and no frontage road connection is made to McGowan Pkwy.

There were two options developed for the Yuba River Pkwy connections to SR 65 and 70. Both options preclude the ability to widen SR 65 to six lanes within the SR 65/70 interchange. SR 65 is constrained on the south side by an existing cemetery. Widening to the south would require exhuming and relocating graves. Widening to the north would require realigning UPRR at great expense. This alternative precludes the ability for the State to add lanes to SR 65 in the future and is not compatible with State policy and planning for future flexibility. The alternative would likely need to be modified by widening east and realigning the UPRR tracks to accommodate future SR 65 widening. Due to the costs and issue with the UPRR, this alternative has been rejected and further study of the SR 65 direct connections will not be necessary.

- SR 65/70 Interchange Options C & D. As illustrated in the attached layouts (see Attachments F), and described above, Options C & D would construct connections between Yuba River Pkwy and SR 65 and SR 70. The difference between these two options is that SR 65 connector ramps in Option D merge with two lanes on SR 65, so there is no conflict with UPRR ROW. Option C shifts mainline east to allow six lanes from the ramp gore heading south, but would require acquisition of UPRR ROW so a future parallel track could be constructed east of the existing track.

Since this alternative was rejected, the operational analysis and other study work were not performed on this alternative.

6.8 Alternative 6 – Improvements at Erle, McGowan & SR 65/70 (Rejected)

This alternative is the same as Alternative 5 but includes the Yuba River Pkwy extension to the SR 70/McGowan Pkwy Interchange where a frontage road connection is made to the SR 65/McGowan Pkwy Interchange. Improvements are assumed at the SR 70/Erle Rd and SR 65/McGowan Pkwy interchanges. This alternative has been rejected for the same reasons described in Alternative 5.

Since this alternative was rejected, the operational analysis and other study work were not performed on this alternative.

6.9 Other Improvement Considerations – SR 70/Olivehurst Ave Interchange

6.9.1 Olivehurst Interchange

The traffic forecast for this project indicates some level of minor improvements will be required for the SR 70/Olivehurst Ave Interchange, such as signalization and intersection widening. Also, roundabouts should be considered as an improvement feature for the SR 70/Olivehurst Ave Interchange and should be studied as the SR 70/Erle Rd Interchange proceeds to PA&ED.

6.9.2 Olivehurst Grade Separation

Olivehurst Ave grade separation was considered and analyzed as a design improvement feature for the SR 70/Erle Rd Interchange improvement. The Olivehurst Ave grade separation was included because the PDT wanted to determine if this feature would improve traffic circulation around the SR 70/Erle Rd Interchange by redistributing traffic circulation away from the SR 70/Erle Road Interchange. Based on the traffic modeling and operations, it was concluded that the Olivehurst Ave grade separation improvement feature reduces by one LOS at the SR 70/Erle Rd Interchange (see Table 4, 3A vs. 3B). Since the traffic design requirement for the SR 70/Erle Rd Interchange is LOS D or better and the SR 70/Erle Rd Interchange Option D meets these traffic design requirements, the Olivehurst Ave grade separation improvement feature was dropped.

The new grade separation would likely be 4 lanes wide and would cost approximately \$20 to \$25 million for the new structure, roadway, and ROW. There would also be added costs for widening Olivehurst Ave to feed and receive the traffic from the four-lane grade separation. Widening Olivehurst Ave could cost another \$5 to \$15 million. Therefore the added benefits for adding the grade separation would not justify the cost.

As the SR 70/Erle Rd Interchange proceeds to the PA&ED phase, the PDT should not preclude the Olivehurst Ave grade separation feature if there is a need for more traffic circulation relief at the SR 70/Erle Rd Interchange. If the grade separation is not needed or built during the SR 70/Erle Rd improvements, the County should consider phasing the Olivehurst Ave grade separation as a potential future locally funded project that would improve local circulation between Olivehurst Ave and Erle Rd.

6.10 Traffic Analysis

6.10.1 Accident Data

Caltrans Traffic Accident Surveillance and Analysis System (TASAS) for the three-year period beginning January 1, 2005 through December 31, 2007, was evaluated to determine any accident trends for segments within this project's limits and is summarized below.

The accident rate for the segments of SR 70 between Feather River Blvd to McGowan Pkwy and SR 65/70 to McGowan Pkwy is below average for similar facilities as shown in Table 1. There are four fatalities and a high concentration of injuries on SR 70 between Feather River Blvd to McGowan Pkwy and the cause is the current at-grade-intersection at the Feather River Blvd on SR 70.

Location	Accidents				Accident Rate	
	Total	With Fatalities	With Injuries	Involving Multiple Vehicles	Actual Accident Rate ¹	Average Accident Rate ²
SR 70 – Feather River Blvd. to McGowan Pkwy. (4.04 mi.)	125	4	42	70	0.75	0.80
SR 65/70 to McGowan Pkwy. (1.15 mi.)	6	0	1	4	0.25	0.57

Note: ¹ Per million vehicle miles
² Average accident rate based on similar facilities per million vehicle miles
Source: Caltrans District 3 TASAS Table B, January 2005 through December 2007

The accident rate for the segment of SR 65/McGowan Pkwy NB off- and on-ramp and SR 65/McGowan Pkwy SB off- and on-ramp is below for similar facilities as shown in Table 2. There are no fatalities and injuries within this segment of this project.

Location	Accidents				Accident Rate	
	Total	With Fatalities	With Injuries	Involving Multiple Vehicles	Actual Accident Rate ¹	Average Accident Rate ²
SR 65 / McGowan Pkwy. NB Off-Ramp	0	0	0	0	0.00	1.50
SR 65 / McGowan Pkwy. NB On-Ramp	0	0	0	0	0.00	0.80
SR 65 / McGowan Pkwy. SB Off-Ramp	1	0	0	1	0.51	1.50
SR 65 / McGowan Pkwy. SB On-Ramp	0	0	0	0	0.00	0.80

Note: ¹ Per million vehicle miles
² Average accident rate based on similar facilities per million vehicle miles
Source: Caltrans District 3 TASAS Table B, January 2005 through December 2007

The accident rate for the segment of SR 70/Lindhurst Ave NB off-ramp is approximately three times higher than similar facilities and the SR 70/Erle Rd Interchange SB on-ramp is approximately 2.5 times higher than similar facilities as shown in Table 3. One accidents on the NB off ramp occurred at night, while the other accident occurred in wet conditions. The primary collision factors for these two accidents were classified as “speeding” and “other violations.” There are no fatalities, but the SR 70/Erle Rd SB on-ramp has three incidents involving multiple vehicles. The SB on-ramp primary collision factor is speeding for five of the 10 accidents at this ramp.

**TABLE 3: SR 70 / ERLE ROAD INTERCHANGE ACCIDENT HISTORY
 (JANUARY 2005 THROUGH DECEMBER 2007)**

Location	Accidents				Accident Rate	
	Total	With Fatalities	With Injuries	Involving Multiple Vehicles	Actual Accident Rate ¹	Average Accident Rate ²
SR 70 / Lindhurst Ave. NB Off-Ramp	2	0	0	0	4.48	1.50
SR 70 / Lindhurst Ave. NB On-Ramp	0	0	0	0	0	0.80
SR 70 / Erle Rd. SB Off-Ramp	2	0	1	2	0.62	1.50
SR 70 / Erle Rd. SB On-Ramp	8	0	2	3	2.07	0.80

Note: ¹ Per million vehicle miles
² Average accident rate based on similar facilities per million vehicle miles
 Source: Caltrans District 3 TASAS Table B, January 2005 through December 2007

6.10.2 Traffic Operations

Traffic operations were analyzed for three alternatives with two variations. Alternative 1 (No-Build) assumes the Yuba River Pkwy does not connect to SR 65/70. No connections are made to SR 65/McGowan Pkwy and no improvements are made at SR 70/Erle Rd and SR 65/McGowan Pkwy. Alternative 3 assumes Yuba River Pkwy does not connect to SR 65/70, but has a connection to SR 65/McGowan Pkwy. Improvements are assumed at SR 70/Erle Rd and SR 65/McGowan Pkwy. Alternative 4 assumes the SR 70/Yuba River Pkwy connection is made (no connector ramps to/from SR 65). The frontage road connection is made to SR 65/McGowan Pkwy and improvements are made at SR 70/Erle Rd and SR 65/McGowan Pkwy.

The two options for the above alternatives were included in this analysis. The Olivehurst Ave overcrossing was included in the traffic analysis because Caltrans requested this component to determine if there are any additional benefits to the proposed improvements. Option A represents conditions without the Olivehurst Ave overcrossing and Option B represents the condition with the Olivehurst Ave overcrossing.

For SR 70/Erle Rd Interchange Option D, Alternatives 3A, 3B, and 4A each result in LOS D or better operations (Table 4). Since Caltrans staff indicated that the design criterion for this interchange is LOS D, the Option D configuration would operate acceptably.

TABLE 4: SR 70/ERLE ROAD RAMP INTERSECTION OPERATIONS – DESIGN YEAR (2030) CONDITIONS				
Intersection		SR 70/Erle Road – Option D		
		Alt. 3A Delay – LOS1	Alt. 3B Delay - LOS1	Alt. 4A Delay - LOS1
1. Erle Rd/Chestnut Rd	AM Peak Hour	19 – B	18 – B	19 – B
	PM Peak Hour	48 – D	25 – C	31 – C
2. Erle Rd/SR-70 SB Ramps	AM Peak Hour	23 – C	19 – B	23 – C
	PM Peak Hour	35 – D	22 – C	30 – C
3. Erle Rd/Lindhurst Ave	AM Peak Hour	37 – D	28 – C	28 – C
	PM Peak Hour	50 – D	33 – C	49 – D
4. Erle Rd/Edgewater Cir	AM Peak Hour	35 – C	22 – C	25 – C
	PM Peak Hour	32 – C	28 – C	38 – D
5. SR-70 NB Ramps / Lindhurst Ave	AM Peak Hour	11 – B	10 – B	7 – A
	PM Peak Hour	49 – D	19 – B	9 – A
Average ²	AM Peak Hour	25 – C	19 – B	20 – B/C
	PM Peak Hour	43 – D	25 – C	31 – C
Notes: 1. LOS = Level of service 2. Average delay (weighted evenly) in seconds per vehicle for the five study intersections Source: Fehr & Peers, 2008				

Alternative 3B (with Olivehurst Ave grade separation) provides one overall service level improvement when compared to Alternative 3A (without Olivehurst Ave grade separation). The average delay for Alternative 4A is slightly greater than for Alternative 3B. This is due in part to increased traffic between SR 70 to/from the north and Erle Rd to/from the east. The direct connector ramps between SR 70 and Yuba River Pkwy shift away traffic that would otherwise be on Erle Rd. The travel demand model then assigns more trips (to/from the north) to Erle Rd in response to the available capacity.

The SR 65/McGowan Pkwy interchange was analyzed under design year conditions for Alternatives 1, 3A, and 4A. Alternative 3B was not analyzed because it is being considered primarily as a means to improve operations at the SR 70/Erle Rd interchange. Alternative 1 assumes the existing geometrics and lane configurations. Alternatives 3A and 4A assume traffic signals are installed at both ramp intersections, the McGowan Pkwy overcrossing is widened to a four-lane cross-section, and McGowan Pkwy is four lanes east of the interchange. In addition, a traffic signal is assumed in place at the McGowan Pkwy/Olive Ave intersection, which is located approximately 200 feet west of the interchange.

Operations were analyzed using SimTraffic. Table 5 summarizes the results.

TABLE 5: SR 65/MCGOWAN PARKWAY RAMP INTERSECTION OPERATIONS – DESIGN YEAR (2030) CONDITIONS				
Intersection		Alt. 1 Delay – LOS1	Alt. 3A Delay - LOS1	Alt. 4A Delay - LOS1
1. McGowan Pkwy/SR-65 NB Ramps	AM Peak Hour	16 – C	22 – C	17 – B
	PM Peak Hour	27 – D	41 – D	21 – C
2. McGowan Pkwy/SR-65 SB Ramps	AM Peak Hour	81 – F	42 – D	16 – B
	PM Peak Hour	16 – C	28 – C	13 – B
3. McGowan Pkwy/Olive Ave	AM Peak Hour	19 – B	>150 – F	12 – B
	PM Peak Hour	10 – A	32 - C	11 – B

Notes:
1. LOS = Level of service.
Source: Fehr & Peers, 2008

Table 5 indicates that Alternative 1 would operate unacceptably, while Alternatives 3A and 4A would function acceptably at the interchange ramps. Alternative 4A operates better than Alternative 3A given the same geometric conditions. This is because the direct connector ramps allow traffic to access Yuba River Pkwy without passing through this interchange.

The freeway mainline facilities were analyzed for design year conditions for Alternatives 1, 3A, and 4A. Since Alternative 4A adds an auxiliary lane on SR 70 between McGowan Pkwy and the SR 65/70/Yuba River Pkwy Interchange, it was analyzed as a weave section using the Leisch Methodology.

Table 6 summarizes the analysis results. As shown, all freeway segments would operate at LOS D or better under each alternative.

TABLE 6: FREEWAY MAINLINE OPERATIONS – DESIGN YEAR (2030) CONDITIONS							
Mainline Segment	Direction	AM (PM) Peak Hour					
		Alt. 1		Alt. 3A		Alt. 4A	
		Density1	LOS2	Density1	LOS2	Density1	LOS2
1. SR-70 N of Erle Rd	Northbound	24.6 (26.2)	C (D)	24.8 (25.3)	C (C)	23.6 (29.7)	C (D)
	Southbound	18.9 (23.5)	C (C)	20.1 (23.6)	C (C)	21.3 (24.6)	C (C)
2. SR-70 S of Erle Rd	Northbound	20.3 (21.8)	C (C)	19.4 (20.9)	C (C)	14.8 (20.2)	B (C)
	Southbound	23.8 (23.1)	C (C)	21.3 (19.7)	C (C)	18.4 (17.3)	C (B)
3. SR-70 between SR-65 & McGowan Pkwy	Northbound	14.0 (17.0)	B (B)	11.1 (14.3)	B (B)	Leisch Weave	D (D)
	Southbound	14.1 (12.4)	B (B)	11.7 (12.6)	B (B)	Leisch Weave	B (C)
4. SR-70 S of McGowan Pkwy	Northbound	10.8 (16.5)	A (B)	10.4 (16.0)	A (B)	13.2 (21.6)	B (C)
	Southbound	14.3 (10.6)	B (A)	13.9 (10.1)	B (A)	15.9 (13.2)	B (B)
5. SR-65 between SR-70 & McGowan Pkwy	Northbound	11.0 (13.2)	A (B)	7.9 (10.7)	A (A)	7.8 (12.4)	A (B)
	Southbound	12.5 (10.4)	B (A)	11.3 (8.5)	B (A)	12.0 (8.3)	B (A)
6. SR-65 South of McGowan Pkwy	Northbound	11.1 (13.5)	B (B)	11.8 (17.7)	B (B)	11.9 (18.8)	B (C)
	Southbound	10.9 (10.4)	A (A)	14.5 (13.1)	B (B)	14.7 (12.7)	B (B)

Notes:
1. Density = passenger vehicles per hour per lane per mile
2. LOS = Level of Service
Source: Fehr & Peers, 2008

When this project is in the PA&ED phase, an updated traffic report will be required to address traffic issues that could not be analyzed during this PID phase because of the lack of information during this phase.

6.10.3 Yuba River Pkwy and the Direct Connector Ramps

This section describes the expected travel demand on Yuba River Pkwy and its direct connector ramps under design year conditions.

6.10.3.1 Alternative 3A

Yuba River Pkwy is expected to carry 2,240 AM peak hour vehicles and 2,550 PM peak hour vehicles between the SR 65/McGowan Parkway interchange and the southern edge of the proposed Woodbury Specific Plan. Since the Yuba County General Plan Update Transportation Background Report (2007) identifies 2,630 vehicles per hour as the maximum LOS C volume for a four-lane highway or expressway, a four-lane expressway for this segment would operate acceptably.

6.10.3.2 Alternative 4A

Yuba River Pkwy between the SR 65/McGowan Pkwy Interchange and the direct connector ramps to/from SR 70 would carry 1,050 AM peak hour vehicles and 1,280 PM peak hour

vehicles. This represents less than half the traffic expected on this segment under Alternative 3A. And as such, a two-lane expressway concept would operate acceptably on this segment.

Yuba River Pkwy north of the direct connector ramps would carry 4,070 AM peak hour vehicles and 4,590 PM peak hour vehicles. This would require a minimum of three travel lanes in each direction.

The NB SR 70 direct connector ramp to Yuba River Pkwy is projected to serve about 1,900 vehicles during the PM peak hour. This volume will require two exiting lanes from SR 70, a two-lane ramp, and two receiving lanes on Yuba River Pkwy. The southbound direct connector ramp from Yuba River Pkwy to SR 70 is expected to serve 1,460 AM peak hour vehicles and 1,400 PM peak hour vehicles. It is recommended that this be a two-lane ramp that merges to a single lane prior to its connection with SR 70.

6.10.4 Effects on County Roads

This section discusses how Alternatives 3A and 4A would affect traffic conditions and operations on Erle Rd, McGowan Pkwy, and Lindhurst Ave.

Under Alternative 3A, Erle Road directly west of Edgewater Cir would carry 4,180 AM peak hour vehicles and 4,260 PM peak hour vehicles. With Alternative 4A, this volume is reduced to 3,340 AM peak hour vehicles and 3,680 PM peak hour vehicles. Although Alternative 4A provides a substantial reduction in traffic, Erle Road would still need to be six lanes from east of Lindhurst Ave to Yuba River Pkwy.

Under Alternative 3A, McGowan Pkwy west of its SR 65 interchange would carry 2,170 AM peak hour vehicles and 1,980 PM peak hour vehicles. With Alternative 4, this volume reduces to 1,130 AM peak hour vehicles and 940 PM peak hour vehicles. Thus, Alternative 3A would carry approximately twice the traffic on McGowan Pkwy between SR 65 and SR 70. Under Alternative 4, McGowan Pkwy between SR 65 and SR 70 would function adequately with two through lanes (with the addition of turn lanes at intersections). However, Alternative 3A would require four through lanes plus a turn lane at intersections to accommodate the expected demand at an acceptable LOS. Since development exists on both sides of the street, widening to a five-lane cross-section may be difficult or undesirable.

Under Alternative 3A, Lindhurst Ave south of the SR 70 NB ramp intersection would carry 1,190 AM peak hour vehicles and 1,440 PM peak hour vehicles. With Alternative 4, this volume is reduced to 1,090 AM peak hour vehicles and 1,150 PM peak hour vehicles. This segment of Lindhurst Ave will likely remain as two lanes under both alternatives. However, Alternative 4 will operate better as a result of adding the direct connector ramps, which reduce the usage of the Lindhurst Avenue NB off-ramp from SR 70.

7 COMMUNITY INVOLVEMENT

On September 25, 2008 the County conducted a public hearing to present and inform the public and stakeholders about the project and proposed alternatives. Twenty-six people from the general public were in attendance. In general, verbal discussions at the workshop indicated public support for the project with Alternative 4 using SR 70/Erle Rd Interchange

Option D as the favored configuration. Some of the attendees had heard about the rejected proposal to add a local grade separation near the SR 70/Olivehurst Ave Interchange and were not in favor of the concept.

8 ENVIRONMENTAL DETERMINATION/DOCUMENT

This section is a summary of the information presented separately in the Preliminary Environmental Analysis Report (PEAR) (Attachment K).

The Environmental Document (ED) anticipated for this proposed project is expected to be an Environmental Impact Report (EIR) under the California Environmental Quality Act (CEQA) and an Environmental Assessment (EA) / Finding of No Significant Impact (FONSI) under National Environmental Protection Act (NEPA). This assumes that each interchange improvement project would have independent utility and would be analyzed separately. Yuba County would be the lead agency for CEQA and if federal funding is obtained from FHWA, Caltrans under authority delegated by FHWA, would be the lead agency for NEPA.

Potential significant environmental issues associated with the proposed project are related to biological resources, air quality, and noise impacts. It is anticipated that the proposed project would require preparation of the following technical studies: community impact assessment, farmland impact study, visual resources study, noise study, air quality study, cultural resources studies, natural environment study, paleontological identification report, and preliminary site investigation. In addition, authorizations and approvals may be needed under the Clean Water Act, California Fish and Game Code and state and federal Endangered Species Act. Protocol-level surveys for vernal pool branchiopods may be required. Documentation on the project's effects on water quality, climate change and cumulative impacts will be needed for the project file and environmental document.

Under Alternatives 3 and 4, the SR 70/McGowan Pkwy Interchange Option A would displace parking at one commercial business and alter access to the business. Options A through D for the SR70/Erle Rd Interchange would have similar environmental effects. However, the SR 70/Erle Rd Interchange Options A and B would cause displacement of four businesses, one residence, and a church.

In comparison to Alternative 3, Alternative 4 has a greater potential for significant effects related to visual resources, air quality, noise, and agricultural resources. Alternative 4 also has the greatest potential to encounter significant paleontological resources and hazardous material sites because of the excavation required. In addition, Alternative 4 would affect a currently undeveloped portion of the Sierra View Memorial Park cemetery at the connection of the Yuba River Pkwy to SR 65 and 70. Alternative 4 is also expected to have a greater potential for effects on special-status plants and on habitat for the Western Burrowing Owl.

8.1 Hazardous Waste/Materials

A hazardous waste Initial Site Assessment (Attachment K) evaluation was conducted and involved reviewing historical and aerial maps, contacting state, federal and local agencies,

reviewing historical files, and conducting six field investigations between August to October 2008. This evaluation found three known hazardous material sites, 14 potential hazardous material sites, four historical hazardous material sites, 27 United States Geological Survey (USGS) wells and 18 California wells within this project study limits. Potential contaminants of concern identified are petroleum hydrocarbons, lead based paint, creosote, petroleum, asbestos, and aurally deposited lead (ADL). Historically, lead additives were placed in gasoline and the combustion of the gasoline with lead additives resulted in lead particulates, ADL, that over time has accumulated along the State highway system. The potential source for lead based paint and asbestos is the existing bridge within the project limits and creosote can be found within the UPRR ROW. Potential sources for petroleum hydrocarbons and petroleum are the commercial businesses within the project limits.

9 FUNDING AND PROGRAMMING

This project is currently 100% locally funded from developer impact fees. However, the County is not precluded from applying for federal funding. Due to the high level of study for this PSR (PDS), it was decided that the appropriate document would be a PSR (PDS). With this document the County could program State Transportation Improvement Program (STIP) funding for PA&ED and Plan, Specification and Estimate (PS&E), but the PSR (PDS) document would limit the ability to program construction funds and may limit the time frames for funding applications. If Capital funding becomes available, the County could do a supplemental PSR which can be completed in a shorter time frame than the PA&ED. As these interchanges develop into separate projects, they may require supplemental PSR documents because of the time limitation after the PSR (PDS) approval date. See Attachment H, for the construction cost estimate.

The estimates below are based on project Alternative 4, with the SR 70/Erle Rd Interchange Option D, SR 65/McGowan Pkwy Interchange Option A, and SR 65/70 Interchange Option A. Escalation has not been included in these estimates.

TABLE 7: ERLE RD INTERCHANGE OPTION D	
Funding Component	Budget Estimate
PA&ED	800,000
PS&E	2,000,000
Right-of-Way Support	100,000
Right-of-Way	2,400,000
Construction Support	2,300,000
Construction	23,000,000
TOTAL	30,600,000

TABLE 8: MCGOWAN PKWY INTERCHANGE OPTION A	
** Estimate doesn't include RR Overhead	
Funding Component	Budget Estimate
PA&ED	700,000
PS&E	2,000,000
Right-of-Way Support	100,000
Right-of-Way	400,000
Construction Support	800,000
Construction	7,200,000
TOTAL	11,200,000

TABLE 9: YUBA RIVER PKWY/ROUTE 70 CONNECTORS	
OPTION A	
Funding Component	Budget Estimate
PA&ED	700,000
PS&E	2,000,000
Right-of-Way Support	300,000
Right-of-Way	9,100,000
Construction Support	6,500,000
Construction	63,200,000
TOTAL	82,000,000

10 SCHEDULE AND PHASING

Yuba River Pkwy will be tied to development and may be constructed in phases, which would limit the traffic accessing SR 65 and 70. Four-lane segments of Yuba River Pkwy could initially be constructed as a two-lane facility, with a future four-lane expansion. Similarly, planned six lane sections could be constructed as four lanes. Right-of-way for the ultimate facilities should be preserved and obtained so future regional growth does not preclude these future phasing improvements.

In addition to interchange and corridor phasing, there are several other potential minimum build projects that could provide interim short-term relief, while addressing long term improvement needs. An opportunity would include placing an all way stop control at the intersection and/or the signalization of the SR 70/McGowan Pkwy Interchange ramp termini and a two-lane extension of the Yuba River Pkwy that connects to McGowan Pkwy via the existing at-grade UPRR crossing. Phasing and other interim projects should be identified during the PA&ED phase when more detailed funding and regional development information is available.

Since this project will be phased by breaking each interchange into separate projects during the PA&ED phase, an accurate and complete schedule is somewhat uncertain at this time.

The schedule for further project development is dependent on identification of funding sources that are directly tied to development and the impact fees generated from development. The phasing concept assumes the interchanges in Alternative 4 will be constructed one at a time as separate interchange improvements. Two potential phasing scenarios are presented below:

10.1 Scenario #1

Scenario #1 assumes the majority of development in the next decade would occur west of Yuba River Pkwy. Scenario #1 assumes interchange improvements in the following order:

- SR 70/Erle Rd Interchange - Full interchange upgrade.
- SR 65/McGowan Pkwy Interchange (Phase 1) - Two lane connection from Yuba River Pkwy
- SR 65/McGowan Pkwy Interchange (Phase 2) - Full interchange upgrade.
- SR 70/Yuba River Pkwy Connectors – Full interchange upgrade.

10.1.1 SR 70/Erle Rd Interchange

Development west of Yuba River Pkwy would place the highest demand on the SR 70/Erle Rd Interchange because the interchange would be the closest freeway access to SR 65 and 70 to the south as well as SR 70 to the north. Additionally, the SR 70/Erle Rd Interchange, which already operates poorly, would be the first to degrade to a point of needing upgrades before other interchanges in the area.

10.1.2 SR 65/McGowan Pkwy Interchange

The SR 70/Erle Rd Interchange will have a high degree of out-of-direction travel for development east of Yuba River Pkwy. Consequently, as development continues in the Linda area east of Yuba River Pkwy, the need for improvements at the SR 65/McGowan Pkwy Interchange will become an increasing priority.

If funding for the full interchange is unavailable, SR 65/McGowan Pkwy Interchange Option C may be considered as an interim improvement and/or an all way stop control. An all way stop control would serve immediate traffic needs until additional improvements are required. Option C would provide interim access to both SR 65 and 70 without the higher costs of the full interchange upgrade. The concept would be to acquire the ultimate ROW for Yuba River Pkwy, but only construct two lanes. Although Attachment E for Option C illustrates a two lane at-grade UPRR crossing, staging the ultimate four-lane UPRR OH would be more costly and complicated. If funds are available, it may be more beneficial to construct two lanes of the ultimate four-lane UPRR OH.

10.1.3 SR 70/Yuba River Pkwy Connectors

Although the connectors in conjunction with the Yuba River Pkwy connection to SR 20 provide the most congestion relief to Marysville, they have the highest cost and do not provide access to SR 65. The connectors are therefore recommended as the last phase.

TABLE 10: SR 70 / ERLE RD INTERCHANGE IMPROVEMENTS

Milestone	Time to Complete	Completion Date
Begin Project Report and Environmental Document		Jan 2010
Project Approval and Environmental Document (PA&ED)	24 mo.	Dec 2012
Maps to R/W (Overlap with PS&E)	6 mo.	June 2013
Plans, Specifications, and Estimate (PS&E)	12 mo.	May 2014
R/W Certification/Ready to List (RTL)	14 mo.	Aug 2015
Advertise and Award Contract	3 mo.	Nov 2015
Construction Completion	18 mo.	March 2017

TABLE 11: SR 65 / MCGOWAN PKWY INTERCHANGE IMPROVEMENTS (PHASE 1)

Milestone	Time to Complete	Completion Date
Begin Project Report and Environmental Document		June 2015
Encroachment Permit & PS&E	18 mo.	Nov 2016
Advertise and Award Contract	3 mo.	Feb 2017
Construction Completion	6 mo.	Aug 2017

TABLE 12: SR 65 / MCGOWAN PKWY INTERCHANGE IMPROVEMENTS (PHASE 2)

Milestone	Time to Complete	Completion Date
Begin Project Report and Environmental Document		Jan 2018
Project Approval and Environmental Document (PA&ED)	24 mo.	Dec 2020
Maps to R/W (Overlap with PS&E)	6 mo.	June 2021
Plans, Specifications, and Estimate (PS&E)	12 mo.	May 2022
R/W Certification/Ready to List (RTL)	14 mo.	Aug 2023
Advertise and Award Contract	3 mo.	Nov 2023
Construction Completion	18 mo.	May 2025

TABLE 13: SR 70 / YUBA RIVER PKWY CONNECTORS (PHASE 3)

Milestone	Time to Complete	Completion Date
Begin Project Report and Environmental Document		2020
Project Approval and Environmental Document (PA&ED)	36 mo.	2023
Maps to R/W (Overlap with PS&E)	12 mo.	2024
Plans, Specifications, and Estimate (PS&E)	24 mo.	2026
R/W Certification/Ready to List (RTL)	12 mo.	2027
Advertise and Award Contract	2 mo.	2027
Construction Completion	24 mo.	2030

10.2 Scenario #2

Scenario #2 assumes the majority of development in the next decade would occur east of Yuba River Pkwy. Scenario #2 assumes interchange improvements in the following order:

- SR 65/McGowan Pkwy Interchange (Phase 1) - Two lane connection from Yuba River Pkwy.
- SR 65/McGowan Pkwy Interchange (Phase 2) - Full interchange upgrade.
- SR 70/Erle Rd Interchange - Full interchange upgrade.
- SR 70/Yuba River Pkwy Connectors – Full interchange upgrade.

Traffic originating east of Yuba River Pkwy would experience significant out-of-direction travel if required to utilize the SR 70/Erle Rd Interchange. The most efficient access to SR 65 and 70 would be via McGowan Pkwy. The cost differential between the SR 70/Erle Rd Interchange and McGowan Pkwy interchange improvements offer the best cost-to-benefit ratio (Capital Cost of Improvements / Level of Service).

11 FEDERAL HIGHWAY ADMINISTRATION (FHWA)

Federal-aid funding is not anticipated at this project initiation documentation phase, therefore there is no FHWA project involvement.

12 DISTRICT CONTACT

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13 ATTACHMENTS

A) Yuba River Pkwy Corridor Layouts (SR 65/70 to SR 20)

B) Advance Planning Studies (APS)

- Erle Overcrossing Widening for Option A, C, and D
- Erle Northbound On-ramp Overhead for Option C and D
- Erle Overhead Widening for Option A, C, and D
- McGowan Overcrossing Widening for Option A
- SR 65/70 Northbound Connector Option A
- SR 65/70 Southbound Connector Option A

C) Layouts - Alternatives

- Alternative 2 (Rejected) (Improvements at Erle Interchange only)
- Alternative 3 (Improvements at Erle and McGowan Interchange only)
- Alternative 4 (Improvements at Erle, McGowan, and SR 65/70 Connector to SR 70 from YRP)
- Alternative 5 (Rejected) (Improvements at Erle and SR 65/70 Connector)

- Alternative 6 (Rejected) (Improvements at Erle, McGowan, and SR 65/70 Connector with connections to SR 65 and 70 from YRP)

D) Layouts – SR 70/Erle Rd Interchange

- Options A (SB ramps = existing L-1, NB ramps = proposed L-1, Constrained)
- Options B (SB ramps = existing L-1, NB ramps = proposed L-1, Un-Constrained)
- Option C (SB ramps = existing L-1, NB ramp = existing L-6 with new NB on-ramp)
- Option D (SB ramps = Proposed L-9, NB ramps = existing L-6 with new NB on-ramp)

E) Layouts – SR 65/McGowan Pkwy Interchange

- Option A (Widen existing structure to 4 lanes and widen existing ramps)
- Option B (Widen existing structure to 4 lanes and convert SB ramps from L-1 to L-9)
- Option C (Proposed Interim of converting structure from 2 to 3 lanes and ramp widening)

F) Layouts – SR 65/70 Interchange

- Option C
- Option D

G) GAD level Plans (Layouts, Profiles, and Typical Sections)

- Erle Road Option D Improvements
- McGowan Option A Improvements
- SR 65/70 Connector Option A Improvements.

H) Cost Estimates (Caltrans Six Page Estimate Format)

- Erle Option A Improvement
- Erle Option B Improvement
- Erle Option C Improvement
- Erle Option D Improvement
- McGowan Option A Improvement
- SR 65/70 Option A Improvement

I) Storm Water Data Report

J) Traffic Report

K) PEAR/ISA

L) Traffic Management Plan (TMP) Data Sheets

- Erle Interchange Option D TMP
- McGowan Option A TMP
- SR 65/70 Option A TMP

M) Exceptions to Geometric Design Standards Spreadsheet.