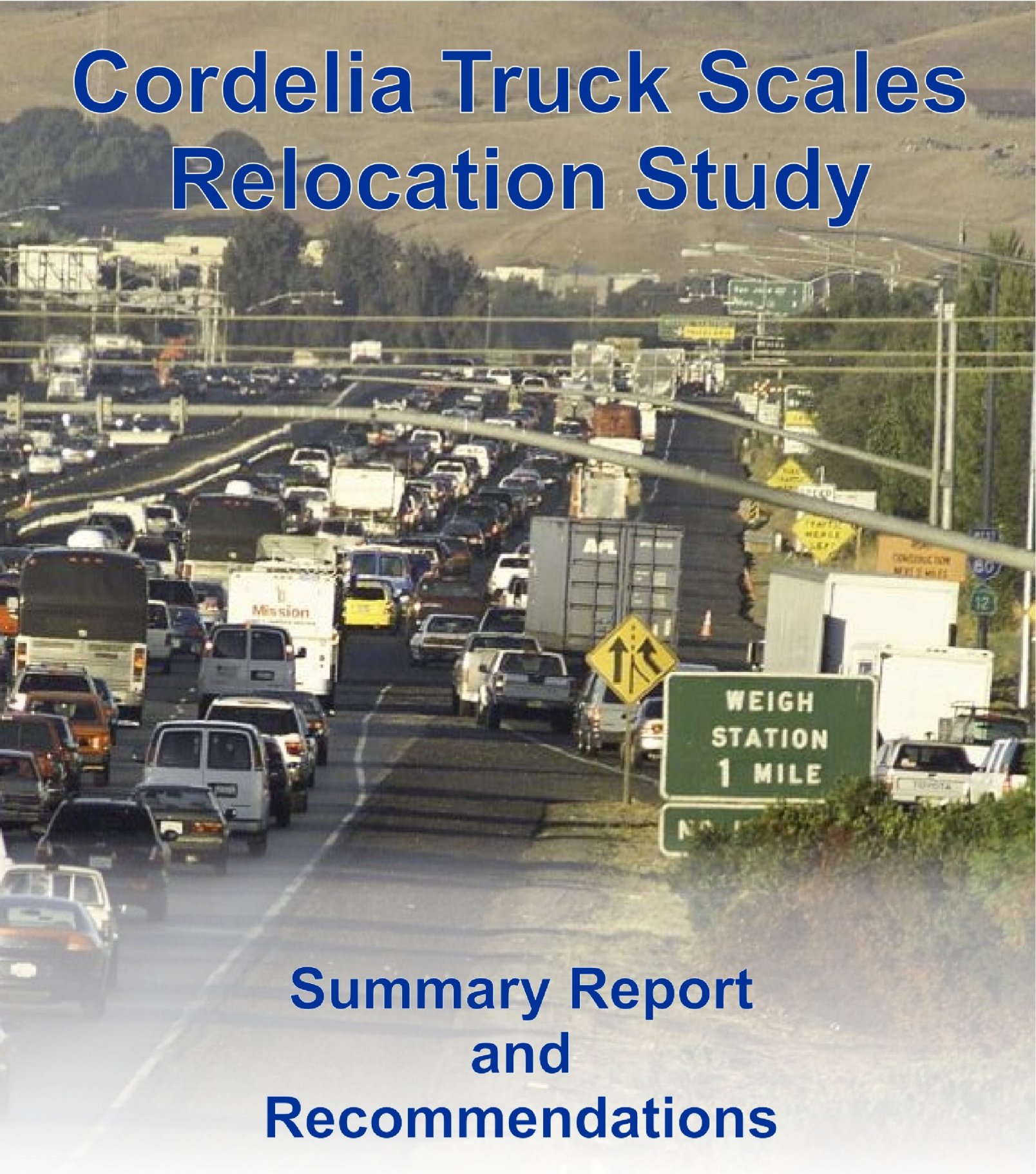
Cordelia Truck Scales Relocation Study



Summary Report and Recommendations

Solano Transportation Authority

February 16, 2005

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CORDELIA TRUCK SCALES RELOCATION STUDY

SUMMARY REPORT AND RECOMMENDATIONS

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0. EXECUTIVE SUMMARY

The Cordelia Truck Scales Relocation Study was conducted as part of the preparation of the Environmental Documents and Project Report for the I-80/I-680/SR12 Interchange project. The purpose of the study was to identify potential sites along the I-80, I-505, SR 12 and SR 113 corridors that could satisfactorily accommodate the relocation of the existing scales within the Interchange or at other sites in Solano County.

The Cordelia Truck Scales, located on I-80 between Suisun Valley Road and SR 12 (East), were built in 1958 and are currently undersized. The scales significantly contribute to the congestion on I-80 due to the large number of trucks exiting and entering I-80 and the close proximity of the scales to both the Suisun Valley Road and I-680 interchanges. The scales will need to be moved and expanded in order to accommodate the anticipated 115% growth in truck traffic in the corridor by 2040 and the eventual expansion of I-80 in this area.

The Cordelia Truck Scales were initially evaluated as part of the study of the I-80/I-680/SR12 Interchange that was completed in late 2001. This initial phase of studying the truck scales was documented in the *Truck Scale Data Collection and Analysis – Technical Memorandum*, dated July 26, 2001. This technical memorandum addressed the existing facility and the anticipated shortfalls with future traffic and formed the basis for estimating the impacts upon freeway and local roadway improvements within the I-80/I-680/SR12 Interchange area. Because of the significant costs to reconstruct the facilities and provide the necessary ramp structures for proper weaving and merging of traffic within the I-80/I-680/SR12 Interchange area, the STA determined that the potential relocation of the Truck Scales should be evaluated.

The Cordelia Truck Scales Relocation Study was conducted as a four-tier technical analysis. Tier 1 initially screened sites for physical size, impact of freeway operations and environmental fatal flaws. A total of 24 candidate sites were initially identified, but were narrowed to 11 candidate sites in Tier 1. In Tier 2, these 11 sites were further screened for specific geometric requirements, traffic operations, additional environmental impacts, and right-of-way requirements. The Tier 2 analysis recommended 8 candidate sites (subsequently increased to 10 sites) for further study. Three potential options for the locations of Truck Scales in Solano County were identified in Tier 2:

- Option 1 - Relocate and expand the scales within the I-80/I-680/SR12 Interchange
- Option 2 - Build new scales on I-80 between Fairfield and Vacaville and on SR 12 between I-80 and SR 113
- Option 3 - Build new scales on I-80 between Vacaville and Dixon, on SR 12 between I-80 and SR 113 and on I-505 between Vacaville and Winters

In Tier 3, a detailed technical analysis of these three options was conducted against the following five criteria:

- Capital Cost
- 35-year Operations and Maintenance Costs
- Right-of-Way Requirements
- Environmental Considerations
- Traffic Operations

The initial conclusion from the Tier 3 technical analysis was that Option 3 provided the best relocation option for the Cordelia Truck Scales. The basis for this conclusion was that Option 3 provides the lowest capital investment, the best flexibility in implementation, the least impact on traffic operations and sites that are in relatively more rural areas, consistent with similar facilities across the state. However, Option 3 also requires constructing three sets of scales (I-80, SR 12 and I-505), resulting in significantly higher operations and maintenance costs.

The Draft Cordelia Truck Scales Relocation Study was produced upon completion of the Tier 3 analysis. On October 8, 2003, the STA Board of Directors directed that the Draft Cordelia Truck Scales Relocation Study be released for public comment and review and that public input help direct the continued evaluation of potential options for relocating the Cordelia Truck Scales.

The Tier 4 analysis was initiated by the release of the Draft Cordelia Truck Scales Relocation Study for public review. Significant concerns were identified through the public input process regarding potential sites on I-80 and SR 12 that were proposed in the Tier 3 analysis. These concerns provided STA direction for reevaluating all sites identified in the Tier 3 analysis and the proposed designs of the scale facilities at these sites. The Tier 4 analysis yielded the following results:

- Option 1 was revised to reflect a modified design, developed through a cooperative effort of STA, the California Highway Patrol (CHP) and Caltrans, for the scale facilities within the I-80/I-680/SR12 Interchange. The revised design significantly reduced the facility capital costs and increased the peak hour truck throughput when compared with the original proposed design of scale facilities within the I-80/I-680/SR12 Interchange area.
- Option 2 was deleted from consideration since, when compared to Option 1, traffic operations would not be significantly improved and Option 2 would require an additional set of scales on SR 12.
- Option 3 was revised to delete the proposed site on SR 12 near Olsen Road due to safety concerns on this segment of SR 12. Both scale facilities (eastbound and westbound) were reevaluated at a site near Branscome Road. Additionally, an alternate site on I-80 between Pedrick Road and Kidwell Road was evaluated to replace the proposed site on I-80 between Vacaville and Dixon.
- The existing Cordelia Truck Scales are inadequate to meet current and future demand for truck weight enforcement, safety and security and should be relocated. The existing facilities have major negative impacts on traffic operations and safety within the I-80/I-680/SR12 Interchange area that will continue until the existing truck scale facilities are relocated with adequate ramp spacing between the entry/exit ramps to the scales and adjacent interchanges and better separation of truck traffic and other vehicles.

Based upon the findings of the four-tier detailed analysis conducted for the Cordelia Truck Scales Relocation Study, the Solano Transportation Authority Board of Directors recommends to the State of California the following actions:

RECOMMENDATIONS

1. **Investigate the feasibility of closure of the existing Cordelia Truck Scales, or closure of the scales during peak commute periods, until the scales can be relocated/reconstructed in a location that ensures safe traffic operations on I-80.**

2. **Relocate the Cordelia Truck Scales as identified in the Revised Option 1 of the Cordelia Truck Scales Relocation Study.**

1. INTRODUCTION

The Solano Transportation Authority (STA), acting as lead agency for conceptual engineering and environmental clearance for the I-680/I-80/SR12 Interchange Project and the North Connector Project in the City of Fairfield, Solano County, has identified the immediate need to address the eventual reconstruction and possible relocation of the Cordelia Truck Scale Facilities. The existing scales are currently undersized and will need to be moved to accommodate 1) an expanded scale facility footprint and 2) the eventual expansion of the adjacent State Highway system. The disposition of the scale facility, located within the limits of both STA projects, will need to be resolved before preferred build alternatives for both of these projects can be finalized.

The primary goal of this Cordelia Truck Scales Relocation Study, as commissioned by the STA, was to identify potential sites along the I-80, I-505, SR 113 and SR 12 corridors in Solano County that could satisfactorily accommodate the relocation of these facilities and to provide a recommendation for the new set. A set of fatal flaw and performance criteria were used to screen all potential sites using a two-tier process. From the sites available after the screening process, three relocation options were developed, combining various site locations such that all truck traffic will be captured on the primary routes through Solano County. The relocation options were evaluated against five technical criteria and a Draft Cordelia Truck Scales Relocation Study summary report was prepared and released for public review. Based upon comments received during the public review process, two additional alternatives (revised options) were developed and evaluated.

This report summarizes the analysis performed for the Cordelia Truck Scale Relocation Study. Relocation options are identified, including the option to reconstruct the scales near their current location, and relative merits of each option are compared.

2. BACKGROUND

The existing Cordelia Truck Scale facilities are located in the eastbound and westbound directions on I-80, east of the Suisun Valley Road interchange in Solano County. Although the scales are located at an optimum site from an enforcement standpoint, capturing virtually all the freeway truck traffic traveling to and from SR 12, I-80 and I-680, they are also located in the most congested freeway segment of the County. In spite of their strategic location, the existing truck scale facilities at Cordelia are inefficient and considerably undersized to accommodate the expected increases in truck traffic over the next 40 years.

The anticipated growth of truck traffic in the corridor, up to 70% by year 2025 and up to 115% by year 2040, will create a significant increase in congestion on I-80 in the scale's vicinity, negatively impacting the facility's operation and the adjacent freeway section. Even at existing truck traffic volumes, the existing scale facility often exceeds capacity. Currently, during peak periods of truck traffic at the Cordelia facility, trucks have been frequently observed to queue back to the gore area of the facility entrance ramp. This is due to the existing facility being unable to process the trucks fast enough. When this occurs, the CHP temporarily closes the scale facility for safety measures to avoid stopped trucks impeding freeway operation.

In the referenced *2001 Weigh Station Inventory of Needs Report,* prepared by the California Highway Patrol (CHP) in cooperation with Caltrans, the Cordelia inspection facility is identified as a candidate scale facility needing major improvements. Per recent discussions with CHP staff during this study period, they have confirmed the existing Cordelia inspection facility is undersized and outdated with regards to the number of inspection bays and the length of truck ramps. This is evident by the frequency at which the scales must be temporarily closed during peak periods.

The existing scale facilities locations are physically constrained by the adjacent Suisun Valley Road and SR 12 East interchanges and will be impacted by the planned expansion of I-80 and the development of adjacent land. Thus, the existing inspection and scale facilities cannot be retained and expanded in their current location. Furthermore, to keep the truck scales at or near the current location, braiding (grade separation) of the on/off ramps between the Suisun Valley Road, I-680, and the SR 12 East interchanges will be required to minimize the conflicts between the trucks and other vehicular traffic.

2.1 EXISTING CORDELIA TRUCK SCALE FACILITY

The existing Cordelia Truck Scales, formally called the Cordelia Commercial Vehicle Enforcement Facility (CVEF), is a Class B facility with full inspection capabilities. Truck scales are in place for the eastbound and westbound directions of I-80 between I-680 and SR 12 East. Each existing facility has four inspection bays, three static scales and a mainline truck bypass system (*PrePass*) installed. Currently, all trucks are required to pull into the truck scale for weighing. The only exceptions are:

- Trucks that use the *PrePass* system, with the weigh-in-motion system installed 0.25 mile in advance of the scales; and

- Closure of the truck scale. During the peak periods, when truck traffic backs up to the freeway gore area, the truck scales are closed temporarily as a safety measure to avoid stopped trucks impeding mainline freeway operations.

Trucks that do not have *PrePass* installed or exceed the weight limit are required to pull into one of three lanes: Lanes A and B are for loaded trucks and Lane C is for empty trucks. Trucks exceeding the weight limit will trigger an alarm and the CHP staff will take appropriate enforcement action. The overloaded trucks are required to circle around for load adjustment and re-weighing. The truck driver may re-adjust the loads or remove some of the load. The trucks are not allowed to leave the facility until the weight limit is satisfied.

The inspection facility routinely conducts random inspections of trucks. The most common inspections are 'Level 1' and 'Level 3' inspections. A 'Level 3' inspection is conducted once per week and involves the Commercial Vehicle Inspection Specialist (CVIS) inspecting driver's license, registration and logbook. 'Level 3' inspections routinely take 5-7 minutes to perform for each truck. A 'Level 1' inspection occurs on a daily basis and involves a full inspection and survey of the truck from top to bottom. In addition to a paperwork check as in the 'Level 3' inspection, a safety inspection is performed to check the mechanics of the vehicle. This inspection is required for the truck to obtain the quarterly inspection/safety sticker that must be shown on the right side of the truck.

2.2 EXISTING TRUCK TRAFFIC VOLUMES

Peak hour truck traffic volumes shown in Attachment C were counted at selected locations on Tuesday October 29th, Wednesday October 30th, and Thursday October 31, 2002 between 6 and 9 a.m. and 2 and 6 p.m. Annual average daily truck traffic was obtained from the California Department of Transportation's (Caltrans) *2000 and 2001 Annual Average Daily Truck Traffic on the California State Highway System.*

In addition, the CHP collected some random counts at the Cordelia location in June 2003 during times of peak hour truck traffic. These counts were generally consistent with the prior counts taken in 2002 for the I-80 westbound direction. However, for I-80 eastbound direction, the peak hour counts were considerably higher for 3 of the 4 days counted. The data collected by the CHP in June 2003 at Cordelia was not factored into the existing peak hour volume counts used in this report. This additional data was not considered in order to maintain consistency amongst the data collected in 2002 at all site locations. It

should be noted that if higher peak hour counts are taken into consideration, the estimated capital and operating and maintenance cost to reconstruct the scales could be higher.

As illustrated by the figures in Attachment C, the highest concentration of truck traffic is near the existing Cordelia facilities with over 500 trucks observed on I-80 west of SR 12 East during the peak hour. Lower concentrations of trucks are present in the peak hour on I-505 and SR 12, as these roadways carry 120 to 140 trucks during the peak hour in one direction. In general, the peak hour truck volumes on I-80 decrease from west to east towards Sacramento. This is expected as truck traffic splits off onto SR 12 East and I-505 North. Approximately 21% of all eastbound truck traffic screened at Cordelia continues onto SR 12 East, as determined in interviews with truckers on May 11, 2001 and documented in the referenced *Segment 1: I-80/I-680/SR12 MIS; Cordelia Truck Scale Data Collection & Analysis Technical Memo*, dated July 13, 2001.

In the I-80 corridor, truck traffic ranges from 6.1% near SR 12 East to 13.5% of the average annual daily traffic (AADT) near SR 113 North. The truck traffic volume does not actually decrease near SR 12 East; it simply comprises a lesser percent of the total traffic because of the higher overall vehicular traffic near SR 12 East.

In the SR 113 corridor, truck traffic is approximately 5.8% to 7.0% of the AADT. In the SR 12 corridor, truck traffic is approximately 5% to 13% of the AADT. In the I-505 corridor, truck traffic is approximately 12% to 14% of the AADT.

2.3 MAINLINE BYPASS SYSTEM (PREPASS)

Many scale facilities throughout California have mainline bypass equipment installed, also known as *PrePass*. *PrePass* is a system that allows trucks equipped with a transponder to bypass the scale facility and continue on the mainline freeway. Trucks equipped with a *PrePass* transponder are weighed over a weigh-in-motion system located in advance of the scale facility. If the truck is within weight limits and identification in the database is acceptable, then the truck is given a signal to bypass the scales. If a weight cannot be read by the weigh-in-motion system or if truck information cannot be verified, the truck is signaled to enter the scale facility. The use of the *PrePass* system helps alleviate the volume of trucks entering the scale facilities and allows for more throughput of trucks through the checkpoints by automating the weighing process.

The subscriber base of the *PrePass* system is increasing. Currently, based upon data received by CHP in June 2003, approximately 635 eastbound trucks per day and 654 trucks per day westbound use the *PrePass* system. 2001 truck traffic volumes from Caltrans indicate that the average annual daily truck traffic is 11,590 trucks at this location. Therefore, it was calculated that today, approximately 11% of all trucks passing through the existing Cordelia Inspection Facility are using *PrePass*. Previous analysis performed by the study team assumed a 15% *PrePass* usage in 2025, which is generally considered a conservative number as the usage of the *PrePass* system has grown considerably over the last few years and is expected to continue to grow. For purposes of this report, it was assumed an average 15% of truck traffic will use the *PrePass* system during the life of the study period. Therefore, an overall reduction of 15% was taken on all forecast truck volumes expected to enter the scale facilities.

2.4 COMPARISON OF STATEWIDE TRUCK SCALE LOCATIONS

In general, larger commercial truck scale facilities are located in rural areas, beyond urban cores. The route segments with the highest number of truck traffic are not necessarily the routes on which truck scales are located. A single facility in an urban area capturing the maximum number of trucks may be the most strategically located, but not necessarily the most feasible. In urban areas, land use, infrastructure cost and freeway operations hamper the placement of truck inspection facilities.

The I-710, I-605, and SR 60 freeways in Los Angeles County are major truck routes to and from the Ports of Long Beach and Los Angeles and carry three times the amount of truck traffic as I-80 in Cordelia, but no truck scale facilities are located on those route segments. The only scale facility located in the Los Angeles basin is a Class D platform scale at Carson on a segment of I-405 that carries 16,300 trucks daily with an AADT of 263,000. The platform scale at Carson has not been used in over three years due to the facility being obsolete and unable to be effective. The CHP and Caltrans are studying how to install scales on the I-710 corridor, possibly using advanced technologies and mainline weigh-in-motion (WIM) scales.

Table 1 illustrates a sample of truck scale locations across the State similar to Cordelia:

Table 1: Similar Commercial Vehicle Enforcement Facilities Statewide

Facility Name	Route	County	Facility Class	AADTT*	# of Existing Inspection Bays
Cordelia EB	80	SOL	B	5100	4
Cordelia WB	80	SOL	B	5100	4
Nimitz NB	880	ALA	B	5500	4
Nimitz SB	880	ALA	C	5500	0
Mountain Pass WB	15	SBD	A	3200	4
Needles WB	40	SBD	A	3300	4 (under design)
Cottonwood NB	5	SHA	B	4000	4
Cottonwood SB	5	SHA	C	4000	0
Grapevine SB	5	KER	B	8500	4
Castaic NB	5	LA	B	8600	4
Gilroy SB	101	SCL	B	3800	3
Livermore EB	580	ALA	D	8300	0
Livermore WB	580	ALA	D	8300	0

* AADTT = Total Average Annual Daily Truck Traffic divided by 2, rounded to nearest 100.

2001 Average Daily Truck Traffic on the California State Highway System, Caltrans, Dec 2002.

The facilities shown, and their corresponding truck volumes, match the existing conditions at the Cordelia facility. However, some of the facilities are outdated as well and have similar problems. For example, the Castaic facility exceeds capacity at many hours throughout the day and must be temporarily closed for a few minutes at a time, similar to the existing condition at Cordelia.

The area of Solano County near Cordelia is not necessarily considered part of a dense urban core today, but is not the rural setting it once was when the existing Cordelia truck scale facility was located and constructed in 1958.

3. STUDY METHODOLOGY

The purpose of the Cordelia Truck Scales Relocation Study was to identify potential sites along the I-80, I-505, SR 12 and SR 113 corridors that could satisfactorily accommodate the relocation of the existing scales within the I-80/I-680/SR12 Interchange or at other sites in Solano County. The study evaluated sites and relocation options for truck scale facilities using a four-tier analysis.

In Tier 1, sites were screened for physical size and environmental fatal flaws. The Tier 2 process evaluated sites from Tier 1 using a set of performance measures that included traffic operations, geometric considerations, relationship with the truck scales network, truck capture ratio and site

expandibility. The Tier 2 analysis provided three site-specific options for the relocation of the Cordelia Truck Scales. The Tier 3 analysis was a rigorous comparative evaluation of the Options identified in Tier 2 using five evaluation criteria: capital cost, 35-year operation and maintenance cost, right-of-way requirements, environmental considerations and traffic operations. The Draft Cordelia Truck Scales Relocation Study was completed after the Tier 3 analysis and released for public review and comments.

The release of the draft study for public review started the Tier 4 analysis. During the Tier 4 analysis, public input was solicited to evaluate the compatibility of the proposed options with adjacent land uses and the community acceptance of the proposed options. Based upon the public input received during the Tier 4 analysis, the proposed options were reevaluated and two revised options were developed for further evaluation. A comparative analysis of the revised options was the basis for the recommendations from the STA Board of Directors to the State of California for the relocation of the Cordelia Truck Scales. These recommendations are included in Section 7 of this report.

4. TIER 1 AND TIER 2 ANALYSES

A team comprised of engineering consultants, STA, Caltrans and CHP staff, with input from the City of Fairfield, City of Vacaville and Solano County, studied possible relocation sites for the Cordelia scale facilities. It was determined that the potential site locations for purposes of this study would be limited to areas within Solano County.

Based upon preliminary assessments, areas west on I-80 and south on I-680 of the I-80/I-680/SR12 Interchange were deemed not suitable for accommodating truck inspection facilities on the basis of terrain, environmental, soils and jurisdictional conditions. Similarly, areas east on I-80 and north on SR 113 of the I-80/SR 113 (north) interchange were ruled out based on the proximity of the Solano/Yolo County line and the need for too many truck scale facilities to capture multiple routes, should the major facility on I-80 be moved this far eastward. Therefore, the initial site selection process focused on finding candidate sites along the I-80 corridor, between the I-80/I-680 and the I-80/SR 113 interchanges. Additionally, potential sites were assessed along I-505 and SR 12 within Solano County to capture truck movements on these routes should the major facility on I-80 be moved eastward.

For purposes of this study, only sites that could accommodate Class B commercial vehicle enforcement facilities were considered as viable options on all routes. A Class B facility is defined as an independent command facility by the CHP and is located along major highway routes. Class B facilities normally operate 24 hours per day / 7 days per week, have two or more covered inspection bays with at least one designed with an inspection pit, and provides adequate administrative office space. Further, Class B facilities are designed to serve volumes greater than 2,000 trucks per day, include a 'racetrack' to allow trucks to circle for re-weighing, load adjustment areas, long-term and short-term truck parking, staff parking, and are equipped with weigh-in-motion and static scales, a weigh-in-motion sorting scale, and a mainline bypass system.

Caltrans and CHP both stated preferences for Class B facilities at all route locations, primarily to preserve the ability to inspect all trucks moving within the County 24-hours/7-days a week. A concern was raised that if only continuously operated Class B facilities were located at the higher volume location on I-80, truckers would circumvent inspection by using lesser enforced routes.

A site tour was conducted to view possible relocation sites. The results of that tour and the long list of candidate sites are documented in the referenced *Cordelia Truck Scales Relocation Study: Tier 1 Evaluation Report, dated February 11, 2003.* The Tier 1 report process eliminated sites based upon environmental fatal flaw criteria, and how well the potential site physically fits between interchanges based upon the geometry of the scales. Eleven candidate sites were recommended for further evaluation

from the Tier 1 analysis. A Tier 2 process followed which involved screening the list of candidate sites further by a more rigorous set of performance measures, including traffic operations, geometric evaluation, relationship with the truck scales network, truck capture ratio, and site expandability. The results of this process are in the referenced *Cordelia Truck Scales Relocation Study: Tier 2 Evaluation Report, dated April 8, 2003.* Attachment B shows Tier 1 sites and then, Tier 2 sites considered.

During the Tier 2 process, it was identified that the area south of SR 12, from approximately Suisun City to Denverton, is within the Suisun Marsh. The Suisun Marsh Protection Plan, as administered by Bay Conservation and Development Commission (BCDC) and local agencies, does not allow for construction of new roadways within the Marsh. Therefore, the eastbound SR 12 candidate site at Branscome was dropped and replaced with a site previously identified site in the Tier 1 study east of Olsen Road.

Finally, from various combinations of candidate sites, three primary options were developed that could provide commercial vehicle enforcement for trucks traveling on major thoroughfares in Solano County. These final three options, shown in Attachment A, were carried forward for evaluation.

Option 1 reconstructs the scales in the vicinity of the existing Cordelia site. Option 2 relocates the scales to sites located on I-80 and SR 12. Option 3 relocates the scales to sites located on I-80, SR 12 and I-505.

Conceptual layouts for each option are shown in Attachment D. A brief description of each option is defined as follows:

Option 1 – Reconstructs WB & EB I-80 scales at Cordelia in the vicinity of the existing location, east of Suisun Creek, between Suisun Valley Road and SR 12 East interchanges.

Option 2 – Relocates WB & EB I-80 scale facilities between Fairfield and Vacaville, between North Texas Street and Lagoon Valley Road interchanges; then adds scale facilities on SR 12, one westbound, east of Branscome Road and one eastbound, east of Olsen Road.

Option 3 – Relocates WB and EB I-80 scale facilities between Vacaville and Dixon, between Midway Road and Dixon Avenue interchanges; then adds scale facilities on SR 12, one westbound, east of Branscome Road and one eastbound, east of Olsen Road; then additionally adds scales facilities on I-505, one northbound, between Midway and Allendale and one southbound, between Allendale and Wolfskill.

For the purpose of looking for ways to reduce operating cost for options with multiple sites, the study team investigated combining the two separated sites on SR 12 and I-505 as follows:

- SR 12: Instead of a westbound site east of Branscome Road and an eastbound site east of Olsen Road, combine to one facility located approximately 1.5 miles east of Branscome Road. The westbound direction of SR 12 would be realigned to the north, allowing for the combined truck scale facility to be located within the median of the two-lane highway.

- I-505: Instead of a northbound site between Midway and Allendale and a southbound site between Allendale and Wolfskill, combine to one facility located on the west side of I-505, between Allendale and Wolfskill.

It was recognized that on both SR 12 and I-505 significantly lower truck volumes are predicted when compared to volumes on I-80. Because of the lower volumes, combined sites may be feasible and may realize a reduction in operating costs, as the combined volumes require less inspection bays than their separated counterparts, and thus less staff. It was estimated that over a 35-year operation and maintenance period, the total operating cost for facilities on SR 12 and I-505 could be reduced by as much as 17% if combined sites are used. However, during the study period, Caltrans identified potential operational deficiencies with the combined site facilities including counter-clockwise truck movements within the scale footprints and left lane exits/entrances on SR 12, which could prove undesirable and/or negatively impact any potential operational cost savings.

For purposes of this relocation study report, the combined site options on SR 12 and I-505 were dropped from comparison recognizing that this alternate site design concept can be studied further in the future, should sites be relocated to these lower volume routes.

4.1 FUTURE TRUCK VOLUMES

Future 2025 truck volume forecasts were developed from MTC and Caltrans data and were calculated to have a 1.7 growth rate (70% increase) from 2000 to 2025. This growth rate for 2025 volume forecasts was presented to and approved by MTC and Caltrans in July 2001 as part of the referenced *Segment 1: I-80/I-680/SR12 MIS.* Forecasts for year 2040 were calculated as a 115% increase from year 2000. The year 2040 volumes are based on the assumption of a linear extrapolation of the 2025 forecast. These growth numbers generally coincide with FHWA's studies on freight movements and studies by the Port of Oakland.

Figures illustrating the existing, 2025 and 2040 peak hour and daily truck volumes assumed for this study are included in Attachment C.

4.1.1 Truck Forecast Summary Matrix

Table 2 illustrates the forecasted truck volumes for years 2025 and 2040 at various points along the study corridors. The shaded values in the table represent the volumes used for the development of the truck scale footprints at each of the candidate site locations (see Table 3 for assumed design volume).

Table 2: Existing and Forecast Peak Hour Truck Volumes

Location	Existing PHTV	Year 2025 PHTV	Year 2025 15% PPR	Year 2040 PHTV	Year 2040 15% PPR
WB 80 at Cordelia Truck Scales	524	890	**757**	1127	**958**
EB 80 at Cordelia Truck Scales	552	940	**799**	1187	**1009**
WB 80 at Travis Blvd	401	680	**578**	863	**734**
EB 80 at Travis Blvd	417	710	**604**	897	**763**
WB 80 at Meridian Road	325	550	**468**	699	**595**
EB 80 at Meridian Road	205	350	**298**	441	**375**
SB 505 at Midway Road	125	210	**179**	269	**229**
NB 505 at Midway Road	128	220	**187**	276	**235**
WB 12 at Explosive Tech Road	135	230	**196**	291	**248**
EB 12 at Explosive Tech Road	137	230	**196**	295	**251**

PHTV = Peak Hour Truck Volume

PPR = PrePass Reduction of 15% applied to Peak Hour Truck Volume

4.2 PROPOSED SCALE LAYOUT ASSUMPTIONS

Using forecasted truck volumes and making allowances for site conditions and constraints, conceptual scale footprints and resultant site geometry were developed for each of the three relocation options. The following describes the assumptions for the footprints of the truck scale facilities for which the options were developed:

- Class B facilities are assumed to be the required configuration for all three corridors, I-80, SR 12 and I-505. The facility configuration was based upon the truck scale footprint design of the Cottonwood and Mountain Pass Class B truck scale facilities.

- The layout of the supporting areas of the truck scales was developed based upon the requirements for long-term truck parking, load adjustment areas, inspection areas, and staff parking. The size of each of these features, with the exception of staff parking, is based on the STAA design vehicle, as it is the worst-case longest legal size vehicle and one that would frequent the truck scale facility. The truck turning template for a double turnpike truck (with 2' x 48' trailers plus tractor) was used to design the racetrack to accommodate maneuvering of extra-legal vehicles and loads. It should be noted that the double turnpike is a longer vehicle combination, which is illegal in California.

- It is not necessary that scale facilities be located directly opposite each other on any given route, such as the existing Cordelia scale facility layout. A considerable distance can separate the facilities on either side of the roadway if necessary, as long as enforcement capabilities are not adversely impacted.

- The assumption for the number of inspection bays to be constructed at each site was based on conversations with Caltrans and CHP staff. It was stated that several factors influence the required number of bays. For purposes of this study, the number of bays assumed constructed at each site was determined based on the need during the peak hour. The number of constructed bays was calculated assuming that one inspection bay would be required for every 150 trucks entering the facility in the peak hour. However, it was determined each facility on I-80 shall have a minimum of 4 inspection bays and on SR 12 and I-505, a minimum of 2 bays, for each direction. It was noted by Caltrans that during final facility design, an area should be considered for an open inspection bay to inspect oversized extra-legal vehicles.

- The footprint geometry, including ramp lengths, for each of the site locations were developed using the Caltrans Highway Design Manual (HDM) and guidelines distributed by Caltrans Office of Truck Services and Caltrans Division of Engineering Services on June 9, 2003.

- Design volume for footprints was based on Year 2040 peak hour volumes. Highest directional value was taken for each route from the forecast volumes shown in Table 2 and rounded as shown in Table 3.

- Where there is insufficient distance between interchanges such that the design cannot provide adequate weaving to and from the new truck scale facility, braiding (grade separation) of one or more of the access/egress ramps will be required. Factors that are dependant on whether or not braiding is required include existing interchange spacing, length of truck scale facility and ramps, and minimum required weaving distances. Required access/egress geometry was based on level of service (LOS) calculations and requirements per the Caltrans Highway Capacity Manual.

Table 3: Scale Facility Design Volume and Inspection Bay Requirements

Option	Location	Assumed # Constructed Inspection Bays	Assumed Footprint Design Volume*
1	WB I-80 at Cordelia	7	1000
	EB I-80 at Cordelia	7	1000
	Total Option 1	***14***	
2	WB I-80 at Lagoon Valley	5	765
	EB I-80 at Lagoon Valley	5	765
	WB SR 12 at Branscome	2	250
	EB SR 12 at Olsen	2	250
	Total Option 2	***14***	
3	WB I-80 at Midway-Dixon	4	600
	EB I-80 at Midway-Dixon	4	600
	NB I-505 at Midway-Allendale	2	250
	SB I-505 at Allendale-Wolfskill	2	250
	WB SR 12 at Branscome	2	250
	EB SR 12 at Olsen	2	250
	Total Option 3	***16***	

* Values from Table 2 are rounded. Highest directional volume used.

4.3 RAMP GEOMETRY

Per the guidelines distributed by Caltrans Office of Truck Services on June 9, 2003, the geometry of the ramps approaching the truck scale is based upon the design volume of trucks in the peak hour. For the scales on I-80, the controlling factor of the off-ramp length is the volume of trucks as the ramp length is designed to accommodate a single-lane queue of trucks in the 5-minute peak-peak period as they approach the sorter weigh-in-motion scale at 20 miles per hour. The proposed scale facilities on SR 12 and I-505 do not include provisions for a sorter weigh-in-motion system. The minimum calculated length of the on-ramps is the same for all site locations, as they are simply a length based on acceleration and merging with the mainline freeway. A comparison of the calculated minimum length of facilities at the various candidate site locations is presented in Table 4. These lengths represent the minimum total distance from the gore point of the truck off-ramp through the facility and to the gore point of the truck on-ramp. Additional lengths of improvements are required at some locations to fit ramps within other highway on/off ramp movements, as highlighted on the conceptual layouts in Attachment D.

Table 4: Minimum Calculated Facility Length, by Site/Option

Option	Site Location	Minimum Calculated Length of Facility (ft)
1	WB I-80 at Cordelia	15,800
1	EB I-80 at Cordelia	15,800
2	WB I-80 at Lagoon Valley	9,850
2	EB I-80 at Lagoon Valley	9,850
3	WB I-80 at Midway-Dixon	7,070
3	EB I-80 at Midway-Dixon	7,070
2	WB SR 12 at Branscome	4,270
2	EB SR 12 at Olsen	4,270
3	NB I-505 at Midway-Allendale	4,270
3	SB I-505 at Allendale-Wolfskill	4,270

4.4 PROPOSED SCALE LAYOUTS

Conceptual scale layouts for each option are located in Attachment D. The following describes specific footprint considerations related to each option:

4.4.1 Option 1

Option 1 locates scale facilities in the vicinity of the existing Cordelia scale facility on I-80 between Suisun Valley Road and SR 12 East (within the I-80/I-680/SR12 Interchange complex).

I-80 Sites:
Both eastbound and westbound scale facilities on I-80 at Cordelia are sized to handle approximately 1,000 trucks in the peak hour (see Table 3). By using the referenced Class B design guidelines provided by Caltrans, truck scale entrance ramps required to support a facility to handle 1,000 trucks extend a considerable distance from the facility.

The significant challenge with this option is the cost to fit in these new ramps and the expanded scale facility, while providing acceptable level of service for both truck and freeway traffic within the freeway-to-freeway interchange area. The conceptual footprint included as part of this report, was developed in concert with the planned improvements to the I-80/I-680/SR12 Interchange project.

Option 1, as a stand alone project, would require significant modification to the existing I-80/I-680/SR12 Interchange. This option includes an eastbound truck ramp, exiting I-80 just to the east of SR 12 (West). The eastbound truck ramp would require a new connector from SR 12 (West) to I-80, as well as a new eastbound collector-distributor roadway from EB I-80 to the local interchanges. New overcrossing structures and interchanges would be constructed at Green Valley Road and Suisun Valley Road, in addition to a new freeway-to-freeway connector system between I-680 and I-80. The westbound truck ramp would exit I-80 at West Texas Street with a new bridge structure, and would require a new structure at Abernathy Road as well.

4.4.2 Option 2

Option 2 locates scale facilities in the vicinity of two general locations: EB and WB I-80 at Lagoon Valley, EB SR 12 at Olsen and WB SR 12 at Branscome.

I-80 Sites:
Both eastbound and westbound scale facilities on I-80 at Lagoon Valley are sized to handle approximately 765 trucks in the peak hour (see Table 3). Similar to Option 1 above, extensive braided ramps and roadway realignment will be required at this location due to space constraints and the close proximity to nearby interchanges at Lagoon Valley Road and North Texas Road.

Under Option 2 on I-80, the Lagoon Valley interchange will have to be reconstructed to accommodate the eastbound truck on-ramps, as there is limited space beneath the existing structure. In the eastbound direction, an auxiliary lane is required from the on-ramp at North Texas to the truck scale off-ramp and from the Lagoon Valley Road interchange to Pena Adobe Road. The off-ramp to Lagoon Valley Road will need to be braided with the truck scale on-ramp. In the westbound direction, the on-ramp from Lagoon Valley Road will need to be braided with the truck scale off-ramp and the North Texas off-ramp will need to be braided with the truck scale on-ramp.

Additionally, because of the topography in the Lagoon Valley area, extensive grading of the hills and retaining structures will be required in both eastbound and westbound directions to accommodate the truck scale ramps. However, the scale facilities themselves could be located on relatively level terrain.

SR 12 Sites:
Locating scales along SR 12 is constrained by the Suisun Marsh as noted earlier. For this reason, as well as existing developments along this route, the locations for split eastbound and westbound scale sites on SR 12 are separated by a distance of 2.5 miles. Under this option, the westbound site is located just east of Branscome Road and the eastbound site east of Olsen Road.

There are no substantial geometric constraints identified for these sites. SR 12 is a two-lane highway on a tangent in open terrain in both areas. The access/egress to the truck scale facility in both directions can easily be accommodated by at-grade truck ramps.

Both eastbound and westbound scale facilities on SR 12 at both the Olsen and Branscome site are sized to handle approximately 250 trucks in the peak hour.

4.4.3 Option 3

Option 3 locates scale facilities in the vicinity of three general locations: EB and WB I-80 at Midway-Dixon, NB I-505 at Midway-Allendale, SB I-505 at Allendale-Wolfskill, EB SR 12 at Olsen Road and WB SR 12 at Branscome Road.

I-80 Sites:
The proposed eastbound I-80 scale facility is located 1.4 miles west of the Dixon Avenue/West A Street interchange and the proposed westbound facility is located 1.4 miles east of the Midway Road interchange. Relative to the other candidate sites along I-80 included in this study under Options 1 and 2, the sites in Option 3 are much simpler to construct. Both scale facilities are located on relatively level terrain in an agricultural area with few geometric constraints. There is sufficient distance between adjacent interchanges to accommodate the truck entrance and exits ramps to the scale facilities, avoiding the need for ramp braiding.

Both facilities will require the widening of the McCune Creek Bridge on I-80 in both directions. The westbound scale facility requires the relocation of the irrigation canal on the north side of the freeway. The scale cannot be moved any further west or it will be located directly under the PG&E power transmission lines and the truck scale on-ramp will impact the frontage road.

Both eastbound and westbound scale facilities on I-80 at Midway-Dixon are sized to handle approximately 600 trucks in the peak hour.

SR 12 Sites:
The geometry of the SR 12 Olsen and Branscome truck scale facilities are the same as described above under Option 2.

I-505 Sites:
The proposed northbound I-505 scale facility is located 1 mile south of the Allendale Road interchange. The proposed southbound I-505 scale facility is located 1.2 miles north of the Allendale Road interchange. Both scale facilities are located on relatively level terrain in an agricultural area with few geometric constraints. The southbound scale facility requires the relocation of Winters County Road that fronts the freeway.

Both northbound and southbound scale facilities on I-505 at Midway-Allendale and at Allendale-Wolfskill are sized to handle approximately 250 trucks in the peak hour.

5. TIER 3 ANALYSIS - EVALUATION OF OPTIONS

5.1 EVALUATION METHODOLOGY

In the Tier 1 and Tier 2 Analyses section of this report, a summary is given describing how potential sites were identified within the original study area and evaluated in a two-tier process to develop a short-list of candidate locations for the relocated truck scales. From the screened candidate sites, three options were packaged together and carried forward for a detailed comparative evaluation. These three options were screened as a whole using the criteria described in Table 5 below:

Table 5: Option Evaluation Criteria

Evaluation Criteria	Description	Measurement
Capital Cost	Construction and right-of-way costs for truck scale facility, and improvements to accommodate proposed facility.	Total cost in present dollars.
35-year Operation & Maintenance Cost	Total costs for staffing and maintaining proposed facilities over a 35-year period.	Total cost in present dollars.
Right-of-Way Requirements	Land required to accommodate scale facility and truck ramps at candidate site.	Land area, in acres.
Environmental Considerations	Environmental sensitivity of candidate site location, and if impacts can be mitigated.	Ranking of the severity of impacts of the candidate sites, relative to each other.
Traffic Operations	Relative intensity of truck traffic and automobile traffic adjacent to the truck scale facility.	Relative ranking of Traffic Weaving Index – total number of vehicles, auto and truck, entering and leaving freeway mainline at adjacent interchanges.

For evaluation criteria that are measured as a relative ranking between each of the option alternatives, the following indicators are used:

Symbol	Description
+	Relatively positive when compared to other option alternatives.
0	Relatively neutral when compared to other option alternatives.
–	Relatively negative when compared to other option alternatives.

5.2 EVALUATION

5.2.1 Capital Costs

Capital costs for each of the candidate sites were determined from the conceptual engineering layouts and footprints developed for each site location. Conceptual estimates for each option are located in Attachment H, and summarized in Table 15.

Construction costs at each of the scale locations vary considerably due to surrounding terrain, complexity of the facility and impacts to adjacent interchanges. Even though there are facilities at only one location in Option 1, the cost of this option far exceeds the other two options in total because of the proximity of several interchanges, thereby requiring extensive ramp braiding.

It should be noted that the capital costs calculated for Option 1 represent constructing the truck scale facility at Cordelia independent of the I-80/I-680/SR12 interchange reconstruction. Therefore, the costs presented for Option 1 are a stand-alone cost to construct a truck scale facility at Cordelia within the existing interchanges, while not precluding the eventual interchange improvement project.

As shown in the final evaluation matrix Table 15, the estimated cost of Option 1 as a stand alone project is $415M. The study team, as a separate exercise, estimated the difference in cost between constructing the ultimate I-80/I-680/SR12 Interchange project with and without truck scales at $270M.

5.2.2 Operating and Maintenance Costs

The total annual operating and maintenance cost at a given commercial vehicle enforcement facility is comprised of the annual personnel costs and maintenance costs. These costs vary depending on the size and classification of the facility as well as the number of inspection bays being operated at the facility.

As described in the following sections, personnel costs are derived directly from the level of staffing required to run the inspection facility. Maintenance costs are derived from similar existing facilities statewide, with an adjustment for the size of the proposed facilities. Total operating and maintenance costs were combined into base year annual costs, rounded to the nearest $100,000. From the annual costs, an analysis of the life cycle costs over a 35-year period was performed and total operating and maintenance costs are presented as a net present value in current (2003) dollars.

In this study, it was assumed that the number of inspection bays in operation over the lifetime of the facility would increase as the truck volumes increase. The forecasted volumes for Year 2025 and Year 2040 were rounded, then the highest directional volume for each location was assumed as the design volumes to be used to calculate the number of bays in operation during the study period. The levels of staffing for the proposed facilities were determined for two periods of operations: Year 2005-2025 (years 1-20) and Year 2026-2040 (years 21-35). This level of staffing was based on the number of inspection bays in operation during these time periods, as shown in Table 6.

At some locations, the assumed number of bays in operation are more than what was calculated because the policy of the CHP is to construct and staff a minimum of four inspection bays in each direction at facilities located anywhere on I-80 and to construct and staff a minimum of two inspection bays at facilities located on I-505 and SR 12.

Table 6: Year 2025 and 2040 Operated Inspection Bay Assumptions

Option	Location	Year 2025 Forecast Volume	Year 2025 Assumed Design Volume	Assumed No. Inspection Bays in Operation Year 1-20	Year 2040 Forecast Volume	Year 2040 Assumed Design Volume	Assumed No. Inspection Bays in Operation Year 21-35
1	WB I-80 at Cordelia	757	800	6	958	1000	7
	EB I-80 at Cordelia	799	800	6	1009	1000	7
	Total Option 1			***12***			***14***
2	WB I-80 at Lagoon Valley	578	615	4	734	765	5
	EB I-80 at Lagoon Valley	604	615	4	763	765	5
	WB SR12 at Branscome	196	200	2	248	250	2
	EB SR12 at Olsen*	196	200	2	251	250	2
	Total Option 2			***12***			***14***
3	WB I-80 at Midway-Dixon	471	480	4	595	600	4
	EB I-80 at Midway-Dixon	297	480	4	375	600	4
	NB I-505 at Allendale-Wolfskill	179	200	2	229	250	2
	SB I-505 at Midway-Allendale	187	200	2	235	250	2
	WB SR12 at Branscome	196	200	2	248	250	2
	EB SR12 at Olsen*	196	200	2	251	250	2
	Total Option 3			***16***			***16***

*Candidate site location based on forecasted volumes collected at Explosive Tech/Branscome.

5.2.2.1 Facility Staffing

Personnel costs are based upon the required staffing levels of the truck scale facility. All Class B Commercial Vehicle Enforcement Facilities (CVEF) are considered a separate command by the CHP. Since the CVEF is a command post, it is to be commanded by a lieutenant and staffed by sergeants, officers, Commercial Vehicle Inspection Specialists (CVIS), clerks, and a janitor. The number of inspection bays at the facility influences the staffing levels. It is noted that at some facilities, staff from additional agencies are accommodated, including but not limited to, California Air Resources Board, Department of Motor Vehicles, Board of Equalization, and the Country Clerk; however, personnel cost to support these other agencies was not considered in this evaluation of facility staffing cost.

Staff from the CHP along with staff from Caltrans confirmed the staffing level assumptions presented below in a meeting held on August 27, 2003 and in subsequent discussions.

Four-Bay Class B Facilities
The minimum size of a Class B facility located on I-80 includes four inspection bays per each facility on each side of the roadway. This size of facility was used as the base case for staffing purposes. The following outlines the staffing levels of four-bay facilities operating on both sides of the roadway. It was assumed the two Class B facilities are sited in close proximity to one another. This assumption was made because in all options presented in this study, the facilities on a particular roadway are either located directly across from one another or are located within a reasonable distance.[1]

Lieutenants – One (1) lieutenant is required to supervise both facilities.

[1] A distance of less than 4,500 feet separates all facilities proposed on I-80. For purposes of this study, this is considered to be a reasonable distance.

Sergeants – One (1) sergeant per side per shift is required. For two four-bay facilities a total of four (4) sergeants are required.

Officers – For a four-bay facility, there are two (2) officers assigned per facility per shift. Currently at the Cordelia site, the officers work three twelve hour days in a row, and are then off for four days. Because of this, an additional officer is required per side as a floater to ensure proper schedule coverage and for training. A total of nine (9) officers are required to staff a single facility; therefore, for two four-bay facilities a total of eighteen (18) officers are required.

Commercial Vehicle Inspection Specialists (CVIS) – The CVIS's perform inspections at each of the inspection bays at the facility. One (1) CVIS is required at each of the inspection bays manned, plus an additional CVIS stationed at the platform scale. Currently at the Cordelia site, CVIS's work three eight - hour shifts. The day shift requires five (5) CVIS's to staff each of the four inspection bays and the platform scale. The swing shift also requires five (5) CVIS's to staff each of the four inspection bays and the platform scale. The graveyard shift requires three (3) CVIS's to staff two inspection bays and the platform scale. It is noted that two less inspection bays are staffed during the graveyard shift due to decreased truck traffic volume. An additional two (2) CVIS's are required as floaters to provide schedule coverage and to allow for training. Therefore, a total of fifteen (15) CVIS's are required to staff a single facility. For two four-bay facilities, a total of thirty (30) CVIS's are required.

Clerical – Three (3) clerical staff are required to handle paperwork and to perform administrative duties for two facilities.

Janitorial – One (1) janitor is required to clean each facility. Therefore, for two four-bay facilities, a total of two (2) janitors are required.

Given the assumed staffing levels above, two four-bay Class B facilities require a total of: One (1) lieutenant, four (4) sergeants, eighteen (18) officers, thirty (30) CVIS's, three (3) clerical and two (2) janitors with a total staff of fifty-eight (58).

Five to Seven-Bay Class B Facilities

As facilities become larger with additional inspection bays, the staff required for operation of the facility increases. The only staff level directly proportional to the number of inspection bays were the CVIS's. The effect of larger facilities, over and above the *four-bay facilities* calculated above, on staffing levels is described below, separated by staff type.

Lieutenant – There is no change in lieutenant staffing, regardless of size of the facility. One lieutenant is always required at a command post.

Sergeants – One (1) additional sergeant per shift per side, or four (4) total, is added on facilities of six to seven bays. Additional sergeants are added to maintain a favorable ratio of supervisors to staff members.

Officers – An additional two (2) officers were added for facilities of six-bays and larger. This is required because of the larger facility in general and to provide additional coverage.

Commercial Vehicle Inspection Specialist (CVIS) – For each additional inspection bay added, it was assumed that one (1) CVIS is required per shift per inspection bay per side at a given location. This allows for one additional inspector per shift for each of the three shifts. Therefore, three (3) CVIS per facility, or six (6) in total, are added with each additional inspection bay.

There is no change in staffing levels of other personnel for facilities of five to seven bays.

Two-Bay Class B Facilities
The following outlines the staffing levels of a two-bay facility operating on both sides of the roadway. The outline assumes two Class B facilities sited in close proximity to one another[2].

Lieutenants – One (1) lieutenant is required to supervise both facilities.

Sergeants – One (1) sergeant is assigned to both of the facilities per shift. An additional sergeant is required as a floater to ensure proper schedule coverage. Therefore, for two facilities in close proximity to each other, a total of three (3) sergeants are required.

Officers –One (1) officer is assigned per facility per shift. Currently at the Cordelia site, the officers work three twelve hour days in a row, and are then off for four days. Because of this, an additional officer is required per side as a floater to ensure proper schedule coverage and for training. In total, six (6) officers are required to staff a single facility to provide a minimum of one officer for each of the two shifts seven days a week. Therefore, for two facilities a total of twelve (12) officers are required.

Commercial Vehicle Inspection Specialists (CVIS) – The CVIS's perform inspections at each of the inspection bays at the facility. One (1) CVIS is required at each of the inspection bays manned, plus an additional CVIS stationed at the platform scale. The day shift requires three (3) CVIS's to staff each of the two inspection bays and the platform scale. The swing shift requires three (3) CVIS's to staff each of the two inspection bays and the platform scale. The graveyard shift requires two (2) CVIS's to staff a single inspection bay and the platform scale. Therefore, a total of eight (8) CVIS's are required to staff a single facility. For two facilities a total of sixteen (16) CVIS's are required.

Clerical – Two (2) clerical staff are required to handle paperwork and to perform administrative duties at two facilities.

Janitorial – One (1) janitor is required to clean two facilities.

Given the assumed staffing levels above, two two-bay Class B facilities require a total staffing level of: One (1) lieutenant, three (3) sergeants, twelve (12) officers, sixteen (16) CVIS's, two (2) clerical and one (1) janitor with a total staff of thirty-five (35). An example of this type of staffing level is either of the proposed facilities located on SR 12 and I-505 in Options 2 and 3.

Table 7 shows the assumed staffing levels for each option for years 1 through 20 and Table 8 shows the assumed staffing levels for each option for years 21 through 35.

[2] At SR 12 this distance is 2.5 miles and at I-505 this distance is approximately 2 miles. For the purpose of this study, the team considers this a reasonable distance.

5.2.2.2 Annual Operating Costs

For purposes of this study, the costs are based upon an average cost of $76,500 per year per staff member. The basis for this estimate was provided by the CHP in the form of a total annual cost to operate a typical facility with a typical staff level. Table 7 shows the base year 1 annual operating costs for each option in years 1 through 20. Table 8 shows the base year 21 annual operating costs for each option for years 21 through 35.

Table 7: Facility Staffing and Annual Operating Costs by Option – Years 1-20

Option	Location	# of Inspection Bays Assumed	Lieutenants	Sergeants	Officers	CVIS	Clerical	Janitorial	Total Personnel	Base Year 1 Annual Operating Cost[1,2]
1	EB & WB I-80 at Cordelia	12	1	5	22	42	3	2	75	$ 5,737,500
	Total Option 1	***12***	***1***	***5***	***22***	***42***	***3***	***2***	***75***	***$ 5,737,500***
2	EB & WB I-80 at Lagoon Valley	8	1	4	18	30	3	2	58	$ 4,437,000
	EB & WB SR12 at Branscome/Olsen	4	1	3	12	16	2	1	35	$ 2,677,500
	Total Option 2	***12***	***2***	***7***	***30***	***46***	***5***	***3***	***93***	***$ 7,114,500***
3	EB & WB I-80 at Midway-Dixon	8	1	4	18	30	3	2	58	$ 4,437,000
	EB & WB SR12 at Branscome/Olsen	4	1	3	12	16	2	1	35	$ 2,677,500
	NB & SB I-505 at Midway-Allendale & Allendale-Wolfskill	4	1	3	12	16	2	1	35	$ 2,677,500
	Total Option 3	***16***	***3***	***10***	***42***	***62***	***7***	***4***	***128***	***$ 9,792,000***

Notes:
[1]Annual costs are presented in 2003 dollars.
[2]Assumed average annual cost per staff member = $76,500.

Table 8: Facility Staffing and Annual Operating Costs by Option – Years 21-35

Option	Location	# of Inspection Bays Assumed	Lieutenants	Sergeants	Officers	CVIS	Clerical	Janitorial	Total Personnel	Base Year 21 Annual Operating Cost[1,2]
1	EB & WB I-80 at Cordelia	14	1	5	22	48	3	2	81	$ 6,196,500
	Total Option 1	***14***	***1***	***5***	***22***	***48***	***3***	***2***	***81***	***$ 6,196,500***
2	EB & WB I-80 at Lagoon Valley	10	1	4	18	36	3	2	64	$ 4,896,000
	EB & WB SR12 at Branscome/Olsen	4	1	3	12	16	2	1	35	$ 2,677,500
	Total Option 2	***14***	***2***	***7***	***30***	***52***	***5***	***3***	***99***	***$ 7,573,500***
3	EB & WB I-80 at Midway-Dixon	8	1	4	18	30	3	2	58	$ 4,437,000
	EB & WB SR12 at Branscome/Olsen	4	1	3	12	16	2	1	35	$ 2,677,500
	NB & SB I-505 at Midway-Allendale & Allendale-Wolfskill	4	1	3	12	16	2	1	35	$ 2,677,500
	Total Option 3	***16***	***3***	***10***	***42***	***62***	***7***	***4***	***128***	***$ 9,792,000***

Notes:
[1]Annual costs are presented in 2003 dollars.
[2]Assumed average annual cost per staff member = $76,500.

5.2.2.3 Annual Maintenance Costs

Maintenance costs are borne by both the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans) as part of a cooperative interagency agreement. In general, the CHP is responsible for maintenance such as landscape maintenance, sign repair/replacement, platform scale maintenance (excluding Weigh-in-Motion system), scale inspection/compliance with County Department of Weights & Measures, replacement of doors/screens/windows, facility painting; septic tank service, HVAC and water system, pest control, site electrical and lighting; CCTV and PA system, parking lot sweeping, and roof drain and gutter cleaning. Maintenance items not specified as being the responsibility of the CHP will be the responsibility of Caltrans.

Currently the existing four inspection bay Cordelia truck scale facility maintenance costs for both eastbound and westbound are approximately $156,600 per year (in 2003 dollars). Due to the increased size of the new facility and additional equipment, and based upon maintenance costs borne by Caltrans and CHP at similar Class B facilities statewide, the maintenance cost for two new four inspection bay facilities serving both eastbound and westbound traffic is estimated to increase to $260,000 per year (in 2003 dollars). Therefore, the maintenance costs for a single side of a proposed Class B facility with four inspection bays is estimated at approximately $130,000 per year (in 2003 dollars) .

Maintenance costs for other facilities were adjusted based on the number of inspection bays. These adjustments were estimated as plus or minus 15% for each inspection bay variant from the single four-bay Class B facility, resulting in a $20,000 per bay increase or decrease.

Table 9 summarizes the base year 1 annual maintenance costs for each option for years 1 through 20 and the base year 21 annual maintenance costs for each option for years 21 through 35.

Table 9: Base Year Annual Maintenance Costs by Option

Option	Location	# of Inpsection Bays Operated Year 1-20	Base Year 1 Annual Maintenance Cost*	# of Inpsection Bays Operated Year 21-35	Base Year 21 Annual Maintenance Cost*
1	EB & WB I-80 at Cordelia	12	$ 340,000	14	$ 380,000
	Total Option 1	***12***	***$ 340,000***	***14***	***$ 380,000***
2	EB & WB I-80 at Lagoon Valley	8	$ 260,000	10	$ 300,000
	EB & WB SR12 at Branscome/Olsen	4	$ 180,000	4	$ 180,000
	Total Option 2	***12***	***$ 440,000***	***14***	***$ 480,000***
3	EB & WB I-80 at Midway-Dixon	8	$ 260,000	8	$ 260,000
	EB & WB SR12 at Branscome/Olsen	4	$ 180,000	4	$ 180,000
	NB & SB I-505 at Midway-Allendale & Allendale-Wolfskill	4	$ 180,000	4	$ 180,000
	Total Option 3	***16***	***$ 620,000***	***16***	***$ 620,000***

* Annual costs presented are in 2003 dollars.

5.2.2.4 35-Year Total Operating & Maintenance Costs

The total operating and maintenance costs for each facility were calculated for all the options for an assumed 35-year life cycle. Because of the gradual increase of traffic volumes over the 35-year period, it was assumed that a smaller staff would be required in the earlier portions of the life cycle. Therefore, the operating and maintenance costs were calculated on the assumption of the number of inspection bays operating in the first 20 years, or to year 2025, and on the number of inspection bays operating in the last 15 years, or to year 2040. In most cases, the increase in volumes between year 2025 and year 2040 required that additional inspection bays be operated in the last 15 years.

Table 10 summarizes the annual operating and maintenance costs in the base year 1 and base year 21 of each of the options for years 1 through 20 and years 21 through 35. The base year costs are expressed in current (2003) dollars for each of the two time periods.

In Table 10, the total 35-year annual operating and maintenance costs for each of the options is forcasted and presented in year 2003 dollars. For purposes of this study, the costs in Table 9 were escalated at an annual rate of 2.5% for the entire 35-year period. In addition, the dollar values in Table 9 are expressed using a net present value discount rate of 4.0%. The net present value compares the value of a dollar today versus the value of the same dollar in the future.

Table 10: Total Operating and Maintenance Cost Summary by Option

Option	Location	# of Inspection Bays Operated Year 1-20	Base Year 1 Annual Operating + Maintenance Cost[1]	# of Inspection Bays Operated Year 21-35	Base Year 21 Annual Operating + Maintenance Cost[1]	Total 35-year Operating & Maintenance Costs[1,2]
1	EB & WB I-80 at Cordelia	12	$ 6,100,000	14	$ 6,600,000	$ 166,900,000
	Total Option 1	***12***	***$ 6,100,000***	***14***	***$ 6,600,000***	***$ 166,900,000***
2	EB & WB I-80 at Lagoon Valley	8	$ 4,700,000	10	$ 5,200,000	$ 129,700,000
	EB & WB SR12 at Branscome/Olsen	4	$ 2,900,000	4	$ 2,900,000	$ 77,100,000
	Total Option 2	***12***	***$ 7,600,000***	***14***	***$ 8,100,000***	***$ 206,800,000***
3	EB & WB I-80 at Midway-Dixon	8	$ 4,700,000	8	$ 4,700,000	$ 125,000,000
	EB & WB SR12 at Branscome/Olsen	4	$ 2,900,000	4	$ 2,900,000	$ 77,100,000
	NB & SB I-505 at Midway-Allendale & Allendale-Wolfskill	4	$ 2,900,000	4	$ 2,900,000	$ 77,100,000
	Total Option 3	***16***	***$ 10,500,000***	***16***	***$ 10,500,000***	***$ 279,200,000***

1. Annual O&M costs presented are in 2003 dollars.
2. Net Present Value (NPV) compares the value of a dollar today versus the value of the same dollar in the future. The 35-year O&M costs were calculated as follows: 1) All annual O&M costs escalated at a rate of 2.5%; and 2) All escalated O&M costs were then discounted at a NPV rate of 4% for the 35 years of operation.

5.2.3 Right-of-Way Requirements

The amount of right-of-way required for each location varies with the truck volumes and the complexity of each scale location. Higher truck volumes create the need for extended ramp lengths to accommodate lengthy truck queues and larger scale footprints for additional inspection bays. More complex locations require additional right-of-way for ramp braiding, collector-distributor roads, auxiliary lanes, and interchange reconstruction.

Table 11 lists anticipated right-of-way requirements for each of the three options. The total acres impacted, by option, are also included in the summary Table 15.

Table 11: Estimated ROW Required in Acres by Land-use, by Option

Option	Location	Residential	Commercial	Agricultural	Open Space	Total ROW
1	WB I-80 at Cordelia	2	2	36	7	*47*
	EB I-80 at Cordelia		50	32	4	*86*
	Total Option 1					***133***
2	WB I-80 at Lagoon Valley	4	5		51	*60*
	EB I-80 at Lagoon Valley		8		61	*69*
	WB SR12 at Branscome			30		*30*
	EB SR12 at Olsen			34		*34*
	Total Option 2					***193***
3	WB I-80 at Midway-Dixon			32		*32*
	EB I-80 at Midway-Dixon			34		*34*
	NB I-505 at Midway-Allendale			24		*24*
	SB I-505 at Allendale-Wolfskill			30		*30*
	WB SR12 at Branscome			30		*30*
	EB SR12 at Olsen			34		*34*
	Total Option 3					***184***

5.2.4 Environmental Considerations

As part of the site selection process, the study team performed an initial environmental constraints analysis that focused on potential land use, biological resources, and cultural resource issues at each candidate site. This initial evaluation relied on windshield surveys (January 28 and August 6, 2003) and review of available reference information. Other than a cultural resources records inventory, no detailed document review, site investigation, or agency consultation was performed. This initial screening was performed to identify fatal flaws or other substantial issues that were readily apparent and would have bearing on the potential for construction at each of the candidate sites. The general environmental considerations for each of the candidate site are provided in Attachment G. A summary of the overall ranking of each location and a total overall ranking by option is presented in Table 12 below and summarized again in Table 15.

Table 12: Environmental Considerations by Site/Option

Option	Facility Location	Environmental Ranking by Site and Relative Ranking by Option
1	WB I-80 at Cordelia	+
	EB I-80 at Cordelia	+
	Total Option 1	+
2	WB I-80 at Lagoon Valley	+
	EB I-80 at Lagoon Valley	+
	WB SR12 at Branscome	0
	EB SR12 at Olsen	+
	Total Option 2	***0***
3	WB I-80 at Midway-Dixon	+
	EB I-80 at Midway-Dixon	+
	NB I-505 at Midway-Allendale	+
	SB I-505 at Allendale-Wolfskill	+
	WB SR12 at Branscome	0
	EB SR12 at Olsen	+
	Total Option 3	***0***

The option ranking reflects the general magnitude of environmental concerns, relative to the other options, and with regard to only those environmental resource areas considered in the constraints analysis. Since the initial constraints analysis conducted by the study team was general, most of the sites are characterized as having a similar degree of risk in terms of the potential for encountering sensitive habitats, special status species, or cultural resources. Nevertheless, specific issues were identified at certain sites that may result in greater level of effort or cost for environmental compliance. As a result of these site-specific issues, the option ranking is primarily related to issues associated with one or more of the candidate sites within the option. The general option rankings are discussed below.

- Option 1 is ranked as (+) for environmental concerns since no extensive issues were identified in the initial screening.

- Options 2 and 3 are ranked as (0) for environmental concerns due to issues at the westbound SR 12 site at Branscome. This site may have greater potential for sensitive species occurrence due to the adjacent seasonal and brackish wetlands. In addition, this site would require permit approval associated with development within the boundaries of the Suisun Marsh (northern right-of-way of SR 12).

It was noted during the study that if environmental concerns at the proposed westbound SR 12 site at Branscome become significant upon further study, other westbound sites identified in the Tier 1 process are available. It is estimated that the possible additional cost to relocate to an alternate westbound site would not materially affect the results of this comparison study.

5.2.5 Traffic Operations

The effect on mainline traffic operations in the area was evaluated quantitatively on the basis of the amount of conflict between mainline traffic and trucks entering and leaving the scale facility. As shown in Attachment F, the Traffic Weaving Index (TWI) is an indicator of the amount of traffic, both automobile and truck, in the areas between the truck scale site and the nearest interchanges. TWI is the cumulative total of ramp volumes of the preceding interchange on-ramp, the truck scale off and on ramps, and the following interchange off-ramp. TWI can be used as a relative index to compare the intensity of traffic near the candidate site location. The TWI was calculated using year 2030 forecast peak hour volumes from the Napa/Solano County traffic model and truck volumes forecast to 2030 using the methodology described earlier in this report.

The calculated TWI for each of the site locations is summarized in Table 13 below.

Table 13: 2030 Traffic Weaving Index by Site/Option

Option	Location	TWI
1	WB I-80 at Cordelia	8292
	EB I-80 at Cordelia	6417
2	WB I-80 at Lagoon Valley	2346
	EB I-80 at Lagoon Valley	2794
	WB SR 12 at Branscome	487
	EB SR 12 at Olsen	477
3	WB I-80 at Midway-Dixon	2527
	EB I-80 at Midway-Dixon	1860
	NB I-505 at Midway-Allendale	731
	SB I-505 at Allendale-Wolfskill	275*
	WB SR 12 at Branscome	487*
	EB SR 12 at Olsen	477*

*Note: TWI value is lower as only one interchange lies in the vicinity of the scale location.

For relative comparison between candidate sites, any TWI significantly higher than the median of the values listed in Table 13 was considered relatively negative and the site location received a " - " in the scoring matrix. Any TWI significantly lower than the median value was considered relatively positive and received a "+" in the scoring matrix. Locations with TWI values near the median were considered neutral locations and received a "0" score.

As truck volumes begin to exceed 1,000 trucks per hour, capacity problems develop on the truck scale ramps. The capacity of a single-lane ramp at free-flow speeds of less than 21 mph is 1,200 trucks per

hour. The 2040 design volumes at the I-80 locations presented earlier in Table 3 are 83% of ramp capacity in Option 1, 64% of ramp capacity in Option 2, and 50% of ramp capacity in Option 3. Therefore, this indicates that beyond 2040, capacity problems will develop in Option 1 at Cordelia.

A summary of the overall ranking of each location and a total average ranking by option is presented in the Table 14 below and summarized again in Table 15.

Table 14: Traffic Operations Ranking by Site/Option

Option	Facility Location	Traffic Operations Ranking
1	WB I-80 at Cordelia	-
	EB I-80 at Cordelia	-
	Total Option 1	**-**
2	WB I-80 at Lagoon Valley	0
	EB I-80 at Lagoon Valley	-
	WB SR12 at Branscome	+
	EB SR12 at Olsen	+
	Total Option 2	***0***
3	WB I-80 at Midway-Dixon	0
	EB I-80 at Midway-Dixon	0
	NB I-505 at Midway-Allendale	+
	SB I-505 at Allendale-Wolfskill	+
	WB SR12 at Branscome	+
	EB SR12 at Olsen	+
	Total Option 3	**+**

5.3 TIER 3 SUMMARY EVALUATION MATRIX

Table 15 summarizes how each site and each option performed under the evaluation criteria:

Table 15: Evaluation Summary Table by Option

Option / Facility Location	Capital Cost ($M)[1]	35-yr O&M Cost ($M)[1]	Total Option Cost ($M)[1]	Right-of-Way Requirements (Acre)	Environmental Considerations Ranking	Traffic Operations Ranking
Option 1						
WB I-80 at Cordelia	145	167		46	+	-
EB I-80 at Cordelia	270			86		
Total Option 1	*$415*	*$167*	***$582***	***132***		
Option 2						
WB I-80 at Lagoon Valley	64	130		60	0	0
EB I-80 at Lagoon Valley	114			69		
WB SR 12 at Branscome	25	77		30		
EB SR 12 at Olsen	27			34		
Total Option 2	*$230*	*$207*	***$437***	***193***		
Option 3						
WB I-80 at Midway-Dixon	38	125		32	0	+
EB I-80 at Midway-Dixon	36			34		
NB I-505 at Midway-Allendale	25	77		24		
SB I-505 at Allendale-Wolfskill	27			30		
WB SR 12 at Branscome	25	77		30		
EB SR 12 at Olsen	27			34		
Total Option 3	*$178*	*$279*	***$457***	***184***		

[1] Cost Presented in Present Value ($2003 dollars).

For evaluation criteria that are measured as a relative ranking between each of the option alternatives, the following indicators are used:

Symbol	Description
+	Relatively positive when compared to other option alternatives.
0	Relatively neutral when compared to other option alternatives.
–	Relatively negative when compared to other option alternatives.

5.4 FINDINGS FROM THE TIER 3 ANALYSIS

Table 15 summarizes the results of the evaluation study performed for Options 1, 2 or 3. In conclusion, the relative importance of each evaluation criteria is as follows:

- Capital Cost – The cost to construct each option varies widely – from $178 M for Option 3 to $415 M for Option 1. Therefore, capital cost is a critical consideration in determining the desired relocation option.

- 35-Year Operating & Maintenance (O&M) Cost – The 35-year O&M cost for each option varies widely – from $167 M for Option 1 to $279 M for Option 3 – however, O&M costs do not vary as widely as capital cost. O&M cost is a critical consideration in determining the desired relocation option.

- Right-of-Way Requirements – The difference in right-of-way requirements between each option did not vary significantly. Option 1 has less acreage requirements but more impacts to commercial land. Options 2 and 3 have higher acreage, but mostly impacts agricultural and open space lands. Therefore, right-of-way requirements are not considered critical in determining the desired relocation option.

- Environmental Considerations – The difference in environmental considerations ranking between options did not vary significantly. In fact, all candidate sites for all three options scored relatively positively as compared to each other with the exception of the site at west bound SR 12 at Branscome (Options 2 and 3), which scored relatively neutral. As stated in the report, other candidate sites on SR 12 are available if it becomes necessary to minimize environmental effects. Therefore, environmental considerations are not considered critical in determining the desired relocation option.

- Traffic Operations Ranking – The traffic operations ranking between options vary widely. Options 2 and 3 both scored relatively positive as compared to Option 1, which scored relatively negative. Traffic operations ranking is a critical consideration in determining the desired relocation option.

Therefore, it was concluded that the critical determining study factors in comparison of relocation options is capital cost, O&M cost and traffic operations.

Option 1 at Cordelia scored well for O&M cost, but is the least desirable for capital and traffic operations.

Option 3 at Dixon, with sites on SR 12 and I-505, performed opposite from Option 1 where it scored well in capital and traffic operations, but is the least desirable for O&M cost.

Option 2 at Lagoon Valley, with sites on SR 12, performed somewhere in-between Options 1 and 3; however, in total cost ranked the lowest of all three options.

5.5 EXPANSION OPPORTUNITIES AND FUNDING IMPLICATIONS

It is important to note that the options vary widely in three key areas:

1. The ability to stage the construction of the proposed improvements over time as funding becomes available;

2. The ability to expand or contract the proposed footprint(s), should need or technology change over time; and

3. The ability to maintain a minimum level of enforcement at all times.

Option 1 – I-80 at Cordelia

Option 1 requires a very sophisticated and expensive system of braided ramp structures to construct the scales within the I-80/I-680/SR12 freeway-to-freeway and local interchange complex --- grade separating truck ingress/egress traffic from freeway traffic movements. The existing scales are in the way of the freeway widening. In fact, moving and expanding the scales and constructing the braided ramp system would benefit the interchange complex today. If the decision was to reconstruct the scales at Cordelia, there basically would be no choice but to build the ultimate sophisticated ramp system (most likely in concert with the freeway expansion project) up-front, along with the newly relocated scale footprint. Therefore, most of the capital cost for this option would need to be expended up-front at an estimated cost of $415 M.

Having to make such a high initial investment to basically construct the ultimate (for purposes of this study) Year 2040 footprint as conceived today, negates the ability to build a more modest, lower capital cost facility in the near term and bide some time before deciding whether the entire ultimate facility is needed should technology/need change in the future. An example of a possible change would be a more sophisticated, more readily available, *PrePass* system. If an updated scale bypass system is developed, presumably, the predicted volumes entering the facility would be less. Improved technology related to the sorter and weigh-in-motion (WIM) systems may also allow for shorter, less complicated, ramp systems. Under Option 1, the ultimate investment is made early on, with little flexibility to downsize should the opportunity present itself.

Similarly, under Option 1, the cost and operational impacts to expand the facility, should the need arise, is very difficult. Several movements are on structures that are extremely expensive to modify or replace as compared to at-grade ramp systems available under Option 3. Plus, there are traffic operational considerations that may become even more compromised, should the facility need to be expanded. Using the eastbound facility entrance ramp from I-80 as an example, if this ramp needed to be lengthened, the SR 12 (west)/I-80 connection would be compromised. The long entrance ramp for the trucks would be even longer, making the time the truckers are delayed off the highway even greater.

Option 1 will be easier to operate and maintain, given the single freeway location as compared to the other options. The CHP has indicated a significant concern in the ability of the State to fund the staffing levels needed for the multiple sites under the other two options, making Option 1 desirable from that standpoint.

Option 3 – I-80 at Dixon, I-505 and SR12

In contrast to Option 1, Option 3 allows for much simpler entrance/exit ramp systems, albeit in three locations in lieu of one. Under this option, all of the sites are located in areas where sufficient distance and room is available between interchanges allowing for more conventional, less costly, at-grade entrance/exit ramps and very minimal modifications to adjacent interchanges.

With less complex, at-grade ramp facilities and relatively little reconstruction needs to existing freeway infrastructure, all of these sites can be constructed in more modest stages over time, allowing for time to make changes in the future should the opportunity present itself. Similarly, the ability to expand these sites in the future is significantly easier and more cost efficient over Option 1.

Therefore, not only is the total estimated capital investment for this option already much lower than Option 1 ($178M vs. $415M), these sites have the ability to be staged over time, maintaining the ability to capitalize on any updated technologies and changes in needs in the future.

Additionally, under Option 3, with the lower overall capital investment coupled with the ability to stage the improvements over time, this option offers the best flexibility in matching a likely capital funding stream, should that be at issue.

The noted negative to Option 3, when compared to Option 1, is the increased operating cost to staff sites on three routes instead of one. Regardless of the size of the facilities and how staged over time, there is a minimum amount of staffing that will be required at each of the three locations. CHP staff, consulted with during this relocation study, have expressed significant concern over the ability to fund adequate staffing for three facilities.

Option 2 – I-80 at Lagoon Valley and SR 12

By comparison, Option 2 falls in-between Options 1 and 3. Under Option 2, complex braided ramp structures are required similar to Option 1. However, not as much reconstruction of the existing freeway infrastructure is required as compared to Option 1, which provides for a lower capital cost investment ($230M Option 2 vs. $415M Option 1). All of the restrictions in flexibility in staging and expansion/contraction capabilities noted for Option 1 above apply to Option 2.

Similar to capital cost, O&M cost for Option 2 falls in-between the other two options, as in this case two routes are enforced as opposed to one in Option 1 and three in Option 3. The same issue raised by the CHP for Option 1, regarding the ability to fund adequate staffing for multiple facilities, applies to Option 2 as well, but to a lesser extent.

5.6 TIER 3 CONCLUSIONS

Based upon the Tier 3 analysis, Option 3 appears to be the best relocation option. This option allows for the lowest capital investment as well as the best flexibility in implementation, while not compromising traffic operations. While this option does not offer the least total cost (capital + O&M), it still provides a significantly lower total cost alternative to Option 1. Also, Option 3, with locations in relatively more rural areas, is consistent with like facilities across the State.

At the conclusion of the Tier 3 analysis, the Draft Cordelia Truck Scales Relocation Study was released.

6. TIER 4 ANALYSIS

The Draft Cordelia Truck Scales Relocation Study was released for public review and comment on October 8, 2003. The release of the draft study initiated the Tier 4 analysis. STA staff made presentations to State and local officials, city councils and interest groups in order to solicit public comments on the information and findings presented in the draft study to determine the perceived compatibility of relocated truck scales with adjacent land uses and to determine public acceptance of proposed sites.

6.1 PUBLIC REVIEW AND COMMENTS

A wide range of public comments were received by STA at public meetings and via correspondence regarding the proposed Options evaluated during the Tier 3 analysis. Significant concerns were identified regarding Option 1. These concerns are summarized below:

- Initial capital costs of $415M makes relocating the scales within the Interchange extremely difficult.
- Future negative traffic impacts on local interchanges and freeway traffic operations.
- Potential need to close the Abernathy interchange.

Significant concerns were also raised regarding Option 2. These concerns are summarized below:

- The Lagoon Valley location is incompatible with the proposed development of Lagoon Valley.
- Air quality would be significantly impacted in Lagoon Valley.
- Added freeway congestion for the AM peak for Vacaville and PM peak for Fairfield.
- Increase in operating and maintenance costs for Option 2 over Option 1 with no guarantee for additional funding for CHP.
- Safety of scales on a two-lane roadway (SR 12).

Option 3 generated the most comments and public concerns. These concerns are summarized below:

- Trucks bypassing the scales by using local county roads and city streets.
- Incompatibility of truck scales with Vacaville-Dixon Greenbelt.
- Increase in air pollution in the Sacramento air basin (non-attainment area).
- Safety of scales on a two-lane roadway (SR 12).
- Significant increases in operations costs for three sets of scales and the ability of the California Highway Patrol (CHP) to staff more than one set of scales.
- Long-term operations costs (beyond 35-year study period).

The public also raised significant concerns about the existing Cordelia Truck Scales and the negative impacts on traffic operations in the I-80/I-680/SR 12 Interchange area. These concerns/comments are summarized below:

- The existing truck scales should be closed completely since other areas in the state with heavier truck traffic do not have scales.
- If the truck scales stay in the I-80/I-680/SR12 Interchange, the scales should be closed until improvements are made to the interchange that will improve traffic congestion.

In addition to the comments received from the public during the Tier 4 analysis, STA received comments from Caltrans and CHP staff. Caltrans and CHP staff provided significant assistance for developing the criteria for the design of truck scales facilities and staffing needs for varying types of truck scales facilities. Although CHP staff provided invaluable technical assistance throughout the study, they consistently expressed opposition to moving the truck scales outside the I-80/I-680/SR12 Interchange because of the following:

- No other location on I-80 is more ideally suited for "capturing" truck traffic from the Port of Oakland and other major Bay Area truck generators due to the confluence of I-80, I-680 and SR 12 at this one location.
- Bypassing the truck scales at Cordelia is difficult because of the limited number of potential bypass routes; other locations offer additional bypass opportunities.
- Staffing more than one set of scales would be difficult.

Additionally, CHP provided comments regarding potentially closing the Cordelia Truck Scales. CHP staff cited two specific reasons for keeping the Cordelia Truck Scales operational until replacement facilities can be constructed. In locations without truck scales, as many as 75% of all trucks have been shown to be overweight, thereby creating significant potential damage to both freeway and local roadway infrastructure. In locations with truck scales, less than 10% of trucks are overweight due to the deterrent factor of all trucks being weighed. Additionally, CHP staff at truck scales provides a visual "screening" of all vehicles and drivers for safety violations (e.g., uneven loads, "hot" brakes, damaged tires, tired or impaired drivers, etc.) to help ensure freeway safety. As a major truck route from the Port of Oakland to northern California and other parts of the United States, the Cordelia Truck Scales CHP staff are increasingly challenged with homeland security issues that could not be adequately addressed with the closure of the Cordelia Truck Scales facilities.

Because of the many concerns regarding both Option 1 and Option 3, STA staff and consultants, in close cooperation with both CHP and Caltrans staff reevaluated the proposed truck scales facilities in both Option 1 and Option 3.

6.2 DEVELOPMENT OF REVISED OPTIONS

The input received during the public review process provided valuable insight into potential public acceptance of sites identified in the Tier 3 analysis and the compatibility of truck scales with existing and proposed land uses. This information provided direction for STA in reevaluating each option and the individual sites within the options. Based upon public input and a reevaluation of the sites within the Tier 3 options, two new alternatives (Revised Option 1 and Revised Option 3) were developed for further evaluation and Option 2 was dropped from further consideration.

6.2.1 Revised Option 1

Through the joint efforts of staff from CHP, Caltrans, STA and STA consultants, a new conceptual design was developed and evaluated for relocating the truck scales within the I-80/I-680/SR12 Interchange. The new design provides significantly shorter ramps leading to the truck scales by incorporating two inspection facilities within the truck scales complex, thus providing the capability to inspect 1,000 trucks per hour during peak periods without lengthy queuing of trucks on long entrance ramps. The new design reduces the initial estimated capital costs from $415M to $219M, eliminates most of the braided structures (bridges) needed for the original Option 1design, retains the Abernathy interchange by reconfiguring the I-80 westbound on-ramp, supports "staged" construction of relocated facilities, and provides improved traffic operations within the interchange. Although this is a modification from current Caltrans/CHP design standards for truck scales, both CHP and Caltrans staff support this new design in concept, recognizing specific details of the design will be fully developed at a later date.

6.2.2 Option 2

Although the I-80 site at Lagoon Valley in Option 2 provides some operational and construction phasing improvements over the site within the I-80/680/12 Interchange, the site would require significant complex braided ramp structures similar to Option 1. Additionally, as the Lagoon Valley and the North Texas

Street areas "build-out", traffic operations on I-80 would lessen the benefits in operational improvements over Option 1. These factors, combined with the additional scales required on SR 12 for Option 2, provided justification for the STA Board of Directors to eliminate Option 2 from further consideration.

6.2.3 Revised Option 3

I-80 Sites:
On I-80, a potential location for truck scales facilities east of the City of Dixon was evaluated. The location between Pedrick Road and Kidwell Road provides a potential location for a set of scales, although ramp braiding would be required for at least one, and possibly both, of the Pedrick and Kidwell interchanges, thus increasing costs. Constructing I-80 westbound truck scales facilities on the north side of I-80 would be relatively uncomplicated since most of this area is currently agricultural land. However, on the south side of I-80, the presence of a large trucking company and a heavily used frontage road would present challenges for the construction of a truck scales facility. Additionally, the Cities of Dixon and Davis are proposing a Dixon-Davis Greenbelt, similar to the Vacaville-Dixon Greenbelt, that would potentially be seen as incompatible with truck scales facilities.

SR 12 Sites:
STA staff and consultants reevaluated the potential locations for truck scales on SR 12 and determined that both truck scales facilities could be located east of Branscome Road by relocating SR 12 to the north in this area and constructing a four-lane roadway in the vicinity of the truck scales facilities. Potential problems with the terrain near Olsen Road, and the close proximity to the SR 12/SR 113 intersection, are eliminated by locating both scales near Branscome Road. A four-lane roadway extending beyond the entry and exit ramps to the truck scales facilities provides increased traffic safety in this area. Extending the four-lane roadway to the SR 12/Walters Road intersection in Suisun City would further increase traffic safety.

I-505 Sites:
The sites on I-505 did not change from the locations identified in the Tier 3 analysis. The proposed northbound I-505 scale facility is located 1 mile south of the Allendale Road interchange. The proposed southbound I-505 scale facility is located 1.2 miles north of the Allendale Road interchange. Both scale facilities are located on relatively level terrain in an agricultural area with few geometric constraints. The southbound scale facility requires the relocation of Winters County Road that fronts the freeway.

6.3 Evaluation of Revised Options

Revised Option 1 and Revised Option 3 were evaluated against the five criteria used for the Tier 3 analysis (Capital Costs, 35-year Operations & Maintenance Costs, Right-of-Way Requirements, Environmental Considerations and Traffic Operations), compatibility with current and proposed local land uses, and public acceptance of the proposed sites.

6.3.1 Proposed Scale Locations and Layouts

For both Revised Option 1 and Revised Option 3, Class B facilities are assumed to be the required configuration at all sites. The number of bays did not change and overall facility layout remains the same as for the original Options 1 and 3 (see Section 4.2 and Table 16). The ramp geometry is dependent on individual site characteristics. In general, sites on I-505 and SR 12 will be at-grade ramps while sites on I-80 will require some degree of braided ramps. A comparison of the calculated minimum length of facilities at the various site locations for Revised Option 1 and Revised Option 3 is presented in Table 16. These lengths represent the minimum total distance from the gore point of the truck off-ramp through the

facility and to the gore point of the truck on-ramp. Additional lengths of improvements may be required at some locations to fit ramps within other highway on/off ramp movements.

Table 16: Maximum Inspection Bay Requirements and Minimum Facility Length by Site

Revised Option	Location	Assumed # Constructed Inspection Bays	Minimum Calculated Length of Facility (ft)
1	WB I-80 at Cordelia	7	8,350*
	EB I-80 at Cordelia	7	8,200*
	Total Revised Option 1	***14***	
3	WB I-80 at Pedrick-Kidwell	4	5,900
	EB I-80 at Pedrick-Kidwell	4	7,800
	NB I-505 at Midway-Allendale	2	4,700
	SB I-505 at Allendale-Wolfskill	2	6,600
	WB SR 12 at Branscome	2	4,700
	EB SR 12 at Branscome	2	5,100
	Total Revised Option 3	***16***	

* I-80 ramp connections.

6.3.2 Capital Costs

During the Tier 4 analysis, Option 2 was eliminated by the STA Board of Directors from further consideration; therefore, no further actions were completed for Option 2.

Revised Option 1 Capital Costs:
The revised design within the I-80/I-680/SR12 Interchange area provides significantly shorter ramps leading to the truck scales by incorporating two inspection facilities within the truck scales complex, thus providing the capability to inspect 1,000 trucks per hour during peak periods. The new design reduces the initial capital costs from $415M to $219M, primarily by eliminating most of the braided structures (bridges) needed for the original Option 1design and significantly reducing the lengths of the entrance ramps. The design also locates the eastbound scales slightly farther east than the original Option 1 design.

The $219M capital cost calculated for Revised Option 1 represents constructing the truck scale facility at Cordelia independent of the I-80/I-680/SR12 Interchange reconstruction. Therefore, the capital costs presented for Revised Option 1 are a stand-alone cost to construct a truck scale facility at Cordelia within the existing interchanges, while not precluding the eventual interchange improvement project. The study team, as a separate exercise, estimated the difference in cost between constructing the ultimate I-80/I-680/SR12 Interchange project with Revised Option 1 scales and without truck scales at $200M.

Revised Option 3 Capital Costs:
The location between Pedrick Road and Kidwell Road will require ramp braiding for at least one, and possibly both, of the Pedrick and Kidwell interchanges, thus increasing costs over the original Option 3 location on I-80. Constructing I-80 westbound truck scales facilities on the north side of I-80 would be similar to the construction of scales between Midway Road and Dixon Avenue. However, on the south side of I-80, the presence of a large trucking company and a heavily-used frontage road would present challenges for the construction of a truck scales facility. The costs for constructing truck scales between Pedrick Road and Kidwell Road are estimated to be $144M, compared to $74M for the original site on I-80 between Midway Road and Dixon Avenue.

A location on SR 12 between Suisun City and Rio Vista near Branscome Road can accommodate both eastbound and westbound scales by relocating SR 12 to the north in this area and constructing a four-lane roadway in the vicinity of the truck scales facilities. The additional costs for relocating SR 12 near the proposed truck scales and constructing SR 12 as a four-lane roadway in this area is approximately $12M, thus increasing the costs on SR 12 for Revised Option 3 to $64M, compared to $52M for the original sites at Olsen Road (eastbound) and Branscome Road (westbound).

The estimated capital costs for scales on I-505 remain at $52M; therefore, the total Revised Option 3 estimated capital costs are $260M.

6.3.3 Operating and Maintenance Costs

Although some facility locations for Revised Option 1 and Revised Option 3 have changed, the size of the proposed Class B facilities at these locations are the same as for the original sites (see Table 17); therefore, the operating costs for Revised Option 1 and Revised Option 3 are the same as for the original Options 1 and 3. However, the annual maintenance costs will increase slightly for Revised Option 1 due to the addition of a second inspection facility within each truck scales complex.

Table 17: Year 2025 and 2040 Operated Inspection Bay Assumptions for Revised Options

Revised Option	Location	Year 2025 Forecast Volume	Year 2025 Assumed Design Volume	Assumed No. Inspection Bays in Operation Year 1-20	Year 2040 Forecast Volume	Year 2040 Assumed Design Volume	Assumed No. Inspection Bays in Operation Year 21-35
1	WB I-80 at Cordelia	757	800	6	958	1000	7
	EB I-80 at Cordelia	799	800	6	1009	1000	7
	Total Revised Option 1			***12***			***14***
3	WB I-80 at Pedrick-Kidwell	471	480	4	595	600	4
	EB I-80 at Pedrick-Kidwell	297	480	4	375	600	4
	NB I-505 at Allendale-Wolfskill	179	200	2	229	250	2
	SB I-505 at Midway-Allendale	187	200	2	235	250	2
	WB SR12 at Branscome	196	200	2	248	250	2
	EB SR12 at Branscome	196	200	2	251	250	2
	Total Revised Option 3			***16***			***16***

6.3.3.1 Facility Staffing

Personnel costs and staffing levels for Revised Option 1 and Revised Option 3 are the same as for the original Options 1 and 3. For revised Option 1, the personnel required to staff a second inspection facility during peak periods (one to two hours per day) can be accommodated from proposed staffing levels.

6.3.3.2 Annual Operating Costs

The annual operating costs for facility staffing for Revised Option 1 and Revised Option 3 are the same as for the original Options 1 and 3. The estimated annual operating costs for the revised options are summarized in Tables 18 and 19.

Table 18: Facility Staffing and Annual Operating Costs by Revised Option – Years 1-20

Revised Option	Location	# of Inspection Bays Assumed	Lieutenants	Sergeants	Officers	CVIS	Clerical	Janitorial	Total Personnel	Base Year 1 Annual Operating Cost[1,2]
1	EB & WB I-80 at Cordelia	12	1	5	22	42	3	2	75	$ 5,737,500
	Total Revised Option 1	***12***	***1***	***5***	***22***	***42***	***3***	***2***	***75***	***$ 5,737,500***
3	EB & WB I-80 at Pedrick-Kidwell	8	*1*	*4*	*18*	*30*	*3*	*2*	*58*	$ 4,437,000
	EB & WB SR12 at Branscome	4	*1*	*3*	*12*	*16*	*2*	*1*	*35*	$ 2,677,500
	NB & SB I-505 at Midway-Allendale & Allendale-Wolfskill	4	*1*	*3*	*12*	*16*	*2*	*1*	*35*	$ 2,677,500
	Total Revised Option 3	***16***	***3***	***10***	***42***	***62***	***7***	***4***	***128***	***$ 9,792,000***

Notes:
[1]Annual costs are presented in 2003 dollars.
[2]Assumed average annual cost per staff member = $76,500.

Table 19: Facility Staffing and Annual Operating Costs by Revised Option – Years 21-35

Revised Option	Location	# of Inspection Bays Assumed	Lieutenants	Sergeants	Officers	CVIS	Clerical	Janitorial	Total Personnel	Base Year 21 Annual Operating Cost[1,2]
1	EB & WB I-80 at Cordelia	14	1	5	22	48	3	2	81	$ 6,196,500
	Total Revised Option 1	***14***	***1***	***5***	***22***	***48***	***3***	***2***	***81***	***$ 6,196,500***
3	EB & WB I-80 at Pedrick-Kidwell	8	*1*	*4*	*18*	*30*	*3*	*2*	*58*	$ 4,437,000
	EB & WB SR12 at Branscome	4	*1*	*3*	*12*	*16*	*2*	*1*	*35*	$ 2,677,500
	NB & SB I-505 at Midway-Allendale & Allendale-Wolfskill	4	*1*	*3*	*12*	*16*	*2*	*1*	*35*	$ 2,677,500
	Total Revised Option 3	***16***	***3***	***10***	***42***	***62***	***7***	***4***	***128***	***$ 9,792,000***

Notes:
[1]Annual costs are presented in 2003 dollars.
[2]Assumed average annual cost per staff member = $76,500.

6.3.3.3 Annual Maintenance Costs

The annual maintenance costs for Revised Option 1 will increase by an estimated 25% over the original Option 1 costs to support maintenance for the second inspection facility within the truck scales complex. The annual maintenance costs for Revised Option 3 are the same as for the original Option 3. Table 20 summarizes the base year 1 annual maintenance costs for each revised option for years 1 through 20 and the base year 21 annual maintenance costs for each option for years 21 through 35.

Table 20: Base Year Annual Maintenance Costs by Revised Option

Revised Option	Location	# of Inpsection Bays Operated Year 1-20	Base Year 1 Annual Maintenance Cost[1]	# of Inpsection Bays Operated Year 21-35	Base Year 21 Annual Maintenance Cost[1]
1	EB & WB I-80 at Cordelia	12	$ 425,000	14	$ 475,000
	Total Revised Option 1	***12***	***$ 425,000***	***14***	***$ 475,000***
3	EB & WB I-80 at Pedrick-Kidwell	8	$ 260,000	8	$ 260,000
	EB & WB SR12 at Branscome	4	$ 180,000	4	$ 180,000
	NB & SB I-505 at Midway-Allendale & Allendale-Wolfskill	4	$ 180,000	4	$ 180,000
	Total Revised Option 3	***16***	***$ 620,000***	***16***	***$ 620,000***

1. Annual costs presented are in 2003 dollars

6.3.3.4 35-Year Total Operating & Maintenance Costs

The total operating and maintenance costs for each facility were calculated for each of the revised options for an assumed 35-year life cycle. Because of the gradual increase of traffic volumes over the 35-year period, it was assumed that a smaller staff would be required in the earlier portions of the life cycle. Therefore, the operating and maintenance costs were calculated on the assumption of the number of inspection bays operating in the first 20 years, or to year 2025, and on the number of inspection bays operating in the last 15 years, or to year 2040. In most cases, the increase in volumes between year 2025 and year 2040 required that additional inspection bays be operated in the last 15 years.

Table 21 summarizes the annual operating and maintenance costs in the base year 1 and base year 21 of each of the options for years 1 through 20 and years 21 through 35. In Table 21, the total 35-year annual operating and maintenance costs for each of the options is computed and presented in year 2003 dollars. For purposes of this study, the costs in Table 21 were escalated at an annual rate of 2.5% for the entire 35-year period. In addition, the dollar values in Table 21 are expressed using a net present value discount rate of 4.0%. The net present value compares the value of a dollar today versus the value of the same dollar in the future.

Table 21: Total Operating and Maintenance Cost Summary by Revised Option

Revised Option	Location	# of Inspection Bays Operated Year 1-20	Base Year 1 Annual Operating + Maintenance Cost[1]	# of Inspection Bays Operated Year 21-35	Base Year 21 Annual Operating + Maintenance Cost[1]	Total 35-year Operating & Maintenance Costs[1,2]
1	EB & WB I-80 at Cordelia	12	$ 6,200,000	14	$ 6,700,000	$ 169,500,000
	Total Revised Option 1	***12***	***$ 6,200,000***	***14***	***$ 6,700,000***	***$ 169,500,000***
3	EB & WB I-80 at Pedrick-Kidwell	8	$ 4,700,000	8	$ 4,700,000	$ 125,000,000
	EB & WB SR12 at Branscome	4	$ 2,900,000	4	$ 2,900,000	$ 77,100,000
	NB & SB I-505 at Midway-Allendale & Allendale-Wolfskill	4	$ 2,900,000	4	$ 2,900,000	$ 77,100,000
	Total Revised Option 3	***16***	***$ 10,500,000***	***16***	***$ 10,500,000***	***$ 279,200,000***

1. Annual O&M costs presented are in 2003 dollars.
2. NPV compares the value of a dollar today versus the value of the same dollar in the future. The 35-year O&M costs were calculated as follows: 1) All annual O&M costs escalated at a rate of 2.5%; and 2) All escalated O&M costs were then discounted at a Net Present Value rate of 4% for the 35 years of operation.

6.3.4 Right-of-Way Requirements

The amount of right-of-way required for each location for the revised options varies with the truck volumes and the complexity of each scale location. Higher truck volumes create the need for extended ramp lengths to accommodate truck queues and larger scale footprints for additional inspection bays. More complex locations require additional right-of-way for ramp braiding, auxiliary lanes, and interchange reconstruction.

Table 22 below lists anticipated right-of-way requirements for each of the two revised options. The total acres impacted, by revised option, are also included in the summary Table 25.

Table 22: Estimated ROW Required in Acres by Land-use, by Revised Option

Revised Option	Location	Residential	Commercial	Agricultural	Open Space	Total ROW
1	WB I-80 at Cordelia	2	2	19	7	***30***
	EB I-80 at Cordelia		19	26	4	***49***
	Total Revised Option 1					***79***
3	WB I-80 at Pedrick-Kidwell			40		***40***
	EB I-80 at Pedrick-Kidwell		35	34		***69***
	NB I-505 at Midway-Allendale			24		***24***
	SB I-505 at Allendale-Wolfskill			30		***30***
	WB SR12 at Branscome			40		***40***
	EB SR12 at Branscome			44		***44***
	Total Revised Option 3					***247***

6.3.5 Environmental Considerations

There are no significant changes for environmental considerations for Revised Option 1. For Revised Option 3, the environmental impact for the SR 12 site is lessened slightly by moving both sites to a

location near Branscome Road. This new location requires relocating the roadway for SR 12 slightly to the north in the vicinity of the proposed scales, thus farther from the Suisun Marsh. This site may have some potential for sensitive species occurrence due to the adjacent seasonal and brackish wetlands. Although the environmental impact is slightly reduced by moving the roadway, impacts to the Suisun Marsh are still possible, thus the Environmental Ranking for both EB and WB sites on SR 12 for Revised Option 3 will be "0."

A summary of the overall ranking of each location and a total overall ranking by revised option is presented in Table 23 below and summarized again in Table 25.

Table 23: Environmental Considerations by Site/Revised Option

Revised Option	Facility Location	Environmental Ranking by Site and Relative Ranking by Option
1	WB I-80 at Cordelia	+
	EB I-80 at Cordelia	+
	Total Revised Option 1	+
3	WB I-80 at Pedrick-Kidwell	+
	EB I-80 at Pedrick-Kidwell	+
	NB I-505 at Midway-Allendale	+
	SB I-505 at Allendale-Wolfskill	+
	WB SR12 at Branscome	0
	EB SR12 at Branscome	0
	Total Revised Option 3	***0***

The option ranking reflects the general magnitude of environmental concerns relative to the other option. The general option rankings are discussed below.

- Revised Option 1 is ranked as (+) for environmental concerns since no extensive issues were identified.
- Revised Option 3 is ranked as (0) for environmental concerns due to issues at the eastbound and westbound SR 12 site at Branscome.

6.3.6 Traffic Operations

For each revised option, the effect on mainline traffic operations in the area was evaluated qualitatively on the basis of the amount of conflict between mainline traffic and trucks entering and leaving the scale facility compared to the original options.

Although the eastbound site for Revised Option 1 moved slightly east from the original Option 1 location, overall the relative comparison between candidate sites will not change for Revised Option 1 due to the volume of traffic (both truck and automobile) within this area compared to other sites. Additionally, the location of scales on I-80 between Pedrick Road and Kidwell Road in Revised Option 3 will impact traffic operations differently than the site between Midway Road and Dixon Avenue; however, the additional impact will not be significant enough to alter the relative comparison between candidate sites.

Based upon a qualitative analysis for the Revised Options, the overall ranking of each location and a total average ranking by option is presented in the Table 24 below and summarized again in Table 25.

Table 24: Comparison Traffic Operations Ranking by Site/Revised Option

Revised Option	Facility Location	Traffic Operations Ranking
1	WB I-80 at Cordelia	-
	EB I-80 at Cordelia	-
	Total Revised Option 1	-
3	WB I-80 at Pedrick-Kidwell	0
	EB I-80 at Pedrick-Kidwell	0
	NB I-505 at Midway-Allendale	+
	SB I-505 at Allendale-Wolfskill	+
	WB SR 12 at Branscome	+
	EB SR 12 at Branscome	+
	Total Revised Option 3	+

6.3.7 PUBLIC ACCEPTANCE OF CANDIDATE SITES FOR REVISED OPTIONS

After the release of the Draft Cordelia Truck Scales Relocation Study, extensive public input was gathered by STA to determine the acceptability of sites proposed in the original Tier 3 analysis. This public input provided guidance on proposed site locations that were considered to be incompatible with current and/or proposed land uses, safety considerations, and negative impacts that may be created by truck scale facilities. Based upon the public input, the site locations on I-80 and SR 12 for Option 3 were revised for evaluation as Revised Option 3.

Although public acceptance of candidate sites was not evaluated during the Tier 3 analysis, it became a critical component of the Tier 4 analysis.

Revised Option 1:
The Revised Option 1 candidate sites were based upon a new design for the truck scales facilities within the I-80/I-680/SR 12 Interchange and not upon public concern with the specific site locations within the interchange area. The westbound candidate site did not change while the eastbound candidate site moved slightly to the east to accommodate the new design. Public concerns regarding the potential closing of the Abernathy Road interchange were addressed by the new design that rebuilds, but maintains, the Abernathy Road Interchange. Additionally, public concerns for the impacts on other local interchanges were also addressed with the new design. Because of the high volume of traffic, both current and projected, within the I-80/I-680/SR12 Interchange, concerns regarding the negative impacts of truck scales on traffic operations cannot be fully mitigated. However, the new design separates truck traffic from other vehicular traffic and minimizes the impacts of the truck scales on traffic operations.

Revised Option 3:
The Revised Option 3 candidate sites were selected to address several public concerns; however, several concerns could not be fully addressed. The original candidate site on SR 12 near Olsen Road was abandoned due to significant safety concerns regarding the rolling topography and close proximity to the SR 12/SR 113 intersection for this site. For Revised Option 3, both eastbound and westbound truck scales were evaluated at a location near Branscome Road that requires relocating a section of SR 12 to the north. Although this location on SR 12 is technically adequate, public concerns remain that truck scales

on a roadway that is primarily a two-lane road may create safety problems that cannot be adequately mitigated.

Also for the Revised Option 3, the original site on I-80 between Midway Road and Dixon Avenue was abandoned due to public concerns that the site location was incompatible with the Vacaville-Dixon Greenbelt and the National Cemetery to be constructed on Midway Road near I-80. An alternate site was evaluated on I-80 between Pedrick Road and Kidwell Road. This alternate site will require a new interchange at Pedrick Road and/or Kidwell Road and will require the potential relocation of some businesses and a frontage road. Additionally, the Cities of Dixon and Davis are pursuing the establishment of a Dixon-Davis Greenbelt, similar to the Vacaville-Dixon Greenbelt. This location is technically adequate, but public concerns with business relocations and the incompatibility with a potential Dixon-Davis Greenbelt will need to be mitigated.

No public concerns or comments were received regarding the candidate sites on I-505; therefore, no alternate sites were evaluated in the Tier 4 analysis.

6.4 TIER 4 SUMMARY EVALUATION MATRIX

Table 25 below summarizes how each site and each revised option performed under the evaluation criteria:

Table 25: Evaluation Summary Table by Revised Option

Revised Option / Facility Location	Capital Cost ($M)[1]	35-yr O&M Cost ($M)[1]	Total Option Cost ($M)[1]	Right-of-Way Requirements (Acre)	Environmental Considerations Ranking	Traffic Operations Ranking	Public Acceptance
Revised Option 1							
WB I-80 at Cordelia	91	$170		30	+	-	0
EB I-80 at Cordelia	128			49			0
Total Revised Option 1	***$219***	***$170***	***$389***	***79***			
Revised Option 3							
WB I-80 at Pedrick-Kidwell	60	125		40	0	+	-
EB I-80 at Pedrick-Kidwell	84			69			-
NB I-505 at Midway-Allendale	25	77		24			+
SB I-505 at Allendale-Wolfskill	27			30			+
WB SR 12 at Branscome	31	77		40			-
EB SR 12 at Branscome	33			44			-
Total Revised Option 3	***$260***	***$279***	***$539***	***247***			

[1] Cost Presented in Present Value (2003 dollars)

For evaluation criteria that are measured as a relative ranking between each of the option alternatives, the following indicators are used:

Symbol	Description
+	Relatively positive when compared to other option alternatives.
0	Relatively neutral when compared to other option alternatives.
–	Relatively negative when compared to other option alternatives.

6.5 FINDINGS FROM THE TIER 4 ANALYSIS

Table 25 summarizes the results of the evaluation performed for each Revised Options 1 and 3. In conclusion, the relative importance of each evaluation criteria is as follows:

- Capital Cost – The cost to construct each revised option varies slightly – from $219M for Revised Option 1 to $260M for Revised Option 3. Therefore, capital cost is a critical consideration in determining the desired relocation option.

- 35-Year Operating & Maintenance (O&M) Cost – The 35-year O&M cost for each option varies widely – from $170M for Revised Option 1 to $279M for Revised Option 3. Therefore, O&M cost is a critical consideration in determining the desired relocation option.

- Right-of-Way Requirements – The difference in right-of-way requirements between each revised option did not vary significantly. Revised Option 1 has less acreage requirements, but more impacts to commercial land. Revised Option 3 has higher acreage, but mostly impacts agricultural and open space lands. Therefore, right-of-way is not considered critical in determining the desired relocation option.

- Environmental Considerations – The difference in environmental considerations ranking between the revised options did not vary significantly. In fact, all candidate sites for both revised options scored relatively positively as compared to each other with the exception of the sites on SR 12 at Branscome (Revised Option 3), which scored relatively neutral. Therefore, environmental considerations are not considered critical in determining the desired relocation option.

- Traffic Operations Ranking – The traffic operations ranking between the revised options vary widely. Revised Option 3 scored relatively positive as compared to Revised Option 1, which scored relatively negative. The design of ramp structures to minimize conflicts between trucks and other vehicles will be necessary to compensate for the additional traffic within the Revised Option 1 location. Traffic operations ranking is an important consideration in determining the desired relocation option.

- Public Acceptance of Candidate Sites – The public acceptance of candidate sites varied significantly between the revised options and for the candidate sites within Revised Option 3. Revised Option 1 scored relatively positive as compared to Revised Option 3 when all sites in Revised Option 3 are taken together. Therefore, public acceptance of candidate sites is considered critical in determining the desired relocation option.

Therefore, it was concluded that the determining study factors in comparison of relocation options are O&M costs, traffic operations and public acceptance of candidate sites.

Revised Option 1 scored well for capital costs, scored well for O&M costs, scored poorly for traffic operations, and was neutral for public acceptance of candidate sites.

Revised Option 3 scored poorly for capital costs, scored poorly for O&M costs, scored well for traffic operations and scored poorly for public acceptance of candidate sites when all sites are considered together.

6.6 EXPANSION OPPORTUNITIES AND FUNDING IMPLICATIONS

As with the Tier 3 analysis, it is important to note that the revised options vary in three key areas:

- The ability to stage the construction of the proposed improvements over time as funding becomes available;
- The ability to expand or contract the proposed footprint(s), should need or technology change over time; and
- The ability to maintain a minimum level of enforcement at all times.

Revised Option 1 – I-80 at Cordelia

The new design for Revised Option 1 minimizes the system of braided ramp structures to construct the scales within the I-80/I-680/SR12 Interchange --- grade separating truck ingress/egress traffic from freeway traffic movements. Because of the new design, the relocated scales facilities can be constructed while still operating the existing scales. Although the braided structures in the new design are highly desirable to be in place at the opening of the relocated scales, the relocated scales can be operational prior to construction of all of the braided structures and will provide improvements to traffic operations, particularly in the eastbound direction. Therefore, the Revised Option 1 is compatible with staged construction as funding becomes available.

Similarly, under Revised Option 1, the cost and operational impacts to expand the facility, should the need arise, can be accommodated as long as all anticipated right-of-way is secured at the beginning of the initial construction to prevent future encroachment around the facility.

Revised Option 1 will be easier to operate and maintain, given the single freeway location as compared to Revised Option 3. The CHP has indicated a concern in the ability of the State to fund the staffing levels needed for the multiple sites under Revised Option 3, making Revised Option 1 desirable from that standpoint.

Revised Option 3 – I-80 at Pedrick-Kidwell, I-505 and SR12 at Branscome Road

In contrast to Revised Option 1, Revised Option 3 allows for simpler entrance/exit ramp systems, albeit in three locations in lieu of one. Under this option, the sites on I-505 and SR 12 are located in areas where sufficient distance and room is available between interchanges, thereby allowing for more conventional, less costly, at-grade entrance/exit ramps and very minimal modifications to adjacent interchanges. The site on SR 12 near Branscome Road will require relocating SR 12 to the north in the vicinity of the scales; however, construction of a four-lane facility in this area will improve traffic operations in this segment. The sites on I-80 between Pedrick Road and Kidwell Road will require the reconstruction of at least one interchange, but the complexity will be significantly less than the Revised Option 1 requirements.

With less complex, at-grade ramp facilities and relatively little reconstruction to existing freeway infrastructure, all of these sites can be constructed in modest stages over time, allowing for time to make changes in the future should the opportunity present itself. Similarly, the ability to expand these sites in the future will be relatively easy. The ability to stage construction and to easily expand the sites to accommodate future truck volumes offers good flexibility in matching a capital funding stream, should that be at issue.

Revised Option 3, as compared to Revised Option 1, has significantly larger operations costs to staff sites on three routes instead of one ($279M vs $170M). Regardless of the size of the facilities and how they are staged over time, there is a minimum amount of staffing that will be required at each of the three

locations. CHP staff have consistently expressed concern over the ability to fund adequate staffing for three facilities.

6.7 TIER 4 CONCLUSIONS

Based upon the Tier 4 analysis, Revised Option 1 is the best relocation option. This option allows for a comparable capital investment to Revised Option 3, lower life-cycle operations and maintenance costs, better acceptance by the public, and moderate flexibility in implementation. While this option does not offer the best location for improved traffic operations, the composite of the evaluation factors used for the Tier 4 analysis support Revised Option 1 as the best relocation option.

7.0 RECOMMENDATIONS

Based upon the findings of the four-tier detailed analysis conducted for the Cordelia Truck Scales Relocation Study, the Solano Transportation Authority Board of Directors recommends to the State of California the following actions:

1. **Investigate the feasibility of closure of the existing Cordelia Truck Scales, or closure of the scales during peak commute periods, until the scales can be relocated/reconstructed in a location that ensures safe traffic operations on I-80.**

2. **Relocate the Cordelia Truck Scales as identified in the Revised Option 1 of the Cordelia Truck Scales Relocation Study.**

8. CONTACTS

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13.	Andrew Jones California Highway Patrol	(916) 445-1865

9. LIST OF REFERENCED MATERIAL

1. 2001 Weigh Station Inventory of Needs, Department of California Highway Patrol in Cooperation with the California Department of Transportation
2. California Department of Transportation (Caltrans) 2000 and 2001 Annual Average Daily Truck Traffic on the California State Highway System
3. Caltrans Highway Design Manual (HDM)
4. Caltrans Highway Capacity Manual
5. Caltrans Class B Design Guidelines
6. Cordelia Truck Scales Relocation Study; Potential Candidate Sites; Tier 1 Evaluation; February 11, 2003; Korve Engineering, Inc.
7. Cordelia Truck Scales Relocation Study; Tier 2 Evaluation-Alternatives Development; April 8, 2003; Korve Engineering, Inc.
8. Segment 1: I-80/I-680/SR12 Tier 2 Evaluation Report; February 13, 2002; Korve Engineering, Inc.
9. I-80/I-680/I-780 Major Investment & Corridor Study; July 14, 2004; Solano Transportation Authority
10. Caltrans Office of Truck Services, Hand Calculated Guidelines – Distributed June 9, 2003
11. Segment 1: I-80/I-680/SR12 MIS; Cordelia Truck Scale Data Collection and Analysis Technical Memo; July 13, 2001; Korve Engineering, Inc.
12. Port Services Location Study 2001, Port of Oakland

10. ATTACHMENTS

A. Options and Site Location Map

B. Tier 1, 2, 3 and 4 Candidate Site Maps

C. Peak Hour and Daily Truck Volumes

D. Conceptual Layouts

- D.1 Option 1: Conceptual Layout
- D.2 Option 2: Conceptual Layout
- D.3 Option 3: Conceptual Layout
- D.4 Revised Option 1: Conceptual Layout

E. Scale Footprints

F. Traffic Weaving Index

G. Environmental Considerations

H. Capital Cost Estimates

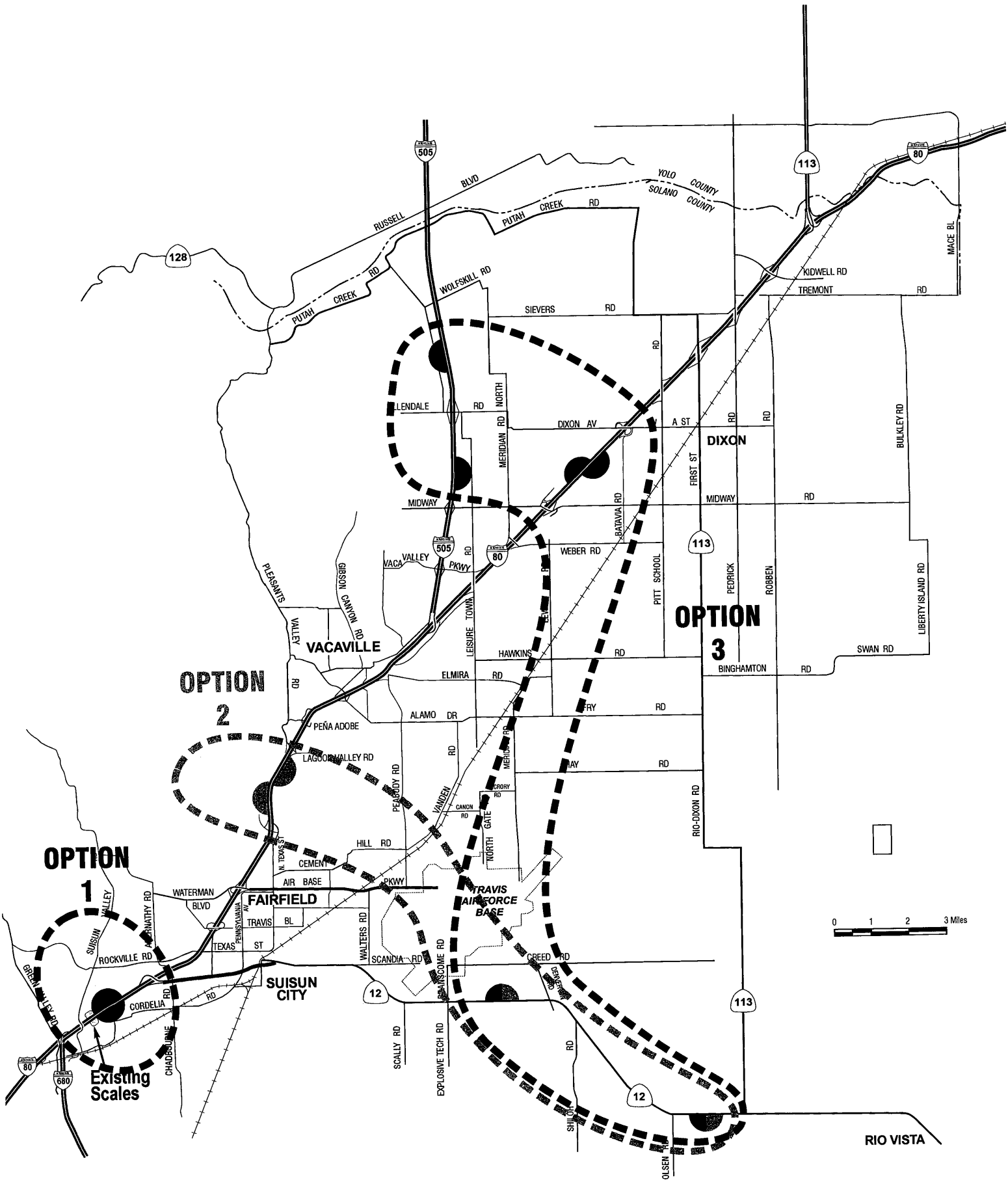
- H.1 Option 1: Capital Cost Estimates
- H.2 Option 2: Capital Cost Estimates
- H.3 Option 3: Capital Cost Estimates
- H.4 Revised Option 1: Capital Cost Estimates
- H.5 Revised Option 3: Capital Cost Estimates

Attachment A

Options and Site Location Map

Attachment A.1

Initial Options and Site Location Map



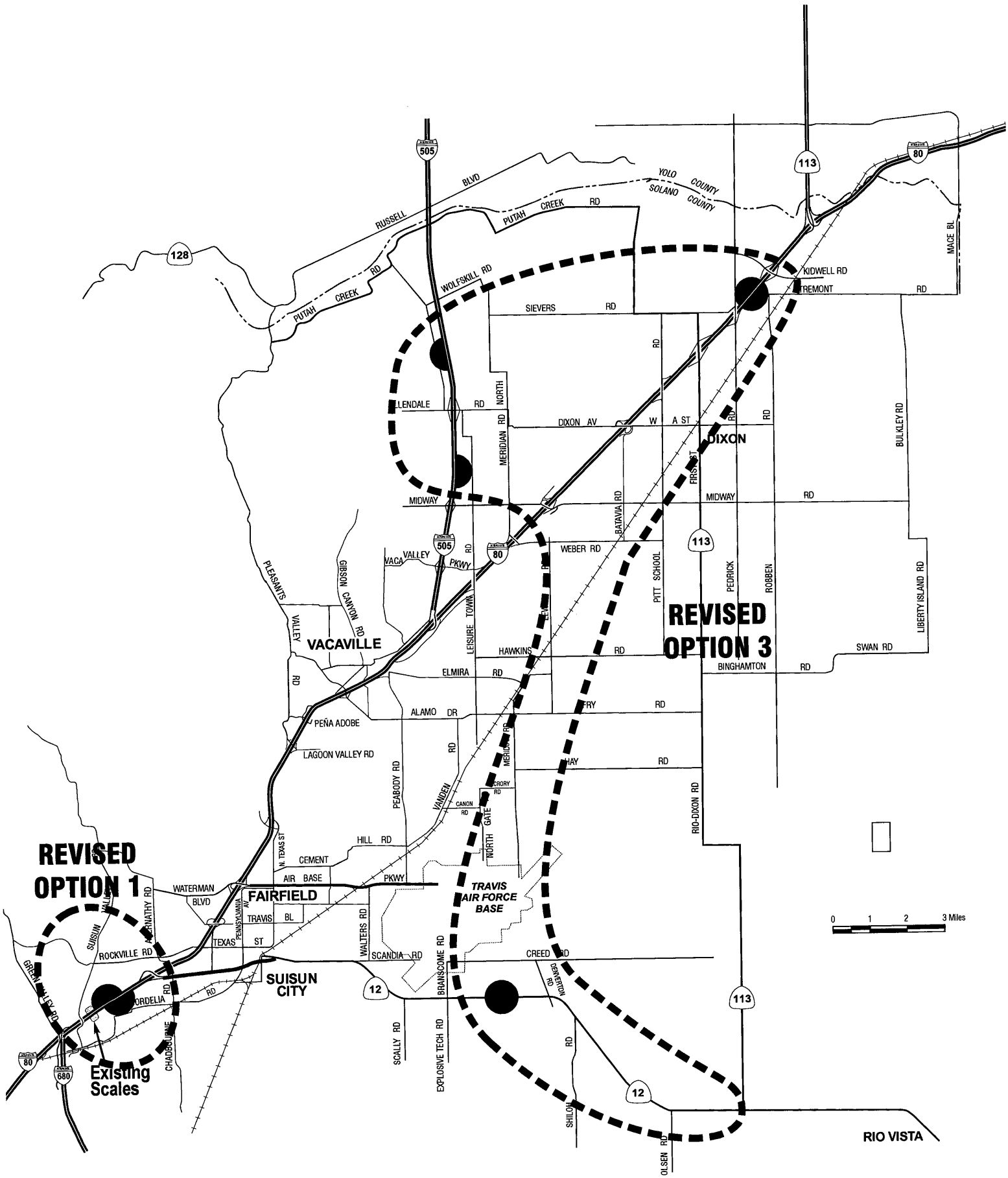
CORDELIA TRUCK SCALES RELOCATION STUDY

A.1 INITIAL OPTIONS AND SITE LOCATION MAP

9-30-04

Attachment A.2

Revised Options and Site Location Map



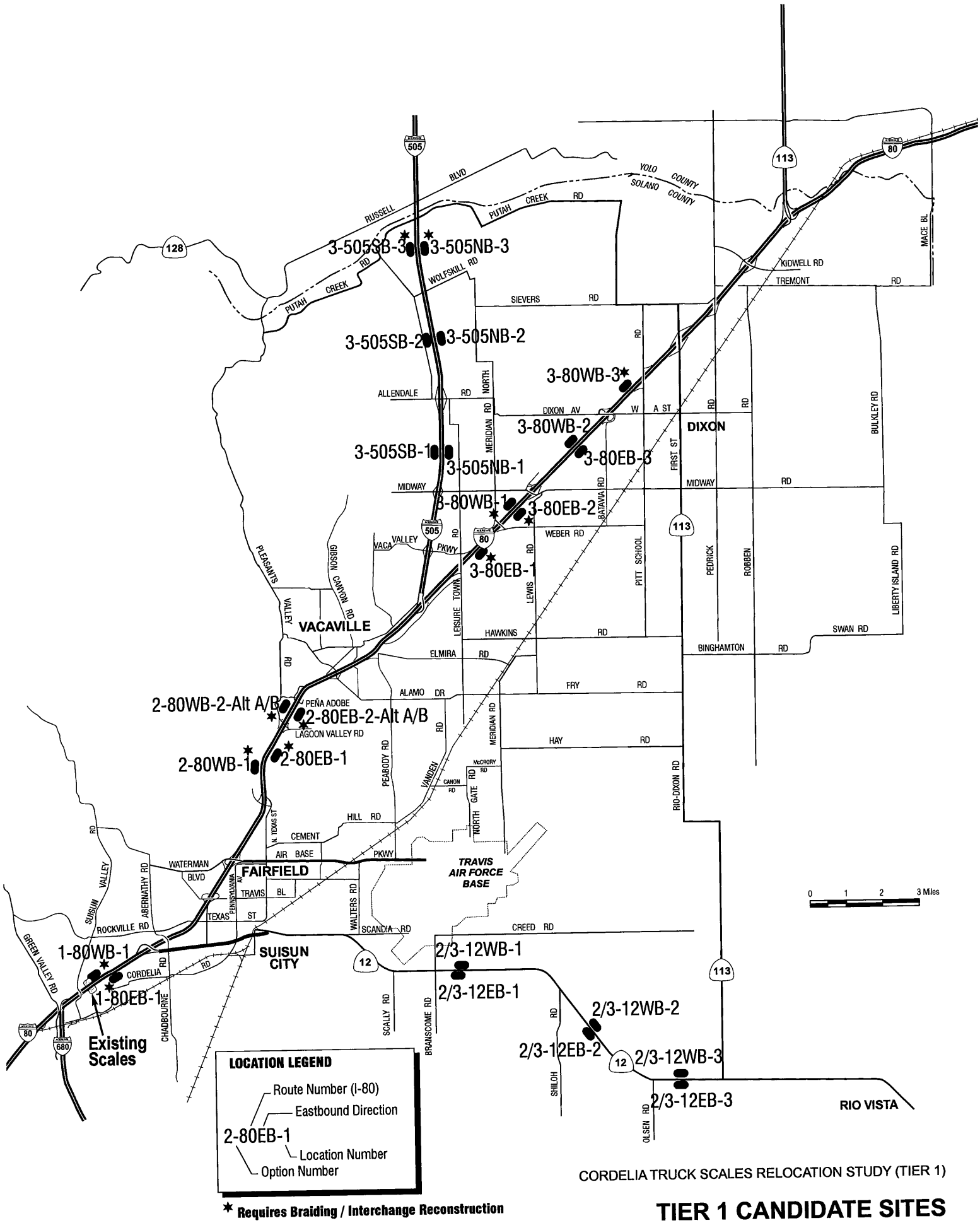
CORDELIA TRUCK SCALES RELOCATION STUDY

A.2 REVISED OPTIONS AND SITE LOCATION MAP

9-30-04

Attachment B

Tier 1, 2, 3 & 4
Candidate Site Maps



CORDELIA TRUCK SCALES RELOCATION STUDY (TIER 1)

TIER 1 CANDIDATE SITES

SOURCE: *Cordelia Truck Scales Relocation Study*
Potential Candidate Sites - Tier 1 Evaluation, February 2003

9-30-04

CORDELIA TRUCK SCALES RELOCATION STUDY (TIER 2)

TIER 2: CANDIDATE SITES

SOURCE: *Cordelia Truck Scales Relocation Study*
Potential Candidate Sites - Tier 2 Evaluation, April 2003

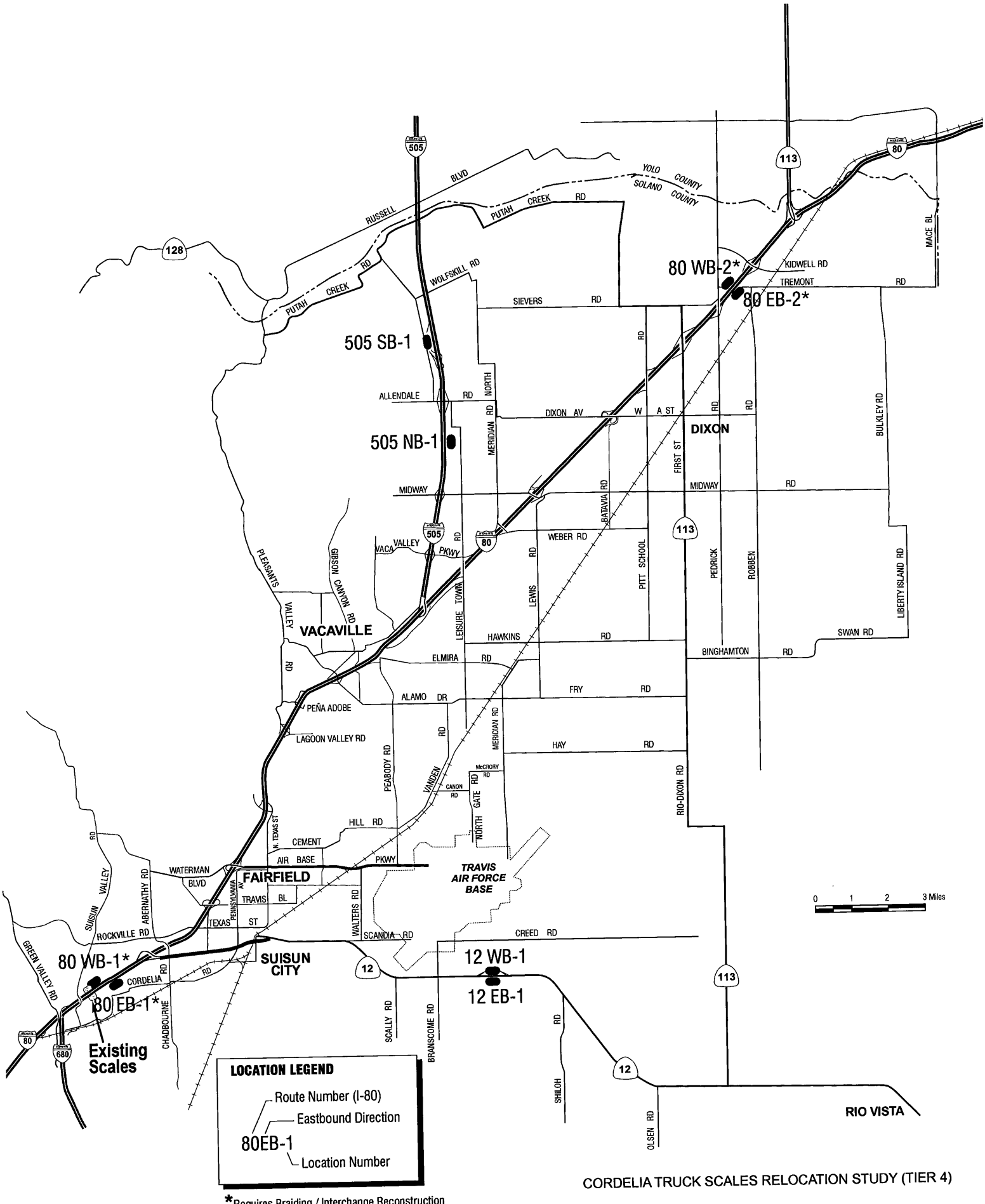
9-30-04

CORDELIA TRUCK SCALES RELOCATION STUDY (TIER 3)

TIER 3: CANDIDATE SITES

SOURCE: *Cordelia Truck Scales Relocation Study, September 2004*

9-30-04



CORDELIA TRUCK SCALES RELOCATION STUDY (TIER 4)

TIER 4: CANDIDATE SITES

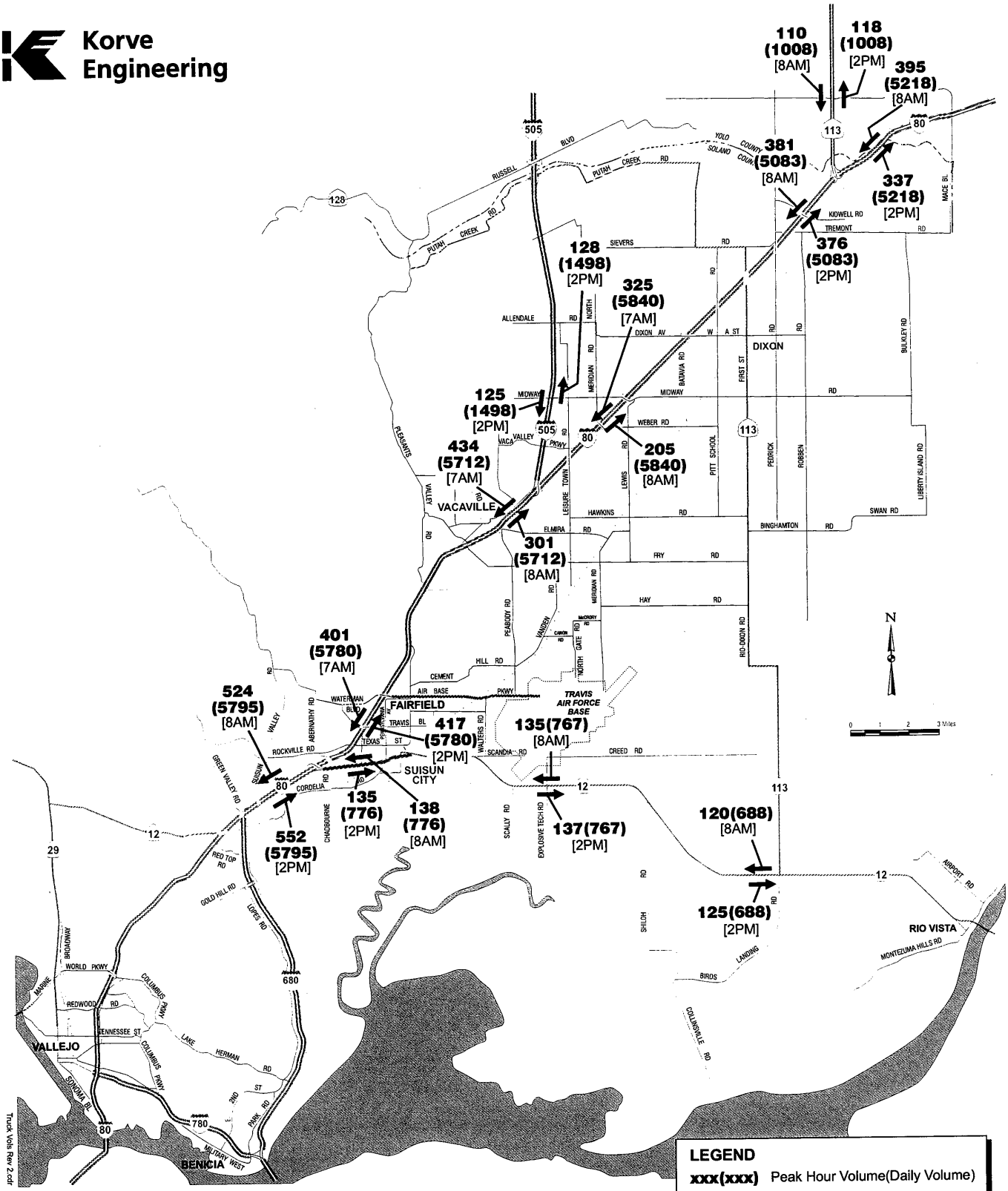
SOURCE: *Cordelia Truck Scales Relocation Study, September 2004*

9-30-04

Attachment C

Peak Hour and Daily Truck Volumes

Korve Engineering



SOURCE: **Daily Volumes** - 2000 & 2001 Annual Average Daily Truck Traffic on the California State Highway System, December 2001 & December 2002, Caltrans;
Peak Hour Volumes - Korve Engineering, October 2002.

NOTE: Peak counts were collected between 6-9 AM and 2-6 PM. Figure shows the peak hour truck traffic for the count periods. The peak hour at each count location is different.

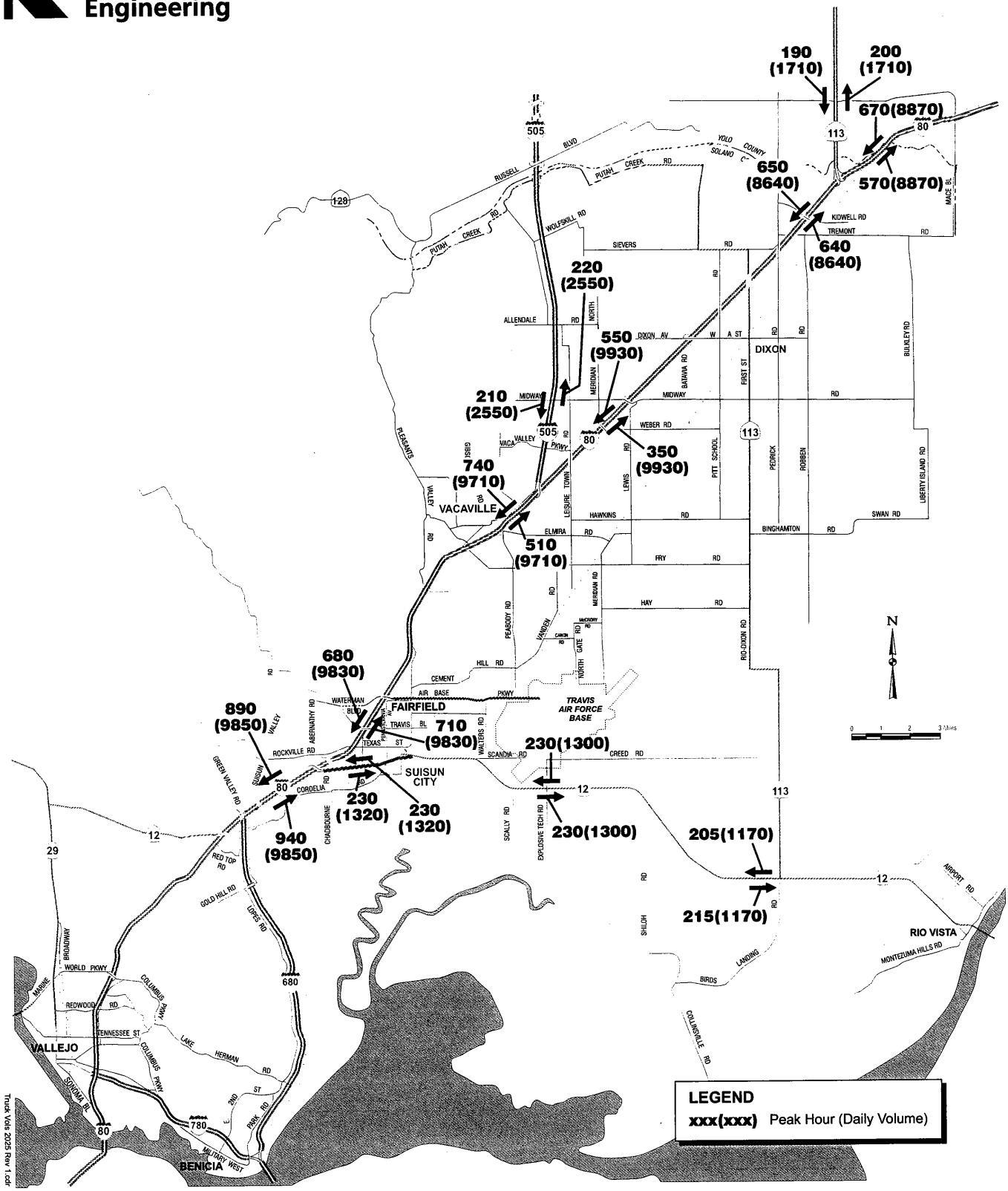
CORDELIA TRUCK SCALES RELOCATION STUDY

EXISTING PEAK HOUR AND DAILY TRUCK VOLUMES

12-10-02
Rev 8-20-03

Truck Vols Rev 2.cdr

Korve Engineering



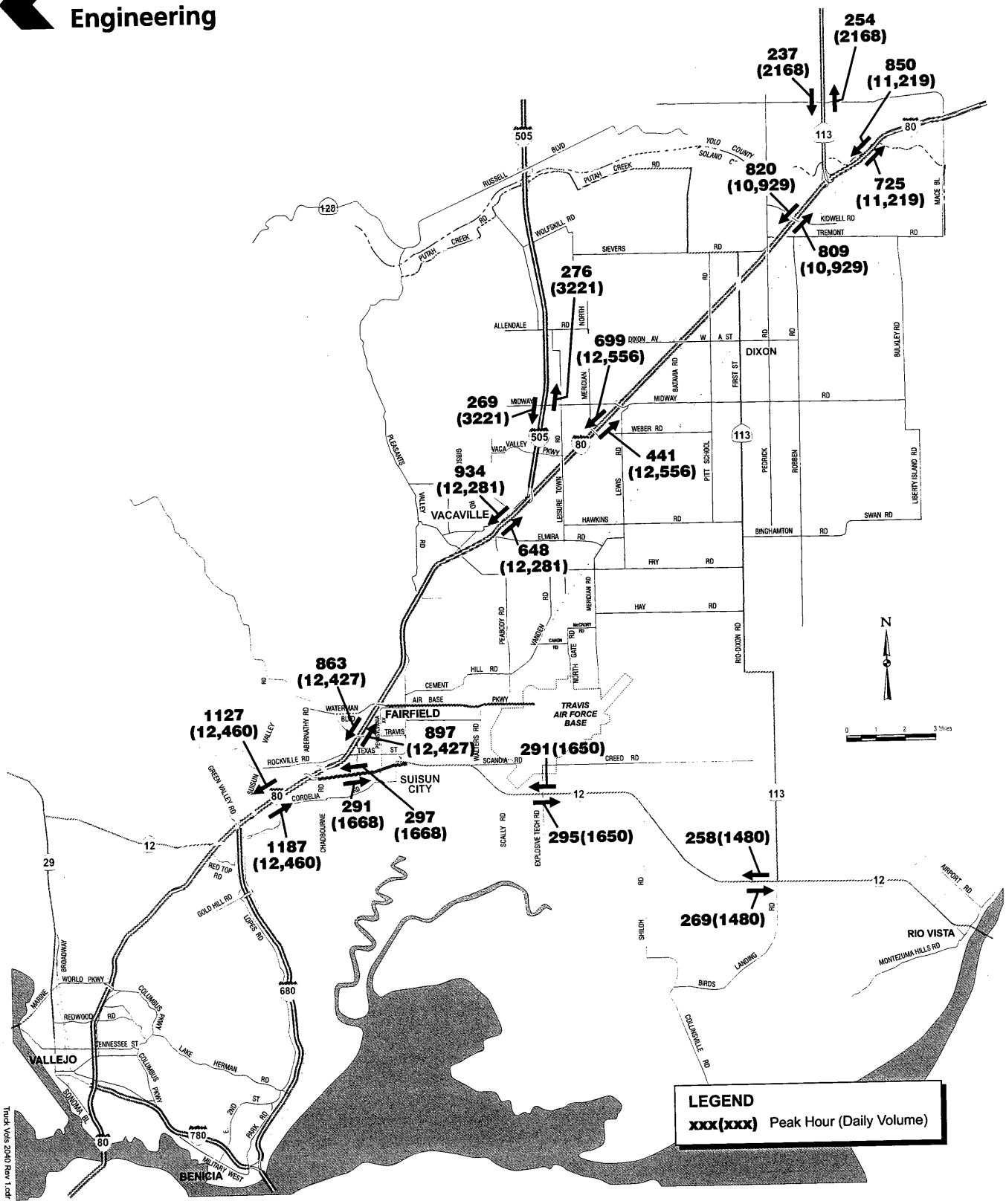
Source: Korve Engineering, October 2002

CORDELIA TRUCK SCALES RELOCATION STUDY

YEAR 2025 PEAK HOUR AND DAILY TRUCK VOLUMES

12-10-02
Rev 8-20-03

Korve Engineering



Truck Vols 2040 Rev 1.cdr

Source: Korve Engineering, October 2002

CORDELIA TRUCK SCALES RELOCATION STUDY

YEAR 2040 PEAK HOUR AND DAILY TRUCK VOLUMES

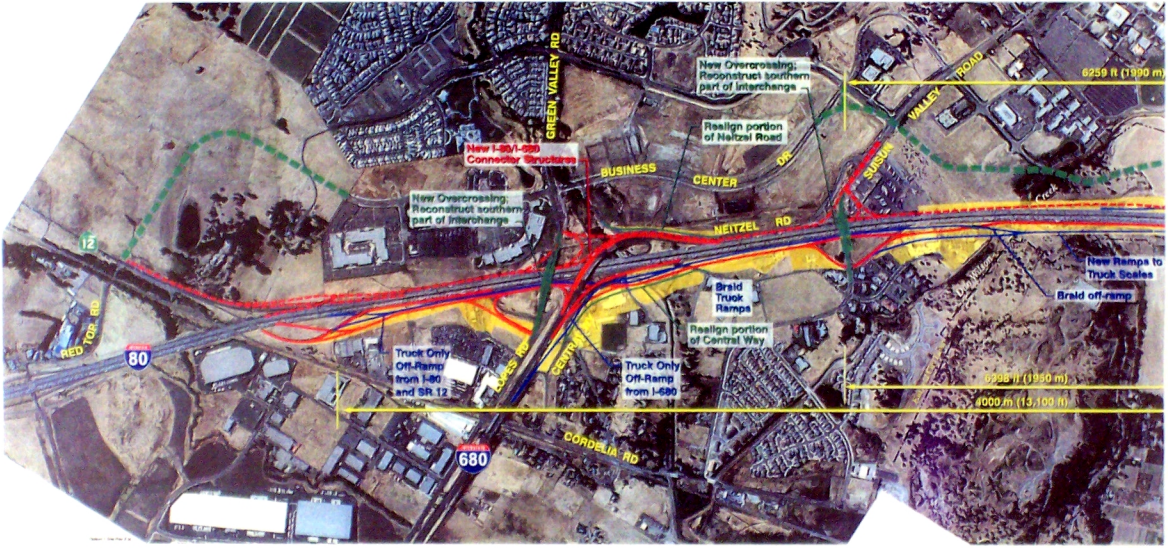
6-20-03
Rev 8-20-03

Attachment D

Conceptual Layouts

Attachment D.1

Option 1: Conceptual Layout



See Page 2

LEGEND

- Truck Ramps
- General Traffic Freeway Ramps
- Local Roadways
- Truck Scale Facility
- Right-of-Way to be acquired
- Ultimate Future Buildout General Traffic Freeway Ramps
- Ultimate Future Buildout Local Roadways

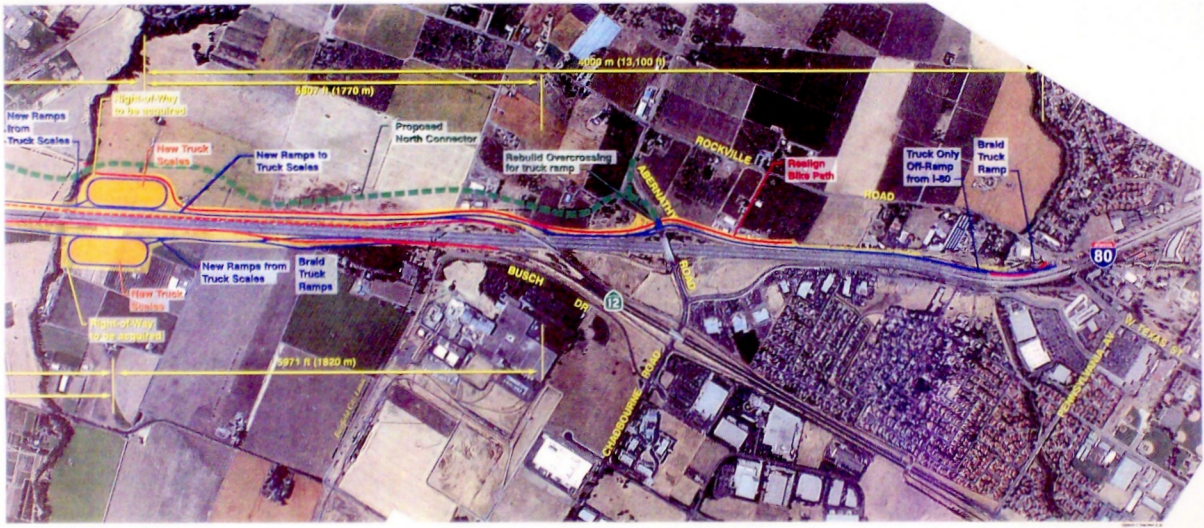
NOT TO SCALE

Korve Engineering

August 18, 2003
Rev 8-21-03

CORDELIA TRUCK SCALES RELOCATION STUDY

CONCEPTUAL LAYOUT
OPTION 1: WB AND EB AT CORDELIA



LEGEND

- Truck Ramps
- General Traffic Freeway Ramps
- Local Roadways
- Truck Scale Facility
- Right-of-Way to be acquired
- Ultimate Future Buildout General Traffic Freeway Ramps
- Ultimate Future Buildout Local Roadways

N

NOT TO SCALE

Korve Engineering

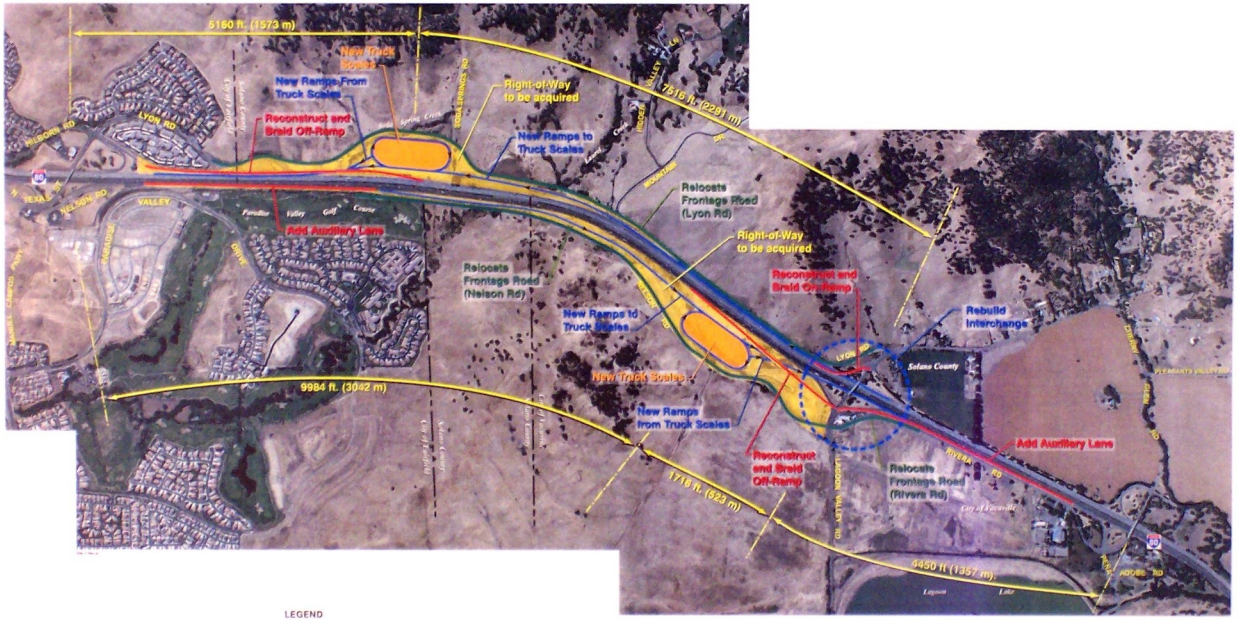
August 18, 2003
Rev 8-21-03

CORDELIA TRUCK SCALES RELOCATION STUDY

CONCEPTUAL LAYOUT
OPTION 1: WB AND EB I-80 AT CORDELIA

Attachment D.2

Option 2: Conceptual Layout



LEGEND

- Truck Ramps
- General Traffic Freeway Ramps
- Local Roadways
- Truck Scale Facility
- Right-of-Way to be acquired

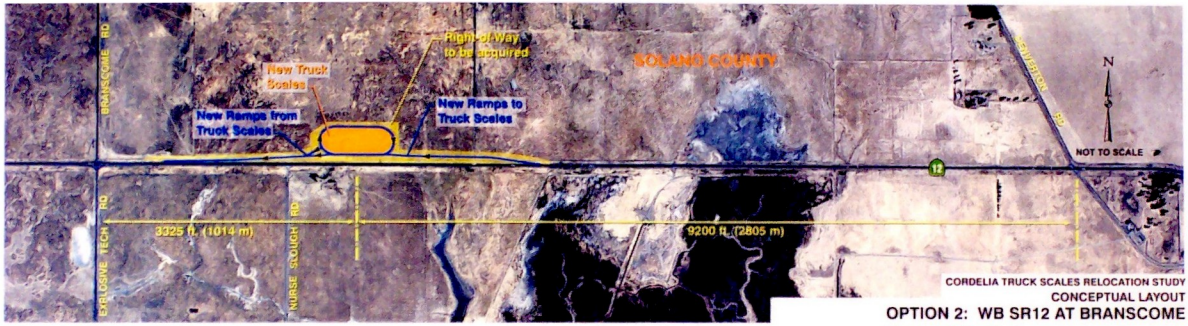
NOT TO SCALE

Korve Engineering

July 3, 2003
Rev 9.21.03

CORDELIA TRUCK SCALES RELOCATION STUDY

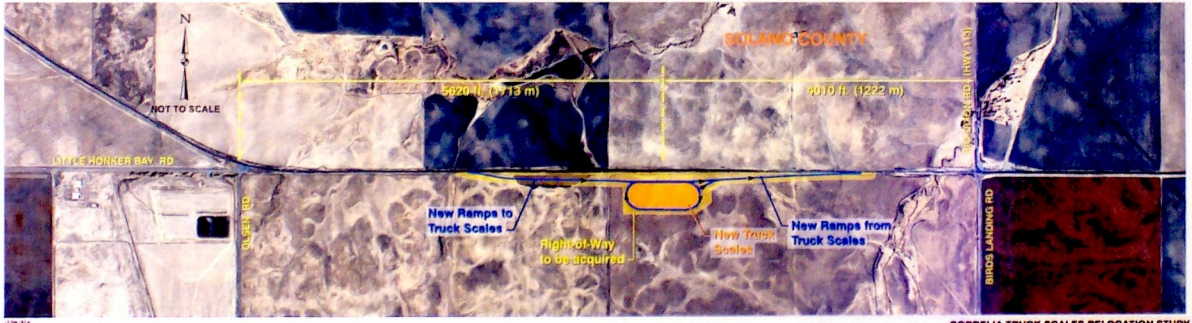
CONCEPTUAL LAYOUT
OPTION 2: WB AND EB I-80 AT LAGOON VALLEY



CORDELIA TRUCK SCALES RELOCATION STUDY
CONCEPTUAL LAYOUT

OPTION 2: WB SR12 AT BRANSCOME

(Same as Option 3)



CORDELIA TRUCK SCALES RELOCATION STUDY
CONCEPTUAL LAYOUT

OPTION 2: EB SR12 AT OLSEN

(Same as Option 3)

Korve Engineering

LEGEND

- Truck Ramps
- General Traffic Freeway Ramps
- Truck Scale Facility
- Right-of-Way to be acquired

August 4, 2003
Rev 9-17-03

Attachment D.3

Option 3: Conceptual Layout

LEGEND

- Truck Ramps
- General Traffic Freeway Ramps
- Truck Scale Facility
- Right-of-Way to be acquired

NOT TO SCALE

Korve Engineering

July 3, 2003
Rev 8.21.03

CORDELIA TRUCK SCALES RELOCATION STUDY

CONCEPTUAL LAYOUT
OPTION 3: WB AND EB I-80 AT MIDWAY-DIXON

CORDELIA TRUCK SCALES RELOCATION STUDY
CONCEPTUAL LAYOUT
OPTION 3: NB I-505 AT MIDWAY-ALLENDALE

CORDELIA TRUCK SCALES RELOCATION STUDY
CONCEPTUAL LAYOUT
OPTION 3: SB I-505 AT ALLENDALE-WOLFSKILL

Korve Engineering

July 11, 2003
Revised 9-17-03

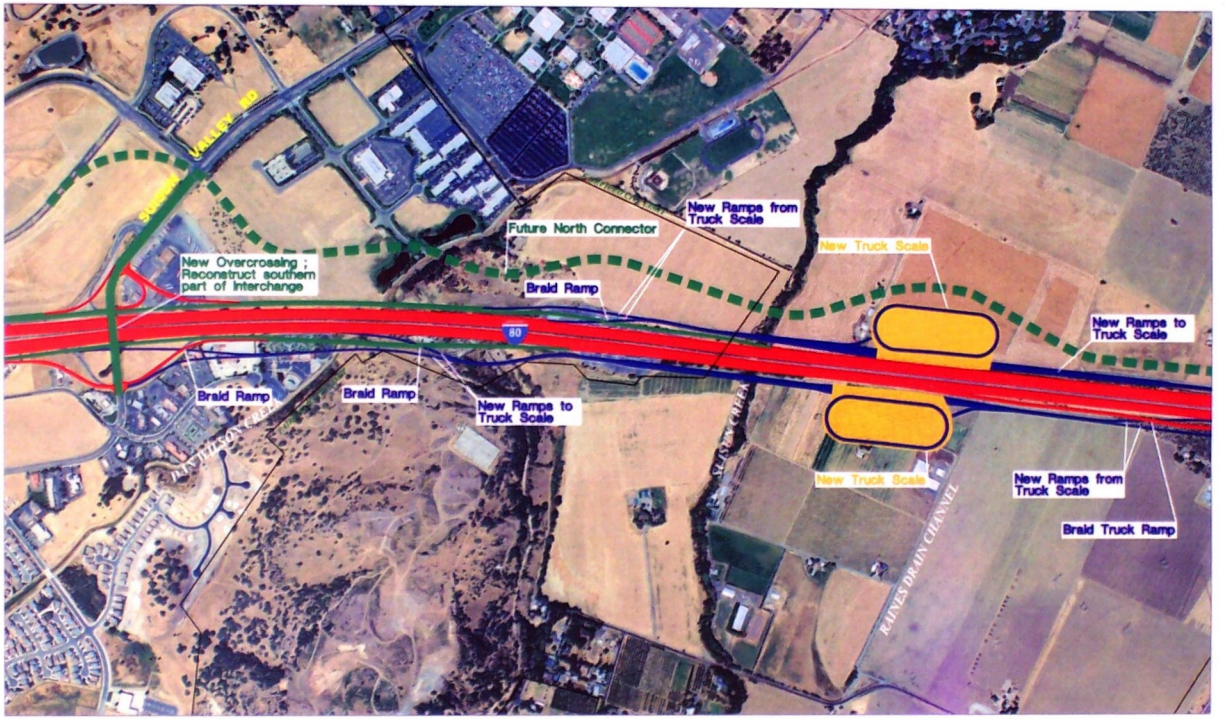
LEGEND

- Truck Ramps
- General Traffic Freeway Ramps
- Local Roadways
- Truck Scale Facility
- Right-of-Way to be acquired

NOT TO SCALE

Attachment D.4

Revised Option 1: Conceptual Layout



LEGEND

- Truck Ramps
- Freeway/Ramps
- Local Roadways/Collector-Distributor Roads
- Local Roadways (Future)
- Truck Scale Facility

Not To Scale

NOLTE BEYOND ENGINEERING

September 29, 2004
Rev. February 24, 2005

CORDELIA TRUCK SCALES RELOCATION STUDY

CONCEPTUAL LAYOUT
REVISED OPTION 1: WB AND EB I-80 AT CORDELIA

LEGEND

- Truck Ramps
- Freeway/Ramps
- Local Roadways/Collector-Distributor Roads
- Local Roadways (Future)
- Truck Scale Facility

Not To Scale

NOLTE

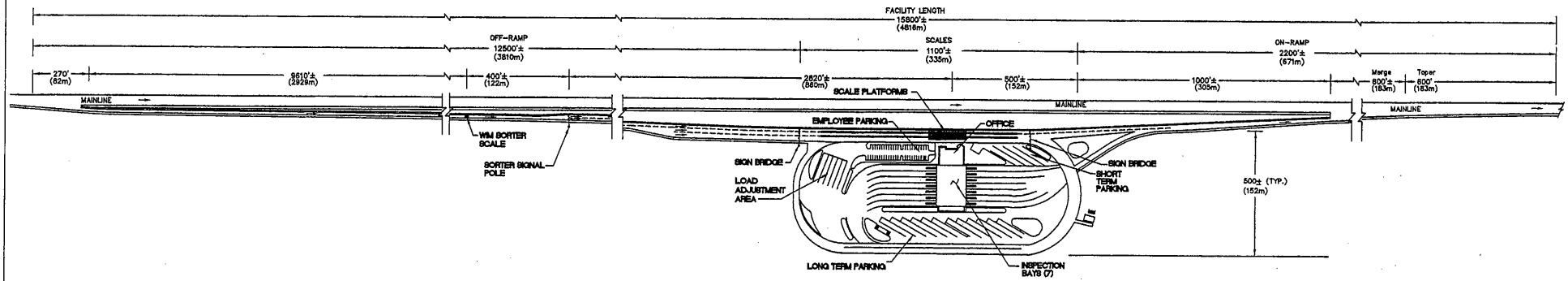
September 28, 2004

CORDELIA TRUCK SCALES RELOCATION STUDY

CONCEPTUAL LAYOUT
REVISED OPTION 1: WB AND EB I-80 AT CORDELIA

Attachment E

Scale Footprints



EB AND WB I-80 AT CORDELIA

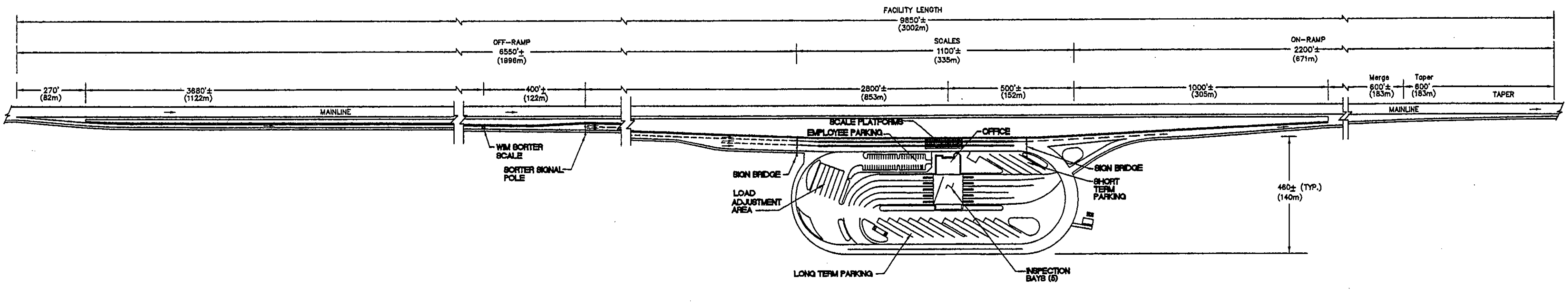
NOTE: FOOTPRINT IS BASED ON PEAK HOUR TRUCK DESIGN VOLUME OF 1000 IN YEAR 2040.

SCALE 1"=400'

400 0 400

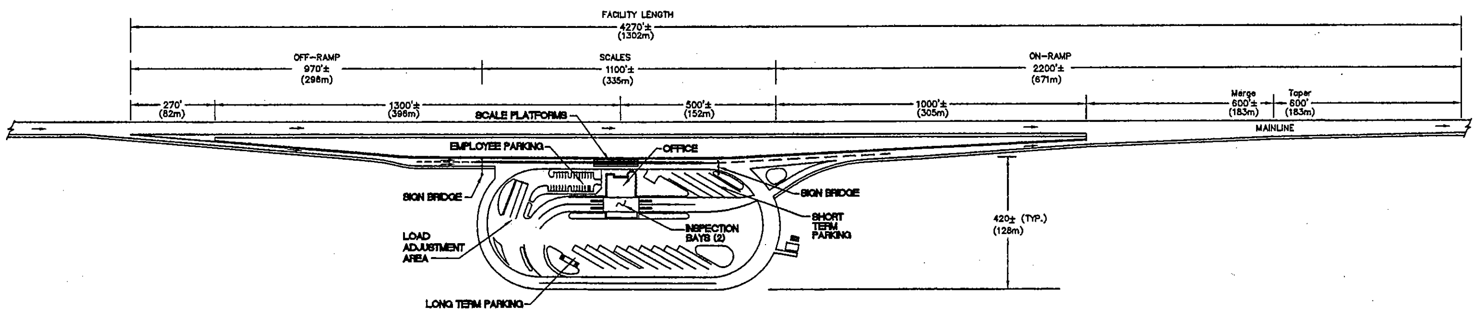
Korve Engineering

CORDELIA TRUCK SCALE RELOCATION STUDY
OPTION 1 SCALE FOOTPRINTS



EB AND WB I-80 AT LAGOON VALLEY

NOTE: FOOTPRINT IS BASED ON PEAK HOUR TRUCK DESIGN VOLUME OF 765 IN YEAR 2040.



WB SR12 AT BRANSCOME
EB SR12 AT OLSEN

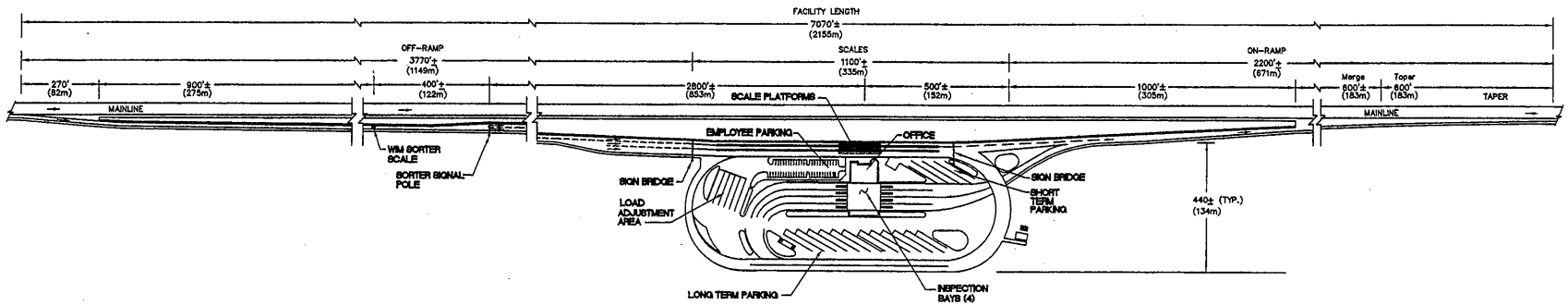
NOTE: FOOTPRINT IS BASED ON PEAK HOUR TRUCK DESIGN VOLUME OF 250 IN YEAR 2040.

SCALE 1"=400'
400 0 400

Korve Engineering

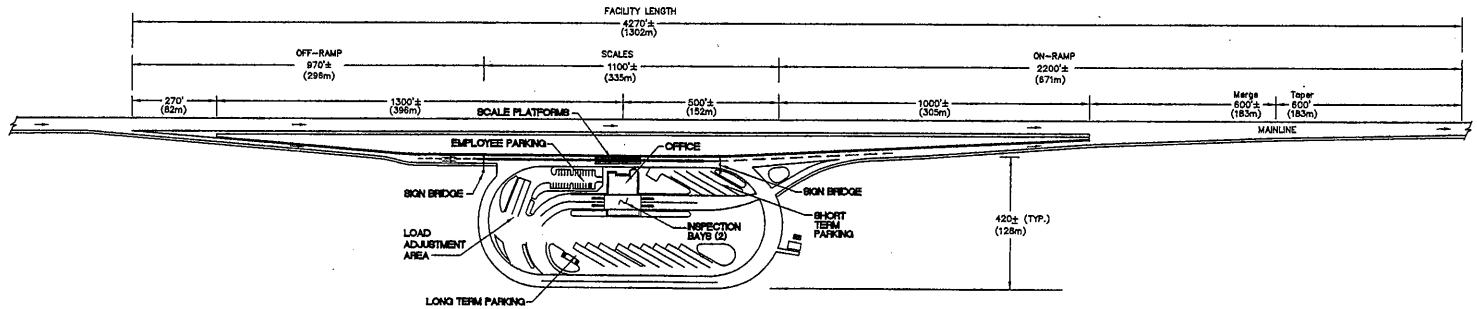
CORDELIA TRUCK SCALE RELOCATION STUDY
OPTION 2 SCALE FOOTPRINTS

REV. 09/12/2003



EB AND WB I-80 AT MIDWAY - DIXON

NOTE: FOOTPRINT IS BASED ON PEAK HOUR TRUCK DESIGN VOLUME OF 600 IN YEAR 2040.



EB SR12 AT OLSEN
WB SR12 AT BRANSCOME
NB I-505 AT MIDWAY - ALLENDALE
SB I-505 AT ALLENDALE - WOLFSKILL

NOTE: FOOTPRINT IS BASED ON PEAK HOUR TRUCK DESIGN VOLUME OF 250 IN YEAR 2040.

SCALE 1"=400'

400 0 400

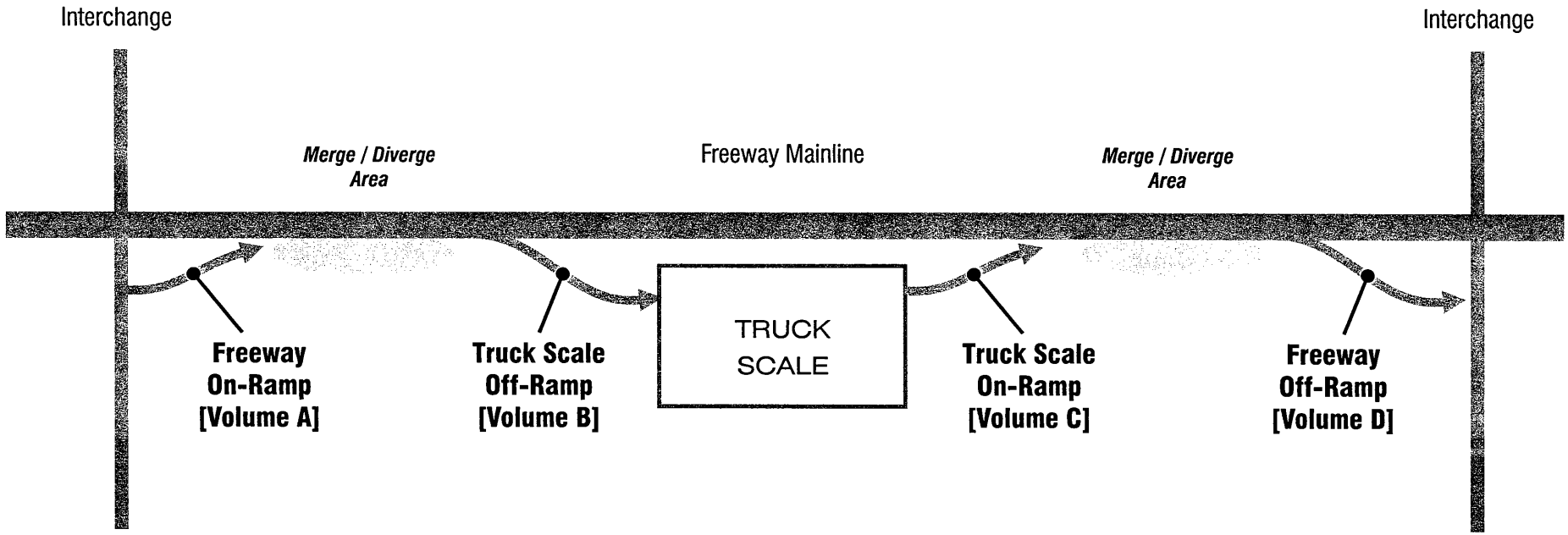
Korve Engineering

CORDELIA TRUCK SCALE RELOCATION STUDY
OPTION 3 SCALE FOOTPRINTS

REV. 09/12/2003

Attachment F

Traffic Weaving Index



TWI = A + B + C + D

Korve Engineering

CORDELIA TRUCK SCALES RELOCATION STUDY

TRAFFIC WEAVING INDEX (TWI)

Conflicting Volumes of Freeway Ramps and Truck Scale Ramps

8-20-03

Attachment G

Environmental Considerations

Environmental Considerations by Site/Option

Option/ Location	Biological Resources	Cultural/Historic Resources	Land Use
Option 1			
WB 80 at Cordelia	Impacts on Suisun Creek, potential seasonal wetland, and agricultural habitat. Potential impacts on special-status species, if present. Suisun Creek and any seasonal wetlands are sensitive biological resources. Permits would be required for activities affecting the creek. Seasonal wetland habitat and special-status species may be regulated.	High sensitivity for archaeological resources; archaeological survey needed.	Compatible existing and planned land uses. The area around this location is designated for Business and Industrial Park on the Fairfield General Plan.
EB 80 at Cordelia	Impacts on Suisun Creek, potential seasonal wetland, and agricultural habitat. Potential impacts on special-status species, if present. Suisun Creek and any seasonal wetlands are sensitive biological resources. Permits would be required for activities affecting the creek. Seasonal wetland habitat and special-status species may be regulated.	Moderate sensitivity for archaeological resources; potentially historic structures on site; archaeological and architectural surveys needed.	Compatible planned land uses. The area around this location is designated for Highway and Regional Commercial on the Fairfield General Plan.
Option 2			
WB 80 at Lagoon Valley	Impacts on Laurel Creek, riparian habitat, and annual grassland. Potential impacts on special-status species, if present. Laurel Creek, riparian habitat, and special-status species are sensitive biological resources. Permits would be required for activities affecting the creek. Riparian habitat and special-status species may be regulated.	High sensitivity for archaeological resources; archaeological survey needed.	Potentially compatible planned land uses. This area is outside of the Urban Growth Boundary for the City of Fairfield, but is within the Rancho Solano Master Plan area. It is designated as Agricultural Intensive on the Solano County General Plan.
EB 80 at Lagoon Valley	Impacts on seasonal drainage and annual grassland. Potential impacts on special-status species, if present. The seasonal drainage is a sensitive biological resource. Permits would be required for activities affecting the seasonal drainage. Special-status species may be regulated.	High sensitivity for archaeological resources; archaeological survey needed.	Potentially compatible land uses. This site and the area around it are designated as Agricultural Intensive on the Solano County General Plan.

Prepared By: Jones & Stokes, Associates

Environmental Considerations by Site/Option

Option/ Location	Biological Resources	Cultural/Historic Resources	Land Use
WB SR12 at Branscome	Potential impacts to seasonal wetlands and adjacent upland habitat, both of which may provide habitat for special status species. Seasonal wetlands and special-status species are sensitive biological resources and may be regulated. Impacts on wetlands would require permits.	Low sensitivity for archaeological resources; archaeological survey needed.	Potentially compatible land use. This site and the area around it are designated as Agricultural Extensive on the Solano County General Plan. May be minor conflicts with Suisun Marsh Management Plan (BCDC considers Marsh boundary to be the northern limit of SR 12 right-of-way).
EB SR12 at Olsen	Potential impacts seasonal drainage, annual grassland and, if present, special-status species. Drainages or wetlands may be present on, or adjacent to, the site. Seasonal wetlands and special-status species are sensitive biological resources and may be regulated. Impacts on wetlands or drainages would require permits.	No cultural resource records review was conducted for this site. Site is near drainage features commonly associated with cultural resources and should be assumed to have a high sensitivity for cultural resources. Archaeological surveys would be required.	Potentially compatible land use. This site and the area around it are designated as Agricultural Extensive on the Solano County General Plan.
Option 3			
WB 80 at Midway-Dixon	Impacts on row crop and orchard habitats and on McCune Creek, which does not support riparian vegetation. Potential impacts on special-status species, if present. McCune Creek is a sensitive biological resource. Permits would be required for activities affecting the creek, and special-status species may be regulated.	Moderate sensitivity for archaeological resources; archaeological survey needed.	Potentially compatible land use. This site and the area around it are designated as Agricultural Intensive on the Solano County General Plan.
EB 80 at Midway-Dixon	Impacts on agricultural land and McCune Creek. Potential impacts on special-status species, if present. McCune Creek is a sensitive biological resource. Permits would be required for activities affecting the creek, and special-status species may be regulated.	Moderate sensitivity for archaeological resources; archaeological survey needed.	Potentially compatible land use. This site and the area around it are designated as Agricultural Intensive on the Solano County General Plan.
WB SR12 at Branscome	*See Option 2A above*		
EB SR12 at Olsen	*See Option 2A above*		

Prepared By: Jones & Stokes, Associates

Environmental Considerations by Site/Option

Option/ Location	Biological Resources	Cultural/Historic Resources	Land Use
NB 505 at Midway-Allendale	Impacts on row crops and an agricultural ditch that supports vegetation (seasonal wetland or marsh). Potential impacts on special-status species, if present. Special-status species are sensitive biological resources and may be regulated. Site has moderate biological sensitivity.	Low-moderate sensitivity for archaeological resources; structures may be on adjacent properties; architectural and archaeological surveys needed.	Potentially incompatible land uses. This site and the area around it is designated as Agricultural Intensive on the Solano County General Plan, but residential neighborhoods in the City of Dixon are located on the other side of the freeway. Design measures could be required to ensure compatibility.
SB 505 at Allendale - Wolfskill	Impacts on annual grassland and potentially on seasonal wetland habitat. Potential impacts on special-status species, if present. Seasonal wetland habitat and special-status species would be sensitive biological resources and may be regulated.	Moderate sensitivity for archaeological resources; archaeological survey needed.	Potentially compatible land use. This site and the area around it is designated as Agricultural Intensive on the Solano County General Plan

Prepared By: Jones & Stokes, Associates

Attachment H

Capital Cost Estimates

Attachment H.1

Option 1:
Capital Cost Estimates

Cordelia Truck Scale Relocation Study - Cost Summary 9/28/2004

OPTION 1: EB I-80 AT CORDELIA		
DESCRIPTION		COST
Sub-total Construction Costs		$145,043,000
Right of Way Cost		$39,980,000
Capital Outlay Cost		$185,023,000
Environmental Mitigation Allowance[1]	2%	$3,700,000
Construction Change Order Contingency[1]	6%	$11,100,000
Project Reserve	7%	$12,950,000
Total Construction Costs		$212,773,000
Project Development Costs[2]		
Design Engineering	10%	$21,280,000
Construction Management	8%	$17,020,000
Agency Costs	3%	$6,380,000
Environmental Documentation	3%	$6,380,000
Project Management	3%	$6,380,000
Subtotal Project Development Costs		$57,440,000
Total Project Costs		$270,000,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $1000k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-80
KP (PM) _____
EA _____
Program Code _____

PROJECT DESCRIPTION:

Limits Total cost required to build EB truck scales stand alone assuming 1,000 trucks/hour configuration.

Proposed Improvement (Scope) _____

Alternate _____

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 104,243,000
TOTAL STRUCTURE ITEMS	$ 40,800,000
SUBTOTAL CONSTRUCTION COSTS	$ 145,043,000
TOTAL RIGHT OF WAY ITEMS	$ 39,980,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 185,023,000

Reviewed by District Program Manager _____ Date _____
(Signature)

Approved by Project Manager _____ Date _____
(Signature)

Phone No. _____

District-County-Route 04-SOL-80
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation	420000	CY	$ 10	$ 4,200,000	
Imported Borrow	60000	CY	$ 12	$ 720,000	
Clearing & Grubbing	1	LS	$ 900,000	$ 900,000	
Develop Water Supply	1	LS	$ -	$ -	
				Subtotal Earthwork	$ 5,820,000
Section 2 Pavement Structural Section					
Pavement	2230000	SF	$ 7	$ 15,610,000	
Blanket and Edge Drains	40000	LF	$ 20	$ 800,000	
				Subtotal Pavement Structural Section	$ 16,410,000
Section 3 Drainage					
Large Drainage Facilities	1	LS	$ 1,000,000	$ 1,000,000	
Project Drainage (X-Drains, overside, etc.	1	LS	$ 2,000,000	$ 2,000,000	
Channel Improvements	1	LS	$ 1,000,000	$ 1,000,000	
				Subtotal Drainage	$ 4,000,000

District-County-Route 04-SOL-80
KP (PM)
EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls	178000	SF	$ 51	$ 9,078,000	
Noise Barriers	0	SF	$ -	$ -	
Concrete Barrier	21000	LF	$ 77	$ 1,617,000	
Metal Beam Guard Rail	6500	LF	$ 30	$ 195,000	
Site Planting & Irrigation	45	Ac	$ 34,000	$ 1,530,000	
SWPPP	1	LS	$ 1,400,000	$ 1,400,000	
Minor Concrete	48000	SF	$ 8	$ 384,000	
AC Dike	20000	LF	$ 5	$ 100,000	
Aerial Lead	1	LS	$ 1,100,000	$ 1,100,000	
New Truck Facility Site	1	EA	$ 7,000,000	$ 7,000,000	
				Subtotal Specialty Items	$ 22,404,000

Section 5 Traffic Items					
Lighting	1	LS	$ 1,500,000	$ 1,500,000	
Traffic Delineation Items	100000	LF	$ 1	$ 100,000	
Traffic Signals	3	EA	$ 50,000	$ 150,000	
Overhead Signs	0	0	$ -	$ -	
Roadside Signs	0	0	$ -	$ -	
Traffic Control System	1	LS	$ 9,000,000	$ 9,000,000	
Transportation Management Plan	0	0	$ -	$ -	
Staging/Detour Allowance	0	0	$ -	$ -	
Ramp Meters	1	EA	$ 80,000	$ 80,000	
Permanent Signing	1	LS	$ 1,650,000	$ 1,650,000	
Remove Yellow Thermoplastic Stripe	6500	LF	$ 4	$ 26,000	
				Subtotal Traffic Items	$ 12,506,000

TOTAL SECTIONS 1 thru 5 $ 61,140,000

District-County-Route 04-SOL-80
KP (PM)
EA

Section 6 Minor Items		Item Cost	Section Cost
$ 61,140,000 (Subtotal Sections 1 thru 5)	x (10%) =	$ 6,114,000	
		TOTAL MINOR ITEMS	$ 6,114,000

Section 7 Roadway Mobilization			
$ 67,254,000 (Subtotal Sections 1 thru 6)	x (10%) =	$ 6,725,400	
		TOTAL ROADWAY MOBILIZATION	$ 6,725,000

Section 8 Roadway Additions

Supplemental Work

$ 67,254,000 (Subtotal Sections 1 thru 6)	x (10%) =	$ 6,725,400

Contingencies

$ 67,254,000 (Subtotal Sections 1 thru 6)	x (35%) =	$23,538,900

TOTAL ROADWAY ADDITIONS $ 30,264,000

TOTAL ROADWAY ITEMS $104,243,000
(Subtotal Sections 1 thru 8)

Estimate Prepared By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

Estimate Checked By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

** Use appropriate percentage per Chapter 20.

District-County-Route 04-SOL-80
KP (PM)
EA

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility				$ -
			10% Mobilization	$ -
			20% Contingency	$ -
			Subtotal	$ 11,100,000

	Total of all structures
Bridge Name	
Structure Type	
Width (out to out) - (ft)	
Span Lengths - (ft)	
Total Area - (ft2)	198,000
Cost Per ft2 (incl. 10% mobilization and 20% contingency)	$ 150
Total Cost for Structure	$29,700,000

$29,700,000

SUBTOTAL STRUCTURES ITEMS $ 40,800,000
(Sum of Total Cost for Structures)

Railroad Related Costs: _____ $ _____

SUBTOTAL RAILROAD ITEMS $ -

TOTAL STRUCTURES ITEMS $ 40,800,000
(Sum of Structures Items plus Railroad Items)

COMMENTS:

Estimate Prepared By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

NOTE: If appropriate attach additional pages and backup.

District-County-Route 04-SOL-80
KP (PM) _____
EA _____

III. RIGHT OF WAY ITEMS **ESCALATED VALUE (100% Contingency)**

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
86	$ 215,000	$ 18,490,000
100% Contingency		$ 21,490,000
Subtotal		$ 39,980,000

B. Utility Relocation (State share) $ (included in contingency)

C. Relocation Assistance $ (included in contingency)

D Clearance/Demolition $ (included in contingency)

E. Title and Escrow Fees $ (included in contingency)

TOTAL RIGHT OF WAY ITEMS $ 39,980,000
(Escalated Value)

Anticipated Date of Right of Way Certification $_____
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:

_____
_____
_____
_____

Right of Way Branch Cost Estimate for Work* $_____

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

NOTE: If appropriate, attach additional pages and backup.

Cordelia Truck Scale Relocation Study - Cost Summary 9/28/2004

OPTION 1: WB I-80 AT CORDELIA		
DESCRIPTION		COST
Sub-total Construction Costs		$71,489,000
Right of Way Cost		$27,780,000
Capital Outlay Cost		$99,269,000
Environmental Mitigation Allowance[1]	2%	$1,990,000
Construction Change Order Contingency[1]	6%	$5,960,000
Project Reserve	7%	$6,950,000
Total Construction Costs		$114,169,000
Project Development Costs[2]		
Design Engineering	10%	$11,420,000
Construction Management	8%	$9,130,000
Agency Costs	3%	$3,430,000
Environmental Documentation	3%	$3,430,000
Project Management	3%	$3,430,000
Subtotal Project Development Costs		$30,840,000
Total Project Costs		$145,000,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $1000k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-80
KP (PM) _____
EA _____
Program Code _____

PROJECT DESCRIPTION:

Limits Total cost required to build WB truck scales stand alone assuming 1,000 trucks/hour configuration.

Proposed Improvement (Scope) _____

Alternate _____

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 44,789,000
TOTAL STRUCTURE ITEMS	$ 26,700,000
SUBTOTAL CONSTRUCTION COSTS	$ 71,489,000
TOTAL RIGHT OF WAY ITEMS	$ 27,780,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 99,269,000

Reviewed by District Program Manager _____ Date _____
(Signature)

Approved by Project Manager _____ Date _____
(Signature)

Phone No. _____

District-County-Route 04-SOL-80
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation	175000	CY	$ 10	$ 1,750,000	
Imported Borrow	13000	CY	$ 12	$ 156,000	
Clearing & Grubbing	1	LS	$ 120,000	$ 120,000	
Develop Water Supply	1	LS	$ -	$ -	
				Subtotal Earthwork	$ 2,026,000
Section 2 Pavement Structural Section					
Pavement	840000	SF	$ 7	$ 5,880,000	
Blanket and Edge Drains	25000	LF	$ 20	$ 500,000	
Bike Path	1	LS	$ 450,000	$ 450,000	
				Subtotal Pavement Structural Section	$ 6,830,000
Section 3 Drainage					
Large Drainage Facilities	1	LS	$ 1,000,000	$ 1,000,000	
Project Drainage (X-Drains, overside, etc.	1	LS	$ 1,650,000	$ 1,650,000	
Channel Improvements	1	LS	$ 450,000	$ 450,000	
				Subtotal Drainage	$ 3,100,000

District-County-Route 04-SOL-80
KP (PM)
EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Wall	16000	SF	$ 51	$ 816,000	
Noise Barriers	0	SF	$ -	$ -	
Concrete Barrier	3300	LF	$ 77	$ 254,100	
Metal Beam Guard Rail	650	LF	$ 30	$ 19,500	
Site Planting & Irrigation	7	Ac	$ 34,000	$ 238,000	
SWPPP	1	LS	$ 200,000	$ 200,000	
Minor Concrete	16000	SF	$ 8	$ 128,000	
AC Dike	1600	LF	$ 5	$ 8,000	
Aerial Lead	1	LS	$ 250,000	$ 250,000	
New Truck Facility Site	1	EA	$ 7,000,000	$ 7,000,000	
				Subtotal Specialty Items	$ 8,913,600

Section 5 Traffic Items					
Lighting	1	LS	$ 655,000	$ 655,000	
Traffic Delineation Items	45000	LF	$ 1	$ 45,000	
Traffic Signals	0	EA	$ 50,000	$ -	
Overhead Signs	0	0	$ -	$ -	
Roadside Signs	0	0	$ -	$ -	
Traffic Control System	1	LS	$ 4,000,000	$ 4,000,000	
Transportation Management Plan	0	0	$ -	$ -	
Staging/Detour Allowance	0	0	$ -	$ -	
Ramp Meters	0	EA	$ 80,000	$ -	
Permanent Signing	1	LS	$ 675,000	$ 675,000	
Remove Yellow Thermoplastic Stripe	6000	LF	$ 4	$ 24,000	
				Subtotal Traffic Items	$ 5,399,000

TOTAL SECTIONS 1 thru 5 $ 26,268,600

District-County-Route 04-SOL-80
KP (PM)
EA

Section 6 Minor Items		Item Cost	Section Cost
$ 26,268,600 (Subtotal Sections 1 thru 5)	x (10%) =	$ 2,626,900	
		TOTAL MINOR ITEMS	$ 2,627,000

Section 7 Roadway Mobilization			
$ 28,895,500 (Subtotal Sections 1 thru 6)	x (10%) =	$ 2,889,550	
		TOTAL ROADWAY MOBILIZATION	$ 2,890,000

Section 8 Roadway Additions

Supplemental Work
$ 28,895,500 (Subtotal Sections 1 thru 6) x (10%) = $ 2,889,550

Contingencies
$ 28,895,500 (Subtotal Sections 1 thru 6) x (35%) = $10,113,430

TOTAL ROADWAY ADDITIONS $ 13,003,000

TOTAL ROADWAY ITEMS $ 44,789,000
(Subtotal Sections 1 thru 8)

Estimate Prepared By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

Estimate Checked By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

** Use appropriate percentage per Chapter 20.

District-County-Route 04-SOL-80
KP (PM)
EA

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility				$ -
			10% Mobilization	$ -
			20% Contingency	$ -
			Subtotal	$ 11,100,000

	Total of all	
Bridge Name	structures	
Structure Type		
Width (out to out) - (ft)		
Span Lengths - (ft)		
Total Area - (ft2)	104,000	
Cost Per ft2 (incl. 10% mobilization and 20% contingency)	$ 150	
Total Cost for Structure	$15,600,000	$15,600,000

SUBTOTAL STRUCTURES ITEMS $ 26,700,000
(Sum of Total Cost for Structures)

Railroad Related Costs: _____ $ _____

SUBTOTAL RAILROAD ITEMS $ -

TOTAL STRUCTURES ITEMS $ 26,700,000
(Sum of Structures Items plus Railroad Items)

COMMENTS:

Estimate Prepared By Mike Lohman Phone # (925) 938-0383 Date 09/27/04

NOTE: If appropriate attach additional pages and backup.

District-County-Route 04-SOL-80
KP (PM) _____
EA _____

III. RIGHT OF WAY ITEMS **ESCALATED VALUE (100% Contingency)**

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
46	$ 215,000	$ 9,890,000
100% Contingency		$ 17,890,000
Subtotal		$ 27,780,000

B. Utility Relocation (State share) $ (included in contingency)

C. Relocation Assistance $ (included in contingency)

D Clearance/Demolition $ (included in contingency)

E. Title and Escrow Fees $ (included in contingency)

TOTAL RIGHT OF WAY ITEMS $ 27,780,000
(Escalated Value)

Anticipated Date of Right of Way Certification $_____
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:

_____
_____
_____
_____

Right of Way Branch Cost Estimate for Work* $_____

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

NOTE: If appropriate, attach additional pages and backup.

Attachment H.2

Option 2:
Capital Cost Estimates

Cordelia Truck Scale Relocation Study - Capital Cost Summary

OPTION 2: EB I-80 AT LAGOON VALLEY

DESCRIPTION		COST
Sub-total Construction Costs		$71,900,000
Right of Way Cost		$6,100,000
Capital Outlay Cost		$78,000,000
Environmental Mitigation Allowance[1]	2%	$1,600,000
Construction Change Order Contingency[1]	6%	$4,600,000
Project Reserve[1]	7%	$5,400,000
Total Capital Costs and Reserves		$89,600,000
Project Development Costs[2]		
Design Engineering	10%	$8,900,000
Construction Management	8%	$7,200,000
Agency Costs	3%	$2,700,000
Environmental Documentation	3%	$2,700,000
Project Management	3%	$2,700,000
Subtotal Project Development Costs		$24,200,000
Total Project Costs		$113,800,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-80
KP (PM)
EA
Program Code

DESCRIPTION:
OPTION 2: EB I-80 AT LAGOON VALLEY

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 60,530,000
TOTAL STRUCTURE ITEMS	$ 11,285,000
SUBTOTAL CONSTRUCTION COSTS	$ 71,815,000
TOTAL RIGHT OF WAY ITEMS	$ 6,072,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 77,887,000

Reviewed by Project Engineer _____ (510) 763-2929 _____
Brandon Whitehurst (Phone No.) (Date)

Approved by Project Manager _____ (510) 763-2929 _____
Hans Korve (Phone No.) (Date)

District-County-Route 04-SOL-80
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation - Ramp	2550	LF	$ 30	$ 76,500	
Roadway Excavation - Auxiliary Lane	4750	LF	$ 40	$ 190,000	
Roadway Excavation - Frontage Road	10760	LF	$ 30	$ 322,800	
Roadway Excavation - Site	66750	CY	$ 10	$ 667,500	
Import Borrow - Braided Structure	30000	CY	$ 12	$ 360,000	
Earthwork - Site/Access	1	LS	$ 3,000,000	$ 3,000,000	
Clearing & Grubbing	35	Acres	$ 3,000	$ 105,000	
Develop Water Supply	1	LS	$ 100,000	$ 100,000	
				Subtotal Earthwork	$ 4,830,000
Section 2 Pavement Structural Section					
Pavement Section - Ramp (1)	2200	LF	$ 125	$ 275,000	
Pavement Section - Ramp (2)	2070	LF	$ 200	$ 414,000	
Pavement Section - Aux Lane	4750	LF	$ 140	$ 665,000	
Pavement Section - Frontage Road	10760	LF	$ 100	$ 1,076,000	
Pavement - Site*	821640	SF	$ 5	$ 4,108,200	
Edge Drains - Ramp	4000	LF	$ 20	$ 80,000	
				Subtotal Pavement Structural Section	$ 6,620,000
Section 3 Drainage					
Large Drainage Facilities	0	0	$ -	$ -	
Culvert at Laurel Creek Crossing	200	LF	$ 500	$ 100,000	
Storm Drains	3000	LF	$ 85	$ 255,000	
Project Drainage (X-Drains, overside, etc.	1	LS	$ 500,000	$ 500,000	
	0	0	$ -	$ -	
				Subtotal Drainage	$ 860,000

*Truck Scale Site Pavement includes Racetrack, Parking, Load Adjustment, Off-Ramp and On-Ramp.

District-County-Route 04-SOL-80
KP (PM)
EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls	750	LF	$ 300	$ 225,000	
Noise Barriers	0	0	$ -	$ -	
Barriers and Guardrails	1500	LF	$ 75	$ 112,500	
Equipment/Animal Passes	0	0	$ -	$ -	
Site Planting & Irrigation	1	LS	$ 300,000	$ 300,000	
Replacement Planting	0	0	$ -	$ -	
Erosion Control	1	LS	$ 150,000	$ 150,000	
Slope Protection	0	0		$ -	
SWPPP	1	LS	$ 50,000	$ 50,000	
Truck Scales - 1 Static / 2 WIM / Signals	1	LS	$ 750,000	$ 750,000	
Sorter WIM Scale	1	LS	$ 250,000	$ 250,000	
Truck Bypass System	1	LS	$ 300,000	$ 300,000	
Hazardous Waste Mitigation	0	0	$ -	$ -	
Resident Engineer Office	1	LS	$ 150,000	$ 150,000	
Aerial Lead	1	LS	$ 150,000	$ 150,000	
Reconstruct Lagoon Valley Interchange	1	LS	$20,000,000	$ 20,000,000	
				Subtotal Specialty Items	$22,440,000

Section 5 Traffic Items					
Site Lighting	1	LS	$ 200,000	$ 200,000	
Traffic Delineation Items	1	LS	$ 95,000	$ 95,000	
Traffic Signals	0	0	$ -	$ -	
Overhead Signs	1	EA	$ 75,000	$ 75,000	
Roadside Signs	1	LS	$ 60,000	$ 60,000	
Traffic Control Systems	1	LS	$ 200,000	$ 200,000	
Transportation Management Plan	0	0	$ -	$ -	
Staging/Detour Allowance	1	LS	$ 110,000	$ 110,000	
				Subtotal Traffic Items	$ 740,000

TOTAL SECTIONS 1 thru 5 $35,490,000

NOTE: Lagoon Valley Interchange Reconstruction comprises of Cherry Glen on and off ramps on EB side, off ramp on WB side and construction of new structure. The construction of on ramp on WB side included in truck scale ramps on WB side.

District-County-Route 04-SOL-80
KP (PM)
EA

Section 6 Minor Items — Item Cost — Section Cost

$ 35,490,000 x (10%) = $ 3,550,000
(Subtotal Sections 1 thru 5)

TOTAL MINOR ITEMS $ 3,550,000

Section 7 Roadway Mobilization

$ 39,040,000 x (10%) = $ 3,910,000
(Subtotal Sections 1 thru 6)

TOTAL ROADWAY MOBILIZATION $ 3,910,000

Section 8 Roadway Additions

Supplemental Work
$ 39,040,000 x (10%) = $ 3,910,000
(Subtotal Sections 1 thru 6)

Contingencies
$ 39,040,000 x (35%) = $ 13,670,000
(Subtotal Sections 1 thru 6)

TOTAL ROADWAY ADDITIONS $17,580,000

TOTAL ROADWAY ITEMS $60,530,000
(Subtotal Sections 1 thru 8)

Estimate Prepared By Bhaskar Molakalapalli (Print Name) (510) 763-2929 (Phone No.) _____ (Date)

Estimate Prepared By _____ Brandon Whitehurst (Print Name) (510) 763-2929 (Phone No.) _____ (Date)

** Use appropriate percentage per Chapter 20.

District-County-Route 04-SOL-80
KP (PM)
EA

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility	20550	SF	$ 320	$ 6,576,000
			10% Mobilization	$ 657,600
			20% Contingency	$ 1,446,720
			Subtotal	$ 8,680,320

Bridge Name	EB Cherry Glen Off
Structure Type	CIP/PS Box
Width (out to out) - (ft)	28
Span Lengths - (ft)	600
Total Area - (ft2)	16800
Cost Per ft2 (incl. 10% mobilization and 20% contingency)	$ 155
Total Cost for Structure	$2,604,000

$2,604,000

SUBTOTAL STRUCTURES ITEMS $11,285,000
(Sum of Total Cost for Structures)

Railroad Related Costs: _____ $_____

SUBTOTAL RAILROAD ITEMS $ -
TOTAL STRUCTURES ITEMS $11,285,000
(Sum of Structures Items plus Railroad Items)

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (510) 763-2929 _____
(Print Name) (Phone No.) (Date)

NOTE: If appropriate attach additional pages and backup.

District-County-Route 04-SOL-80
KP (PM)
EA

III. RIGHT OF WAY ITEMS **ESCALATED VALUE (100% Contingency)**

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
69	$ 44,000	$ 3,036,000
100% Contingency		$ 3,036,000
Subtotal		$ 6,072,000

B. Utility Relocation (State share) $ (included in contingency)

C. Relocation Assistance $ (included in contingency)

D Clearance/Demolition $ (included in contingency)

E. Title and Escrow Fees $ (included in contingency)

TOTAL RIGHT OF WAY ITEMS $ 6,072,000
(Escalated Value)

Anticipated Date of Right of Way Certification $_____
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:

_____
_____
_____
_____

Right of Way Branch Cost Estimate for Work* $_____

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (510) 763-2929 _____
(Print Name) (Phone No.) (Date)

NOTE: If appropriate, attach additional pages and backup.

Cordelia Truck Scale Relocation Study - Capital Cost Summary

OPTION 2: WB I-80 AT LAGOON VALLEY

DESCRIPTION		COST
Sub-total Construction Costs		$38,800,000
Right Of Way Cost		$5,300,000
Capital Outlay Cost		$44,100,000
Environmental Mitigation Allowance[1]	2%	$900,000
Construction Change Order Contingency[1]	6%	$2,600,000
Project Reserve[1]	7%	$3,000,000
Total Capital Costs and Reserves		$50,600,000
Project Development Costs[2]		
Design Engineering	10%	$5,000,000
Construction Management	8%	$4,100,000
Agency Costs	3%	$1,600,000
Environmental Documentation	3%	$1,600,000
Project Management	3%	$1,600,000
Subtotal Project Development Costs		$13,900,000
Total Project Costs		$64,500,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-80
KP (PM)
EA
Program Code

DESCRIPTION:
OPTION 2: WB I-80 AT LAGOON VALLEY

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 24,880,000
TOTAL STRUCTURE ITEMS	$ 13,889,000
SUBTOTAL CONSTRUCTION COSTS	$ 38,769,000
TOTAL RIGHT OF WAY ITEMS	$ 5,280,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 44,049,000

Reviewed by Project Engineer _____ (510) 763-2929 _____
Brandon Whitehurst (Phone No.) (Date)

Approved by Project Manager _____ (510) 763-2929 _____
Hans Korve (Phone No.) (Date)

District-County-Route 04-SOL-80
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation - Ramp	4200	LF	$ 30	$ 126,000	
Roadway Excavation - Frontage Road	10300	LF	$ 30	$ 309,000	
Roadway Excavation - Site	62600	CY	$ 10	$ 626,000	
Import Borrow - Braided Structure	30000	CY	$ 12	$ 360,000	
Earthwork - Site/Access/Mass Grading	1	LS	$ 1,700,000	$ 1,700,000	
Clearing & Grubbing	24	Acres	$ 3,000	$ 72,000	
Develop Water Supply	1	LS	$ 100,000	$ 100,000	
				Subtotal Earthwork	$ 3,300,000
Section 2 Pavement Structural Section					
Pavement Section - Cherry Glen On	2700	LF	$ 150	$ 405,000	
Pavement Section - N. Texas Off	3500	LF	$ 150	$ 525,000	
Pavement Section - Frontage Road	10300	LF	$ 125	$ 1,287,500	
Pavement - Truck Scale Site*	770000	SF	$ 5	$ 3,850,000	
Edge Drains - Ramp	4300	LF	$ 20	$ 86,000	
				Subtotal Pavement Structural Section	$ 6,160,000
Section 3 Drainage					
Culvert at Laurel Creek Crossing	200	LF	$ 500	$ 100,000	
Culvert at Soda Springs Creek Crossing	1800	LF	$ 500	$ 900,000	
Storm Drains	5000	LF	$ 85	$ 425,000	
Project Drainage (X-Drains, overside, etc.	1	LS	$ 500,000	$ 500,000	
				Subtotal Drainage	$ 1,930,000

*Truck Scale Site Pavement includes Racetrack, Parking, Load Adjustment, Off-Ramp and On-Ramp.

District-County-Route 04-SOL-80
KP (PM)
EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls	600	LF	$ 300	$ 180,000	
Barriers and Guardrails	1500	LF	$ 75	$ 112,500	
Site Planting & Irrigation	1	LS	$ 300,000	$ 300,000	
Erosion Control	1	LS	$ 100,000	$ 100,000	
SWPPP	1	LS	$ 50,000	$ 50,000	
Truck Scales - 1 Static / 2 WIM / Signals	1	LS	$ 750,000	$ 750,000	
Sorter WIM Scale	1	LS	$ 250,000	$ 250,000	
Truck Bypass System	1	LS	$ 300,000	$ 300,000	
Resident Engineer Office	1	LS	$ 150,000	$ 150,000	
Aerial Lead	1	LS	$ 150,000	$ 150,000	
				Subtotal Specialty Items	$ 2,340,000

Section 5 Traffic Items					
Site Lighting	1	LS	$ 220,000	$ 220,000	
Traffic Delineation Items	1	LS	$ 90,000	$ 90,000	
Overhead Signs	1	EA	$ 75,000	$ 75,000	
Roadside Signs	1	LS	$ 60,000	$ 60,000	
Traffic Control Systems	1	LS	$ 200,000	$ 200,000	
Staging/Detour Allowance	1	LS	$ 200,000	$ 200,000	
				Subtotal Traffic Items	$ 850,000

TOTAL SECTIONS 1 thru 5 $14,580,000

District-County-Route 04-SOL-80
KP (PM)
EA

Section 6 Minor Items		Item Cost	Section Cost
$ 14,580,000 (Subtotal Sections 1 thru 5)	x (10%) =	$1,460,000	
		TOTAL MINOR ITEMS	$ 1,460,000

Section 7 Roadway Mobilization			
$ 16,040,000 (Subtotal Sections 1 thru 6)	x (10%) =	$1,610,000	
		TOTAL ROADWAY MOBILIZATION	$ 1,610,000

Section 8 Roadway Additions			
Supplemental Work			
$ 16,040,000 (Subtotal Sections 1 thru 6)	x (10%) =	$1,610,000	
Contingencies			
$ 16,040,000 (Subtotal Sections 1 thru 6)	x (35%) =	$5,620,000	
		TOTAL ROADWAY ADDITIONS	$ 7,230,000
		TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)	$24,880,000

Estimate Prepared By Bhaskar Molakalapalli (Print Name) (510) 763-2929 (Phone No.) _____ (Date)

Estimate Prepared By _____ Brandon Whitehurst (510) 763-2929 (Phone No.) _____ (Date)

** Use appropriate percentage per Chapter 20.

District-County-Route 04-SOL-80
KP (PM)
EA

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility	20550	SF	$ 320	$ 6,576,000
			10% Mobilization	$ 657,600
			20% Contingency	$ 1,446,720
			Subtotal	$ 8,680,320

Bridge Name	Ch. Glen On	N. Tex. Off	
Structure Type	CIP/PS Box	CIP/PS Box	
Width (out to out) - (ft)	28	28	
Span Lengths - (ft)	600	600	
Total Area - (ft2)	16800	16800	
Cost Per ft2 (incl. 10% mobilization and 20% contingency)	$ 155	$ 155	
Total Cost for Structure	$2,604,000	$2,604,000	$5,208,000

SUBTOTAL STRUCTURES ITEMS $13,889,000
(Sum of Total Cost for Structures)

Railroad Related Costs: _____ $ _____

SUBTOTAL RAILROAD ITEMS $ -

TOTAL STRUCTURES ITEMS $13,889,000
(Sum of Structures Items plus Railroad Items)

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (510) 763-2929 _____
(Print Name) (Phone No.) (Date)

NOTE: If appropriate attach additional pages and backup.

District-County-Route 04-SOL-80
KP (PM)
EA

III. RIGHT OF WAY ITEMS **ESCALATED VALUE (100% Contingency)**

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
60	$ 44,000	$ 2,640,000
100% Contingency		$ 2,640,000
Subtotal		$ 5,280,000

B. Utility Relocation (State share) $ (included in contingency)

C. Relocation Assistance $ (included in contingency)

D Clearance/Demolition $ (included in contingency)

E. Title and Escrow Fees $ (included in contingency)

TOTAL RIGHT OF WAY ITEMS $ 5,280,000
(Escalated Value)

Anticipated Date of Right of Way Certification $_____
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:

_____
_____
_____
_____

Right of Way Branch Cost Estimate for Work* $_____

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (510) 763-2929 _____
(Print Name) (Phone No.) (Date)

NOTE: If appropriate, attach additional pages and backup.

Cordelia Truck Scale Relocation Study - Capital Cost Summary

Option 2: EB SR 12 AT OLSEN (SAME AS OPTION 3)

DESCRIPTION		COST
Sub-total Construction Costs		$ 16,200,000
Right of Way Cost		$ 1,600,000
Capital Outlay Cost		$ 17,800,000
Environmental Mitigation Allowance[1]	2%	$ 400,000
Construction Change Order Contingency[1]	6%	$ 1,100,000
Project Reserve[1]	7%	$ 1,300,000
Total Capital Costs and Reserves		$ 20,600,000
Project Development Costs[2]		
Design Engineering	10%	$ 2,100,000
Construction Management	8%	$ 1,700,000
Agency Costs	3%	$ 700,000
Environmental Documentation	3%	$ 700,000
Project Management	3%	$ 700,000
Subtotal Project Development Costs		$ 5,900,000
Total Project Costs		$ 26,500,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $100k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-12
KP (PM)
EA
Program Code

DESCRIPTION:
OPTION 2: EB SR 12 AT OLSEN
(SAME AS OPTION 3)

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 11,040,000
TOTAL STRUCTURE ITEMS	$ 5,069,000
SUBTOTAL CONSTRUCTION COSTS	$ 16,109,000
TOTAL RIGHT OF WAY ITEMS	$ 1,510,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 17,619,000

Reviewed by Project Engineer _____ (510) 763-2929 _____
Brandon Whitehurst (Phone No.) (Date)

Approved by Project Manager _____ (510) 763-2929 _____
Hans Korve (Phone No.) (Date)

District-County-Route 04-SOL-12
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation - Site	49400	CY	$ 10	$ 494,000	
Earthwork	1	LS	$ 250,000	$ 250,000	
Earthwork - Site/Access/Mass Grading	1	LS	$ 300,000	$ 300,000	
Clearing & Grubbing	17.2	Acres	$ 3,000	$ 51,600	
Develop Water Supply	1	LS	$ 100,000	$ 100,000	$ 1,200,000
				Subtotal Earthwork	
Section 2 Pavement Structural Section					
Pavement Section - Ramp (1)	0	0	$ -	$ -	
Pavement Section - Ramp (2)	0	0	$ -	$ -	
Pavement - Truck Scale Site*	641750	SF	$ 5	$ 3,208,750	
Edge Drains - Ramp	0	0	$ -	$ -	$ 3,210,000
				Subtotal Pavement Structural Section	
Section 3 Drainage					
Large Drainage Facilities	0	0	$ -	$ -	
Storm Drains	0	0	$ -	$ -	
Pumping Plants	0	0	$ -	$ -	
Project Drainage (X-Drains, overside, etc.)	1	LS	400000	$ 400,000	
					$ 400,000
				Subtotal Drainage	

*Truck Scale Site Pavement includes Racetrack, Parking, Load Adjustment, Off-Ramp and On-Ramp.

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District-County-Route

KP (PM)

EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls	0	0	$ -	$ -	
Noise Barriers	0	0	$ -	$ -	
Barriers and Guardrails	0	0	$ -	$ -	
Equipment/Animal Passes	0	0	$ -	$ -	
Site Planting & Irrigation	1	LS	$ 150,000	$ 150,000	
Replacement Planting	0	0	$ -	$ -	
Erosion Control	1	LS	$ 85,000	$ 85,000	
Slope Protection	0	0	$ -	$ -	
SWPPP	1	LS	$ 100,000	$ 100,000	
Truck Scale - 1 Static / 1 WIM / Signals	1	LS	$ 400,000	$ 400,000	
Truck Bypass System	1	LS	$ 300,000	$ 300,000	
Hazardous Waste Mitigation	0	0	$ -	$ -	
Resident Engineer Office	1	LS	$ 150,000	$ 150,000	
Curb & Gutter	0	0	$ -	$ -	
AC Dike - Ramp	0	0	$ -	$ -	$ 1,190,000
				Subtotal Specialty Items	

Section 5 Traffic Items					
Site Lighting	1	LS	$ 250,000	$ 250,000	
Traffic Delineation Items	1	LS	$ 30,000	$ 30,000	
Traffic Signals	0	0	$ -	$ -	
Overhead Signs	1	EA	$ 75,000	$ 75,000	
Roadside Signs	1	LS	$ 25,000	$ 25,000	
Traffic Control Systems	1	LS	$ 80,000	$ 80,000	
Transportation Management Plan	0	0	$ -	$ -	
Staging/Detour Allowance	0	0	$ -	$ -	
Signing and Striping - Ramp (1)	0	0	$ -	$ -	
Signing and Striping - Ramp (2)	0	0	$ -	$ -	
_____	0	0	$ -	$ -	$ 460,000
				Subtotal Traffic Items	
					$ 6,460,000
				TOTAL SECTIONS 1 thru 5	

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District-County-Route
KP (PM)
EA

		Section Cost
Section 6 Minor Items	Item Cost	
$6,460,000 x (10%) = $ 650,000 (Subtotal Sections 1 thru 5)		
		$ 650,000
	TOTAL MINOR ITEMS	
Section 7 Roadway Mobilization		
$7,110,000 x (10%) = $ 720,000 (Subtotal Sections 1 thru 6)		
		$ 720,000
	TOTAL ROADWAY MOBILIZATION	
Section 8 Roadway Additions		
Supplemental Work $7,110,000 x (10%) = $ 720,000 (Subtotal Sections 1 thru 6)		
Contingencies $7,110,000 x (35%) = $2,490,000 (Subtotal Sections 1 thru 6)		
		$ 3,210,000
	TOTAL ROADWAY ADDITIONS	
		$ 11,040,000
	TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)	

Estimate Prepared By Bhaskar Molakalapalli (Print Name) (510) 763-2929 (Phone No.) _____ (Date)

Estimate Prepared By _____ Brandon Whitehurst (510) 763-2929 (Phone No.) _____ (Date)

** Use appropriate percentage per Chapter 20.

04-SOL-12
District-County-Route
KP (PM)
EA

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility	12000	SF	$ 320	$ 3,840,000
Bridge Name				
Structure Type				
Width (out to out) - (m)				
Span Lengths - (m)				
Total Area - (m2)				
Footing Type (pile/spread)				
Cost Per m2 (incl. 10% mobilization and 20% contingency)				
Total Cost for Structure				$ 5,068,800

		$ 5,069,000
	SUBTOTAL STRUCTURES ITEMS (Sum of Total Cost for Structures)	$
Railroad Related Costs:		$ -
	SUBTOTAL RAILROAD ITEMS	$ 5,069,000
	TOTAL STRUCTURES ITEMS (Sum of Structures Items plus Railroad Items)	

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (510) 763-2929 _____
(Print Name) (Phone No.) (Date)

NOTE: If appropriate attach additional pages and backup.

04-SOL-12
District-County-Route
KP (PM)
EA

III. RIGHT OF WAY ITEMS — ESCALATED VALUE (100% Contingency)

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
34.3	$ 22,000	$ 754,600
100% Contingency		$ 754,600
Subtotal		$ 1,510,000

B. Utility Relocation (State share) — $ (inluded in contingency)

C. Relocation Assistance — $ (inluded in contingency)

D Clearance/Demolition — $ (inluded in contingency)

E. Title and Escrow Fees — $ (inluded in contingency)

$ 1,510,000

TOTAL RIGHT OF WAY ITEMS
(Escalated Value)

$_____

Anticipated Date of Right of Way Certification
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:

_____
_____
_____
_____

$_____

Right of Way Branch Cost Estimate for Work*

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (Print Name) (510) 763-2929 (Phone No.) _____ (Date)

NOTE: If appropriate, attach additional pages and backup.

Cordelia Truck Scale Relocation Study - Capital Cost Summary

OPTION 2: WB SR 12 AT BRANSCOME (SAME AS OPTION 3)

DESCRIPTION		COST
Sub-total Construction Costs		$15,600,000
Right of Way Cost		$1,400,000
Capital Outlay Cost		$17,000,000
Environmental Mitigation Allowance[1]	2%	$400,000
Construction Change Order Contingency[1]	6%	$1,100,000
Project Reserve[1]	7%	$1,200,000
Total Capital Costs and Reserves		$19,700,000
Project Development Costs[2]		
Design Engineering	10%	$1,900,000
Construction Management	8%	$1,600,000
Agency Costs	3%	$600,000
Environmental Documentation	3%	$600,000
Project Management	3%	$600,000
Subtotal Project Development Costs		$5,300,000
Total Project Costs		$25,000,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $100k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-12
KP (PM)
EA
Program Code

DESCRIPTION:

OPTION 2: WB SR 12 AT BRANSCOME
(SAME AS OPTION 3)

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 10,480,000
TOTAL STRUCTURE ITEMS	$ 5,069,000
SUBTOTAL CONSTRUCTION COSTS	$ 15,549,000
TOTAL RIGHT OF WAY ITEMS	$ 1,334,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 16,883,000

Reviewed by Project Engineer	Brandon Whitehurst	(510) 763-2929 (Phone No.)	(Date)
Approved by Project Manager	Hans Korve	(510) 763-2929 (Phone No.)	(Date)

District-County-Route 04-SOL-12
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation - Site	49400	CY	$ 10	$ 494,000	
Earthwork	1	LS	$ 300,000	$ 300,000	
Clearing & Grubbing	15.2	Acres	$ 3,000	$ 45,600	
Develop Water Supply	1	LS	$ 100,000	$ 100,000	
				Subtotal Earthwork	$ 940,000
Section 2 Pavement Structural Section					
Pavement Section - Ramp (1)	0	0	$ -	$ -	
Pavement Section - Ramp (2)	0	0	$ -	$ -	
Pavement - Truck Scale Site Site*	641750	SF	$ 5	$ 3,208,750	
Edge Drains - Ramp	0	0	$ -	$ -	
				Subtotal Pavement Structural Section	$ 3,210,000
Section 3 Drainage					
Large Drainage Facilities	0	0	-	$ -	
Storm Drains	0	0	-	$ -	
Pumping Plants	0	0	-	$ -	
Project Drainage (X-Drains, overside, etc.)	1	LS	400,000	$ 400,000	
				Subtotal Drainage	$ 400,000

*Truck Scale Site Pavement includes Racetrack, Parking, Load Adjustment, Off-Ramp and On-Ramp.

District-County-Route 04-SOL-12
KP (PM)
EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls	0	0	$ -	$ -	
Noise Barriers	0	0	$ -	$ -	
Barriers and Guardrails	0	0	$ -	$ -	
Equipment/Animal Passes	0	0	$ -	$ -	
Site Planting & Irrigation	1	LS	$ 150,000	$ 150,000	
Replacement Planting	0	0	$ -	$ -	
Erosion Control	1	LS	$ 65,000	$ 65,000	
Slope Protection	0	0	$ -	$ -	
SWPPP	1	LS	$ 50,000	$ 50,000	
Truck Scale - 1 Static / 1 WIM / Signals	1	LS	$ 400,000	$ 400,000	
Truck Bypass System	1	LS	$ 300,000	$ 300,000	
Hazardous Waste Mitigation	0	0	$ -	$ -	
Resident Engineer Office	1	LS	$ 150,000	$ 150,000	
Curb & Gutter	0	0	$ -	$ -	
AC Dike - Ramp	0	0	$ -	$ -	
				Subtotal Specialty Items	$ 1,120,000

Section 5 Traffic Items					
Site Lighting	1	LS	$ 250,000	$ 250,000	
Traffic Delineation Items	1	LS	$ 30,000	$ 30,000	
Traffic Signals	0	0	$ -	$ -	
Overhead Signs	1	EA	$ 75,000	$ 75,000	
Roadside Signs	1	LS	$ 25,000	$ 25,000	
Traffic Control Systems	1	LS	$ 80,000	$ 80,000	
Transportation Management Plan	0	0	$ -	$ -	
Staging/Detour Allowance	0	0	$ -	$ -	
Signing and Striping - Ramp (1)	0	0	$ -	$ -	
Signing and Striping - Ramp (2)	0	0	$ -	$ -	
_____	0	0	$ -	$ -	
				Subtotal Traffic Items	$ 460,000

TOTAL SECTIONS 1 thru 5 $ 6,130,000

District-County-Route 04-SOL-12
KP (PM)
EA

Section 6 Minor Items | Item Cost | Section Cost

$6,130,000 x (10%) = $ 620,000
(Subtotal Sections 1 thru 5)

TOTAL MINOR ITEMS $ 620,000

Section 7 Roadway Mobilization

$6,750,000 x (10%) = $ 680,000
(Subtotal Sections 1 thru 6)

TOTAL ROADWAY MOBILIZATION $ 680,000

Section 8 Roadway Additions

Supplemental Work
$6,750,000 x (10%) = $ 680,000
(Subtotal Sections 1 thru 6)

Contingencies
$6,750,000 x (35%) = $2,370,000
(Subtotal Sections 1 thru 6)

TOTAL ROADWAY ADDITIONS $ 3,050,000

TOTAL ROADWAY ITEMS $ 10,480,000
(Subtotal Sections 1 thru 8)

Estimate Prepared By Bhaskar Molakalapalli (510) 763-2929 _____
(Print Name) (Phone No.) (Date)

Estimate Prepared By _____ (510) 763-2929 _____
Brandon Whitehurst (Phone No.) (Date)

** Use appropriate percentage per Chapter 20.

District-County-Route 04-SOL-12
KP (PM)
EA

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility	12000	SF	$ 320	$ 3,840,000
Bridge Name				
Structure Type				
Width (out to out) - (m)				
Span Lengths - (m)				
Total Area - (m2)				
Footing Type (pile/spread)				
Cost Per m2 (incl. 10% mobilization and 20% contingency)				
Total Cost for Structure				$ 5,068,800

SUBTOTAL STRUCTURES ITEMS $ 5,069,000
(Sum of Total Cost for Structures)

Railroad Related Costs: _____ $ _____

SUBTOTAL RAILROAD ITEMS $ -

TOTAL STRUCTURES ITEMS $ 5,069,000
(Sum of Structures Items plus Railroad Items)

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (510) 763-2929 _____
(Print Name) (Phone No.) (Date)

NOTE: If appropriate attach additional pages and backup.

District-County-Route 04-SOL-12
KP (PM) _____
EA _____

III. RIGHT OF WAY ITEMS — ESCALATED VALUE (100% Contingency)

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
30.3	$ 22,000	$ 666,600
100% Contingency		$ 666,600
Subtotal		$ 1,334,000

B. Utility Relocation (State share) — $ (inluded in contingency)

C. Relocation Assistance — $ (inluded in contingency)

D Clearance/Demolition — $ (inluded in contingency)

E. Title and Escrow Fees — $ (inluded in contingency)

TOTAL RIGHT OF WAY ITEMS $ 1,334,000
(Escalated Value)

Anticipated Date of Right of Way Certification $_____
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:
_____
_____
_____
_____

Right of Way Branch Cost Estimate for Work* $_____

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (510) 763-2929 _____
(Print Name) (Phone No.) (Date)

NOTE: If appropriate, attach additional pages and backup.

Attachment H.3

Option 3:
Capital Cost Estimates

Cordelia Truck Scale Relocation Study - Capital Cost Summary

OPTION 3: EB I-80 AT MIDWAY - DIXON

DESCRIPTION		COST
Sub-total Construction Costs		$21,900,000
Right of Way Cost		$3,000,000
Capital Outlay Cost		$24,900,000
Environmental Mitigation Allowance[1]	2%	$500,000
Construction Change Order Contingency[1]	6%	$1,400,000
Project Reserve[1]	7%	$1,700,000
Total Capital Costs and Reserves		$28,500,000
Project Development Costs[2]		
Design Engineering	10%	$2,800,000
Construction Management	8%	$2,300,000
Agency Costs	3%	$900,000
Environmental Documentation	3%	$900,000
Project Management	3%	$900,000
Subtotal Project Development Costs		$7,800,000
Total Project Costs		$36,300,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-80
KP (PM)
EA
Program Code

DESCRIPTION:
OPTION 3: EB I-80 AT MIDWAY - DIXON

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 13,800,000
TOTAL STRUCTURE ITEMS	$ 8,053,000
SUBTOTAL CONSTRUCTION COSTS	$ 21,853,000
TOTAL RIGHT OF WAY ITEMS	$ 2,992,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 24,845,000

Reviewed by Project Engineer _____ (510) 763-2929 _____
Brandon Whitehurst (Phone No.) (Date)

Approved by Project Manager _____ (510) 763-2929 _____
Hans Korve (Phone No.) (Date)

District-County-Route 04-SOL-80
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation - Site	56900	CY	$ 10	$ 569,000	
Earthwork - Site/Access/Mass Grading	1	LS	$ 750,000	$ 750,000	
Clearing & Grubbing	16	Acres	$ 3,000	$ 48,000	
Develop Water Supply	1	LS	$ 100,000	$ 100,000	
				Subtotal Earthwork	$ 1,470,000
Section 2 Pavement Structural Section					
Pavement Section - Ramp	0	LF	$ 150	$ -	
Pavement - Truck Scale Site*	713800	SF	$ 5	$ 3,569,000	
Edge Drains - Ramp	0	LF	$ 20	$ -	
				Subtotal Pavement Structural Section	$ 3,570,000
Section 3 Drainage					
Large Drainage Facilities	0	0	$ -	$ -	
Storm Drains	0	LF	$ 85	$ -	
Project Drainage (X-Drains, overside, etc.	1	LS	$ 500,000	$ 500,000	
	0	0	$ -	$ -	
				Subtotal Drainage	$ 500,000

*Truck Scale Site Pavement includes Racetrack, Parking, Load Adjustment, Off-Ramp and On-Ramp.

District-County-Route 04-SOL-80
KP (PM)
EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls	0	LF	$ 300	$ -	
Noise Barriers	0	0	$ -	$ -	
Barriers and Guardrails	0	LF	$ 75	$ -	
Equipment/Animal Passes	0	0	$ -	$ -	
Site Planting & Irrigation	1	LS	$ 300,000	$ 300,000	
Replacement Planting	0	0	$ -	$ -	
Erosion Control	1	LS	$ 70,000	$ 70,000	
Slope Protection	0	0		$ -	
SWPPP	1	LS	$ 50,000	$ 50,000	
Truck Scales - 1 Static / 2 WIM / Signals	1	LS	$ 750,000	$ 750,000	
Sorter WIM Scale	1	LS	$ 250,000	$ 250,000	
Truck Bypass System	1	LS	$ 300,000	$ 300,000	
Hazardous Waste Mitigation	0	0	$ -	$ -	
Resident Engineer Office	1	LS	$ 150,000	$ 150,000	
Curb & Gutter	0	0	$ -	$ -	
AC Dike - Ramp	0	0	$ -	$ -	
				Subtotal Specialty Items	$ 1,870,000

Section 5 Traffic Items					
Site Lighting	1	LS	$ 150,000	$ 150,000	
Traffic Delineation Items	1	LS	$ 45,000	$ 45,000	
Traffic Signals	0	0	$ -	$ -	
Overhead Signs	1	EA	$ 75,000	$ 75,000	
Roadside Signs	1	LS	$ 60,000	$ 60,000	
Traffic Control Systems	1	LS	$ 200,000	$ 200,000	
Transportation Management Plan	0	0	$ -	$ -	
Staging/Detour Allowance	1	LS	$ 150,000	$ 150,000	
				Subtotal Traffic Items	$ 680,000

TOTAL SECTIONS 1 thru 5 $ 8,090,000

District-County-Route 04-SOL-80
KP (PM)
EA

Section 6 Minor Items		Item Cost	Section Cost
$ 8,090,000 (Subtotal Sections 1 thru 5)	x (10%) =	$ 810,000	
		TOTAL MINOR ITEMS	$ 810,000

Section 7 Roadway Mobilization			
$ 8,900,000 (Subtotal Sections 1 thru 6)	x (10%) =	$ 890,000	
		TOTAL ROADWAY MOBILIZATION	$ 890,000

Section 8 Roadway Additions

Supplemental Work			
$ 8,900,000 (Subtotal Sections 1 thru 6)	x (10%) =	$ 890,000	
Contingencies			
$ 8,900,000 (Subtotal Sections 1 thru 6)	x (35%) =	$3,120,000	
		TOTAL ROADWAY ADDITIONS	$ 4,010,000
		TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)	$13,800,000

Estimate Prepared By Bhaskar Molakalapalli (Print Name) (510) 763-2929 (Phone No.) _____ (Date)

Estimate Prepared By _____ Brandon Whitehurst (510) 763-2929 (Phone No.) _____ (Date)

** Use appropriate percentage per Chapter 20.

District-County-Route 04-SOL-80
KP (PM)
EA

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility	17700	SF	$ 320	$ 5,664,000
			10% Mobilization	$ 566,400
			20% Contingency	$ 1,246,080
			Subtotal	$ 7,476,480

Bridge Name	McCune Creek			
Structure Type	CIP Girder			
Width (out to out) - (ft)	32			
Span Lengths - (ft)	150			
Total Area - (ft2)	4800			
Cost Per ft2 (incl. 10% mobilization and 20% contingency)	$ 120			
Total Cost for Structure	$576,000	$0		$576,000

SUBTOTAL STRUCTURES ITEMS $ 8,053,000
(Sum of Total Cost for Structures)

Railroad Related Costs: _____ $ _____

SUBTOTAL RAILROAD ITEMS $ -

TOTAL STRUCTURES ITEMS $ 8,053,000
(Sum of Structures Items plus Railroad Items)

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (510) 763-2929 _____
(Print Name) (Phone No.) (Date)

NOTE: If appropriate attach additional pages and backup.

District-County-Route 04-SOL-80
KP (PM)
EA

III. RIGHT OF WAY ITEMS **ESCALATED VALUE (100% Contingency)**

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
34	$ 44,000	$ 1,496,000
100% Contingency		$ 1,496,000
Subtotal		$ 2,992,000

B. Utility Relocation (State share) $ (included in contingency)

C. Relocation Assistance $ (included in contingency)

D Clearance/Demolition $ (included in contingency)

E. Title and Escrow Fees $ (included in contingency)

TOTAL RIGHT OF WAY ITEMS $ 2,992,000
(Escalated Value)

Anticipated Date of Right of Way Certification $_____
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:

_____
_____
_____
_____

Right of Way Branch Cost Estimate for Work* $_____

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (Print Name) (510) 763-2929 (Phone No.) _____ (Date)

NOTE: If appropriate, attach additional pages and backup.

Cordelia Truck Scale Relocation Study - Capital Cost Summary

OPTION 3: WB I-80 AT MIDWAY - DIXON

DESCRIPTION		COST
Sub-total Construction Costs		$22,800,000
Right of Way Cost		$2,900,000
Capital Outlay Cost		$25,700,000
Environmental Mitigation Allowance[1]	2%	$600,000
Construction Change Order Contingency[1]	6%	$1,500,000
Project Reserve[1]	7%	$1,700,000
Total Capital Costs and Reserves		$29,500,000
Project Development Costs[2]		
Design Engineering	10%	$2,900,000
Construction Management	8%	$2,400,000
Agency Costs	3%	$900,000
Environmental Documentation	3%	$900,000
Project Management	3%	$900,000
Subtotal Project Development Costs		$8,000,000
Total Project Costs		$37,500,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-80
KP (PM)
EA
Program Code

DESCRIPTION:

OPTION 3: WB I-80 AT MIDWAY - DIXON

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 14,680,000
TOTAL STRUCTURE ITEMS	$ 8,053,000
SUBTOTAL CONSTRUCTION COSTS	$ 22,733,000
TOTAL RIGHT OF WAY ITEMS	$ 2,816,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 25,549,000

Reviewed by Project Engineer — Brandon Whitehurst — 510-763-2929 (Phone No.) — (Date)

Approved by Project Manager — Hans Korve — 510-763-2929 (Phone No.) — (Date)

District-County-Route 04-SOL-80
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation - Site	57000	CY	$ 10	$ 570,000	
Earthwork - Site/Access/Mass Grading	1	LS	$ 750,000	$ 750,000	
Clearing & Grubbing	16	Acres	$ 3,000	$ 48,000	
Develop Water Supply	1	LS	$ 100,000	$ 100,000	
				Subtotal Earthwork	$ 1,470,000
Section 2 Pavement Structural Section					
Pavement Section - Ramp	0	LF	$ 150	$ -	
Pavement - Truck Scale Site*	713800	SF	$ 5	$ 3,569,000	
Edge Drains - Ramp	0	LF	$ 20	$ -	
				Subtotal Pavement Structural Section	$ 3,570,000
Section 3 Drainage					
Large Drainage Facilities	0	0	$ -	$ -	
Storm Drains	0	LF	$ 85	$ -	
Project Drainage (X-Drains, overside, etc.	1	LS	$ 500,000	$ 500,000	
Irrigation Channel Reconstruction	1	LS	$ 500,000	$ 500,000	
				Subtotal Drainage	$ 1,000,000

*Truck Scale Site Pavement includes Racetrack, Parking, Load Adjustment, Off-Ramp and On-Ramp.

District-County-Route 04-SOL-80
KP (PM)
EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls	0	LF	$ 300	$ -	
Noise Barriers	0	0	$ -	$ -	
Barriers and Guardrails	0	LF	$ 75	$ -	
Equipment/Animal Passes	0	0	$ -	$ -	
Site Planting & Irrigation	1	LS	$ 300,000	$ 300,000	
Replacement Planting	0	0	$ -	$ -	
Erosion Control	1	LS	$ 75,000	$ 75,000	
Slope Protection	0	0		$ -	
SWPPP	1	LS	$ 50,000	$ 50,000	
Truck Scales - 1 Static / 2 WIM / Signals	1	LS	$ 750,000	$ 750,000	
Sorter WIM Scale	1	LS	$ 250,000	$ 250,000	
Truck Bypass System	1	LS	$ 300,000	$ 300,000	
Hazardous Waste Mitigation	0	0	$ -	$ -	
Resident Engineer Office	1	LS	$ 150,000	$ 150,000	
Curb & Gutter	0	0	$ -	$ -	
AC Dike - Ramp	0	0	$ -	$ -	
				Subtotal Specialty Items	$ 1,880,000

Section 5 Traffic Items					
Site Lighting	1	LS	$ 150,000	$ 150,000	
Traffic Delineation Items	1	LS	$ 45,000	$ 45,000	
Traffic Signals	0	0	$ -	$ -	
Overhead Signs	1	EA	$ 75,000	$ 75,000	
Roadside Signs	1	LS	$ 60,000	$ 60,000	
Traffic Control Systems	1	LS	$ 200,000	$ 200,000	
Transportation Management Plan	0	0	$ -	$ -	
Staging/Detour Allowance	1	LS	$ 150,000	$ 150,000	
				Subtotal Traffic Items	$ 680,000

TOTAL SECTIONS 1 thru 5 $ 8,600,000

District-County-Route 04-SOL-80
KP (PM)
EA

Section 6 Minor Items

	Item Cost	Section Cost
$ 8,600,000 x (10%) = (Subtotal Sections 1 thru 5)	$ 860,000	
TOTAL MINOR ITEMS		$ 860,000

Section 7 Roadway Mobilization

$ 9,460,000 x (10%) = (Subtotal Sections 1 thru 6)	$ 950,000	
TOTAL ROADWAY MOBILIZATION		$ 950,000

Section 8 Roadway Additions

Supplemental Work		
$ 9,460,000 x (10%) = (Subtotal Sections 1 thru 6)	$ 950,000	
Contingencies		
$ 9,460,000 x (35%) = (Subtotal Sections 1 thru 6)	$3,320,000	
TOTAL ROADWAY ADDITIONS		$ 4,270,000
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)		$14,680,000

Estimate Prepared By Bhaskar Molakalapalli (Print Name) (510) 763-2929 (Phone No.) _____ (Date)

Estimate Prepared By _____ Brandon Whitehurst (510) 763-2929 (Phone No.) _____ (Date)

** Use appropriate percentage per Chapter 20.

District-County-Route 04-SOL-80
KP (PM)
EA

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility	17700	SF	$ 320	$ 5,664,000
			10% Mobilization	$ 566,400
			20% Contingency	$ 1,246,080
			Subtotal	$ 7,476,480

Bridge Name	McCune Creek			
Structure Type	CIP Girder			
Width (out to out) - (ft)	32			
Span Lengths - (ft)	150			
Total Area - (ft2)	4800			
Cost Per ft2 (incl. 10% mobilization and 20% contingency)	$ 120			
Total Cost for Structure	$576,000	$0		$576,000

SUBTOTAL STRUCTURES ITEMS $ 8,053,000
(Sum of Total Cost for Structures)

Railroad Related Costs: _____ $ _____

SUBTOTAL RAILROAD ITEMS $ -
TOTAL STRUCTURES ITEMS $ 8,053,000
(Sum of Structures Items plus Railroad Items)

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (510) 763-2929 _____
(Print Name) (Phone No.) (Date)

NOTE: If appropriate attach additional pages and backup.

District-County-Route 04-SOL-80
KP (PM)
EA

III. RIGHT OF WAY ITEMS **ESCALATED VALUE (100% Contingency)**

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
32	$ 44,000	$ 1,408,000
100% Contingency		$ 1,408,000
Subtotal		$ 2,816,000

B. Utility Relocation (State share) $ (included in contingency)

C. Relocation Assistance $ (included in contingency)

D Clearance/Demolition $ (included in contingency)

E. Title and Escrow Fees $ (included in contingency)

TOTAL RIGHT OF WAY ITEMS $ 2,816,000
(Escalated Value)

Anticipated Date of Right of Way Certification $_____
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:

_____
_____
_____
_____

Right of Way Branch Cost Estimate for Work* $_____

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (Print Name) (510) 763-2929 (Phone No.) _____ (Date)

NOTE: If appropriate, attach additional pages and backup.

Cordelia Truck Scale Relocation Study - Capital Cost Summary

Option 3: EB SR 12 AT OLSEN (SAME AS OPTION 2)

DESCRIPTION		COST
Sub-total Construction Costs		$ 16,200,000
Right of Way Cost		$ 1,600,000
Capital Outlay Cost		$ 17,800,000
Environmental Mitigation Allowance[1]	2%	$ 400,000
Construction Change Order Contingency[1]	6%	$ 1,100,000
Project Reserve[1]	7%	$ 1,300,000
Total Capital Costs and Reserves		$ 20,600,000
Project Development Costs[2]		
Design Engineering	10%	$ 2,100,000
Construction Management	8%	$ 1,700,000
Agency Costs	3%	$ 700,000
Environmental Documentation	3%	$ 700,000
Project Management	3%	$ 700,000
Subtotal Project Development Costs		$ 5,900,000
Total Project Costs		$ 26,500,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $100k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

Cordelia Truck Scale Relocation Study - Capital Cost Summary

OPTION 3: WB SR 12 AT BRANSCOME (SAME AS OPTION 2)

DESCRIPTION		COST
Sub-total Construction Costs		$15,600,000
Right of Way Cost		$1,400,000
Capital Outlay Cost		$17,000,000
Environmental Mitigation Allowance[1]	2%	$400,000
Construction Change Order Contingency[1]	6%	$1,100,000
Project Reserve[1]	7%	$1,200,000
Total Capital Costs and Reserves		$19,700,000
Project Development Costs[2]		
Design Engineering	10%	$1,900,000
Construction Management	8%	$1,600,000
Agency Costs	3%	$600,000
Environmental Documentation	3%	$600,000
Project Management	3%	$600,000
Subtotal Project Development Costs		$5,300,000
Total Project Costs		$25,000,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $100k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

Cordelia Truck Scale Relocation Study - Capital Cost Summary

OPTION 3: NB I-505 AT MIDWAY - ALLENDALE

DESCRIPTION		COST
Sub-total Construction Costs		$15,300,000
Right Of Way Cost		$1,600,000
Capital Outlay Cost		$16,900,000
Environmental Mitigation Allowance[1]	2%	$400,000
Construction Change Order Contingency[1]	6%	$1,100,000
Project Reserve[1]	7%	$1,200,000
Total Capital Costs and Reserves		$19,600,000
Project Development Costs[1]		
Design Engineering	10%	$1,900,000
Construction Management	8%	$1,600,000
Agency Costs	3%	$600,000
Environmental Documentation	3%	$600,000
Project Management	3%	$600,000
Subtotal Project Development Costs		$5,300,000
Total Project Costs		$24,900,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $100k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-505
KP (PM)
EA
Program Code

DESCRIPTION:

OPTION 3: NB I-505 AT MIDWAY - ALLENDALE

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$10,230,000
TOTAL STRUCTURE ITEMS	$5,069,000
SUBTOTAL CONSTRUCTION COSTS	$15,299,000
TOTAL RIGHT OF WAY ITEMS	$1,560,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$16,859,000

Reviewed by Project Engineer	Brandon Whitehurst	510-763-2929 (Phone No.)	(Date)
Approved by Project Manager	Hans Korve	510-763-2929 (Phone No.)	(Date)

District-County-Route 04-SOL-505
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation - Site	49400	CY	$ 10	$ 494,000	
Earthwork	1	LS	$ 250,000	$ 250,000	
Clearing & Grubbing	11.8	Acres	$ 3,000	$ 35,400	
Develop Water Supply	1	LS	$ 100,000	$ 100,000	
				Subtotal Earthwork	$ 880,000
Section 2 Pavement Structural Section					
Pavement Section - Ramp (1)	0	0	$ -	$ -	
Pavement Section - Ramp (2)	0	0	$ -	$ -	
Pavement - Truck Scale Site*	641750	SF	$ 5	$ 3,208,750	
Edge Drains - Ramp	0	0	$ -	$ -	
				Subtotal Pavement Structural Section	$ 3,210,000
Section 3 Drainage					
Large Drainage Facilities	0	0	-	$ -	
Storm Drains	0	0	-	$ -	
Pumping Plants	0	0	-	$ -	
Project Drainage (X-Drains, overside, etc.)	1	LS	400,000	$ 400,000	
				Subtotal Drainage	$ 400,000

*Truck Scale Site Pavement includes Racetrack, Parking, Load Adjustment, Off-Ramp and On-Ramp.

District-County-Route 04-SOL-505
KP (PM)
EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls	0	0	$ -	$ -	
Noise Barriers	0	0	$ -	$ -	
Barriers and Guardrails	0	0	$ -	$ -	
Equipment/Animal Passes	0	0	$ -	$ -	
Site Planting & Irrigation	1	LS	$ 150,000	$ 150,000	
Replacement Planting	0	0	$ -	$ -	
Erosion Control	1	LS	$ 65,000	$ 65,000	
Slope Protection	0	0	$ -	$ -	
SWPPP	1	LS	$ 50,000	$ 50,000	
Truck Scale - 1 Static / 1 WIM / Signals	1	LS	$ 400,000	$ 400,000	
Truck Bypass System	1	LS	$ 300,000	$ 300,000	
Hazardous Waste Mitigation	0	0	$ -	$ -	
Resident Engineer Office	1	LS	$ 150,000	$ 150,000	
Curb & Gutter	0	0	$ -	$ -	
AC Dike - Ramp	0	0	$ -	$ -	
				Subtotal Specialty Items	$ 1,120,000

Section 5 Traffic Items					
Site Lighting	1	LS	$ 250,000	$ 250,000	
Traffic Delineation Items	1	LS	$ 30,000	$ 30,000	
Traffic Signals	0	0	$ -	$ -	
Overhead Signs	0	0	$ -	$ -	
Roadside Signs	1	LS	$ 25,000	$ 25,000	
Traffic Control Systems	1	LS	$ 80,000	$ 80,000	
Transportation Management Plan	0	0	$ -	$ -	
Staging/Detour Allowance	0	0	$ -	$ -	
Signing and Striping - Ramp (1)	0	0	$ -	$ -	
Signing and Striping - Ramp (2)	0	0	$ -	$ -	
_____	0	0	$ -	$ -	
				Subtotal Traffic Items	$ 390,000

TOTAL SECTIONS 1 thru 5 $ 6,000,000

District-County-Route 04-SOL-505
KP (PM) _____
EA _____

Section 6 Minor Items	Item Cost	Section Cost
$6,000,000 x (10%) = (Subtotal Sections 1 thru 5)	$ 600,000	
TOTAL MINOR ITEMS		$ 600,000

Section 7 Roadway Mobilization

$6,600,000 x (10%) = $ 660,000
(Subtotal Sections 1 thru 6)

TOTAL ROADWAY MOBILIZATION $ 660,000

Section 8 Roadway Additions

Supplemental Work
$6,600,000 x (10%) = $ 660,000
(Subtotal Sections 1 thru 6)

Contingencies
$6,600,000 x (35%) = $2,310,000
(Subtotal Sections 1 thru 6)

TOTAL ROADWAY ADDITIONS $ 2,970,000

TOTAL ROADWAY ITEMS $ 10,230,000
(Subtotal Sections 1 thru 8)

Estimate Prepared By _____ Phone # _____ Date _____
(Print Name)

Estimate Checked By _____ Phone # _____ Date _____
(Print Name)

** Use appropriate percentage per Chapter 20.

District-County-Route 04-SOL-505
KP (PM)
EA

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility	12000	SF	$ 320	$ 3,840,000
Bridge Name				
Structure Type				
Width (out to out) - (m)				
Span Lengths - (m)				
Total Area - (m2)				
Footing Type (pile/spread)				
Cost Per m2 (incl. 10% mobilization and 20% contingency)				
Total Cost for Structure				$ 5,068,800

SUBTOTAL STRUCTURES ITEMS $ 5,069,000
(Sum of Total Cost for Structures)

Railroad Related Costs: _____ $ _____

SUBTOTAL RAILROAD ITEMS $ -

TOTAL STRUCTURES ITEMS $ 5,069,000
(Sum of Structures Items plus Railroad Items)

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (510) 763-2929 _____
(Print Name) (Phone No.) (Date)

NOTE: If appropriate attach additional pages and backup.

District-County-Route 04-SOL-505
KP (PM) _____
EA _____

III. RIGHT OF WAY ITEMS — ESCALATED VALUE (100% Contingency)

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
23.5	$ 33,000	$ 775,500
100% Contingency		$ 775,500
Subtotal		$ 1,560,000

B. Utility Relocation (State share) — $ (included in contingency)

C. Relocation Assistance — $ (included in contingency)

D Clearance/Demolition — $ (included in contingency)

E. Title and Escrow Fees — $ (included in contingency)

TOTAL RIGHT OF WAY ITEMS $ 1,560,000
(Escalated Value)

Anticipated Date of Right of Way Certification $_____
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:

_____
_____
_____
_____

Right of Way Branch Cost Estimate for Work* $_____

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (Print Name) (510) 763-2929 (Phone No.) _____ (Date)

NOTE: If appropriate, attach additional pages and backup.

Cordelia Truck Scale Relocation Study - Capital Cost Summary

OPTION 3: SB I-505 AT ALLENDALE - WOLFSKILL

DESCRIPTION		COST
Sub-total Construction Costs		$16,200,000
Right of Way Cost		$2,100,000
Capital Outlay Cost		$18,300,000
Environmental Mitigation Allowance[1]	2%	$400,000
Construction Change Order Contingency[1]	6%	$1,100,000
Project Reserve[1]	7%	$1,300,000
Total Capital Costs and Reserves		$21,100,000
Project Development Costs[2]		
Design Engineering	10%	$2,100,000
Construction Management	8%	$1,700,000
Agency Costs	3%	$700,000
Environmental Documentation	3%	$700,000
Project Management	3%	$700,000
Subtotal Project Development Costs		$5,900,000
Total Project Costs		$27,000,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $100k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-505
KP (PM)
EA
Program Code

DESCRIPTION:
OPTION 3: SB I-505 AT ALLENDALE - WOLFSKILL

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 11,080,000
TOTAL STRUCTURE ITEMS	$ 5,069,000
SUBTOTAL CONSTRUCTION COSTS	$ 16,149,000
TOTAL RIGHT OF WAY ITEMS	$ 2,013,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 18,162,000

Reviewed by Project Engineer _____ (510) 763-2929 _____
Brandon Whitehurst (Phone No.) (Date)

Approved by Project Manager _____ (510) 763-2929 _____
Hans Korve (Phone No.) (Date)

District-County-Route 04-SOL-505
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation - Site	49400	CY	$ 10	$ 494,000	
Roadway Excavation - Frontage Road	4700	LF	$ 30	$ 141,000	
Earthwork	1	LS	$ 300,000	$ 300,000	
Clearing & Grubbing	15.3	Acres	$ 3,000	$ 45,900	
Develop Water Supply	1	LS	$ 100,000	$ 100,000	
				Subtotal Earthwork	$ 1,090,000
Section 2 Pavement Structural Section					
Pavement Section - Ramp (1)	0	0	$ -	$ -	
Pavement Section - Ramp (2)	0	0	$ -	$ -	
Pavement - Truck Scale Site*	670550	SF	$ 5	$ 3,352,750	
Edge Drains - Ramp	0	0	$ -	$ -	
				Subtotal Pavement Structural Section	$ 3,360,000
Section 3 Drainage					
Large Drainage Facilities	0	0	-	$ -	
Storm Drains	0	0	-	$ -	
Pumping Plants	0	0	-	$ -	
Project Drainage (X-Drains, overside, etc.)	1	LS	450,000	$ 450,000	
				Subtotal Drainage	$ 450,000

*Truck Scale Site Pavement includes Racetrack, Parking, Load Adjustment, Off-Ramp and On-Ramp.

District-County-Route 04-SOL-505
KP (PM)
EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls	0	0	$ -	$ -	
Noise Barriers	0	0	$ -	$ -	
Barriers and Guardrails	0	0	$ -	$ -	
Equipment/Animal Passes	0	0	$ -	$ -	
Site Planting & Irrigation	1	LS	$ 175,000	$ 175,000	
Replacement Planting	0	0	$ -	$ -	
Erosion Control	1	LS	$ 75,000	$ 75,000	
Slope Protection	0	0	$ -	$ -	
SWPPP	1	LS	$ 50,000	$ 50,000	
Truck Scale - 1 Static / 1 WIM / Signals	1	LS	$ 400,000	$ 400,000	
Truck Bypass System	1	LS	$ 300,000	$ 300,000	
Hazardous Waste Mitigation	0	0	$ -	$ -	
Resident Engineer Office	1	LS	$ 150,000	$ 150,000	
Curb & Gutter	0	0	$ -	$ -	
AC Dike - Ramp	0	0	$ -	$ -	
				Subtotal Specialty Items	$ 1,150,000

Section 5 Traffic Items					
Site Lighting	1	LS	$ 250,000	$ 250,000	
Traffic Delineation Items	1	LS	$ 75,000	$ 75,000	
Traffic Signals	0	0	$ -	$ -	
Overhead Signs	0	0	$ -	$ -	
Roadside Signs	1	LS	$ 35,000	$ 35,000	
Traffic Control Systems	1	LS	$ 80,000	$ 80,000	
Transportation Management Plan	0	0	$ -	$ -	
Staging/Detour Allowance	0	0	$ -	$ -	
Signing and Striping - Ramp (1)	0	0	$ -	$ -	
Signing and Striping - Ramp (2)	0	0	$ -	$ -	
_____	0	0	$ -	$ -	
				Subtotal Traffic Items	$ 440,000

TOTAL SECTIONS 1 thru 5 $ 6,490,000

District-County-Route 04-SOL-505
KP (PM)
EA

Section 6 Minor Items		Item Cost	Section Cost
$6,490,000 (Subtotal Sections 1 thru 5)	x (10%) =	$ 650,000	
	TOTAL MINOR ITEMS		$ 650,000

Section 7 Roadway Mobilization			
$7,140,000 (Subtotal Sections 1 thru 6)	x (10%) =	$ 720,000	
	TOTAL ROADWAY MOBILIZATION		$ 720,000

Section 8 Roadway Additions

Supplemental Work			
$7,140,000 (Subtotal Sections 1 thru 6)	x (10%) =	$ 720,000	
Contingencies			
$7,140,000 (Subtotal Sections 1 thru 6)	x (35%) =	$2,500,000	
	TOTAL ROADWAY ADDITIONS		$ 3,220,000
	TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)		$ 11,080,000

Estimate Prepared By Bhaskar Molakalapalli (Print Name) (510) 763-2929 (Phone No.) _____ (Date)

Estimate Prepared By _____ Brandon Whitehurst (510) 763-2929 (Phone No.) _____ (Date)

** Use appropriate percentage per Chapter 20.

District-County-Route 04-SOL-505
KP (PM)
EA

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility	12000	SF	$ 320	$ 3,840,000
Bridge Name				
Structure Type				
Width (out to out) - (m)				
Span Lengths - (m)				
Total Area - (m2)				
Footing Type (pile/spread)				
Cost Per m2 (incl. 10% mobilization and 20% contingency)				
Total Cost for Structure				$ 5,068,800

SUBTOTAL STRUCTURES ITEMS $ 5,069,000
(Sum of Total Cost for Structures)

Railroad Related Costs: _____ $ _____

SUBTOTAL RAILROAD ITEMS $ -

TOTAL STRUCTURES ITEMS $ 5,069,000
(Sum of Structures Items plus Railroad Items)

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (510) 763-2929 _____
(Print Name) (Phone No.) (Date)

NOTE: If appropriate attach additional pages and backup.

District-County-Route 04-SOL-505
KP (PM) _____
EA _____

III. RIGHT OF WAY ITEMS — ESCALATED VALUE (100% Contingency)

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
30.50	$ 33,000	$ 1,006,500
100% Contingency		$ 1,006,500
Subtotal		$ 2,013,000

B. Utility Relocation (State share) — $ (inluded in contingency)

C. Relocation Assistance — $ (inluded in contingency)

D Clearance/Demolition — $ (inluded in contingency)

E. Title and Escrow Fees — $ (inluded in contingency)

TOTAL RIGHT OF WAY ITEMS $ 2,013,000
(Escalated Value)

Anticipated Date of Right of Way Certification $_____
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:

_____
_____
_____
_____

Right of Way Branch Cost Estimate for Work* $_____

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By Bhaskar Molakalapalli (Print Name) (510) 763-2929 (Phone No.) _____ (Date)

NOTE: If appropriate, attach additional pages and backup.

Attachment H.4

Revised Option 1:
Capital Cost Estimates

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

DIST - CO - RTE 04-Sol-80/680

PSR, PR, etc.): PR
Program Code:
KP: 0
EA: 0
PP No. : 0

Project Description:

Limits: **Total cost required to build EB truck scales stand alone assuming 1,000 trucks/hour configuration.**

Proposed Improvement: (Scope)

(1) RIGHT OF WAY & UTILITY		$15,470,000
(2) CONSTRUCTION PHASE		
ROADWAY ITEMS		$51,509,000
STRUCTURE ITEMS		$20,594,000
SUBTOTAL CONSTRUCTION PHASE		**$87,573,000**
Env. Mitigation - 2%	$1,750,000	
Change Order Contingency - 6%	$5,250,000	
Project Reserve - 7%	$6,130,000	
Subtotal	$13,130,000	$100,703,000
Construction Management - 8%	$8,060,000	
Agency Costs - 3%	$3,020,000	
Environmental Documentation - 3%	$3,020,000	
Design Engineering - 10%	$10,070,000	
Project Management - 3%	$3,020,000	
Subtotal	$27,190,000	
	TOTAL ALTERNATIVE COST	***$128,000,000***

Reviewed by		(925) 938-0383	09/24/04
Project Engineer	Mike Lohman	(Phone)	(Date)
Approved by		(925) 938-0383	09/24/2004
Project Manager	Mike Lohman	(Phone)	(Date)

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

DIST - CO - RTE	04-Sol-80/680
KP:	0
EA:	0
PP No. :	0

	Quantity	Unit	Unit Price	Unit Cost	Section Cost
Section 1 - Earthwork					
Roadway Excavation	300,000	CY	$10	$3,000,000	
Roadway Excavation - Site	70,000	CY	$10	$700,000	
Imported Borrow	0	CY	$12	$0	
Earthwork - Site Access	1	LS	$3,000,000	$3,000,000	
Clearing & Grubbing	1	LS	$1,000,000	$1,000,000	
Develop Water Supply	1	LS	$0	$0	
				Total Earthwork	$7,700,000
Section 2 - Structural Section *					
Pavement	500,000	SF	$7	$3,500,000	
Pavement - Site	840,000	SF	$5	$4,200,000	
Blanket & Edge Drains	14,000	LF	$20	$280,000	
				Total Structural Section	$7,980,000
Section 3 - Drainage					
Large Drainage Facilities (Raines Drain)	1	LS	$1,000,000	$1,000,000	
Channel Improvements	1	LS	$500,000	$500,000	
Project Drainage	1	LS	$500,000	$500,000	
				Total Drainage	$2,000,000

* Attach sketch showing typical structural section elements of the roadway.
Include (if available) T.I., R-Value, and date when tests were performed

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

DIST - CO - RTE	04-Sol-80/680
KP:	0
EA:	0
PP No. :	0

	Quantity	Unit	Unit Price	Unit Cost	Section Cost
Section 4 - Specialty Items					
Retaining Wall	100,000	SF	$51	$5,100,000	
Sound Wall	0	SF		$0	
Concrete Barrier	5,000	LF	$77	$385,000	
Metal Beam Guard Rail	1,000	LF	$30	$30,000	
Landscaping/Irrigation (normally separate project)	0.0	Ac	$34,000	$0	
SWPPP	1	LS	$700,000	$700,000	
Environmental Mitigation	0	LS		$0	
Truck Scales-1static/4WIM/Signals	1	LS	$1,250,000	$1,250,000	
Sorter WIM	1	LS	$300,000	$300,000	
Truck Bypass System	1	LS	$300,000	$300,000	
Aerial Lead	1	LS	$200,000	$200,000	
AC Dike	0	LF	$5	$0	
Minor Concrete	0	SF	$8	$0	
New Truck Facility Site	0	EA	$0	$0	
				Total Specialty Items	$8,265,000
Section 5 - Traffic Items					
Lighting	1	LS	$600,000	$600,000	
Traffic Signals	0	EA	$50,000	$0	
Ramp Meters	0	EA	$80,000	$0	
Permanent Signing	1	LS	$600,000	$600,000	
Striping	40,000	LF	$1	$40,000	
Traffic Control System	1	LS	$3,000,000	$3,000,000	
Remove Yellow Thermoplastic Stripe	6,500	LF	$4	$26,000	
				Total Traffic Items	$4,266,000
				SUBTOTAL SECTIONS 1 - 5:	$30,211,000

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

DIST - CO - RTE: 04-Sol-80/680
KP: 0
EA: 0
PP No. : 0

					Unit Cost	Section Cost
Section 6 - Minor Items						
Subtotal Sections 1 - 5		$30,211,000	X	10%	$3,021,100.00	
					TOTAL MINOR ITEMS:	$3,021,000
Section 7 - Roadway Mobilization						
Subtotal Sections 1 - 5		$30,211,000				
Minor Items		$3,021,000				
	Sum	$33,232,000	X	10%	$3,323,200.00	
					TOTAL ROADWAY MOBILIZATION	$3,323,000
Section 8 - Roadway Additions						
Supplemental						
Subtotal Sections 1 - 5		$30,211,000				
Minor Items		$3,021,000				
	Sum	$33,232,000	X	10%	$3,323,200.00	
Contingencies						
Subtotal Sections 1 - 5		$30,211,000				
Minor Items		$3,021,000				
	Sum	$33,232,000	X	35%	$11,631,200.00	
					TOTAL ROADWAY ADDITIONS	$14,954,000
					TOTAL ROADWAY ITEMS	$51,509,000
					(Total of Sections 1 - 8)	

Estimate Prepared By: Mike Lohman (925) 938-0383 09/24/04

(Print Name) (Phone) (Date)

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

DIST - CO - RTE	04-Sol-80/680
KP:	0
EA:	0
PP No. :	0

II. STRUCTURES ITEMS #1

Bridge Name	Total of all structures	Truck Scale Office & Insp Facility			
Structure Type					
Additional Width (LF)					
Span Lengths (LF)					
Total Area (SF)	79,000	20,700			
Footing Type (pile/spread)					
Cost per SF	$150	$320			
Including:					
Mobilization: 10%		$662,400			
Contingency: 25%		$1,457,280			
Other					
Total Cost For Structure	$11,850,000	$8,743,680	$0	$0	$0
				SUBTOTAL THIS PAGE	$20,593,680
				TOTAL STRUCTURES ITEMS	$20,594,000
Railroad Related Costs					

COMMENTS:

Estimate Prepared By:	Mike Lohman	(925) 938-0383	09/24/04
	(Print Name)	(Phone)	(Date)

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

DIST - CO - RTE	04-Sol-80/680
KP:	0
EA:	0
PP No. :	0

III. RIGHT OF WAY

Right-of-Way estimates should consider the probable highest and best use and type and intent of improvements at the time of acquisition. Assume acquisition including utility relocation occurs at the right of way certification milestone as shown in the Funding and Scheduling Section of the PSR. For further guidance see Chapter 1, Caltrans Right of Way Procedural Handbook.

	Current Values (Future Use)	Escalation Rate (%/yr)	Escalated Value *
Acquisition, including excess lands and damages to remainders ***	49 Ac @ $150,000/Ac		$7,350,000
	100% Contingency		$7,350,000
Utility Relocation			$770,000
Clearance / Demolition			In Contingency
RAP			In Contingency
R/W Services - Title and Escrow Fees			In Contingency
CONSTRUCTION CONTRACT WORK			In Contingency

TOTAL RIGHT OF WAY ** (CURRENT VALUE) _____

TOTAL ESCALATED RIGHT OF WAY $15,470,000

* - Escalated to assumed year of advertising: _____

** - Current total value for use on sheet 1 of 6, does not include value enhancement cost

Estimate prepared by:	Mike Lohman	(925) 938-0383	09/24/04
	(Print Name)	(Phone)	(Date)

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

DIST - CO - RTE 04-Sol-80/680

PSR, PR, etc.): PR

Program Code:

KP: 0

EA: 0

PP No. : 0

Project Description:

Limits: **Total cost required to build WB truck scales stand alone assuming 1,000 trucks/hour configuration.**

Proposed Improvement: (Scope)

(1) RIGHT OF WAY & UTILITY		$13,900,000
(2) CONSTRUCTION PHASE		
ROADWAY ITEMS		$31,662,000
STRUCTURE ITEMS		$17,004,000
SUBTOTAL CONSTRUCTION PHASE		**$62,566,000**
Env. Mitigation - 2%	$1,250,000	
Change Order Contingency - 6%	$3,750,000	
Project Reserve - 7%	$4,380,000	
Subtotal	$9,380,000	$71,946,000
Construction Management - 8%	$5,760,000	
Agency Costs - 3%	$2,160,000	
Environmental Documentation - 3%	$2,160,000	
Design Engineering - 10%	$7,190,000	
Project Management - 3%	$2,160,000	
Subtotal	$19,430,000	
	TOTAL ALTERNATIVE COST	***$91,000,000***

Reviewed by Project Engineer	Mike Lohman	(925) 938-0383 (Phone)	09/24/04 (Date)
Approved by Project Manager	Mike Lohman	(925) 938-0383 (Phone)	09/24/2004 (Date)

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

DIST - CO - RTE	04-Sol-80/680
KP:	0
EA:	0
PP No. :	0

	Quantity	Unit	Unit Price	Unit Cost	Section Cost
Section 1 - Earthwork					
Roadway Excavation	80,000	CY	$10	$800,000	
Roadway Excavation - Site	70,000	CY	$10	$700,000	
Imported Borrow	13,000	CY	$12	$156,000	
Earthwork - Site / Access	1	LS	$3,000,000	$3,000,000	
Clearing & Grubbing	1	LS	$60,000	$60,000	
Develop Water Supply	1	LS	$0	$0	
				Total Earthwork	$4,716,000
Section 2 - Structural Section *					
Pavement	300,000	SF	$7	$2,100,000	
Pavement - Site	850,000	SF	$5	$4,250,000	
Blanket & Edge Drains	10,000	LF	$20	$200,000	
Bike Path	1	LS	$200,000	$200,000	
				Total Structural Section	$6,750,000
Section 3 - Drainage					
Large Drainage Facilities (Raines Drain)	1	LS	$500,000	$500,000	
Channel Improvements	1	LS	$200,000	$200,000	
Project Drainage	1	LS	$500,000	$500,000	
				Total Drainage	$1,200,000

* Attach sketch showing typical structural section elements of the roadway.
Include (if available) T.I., R-Value, and date when tests were performed

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

DIST - CO - RTE	04-Sol-80/680
KP:	0
EA:	0
PP No. :	0

	Quantity	Unit	Unit Price	Unit Cost	Section Cost
Section 4 - Specialty Items					
Retaining Wall	0	SF	$51	$0	
Sound Wall	0	SF		$0	
Concrete Barrier	1,500	LF	$77	$115,500	
Metal Beam Guard Rail	650	LF	$30	$19,500	
Landscaping/Irrigation (normally separate project)	0.0	Ac	$34,000	$0	
SWPPP	1	LS	$200,000	$200,000	
Environmental Mitigation	0	LS	$0	$0	
Truck Scales-1 static/4WIM/Signals	1	LS	$1,250,000	$1,250,000	
Sorter WIM	1	LS	$300,000	$300,000	
Truck Bypass System	1	LS	$300,000	$300,000	
Aerial Lead	1	LS	$150,000	$150,000	
AC Dike	0	LF	$5	$0	
Minor Concrete	0	SF	$8	$0	
New Truck Facility Site	0	EA	$0	$0	
				Total Specialty Items	$2,335,000
Section 5 - Traffic Items					
Lighting	1	LS	$200,000	$200,000	
Traffic Signals	0	EA	$50,000	$0	
Ramp Meters	0	EA	$80,000	$0	
Permanent Signing	1	LS	$300,000	$300,000	
Striping	45,000	LF	$1	$45,000	
Traffic Control System	1	LS	$3,000,000	$3,000,000	
Remove Yellow Thermoplastic Stripe	6,000	LF	$4	$24,000	
				Total Traffic Items	$3,569,000
				SUBTOTAL SECTIONS 1 - 5:	$18,570,000

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

DIST - CO - RTE	04-Sol-80/680
KP:	0
EA:	0
PP No. :	0

					Unit Cost	Section Cost
Section 6 - Minor Items						
Subtotal Sections 1 - 5		$18,570,000	X	10%	$1,857,000.00	
					TOTAL MINOR ITEMS:	$1,857,000
Section 7 - Roadway Mobilization						
Subtotal Sections 1 - 5		$18,570,000				
Minor Items		$1,857,000				
	Sum	$20,427,000	X	10%	$2,042,700.00	
					TOTAL ROADWAY MOBILIZATION	$2,043,000
Section 8 - Roadway Additions						
Supplemental						
Subtotal Sections 1 - 5		$18,570,000				
Minor Items		$1,857,000				
	Sum	$20,427,000	X	10%	$2,042,700.00	
Contingencies						
Subtotal Sections 1 - 5		$18,570,000				
Minor Items		$1,857,000				
	Sum	$20,427,000	X	35%	$7,149,450.00	
					TOTAL ROADWAY ADDITIONS	$9,192,000
					TOTAL ROADWAY ITEMS	$31,662,000
					(Total of Sections 1 - 8)	

Estimate Prepared By:	Mike Lohman	(925) 938-0383	09/24/04
	(Print Name)	(Phone)	(Date)

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

DIST - CO - RTE: 04-Sol-80/680
KP: 0
EA: 0
PP No. : 0

II. STRUCTURES ITEMS

	#1				
Bridge Name	Total of all structures	Truck Scale Office & Insp Facility			
Structure Type					
Additional Width (LF)					
Span Lengths (LF)					
Total Area (SF)	50,000	22,500			
Footing Type (pile/spread)					
Cost per SF	$150	$320			
Including:					
Mobilization: 10%		$720,000			
Contingency: 20%		$1,584,000			
Other					
Total Cost For Structure	$7,500,000	$9,504,000	$0	$0	$0

SUBTOTAL THIS PAGE $17,004,000

TOTAL STRUCTURES ITEMS $17,004,000

Railroad Related Costs

COMMENTS:

Estimate Prepared By: Mike Lohman (Print Name) (925) 938-0383 (Phone) 09/24/04 (Date)

PRELIMINARY PROJECT COST ESTIMATE SUMMARY

DIST - CO - RTE	04-Sol-80/680
KP:	0
EA:	0
PP No. :	0

III. RIGHT OF WAY

Right-of-Way estimates should consider the probable highest and best use and type and intent of improvements at the time of acquisition. Assume acquisition including utility relocation occurs at the right of way certification milestone as shown in the Funding and Scheduling Section of the PSR. For further guidance see Chapter 1, Caltrans Right of Way Procedural Handbook.

	Current Values (Future Use)	Escalation Rate (%/yr)	Escalated Value *
Acquisition, including excess lands and damages to remainders ***	30 Ac @ $150,000/Ac		$4,500,000
	100% Contingency		$4,500,000
Utility Relocation			$4,900,000
Clearance / Demolition			In Contingency
RAP			In Contingency
R/W Services - Title and Escrow Fees			In Contingency
CONSTRUCTION CONTRACT WORK			In Contingency

TOTAL RIGHT OF WAY ** (CURRENT VALUE) _____

TOTAL ESCALATED RIGHT OF WAY $13,900,000

* - Escalated to assumed year of advertising: _____

** - Current total value for use on sheet 1 of 6, does not include value enhancement cost

Estimate prepared by:	Mike Lohman	(925) 938-0383	09/24/04
	(Print Name)	(Phone)	(Date)

Attachment H.5

Revised Option 3:
Capital Cost Estimates

Cordelia Truck Scale Relocation Study - Cost Summary 9/27/2004

REVISED OPTION 3: EB I-80 BETWEEN PEDRICK TO KIDWELL		
DESCRIPTION		COST
Sub-total Construction Costs		$41,394,000
Right of Way Cost		$16,072,000
Capital Outlay Cost		$57,466,000
Environmental Mitigation Allowance[1]	2%	$1,150,000
Construction Change Order Contingency[1]	6%	$3,450,000
Project Reserve	7%	$4,020,000
Total Construction Costs		$66,086,000
Project Development Costs[2]		
Design Engineering	10%	$6,610,000
Construction Management	8%	$5,290,000
Agency Costs	3%	$1,980,000
Environmental Documentation	3%	$1,980,000
Project Management	3%	$1,980,000
Subtotal Project Development Costs		$17,840,000
Total Project Costs		$84,000,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $1000k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-80
KP (PM) _____
EA _____
Program Code _____

PROJECT DESCRIPTION:

Limits Total cost required to build EB I-80 truck scale between Pedrick and Kidwell (Revised Option 3)

Proposed Improvement (Scope) _____

Alternate _____

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 29,650,000
TOTAL STRUCTURE ITEMS	$ 11,744,000
SUBTOTAL CONSTRUCTION COSTS	$ 41,394,000
TOTAL RIGHT OF WAY ITEMS	$ 16,072,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 57,466,000

Reviewed by District Program Manager _____ Date _____
(Signature)

Approved by Project Manager _____ Date _____
(Signature)

Phone No. _____

District-County-Route 04-SOL-80
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation	100000	CY	$ 10	$ 1,000,000	
Roadway Excavation - Site	60000	CY	$ 10	$ 600,000	
Imported Borrow	20000	CY	$ 12	$ 240,000	
Earthwork - Site/Access/Mass Grading	1	LS	$ 750,000	$ 750,000	
Clearing & Grubbing	1	LS	$ 60,000	$ 60,000	
Develop Water Supply	1	LS	$ -	$ -	
				Subtotal Earthwork	$ 2,650,000
Section 2 Pavement Structural Section					
Pavement	855000	SF	$ 7	$ 5,985,000	
Pavement - Truck Scale Site*	750000	SF	$ 5	$ 3,750,000	
Edge Drains - Ramp	14500	LS	$ 20	$ 290,000	
				Subtotal Pavement Structural Section	$10,025,000
Section 3 Drainage					
Large Drainage Facilities	1	LS	$ 200,000	$ 200,000	
Storm Drains	0	LF	$ 85	$ -	
Project Drainage (X-Drains, overside, etc.	1	LS	$ 500,000	$ 500,000	
Irrigation Improvements	1	LS	$ 200,000	$ 200,000	
				Subtotal Drainage	$ 900,000

*Truck Scale Site Pavement includes Racetrack, Parking, Load Adjustment, Off-Ramp and On-Ramp.

District-County-Route 04-SOL-80
KP (PM)
EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls	1600	SF	$ 120	$ 192,000	
Noise Barriers	0	0	$ -	$ -	
Concrete Barrier	500	LF	$ 77	$ 38,500	
Metal Beam Guard Rail	500	LF	$ 30	$ 15,000	
Equipment/Animal Passes	0	0	$ -	$ -	
Site Planting & Irrigation	0	0	$ -	$ -	
Replacement Planting	0	0	$ -	$ -	
Erosion Control	0	0	$ -	$ -	
Slope Protection	0	0	$ -	$ -	
SWPPP	1	LS	$ 200,000	$ 200,000	
Truck Scales - 1 Static / 2 WIM / Signals	1	LS	$ 1,250,000	$ 1,250,000	
Sorter WIM Scale	1	LS	$ 300,000	$ 300,000	
Truck Bypass System	1	LS	$ 300,000	$ 300,000	
Hazardous Waste Mitigation	0	0	$ -	$ -	
Resident Engineer Office	0	0	$ -	$ -	
Curb & Gutter	0	0	$ -	$ -	
AC Dike	0	LF	$ 5	$ -	
Landscaping/Irrigation	1	LS	$ 300,000	$ 300,000	
Aerial Lead	1	LS	$ 150,000	$ 150,000	
				Subtotal Specialty Items	$ 2,745,500

Section 5 Traffic Items					
Lighting	1	LS	$ 250,000	$ 250,000	
Traffic Delineation Items	45000	LF	$ 1	$ 45,000	
Traffic Signals	0	0	$ 50,000	$ -	
Overhead Signs	0	0	$ -	$ -	
Roadside Signs	0	0	$ -	$ -	
Traffic Control Systems	1	LS	$ 500,000	$ 500,000	
Transportation Management Plan	0	0	$ -	$ -	
Staging/Detour Allowance	0	0	$ -	$ -	
Ramp Meters	0	EA	$ 80,000	$ -	
Permanent Signing	1	LS	$ 250,000	$ 250,000	
Remove Yellow Thermoplastic Stripe	6000	LF	$ 4	$ 24,000	
				Subtotal Traffic Items	$ 1,069,000

TOTAL SECTIONS 1 thru 5 $17,389,500

District-County-Route 04-SOL-80
KP (PM)
EA

Section 6 Minor Items		Item Cost	Section Cost
$ 17,389,500 (Subtotal Sections 1 thru 5)	x (10%) =	$1,738,950	
		TOTAL MINOR ITEMS	$ 1,739,000

Section 7 Roadway Mobilization			
$ 19,128,450 (Subtotal Sections 1 thru 6)	x (10%) =	$1,912,845	
		TOTAL ROADWAY MOBILIZATION	$ 1,913,000

Section 8 Roadway Additions

Supplemental Work			
$ 19,128,450 (Subtotal Sections 1 thru 6)	x (10%) =	$1,912,845	
Contingencies			
$ 19,128,450 (Subtotal Sections 1 thru 6)	x (35%) =	$6,694,958	
		TOTAL ROADWAY ADDITIONS	$ 8,608,000
		TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)	$29,650,000

Estimate Prepared By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

Estimate Checked By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

** Use appropriate percentage per Chapter 20.

District-County-Route 04-SOL-80
KP (PM)
EA

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility	20700	SF	$ 320	$ 6,624,000
			10% Mobilization	$ 662,400
			20% Contingency	$ 1,457,280
			Subtotal	$ 8,743,680

	Total of all structures		
Bridge Name			
Structure Type			
Width (out to out) - (ft)			
Span Lengths - (ft)			
Total Area - (ft2)	20,000		
Cost Per ft2 (incl. 10% mobilization and 20% contingency)	$ 150		
Total Cost for Structure	$3,000,000		$3,000,000

SUBTOTAL STRUCTURES ITEMS $11,743,680
(Sum of Total Cost for Structures)

Railroad Related Costs: _____ $_____

SUBTOTAL RAILROAD ITEMS $ -

TOTAL STRUCTURES ITEMS $11,744,000
(Sum of Structures Items plus Railroad Items)

COMMENTS:

Estimate Prepared By Mike Lohman Phone # (925) 938-0383 Date 09/27/04

NOTE: If appropriate attach additional pages and backup.

District-County-Route 04-SOL-80
KP (PM) _____
EA _____

III. RIGHT OF WAY ITEMS **ESCALATED VALUE (100% Contingency)**

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
69	$ 44,000	$ 3,036,000
100% Contingency		$ 13,036,000
Subtotal		$ 16,072,000

B. Utility Relocation (State share) $ (included in contingency)

C. Relocation Assistance $ (included in contingency)

D Clearance/Demolition $ (included in contingency)

E. Title and Escrow Fees $ (included in contingency)

TOTAL RIGHT OF WAY ITEMS $16,072,000
(Escalated Value)

Anticipated Date of Right of Way Certification $_____
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:

_____
_____
_____
_____

Right of Way Branch Cost Estimate for Work* $_____

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

NOTE: If appropriate, attach additional pages and backup.

Cordelia Truck Scale Relocation Study - Cost Summary 9/27/2004

REVISED OPTION 3: WB I-80 BETWEEN PEDRICK TO KIDWELL

DESCRIPTION		COST
Sub-total Construction Costs		$36,752,000
Right of Way Cost		$4,020,000
Capital Outlay Cost		$40,772,000
Environmental Mitigation Allowance[1]	2%	$820,000
Construction Change Order Contingency[1]	6%	$2,450,000
Project Reserve	7%	$2,850,000
Total Construction Costs		$46,892,000
Project Development Costs[2]		
Design Engineering	10%	$4,690,000
Construction Management	8%	$3,750,000
Agency Costs	3%	$1,410,000
Environmental Documentation	3%	$1,410,000
Project Management	3%	$1,410,000
Subtotal Project Development Costs		$12,670,000
Total Project Costs		$60,000,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $1000k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-80
KP (PM) _____
EA _____
Program Code _____

PROJECT DESCRIPTION:

Limits Total cost required to build WB I-80 truck scale between Pedrick and Kidwell (Revised Option 3)

Proposed Improvement (Scope) _____

Alternate _____

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 25,308,000
TOTAL STRUCTURE ITEMS	$ 11,444,000
SUBTOTAL CONSTRUCTION COSTS	$ 36,752,000
TOTAL RIGHT OF WAY ITEMS	$ 4,020,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 40,772,000

Reviewed by District Program Manager _____ Date _____
(Signature)

Approved by Project Manager _____ Date _____
(Signature)

Phone No. _____

District-County-Route 04-SOL-80
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation	50000	CY	$ 10	$ 500,000	
Roadway Excavation - Site	70000	CY	$ 10	$ 700,000	
Imported Borrow	50000	CY	$ 12	$ 600,000	
Earthwork - Site/Access/Mass Grading	1	LS	$ 750,000	$ 750,000	
Clearing & Grubbing	1	LS	$ 200,000	$ 200,000	
Develop Water Supply	1	LS	$ -	$ -	
				Subtotal Earthwork	$ 2,750,000
Section 2 Pavement Structural Section					
Pavement	400000	SF	$ 7	$ 2,800,000	
Pavement - Truck Scale Site*	840000	SF	$ 5	$ 4,200,000	
Edge Drains - Ramp	13000	LS	$ 20	$ 260,000	
				Subtotal Pavement Structural Section	$ 7,260,000
Section 3 Drainage					
Large Drainage Facilities	1	LS	$ 200,000	$ 200,000	
Storm Drains	0	LF	$ -	$ -	
Project Drainage (X-Drains, overside, etc.	1	LS	$ 500,000	$ 500,000	
Irrigation Improvements	1	LS	$ 200,000	$ 200,000	
				Subtotal Drainage	$ 900,000

*Truck Scale Site Pavement includes Racetrack, Parking, Load Adjustment, Off-Ramp and On-Ramp.

District-County-Route 04-SOL-80
KP (PM)
EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls	2200	SF	$ 120	$ 264,000	
Noise Barriers	0	0	$ -	$ -	
Concrete Barrier	500	LF	$ 77	$ 38,500	
Metal Beam Guard Rail	500	LF	$ 30	$ 15,000	
Equipment/Animal Passes	0	0	$ -	$ -	
Site Planting & Irrigation	0	0	$ -	$ -	
Replacement Planting	0	0	$ -	$ -	
Erosion Control	0	0	$ -	$ -	
Slope Protection	0	0	$ -	$ -	
SWPPP	1	LS	$ 300,000	$ 300,000	
Truck Scales - 1 Static / 4 WIM / Signals	1	LS	$ 1,250,000	$ 1,250,000	
Sorter WIM Scale	1	LS	$ 300,000	$ 300,000	
Truck Bypass System	1	LS	$ 300,000	$ 300,000	
Hazardous Waste Mitigation	0	0	$ -	$ -	
Resident Engineer Office	0	0	$ -	$ -	
Curb & Gutter	0	0	$ -	$ -	
AC Dike	0	LF	$ 5	$ -	
Landscaping/Irrigation	1	LS	$ 300,000	$ 300,000	
Aerial Lead	1	LS	$ 200,000	$ 200,000	
				Subtotal Specialty Items	$ 2,967,500

Section 5 Traffic Items					
Lighting	1	LS	$ 200,000	$ 200,000	
Traffic Delineation Items	40000	LF	$ 1	$ 40,000	
Traffic Signals	0	0	$ 50,000	$ -	
Overhead Signs	0	0	$ -	$ -	
Roadside Signs	0	0	$ -	$ -	
Traffic Control Systems	1	LS	$ 500,000	$ 500,000	
Transportation Management Plan	0	0	$ -	$ -	
Staging/Detour Allowance	0	0	$ -	$ -	
Ramp Meters	0	EA	$ 80,000	$ -	
Permanent Signing	1	LS	$ 200,000	$ 200,000	
Remove Yellow Thermoplastic Stripe	6500	LF	$ 4	$ 26,000	
				Subtotal Traffic Items	$ 966,000

TOTAL SECTIONS 1 thru 5 $14,843,500

District-County-Route 04-SOL-80
KP (PM)
EA

Section 6 Minor Items			Item Cost	Section Cost
	$ 14,843,500 (Subtotal Sections 1 thru 5)	x (10%) =	$1,484,350	
			TOTAL MINOR ITEMS	$ 1,484,000

Section 7 Roadway Mobilization				
	$ 16,327,850 (Subtotal Sections 1 thru 6)	x (10%) =	$1,632,790	
			TOTAL ROADWAY MOBILIZATION	$ 1,633,000

Section 8 Roadway Additions

Supplemental Work	$ 16,327,850 (Subtotal Sections 1 thru 6)	x (10%) =	$1,632,790	
Contingencies	$ 16,327,850 (Subtotal Sections 1 thru 6)	x (35%) =	$5,714,750	
			TOTAL ROADWAY ADDITIONS	$ 7,347,000
			TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)	$25,308,000

Estimate Prepared By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

Estimate Checked By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

** Use appropriate percentage per Chapter 20.

District-County-Route 04-SOL-80
KP (PM)
EA

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility	20700	SF	$ 320	$ 6,624,000
			10% Mobilization	$ 662,400
			20% Contingency	$ 1,457,280
			Subtotal	$ 8,743,680

	Total of all structures		
Bridge Name			
Structure Type			
Width (out to out) - (ft)			
Span Lengths - (ft)			
Total Area - (ft2)	18,000		
Cost Per ft2 (incl. 10% mobilization and 20% contingency)	$ 150		
Total Cost for Structure	$2,700,000		$2,700,000

	SUBTOTAL STRUCTURES ITEMS (Sum of Total Cost for Structures)	$11,443,680
Railroad Related Costs:		$
	SUBTOTAL RAILROAD ITEMS	$ -
	TOTAL STRUCTURES ITEMS (Sum of Structures Items plus Railroad Items)	$11,444,000

COMMENTS:

Estimate Prepared By Mike Lohman Phone # (925) 938-0383 Date 09/27/04

NOTE: If appropriate attach additional pages and backup.

District-County-Route 04-SOL-80
KP (PM)
EA

III. RIGHT OF WAY ITEMS **ESCALATED VALUE (100% Contingency)**

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
40	$ 44,000	$ 1,760,000
100% Contingency		$ 2,260,000
Subtotal		$ 4,020,000

B. Utility Relocation (State share) $ (included in contingency)

C. Relocation Assistance $ (included in contingency)

D Clearance/Demolition $ (included in contingency)

E. Title and Escrow Fees $ (included in contingency)

TOTAL RIGHT OF WAY ITEMS $ 4,020,000
(Escalated Value)

Anticipated Date of Right of Way Certification $_____
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:

_____
_____
_____
_____

Right of Way Branch Cost Estimate for Work* $_____

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

NOTE: If appropriate, attach additional pages and backup.

Cordelia Truck Scale Relocation Study - Cost Summary 9/27/2004

REVISED OPTION 3: EB SR 12 AT BRANSCOME		
DESCRIPTION		COST
Sub-total Construction Costs		$ 21,000,000
Right of Way Cost		$ 1,500,000
Capital Outlay Cost		$ 22,500,000
Environmental Mitigation Allowance[1]	2%	$ 450,000
Construction Change Order Contingency[1]	6%	$ 1,350,000
Project Reserve	7%	$ 1,580,000
Total Construction Costs		$ 25,880,000
Project Development Costs[2]		
Design Engineering	10%	$ 2,600,000
Construction Management	8%	$ 2,100,000
Agency Costs	3%	$ 800,000
Environmental Documentation	3%	$ 800,000
Project Management	3%	$ 800,000
Subtotal Project Development Costs		$ 7,100,000
Total Project Costs		$ 33,000,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $1000k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-12
KP (PM) _____
EA _____
Program Code _____

PROJECT DESCRIPTION:

Limits Total cost required to build EB SR12 truck scale at Branscome (Revised Option 3)

Proposed Improvement (Scope) _____

Alternate _____

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 15,900,000
TOTAL STRUCTURE ITEMS	$ 5,069,000
SUBTOTAL CONSTRUCTION COSTS	$ 20,969,000
TOTAL RIGHT OF WAY ITEMS	$ 1,510,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 22,479,000

Reviewed by District Program Manager _____ Date _____
(Signature)

Approved by Project Manager _____ Date _____
(Signature)

Phone No. _____

District-County-Route 04-SOL-12
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation - Site	49400	CY	$ 10	$ 494,000	
Earthwork	1	LS	$ 250,000	$ 250,000	
Earthwork - Site/Access/Mass Gradin	1	LS	$ 300,000	$ 300,000	
Clearing & Grubbing	17.2	Acres	$ 3,000	$ 51,600	
Develop Water Supply	1	LS	$ 100,000	$ 100,000	$ 1,200,000
				Subtotal Earthwork	
Section 2 Pavement Structural Section					
Pavement Section	350000	0	$ 7	$ 2,450,000	
Pavement Section - Ramp	0	0	$ -	$ -	
Pavement - Truck Scale Site*	641750	SF	$ 5	$ 3,208,750	
Edge Drains - Ramp	0	0	$ -	$ -	$ 5,660,000
				Subtotal Pavement Structural Section	
Section 3 Drainage					
Large Drainage Facilities	0	0	$ -	$ -	
Storm Drains	0	0	$ -	$ -	
Pumping Plants	0	0	$ -	$ -	
Project Drainage (X-Drains, overside, etc.)	1	LS	800000	$ 800,000	
					$ 800,000
				Subtotal Drainage	

*Truck Scale Site Pavement includes Racetrack, Parking, Load Adjustment, Off-Ramp and On-Ramp.

District-County-Route
KP (PM)
EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls	0	0	$ -	$ -	
Noise Barriers	0	0	$ -	$ -	
Barriers and Guardrails	0	0	$ -	$ -	
Equipment/Animal Passes	0	0	$ -	$ -	
Site Planting & Irrigation	1	LS	$ 150,000	$ 150,000	
Replacement Planting	0	0	$ -	$ -	
Erosion Control	1	LS	$ 85,000	$ 85,000	
Slope Protection	0	0	$ -	$ -	
SWPPP	1	LS	$ 100,000	$ 100,000	
Truck Scale/1Static/1WIM/Signals	1	LS	$ 400,000	$ 400,000	
Truck Bypass System	1	LS	$ 300,000	$ 300,000	
Hazardous Waste Mitigation	0	0	$ -	$ -	
Resident Engineer Office	1	LS	$ 150,000	$ 150,000	
Curb & Gutter	0	0	$ -	$ -	
AC Dike - Ramp	0	0	$ -	$ -	$ 1,190,000
				Subtotal Specialty Items	

Section 5 Traffic Items					
Site Lighting	1	LS	$ 250,000	$ 250,000	
Traffic Delineation Items	1	LS	$ 33,000	$ 33,000	
Traffic Signals	0	0	$ -	$ -	
Overhead Signs	1	EA	$ 75,000	$ 75,000	
Roadside Signs	1	LS	$ 25,000	$ 25,000	
Traffic Control Systems	1	LS	$ 80,000	$ 80,000	
Transportation Management Plan	0	0	$ -	$ -	
Staging/Detour Allowance	0	0	$ -	$ -	
Signing and Striping - Ramp (1)	0	0	$ -	$ -	
Signing and Striping - Ramp (2)	0	0	$ -	$ -	
_____	0	0	$ -	$ -	$ 460,000
				Subtotal Traffic Items	
					$ 9,310,000
				TOTAL SECTIONS 1 thru 5	

Section 6 Minor Items	Item Cost	Section Cost
$9,310,000 x (10%) = $ 940,000 (Subtotal Sections 1 thru 5)		
	TOTAL MINOR ITEMS	$ 940,000

Section 7 Roadway Mobilization

$10,250,000 x (10%) = $1,030,000
(Subtotal Sections 1 thru 6)

TOTAL ROADWAY MOBILIZATION	$ 1,030,000

Section 8 Roadway Additions

Supplemental Work
$10,250,000 x (10%) = $1,030,000
(Subtotal Sections 1 thru 6)

Contingencies
$10,250,000 x (35%) = $3,590,000
(Subtotal Sections 1 thru 6)

TOTAL ROADWAY ADDITIONS	$ 4,620,000
TOTAL ROADWAY ITEMS (Subtotal Sections 1 thru 8)	$ 15,900,000

Estimate Prepared By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

Estimate Checked By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

** Use appropriate percentage per Chapter 20.

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility	12000	SF	$ 320	$ 3,840,000
Bridge Name				
Structure Type				
Width (out to out) - (m)				
Span Lengths - (m)				
Total Area - (m2)				
Footing Type (pile/spread)				
Cost Per m2 (incl. 10% mobilization and 20% contingency)				
Total Cost for Structure				$ 5,068,800

		$ 5,069,000
	SUBTOTAL STRUCTURES ITEMS (Sum of Total Cost for Structures)	$
Railroad Related Costs:		$ -
	SUBTOTAL RAILROAD ITEMS	$ 5,069,000
	TOTAL STRUCTURES ITEMS (Sum of Structures Items plus Railroad Items)	

COMMENTS:

Estimate Prepared By Mike Lohman Phone # (925) 938-0383 Date 09/27/04

NOTE: If appropriate attach additional pages and backup.

III. RIGHT OF WAY ITEMS — ESCALATED VALUE (100% Contingency)

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
34.3	$ 22,000	$ 754,600
100% Contingency		$ 754,600
Subtotal		$ 1,510,000

B. Utility Relocation (State share) — $ (inluded in contingency)

C. Relocation Assistance — $ (inluded in contingency)

D Clearance/Demolition — $ (inluded in contingency)

E. Title and Escrow Fees — $ (inluded in contingency)

$ 1,510,000

TOTAL RIGHT OF WAY ITEMS
(Escalated Value)

$_____

Anticipated Date of Right of Way Certification
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:

_____
_____
_____
_____

$_____

Right of Way Branch Cost Estimate for Work*

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

NOTE: If appropriate, attach additional pages and backup.

Cordelia Truck Scale Relocation Study - Cost Summary 9/27/2004

REVISED OPTION 3: WB SR 12 AT BRANSCOME		
DESCRIPTION		COST
Sub-total Construction Costs		$19,700,000
Right of Way Cost		$1,300,000
Capital Outlay Cost		$21,000,000
Environmental Mitigation Allowance[1]	2%	$400,000
Construction Change Order Contingency[1]	6%	$1,300,000
Project Reserve	7%	$1,500,000
Total Construction Costs		$24,200,000
Project Development Costs[2]		
Design Engineering	10%	$2,400,000
Construction Management	8%	$2,000,000
Agency Costs	3%	$800,000
Environmental Documentation	3%	$800,000
Project Management	3%	$800,000
Subtotal Project Development Costs		$6,800,000
Total Project Costs		$31,000,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $1000k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

CORDELIA TRUCK SCALE RELOCATION STUDY
PLANNING COST ESTIMATE

District-County-Route 04-SOL-12
KP (PM) _____
EA _____
Program Code _____

PROJECT DESCRIPTION:

Limits Total cost required to build WB SR12 truck scale at Branscome (Revised Option 3)

Proposed Improvement (Scope) _____

Alternate _____

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	$ 14,650,000
TOTAL STRUCTURE ITEMS	$ 5,069,000
SUBTOTAL CONSTRUCTION COSTS	$ 19,719,000
TOTAL RIGHT OF WAY ITEMS	$ 1,334,000
TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 21,053,000

Reviewed by District Program Manager _____ Date _____
(Signature)

Approved by Project Manager _____ Date _____
(Signature)

Phone No. _____

District-County-Route 04-SOL-12
KP (PM)
EA

I. ROADWAY ITEMS

Section 1 Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation - Site	49400	CY	$ 10	$ 494,000	
Earthwork	1	LS	$ 300,000	$ 300,000	
Clearing & Grubbing	15.2	Acres	$ 3,000	$ 45,600	
Develop Water Supply	1	LS	$ 100,000	$ 100,000	
				Subtotal Earthwork	$ 940,000
Section 2 Pavement Structural Section					
Pavement Section	300000	0	$ 7	$ 2,100,000	
Pavement Section - Ramp	0	0	$ -	$ -	
Pavement - Truck Scale Site Site*	641750	SF	$ 5	$ 3,208,750	
Edge Drains - Ramp	0	0	$ -	$ -	
				Subtotal Pavement Structural Section	$ 5,310,000
Section 3 Drainage					
Large Drainage Facilities	0	0	-	$ -	
Storm Drains	0	0	-	$ -	
Pumping Plants	0	0	-	$ -	
Project Drainage (X-Drains, overside, etc.)	1	LS	750,000	$ 750,000	
				Subtotal Drainage	$ 750,000

*Truck Scale Site Pavement includes Racetrack, Parking, Load Adjustment, Off-Ramp and On-Ramp.

District-County-Route 04-SOL-12
KP (PM)
EA

Section 4 Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Retaining Walls	0	0	$ -	$ -	
Noise Barriers	0	0	$ -	$ -	
Barriers and Guardrails	0	0	$ -	$ -	
Equipment/Animal Passes	0	0	$ -	$ -	
Site Planting & Irrigation	1	LS	$ 150,000	$ 150,000	
Replacement Planting	0	0	$ -	$ -	
Erosion Control	1	LS	$ 65,000	$ 65,000	
Slope Protection	0	0	$ -	$ -	
SWPPP	1	LS	$ 50,000	$ 50,000	
Truck Scale/1Static/1WIM/Signals	1	LS	$ 400,000	$ 400,000	
Truck Bypass System	1	LS	$ 300,000	$ 300,000	
Hazardous Waste Mitigation	0	0	$ -	$ -	
Resident Engineer Office	1	LS	$ 150,000	$ 150,000	
Curb & Gutter	0	0	$ -	$ -	
AC Dike - Ramp	0	0	$ -	$ -	
				Subtotal Specialty Items	$ 1,120,000

Section 5 Traffic Items					
Site Lighting	1	LS	$ 250,000	$ 250,000	
Traffic Delineation Items	1	LS	$ 33,000	$ 33,000	
Traffic Signals	0	0	$ -	$ -	
Overhead Signs	1	EA	$ 75,000	$ 75,000	
Roadside Signs	1	LS	$ 25,000	$ 25,000	
Traffic Control Systems	1	LS	$ 80,000	$ 80,000	
Transportation Management Plan	0	0	$ -	$ -	
Staging/Detour Allowance	0	0	$ -	$ -	
Signing and Striping - Ramp (1)	0	0	$ -	$ -	
Signing and Striping - Ramp (2)	0	0	$ -	$ -	
_____	0	0	$ -	$ -	
				Subtotal Traffic Items	$ 460,000

TOTAL SECTIONS 1 thru 5 $ 8,580,000

District-County-Route 04-SOL-12
KP (PM)
EA

Section 6 Minor Items	Item Cost	Section Cost
$8,580,000 x (10%) = $ 860,000 (Subtotal Sections 1 thru 5)		
	TOTAL MINOR ITEMS	$ 860,000

Section 7 Roadway Mobilization

$9,440,000 x (10%) = $ 950,000
(Subtotal Sections 1 thru 6)

TOTAL ROADWAY MOBILIZATION $ 950,000

Section 8 Roadway Additions

Supplemental Work
$9,440,000 x (10%) = $ 950,000
(Subtotal Sections 1 thru 6)

Contingencies
$9,440,000 x (35%) = $3,310,000
(Subtotal Sections 1 thru 6)

TOTAL ROADWAY ADDITIONS $ 4,260,000

TOTAL ROADWAY ITEMS $ 14,650,000
(Subtotal Sections 1 thru 8)

Estimate Prepared By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

Estimate Checked By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

** Use appropriate percentage per Chapter 20.

District-County-Route 04-SOL-12
KP (PM)
EA

II. STRUCTURES ITEMS

	Quantity	Unit	Unit Price	Item Cost
Office and Inspection Facility	12000	SF	$ 320	$ 3,840,000
Bridge Name				
Structure Type				
Width (out to out) - (m)				
Span Lengths - (m)				
Total Area - (m2)				
Footing Type (pile/spread)				
Cost Per m2 (incl. 10% mobilization and 20% contingency)				
Total Cost for Structure				$ 5,068,800

SUBTOTAL STRUCTURES ITEMS $ 5,069,000
(Sum of Total Cost for Structures)

Railroad Related Costs: _____ $ _____

SUBTOTAL RAILROAD ITEMS $ -

TOTAL STRUCTURES ITEMS $ 5,069,000
(Sum of Structures Items plus Railroad Items)

COMMENTS:

Estimate Prepared By Mike Lohman Phone # (925) 938-0383 Date 09/27/04

NOTE: If appropriate attach additional pages and backup.

District-County-Route 04-SOL-12
KP (PM) _____
EA _____

III. RIGHT OF WAY ITEMS ESCALATED VALUE (100% Contingency)

A. Acquisition, including excess lands, damages to remainder(s) and Goodwill

Acres	Cost/Acre	
30.3	$ 22,000	$ 666,600
100% Contingency		$ 666,600
Subtotal		$ 1,334,000

B. Utility Relocation (State share) $ (inluded in contingency)

C. Relocation Assistance $ (inluded in contingency)

D Clearance/Demolition $ (inluded in contingency)

E. Title and Escrow Fees $ (inluded in contingency)

TOTAL RIGHT OF WAY ITEMS $ 1,334,000
(Escalated Value)

Anticipated Date of Right of Way Certification $_____
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work:

_____
_____
_____
_____

Right of Way Branch Cost Estimate for Work* $_____

*This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items.

COMMENTS:

Estimate Prepared By _____ Phone # (925) 938-0383 Date 09/27/04
Mike Lohman

NOTE: If appropriate, attach additional pages and backup.

Cordelia Truck Scale Relocation Study - Cost Summary

REVISED OPTION 3: NB I-505 AT MIDWAY - ALLENDALE (SAME AS OPTION 3)		
DESCRIPTION		COST
Sub-total Construction Costs		$ 15,300,000
Right of Way Cost		$ 1,600,000
Capital Outlay Cost		$ 16,900,000
Environmental Mitigation Allowance[1]	2%	$ 400,000
Construction Change Order Contingency[1]	6%	$ 1,100,000
Project Reserve	7%	$ 1,200,000
Total Construction Costs		$ 19,600,000
Project Development Costs[2]		
Design Engineering	10%	$ 1,900,000
Construction Management	8%	$ 1,600,000
Agency Costs	3%	$ 600,000
Environmental Documentation	3%	$ 600,000
Project Management	3%	$ 600,000
Subtotal Project Development Costs		$ 5,300,000
Total Project Costs		$ 24,900,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $1000k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves

Cordelia Truck Scale Relocation Study - Cost Summary

REVISED OPTION 3: SB I-505 AT ALLENDALE - WOLFSKILL **(SAME AS OPTION 3)**		
DESCRIPTION		COST
Sub-total Construction Costs		$ 16,200,000
Right of Way Cost		$ 2,100,000
Capital Outlay Cost		$ 18,300,000
Environmental Mitigation Allowance[1]	2%	$ 400,000
Construction Change Order Contingency[1]	6%	$ 1,100,000
Project Reserve	7%	$ 1,300,000
Total Construction Costs		$ 21,100,000
Project Development Costs[2]		
Design Engineering	10%	$ 2,100,000
Construction Management	8%	$ 1,700,000
Agency Costs	3%	$ 700,000
Environmental Documentation	3%	$ 700,000
Project Management	3%	$ 700,000
Subtotal Project Development Costs		$ 5,900,000
Total Project Costs		$ 27,000,000

Note: Capital Outlay Costs includes 10% for minor items, 10% for mobilization, 10% for supplemental work and 35% for roadway items, plus 20% contingency and 10% mobilization for structural items.

Assumptions:
ROW costs based upon preliminary estimates of land values prepared by Associated Right of Way Services.
Project costs rounded up to nearest $1000k increment.

Note: 1. Percent of Capital Outlay Costs
2. Percent of Capital Costs and Reserves