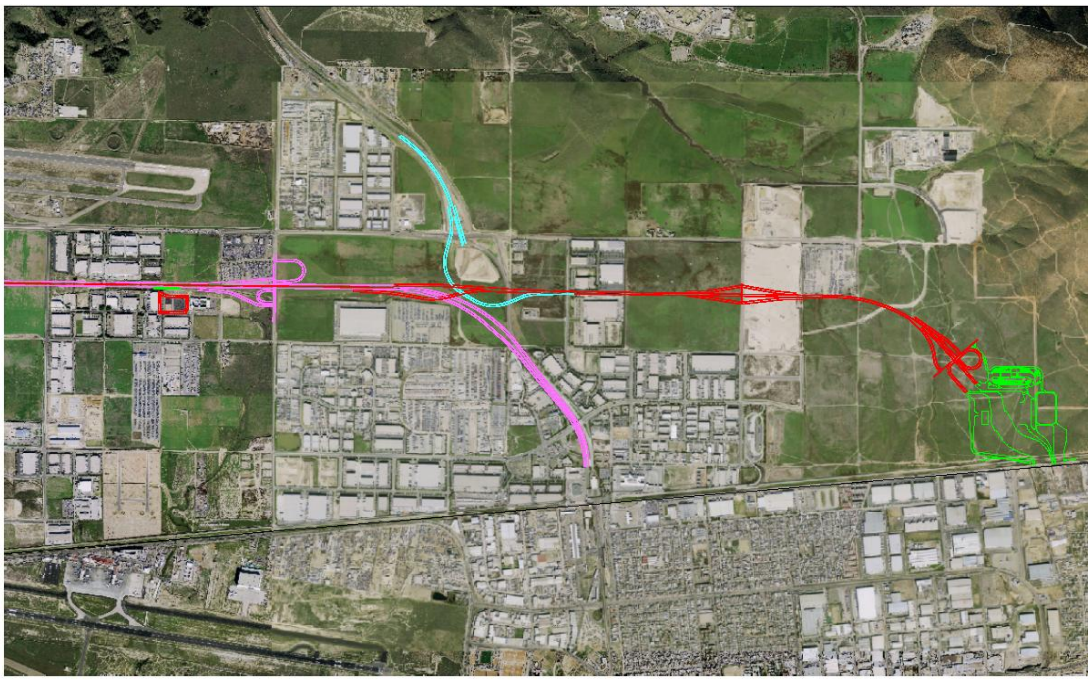
STATE ROUTE 11 *NADR*



Noise Abatement Decision Report

From Britannia Blvd. on SR 905 to the Border of Mexico East of SR 905/Otay Mesa Border Crossing

Construction of 4-Lane Freeway

11-SD-905-PM R8.4-10.1 and 11-SD-11-PM 0.0-2.1

EA 056310

November 2010

Caltrans

Noise Abatement Decision Report

From Britannia Blvd. on SR 905 to the Border of Mexico East of

SR 905/Otay Mesa Border Crossing

Construction of 4-Lane Freeway

11-SD-905-PM R8.4-10.1 and 11-SD-11-PM 0.0-2.1

EA 056310

November 2010

Approved By: _____ Date: November 30, 2010

Nicola Bernard,
District 11

List of Abbreviated Terms

Caltrans	California Department of Transportation
dB	A measure of sound pressure level on a logarithmic scale
dBA	A-weighted sound pressure level
FHWA	Federal Highway Administration
Leq	Equivalent sound level (energy averaged sound level)
Leq[h]	A-weighted, energy average sound level during a 1-hour period
Benefited residence	A dwelling unit expected to receive a noise reduction of at least 5 dBA from the proposed abatement measure
Critical design receiver	The design receiver that is impacted and for which the absolute noise levels, build vs. existing noise levels, or achievable noise reduction will be at a maximum where noise abatement is considered
Planned, designed, and programmed	A noise-sensitive land use is considered planned, designed, and programmed when it has received final development approval (generally the issuance of a building permit) from the local agency with jurisdiction
Date of public knowledge	The date that a project is approved—approval of the final environmental documentation (e.g., Record of Decision) is complete
NSR	Noise study report
NADR	Noise Abatement Decision Report
NAC	Noise abatement criteria
ED	Environmental document
Reasonable allowance	A single dollar value—a reasonable allowance per benefited residence that embodies five reasonableness factors
POE	Port of Entry
CVEF	Commercial Vehicle Enforcement Facility
HOV	High Occupancy Vehicle

Executive Summary

The Caltrans Traffic Noise Analysis Protocol (Protocol) specifies that Caltrans must address issues arising due to noise impacts produced by State projects. The Noise Study Report (NSR) is the source of the project noise level information used for this Noise Abatement Decision Report (NADR) and is hereby incorporated, in its entirety, by reference. The NADR represents the preliminary decision regarding noise abatement for the State Route 11 (SR-11) Project and is presented to the public for comment prior to final decision.

The SR-11 is to be located in southern portion of the City and County of San Diego in the community of Otay Mesa. The purpose of the project is to provide access, via a four-lane highway, to a new Port of Entry to be built concurrent with the SR-11 project. The project extends from 0.2 mile west of Britannia Boulevard along State Route 905 (SR-905) and then proceeds east and south, along the new SR-11 alignment, to the border. There are three build alternatives under consideration. However, each alternative ties into SR-905 and makes similar changes to that segment of the project. Southwestern College Higher Education Facility, the site shown in the NSR as having noise impacts greater than 12-dBA, is located along this segment of the project.

The preliminary noise abatement decision is based on the *feasibility* of evaluated abatement and the *preliminary reasonableness determination.* Noise abatement is considered to be acoustically feasible if it provides noise reduction of at least 5-dBA at receivers subject to noise impacts. The preliminary reasonableness determination is made by calculating an allowance that is considered to be a reasonable amount of money, per benefited residence, to spend on abatement. This *reasonable allowance* is then compared to the engineer's cost estimate for the abatement. If the engineer's cost estimate is less than the allowance, the preliminary determination is that the abatement is reasonable**.** If the cost estimate is higher than the allowance, the preliminary determination is that the abatement is not reasonable.

The NSR showed that there were no sites along the SR-11 portion of the project that required noise barriers for any of the design alternatives. Along the SR-905 portion of the project, noise impacts were recorded at the track at Southwestern College Higher Education Facility. No matter which design alternative is ultimately selected, the noise impact at the college exceeds 12-dBA and a noise barrier must be looked at. The NSR states that a wall that is 591 feet long and 10 or more feet high would achieve a 5-dBA reduction in noise and thus, is acoustically feasible. Walls in increasing two-foot increments between 6 feet and 16 feet were evaluated. The walls shorter that 10 feet were not feasible and the walls taller than 10 feet added only one more decibel of relief, which is not considered to be a reasonable tradeoff compared to the increase in cost. An engineer's cost estimate was prepared for this project. The estimate was more than double the cost allowance. It is therefore the preliminary decision to not construct the sound wall.

1. Introduction

The Noise Abatement Decision Report (NADR) presents the preliminary noise abatement decision as defined in the Caltrans Traffic Noise Analysis Protocol (Protocol). This report has been approved by a California licensed professional civil engineer. The project level Noise Study Report (NSR) (March 2010) prepared for this project is hereby incorporated by reference.

1.1. Noise Abatement Assessment Requirements

Title 23, Code of Federal Regulations (CFR), Part 772 of the Federal Highway Administration (FHWA) standards (23 CFR 772) and the Caltrans Traffic Noise Analysis Protocol (Protocol) require that noise abatement be considered for projects that are predicted to result in traffic noise impacts. A traffic noise impact is considered to occur when future predicted design-year noise levels with the project "approach or exceed" Noise Abatement Criteria (NAC) defined in 23 CFR 772 or when the predicted design-year noise levels with the project substantially exceed existing noise levels. A predicted design-year noise level is considered to "approach" the NAC when it is within 1-dB of the NAC. A substantial increase is defined as being a 12-dB increase above existing conditions.

23 CFR 772 requires that noise abatement measures that are reasonable and feasible and are likely to be incorporated into the project be identified before adoption of the final environmental document.

The Protocol establishes a process for assessing the reasonableness and feasibility of noise abatement. Before publication of the draft environmental document, a *preliminary noise abatement decision* is made. The preliminary noise abatement decision is based on the *feasibility* of evaluated abatement and the *preliminary reasonableness determination.* Noise abatement is considered to be acoustically feasible if it provides noise reduction of at least 5-dBA at receivers subject to noise impacts. Other nonacoustical factors relating to geometric standards (e.g., sight distances), safety, maintenance, and security can also affect feasibility.

The preliminary reasonableness determination is made by calculating an allowance that is considered to be a reasonable amount of money, per benefited residence, to spend on abatement. This *reasonable allowance* is then compared to the engineer's cost estimate for the abatement. If the engineer's cost estimate is less than the allowance, the preliminary determination is that the abatement is reasonable. If the cost estimate is higher than the allowance, the preliminary determination is that abatement is not reasonable.

The NADR presents the preliminary noise abatement decision based on acoustical and nonacoustical feasibility factors and the relationship between noise abatement allowances and the engineer's cost estimate. The NADR does not present the final decision regarding noise abatement; rather, it presents key information on abatement to be considered throughout the environmental review process, based on the best available information at the time the draft environmental document (ED) is published. The final overall reasonableness decision will take this information into account, along with other reasonableness factors identified during the environmental review process. These factors may include:

- impacts of abatement construction
- public and local agency input,
- life cycle of abatement measures,
- views/opinions of impacted residents, and
- social, economic, environmental, legal, and technological factors.

At the end of the public review process for the draft ED, the final noise abatement decision is made and is indicated in the final ED. The preliminary noise abatement decision will become the final noise abatement decision unless compelling information received during the environmental review process indicates that it should be changed.

1.2. Purpose of the Noise Abatement Decision Report

The purpose of the NADR is to:

- summarize the conclusions of the NSR relating to acoustical feasibility and the reasonable allowances for abatement evaluated,
- present the engineer's cost estimate for evaluated abatement,
- present the engineer's evaluation of nonacoustical feasibility issues,
- present the preliminary noise abatement decision, and
- present preliminary information on secondary effects of abatement (impacts on cultural resources, scenic views, hazardous materials, biology, etc.).

The NADR does not address noise barriers or other noise-reducing treatments required as remediation for significant adverse environmental effects identified under the California Environmental Quality Act (CEQA).

1.3. Project Description

State Route 11 (SR-11) is proposed as a four-lane facility on a new alignment. Its purpose is to serve the new the Port of Entry (POE) at Otay Mesa East and the new California Vehicle Enforcement Facility (CVEF). The San Diego Association of Governments will operate the highway as a toll road. The project is partly situated in the City of San Diego and the rest is in the County of San Diego. Despite the fact that the project is located in a major metropolitan area, the area is largely undeveloped.

There are currently three build alternatives and several design variations on those alternatives. Aside from the CVEF and POE at Otay Mesa East, the common constituents to each alternative and variation are two lanes in each direction, seven bridges and three retaining walls. Except for Sanyo Avenue, all the bridges are overcrossings. A toll plaza will also be built as part of the project and will be located adjacent to the POE. Transportation Systems Management and Transportation Demand Management measures will be incorporated into the project. The proposed overall POE footprint would include space to accommodate a potential future transit center adjacent to the POE. The transit center is not part of the proposed project, and would be designed and constructed by others.

State Route 905 is currently under construction between Britannia Boulevard and State Route 125. It is a six-lane freeway with a median large enough to contain two extra lanes in each direction. Every one of the alternatives will modify SR-905 in order to make the needed connections with SR-11. The project mitigates the proximity of La Media Road Interchange with the eastbound and westbound connectors with SR-11 by adding auxiliary lanes. A westbound auxiliary lane in the median from the westbound SR-11/SR-905 connector to La Media Road will improve functioning of that roadway section. Two auxiliary lanes to the outside of the eastbound mainlanes would also have a positive affect.

<u>TWO INTERCHANGE ALTERNATIVE</u>: The Two Interchange Alternative has local road interchanges at Enrico Fermi Drive and Siempre Viva Road (see Appendix A). Enrico Fermi Drive is designed as a full diamond interchange and is located about one mile to the east of the SR-905/SR-125/SR-11 Interchange. One auxiliary lane in each direction has been included between Enrico Fermi Drive Interchange and the SR-905/SR-125/SR-11 Interchange to mitigate the proximity of the two interchanges. The addition of the auxiliary lanes increases the width of the roadway. In turn, this forces traffic closer to the buildings where the SR-11 goes between the buildings at Sanyo Avenue. The profile is raised and retained by walls on each side of the freeway. By using retaining walls, the amount of Right of Way (R/W) needed is reduced.

The second, local-road interchange is at Siempre Viva Road. It is a half interchange located close to the POE and Toll Plaza. It is located approximately one mile to the east of the Enrico Fermi Drive Interchange.

ONE INTERCHANGE ALTERNATIVE: This alternative has a single, full, local-road-to-highway interchange at Alta Road. It is located about 1.4 miles to the east of the SR-905/SR-125/SR-11 Interchanges (see Appendix A). As in the Two Interchange Alternative, the profile is raised and retained by walls on the outside shoulders of the highway in the vicinity of Sanyo Avenue. Enrico Fermi Drive is not an interchange in this alternative; so auxiliary lanes between Enrico Fermi Drive and Sanyo Avenue are not needed. The bridge at Siempre Viva Road would be reduced in size since there would be no local-road access to the highway.

NO INTERCHANGE ALTERNATIVE: The No Interchange Alternative connects SR-905 and SR-125 with SR-11, but there are no local road interchanges along SR-11 (see Appendix A). The SR-11 simply provides access to the Mexico and United States Ports of Entry.

DESIGN VARIATIONS: In addition to the three proposed build alternatives, several possible variations are proposed. These are: the No Toll Variation (in which SR-11 would be operated as a freeway instead of a toll highway); the 46-foot Median Variation (in which the median in the Sanyo Avenue area would be 46 feet wide instead of the 22-foot median proposed under the build alternatives); the SR-125 Connector Variation (in which an extra connector would be constructed at the SR-90/SR-125/SR-11 Interchange to connect southbound SR-125 to eastbound SR-11 and SR-905, in addition to the SR-125 connector just mentioned); and the Siempre Viva Road Full Interchange Variation (which would apply only to the Two Interchange Alternative, and would involve construction of a full interchange at Siempre Viva Road, instead of the half interchange proposed at this location under the Two Interchange Alternative).

1.4. Affected Land Uses

The majority of the land within and immediately adjacent to the SR11 alignment project is undeveloped. Along the SR-905 segment, however, the majority of the land is developed. The developed properties include developed industrial land, partially graded areas, and Southwestern College Higher Education Facility.

2. Results of the Noise Study Report

The purpose of the Noise Study Report is to analyze traffic noise impacts predicted to occur due to the project and then to identify preliminary, noise abatement measures. The NSR addresses the requirements of the FHWA and of Caltrans.

Surrounding land uses in the vicinity of the project include primarily industrial, commercial and undeveloped, and one educational institution (Southwestern College Higher Education Facility). The nearest residence is located approximately 1,200 feet to the north of the project, beyond a reasonably expected project noise impact distance. The project R/W is primarily vacant; but does currently contain a portion of several developed properties just east of Sanyo Avenue that would be altered under the SR-11 project. In addition, the project would traverse a portion of an auto auction yard west of Alta Road, a portion of a graded industrial property currently being used for truck parking to the east of Enrico Fermi Drive, and a portion of a developed property just west of Michael Faraday Drive. The site and immediate vicinity are located on a mesa, and, as such, are relatively flat, with a slight downward slope to the south. According to the Federal Regulation 23 CFR 772, the adjacent land uses fall within Activity Categories B, C, D and E. Activity category D does not have a corresponding Noise Abatement Criteria (NAC), but Activity Category B has a NAC of 67 A-weighted decibels (dBA) 1-hour A-weighted equivalent sound level ($L_{EQ(h)}$) at the exterior of the buildings; Activity Category C has a NAC of 72 dBA $L_{EQ(h)}$; and Activity Category E has a NAC of 52 dBA $L_{EQ(h)}$ at the interior of the buildings.

Ambient noise in the area is primarily generated by vehicular traffic, airport traffic (Brown Field), and commercial/industrial uses. Ambient noise levels in the project vicinity range from 46 to 65 dBA L_{EQ}. The East Otay Mesa area is undergoing a substantial amount of development and is expected to experience an increase in noise levels in the future.

With the implementation of any of the proposed build alternative, future noise is expected to increase as a result of SR-11 and associated facilities. To determine traffic noise impacts, nineteen surrounding receiver locations were identified in three areas of the project, and the noise levels at these receivers were modeled (see Appendix A). The traffic noise modeling completed for each alternative with the baseline 22-foot median and the 46-foot median variation did not identify any traffic noise impacts from the implementation of any of the alternatives with any of the proposed variations in Area 2 or Area 3. Therefore, no abatement measures were considered in these areas. In Area 1, modeling results for all of the build alternatives and design variation indicated that predicted traffic noise levels with maximum traffic for LOS C traffic conditions would exceed the NAC at the Southwestern College Higher Education Facility receiver locations (R-10 and R-11). A noise control barrier of 10 feet in height approximately 591 feet in length along the edge of the roadway (within transportation R/W) would achieve the required minimum 5-dBA of noise reduction. The total reasonable allowance for this barrier is $105,000.

Under the No Build Alternative, it is anticipated that future traffic noise levels associated with LOS C traffic conditions at analyzed receivers would be similar to noise levels predicted for the proposed project in Areas 1 and 2, where approved SR-905 is planned or under construction, and lower than noise levels predicted for the proposed project in Area 3.

During construction of the project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Construction noise is regulated by Caltrans Standard Specifications Section 7-1.01(l), "Sound Control Requirements" (Caltrans 2006b).

Table 1. Summary of Barrier Evaluation from Noise Study Report

Barrier	Location	Station	Height Feet	Acoustically Feasible?	Number of Benefited Residences	Reasonable Allowance per Residence	Total Reasonable Allowance
NB1	EP	Sta. 570+22.7 to 570+28	6	N/A	3*	$35,000	$105,000
NB1	EP	Sta. 570+22.7 to 570+28	8	No	3*	$35,000	$105,000
NB1	EP	Sta. 570+22.7 to 570+28	10	Yes	3*	$35,000	$105,000
NB1	EP	Sta. 570+22.7 to 570+28	12	Yes	3*	$35,000	$105,000
NB1	EP	Sta. 570+22.7 to 570+28	14	Yes	3*	$35,000	$105,000
NB1	EP	Sta. 570+22.7 to 570+28	16	Yes	3*	$35,000	$105,000

EP = edge of pavement
* This is one location considered equivalent to 3 benefited residences,

3. Preliminary Noise Abatement Decision

3.1. Summary of Key Information

3.1.1. Feasibility Criteria

The NSR summarizes data gathered on existing and predicted noise impacts, provides the recommendation for the type of sound abatement to be used and recommends the number, size and locations of sites to be mitigated. The NSR recommends abatement for noise impacts only after an impacted site is determined to be an area of frequent human use and when a lowered noise level would be of benefit. The Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects (Protocol) (Caltrans 2006a) provides Caltrans policy for implementing 23 CFR 772 in California. The Protocol states that recommended abatement is feasible if the noise barrier results in an insertion loss of at least 5-dBA reduction in noise level when comparing future noise levels with and without abatement. Factors that could affect feasibility include the need to provide openings in the noise barrier due to the presence of cross streets or driveway openings, topography, safety considerations or the existence of other noise sources in the area.

After evaluating the data for this project, Southwestern College Higher Education Facility (located 0.5 miles west of La Media Road along SR-905) is the one location that the NSR recommends for noise abatement. The building at the Southwestern College building is constructed with permanently closed, double glazed windows. The building construction is heavier than Light Frame construction, but does not provide as much noise control as Masonry construction. This type of construction typically provides a minimum of 25 dBA applied to the predicted exterior noise level of 75 dBA L_{eq}, the expected interior noise level would be 50 dBA L_{eq}. The predicted exterior noise level would not approach or exceed the Activity Category E NAC of 52 dBA L_{eq}; therefore, noise abatement is not considered. The parking lot exceeds noise abatement criteria but the parking lot is not a benefited area for educational uses, so it does not require mitigation. The preliminary findings show the track meets the feasibility criteria of 5-dBA as set out in the PDPM. This criterion is satisfied with a wall height of 10 feet.

3.1.2. Reasonableness Criteria

The preliminary decision for considering abatement occurs when there are noise sensitive receptors that would benefit from a reduced noise level. For most of the SR-11 Project,

the surrounding land use s are industrial and commercial developed lands or undeveloped lands, Noise Abatement Categories C and E, both of which do not have frequent outdoor human use areas that would benefit from a reduced noise level. A noise impact was identified at Southwestern Community College recreational use area, therefore, noise abatement was considered. Although the recommended abatement met the feasibility requirement, the NADR has preliminarily resulted in the decision not to build the soundwall, as the construction cost exceeds the reasonable allowance, as discussed in further detail in section 3.1.2.

The cost reasonable determination is a collar amount allocated for noise abatement consideration based on some of the following factors:

- The cost of the abatement per benefited resident
- The life cycle of the selected abatement measure
- The amount of the noise impact
- The amount of the achievable noise reduction verses cost
- The points of view of the impacted residents
- The timeframe for future development along the highway
- The legal, social, environment, economic conditions
- The input of public and local agencies

Some of the considerations have been addressed while others remain to be considered after public input and a thorough evaluation of environmental impacts. For this reason, the decision presented here is a preliminary one.

Cost Analysis Methodology

Cost Allowance
While some of the above factors call for common sense and good judgment, others of the conditions are more easily quantifiable. A noise barrier project has a cost allowance associated with it that is based on the number of benefited frontage units; the greater the number of impacted frontage units, the longer the wall and the greater the costs. Since the sound wall under consideration is contiguous to a college, an equivalency is made based on the length of footage along the highway. For the purposes of this report, the frontage along Southwestern College Higher Education Facility is equivalent to three frontage units. A cost related to current, general, construction costs is established as the base allowance. Other very specific cost factors, when applicable to the project, are added to the base allowance. The reasonable allowance for this project, as calculated in the NSR, is $35, 000 per frontage unit (see Appendix A). This brings the total reasonable allowance for the wall to $105, 000.

Construction Cost
Caltrans construction estimates of cost are based on the actual, most current construction costs to build a Caltrans project. The completed, estimated construction cost is compared to the cost allowance and the sound wall is preliminarily established as reasonable or not reasonable to build.

Unit Price Derivation: The height, length, type and location of a sound wall all affect the Estimated Cost to build the wall. Caltrans assigns a unit price to each component of construction based upon historical data for that item of work. In generating this cost estimate, the most recent Contract Cost Data (2009 CCD) was used. This database is located at the Caltrans web site, http://www.dot.ca.gov/hq/esc/oe/awards/2009CCDB/2009ccdb.pdf. The 2009 CCD lists the costs by district and also gives the average cost for every pay item. At times, a district may not have done any work in a particular category in the past year. At other times, a district may only have one project within a particular category. To use a cost, in that case, risks skewing the results. The costs used here are the average costs of all the districts as listed in Caltrans' 2009 CCD. It may not be immediately apparent by the name of a pay item what is included in its payment. The Caltrans Standard Special Provisions specifies exactly what labor, material and incidentals are included for each pay item. See Caltrans Office Engineer's web site at http://www.dot.ca.gov/hq/esc/oe/specifications/SSPs/2006-SSPs/ Measurements and Payments section for each item of work to see what the cost item covers.

Certain actual costs of construction are not added to the sound wall budget, but will be included in the overall cost of constructing the SR-11 project. For example, the construction cost is based on a standard, masonry block wall with standard aesthetic treatments. Additional costs to mitigate the visual effects of the wall or to mitigate for hazardous materials, cultural resources or biological resources are not considered as a part of the cost for comparison purposes.

It should be noted that there are no easement costs associated with this sound wall because the wall in entirely within the State Right of Way. The costs that apply to the construction of the sound wall at the Southwestern College Higher Education Facility are as follows:

- Structure Excavation (Sound Wall): $34.71 per cubic yard
- Structure Backfill (Sound Wall): $27.00 per cubic yard
- Relocate Roadside Sign (Wood Post): $207.73 each
- Remove Road Base and Surfacing: $21.61 per cubic yard
- Remove Concrete Barrier (Type 736S): $94.56 per linear foot
- Remove Asphalt Concrete Dike: $4.12 per linear foot
- 16" Cast-In-Drilled-Hole Concrete Piling (Sound Wall): $35.93 per linear foot
- Concrete Barrier Type 736S: $94.56 per linear foot
- Sound Wall (Barrier) (Masonry Block): $20.00 per square foot
- Asphalt Concrete: $63.36 per ton
- Class 2 Aggregate Base: $30.83 per cubic yard
- Tack Coat: $26.81 per cubic yard
- Asphaltic Emulsion (Fog Seal Coat): $477.10 per ton
- Remove Concrete Barrier: $14.12 per linear foot
- Place Hot Mix Asphalt (Type E): $1.85 per linear foot
- Fiber Roll: $2.69 per linear foot
- Remove Gate: $381.67 each
- 8' Chain Link Gate (Type CL-6): $1,410.00 each

- Clearing and Grubbing: 8% of the project cost
- Landscape Costs: 10% of the project cost
- Storm Water Pollution Prevention Costs: 5% of the project cost
- Traffic Control Costs: 5% of the project cost

The total cost for the noise barrier has been calculated to be $289,463. Since the total reasonable allowance has been calculated at $105,000 , even the shortest feasible sound wall is double the reasonable allowance The table below summarizes the results.

Table 2. Summary of Abatement Key Information

Barrier	Height Feet	Acoustically Feasible? If, so, dBA reduction.	Number of Benefited Residences	Total Reasonable Allowance	Estimated Construction Cost	Cost Less than Allowance?
NB1	6	No	3*	$105,000	N/A	N/A
NB1	8	No	3*	$105,000	N/A	N/A
NB1	10	5 dBA	3*	$105,000	$289,463	No
NB1	12	6 dBA	3*	$105,000	> $289,463	No
NB1	14	6 dBA	3*	$105,000	> $289,463	No
NB1	16	6 dBA	3*	$105,000	> $289,463	No

*This is one location equivalent to 3 benefited frontage units

3.2. Nonacoustical Factors Relating to Feasibility

Preliminary findings show the proposed noise barrier for this project is feasible when evaluating nonacoustical considerations for this project. The recommended noise barrier for this project is able to be positioned so it meets the geometric standards set out in the Highway Design Manual (HDM). There are no utility conflicts with the barrier. There is, however, a double reinforced concrete box culvert that would conflict with the placement of the noise barrier. A solution to work around this obstacle would add to the cost of the project.

The recommendation made in the NSR is for the noise barrier to be placed on the edge of shoulder. This placement would negatively impact the clear recovery zone. It would also be at the minimum acceptable horizontal clearance. To ameliorate the two conditions, the HDM recommends the wall and the barrier rail be shielded. These are all issues that can be addressed in the design of the sound wall.

3.3. Preliminary Recommendation and Decision

A sound wall has been recommended in the NSR as the best option for noise abatement for the Southwestern College track area. The acoustically feasible wall is identified in the NSR as being 591 feet long and 10 feet high.

The other criterion used for considering the recommendation to construct a noise barrier is the cost comparison between the construction cost and the reasonableness allowance. The sound wall would benefit three frontage units. The allotted cost per benefited unit has been identified as $35, 000 each or a combined reasonable allowance of $105, 000.The reasonable allowance cost is compared to the construction cost of a masonry block wall built to Caltrans standards. The estimated construction costs for this wall is $289,463. This exceeds the allowable cost; therefore, the preliminary decision is to not build a noise barrier. This finding will be included in the draft environmental document. The document will be circulated for public review.

The preliminary noise abatement decision presented in this report is based on preliminary project alignments and profiles, which may be subject to change. As such, the physical characteristics of noise abatement described herein also may be subject to change. If pertinent parameters change substantially during the final project design, the preliminary noise abatement decision may be changed or eliminated from the final project design. A final decision to construct noise abatement will be made upon completion of the project design.

4. References

California Department of Transportation, 2006. *Traffic Noise Analysis Protocol*, Sacramento, California

Internet Resources:

http://www.dot.ca.gov/hq/LandArch/scenic_highways/
Copy of the map showing District 11 Scenic Routes

http://www.conservation.ca.gov/cgs/cgs_history/Pages/2010_geologicmap.aspx
Copy of the quadrangle map showing the geological formations

http://www.dot.ca.gov/hq/esc/oe/specifications/SSPs/2006-SSPs/

http://www.dot.ca.gov/hq/esc/oe/awards/2009CCDB/2009ccdb.pdf

http://www.sandiego.gov/planning/community/profiles/otaymesa/pdf/1luotaymesa.pdf
Copy of the City of San Diego's Otay Mesa Community Plan – Land Use

http://www.sandiego.gov/planning/genplan/pdf/generalplan/adoptedluelemfv.pdf
Copy of the City of San Diego adopted General Plan Land Use

http://www.sdcounty.ca.gov/dplu/docs/existgp/gpcpaotay.pdf
Copy of the Couny of San Diego Existing General Plan

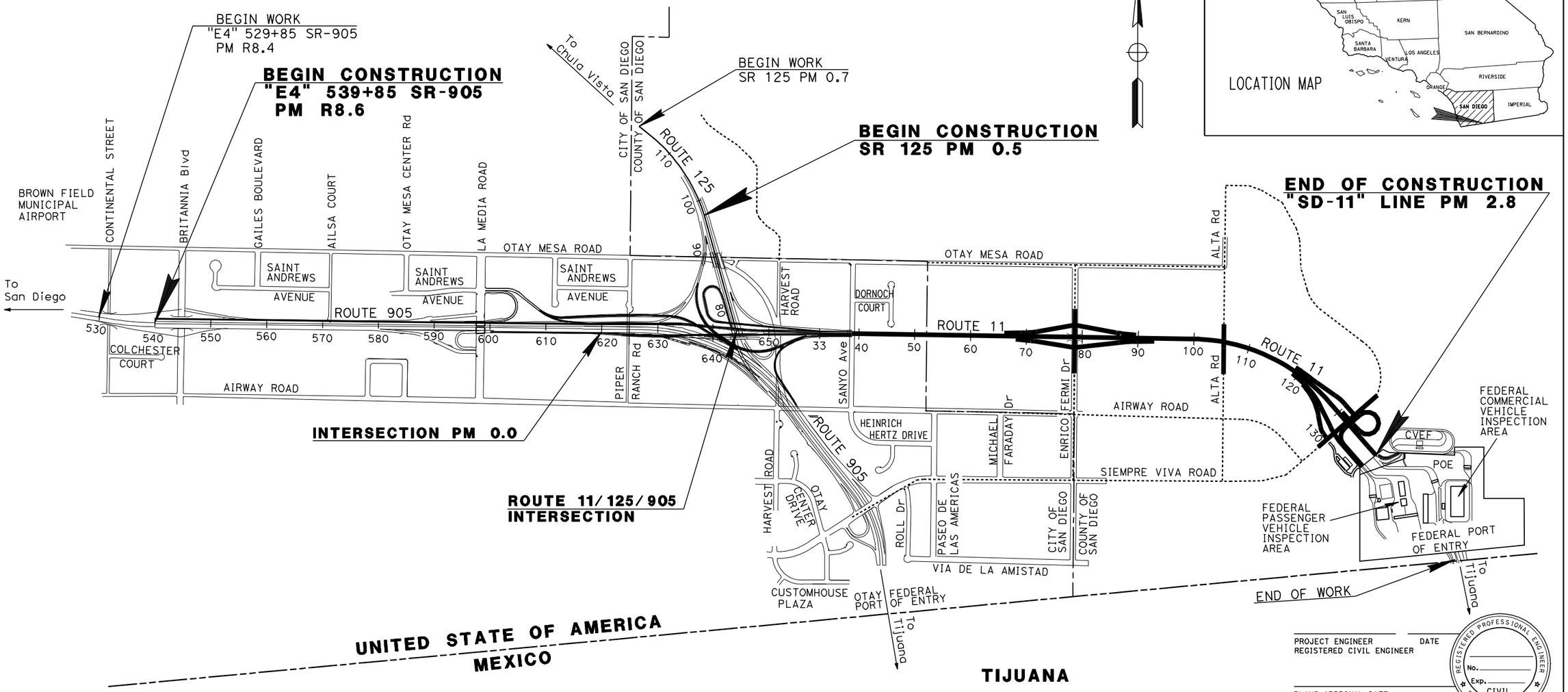
Appendix A – Appendix

PRELIMINARY PLANS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

LOCATION MAP



NADR EXHIBIT 1
TWO INTERCHANGE ALTERNATIVE

SCALE 1":900'

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

PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

CONTRACT No.

PROJECT MANAGER

DESIGN ENGINEER

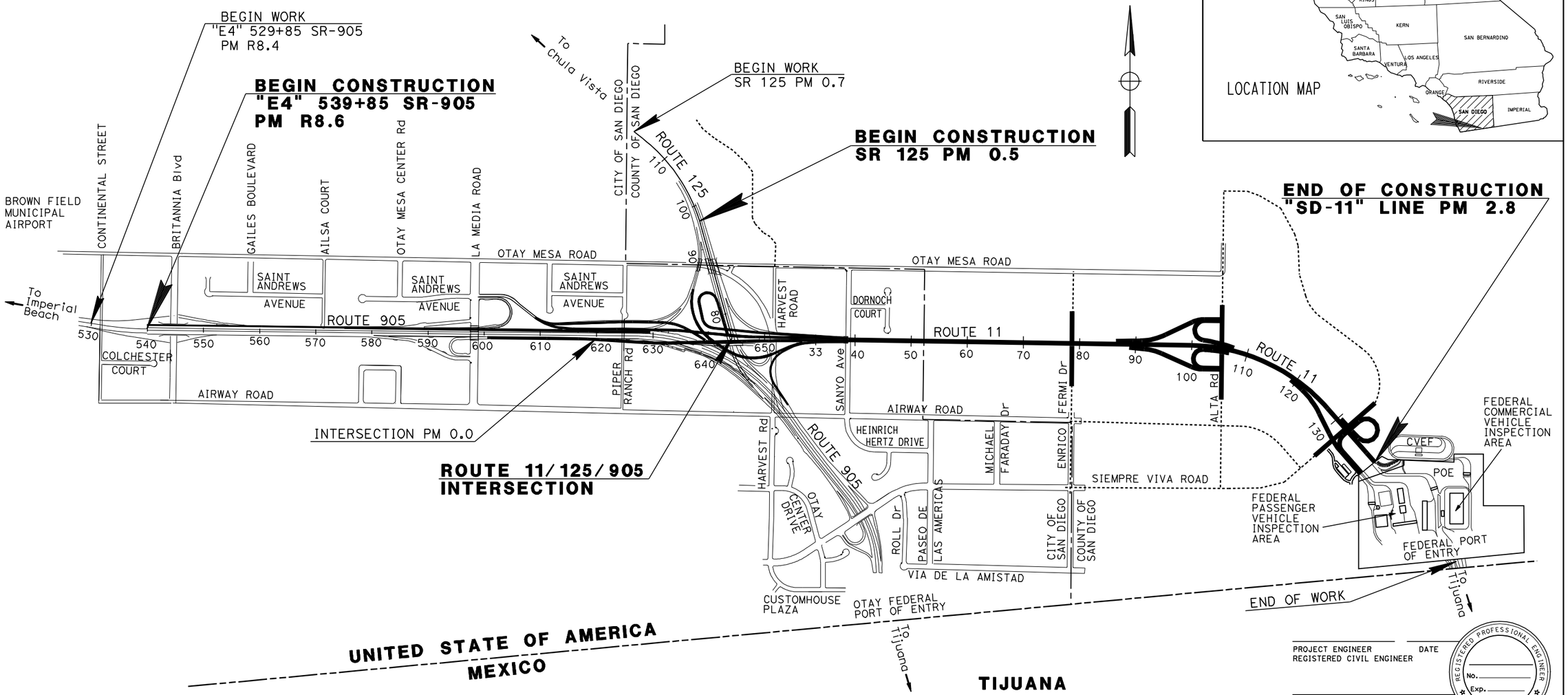
LAST REVISION 00-00-00 DATE PLOTTED => 11-OCT-2010 TIME PLOTTED => 11:21

PRELIMINARY PLANS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

LOCATION MAP



NADR EXHIBIT 2
ONE INTERCHANGE ALTERNATIVE

SCALE 1":900'

PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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

PROJECT MANAGER

DESIGN ENGINEER

LAST REVISION 00-00-00 | DATE PLOTTED => 11-OCT-2010 | TIME PLOTTED => 11:21

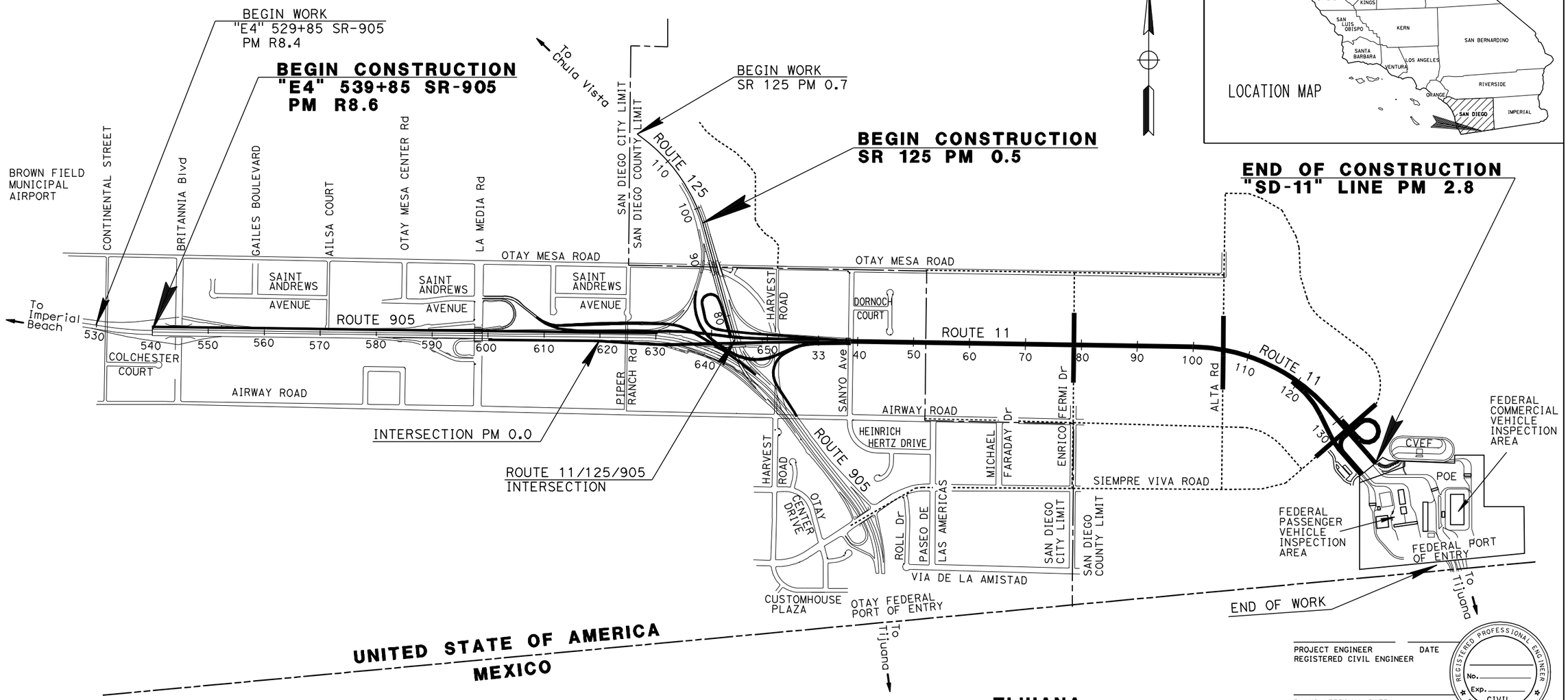
CONTRACT No.

PRELIMINARY PLANS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

LOCATION MAP



NADR EXHIBIT 3
NO INTERCHANGE ALTERNATIVE

SCALE 1":900'

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

PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

PROJECT MANAGER

DESIGN ENGINEER

LAST REVISION 00-00-10

DATE PLOTTED => 11-OCT-2010
TIME PLOTTED => 11:22

CONTRACT No.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

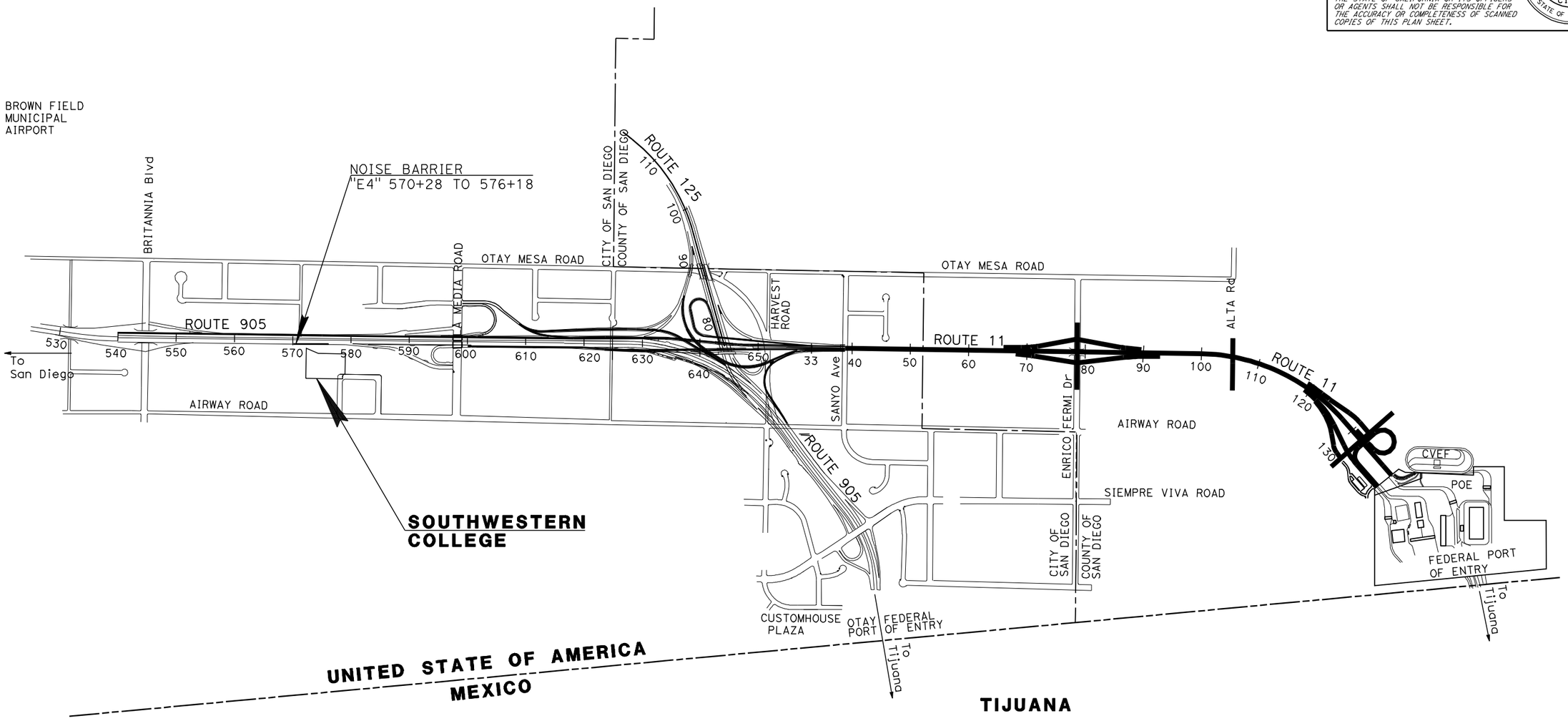
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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

PRELIMINARY DESIGN



NOISE BARRIER AND SOUTHWESTERN COLLEGE HIGHER EDUCATION FACILITY

NADR EXHIBIT 4

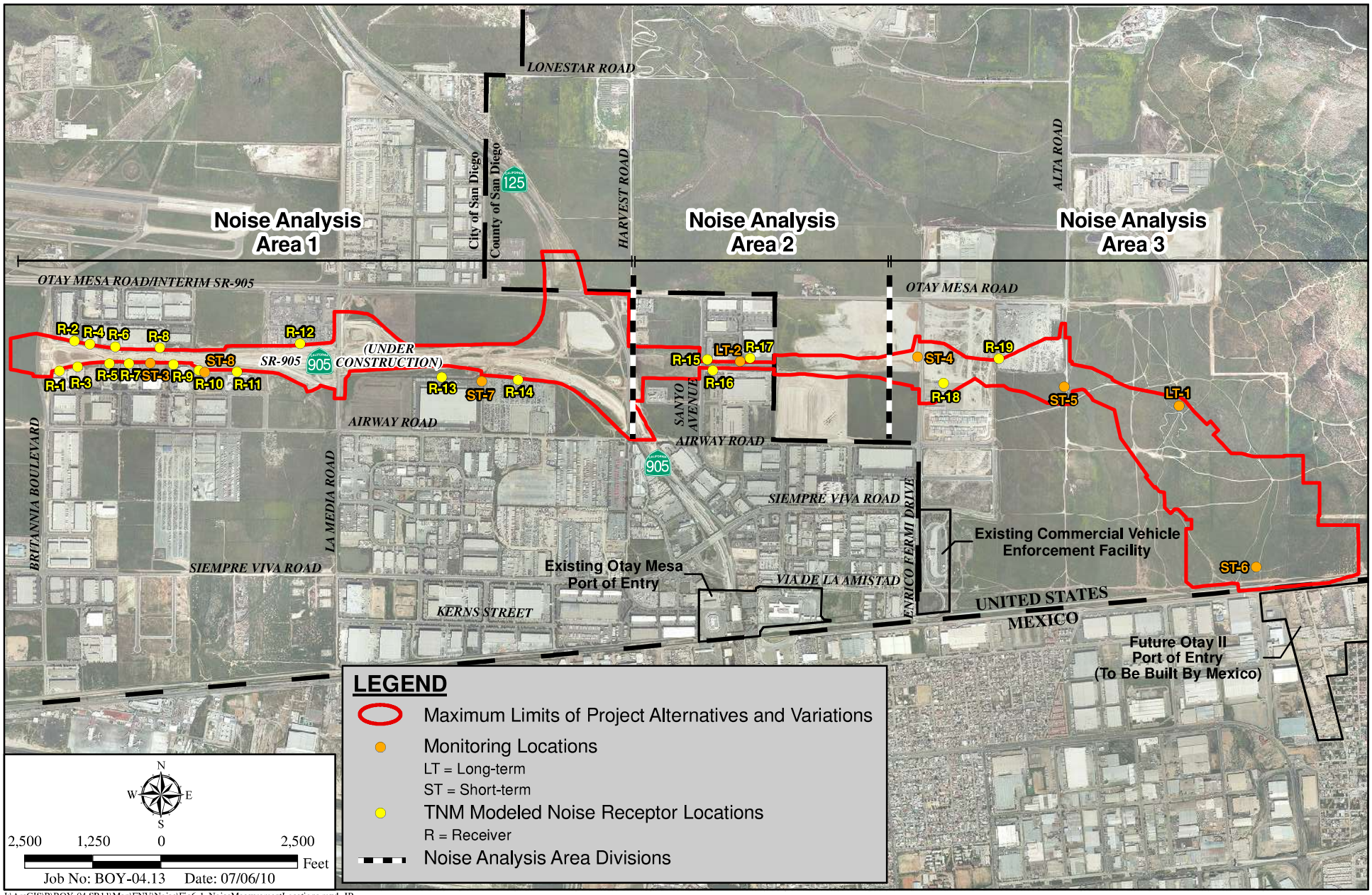
REVISED BY | DATE REVISED | CALCULATED-DESIGNED BY | CHECKED BY | FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 00-00-00 | DATE PLOTTED => 11-OCT-2010 | TIME PLOTTED => 11:22

BORDER LAST REVISED 4/11/2008 | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | USERNAME => s116215 | DGN FILE => 4SOUTHWESTERN.dgn | CU 00000 | EA 000000



I:\ArcGIS\B\BOY-04 SR11\Map\ENV\Noise\Fig6-1_NoiseMeasurementLocations.mxd -JP

Noise Analysis Areas and Receiver and Monitoring Locations

STATE ROUTE 11 AND OTAY MESA EAST PORT OF ENTRY - TIER II NOISE STUDY REPORT

HELIX

Figure 6-1

Worksheet A
Reasonable Allowance Calculation for Noise Abatement based on Critical Design Receiver

Base Allowance				
Base Year	2008			$31,000
1) Absolute Noise Levels			Check One	
69 dBA or less:	Add:	$2,000		$0
70-74 dBA:	Add:	$4,000	√	$4,000
75-78 dBA:	Add:	$6,000		$0
More than 78 dBA:	Add:	$8,000		$0
2) Build vs. Existing Noise Levels[1]			Check One	
Less than 3 dBA:	Add:	$0	√	$0
3-7 dBA:	Add:	$2,000		$0
8-11 dBA:	Add:	$4,000		$0
12 dBA or more:	Add:	$6,000		$0
3) Achievable Noise Reduction			Check One	
Less than 6 dBA:	Add:	$0	√	$0
6-8 dBA:	Add:	$2,000		$0
9-11 dBA:	Add:	$4,000		$0
12 dBA or more:	Add:	$6,000		$0
4) New Construction Or Pre 1978 residences? (Choose Yes or No)				
YES on either one:	Add:	$10,000		$0
NO on both:	Add:	$0	√	$0
Reasonable Allowance Per Residence				$35,000
Unmodified Barrier Allowance				$105,000
Adjusted reasonable allowance for Benefitted Residence				$35,000
Adjusted Unmodified Barrier Allowance				$105,000

Adjusted reasonable allowance for Residence and Barrier must be rounded up to the nearest $1,000

[1] Build vs. Build-out SR-905 (under construction)
[2] Build-out SR-905 Noise Levels

County:	San Diego
Route:	SR-905
Post Mile:	570+28/576+18
Project Exp Auth:	EA 085780
Program Code:	

Barrier Name or ID	NB-1
Barrier Height (Feet)	10
Critical Design Receiver	R-10
Number of benefitted Residences (equivalent)	3
New Hwy Construction	No
Pre 1978 residences	No
Existing Noise Levels[2]	74 dBA
Future Noise Levels	74 dBA
Changes in Noise Level	0 dBA
Noise Level with Abatement	69 dBA
Barrier Insertion Loss	5 dBA

Continue to Worksheet B

Worksheet B
Noise Barrier Reasonable Allowance Calculation

County: San Diego Route: SR-905 Post Mile: 570+28/576+18 Program Code:
Construction Cost without abatement: $139,134,000.00[1]

From Worksheet A				Adjusted Barrier Allowance vs Construction Cost	Percentage of Total Barrier Allowance	Modified Barrier Allowance	Modified Allowance Benefitted Residence
Barrier ID	Adjusted Allowance for Critical Design Receiver	Number of Benefitted Residences	Adjusted Unmodified Barrier Allowance		(col 4: A/ΣA)	(A/ΣA x .5 x Const Cost)	(col 7/col 3)
R-10	$35,000	3	$105,000	The total unmodified barrier allowance (column 4) is less than 50% of the construction cost without abatement, therefore no allowance modification is required.			
	Totals	3	$105,000				
1	2	3	4	5	6	7	8

[1] Lowest cost scenario, i.e. No Interchange Alternative, SR-11 Only ($358,020,000 if POE and CVEF included)

NOISE BARRIER

Construction Cost Estimate

Number of Equivalent Benefited Residences	Height	Length	Structure Excavation Sound Wall	Structure Backfill	Relocate Sign (Wood Post)	Remove Road Base and Surfacing	Remove Concrete Barrier	Remove AC Dike	16" CIDH Concrete Piling (Sound Wall)	Concrete Barrier Type 736S	Sound Wall (Barrier) (Masonry Block)
	Ft	Ft	CY	CY	Ea	CY	LF	LF	LF	LF	SF
	10	591	73.9	22.0		72.5		130.0	627.9	591.0	4137.0
COSTS			$2,542	$594	$0	$1,567	$0	$536	$22,560	$55,885	$82,740

Number of Equivalent Benefited Residences	Ht.	Len.	Asphalt Concrete	Class 2 Aggregate Base	Tack Coat	Asphaltic Emulsion (Fog Seal Coat)	Place Hot Mix Asphalt Type E	Fiber Roll	Remove Gate	Gate
	Ft	Ft	CY	CY	Ton		LF	LF	Ea	Ea
	10	591	24.5	75.7	1.4	0.6	130.0	100.4	2.0	2.0
COSTS			$1,554	$2,334	$551	$286	$51,141	$270	$763	$2,820

Construction Cost: $226,143

Clearing & Grubbing	Landscaping Cost	Traffic Control Cost	SWPPP Cost
(8% Wall Cost)	(10% Wall Cost)	(5% Wall Cost)	(5% Wall Cost)
$18,091	$22,614	$11,307	$11,307

Additional Costs: $63,320

TOTAL COSTS: $289,463