

6.0 DEVELOPMENT OF A HYBRID STRATEGY

In response to the community concerns and opposition to the Build Alternatives (C, D, and E) of the Final Set of Alternatives, the MTA Board passed a motion and the I-710 Oversight Policy Committee adopted Guiding Principles and directed staff to continue to work with the affected communities and other stakeholders to develop a Hybrid Strategy that would be acceptable to them, while meeting the adopted Purpose and Need of the I-710 Corridor. This Hybrid Strategy would have both operational and policy elements, as well as proposed physical infrastructure improvements. This section describes the development and content of the Hybrid Strategy, as well as an assessment of its impacts and financing.

6.1 Revised Study Direction

After learning of concerns regarding proposed right of way impacts and health and air quality issues voiced by residents and other stakeholders during the public outreach on the Final Set of Alternatives during the Spring of 2003, the MTA Board adopted a motion by Board member Molina at their May 2003 meeting that stated the following:

I move that the MTA staff express their preference for Alternative B, the TSM/TDM alternative, to the I-710 Corridor Technical Advisory Committee (TAC) and the Oversight Policy Committee (OPC) and work with the various entities to develop a hybrid alternative using elements from Alternative C, D, and E that results in meaningful improvements to the corridor without impacting residences and businesses.

Furthermore, I move that the staff urge the TAC and OPC to remove from consideration the design elements of Alternatives C, D and E that result in acquisition of business and residential parcels. Staff should continue working with the TAC, OPC and Gateway Cities COG to identify improvements to the I-710 freeway that do not rely solely on cost and that explore non-standard design methods.

Additionally:

- 1) Form advisory committees in key areas along the Corridor where current design alternatives require the acquisition of large amounts of private property. These committees should be comprised of residents and business owners and staff should work with local jurisdictions to identify members. The establishment of these committees should begin immediately.*
- 2) And report back on the use of rail, specifically the Alameda Corridor, as a method of moving cargo to and from the ports. The report should include possible policies and incentives in order to further promote rail usages as the preferred method of transportation to and from the ports.*

Source: MTA Board Meeting Minutes, May 22, 2003.

The May 2003 MTA Board Action placed renewed emphasis on community outreach through the formation of community advisory committees. In response, MTA staff worked with the approval of their Planning and Programming Committee to modify the I-710 Major Corridor Study Scope of Work to enhance the public outreach process and add a task (Task 9.0) to address the creation of a Hybrid Alternative (June 18, 2003). In order to keep the change to the Scope of Work cost neutral, technical activities related to the development of three Project Study Reports (Task 8.0) were eliminated from the Scope of Work.

The I-710 Oversight Policy Committee (OPC), also cognizant of community concerns regarding the Final Set of Alternatives, adopted a set of Guiding Principles at their May 28, 2003 meeting that further elaborated on the MTA motion and provided guidance to the development of a Hybrid Strategy for the I-710 Corridor. Refer to Section 3.3 of this report for the text of the Guiding Principles. The OPC created two tiers of Community Advisory Committees to advise the OPC on the development of the Hybrid Strategy. The following section describes this community engagement process that helped lead to the development of a Hybrid Design Concept for I-710.

6.2 Community Engagement

As discussed in Section 2.5 of this report, at the direction of the OPC, Tier 1 Community Advisory Committees (CACs) were formed for each of the communities that border the I-710 freeway to advise the study team on the development of a Hybrid Strategy. These cities would have potential right-of-way impacts created by the build alternatives (C, D, and E) of the Final Set of Alternatives. These CACs primarily focused on key issues that affected their communities including health, environmental, quality of life, safety, and mobility issues, as well as economic development and land use issues.

To assist with the formation and coordination of these Tier 1 CACs, MTA and the Gateway Cities COG retained a consultant, Moore, Icofano, Goltsman, Inc. (MIG), to facilitate meetings of these committees. The Gateway Cities COG also retained an engineer to assist the Tier 1 CACs in the development of their recommendations for improvements to the I-710 freeway and the transportation system in the surrounding study area.

MIG facilitated the formation and meetings of the Tier 1 CACs representing the communities of: Carson, Compton, Lynwood, Bell Gardens, Commerce, and East Los Angeles. The Gateway Cities COG engineer worked with these Tier 1 CACs as well as the South Gate Tier I CAC to help develop a Hybrid Strategy.

Rather than form a Tier 1 CAC, the City of Long Beach formed an I-710 Oversight Committee comprised of the three city council members whose districts border the I-710 freeway. The City of Long Beach also retained consultants for facilitation (DSO) and engineering (MMA) to support its separate community outreach process, leading to the development and adoption by the Long Beach City Council of their portion of the Hybrid Strategy. "Long Beach City Council I-710 Oversight Policy Committee, Summary of Outreach" (September 2004), included in Appendix E of this report, provides a summary of the concerns and recommendations elicited by this process.

Each of the Tier 1 CACs met numerous times and developed a list of their issues and concerns, along with a list of the recommendations for improvements to the I-710 freeway and the surrounding study area. Appendix E of this report contains a detailed summary of the

issues, concerns and recommendations from the Tier 1 CACs that just relate to the improvements to the I-710 freeway. There were a number of similar and common issues, concerns, and recommendations developed by these Tier 1 CACs that were applied to the development of the Hybrid Design Concept and include the following:

- Separate cars and trucks as much as possible.
- Minimize elevated structures.
- Keep trucks at grade as much as possible.
- Move the existing centerline of the freeway to take advantage of adjacent property that will minimize impacts to existing homes, parks and businesses.
- Minimize (or eliminate) property impacts required to improve the I-710 freeway.
- Use "diamond" type interchange designs to modify some existing interchanges to reduce property impacts at these interchanges.
- Keep trucks away from existing homes as much as possible.
- Use the adjacent river to construct additional lanes for the freeway.
- Relocate utility systems adjacent to the freeway to provide space to improve the freeway.
- Keep trucks off local streets.
- Extend any improvements of the I-710 freeway past the SR-60 freeway.
- Include landscaping and aesthetic treatments in any improvements to the I-710 freeway to beautify the freeway.
- Construct soundwalls at all sensitive receptive locations.
- Consider safety in all design improvements.
- Do not extend the Terminal Island Freeway to the I-710/1-405 interchange (but consider such elimination impacts to the City of Carson).
- Provide a truck inspection facility.
- Consider limiting trucks on the I-710 freeway during peak hours and encourage the ports to provide extended hours of operation for truck movements.
- Consider the "Bandini Alternative" at the I-5/I-710 interchange to reduce the impacts at this location.
- Consider constructing elevated HOV lanes on the I-5 freeway north and south of the I-710 freeway to reduce adjacent property impacts.
- The communities along the freeway should benefit economically from the construction of the improvements in the corridor during and after construction.

The preceding list shows how similar the design issues, concerns and recommendations were for all eight of the Tier 1 CACs. The list of general issues, concerns and recommendations presented above, along with the specific local issues, concerns and recommendations developed by each Tier 1 CAC contained in Appendix E were used to prepare and refine the Hybrid design concept with each of the Tier 1 CACs. After reviewing the lists contained in Appendix E, preliminary design concepts for their respective segments of I-710 were developed and presented to each Tier 1 CAC for their review and comment. [Note: due to the design complexity and great potential for right-of-way impacts associated with improvements to the I-710/I-5 interchange area, the East Los Angeles and Commerce Tier 1 CACs are still working on their recommendations for I-710 between Atlantic/Bandini Boulevard and SR-60 via a "mini-corridor study" to be completed prior to kicking off the environmental phase of the overall Hybrid Strategy for I-710.] Based on the reviews conducted over numerous meetings

with each Tier 1 CAC, a design concept for the I-710 Hybrid Strategy was formed. The Draft Hybrid Design Concept is presented in Section 6.3.

6.3 Hybrid Design Concept

The community participation phase of the development of the Hybrid Strategy generated a significant number of comments on those physical features that were viewed as providing future improvement on I-710. These physical features were combined and coordinated to develop the I-710 Draft Hybrid Design Concept. As described above, the GCCOG engaged an engineering consultant to work with the Tier 1 CACs to develop a design concept for the I-710 that meets the Purpose and Need for the I-710 Corridor as well as address community issues and concerns and meets the MTA Board's and OPC's guiding principles. The summary information on the Draft Hybrid Design Concept provided throughout this report is drawn from the *I-710 Major Corridor Study "Hybrid" Mainline Alternative of Locally Preferred Strategy Technical Report* (Gateway Cities Council of Governments, April 2004), which is included in Appendix P.

The purpose of the I-710 Draft Hybrid Design Concept is to provide infrastructure improvements to I-710 focused on improving safety; increasing capacity for growing heavy duty truck demand; increasing capacity for high general-purpose traffic demand; improving reliability of travel times; and separating autos and trucks to the greatest extent possible while limiting direct and indirect right-of-way impacts. The Draft Hybrid Design Concept is comprised of 10 general-purpose traffic lanes, 4 exclusive truck lanes, and interchange improvements from Ocean Boulevard in Long Beach to the intermodal railroad yards in Commerce/Vernon. It is important to note that proposed improvements to the segment of I-710 between Washington Boulevard and SR-60 are still under study due to the design complexities and potential right-of-way impacts in the vicinity of the I-710/I-5 interchange.

The I-710 Draft Hybrid Design Concept is comprised of the following components (also refer to Figure 6.3-1):

Exclusive Truck Facility on I-710

- 4 lanes (2 in each direction) mostly at-grade between Ocean Boulevard and the intermodal rail-yards in Vernon/Commerce, with the truck lanes being elevated at the following locations: near the SR-91 interchange; north of I-105 near Imperial Highway; and north of Slauson Avenue
- dedicated ingress/egress points for trucks at selected locations: north of Ocean Boulevard (ingress northbound, egress southbound); north of I-405 (ingress northbound, egress southbound); SR-91 interchange (NB I-710 to EB SR-91, WB SR-91 to SB I-710, EB SR-91 to NB I-710, and SB I-710 to WB SR-91); south of Firestone Boulevard (ingress southbound, egress northbound); and north of Atlantic/Bandini Boulevard (ingress southbound, egress northbound)
- horizontal alignment is generally as follows:
 - split on both sides of I-710 from Ocean Boulevard to north of Pacific Coast Highway (Figure 6.3-2)
 - decked over I-710 for a short stretch north of Pacific Coast Highway to Willow Street (Figure 6.3-3)

- on the east side of I-710 from north of Pacific Coast Highway to south of Imperial Highway, largely (though not entirely) within the existing State right-of-way or the Southern California Edison right-of-way (Figures 6.3-4 and 6.3-5)
- decked over the northbound I-710 for a short stretch south of Imperial Highway (Figure 6.3-6)
- on the west side of I-710 from Imperial Highway to Gage Avenue (Figures 6.3-7 and 6.3-8)
- on the east side of I-710 from Gage Avenue to Bandini Boulevard
- split on both sides of I-710 from Bandini Boulevard to south of Washington Boulevard

General Purpose Traffic Improvements on I-710

- one additional general purpose lane in each direction from Ocean Boulevard to the Shoemaker Bridge
- two additional general purpose lanes in each direction from Shoemaker Bridge to I-405
- one additional general purpose lane in each direction from I-405 to Atlantic Boulevard
- shifting the freeway centerline at various locations between Shoemaker Bridge and Atlantic Boulevard to attempt to minimize right-of-way impacts

Interchange Improvements – Truck-Related

- add a truck interchange on the exclusive truck facility providing a northbound exit ramp and a southbound entrance ramp viaduct for trucks only along Sheila Street south of Washington Boulevard providing direct access to/from the UP and BNSF rail yards; also provide a southbound exit ramp and a northbound entrance ramp using the viaduct from the rail yards

Interchange Improvements – General Purpose Traffic

- eliminate some of the design deficiencies at I-405/I-710 and SR-91/I-710 interchanges
- reconfigure approximately 13 local access interchanges between and including Ocean Boulevard at Shoreline Drive in Long Beach and Atlantic Boulevard/Bandini Boulevard in Vernon/Bell
- add one new interchange (Slauson Avenue)
- eliminate freeway access at 9 locations:
 - entrance from 7th Street to SB Shoreline Drive (1 ramp)
 - connection from Shoemaker Bridge to Pico Avenue (1 ramp)
 - connection from Pico Avenue to Shoemaker Bridge (1 ramp)
 - SB exit to and NB entrance from Wardlow Road at I-710 (2 ramps)
 - NB and SB I-710 to Santa Fe Avenue (1 ramp)
 - exit from WB SR-91 to Alondra Boulevard (1 ramp)
 - exit from EB SR-91 to Cherry Avenue (1 ramp)
 - WB exit to and EB entrance from Atlantic Boulevard at SR-91 (2 ramps)
 - all ramps at Washington Boulevard (4 ramps)

Note that the community engagement process to reach consensus on the I-710 Draft Hybrid Design Concept north of Washington Boulevard is still underway with Commerce and East Los Angeles and therefore proposed improvements to this segment are yet to be defined.

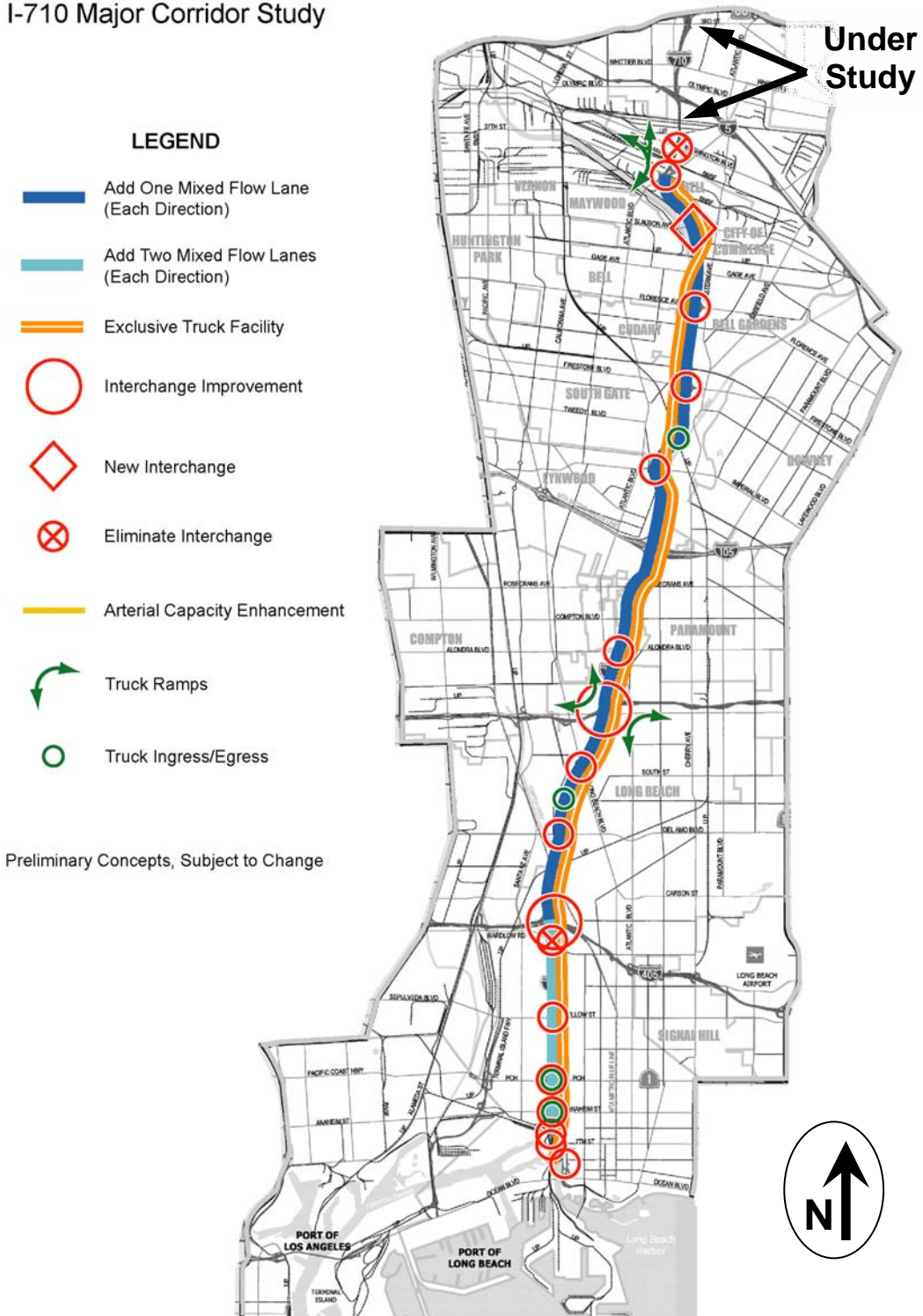
Caltrans standards were considered during the development of the Draft Hybrid Design Concept. However, the standards could not be met at all locations and Caltrans/FHWA approval of design exceptions will be needed to implement the geometric design as currently

proposed. If the design exceptions are not acceptable to Caltrans/FHWA, then the geometric designs at certain locations will have to be restudied and the design modified. Any changes to the design and their potential impacts will need to be reviewed with the affected communities to ascertain whether a consensus can be maintained on the design concept that is acceptable to Caltrans, FHWA, and other agencies whose facilities and operations are impacted by the design.

Figure 6.3-1

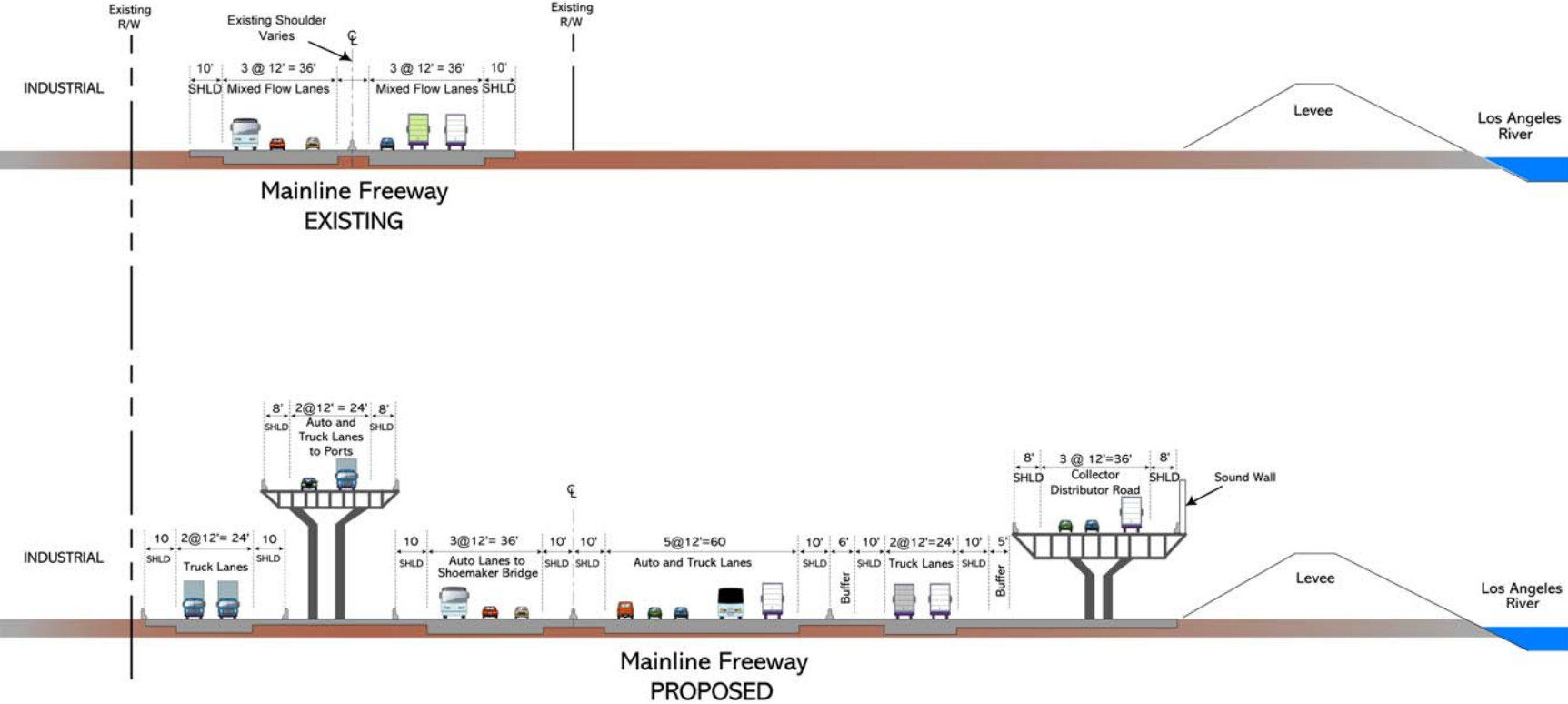
I-710 Draft Hybrid Design Concept

I-710 Major Corridor Study



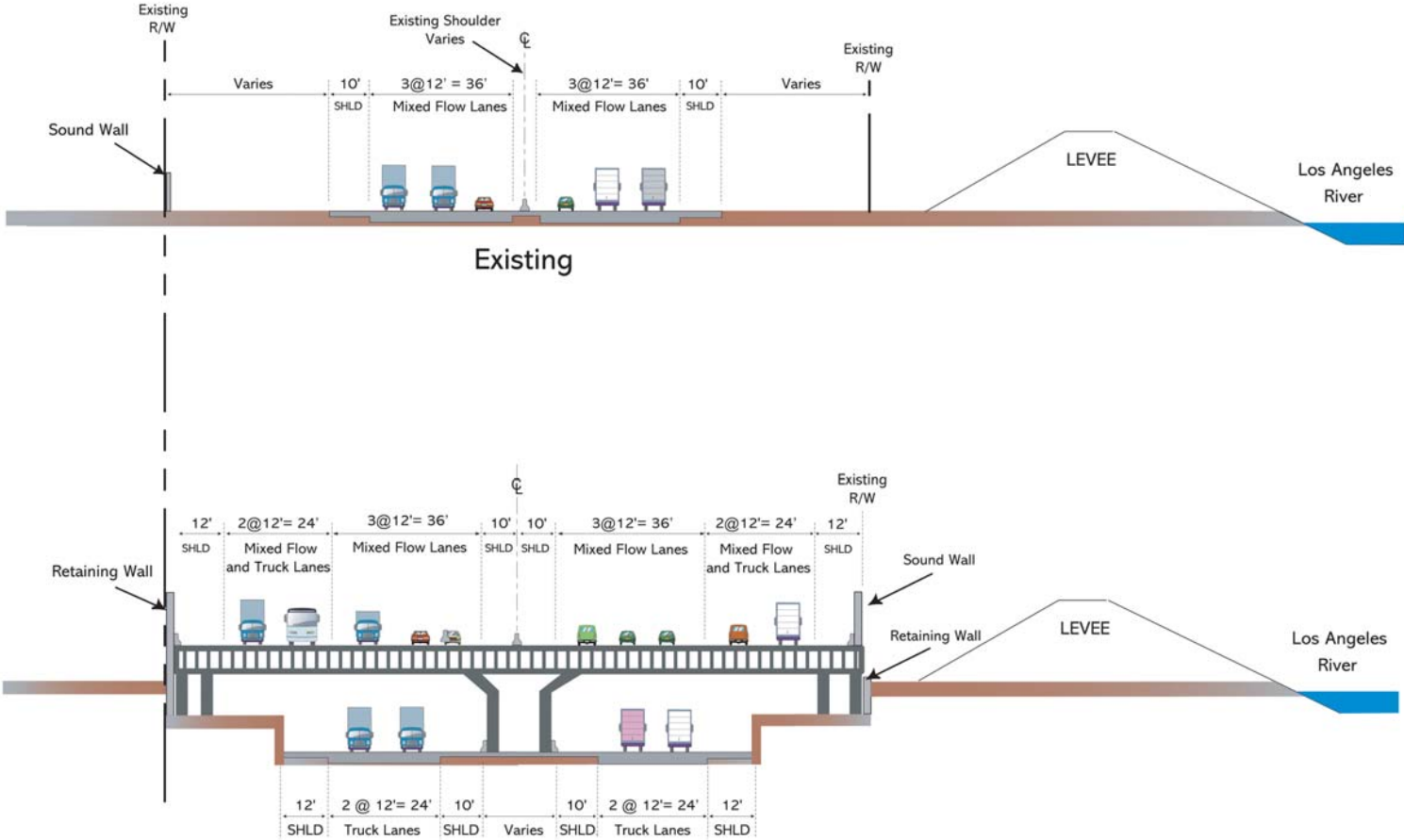
Source: Jerry Wood, Consultant, in association with MMA, Inc. and Nolan Consulting, Inc. April 2004.

Figure 6.3-2
Draft Hybrid Design Concept
Typical Section between Anaheim Street and Pacific Coast Highway



Source: "Hybrid" Mainline Alternative of Locally Preferred Strategy Technical Report (Gateway Cities Council of Governments, April 2004)

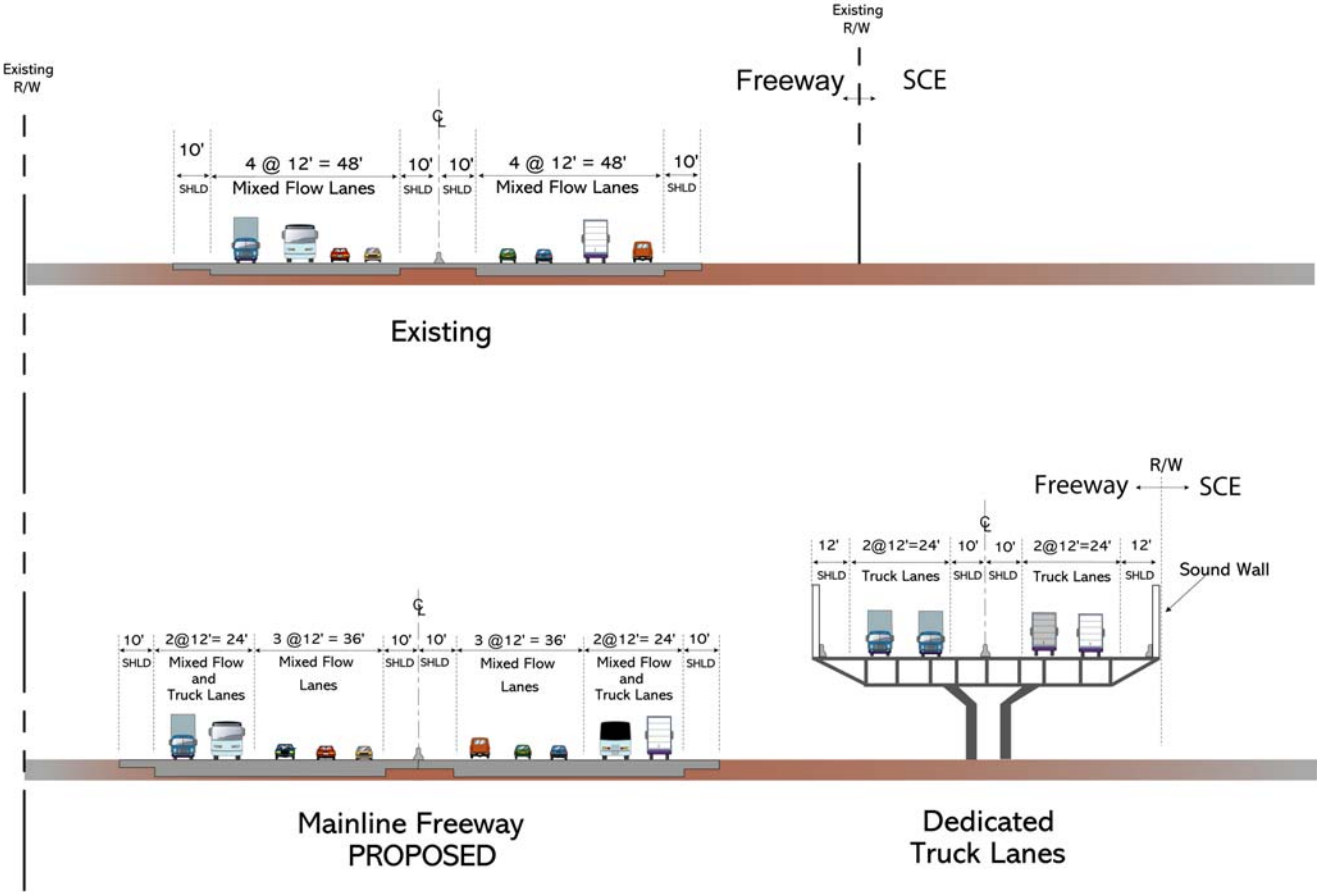
Figure 6.3-3
Draft Hybrid Design Concept
Typical Section between Pacific Coast Highway and Willow Street



(Proposed Depressed)

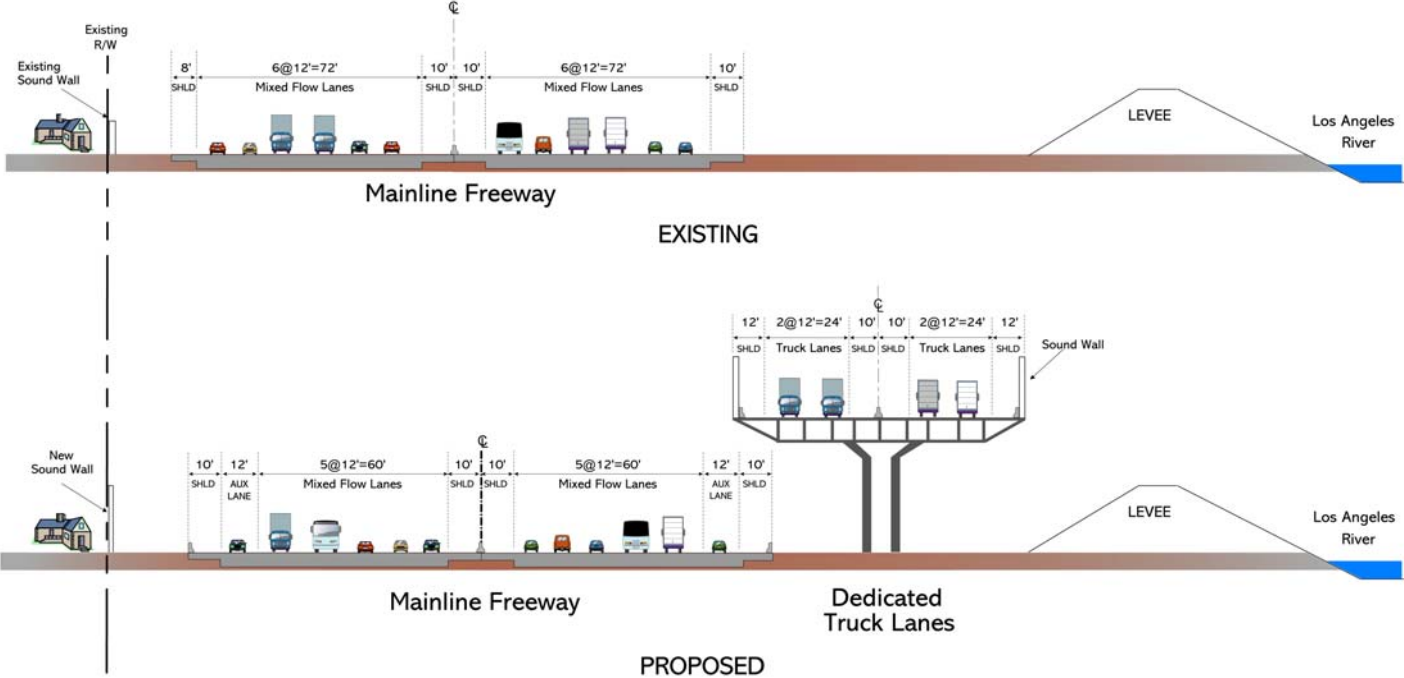
Source: "Hybrid" Mainline Alternative of Locally Preferred Strategy Technical Report (Gateway Cities Council of Governments, April 2004)

Figure 6.3-4
Draft Hybrid Design Concept
Typical Section North of Del Amo Boulevard



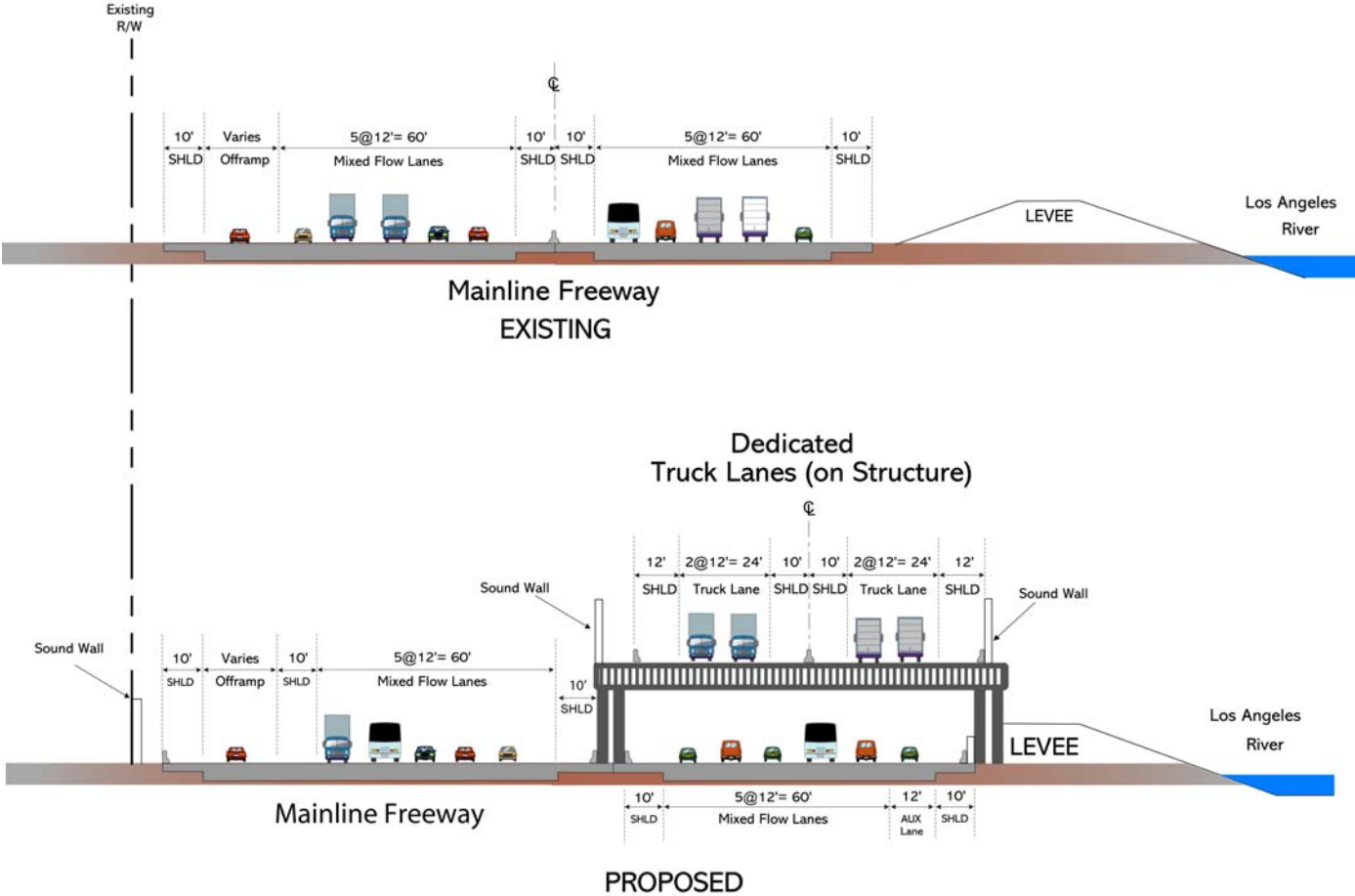
Source: "Hybrid" Mainline Alternative of Locally Preferred Strategy Technical Report (Gateway Cities Council of Governments, April 2004)

Figure 6.3-5
Draft Hybrid Design Concept
Typical Section between Alondra Boulevard and Rosecrans Avenue



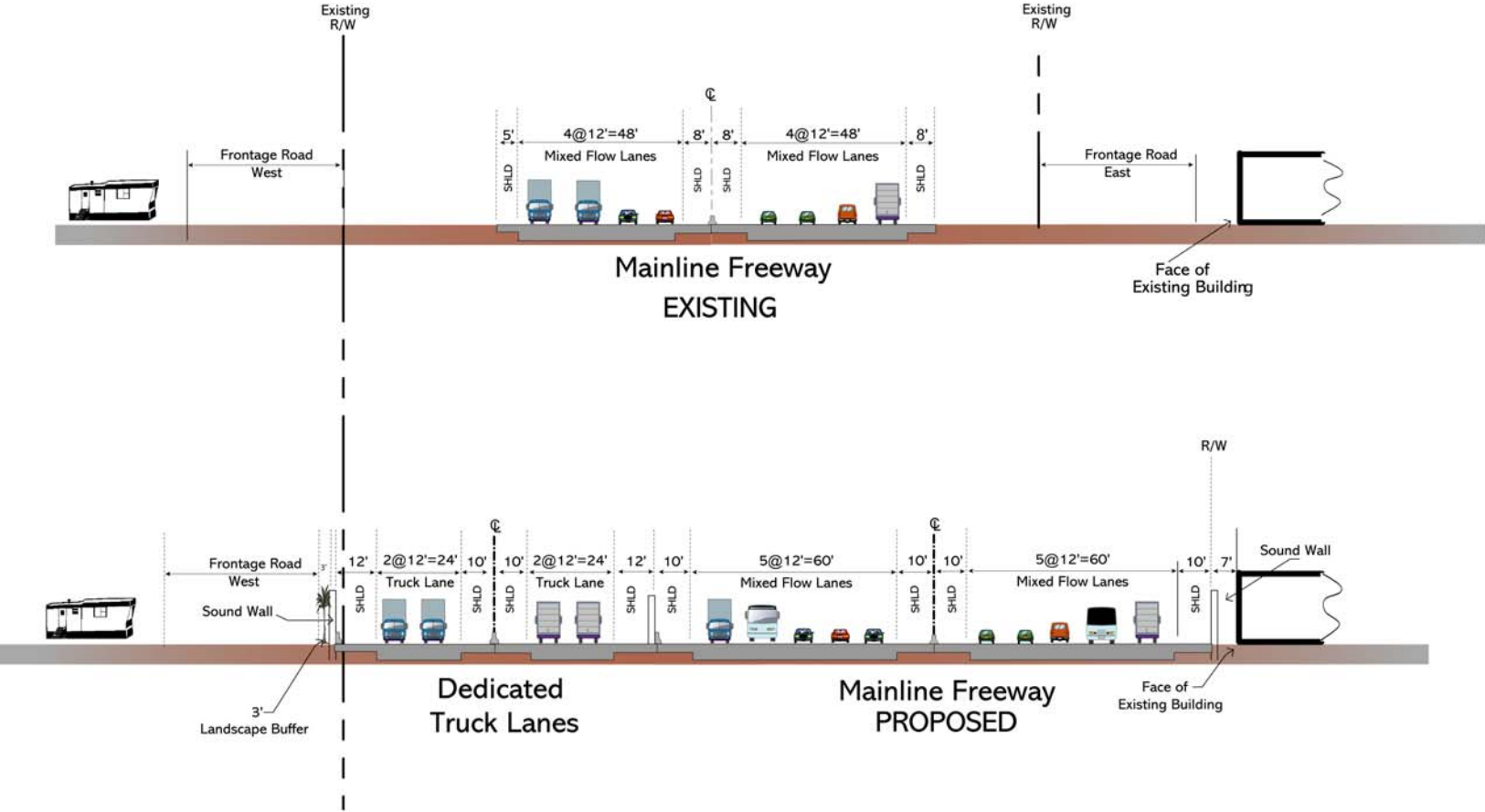
Source: "Hybrid" Mainline Alternative of Locally Preferred Strategy Technical Report (Gateway Cities Council of Governments, April 2004)

Figure 6.3-6
Draft Hybrid Design Concept
Typical Section South of Imperial Highway



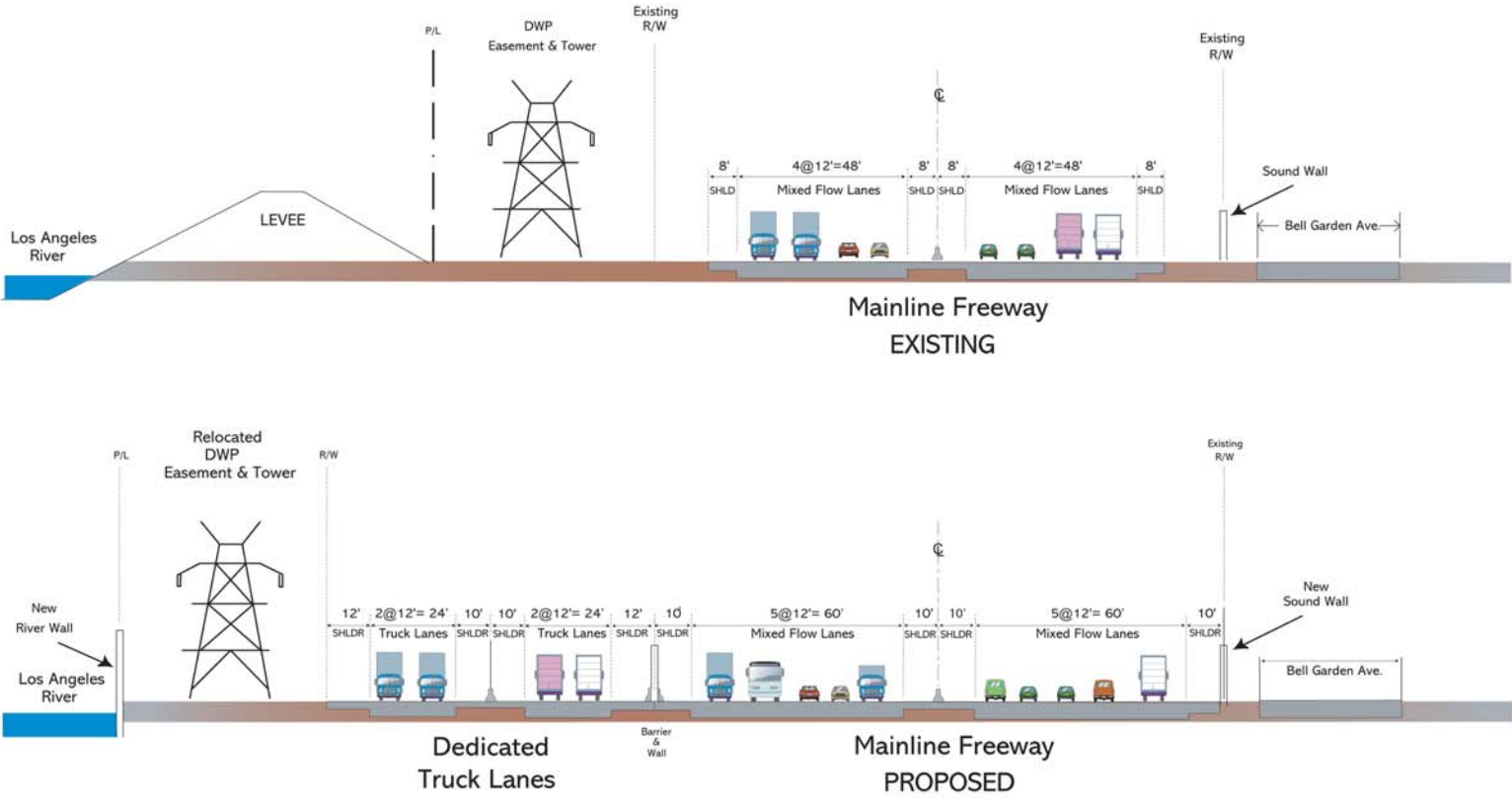
Source: "Hybrid" Mainline Alternative of Locally Preferred Strategy Technical Report (Gateway Cities Council of Governments, April 2004)

Figure 6.3-7
Draft Hybrid Design Concept
Typical Section between Imperial Highway and Firestone Boulevard



Source: "Hybrid" Mainline Alternative of Locally Preferred Strategy Technical Report (Gateway Cities Council of Governments, April 2004)

Figure 6.3-8
Draft Hybrid Design Concept
Typical Section between Firestone Boulevard and Florence Avenue



Source: "Hybrid" Mainline Alternative of Locally Preferred Strategy Technical Report (Gateway Cities Council of Governments, April 2004)

6.4 Right-of-Way Impact Analysis

As right-of-way impacts of proposed I-710 improvements are of great concern to the public, MTA Board, and OPC, right-of-way impacts were assessed for the I-710 Draft Hybrid Design Concept. The precision of this right-of-way impact analysis is governed by the conceptual level of engineering design of the Draft Hybrid Design Concept, which is appropriate for this stage of project planning.

Based on aerial photography and topographic information, the approximate number of structures that would be impacted was assessed, as well as the total acreage that would be impacted by the Draft Hybrid Design Concept. Each potentially impacted structure was assigned to a specific land use category to provide an understanding of what kind of structures were being impacted. The land use categories are residential, commercial/industrial, railroad, power/utility, environmentally sensitive, or undeveloped land uses. The estimated number of impacted structures in each affected city is shown in Table 6.4-1. The City of Long Beach would have the greatest number of impacted structures, which is related to the fact that Long Beach encompasses the largest portion of the I-710 Corridor. Further, there are more estimated commercial structure impacts than any other category as a consequence of the Draft Hybrid Design Concept's attempt to preserve residential structures as well as the significant number of commercial and industrial structures along I-710 in the Study Area. This preliminary analysis estimates that only five residential structures would be removed by the Draft Hybrid Design Concept.

Right-of-way impacts were also assessed on an acreage basis, again utilizing aerial photographs, topographic mapping, and GIS database mapping. Table 6.4-2 displays the impacted acreage stratified by city and by land use type. The same land use categories were used as in the structure impact analysis. Again, the City of Long Beach, by virtue of the fact that the City stretches from the southerly project limit at Ocean Boulevard northward to near the SR-91/I-710 interchange, would have the greatest acreage impact of any jurisdiction, 91.2 acres out of a total of 241.4 acres. However, almost half of the impacted acreage in Long Beach is in the Power/Utility land use category. This is an intentional by-product of the design of the Draft Hybrid Design Concept, which attempts to maximize use of existing utility owned land adjacent to the I-710 for improvements and hence minimize impacts to residential and commercial properties.

Figure 6.4-1 displays the potential right-of-way impacts of Alternatives C, D, and E along with the same data for the Draft Hybrid Design Concept. Only the right-of-way impacts of the I-710 mainline concepts are shown. Impacts of proposed improvements north of Washington Boulevard are included in Alternatives C, D, and E, while the Draft Hybrid Design Concept improvements are currently defined only as far north as the I-710/Washington Boulevard interchange. The right-of-way impacts for the proposed truck inspection station have been excluded from Alternative C to normalize its comparison with the Draft Hybrid Design Concept. The right-of-way impacts for the Draft Hybrid Design Concept do not include those from a truck inspection station, nor do they account for impacts for any improvements north of Washington Boulevard, as these are yet to be defined.

Table 6.4-1
Estimated Number of Structures Removed by Land Use Type by City
Draft Hybrid Design Concept

City/Land Use Type	Long Beach	County - Rancho Dominguez	Carson	Compton	Paramount	Lynwood	South Gate	Bell	Bell Gardens	Commerce	Vernon	Total
Residential Structures	3									2		5
Commercial/Industrial Structures	1		3	7			14	15		18	3	61
Railroad Structures												0
Power/Utility Structures	42							9				51
Sensitive Land Use Structures				1								1
Undeveloped Land Structures												0
Total Structures by City	46		3	8			14	24		20	3	118

Source: Jerry Wood, Consultant, in association with MMA, Inc. and Nolan Consulting, Inc., April 2004.

Note: Does not include right-of-way impacts between I-710/Washington Boulevard and I-710/SR-60, including I-5/I-710 interchange improvements.

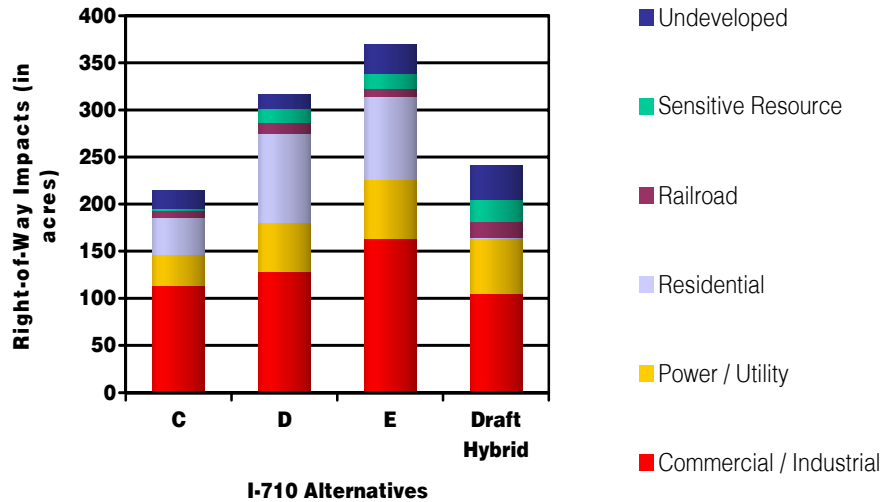
Table 6.4-2
Acreage Impacts by Land Use Type by City
Draft Hybrid Design Concept

City/Land Use Type	Long Beach	County - Rancho Dominquez	Carson	Compton	Paramount	Lynwood	South Gate	Bell	Bell Gardens	Commerce	Vernon	Total
Residential Acreage	1.0									0.5		1.5
Commercial/Industrial Acreage	5.5		2.9	18.1	0.5		19.0	20.6		29.0	9.9	105.5
Railroad Acreage										17.3		17.3
Power/Utility Acreage	45.5						0.4	11.9				57.8
Sensitive Land Use Acreage	12.6			3.0	1.6			4.3	0.3			21.8
Undeveloped Acreage	26.6					3.1	6.2	1.6				37.5
Total Acreage by City	91.2		2.9	21.1	2.1	3.1	25.6	38.4	0.3	46.8	9.9	241.4

Source: Jerry Wood, Consultant, in association with MMA, Inc. and Nolan Consulting, Inc., April 2004.

Note: Does not include right-of-way impacts between I-710/Washington Boulevard and I-710/SR-60, including I-5/I-710 interchange improvements.

**Figure 6.4-1
Acreage Impacts by Land Use Type by Alternative**



Source: Parsons Brinckerhoff (March 2003) for Alternatives C, D, and E; Jerry Wood, consultant, in association with MMA, Inc. and Nolan Consulting, Inc. (April 2004) for the Draft Hybrid Design Concept.

Notes: Alternative C impacts exclude proposed truck inspection facility. Draft Hybrid Design Concept impacts exclude truck inspection facility and improvements north of I-710/Washington Boulevard.

6.5 Cost and Financial Analysis of the Draft Hybrid Strategy

This section presents the estimated costs of the Draft Hybrid Design Concept and a menu of potential revenue sources that may be explored in the financing of the Draft Hybrid Strategy.

The concept level cost estimates generated in this phase include a significant contingency factor to address the account for the uncertainties typical for this stage of study.

This analysis assumes that existing and new state and federal grant-in-aid programs will be required in funding the I-710 improvements. In view of the nationwide destination of goods arriving at the ports and transported on the I-710 Freeway, the MTA Board has recommended exploring a coalition of partners to fund the improvements.

Access to federal and state grants is significantly influenced by the availability of local matching funds. Options for generating local sources of revenue dedicated to funding the I-710 improvements from port-related freight and trucking activities, are explored in this section. The objective of this analysis is to provide a preliminary order-of-magnitude estimate of revenue that could be expected based on assumptions relative to container fees, value of time, etc. The revenue estimates are only intended to be used as a point of reference, and detailed financial analyses will be performed during the environmental phase of this project.

6.5.1 Draft Hybrid Design Concept Cost Estimate

The cost of the Draft Hybrid Design Concept was estimated using the same methodology that was used to estimate the costs of the prior Final Set of Alternatives. In the year since the

previous cost estimates were prepared, there has been a dramatic change in certain elements of the local economy. Land values have risen significantly, as have the unit costs of certain construction materials, specifically concrete and steel. As such, the estimate for the Draft Hybrid Design Concept is in 2004 dollars as compared to the estimates for Alternatives C, D and E, which were developed in 2003 dollars and presented in Section 5.5. To provide a clearer comparison among the alternatives, the estimates for Alternatives C, D and E have been escalated to 2004 dollars within this section only. Previous references to the Alternatives C, D, and E costs were relative to their estimates in 2003 dollars.

It is important to recognize that these are concept level cost estimates and that they will be further refined in subsequent preliminary engineering and final design phases. At this early stage in the project development process, uncertainty exists about precisely how the improvements will be constructed and eventually implemented. Consequently, average unit costs were developed for some quantities (pavement, earthwork, structures); some categories of cost were included on a per mile basis (drainage, traffic handling); and others were based on percentages of construction cost (mobilization, contingency, design). The right-of-way unit costs were developed based on a database search of recent real estate values in the Study Area. All costs are shown in 2004 dollars and include a 50 percent contingency factor to account for uncertainties inherent at this stage of engineering design development. Costs are included for those improvements that would entail an additional capital cost beyond what is already planned and committed for the I-710 Corridor.

The estimated cost for the Draft Hybrid Design Concept is \$4.5 billion for mainline and interchanges improvements. This includes \$3.9 billion for infrastructure construction and \$0.6 billion for right-of-way acquisition. The cost estimate does not currently include any improvements north of Washington Boulevard in the City of Commerce, nor does it include:

- a truck inspection station,
- any arterial improvements, or
- TSM/TDM/Transit elements.

The cost estimates for Alternatives C, D, and E have been escalated to 2004 dollars and modified to exclude elements that are not included in the Draft Hybrid Design Concept for purposes of comparison. Table 6.5-1 displays the cost estimates for the various alternatives.

**Table 6.5-1
Comparison of I-710 Alternatives Cost Estimates
(2004 dollars in millions)**

	Alternative C	Alternative D	Alternative E	Draft Hybrid Design Concept
Construction	\$1,787.5	\$2,709.3	\$2,992.3	\$3,902.8
Right-of-Way	\$627.1	\$692.9	\$900.7	\$584.8
Total	\$2,414.6	\$3,402.2	\$3,893.0	\$4,487.6

The Draft Hybrid Design Concept has the highest estimated construction cost, but the lowest estimated right-of-way cost. One of the goals of the Draft Hybrid Design Concept was to reduce residential right-of-way impacts, which would commensurately reduce right-of-way acquisition costs. The measures taken to reduce right-of-way impacts include constructing

more of the alignment on elevated structure or building other features that would result in higher construction costs. The Draft Hybrid Design Concept has a construction cost estimate that is about 595 million dollars higher than Alternative E, the alternative with the next highest estimated construction cost.

6.5.2 Financial Analysis

A significant portion of the total capital cost of the Draft Hybrid Strategy could come from existing or new state and federal grant-in-aid programs (both formula and discretionary). Access to these grants depends on and is greatly influenced by matching these funds with significant amounts of local funds. So, the financial feasibility of the Draft Hybrid Strategy would ultimately depend on the amount of revenue that can be generated from local sources.

MTA's existing portfolio of local revenue sources will be insufficient to fund major transportation improvements that are not already ranked as priorities in its Long Range Regional Transportation Plan (LRTP). Therefore, funding for the improvements will have to come from new, dedicated sources of revenue. The goal of this analysis was to leverage the maximum amount of funding over time from a short-list of local revenue sources using a variety of conventional debt financing structures as well as more innovative financing tools.

While the amount of federal funding for this project cannot be assessed at this time, the local agencies expect some federal funding participation based on the benefits to the rest of the nation from the Hybrid's improvements to I-710 freight throughput. MTA is interested in pursuing the designation of the I-710 Corridor Improvements as a Project of National Significance. Specifically, 45 percent of all goods moving from the Ports have final destinations east of the Rocky Mountains. In recognition of the material benefits accruing from the Ports, congressional proposals have included federal demonstration earmarks of new federal funds for the I-710 Corridor expansion. Although the receipt of significant federal earmarks can be justified and is needed, no assumption on the receipt of such grant funds is carried forward.

This section explores local revenue generation options from port-related freight and trucking activities, for funding the Draft Hybrid Strategy. Specifically, revenue generation through container fees and a truck-way toll are presented. Other options were considered but not reported or explored further as they were not perceived to be viable.

The funding alternatives and financing plan were developed by the application of the I-710 travel demand model, research on value of time, and a financial model. The financial model is a significantly improved version of a model built for the SCAG SR-60 Truck Lanes analysis. The model shows expenditures, revenues, debt service requirements, and cash flow over the life of the project. The modeling effort and results provided in this section depend on a large number of assumptions and analytical details. For ease of comprehension and clarity, only the model output is presented in this section. The details of the assumptions and documentation of the model are presented in Appendix Q.

The financial analysis evaluated a long list of possible federal, state and local funding sources that could be used for some or all elements of the Hybrid Alternative. In addition to the regular Federal-aid highway programs such as Interstate Maintenance, the National Highway System Program, and the Surface Transportation Program, the evaluation included the following innovative financing and discretionary mechanisms as possible sources:

- Transportation Infrastructure Finance and Innovation Act (TIFIA)
- Grant Anticipation Revenue Vehicle (GARVEE) bonds
- State Infrastructure Banks (SIBs)
- TEA-21 authorized pilots for conversion of a free Interstate highway to tolled facilities in conjunction with reconstruction or rehabilitation.
- Interstate Discretionary¹
- High Priority Projects²
- Corridors and Borders
- California Transportation Commission Interregional Program (IPP)
- State Highway Operation and Protection Program (SHOPP)
- Interregional Improvement Program (IIP)
- Regional Improvement Program (RIP)
- State Loan Program (AB 1012)

Two local revenue sources, namely container fees and tolls, proceeds from which could potentially be dedicated to the I-710 Corridor improvements were analyzed. Both sources would generate revenue from users or beneficiaries of the proposed Hybrid Strategy improvements. The purpose of this analysis was to explore orders of magnitude of revenue that could be generated and be eligible to be used for funding the improvements.

Tolls would be levied exclusively on the users of the truckway, and therefore can be used in their entirety to pay for truckway improvements. Since only a portion of the containers entering or leaving the ports would use the facilities that are being improved, only a part of the container fees can be used to fund these improvements.

This analysis does not attempt to establish a “nexus” between the payment burden placed on the users or beneficiaries and the benefits they receive. The calculation of nexus would be performed in future phases. Nevertheless, each potential revenue source is based on a link between those initially proposed to pay for these improvements and the beneficiaries of the proposed improvements.

The two local sources of revenue explored are:

1. Extension of Alameda Corridor rail-borne container charges to all truck-borne containers leaving or entering the Ports of Long Beach and Los Angeles on trucks. This fee would be similar to the Alameda Corridor fees which are now imposed on containers moving into and out of the Ports on rail or being moved to a rail head. This new charge is intended to provide parity between rail and truck by assessing the same fee on all containers moving into and out of the ports. The total amount of capital funds that could be leveraged from this source is estimated to be \$1.4 billion.

¹ A relatively small program of \$100 million authorized in 2003, for high cost Interstate projects for resurfacing, restoring, rehabilitating, and reconstructing Interstate routes. Capacity additions cannot be funded, therefore only a portion of I-710 costs could be eligible for these funds. Criteria for this program require that the state has obligated all its Interstate maintenance funds and that that it could obligate the discretionary funds in one year.

² In TEA-21 there were \$3.5 billion in earmarked high priority projects. The single largest TEA-21 high priority project allocation was \$100 million for Alameda Corridor East.

2. Tolling of the dedicated truck-only lanes component of the Hybrid Strategy whereby trucks traveling between the ports and SR-60 would have the option of either entering the truck lanes and paying a toll or using the I-710 general purpose lanes or alternative routes. This analysis assumes the decision to use the toll lanes is market driven and would not be imposed on the truckers through regulations restricting trucks on alternative routes.

Other potential sources that depended on user charges assessed on other local goods movement activities were considered. These include such charges as: gate fees, surcharges on terminal operators, and other dock-side sources. After further investigation, these sources were eliminated from consideration because they would effectively duplicate the potential sources that could be explored in future phases of the project. The results of the financial analysis of container fees and tolling of the dedicated truck-only lanes are summarized in the following sections.

Container Fee

The container fee was structured to be identical to the current fees being levied by the Alameda Corridor Transportation Authority (ACTA). The ACTA container fees are assessed on containers that are traveling into or out of the ports either on rail or destined for a rail head within the region.

The volume of containers that could be charged is based on the Port forecast for inbound and outbound containers that will be moved by trucks between 2005 and 2035. The forecast estimates 10.8 million total container movements (for both ports) in 2005 and forecasts this total will grow to 40.5 million by 2027 where the analysis assumes it will remain constant through the remaining forecast period (2044).

The analysis assumes that these fees will increase annually at an annual inflation rate of two percent from the current levels of \$30 per container until the year 2035 when charges would be \$54.30 per full box and \$14.50 on empties. These fees have the potential to generate about \$51.5 million annually in 2005 and would grow to \$303.4 million in 2035.

This 30-year, container fee-based stream of revenue could then be used to issue container fee revenue bonds worth approximately \$430 million. These revenue bonds assume 23% of container fees is leveraged. Under the Transportation Infrastructure Finance and Innovation Act (TIFIA), loan guarantees would allow leveraging of additional container fee revenues. By leveraging an additional 54%, \$667 million in Capital appreciation bonds could be issued. Finally, a subordinate federal loan serviced by an additional 20% of container fee revenue could leverage an additional \$310 million. Thus the total capital amount generated from these container fees could be used to make \$1.4 billion available as a single amount of capital for Corridor improvements. The net proceeds from each of these three sources are shown in Table 6.5-2 below:

Table 6.5-2
Projected Net Proceeds from Container Fee

Financing Mechanism	Capital Amount	% of Container fee Revenue
Container Fee Revenue Bonds	\$430 million	23%
Capital Appreciation Bonds	\$667 million	54%
Federal Loan	\$310 million	20%
Total Funds	\$1,408 million	97%

Source Cambridge Systematics, Inc., 2004

The \$1.4 billion represents the total amount of capital that could be used for I-710 corridor projects linked to the Port's activities. Other potential funding sources such as federal, state, or local grants, GARVEE bonds, or construction fund investment earnings were not included in this analysis. Nevertheless, the local agencies believe that federal funds for Corridor improvements should be forthcoming given the national importance of improved access into and out of the Ports.

Selected intermediate results and significant assumptions included in the financial modeling are shown in Table 6.5-3 and the most significant interest rates are shown in Table 6.5-4. More detail of the financial model is shown in Appendix Q of this report.

Table 6.5-3
Container Fee Bond Assumptions

Assumption	Value
Gross Bond Proceeds	\$565,410,696
Annual Debt Service	\$41,516,956
Issuance Cost (percent of gross proceeds)	1.5%
Issuance Cost	\$8,481,160
Years of Capitalized Interest	3
Capitalized Interest	\$92,022,016
Debt Service Reserve Deposit	\$34,759,967
Construction Deposit	\$430,147,553
Value of Time Inflation Rate ¹	3.2%
O&M Cost Inflation Rate	2.2%
Construction Inflation Rate	2.2%
Required Coverage Factor (Senior Debt)	1.3
Required Coverage Factor (Combined Coverage)	1.1
Operating Revenue Reserve Fund	\$2,956,780
Capital Renewal Fund	\$50,000,000

Source: Cambridge Systematics, Inc., 2004

Note: This model requires the toll to inflate at the same rate as the value of time

**Table 6.5-4
Interest Rate Assumptions**

Type of Interest Rate	Annual Value
Capitalized Interest Reinvestment Rate	6.10%
Reserve Earnings Reinvestment Rate	6.10%
Construction Fund Reinvestment Rate	0.00%
Senior Bond Borrowing Rate	6.10%
Federal Loan Borrowing Rate	6.10%
Local Debt Borrowing Rate	5.90%
Capital Appreciation Bonds	6.35%

Source: Cambridge Systematics, Inc., 2004

Use of container fees for funding the I-710 improvements would be subject to a stricter nexus, since there would be trucks other than those carrying containers from the port that would benefit from the improvements. Therefore, it is likely that only a portion of the container fee based capital of \$1.4 billion could be used for the I-710 improvements.

Table 6.5-5 shows the forecast 2010 volumes of trucks entering and leaving the ports via the four principal roadways serving the Ports during the three peak periods (AM, midday, and PM) and the sum of all three.

**Table 6.5-5
Forecast 2010 Truck Volumes North of Pacific Coast Highway**

Time Period	2010 Truck Volumes	I-710		SR-47/SR-103		Henry Ford / Alameda St.		I-110	
		In	Out	In	Out	In	Out	In	Out
AM Peak	Number	965	595	207	149	187	101	364	244
	% of Total	41.9%	36.6%	9.0%	9.2%	8.1%	6.2%	15.8%	15.0%
Midday Peak	Number	936	1,006	191	173	268	284	420	455
	% of Total	34.7%	36.0%	7.1%	6.2%	9.9%	10.2%	15.6%	16.3%
PM Peak	Number	486	760	116	140	139	203	206	352
	% of Total	33.3%	38.0%	8.0%	7.0%	9.5%	10.1%	14.1%	17.6%
Sum of Above	Number	2,387	2,361	514	462	594	588	990	1,051
	% of Total	37.3%	36.8%	8.0%	7.4%	9.3%	9.5%	15.4%	16.4%

Source: Cambridge Systematics, Inc., 2004

The table shows that approximately 37 percent of the truck trips serving the Ports would travel on I-710 north of PCH. This share of truck traffic using I-710 provides a basis for the nexus between a container fee charge at the Ports and the improvements in the Hybrid Strategy located along the I-710. This nexus definition is that any truck-borne container entering or leaving the Ports that travels within the I-710 Corridor benefits from the proposed improvements within that Corridor, and should pay the fee. This definition of nexus does not take into account the distance, particular route, time-of-day, or the value or weight of the goods

being moved. Nor does it in any way validate the amount of the existing ACTA fee schedule which has been applied to generate the funding alternatives.

Approximately 16 percent of all trucks entering or leaving the ports would use the I-110. These estimates are based on the Ports' 2010 traffic forecasts. The Port data provides percentages for truck trips by terminal and totals for both inbound and outbound trucks for each of the three peak hours (AM peak hour, mid-day peak hour, and PM peak hour).³ The rationale for including these trips in the nexus calculation is that these trucks move within and contribute to some of the traffic impacts in the I-710 Study Area, that the improvements are aimed at mitigating.

These percentages also include trucks that are moving to the off-dock terminals that have already been charged the container fee by ACTA. The base revenue calculations do not assume any new revenue from these truck moves. In other words, the \$1.4 billion in total bond proceeds and federal loans do not include any revenues from these off-dock moves. However, a higher percentage of these trucks- use the I-710 relative to the proportion of all port trucks that use the I-710. Thus revenue estimates based on the 37 percent figure would be somewhat high.⁴ To give a range of the revenue available to the Hybrid Strategy projects, this preliminary nexus analysis set a higher and lower bound:

- The lower bound of the container fee revenue estimate is based on a traffic volume-weighted average of only those port trucks using the I-710 and shown in the I-710 column in Table 6.5-5 as an average of 37 percent. \$520 million of the \$1.4 billion total capital could be generated from container fees at \$30 per container.
- The upper bound is based on a traffic volume-weighted average of all trucks not traveling on the I-110. This would be the total truck traffic using I-710, SR-47/SR-103 (Terminal Island Freeway), Henry Ford/Alameda Street, and other ingress and egress routes not in the I-110 corridor. This would approximately be 84 percent of all truck volume or \$1.2 billion of capital generated from the proposed container fee. This higher end of the range recognizes that some of the proposed elements of the Hybrid Strategy are not just limited to the I-710 but are also located elsewhere throughout the I-710 Study Area.

Tolled Truck Lanes

Another option explored for local revenue generation for I-710 related infrastructure improvements is the application of tolls to the separate truck lanes proposed in the Hybrid Strategy. The financial feasibility of the proposed truck lanes as defined in Alternative E was evaluated, and these findings should generally apply to the truck lanes proposed in the Hybrid Strategy. This evaluation determined the revenue potential if these lanes were to be tolled. The following are key features of the approach to toll analysis:

³ These percentages are based on all gate moves, so the percentages for all the major facilities in the study area (including the 110) do not add up to 100 percent for two reasons: First, there are inter-terminal trips within the port area that never get on any of the major roads. Second, there are some truck trips that have exited or entered south of PCH, data for which was not available.

⁴ It would require additional analysis to determine more precisely how much it overstates the trucks using I-710, but a rough estimate would be as much as 10 percent. A more detailed assessment of the more precise nexus would be the subject of a future, more detailed study.

- The analysis is based on a tradeoff between travel time savings on the truck lanes vs. the cost of the tolls. Thus, the analysis relies on travel time data derived from the I-710 sub-area focus traffic forecasting model and data on value of time for truckers collected in a stated preference survey by researchers at University of California at Berkeley.⁵ A randomly selected sample of California registered trucks was used from these data, and only the Southern California data were extracted. The data was collected by interviewing fleet managers who can make routing decisions. Data for port only trucks were also assessed, but the sample was too small to make reliable assumptions. A logit curve was fitted to the value of time data. The trucks were split into five value-of-time categories for each of two weight ranges, greater than 33,000 pounds, and 8,500 to 33,000 pounds.
- The value of time data recognizes that different types of trucks have different values of time. This is represented by a probability distribution in the data. In modeling tolls, trucks were divided into two weight classes and five value-of-time categories and assigned to the roadway system using different values of time for each vehicle class.
- Tolls were represented as an equivalent travel time impact. This affects route choice in the traffic forecasts.

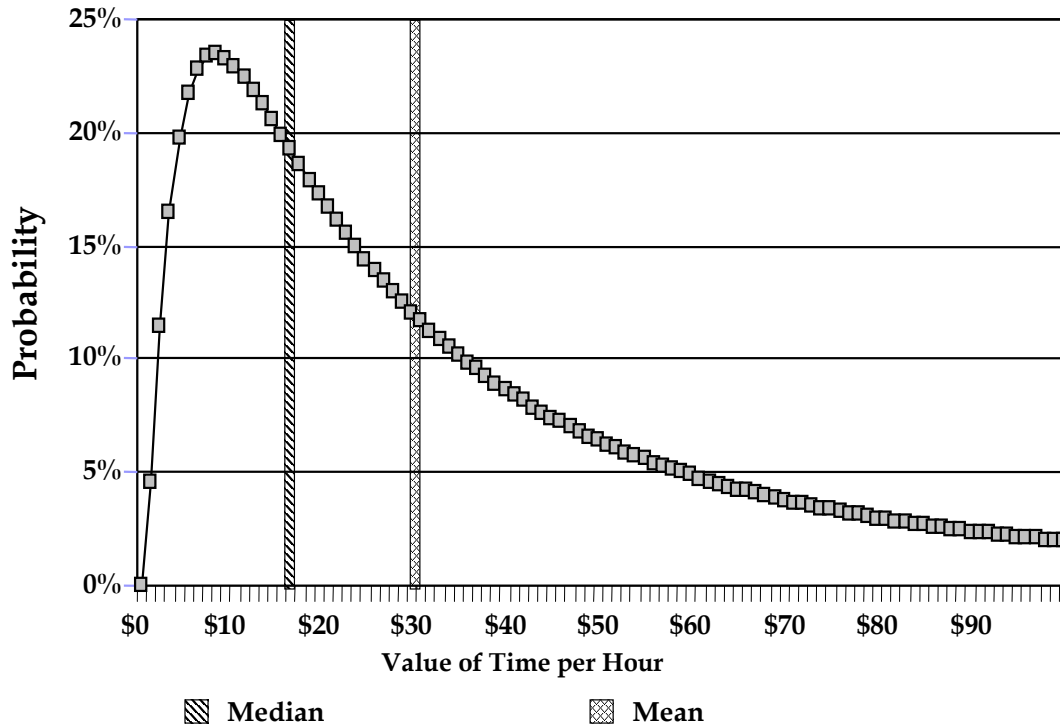
Based on the data, mean value of time was assumed to be \$30 per hour and median value of time was assumed to be \$18 per hour, reflecting a distribution skewed to the lower values of time but with some trucks having a very high value of time (Figure 6.5-5).

These assumptions and the methodology used provide a lower bound estimate of the potential of tolls for the following reasons:

- The value of reliability benefits are not factored into route choice due to the methodology available within the travel forecasting model.
- The data represent the average for all California trucks. The value of time for trucks serving the ports may be higher.

⁵ Kazuya Kawamura, UC Berkeley dissertation, *Commercial Vehicle Value of Time and Perceived Benefit of Congestion Pricing*, 1999.

Figure 6.5-5
Truck Value of Time Distribution



Source: Kazuya Kawamura, UC Berkeley dissertation, *Commercial Vehicle Value of Time and Perceived Benefit of Congestion Pricing*, 1999

- Speed estimates from the traffic forecasting model are critical and are difficult to validate. Even small changes in the assumed difference in speeds between the mainline and the truck lanes can have significant impacts on the results of the analysis.

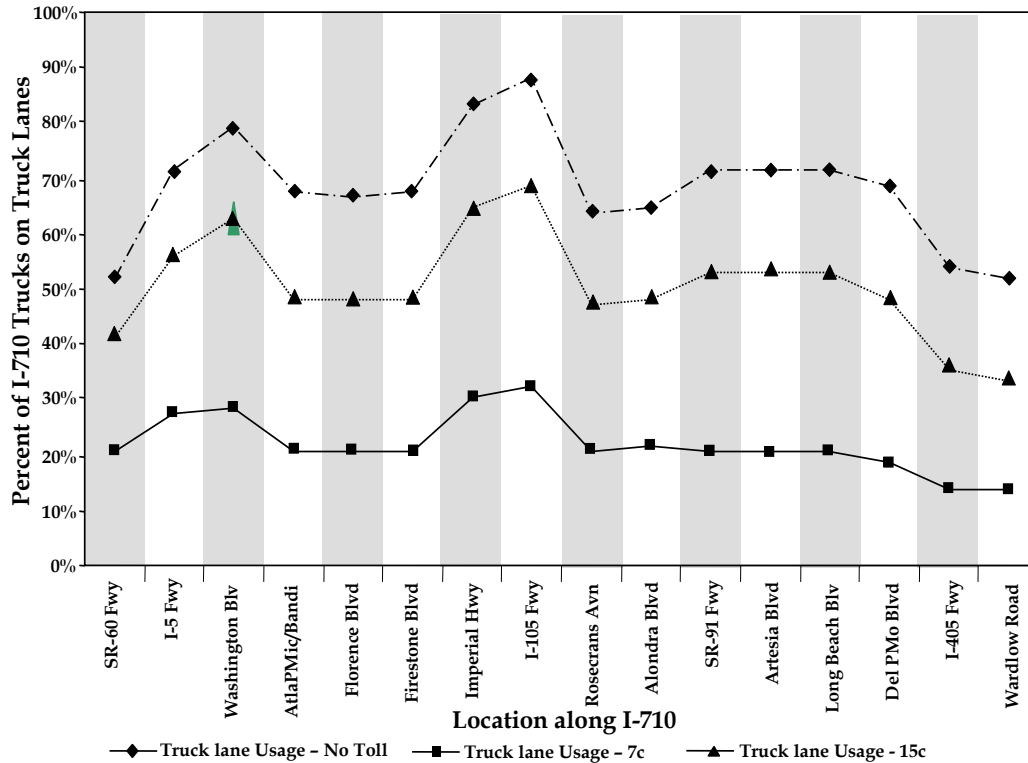
Using a hypothetical trip from the port, the impact of different assumptions about the value of time and speeds on the mainline can be illustrated using information derived from the Final Set of Alternatives. Assuming a trip from the Port of Long Beach to SR-91 along I-710, a distance of about seven miles, a truck is forecast to take 9.8 minutes on average in 2025 in Alternative B (TSM/TDM Alternative) and 7.4 minutes on average using the truck lanes in Alternative E. This information was used subsequently to conduct a sensitivity analysis of the results. Specifically, to capture 50 percent of the truck traffic on I-710 on the truck lanes would require a toll of \$0.105/mile if the value of time is \$18/hour, \$0.175/mile at \$30/hour and \$0.35/mile at \$60/hour.

One point that is clear from the example is that for relatively short trips that characterize truck operations on I-710, the impact of saving time on I-710 itself may be small relative to the amount of time they spend waiting for pick-up and delivery during other parts of their trip.

Forecasts of truck lane utilization rates for two scenarios, a \$0.07/mile toll and a \$0.15/mile toll are shown in Figure 6.5-6. The maximum revenue toll is expected to be somewhere between these two values. At \$0.07/mile, truck lane utilization is estimated to average around 60 percent of all trucks using I-710, whereas at \$0.15/mile this is forecast to drop to around 35 percent. The difference between peak period truck lane utilization rates and daily utilization

rates is not significant because of relatively constant congestion levels throughout the day and high mid-day truck volumes.

**Figure 6.5-6
Tolls and Truck Lane Usage¹
Impacts of Toll Values by Freeway Segment**



¹Percent of trucks that use the truck-exclusive lanes derived from forecast of daily truck lane usage in Alternative E.

In a sensitivity analysis, utilization rates were compared for a \$0.15 per mile toll assuming that actual value of time is twice that assumed in the base case analysis. Utilization rates were approximately equivalent to the base case of \$0.07 per mile toll. In the base case of \$0.07 per mile, annual revenue in 2003 dollars was estimated at \$6.1 million. Maximum revenue for the base case is closer to \$8 million annually in 2025. This annual amount would leverage a total capital fund of roughly \$80 million assuming an annual growth rate in truck volumes of 2.96 percent from 2005 to 2035.⁶ This amount is significantly less than the \$1.4 billion that could be raised by implementing a container fee as discussed earlier in this section.

Sensitivity cases by doubling the value of time to \$60 per hour and assuming that speeds on the I-710 mainline are five to eight miles per hour lower than the forecast were also tested. In these best case set of assumptions, annual revenues might be as high as \$25 to \$30 million. The increased value of time figures may be a way of taking into account the value of travel time

⁶ 2.96 percent is the projected annual average growth rate of truck traffic on the I-710 between 1997 and 2025.

reliability, for example. This annual amount would leverage a total capital fund of roughly \$330 million using the same assumptions as stated above.

Conclusions

Federal and state funding would be required to implement the I-710 Draft Hybrid Strategy improvements. Access to these funds will depend in part on the extent to which local matching funds can be raised. Several conventional and innovative sources were considered, and two such revenue sources were explored to provide an understanding of the order-of-magnitude of such funds.

The charging of container fees for all non-rail borne containers was analyzed using the rate similar currently charged by the Alameda Corridor Transportation Authority. Revenue generated by charging container fees could potentially be leveraged to raise an estimated \$1.4 billion.

Revenue likely to be generated by charging tolls for use of the truck-only lanes were based on estimated value of time, and applying travel time savings generated by the model. Using a toll of 7 cents per mile and value of time of \$30 per hour, the revenues could be leveraged to raise \$80 million in capital. A scenario doubling the toll to 15 cents per mile, representing a doubling of value of time to \$60 per was tested. Under this scenario, it was estimated that approximately \$330 million in capital could be raised.

The analyses presented in this section are intended to provide a general order-of-magnitude estimate of potential revenues through charging container fees and truck-only lane tolls. Significant additional analysis will be necessary for generating estimates usable in developing financial plans for the I-710 improvements.