

SANTA MONICA PIER BRIDGE REPLACEMENT PROJECT CONCEPT SUMMARY REPORT

October 18, 2013

Prepared by:

TYLININTERNATIONAL



Table of Contents

Executive Summary	3
1. Project Description.....	8
1.1. Setting and Context	8
1.2. Current Functionality.....	12
2. Previous Studies.....	15
3. Purpose and Need	16
4. Site Constraints	16
4.1. Geometric	16
4.2. Maintaining Pier Access.....	17
4.3. Right-of-Way, Business & Utilities.....	18
4.4. Environmental Impacts.....	18
5. Context Sensitive Design.....	19
6. Public Outreach.....	19
7. Design Concept Summary	20
Appendix A: Preliminary Cost Estimate.....	26

List of Figures and Tables

Figure 1 - Conceptual Design for Alternative 1A.....	5
Figure 2 – Site Plan for Alternative 1A	5
Figure 3 - Conceptual Design for Alternative 1B.....	6
Figure 4 – Site Plan for Alternative 1B	6
Figure 3 - Conceptual Design for Alternative 4.....	7
Figure 4 - Site Plan for Alternative 4.....	7
Figure 5 - Plan of Pier Bridge and Adjacent Properties and Projects.....	10
Figure 6 - Scramble Intersection with Pedestrian Walkway and Two-Way Cycle Track	13
Figure 7 - 2006 Draft EIR/EA	15
Figure 8 - 2006 Staged Bridge Construction Concept.....	17
Table 1: Alternatives At-A-Glance.....	22
Table 2: Summary of Alternatives.....	24

Concept Summary Report Santa Monica Pier Bridge Replacement Project

Executive Summary

The Santa Monica Pier Bridge represents a key link to the City of Santa Monica's past and remains an important element in the present and future planning for Pier access, adjacent neighborhoods and businesses. The Pier Bridge has been identified for replacement since 2008 through the federal-aid Highway Bridge Program. In October 2012, the City of Santa Monica embarked on the bridge replacement project starting with the Concept Design Phase. The results of the Concept Design efforts are summarized in the following report.

As a result of the Concept Design Phase, the following two alternatives are recommended for further study in the environmental document phase:

Alternative 1A – Replace and widen bridge in kind with wider sidewalks and bicycle lanes at the current location. Provide a temporary bridge at Moss Avenue.

Alternative 1B – Replace and widen bridge in kind with wider sidewalks and bicycle lanes at the current location. Provide a temporary access ramp on North side of Pier.

Alternative 4 – Construct two bridges. (1) Replace bridge in kind similar to existing bridge with pedestrian/bicycle/limited access/emergency vehicular bridge in the current location and (2) a new vehicular bridge with sidewalks at Moss Avenue.



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Alternative 1A – Replace in Kind

Replace the Pier Bridge with a wider bridge in the same location. Replacement bridge would be approximately 58 ft wide, with standard vehicular lanes, shoulders, bike lanes, and wider sidewalks (optional elevator). A temporary bridge would be located at Moss Ave.

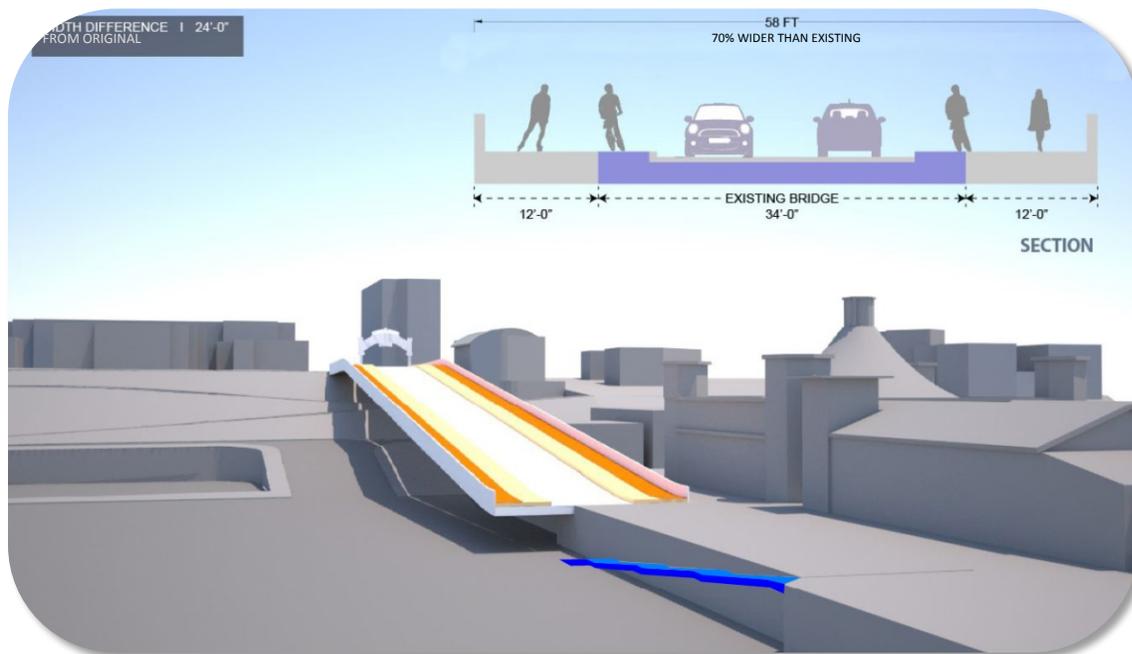


Figure 1 - Conceptual Design for Alternative 1A

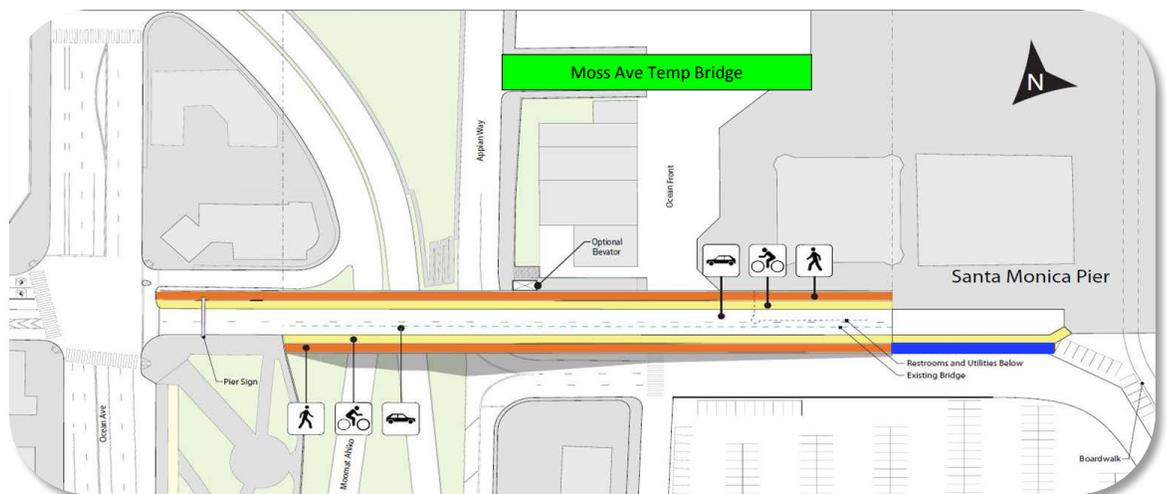


Figure 2 – Site Plan for Alternative 1A

Alternative 1B – Replace in Kind

Replace the Pier Bridge with a wider bridge in the same location. Replacement bridge would be approximately 58 ft wide, with standard vehicular lanes, shoulders, bike lanes, and wider sidewalks (optional elevator). A temporary pier access ramp would be located on the North side of the Pier.

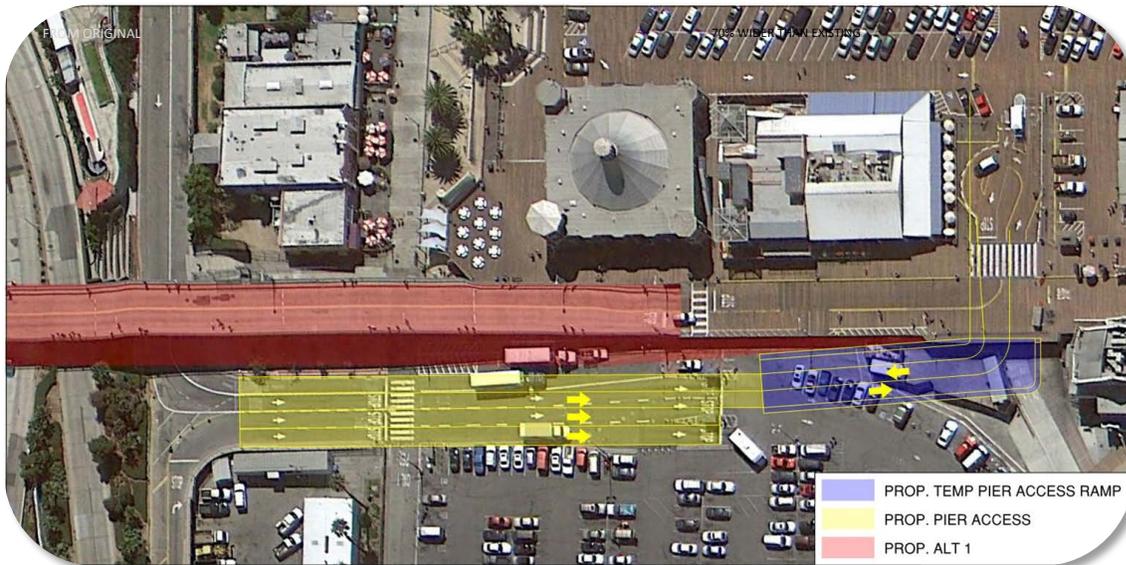


Figure 3 - Conceptual Design for Alternative 1B

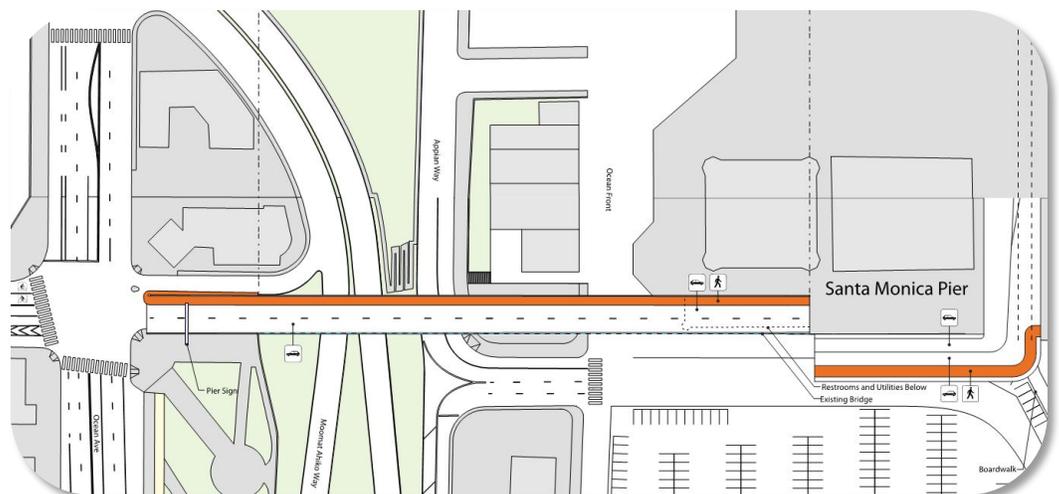


Figure 4 – Site Plan for Alternative 1B

Alternative 4 – New Bridge + Emergency/ADA/Bike

Replace the Pier Bridge with the same current width designed primarily for pedestrian and bicycle use, but also accommodate limited (controlled) use, delivery, and emergency vehicles. ADA access would be provided by an adjacent ADA pathway or an elevator. Provide a separate vehicular access bridge at Moss Avenue.

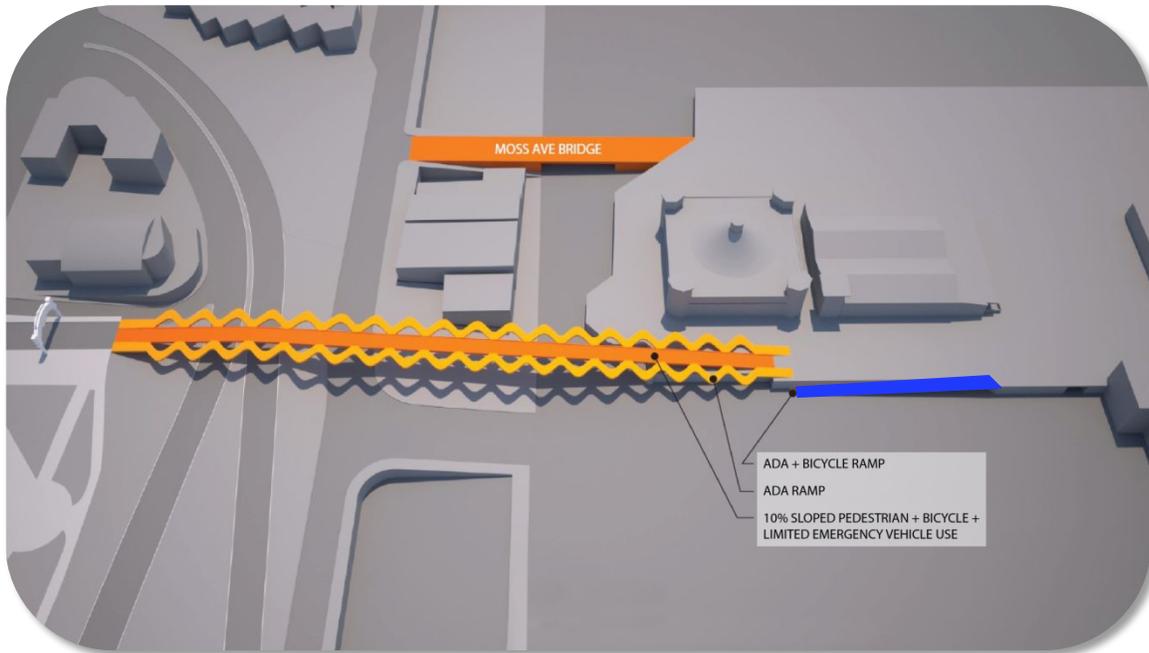


Figure 5 - Conceptual Design for Alternative 4

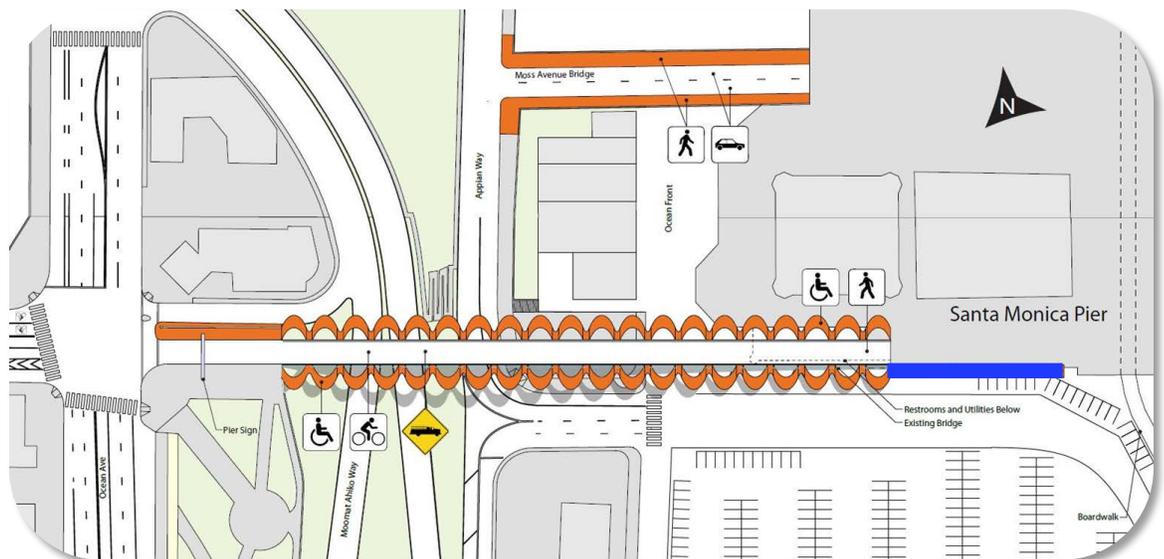


Figure 6 - Site Plan for Alternative 4

1. Project Description

1.1. *Setting and Context*

The Santa Monica Pier Bridge serves as the key infrastructure element for one of the City of Santa Monica's (COSM) most iconic locations, encompassing the Santa Monica Pier, Palisades Park, Tongva Park, and the historic Pier Sign. The bridge is the link between one of the City's most recognized landmarks, the Santa Monica Pier, and the ever vibrant downtown area, which draws millions from around the world to visit the Pier and enjoy the City's culture and iconic beach elements. Over 6 million people visit the Pier every year¹. In 2012, the photo sharing service Instagram listed the Santa Monica Pier as one of the top 10 most popular locations on Instagram, further attesting to its unique location and character.

With the anticipated completion of the Exposition Light Rail extension to Santa Monica in 2015, the City's prominence and the need for a safe, accessible, and architecturally pleasing Pier Bridge will only increase.

Replacement of the Pier Bridge has many unique challenges, including:

- A steep grade and lack of current Americans with Disabilities Act (ADA) access
- Protection of historic resources (e.g. the Pier Sign, Looff's Hippodrome),
- Construction staging
- Maintaining Pier access for the public and adjacent businesses

The Pier and Pier Bridge also function as a key financial engine for the local economy, drawing millions of tourists and locals to the Pier, surrounding businesses, shopping areas, and hotels. Access to the Pier is critical to maintain this financial artery.

The bridge was built in 1939 and is classified as an Urban Local Street. The bridge is both structurally deficient and functionally obsolete with a sufficiency rating of 28.6 making the project eligible for replacement funding through the Federal Highway Administration's (FHWA) Highway Bridge Program (HBP). The project was programmed under the HBP and authorized for the Preliminary Engineering (PE) phase in May 2012.



Photo 1 – Project Site Looking West Along Colorado Ave

¹ *Santa Monica Pier Governance and Management Study*. City of Santa Monica, October 2011.

<http://www.smgov.net/uploadedFiles/Departments/OPM/AboutUs/Pier%20Governance%20Study.pdf>. September 2013



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<p>SANTA MONICA PIER BRIDGE</p>	<p>DATE PREPARED SEPTEMBER 2013</p>	 <p>TYLIN INTERNATIONAL engineers planners scientists</p>
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Figure 7 - Plan of Pier Bridge and Adjacent Properties and Projects



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1.2. Current Functionality

The bridge serves as the primary access to Pier businesses and sole access for on-Pier parking and emergency vehicles. In addition, the Pier serves the Santa Monica Harbor Patrol, Santa Monica Police Department's downtown substation, City beach and pier maintenance facilities, the non-profit Heal the Bay (Aquarium), various vendors, performers, and special events.

Peak weekend average daily traffic (ADT) is approximately 3,667 comprised of a mix of beach/amusement park patrons and service/delivery vehicles². However, the largest groups of bridge users by far are pedestrians and bicyclists accessing the Pier and boardwalk/beach access points from Ocean Avenue. Pier deck parking accommodates 277 vehicles. When Pier deck parking is full or during periods of high pedestrian usage (typical summer day), the bridge is closed to vehicular traffic and functions as a pedestrian/bicycle facility (Photo 2). It is notable that Pier usage is heavy not only in the summer months, but all year around. In fact, the second busiest time for Pier businesses and attendance is the Winter Holiday Season.

Completion of the Expo Light Rail and the Colorado Esplanade Projects, both expected in Fall 2015, will serve to further increase pedestrian and bicycle use of the Pier Bridge. The Colorado Esplanade project calls for modifying Colorado Avenue from the Expo Station at 4th Street to the Pier Bridge with extra wide pedestrian walkways and a dedicated two-way cycle track (Figure 6).



Photo 2 – Pier Bridge Closure – Pier Parking Full

² Santa Monica Pier Access Improvements Project Draft Environmental Impact Report/Environmental Assessment and Section 4(f) Evaluation, Volume I, page 1-10

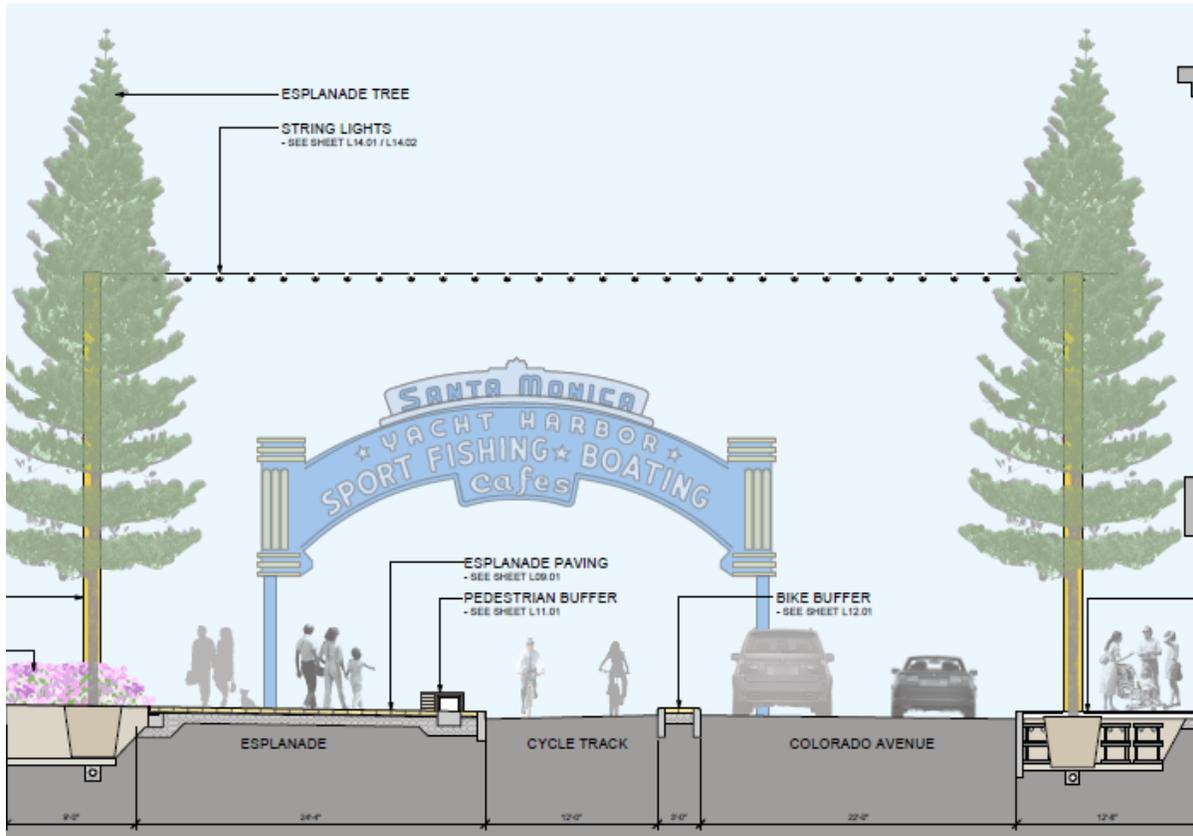


Figure 8 - Scramble Intersection with Pedestrian Walkway and Two-Way Cycle Track³

The large volume of pedestrians using the bridge creates a substantial conflict with vehicles resulting in safety concerns and delays in accessing the Pier by car. At the request of the Santa Monica Police Department, bridge sidewalks were recently removed from the bridge and a K-rail barrier was added to separate pedestrians and vehicular traffic; providing better protection for pedestrians using the bridge (Photos 3 & 4).



Photo 3 - Large Volume of Pedestrians on Bridge



Photo 4 - Pedestrian/Vehicle Conflicts

³ City of Santa Monica Colorado Esplanade 100% Design Development Plans, PWP Landscape Architecture

The existing structure is on a 10% grade resulting in slow pedestrian speeds in both directions. Limited mobility and disabled patrons find the bridge especially difficult to navigate given the steep grade and the volume of users (Photos 5, 6, & 7). The COSM stated the desire to make the Pier Bridge fully ADA compliant from Ocean Ave and Colorado Ave intersection, the main route, while maintaining full federal funding participation.



Photo 5 - Steep Grade of Santa Monica Pier Bridge, Looking East



Photo 6 - Steep Grade of Santa Monica Pier Bridge, Looking West



Photo 7 - Effects of Steep Grade on Disabled Patrons

2. Previous Studies

The COSM has invested significant time and funding into the project over many years. Work on the Pier Bridge dates back to the mid-1990's Beach Improvement Group (BIG) project which included beach development, restrooms, and engineering studies of the Pier Bridge, Pier Sign, and the nearby California Incline Bridge Replacement Project using the HBP. The BIG project's goal was to increase and improve beach access in the Santa Monica area. Specifically for the Pier Bridge, work was completed to evaluate the historic Pier Sign for seismic retrofitting and possible relocation. Alternatives were developed for the Pier Bridge retrofit and rehabilitation/widening versus complete replacement⁴.

In 2006, the COSM produced a Draft EIR/EA as part of the Santa Monica Pier Access Study based on a bridge retrofit/widening and rehabilitation alternative (Figure 7). The 2006 study identified the predominate pedestrian traffic at the site and recommended a wider bridge with more room for pedestrians and bike lanes. It was subsequently determined that retrofitting/widening and rehabilitation would not resolve the structure's functional deficiencies nor appreciably extend the bridge's service life. As a result, the COSM sought and secured bridge replacement funding for the project. This is the last significant study of the bridge prior to the current work.

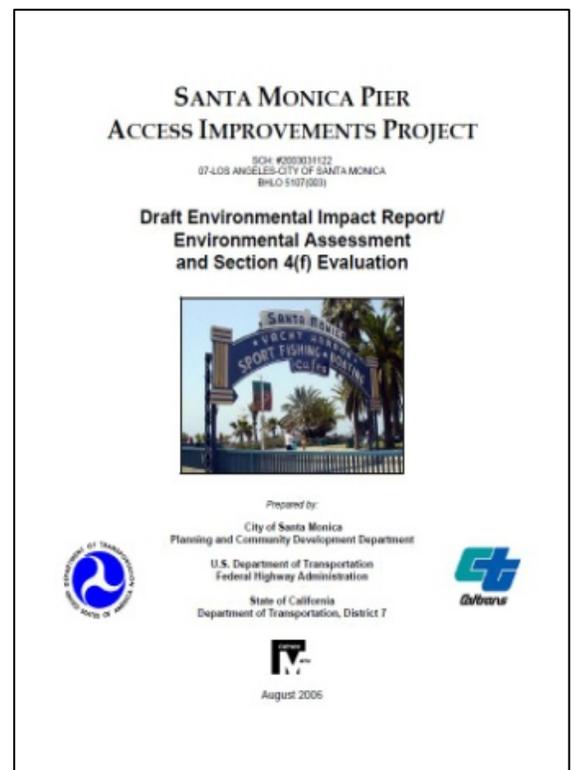


Figure 9 - 2006 Draft EIR/EA

⁴ Caltrans Memorandum, *Assessment of Rehabilitation vs. Replacement*. 13 July 2007.

3. Purpose and Need

The purpose of the Santa Monica Pier Bridge Replacement Project is to resolve the bridge's structural deficiencies and functional obsolescence while providing a safe, aesthetically pleasing structure that meets the current and future needs of the site.

As discussed earlier in this report, the existing bridge serves as a key transportation element literally surrounded by unique developments including businesses, shops, and public facilities. As such, there are many needs for the project to satisfy including:

1. Design to Caltrans standards, including current seismic code
2. Design to reflect the coastal environment and protect historic facilities
3. Design to provide safe and equal access to all modes (pedestrians, bicycles, cars) per FHWA guidance⁵
4. Provide ADA compliance to the extent possible and practical under the federal-aid guidelines
5. Provide a context sensitive design reflective of the project's unique location, function, and importance to the local community and businesses
6. Maintain continuous Pier access during construction via the Pier Bridge or a separate structure(s)
7. Consideration of the site's current and future functionality in determining the final alternatives
8. Consistency with the Regional Transportation Improvement Plan suggesting non-capacity increasing

4. Site Constraints

The project is bound by many site constraints that influence the final bridge replacement alternative selection. Several major constraints are discussed below:

4.1. *Geometric*

- Lower the bridge profile – The current structure provides a direct route from Ocean Avenue to the Pier at a steep 10% grade. The bridge grade is controlled by several street crossings passing under the bridge such as Moomat Ahiko Way (MAW) and Appian Way. Current vertical clearance over MAW is about the minimum 15 feet required for most City streets. Therefore, the bridge profile cannot be further lowered without having an adverse effect on the road network below or requiring an exception to the minimum vertical clearance requirements. In addition, because the low point of MAW is located below the bridge, additional bridge widening would further decrease the vertical clearance available.
- Lower Moomat Ahiko Way – Conversely, consideration was given to lowering MAW in order to lower the bridge grade and thus lessen the bridge grade. However, initial review indicated the profile of MAW is controlled by the adjacent Caltrans owned McClure Tunnel serving Pacific



Photo 8 - Vertical Clearance over Moomat Ahiko Way



Photo 9 - Moomat Ahiko Way West of McClure Tunnel

⁵ LaHood, Ray. *United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations*. FHWA, 15 March 2010.

http://www.fhwa.dot.gov/environment/bicycle_pedestrian/overview/policy_accom.cfm. 03 October 2013.

Coast Hwy 1, see Figure 5. Lowering MAW would increase the grade of the approach roadway to PCH and may trigger the need for Caltrans approval based on decreasing sight distance with limited benefit.

- ADA Compliance – As noted previously, the existing bridge does not meet ADA compliance with the current 10% slope. It presents difficulties to families and limited mobility and disabled patrons. There are several ADA compliant segments serving the Pier within the immediate area including:
 - Santa Monica Urban Runoff Recycling Facility (SMURRF)
 - From Ocean Front Walk to the Pier

However, no continuous ADA compliant access exists from Ocean Avenue to the Pier, a difference of 36 feet in elevation.



Photo 10 - ADA Compliance Issue



Photo 11 - SMURRF ADA Ramp

4.2. Maintaining Pier Access

Rebuilding a bridge in its original location involves careful planning of construction procedures, maintenance of traffic, business impacts, mitigation, and bridge structure type selection. Two primary alternatives in bridge replacement include:

1. Staged Construction – Maintaining one lane of traffic/pedestrian access during construction and building the new structure one half at a time.
2. Closure – Remove and detour vehicular traffic and close the bridge (providing temporary pedestrian/bicycle pier access).

Staged Construction

Keeping at least one vehicular lane open at all times during construction (shared by pedestrians, bicycles, delivery and emergency vehicles) will require staged bridge construction. Typically, staged construction involves removing half the bridge at a time while maintaining traffic on the remaining half. Since existing structure is only 34 feet wide, removing half the bridge results in a structure too narrow to safely accommodate one lane vehicle and pedestrian access.

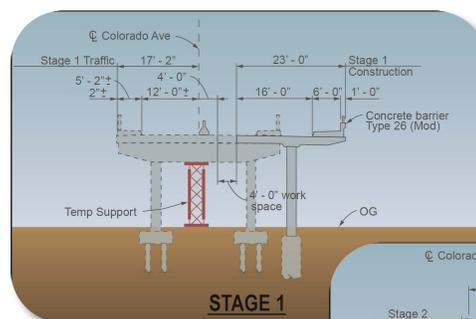
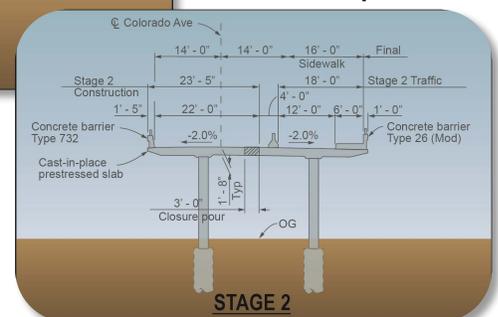


Figure 10 - 2006 Staged Bridge Construction Concept



Also, since the existing bridge is supported on two columns, a temporary shoring system would be required to support the existing structure during the partial removal stage (Figure 8). Caltrans design guidance (Memo to Designers 20-12) requires bridges

under temporary partial demolition to comply with a minimum site seismicity to ensure a minimum threshold for seismic resistance. For the Pier Bridge, this would likely entail seismically retrofitting the existing bridge to a minimum level prior to demolition.

Closure

To mitigate safety and retrofit concerns involved in staged construction, full bridge closure alternatives were investigated. Providing alternative Pier access during construction would eliminate the need to stage the bridge construction and would ensure pedestrian and bike safety as well as time and cost savings. The need for alternative Pier access led to the Moss Avenue bridge alternative discussed later in this report.

4.3. Right-of-Way, Business & Utilities

Right-of-Way (ROW) requirements will be evaluated with each alternative in terms of number of parcels and impacts to businesses. All ROW activities will follow the Federal Acquisition Regulations to be eligible for federal funding participation.

Extensive utility coordination and temporary/permanent relocation is anticipated given the location of the project and the close proximity to existing facilities:

1. The Santa Monica Aquarium, located immediately adjacent to the bridge, will have direct impacts to its business practice from bridge construction activities. The aquarium also has seawater pumping/piping and backup electrical generators that may be impacted by bridge demolition and construction activities (Photo 12 & 13).
2. Pier bridge construction will impact public restrooms located beneath the western most spans (Photo 14).



Photo 12 - Santa Monica Aquarium



Photo 13 - Electrical Generator for Aquarium, Under Bridge



Photo 14 - Public Restrooms, Under Bridge

With significant utility requirements on the project, the benefit and eligibility of using HBP funds for utility relocation will be explored.

Temporary business relocation impacts are anticipated to play a significant role on the overall project planning and execution.

4.4. Environmental Impacts

Important environmental and historical resources adjacent to the project area are not expected to be impacted by the project; including the Pier Sign, Hippodrome Building, and Palisades Park.

However, complete environmental evaluation and technical studies will be conducted during the environmental review and document phase to confirm these assumptions.

5. Context Sensitive Design

With a host of site constraints and competing interests, the Concept Design Phase employed a context sensitive approach to identify project characteristics and goals to evaluate the various project alternatives. The goal of context sensitive design is to identify alternatives that are appropriate and consistent with the surrounding character, use of facilities, and compliment future planned developments such as the Exposition Light Rail, Colorado Esplanade and future Pier improvements.

Context sensitive design is achieved by sculpting the structural system and considering the experience of the users, their speed, and how the project will be seen. Every design makes a statement about the community it serves. Most structures are seen from a multitude of viewpoints and by travelers at different speeds. Some people will see the Pier Bridge walking or biking in Palisades Park. Others will see it from Ocean Avenue or Colorado Avenue. Structures that make a positive statement about a community are designed to balance form, function, and beauty at every scale and location.

In order to accomplish this balance, the Concept Design team employed a process that works in an order of magnitude in four distinct steps. The steps of the process include:

1. Information exchange and education
2. Concept development
3. Concept refinement
4. Alternate selection

This approach is based on Context Sensitive Design/Solution principles which identify community characteristics and project goals. By listening to the expectations of stakeholders, the community, and City personnel, several aspects to ensure a successful project were identified. The community's expectations are balanced by exploring and evaluating sound engineering solutions. An appropriate solution accomplishes the various objectives within the project budget and schedule.

This process is designed to find common elements in the community's expectation and bring form to them. The public outreach process allows us to understand these common elements and incorporate them into the project.

6. Public Outreach

Santa Monica represents a highly diverse citizenry with many interests represented by various City organizations. Currently, the COSM has several planning and construction projects in the immediate Pier area that require extensive public information and education. Similarly, the Pier Bridge replacement project team has conducted significant public outreach to solicit goals and guiding principles from the following groups and organizations:

- Santa Monica Pier Board



Photo 15 – Pier Bridge Community Meeting

- Landmarks Commission
- Public - Community Meeting

In addition, the project is featured on the COSM's website and social media sites.

7. Design Concept Summary

During the Concept Design Phase, the design team solicited Public and City input, performed site analysis to establish current functionality, and constructed a detailed site model to identify feasible bridge alignments and opportunities for further study. Out of this context sensitive based effort, four basic alternatives were developed which are summarized in Tables 1 & 2.

The intent of the Concept Design Phase is to narrow the range of alternatives and select two for further study in the Environmental Document/Preliminary Engineering Phase. The following discussion summarizes how the four basic alternatives were narrowed down to two.

A summary of issues discussed during outreach, meetings, and site analysis are shown in Table 1. This summary reflects the various issues, constraints, functionality, and guiding principles established during the concept phase of the project. Based on the input received, the separation of pedestrian/bikes from vehicular traffic emerged as the most important goal of the public, business community, and City staff. It is noted that this remains consistent with the prior 2006 study findings and recommendations. Alternatives 3 and 4 satisfy this goal of vehicle/pedestrian separation.

Alternatives No. 2 and No. 3 were dropped from further study due to their relative significant visual impacts to the Pier and Hippodrome, impacts on the 1550 Parking Lot, and right-of-way concerns with State Lands who own the 1550 Parking Lot. In addition, the Santa Monica Fire Department has indicated the requirement for direct access to the Pier from Ocean Avenue via the Pier Bridge. Therefore, the new Pier Bridge will also be designed for emergency vehicle use. Alternative No. 3 does not meet this requirement.

As a result of the Concept Design Phase, the following two alternatives are recommended for further study in the environmental document phase:

- Alternative 1A – Replace and widen bridge in kind with wider sidewalks and bicycle lanes at the current location. Provide a temporary bridge at Moss Avenue.
- Alternative 1B – Replace and widen bridge in kind with wider sidewalks and bicycle lanes at the current location. Provide a temporary access ramp on North side of Pier.
- Alternative 4 – Construct two bridges. (1) Replace bridge in kind similar to existing bridge with pedestrian/bicycle/limited access/emergency vehicular bridge in the current location and (2) a new vehicular bridge with sidewalks at Moss Avenue.



Photo 16 - Proposed Location of Moss Ave Bridge



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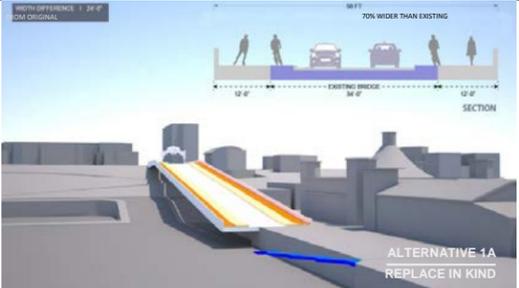
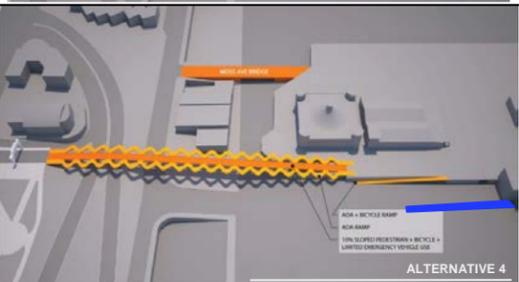
Table 1: Alternatives At-A-Glance

	Alternative				
	1A	1B	2	3	4
Pedestrian/Bicycle					
Eliminates ped/car conflict				✓	✓
Provides ADA Access (w/o elevator)			✓	✓	✓
Maintains direct route for pier access (pedestrian)	✓	✓	✓		✓
Dedicated/Shared bike lanes	✓	✓	✓	✓	✓
Vehicle					
Maintains direct route for pier parking access (vehicle)	✓	✓	✓		
No traffic impacts (Moss Ave)	✓	✓	✓		
Improves traffic flow at Ocean/Colorado Intersection				✓	✓
Limited (controlled use) and emergency vehicle access	✓	✓	✓		✓
Allows permanent vehicular access during construction		✓	✓	✓	✓
No impacts to 1550 lot	✓				✓
Historic					
Pier sign remains in place	✓	✓	✓	✓	✓
Significant change in viewshed for historic elements			✓	✓	
Context					
Publicly supported	✓	✓			✓
Meets vertical clearance requirement at all locations			✓	✓	✓
Bridge width matches pier			✓	✓	✓



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Table 2: Summary of Alternatives

Alt No.	Concept Image	Description	Comment	Pros	Cons	Total Cost
1A		Replace in Kind Replace Pier Bridge with a wider bridge (Approximately 58 ft wide – standard vehicular lanes, shoulders, bike lanes, wider sidewalks) in the same location (optional elevator). Provide a temporary bridge at Moss Ave.	This alternative is considered to provide baseline functionality of the bridge while addressing the current bridge structural and functional deficiencies.	<ul style="list-style-type: none"> Maintains direct route for Pier access Maintains direct route for Pier parking access No traffic impacts at Moss Ave One bridge Does not impact Pier Sign No significant change in viewshed for historic elements Supported by the public 	<ul style="list-style-type: none"> Safety – Maintains many conflict points between vehicles and ped/bikes New bridge width is too wide, doesn't match pier and doesn't provide vertical clearance at 1550 parking lot entrance (pier deck 10' high) New bridge width doesn't provide required vertical clearance at Moomat Ahiko Way, on-ramp to PCH (Highway 1) No ADA access (w/o elevator) Does not improve traffic flow at Ocean/Colorado intersection Requires temporary Pier access for vehicles, peds, & bikes during construction 	\$14,970,000
1B		Replace in Kind Replace Pier Bridge with a wider bridge (Approximately 58 ft wide – standard vehicular lanes, shoulders, bike lanes, wider sidewalks) in the same location (optional elevator). Provide a temporary access ramp on the North side of Pier.	This alternative is considered to provide baseline functionality of the bridge while addressing the current bridge structural and functional deficiencies.	<ul style="list-style-type: none"> Maintains direct route for Pier access Maintains direct route for Pier parking access No traffic impacts at Moss Ave One bridge Does not impact Pier Sign No significant change in viewshed for historic elements Supported by the public 	<ul style="list-style-type: none"> Safety – Maintains many conflict points between vehicles and ped/bikes New bridge width is too wide, doesn't match pier and doesn't provide vertical clearance at 1550 parking lot entrance (pier deck 10' high) New bridge width doesn't provide required vertical clearance at Moomat Ahiko Way, on-ramp to PCH (Highway 1) No ADA access (w/o elevator) Does not improve traffic flow at Ocean/Colorado intersection Requires temporary Pier access for vehicles, peds, & bikes during construction 	\$14,270,000
2		Replace in Kind + ADA/Bicycle Replace Pier Bridge with the same current width and construct a separate ADA/pedestrian/bike path north of the Pier.	Due to the long length required to meet ADA compliance, this alternative had potentially significant ROW impacts to the 1550 Lot as well as impacts to parking spaces and creates adverse visual impacts to the Landmarked Hippodrome Building. This alternative was not preferred by the public and was eliminated from further study.	This alternative was not preferred by the public and was omitted from future studies.		
3		New Bridge + ADA/Bicycle Replace Pier Bridge with a pedestrian/bicycle bridge only and provide a vehicular access bridge at Moss Avenue.	As in Alternative 2, this alternative had potentially significant ROW impacts to the 1550 Lot as well as impacts to parking spaces and creates adverse visual impacts to the Landmarked Hippodrome Building. Additionally, due to the need to maintain delivery and emergency vehicle access from Ocean Avenue and lack of public support, this alternative was also eliminated from further study.	This alternative was not preferred by the public and was omitted from future studies.		
4		New Bridge + Emergency/ADA/Bike Replace Pier Bridge with the same width designed primarily for pedestrian and bicycle use, but also accommodate limited (controlled) use, delivery, and emergency vehicles. ADA access would be provided by an adjacent ADA pathway or an elevator. Provide a separate vehicular access bridge at Moss Avenue.	This alternative received wide support in public and community meetings and is recommended to be further studied in the environmental document phase.	<ul style="list-style-type: none"> Safety – eliminate vehicle ped/bike conflicts at many locations, providing public safety Allows limited (controlled) use and emergency vehicle access Maintains direct route for Pier access for pedestrians Provides ADA access without an elevator Allows permanent vehicular access during construction Does not impact Pier Sign or 1550 lot New bridge width matches pier Less vehicular circulation at Colorado/Ocean Ave intersection by eliminating one signal phase for exiting No significant change in viewshed for historic elements Supported by the public Moss Avenue bridge is shorter span and cost effective 	<ul style="list-style-type: none"> Requires temporary Pier access for peds/bikes from Ocean Ave. during construction Traffic impacts at Moss Ave 	\$10,860,000

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Appendix A: Preliminary Cost Estimate

Alternative 1A –

Item #	Quantity	Unit	Item Description	Unit Price	Item total
1	1	LS	CONSTRUCTION SURVEY	\$20,000	\$20,000
2	1	LS	PROGRESS SCHEDULE (CRITICAL PATH METHOD)	\$10,000	\$10,000
3	1	LS	TIME-RELATED OVERHEAD	\$1,000,000	\$1,000,000
4	1	LS	LEAD COMPLIANCE PLAN	\$10,000	\$10,000
5	1	LS	TRAFFIC CONTROL	\$75,000	\$75,000
6	1	LS	TEMPORARY SIGNS AND STRIPING	\$5,000	\$5,000
7	1	LS	TEMPORARY PEDESTRIAN ACCESS	\$10,000	\$10,000
8	1	LS	TEMPORARY TRAFFIC SIGNAL	\$50,000	\$50,000
9	1	LS	TEMPORARY BMPs	\$50,000	\$50,000
10	1	LS	PREPARE STORM WATER POLLUTION PREVENTION PLAN	\$20,000	\$20,000
11	1	LS	CLEARING AND GRUBBING	\$10,000	\$10,000
12	200	CY	ROADWAY EXCAVATION	\$25	\$5,000
13	100	CY	CLASS 2 AGGREGATE BASE	\$26	\$2,600
14	150	TON	HOT MIX ASPHALT (TYPE A)	\$100	\$15,000
15	1	LS	MINOR CONCRETE (SIDEWALK, CURB, GUTTER, ADA RAMPS)	\$50,000	\$50,000
16	1	LS	SIGNS AND STRIPING	\$10,000	\$10,000
17	1	LS	DRAINAGE SYSTEM	\$100,000	\$100,000
18	1	LS	MISCELLANEOUS RELOCATION/RECONSTRUCTION	\$100,000	\$100,000
19	1	LS	PIER MODIFICATION	\$50,000	\$50,000
20	17,000	SF	BRIDGE REMOVAL	\$25	\$425,000
21	1	LS	BRIDGE LIGHTING	\$200,000	\$200,000
22	29,000	SF	PIER BRIDGE (ALT 1A)	\$170	\$4,930,000
23	10,000	SF	TEMPORARY PEDESTRIAN BRIDGE (ALT 1A)	\$100	\$1,000,000
24	8,000	SF	MOSS TEMPORARY BRIDGE (ALT 1A)	\$125	\$1,000,000
25	1	LS	ELEVATOR (ALT 1A)	\$1,200,000	\$1,200,000
SUMMARY	SUB-TOTAL - UNLOADED CONSTRUCTION COSTS				\$10,347,600
	MOBILIZATION (10%)				\$1,034,760
	CONTINGENCY (25%)				\$2,587,000
	SUB-TOTAL - LOADED CONSTRUCTION COSTS				\$13,970,000
	SUPPLEMENTAL WORK				\$0
	UTILITY RELOCATION COSTS				\$500,000
	TOTAL (CAPITAL)				\$14,470,000
	RIGHT OF WAY COSTS				\$500,000
	TOTAL COST				\$14,970,000

Alternative 1B –

Item #	Quantity	Unit	Item Description	Unit Price	Item total
1	1	LS	CONSTRUCTION SURVEY	\$20,000	\$20,000
2	1	LS	PROGRESS SCHEDULE (CRITICAL PATH METHOD)	\$10,000	\$10,000
3	1	LS	TIME-RELATED OVERHEAD	\$1,000,000	\$1,000,000
4	1	LS	LEAD COMPLIANCE PLAN	\$10,000	\$10,000
5	1	LS	TRAFFIC CONTROL	\$75,000	\$75,000
6	1	LS	TEMPORARY SIGNS AND STRIPING	\$5,000	\$5,000
7	1	LS	TEMPORARY PEDESTRIAN ACCESS	\$10,000	\$10,000
8	1	LS	TEMPORARY TRAFFIC SIGNAL	\$50,000	\$50,000
9	1	LS	TEMPORARY BMPs	\$50,000	\$50,000
10	1	LS	PREPARE STORM WATER POLLUTION PREVENTION PLAN	\$20,000	\$20,000
11	1	LS	CLEARING AND GRUBBING	\$10,000	\$10,000
12	200	CY	ROADWAY EXCAVATION	\$25	\$5,000
13	100	CY	CLASS 2 AGGREGATE BASE	\$26	\$2,600
14	150	TON	HOT MIX ASPHALT (TYPE A)	\$100	\$15,000
15	1	LS	MINOR CONCRETE (SIDEWALK, CURB, GUTTER, ADA RAMPS)	\$50,000	\$50,000
16	1	LS	SIGNS AND STRIPING	\$10,000	\$10,000
17	1	LS	DRAINAGE SYSTEM	\$100,000	\$100,000
18	1	LS	MISCELLANEOUS RELOCATION/RECONSTRUCTION	\$100,000	\$100,000
19	1	LS	PIER MODIFICATION	\$50,000	\$50,000
20	17,000	SF	BRIDGE REMOVAL	\$25	\$425,000
21	1	LS	BRIDGE LIGHTING	\$200,000	\$200,000
22	29,000	SF	PIER BRIDGE (ALT 1B)	\$170	\$4,930,000
23	10,000	SF	TEMPORARY PEDESTRIAN BRIDGE (ALT 1B)	\$100	\$1,000,000
24	6,400	SF	TEMPORARY RAMP (ALT 1B)	\$75	\$480,000
25	1	LS	ELEVATOR (ALT 1B)	\$1,200,000	\$1,200,000
SUMMARY	SUB-TOTAL - UNLOADED CONSTRUCTION COSTS				\$9,827,600
	MOBILIZATION (10%)				\$982,760
	CONTINGENCY (25%)				\$2,457,000
	SUB-TOTAL - LOADED CONSTRUCTION COSTS				\$13,270,000
	SUPPLEMENTAL WORK				\$0
	UTILITY RELOCATION COSTS				\$500,000
	TOTAL (CAPITAL)				\$13,770,000
	RIGHT OF WAY COSTS				\$500,000
TOTAL COST					\$14,270,000

Alternative 4 –

Item #	Quantity	Unit	Item Description	Unit Price	Item total
1	1	LS	CONSTRUCTION SURVEY	\$20,000	\$20,000
2	1	LS	PROGRESS SCHEDULE (CRITICAL PATH METHOD)	\$10,000	\$10,000
3	1	LS	TIME-RELATED OVERHEAD	\$1,000,000	\$1,000,000
4	1	LS	LEAD COMPLIANCE PLAN	\$10,000	\$10,000
5	1	LS	TRAFFIC CONTROL	\$75,000	\$75,000
6	1	LS	TEMPORARY SIGNS AND STRIPING	\$5,000	\$5,000
7	1	LS	TEMPORARY PEDESTRIAN ACCESS	\$10,000	\$10,000
8	1	LS	TEMPORARY TRAFFIC SIGNAL	\$50,000	\$50,000
9	1	LS	TEMPORARY BMPs	\$50,000	\$50,000
10	1	LS	PREPARE STORM WATER POLLUTION PREVENTION PLAN	\$20,000	\$20,000
11	1	LS	CLEARING AND GRUBBING	\$10,000	\$10,000
12	200	CY	ROADWAY EXCAVATION	\$25	\$5,000
13	100	CY	CLASS 2 AGGREGATE BASE	\$26	\$2,600
14	150	TON	HOT MIX ASPHALT (TYPE A)	\$100	\$15,000
15	1	LS	MINOR CONCRETE (SIDEWALK, CURB, GUTTER, ADA RAMPS)	\$50,000	\$50,000
16	1	LS	SIGNS AND STRIPING	\$10,000	\$10,000
17	1	LS	DRAINAGE SYSTEM	\$100,000	\$100,000
18	1	LS	MISCELLANEOUS RELOCATION/RECONSTRUCTION	\$100,000	\$100,000
19	1	LS	PIER MODIFICATION	\$50,000	\$50,000
20	17,000	SF	BRIDGE REMOVAL	\$25	\$425,000
21	1	LS	BRIDGE LIGHTING	\$200,000	\$200,000
22	10,000	SF	PIER BRIDGE (ALT 4)	\$170	\$1,700,000
23	7,000	SF	ADA RAMP (NORTH AND SOUTH) (ALT 4)	\$155	\$1,085,000
24	10,000	SF	TEMPORARY PEDESTRIAN BRIDGE (ALT 4)	\$100	\$1,000,000
25	8,000	SF	MOSS BRIDGE (ALT 4)	\$162.50	\$1,300,000
SUMMARY	SUB-TOTAL - UNLOADED CONSTRUCTION COSTS				\$7,302,600
	MOBILIZATION (10%)				\$730,260
	CONTINGENCY (25%)				\$1,826,000
	SUB-TOTAL - LOADED CONSTRUCTION COSTS				\$9,860,000
	SUPPLEMENTAL WORK				\$0
	UTILITY RELOCATION COSTS				\$500,000
	TOTAL (CAPITAL)				\$10,360,000
	RIGHT OF WAY COSTS				\$500,000
TOTAL COST					\$10,860,000