

# Memorandum

To: CHAIR AND COMMISSIONERS

CTC Meeting: September 9-10, 2009

Reference No.: 3.7  
Information Item

From: CINDY McKIM  
Chief Financial Officer

Prepared by: Karla Sutliff  
Division Chief  
Project Management

Subject: **QUARTERLY NON-TOLL SEISMIC SAFETY RETROFIT REPORT**

Per Section 188.5(g) of the Streets and Highways Code, attached is the Department of Transportation's Quarterly Non-Toll Seismic Safety Retrofit Report.

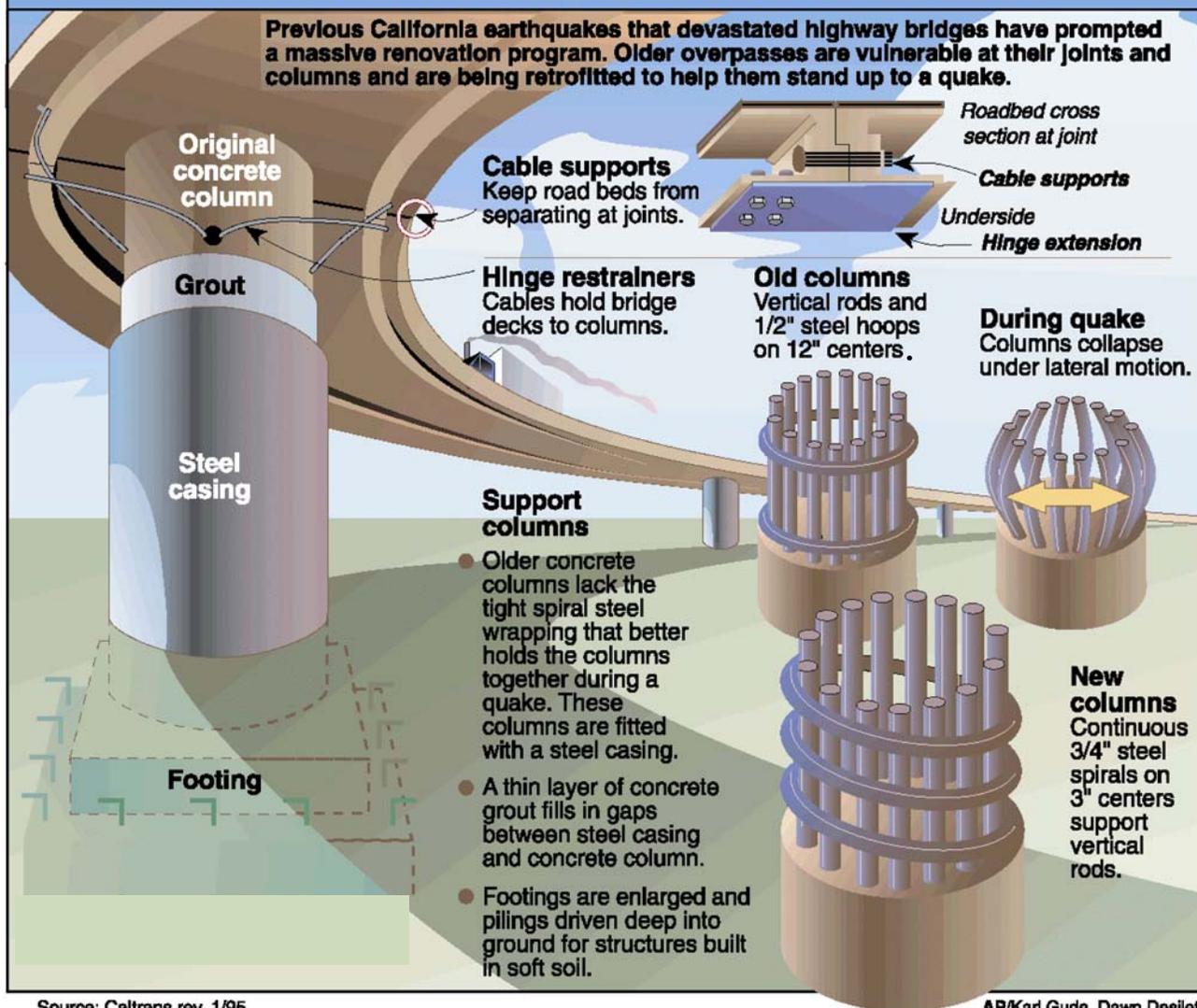
Attachment

# CALIFORNIA DEPARTMENT OF TRANSPORTATION

## SECOND QUARTER 2009 NON-TOLL SEISMIC RETROFIT PROGRAM QUARTERLY REPORT

### Seismic Retrofitting of Freeway Structures

Previous California earthquakes that devastated highway bridges have prompted a massive renovation program. Older overpasses are vulnerable at their joints and columns and are being retrofitted to help them stand up to a quake.



Source: Caltrans rev. 1/95

AP/Karl Gude, Dawn Desilets

Reporting Period Ending June 30, 2009

---

# Report Overview

---

This report provides information on the status and progress in delivering the California Department of Transportation's (Department) non-toll seismic retrofit programs. Other seismic retrofit programs under development by the Department included the following:

- The Phase 1 Seismic Retrofit Program is complete and is no longer reported.
- The Toll Bridge Seismic Retrofit Program Report is prepared and submitted separately by the Toll Bridge Program Oversight Committee as outlined in Section 30952.2 (b) (1) of the Streets and Highways Code.

This report fulfills the Department's statutory reporting requirement outlined in Assembly Bill (AB) 144 (Chapter 71, Statutes of 2005), which amended Section 188.5 (g) of the Streets and Highways Code as follows:

“(1) Commencing on January 1, 2004, and quarterly thereafter until completion of all applicable projects, the Department shall provide quarterly seismic reports to the transportation committees of both houses of the Legislature and to the commission for other seismic retrofit programs.

- (2) The reports shall include all of the following:
- (A) A progress report for each program.
  - (B) The program baseline budget for support and capital outlay construction costs.
  - (C) The current or projected program budget for support and capital outlay construction costs.
  - (D) Expenditures to date for support and capital outlay construction costs.

(E) A comparison of the current or projected schedule and the baseline schedule.

(F) A summary of milestones achieved during the quarterly period and any issues identified and actions taken to address those issues.”

The Department currently has two active non-toll seismic retrofit programs as outlined below.

## **Phase 2 Seismic Retrofit Program:**

The program consists of additional (beyond Phase 1) State-owned bridges that were determined to need seismic retrofit based on additional screening.

## **Local Bridge Seismic Retrofit Program:**

The program consists of seismic retrofit of locally owned and Department of Water (DWR) bridges. This program is funded and implemented by the agencies having jurisdiction over the bridges.

## **Background**

California has more than 12,000 State-owned bridges on its State Highway System, plus an additional 11,500 city and county-owned bridges not on the State Highway System. Each bridge is inspected at least once every two years.

After the 1994 Northridge earthquake, the Department identified 1,155 State-owned bridges that became the Phase 2 program consisting of

mostly multicolumn bridges. Funding for this \$1.35 billion program came from a \$2 billion Proposition 192 bond, which was passed in 1996.

### **Seismic Evaluation**

The Seismic Retrofit Program involves strengthening the columns of existing bridges by encircling certain columns with a steel casing or, in a few instances, an advanced woven fiber casing. In addition to the column casing, some bridge footings are made bigger and given more support by placing additional pilings in the ground, or by using steel tie-down rods to better anchor the footings to the ground.

In a few projects, bridge abutments are made larger and the existing restrainer units are made stronger, because encasing the columns makes them stiffer and can change the way forces are transmitted within the bridge. Many seismic retrofits involve “hinge seat extensions” which enlarge the size of the hinges that connect sections of bridge decks and help prevent them from separating during severe ground movement. The design of each bridge to be retrofitted is “site specific” based on the maximum credible earth movement expected at that location. The design details depend on many factors, including the nearest active earthquake fault, type of geology beneath the bridge, and the original bridge design.

## Phase 2 Seismic Retrofit Program

### Progress Report

The Phase 2 Seismic Retrofit Program is 99 percent complete. To date 1,151 State-owned bridges, of 1,155 planned bridges, have been retrofitted under the Phase 2 program. Of the remaining four bridges, one is under construction, two (one contract) are in the bidding phase, and one bridge is in design.

No program cost overruns are anticipated. All remaining funds will be used to complete the Phase 2 program.

### Milestones Achieved This Quarter

The High Street Separation Contract (two bridges) was advertised on April 20, 2009 and is scheduled to open bids on July 29, 2009.

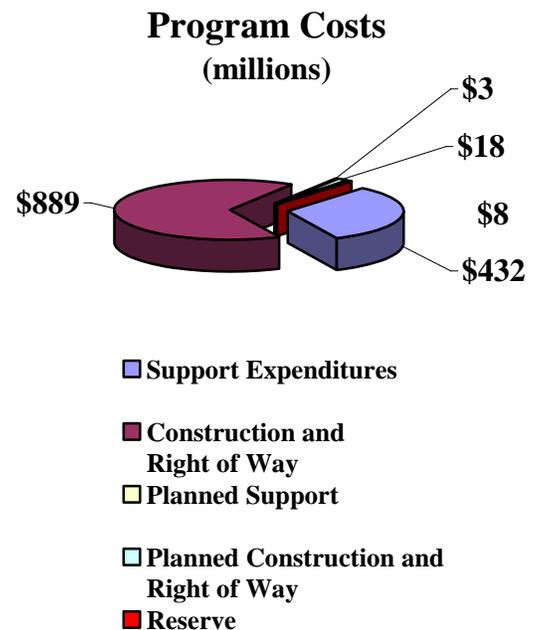
In May, 2009 traffic was removed from the old Ten Mile River Bridge and transferred to the new replacement bridge in Mendocino County.

In June, 2009 the environmental document was completed for the LA-47 Schuyler Heim Bridge Replacement project.

### Program Budget and Expenditures

The total budget for Phase 2 is \$1.35 billion. A total of \$889 million has been allocated for construction and right-of-way, and an additional \$432 million has been expended for support. The total of \$1.321 billion committed to date uses approximately 98 percent of the available program funds.

Of the remaining \$29 million, \$18 million is to be allocated for construction and right-of-way, and \$3 million is planned for support, leaving a reserve of \$8 million. This reserve is intended to cover cost changes, higher-than-anticipated bid results, any potential supplemental funds that may be needed, and arbitration settlements.



### Program Funds

Funding for the Phase 2 Seismic Retrofit Program comes from three sources. Proposition 192, which the voters approved in March of 1996, provides bonds for \$1.21 billion. As shown in the table below, an additional \$140 million was expended from a combination of State (\$99.8 million) and federal (\$40.2 million) funds prior to the passage of Proposition 192. The total budget for Phase 2 is \$1.35 billion.

#### Seismic Retrofit Funds

Funds	Budgeted \$ (millions)	Allocated \$ (millions)
State	\$ 99.8	\$ 99.8
Federal	\$ 40.2	\$ 40.2
Bond	\$ 1,210.0	\$ 1,181.0
<b>Total</b>	<b>\$ 1,350.0</b>	<b>\$ 1,321.0</b>
<b>Available</b>		<b>\$ 29.0</b>

As bridges were evaluated for seismic retrofit design strategies, it was determined that for some bridges it would be more cost effective to replace the bridge than to retrofit. This is particularly true when the existing bridge needed nonseismic improvements for bridge repair or rehabilitation.

The additional cost for replacement is beyond the scope of funds available for the retrofit program. Consequently, bridge replacement costs were programmed in the State Highway Operation and Protection Program (SHOPP).

### Additional Bridge Replacement Funds Funded from SHOPP

Replacement Bridges	Program Year	Const \$ (million)	R/W \$ (million)
Ten Mile	2005-06	\$ 20.2	\$ 0.2
5 <sup>th</sup> Avenue Overhead	2006-07	\$ 126.0	19.8
High Street Separation	2008-09	\$ 100.2	\$ 20.1
<b>Projects Allocated from SHOPP - \$286.5 million</b>			
Schuyler Heim	2009-10	\$ 270.0	\$ 42.0
<b>Projects Programmed in SHOPP - \$312.0 million</b>			

#### Program Delivery by Region/District

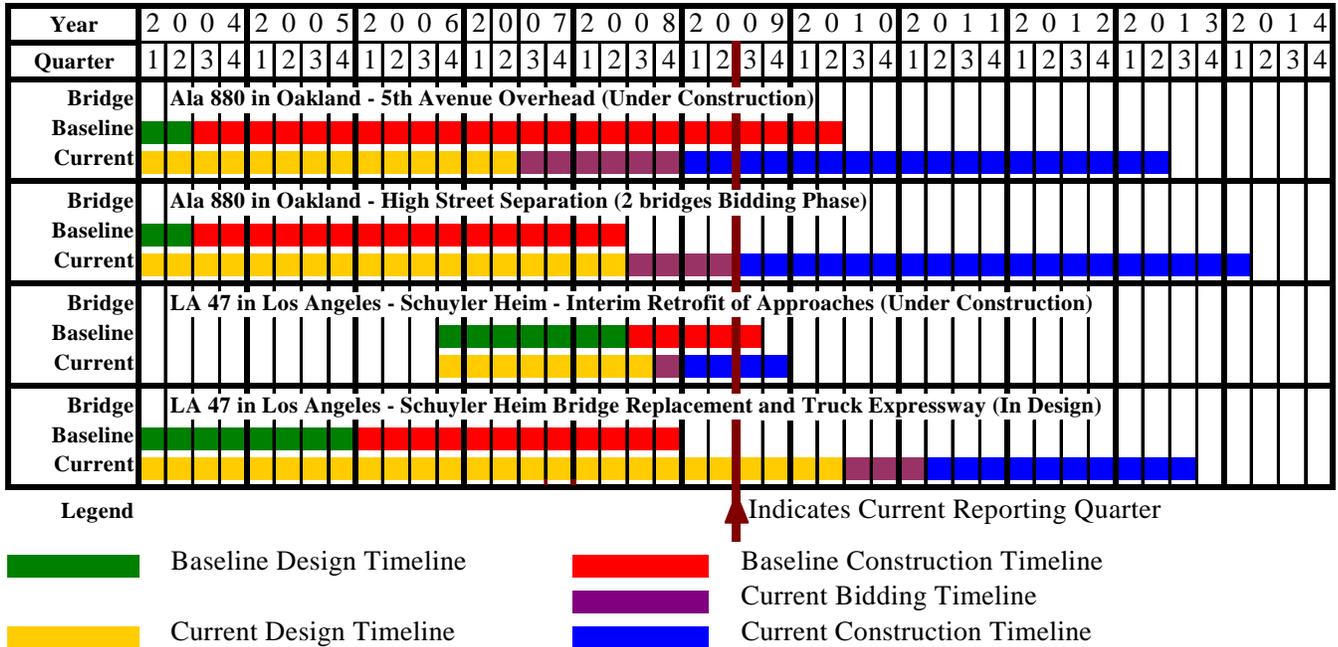
Bridges By Region	#	Percent of Total	\$ (million)	Percent of Total
North Coast	81	7	\$ 154	11
Bay Area	151	13	\$ 527	39
Central Valley	267	23	\$ 184	14
Southern California	656	57	\$ 485	36
<b>Total</b>	<b>1,155</b>	<b>100</b>	<b>\$ 1,350</b>	<b>100</b>

Bridges By District Office	#	Percent of Total	\$ (million)	Percent of Total
1 (Eureka)	69	6	\$ 139	11
2 (Redding)	12	1	\$ 15	1
3 (Marysville)	36	3	\$ 40	3
4 (Oakland)	151	13	\$ 527	39
5 (San Luis Obispo)	107	9	\$ 82	6
6 (Fresno)	77	7	\$ 18	1
7 (Los Angeles)	292	25	\$ 301	22
8 (San Bernardino)	131	11	\$ 86	6
9 (Bishop)	7	1	\$ 2	1
10 (Stockton)	40	4	\$ 42	3
11 (San Diego)	172	15	\$ 82	6
12 (Irvine)	61	6	\$ 16	1
<b>Total</b>	<b>1,155</b>	<b>100</b>	<b>\$ 1,350</b>	<b>100</b>

### Comparison of Current and Baseline Schedule

While the program is 99 percent complete, the few remaining bridges (1 percent) are taking substantially longer than originally planned, because they are total bridge replacement projects. The bridge replacement contracts face delivery

challenges, including environmental constraints, construction under heavy traffic conditions, and securing public and external agency input and acceptance for project approval.



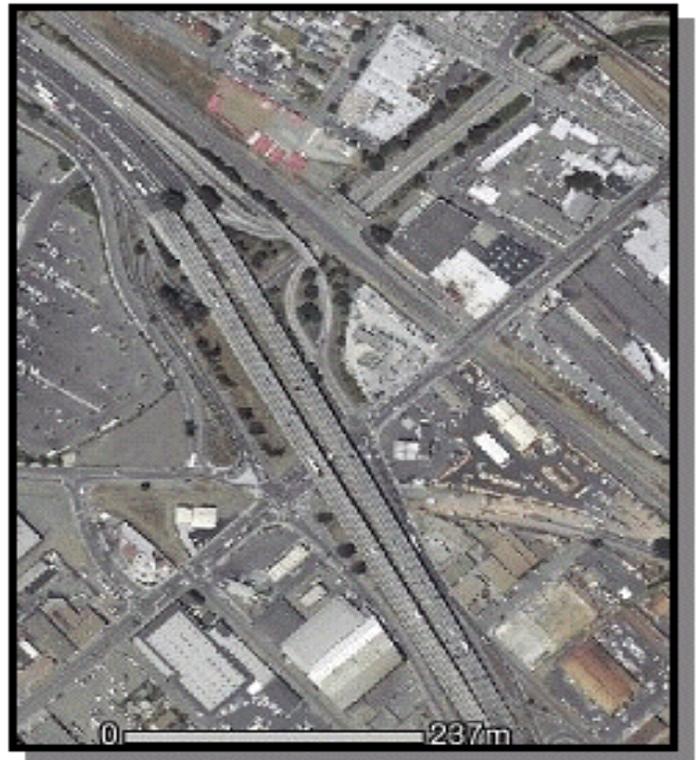
Baseline date is planned schedule as of November 2001 (AB1171 approved)

<b>Fifth Avenue Overhead</b>			
In Alameda County on Interstate 880 in Oakland.			
<b>Retrofit Strategy:</b> Replace Bridge.			
	<b>End Design</b>	<b>End Constr</b>	<b>Budget (millions)</b>
Baseline Schedule	Mid 04	Early 10	
Current Schedule	Mid 07	Mid 13	
<b>Funding:</b>	SHOPP	Seismic	Total
Construction	\$126.0	\$ 0.0	\$126.0
Right-of-Way	\$ 19.8	\$22.5	\$ 42.3
Mitigation	\$ 0.0	\$14.0	\$ 14.0
Support	\$ 15.3	\$ 7.0	\$ 22.3
<b>Total</b>	<b>\$161.1</b>	<b>\$43.5</b>	<b>\$204.6</b>
Number of Bridges to be Retrofitted – 1			
33 0027 5th Avenue Overhead			



The construction contract is six percent complete.

<b>High Street Separation</b>			
In Alameda County on Interstate 880 in Oakland.			
<b>Retrofit Strategy:</b> Replace Bridges.			
	<b>End Design</b>	<b>End Constr</b>	<b>Budget (millions)</b>
Baseline Schedule	Mid 04	Mid 08	
Current Schedule	Mid 08	Early 14	
<b>Funding:</b>	SHOPP	Seismic	Total
Construction	\$73.2	\$ 0.0	\$73.2
Right-of-Way	\$20.1	\$20.0	\$40.1
Support	\$32.4	\$19.0	\$51.4
<b>Total</b>	<b>\$125.7</b>	<b>\$39.0</b>	<b>\$164.7</b>
Number of Bridges to be Retrofitted – 2			
33 0040L High Street Separation Overhead			
33 0040R High Street Separation Overhead			



The biggest obstacle to starting construction is time needed to relocate utilities and realign a city street that is part of the conditions in acquiring right-of-way parcels.

The contract was advertised on April 20, 2009 and is scheduled to open bids on July 29, 2009.

<b>Schuyler Heim Bridge Interim Retrofit</b>			
In Los Angeles County on State Route 47 in Long Beach.			
<b>Retrofit Strategy:</b> Reinforce bridge approaches.			
	<b>End Design</b>	<b>End Constr</b>	<b>Budget (millions)</b>
Baseline Schedule	Late 08	Late 09	
Current Schedule	Mid 08	Late 09	
<b>Funding:</b>			<b>Total</b>
Construction			\$3.7
Right-of-Way			\$0.3
Support			\$2.0
Total			\$6.0
Number of Bridges to be Retrofitted – 0 – Interim Measure			
53 2618 Schuyler Heim Bridge			

The Department initiated an interim retrofit project to enhance safety of the approach slabs to the bridge. This will provide an increased level of safety on an interim basis while the bridge replacement project is implemented.

The interim retrofit construction contract is 46 percent complete.

## Projects in Design

### Schuyler Heim Bridge Replacement and Truck Expressway

In Los Angeles County on State Route 47 in Long Beach.

**Retrofit Strategy:** Replace Bridge.

Project includes elevated truck expressway to bypass at grade intersections.

	End Design	End Constr	Budget (millions)
Baseline Schedule	Late 05	Late 08	
Current Schedule	Mid 10	Late 13	

**Funding:**

Other	TCIF	SHOPP	Seismic	Total
<b>Construction</b>				
\$125.0	\$158.0	\$270.0	\$0.0	\$553.0
<b>Right-of-Way</b>				
\$ 44.0	\$ 0.0	\$ 42.0	\$0.0	\$ 86.0
<b>Support*</b>				
\$ 18.9	\$ 0.0	\$ 25.1	\$4.0	\$ 48.0
<b>Totals</b>				
\$187.9	\$158.0	\$337.1	\$4.0	\$687.0

\* Support costs for construction and right-of-way not identified in TCIF application.

Number of Bridges to be Retrofitted – 1  
53 2618 Schuyler Heim Bridge

The Alameda Corridor Transportation Authority (ACTA) is the lead agency in preparation of the environmental document and has been evaluating an elevated Truck Corridor Expressway to tie into a replacement bridge.

A final environmental document for the combined project was completed by ACTA, and the initial public hearing was held on September 25, 2007.

A decision was made based on the initial public hearing comments to prepare a Health Risk Assessment study. Another public hearing was conducted on January 15, 2009. The environmental document has now been completed and was approved in June, 2009.

A substantial amount of risk is involved in delivering this project. Project risks are outlined below:

- Environmental issues (noise, air quality, and traffic impacts).
- Property impacts to pier operations.
- Possible opposition to the project from residents.
- Time to address construction issues and complications due to maintaining and reconstructing, as needed, numerous utilities, railroad operations, and pier and port operations.
- Hazardous waste studies and remedial action.



**Seismic Retrofit Program Budget, Expenditures and Current Estimates  
(Phase 2 Funds Only)**

<b>Bridges</b>	<b>Projects</b>	<b>Baseline Budget*</b>	<b>Current Budget*</b>	<b>Expenditures To Date*</b>
<b>1,151</b>	<b>Completed Projects</b>			
	Capital Outlay Support		\$ 403.0	\$ 402.5
	Capital Outlay	\$ 865.0	\$ 842.3	\$ 827.7
	Pending Capital Outlay Mitigation		\$ 4.2	\$ 0.0
	Total		\$ 1,249.5	\$ 1,230.2
<b>4</b>	<b>Active Projects</b>			
<b>1</b>	<b>5th Avenue Overhead</b>			
	Capital Outlay Support		\$ 7.0	\$ 6.5
	Capital Outlay (R/W Only)	\$ 0.0	\$ 22.5	\$ 21.5
	Mitigation measures		\$ 14.0	\$ 0.0
	Total		\$ 43.5	\$ 28.0
<b>2</b>	<b>High Street Separations</b>			
	Capital Outlay Support		\$ 19.0	\$ 18.1
	Capital Outlay (R/W Only)	\$ 0.0	\$ 20.0	\$ 14.3
	Total		\$ 39.0	\$ 32.4
<b>Interim</b>	<b>Schuyler Heim Interim Retrofit Approaches</b>			
	Capital Outlay Support		\$ 2.0	\$ 0.5
	Capital Outlay	\$ 0.0	\$ 4.0	\$ 0.6
	Total		\$ 6.0	\$ 1.1
<b>1</b>	<b>Schuyler Heim Bridge replacement</b>			
	Capital Outlay Support		\$ 4.0	\$ 4.0
	Capital Outlay	\$ 66.0	\$ 0.0	\$ 0.0
	Total		\$ 4.0	\$ 4.0
<b>1,155</b>	<b>Program Totals</b>			
	Capital Outlay Support	\$ 419.0	\$ 435.0	\$ 431.6
	Capital Outlay	\$ 931.0	\$ 907.0	\$ 864.1
	Total	\$1,350.0	\$1,342.0	\$1,295.7

\* Note: All costs shown are in millions and include only the seismic retrofit program's portions of costs and expenditures.

---

## Local Bridge Seismic Retrofit Program Status

---

The purpose of this report is to provide information on program delivery status of the Local Bridge Seismic Retrofit Program (LBSRP) for the 1,235 bridges which includes the 479 bridges adopted by the California Transportation Commission (Commission) on May 28, 2008.

The 479 bridges adopted by the Commission were identified to receive bond funds to match federal Highway Bridge Program (HBP) funds for their right of way and construction phases. Additional investigation by the Department revealed that eleven bridges either were not owned by local agencies, the seismic retrofit had already been completed, or the bridge had been demolished/removed. In addition, 42 Bay Area Rapid Transit (BART) bridges in this program will be de-federalized as requested by BART and will be a new project undertaken by BART alone. No local assistance federal or state funds will be needed for that work. Therefore this report will reflect the program delivery of 1,193 bridges under LBSRP which includes 426 bond bridges from here on.

The Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006 provides \$125 million of State matching funds to complete the LBSRP with bond funds. The Bond program budget of \$125 million is to be allocated to provide the 11.47 percent required local match for right of way and construction phases of remaining seismic retrofit work on local bridges, ramps, and overpasses and includes \$2.5 million set aside for bond administrative costs. An additional \$32.9 million

state match through annual exchange of a portion of local share of funds received from federal HBP fund is also available to accommodate the current remaining required local match needs. The Commission has allocated \$13.5 million bond funds for FY 2007/08 and \$21 million bond funds for FY 2008/09. Consistent with the Local Bridge Seismic Retrofit Guidelines, the Department has exchanged \$24.3 million of local share of funds received through the federal HBP for state funds to accommodate local match needs for BART bridges. To date, \$11.3 million of seismic bond funds have been sub-allocated.

This report fulfills the Department's statutory reporting requirement outlined in Assembly Bill (AB) 144 (Chapter 71, Statutes of 2005), which amended Section 188.5 (g) of the Streets and Highways Code as follows:

*“(1) Commencing on January 1, 2004, and quarterly thereafter until completion of all applicable projects, the Department shall provide quarterly seismic reports to the transportation committees of both houses of the Legislature and to the commission for other seismic retrofit programs.”*

# Local Bridge Seismic Retrofit Program Progress Report

The LBSRP is currently 61 percent complete. To date, 729 local bridges, out of total of 1,193 planned bridges, have been retrofitted under the LBSRP. Currently, there are 154 bridges under construction, 303 bridges under design, and 7 bridges in a pre-strategy phase.

## LBSRP Milestones Achieved This Quarter

The status as of June 30, 2009 of local bridges by phases is as follows:

	2005	2006	2007	2008	2009
<b>Complete</b>	692	699	709	724	729
<b>Construction</b>	46	45	66	124	154
<b>Design</b>	291	295	333	349	303
<b>Pre-Strategy</b>	206	196	127	38	7
<b>Total</b>	1,235	1,235	1,235	1,235	*1,193

\*42 BART bridges were removed from the retrofit list in 2009.

## Milestones Achieved This Quarter for Bond Funded Bridges

The status as of June 30, 2009 of local bridges by phases is as follows:

	2005	2006	2007	2008	2009
<b>Complete</b>	0	0	0	4	8
<b>Construction</b>	0	0	15	99	108
<b>Design</b>	0	0	271	327	303
<b>Pre-Strategy</b>	0	0	193	38	7
<b>Total</b>	0	0	479	*468	**426

\*Investigation by the Department removed eleven bridges. \*\*42 BART bridges were removed from the retrofit list in 2009

## LBSRP Program Budget and Expenditures

The estimated budget for the overall LBSRP is \$1,992.8 million. A total of \$792 million has been encumbered (spent) to date.

Funds (millions)	Spent	Plan	Total
<b>State</b>	\$67.1	\$25.8	\$92.9
<b>Bond</b>	\$11.3	\$111.2	\$122.5
<b>Federal</b>	\$713.6	\$1,063.8	\$1,777.4
<b>Total</b>	\$792.0	\$1,200.8	\$1,992.8

Between April 1 and June 30, 2009, there has been a total of \$45.9 million of federal, \$4.6 million of state and \$1.3 million of Bond funds de-obligated due to low bids in the last quarter. A project with \$3.8 millions of bond funds was incorrectly coded for the wrong type of funds so it was not encumbered.

## Funds Committed to Bond Projects (millions)

Component	Available	Allocated	Percent
<b>LBSRP Bond</b>	\$122.5	\$34.5	28%
<b>State Funds</b>	\$32.9	\$24.3	74%
<b>LBSRP Bond Support</b>	\$2.5		
<b>Total</b>	\$157.9	\$58.8	37%

**Overall Program Delivery by Agency Group (Includes all the bridges in the LBSRP)**

Bridges By Agency Group	Number Of Agencies	Pre Strategy	In Design	In Construction		Complete or No Retrofit		Total # Bridges	Percent Program
		Bond	Bond	Bond	Non-Bond	Bond	Non-Bond		
All Other Agencies	59	7	123	18	33	4	612	797	67%
Los Angeles Region (City and County)	2	0	26	38	13	0	109	186	16%
Department of Water Resources	1	0	24	0	0	1	0	25	2%
BART	1	0	130	52	0	3	0	185	15%
<b>Total</b>	<b>63</b>	<b>7</b>	<b>303</b>	<b>108</b>	<b>46</b>	<b>8</b>	<b>721</b>	<b>1,193</b>	<b>100%</b>

*Projects in the pre-strategy and design phase will qualify for bond match when they advance to right of way and construction phase.*

- One agency, Bay Area Rapid Transit (BART) is responsible for 185 bridges (15 percent of the entire program). The remaining 130 BART bridges in design phase are programmed to go to construction this federal fiscal year.
- Construction of nine Department of Water Resources (DWR) bridges that were planned to go to construction this year has been delayed due to DWR's concerns regarding the federal Disadvantage Business Enterprise requirements.