State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

M e m o r a n d u m

To: CHAIR AND COMMISSIONERS

CTC Meeting: March 11-12, 2009

Reference No.: 3.7
Information Item

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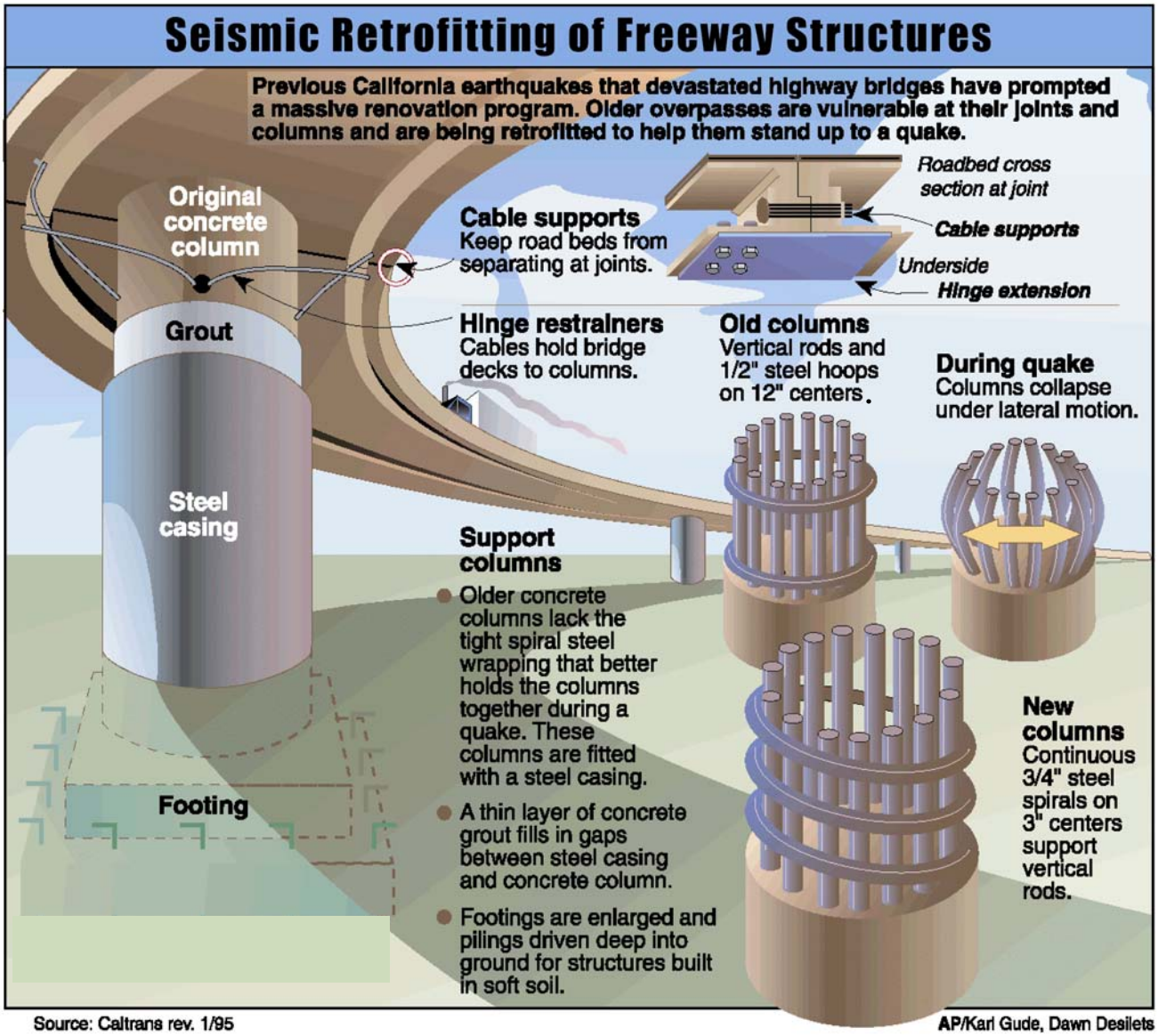
Subject: **QUARTERLY NON-TOLL SEISMIC SAFETY RETROFIT REPORT**

Per Section 188.5(g) of the Streets and Highways Code, attached is the Department of Transportation's 2008 Fourth Quarter Non-Toll Seismic Safety Retrofit Report. This version is consistent with the report sent on February 18, 2009.

Attachment

CALIFORNIA DEPARTMENT OF TRANSPORTATION

FOURTH QUARTER 2008 NON-TOLL SEISMIC RETROFIT PROGRAM QUARTERLY REPORT



Reporting Period Ending December 31, 2008

Executive Summary

The purpose of this report is to provide information on the status and progress in delivering the California Department of Transportation's (Department) non-toll seismic retrofit programs. The Phase 1 Seismic Retrofit Program is complete and is no longer being reported on. 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 Resources (DWR) bridges. This program is funded and implemented by the agencies having jurisdiction over the bridges.

Seismic Retrofit Program Overview

In California, there are more than 12,000 State-owned bridges on the 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 multi-column bridges. Funding for this $1.35 billion program came from a $2 billion bond (Proposition 192), which was passed in 1996.

When the Seismic Retrofit Program was established, there were also seven State-owned toll bridges that required retrofit work. The status and progress of the Toll Bridge Seismic Retrofit Program is reported separately in the quarterly Toll Bridge Seismic Retrofit Program Report.

There are a total of 1,235 locally-owned and DWR bridges statewide in the Local Bridge Program. Lead agencies are responsible for assessing the need for seismic retrofit work on locally-owned bridges. The majority of funding comes from gas tax revenues utilizing subvention funds through the Department's Local Assistance Program, $125 million is available from Proposition 1B Bond program funds, and additional local funds may be used.

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 of the 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 currently 99 percent complete. To date 1,150 State-owned bridges, out of a total of 1,155 planned bridges, have been retrofitted under the Phase 2 program. Of the remaining five bridges, one is under construction, three are in the bidding phase and one bridge is in design.

Milestones Achieved This Quarter

SHOPP construction capital funds were allocated on December 11, 2008 for the Ala-880 High Street Separation bridges.

Program Budget and Expenditures

The total budget for Phase 2 is $1.35 billion. A total of $883 million has been allocated for construction and right-of-way, and an additional $429 million has been expended for support. The total of $1,312 million committed to date utilizes approximately 97 percent of the available program funds.

Of the remaining balance of $38 million, $23 million is to be allocated for construction and right-of-way, and $7 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.

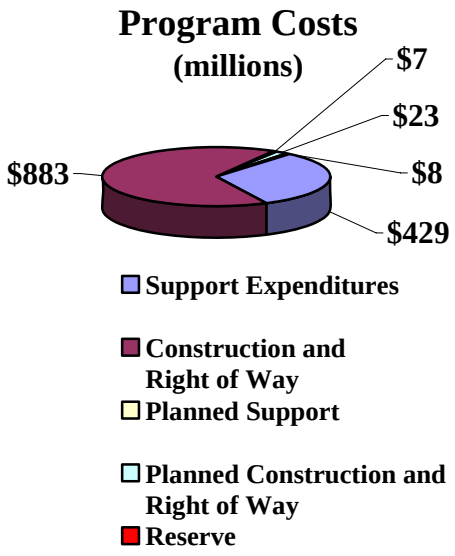
With the delivery of the Schuyler Heim interim retrofit project, the program has reached a significant milestone in that all planned construction allocations to retrofit bridges with Phase 2 Seismic Retrofit Program funds has now been completed.

The construction capital for the remaining replacement bridges is being funded from the SHOPP program.

The remaining obligations for funding (included in planned costs) from the program to close out the program are as follows:

- Complete right of way for 5th Avenue Overhead.
- Complete right of way for High Street Separation.
- Fund Mitigation projects for Ten Mile River Bridge.
- Any potential supplemental funds and arbitration settlements.

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



Program Funds

The funding for the Phase 2 program for seismic retrofit 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 $0.14 billion 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 (millions)	Budgeted	Allocated
State	$99.8	$99.8
Federal	$40.2	$40.2
Bond	$1,210.0	$1,172.0
Total	$1,350.0	$1,312.0
Available		$38.0

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 non-seismic 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 Operations and Protection Program (SHOPP).

Additional Bridge Replacement Funds Funded from SHOPP

Replacement Bridges	Program Year	Const $	R/W $
Ten Mile	2005-06	$ 20.2	$ 0.2
5th Avenue Overhead	2006-07	$ 153.8	19.8
High Street Separation	2008-09	$ 100.2	$ 20.1
Projects Allocated from SHOPP - $314.3 million			
Schuyler Heim	2009-10	$ 270.0	$ 5.0
Projects Programmed in SHOPP - $275.0 million			

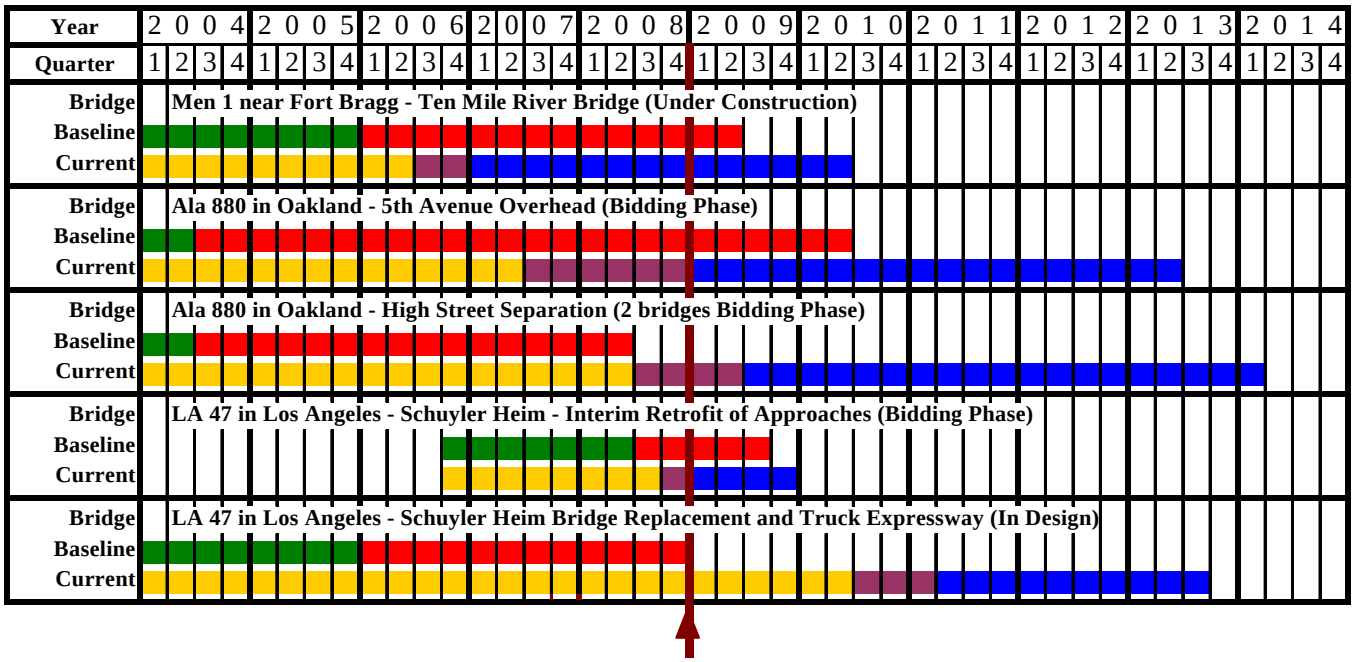
Program Delivery by Region / District

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
Total	1,155	100	$ 1,350	100

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
Total	1,155	100	$ 1,350	100

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 protection, construction under heavy traffic conditions, and securing public and external agency input and acceptance for project approval.



Legend

- Baseline Design Timeline
- Current Design Timeline
- Baseline Construction Timeline
- Current Bidding Timeline
- Current Construction Timeline
- Indicates Current Reporting Quarter

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

Projects Under Construction or in Bidding Phase

Ten Mile River Bridge

In Mendocino County on Route 1 North of Fort Bragg and South of Westport.

Retrofit Strategy: Replace Bridge.

	End Design	**End Constr**	**Budget (millions)**
Baseline Schedule	Late 05	Early 09	
Current Schedule	Late 06	Mid 10	
Funding:	SHOPP	Seismic	Total
Construction	$20.2	$32.7	$52.9
Right-of-Way	$ 0.2	$ 0.0	$ 0.2
Support	$10.0	$10.0	$20.0
Mitigation	$ 2.0	$ 4.2	$ 6.2
Total	$32.4	$46.9	$79.3

Number of Bridges to be Retrofitted – 1
10-0161 Ten Mile

The construction contract is currently 85 percent complete.

Fifth Avenue Overhead

In Alameda County on Interstate 880 in Oakland.

Retrofit Strategy: Replace Bridge.

	End Design	**End Constr**	**Budget (millions)**
Baseline Schedule	Mid 04	Early 10	
Current Schedule	Mid 07	Mid 13	
Funding:	SHOPP	Seismic	Total
Construction	$153.8	$ 0.0	$153.8
Right-of-Way	$ 19.8	$17.2	$ 37.0
Mitigation	$ 0.0	$17.0	$ 17.0
Support	$ 15.3	$ 7.0	$ 22.3
Total	$188.9	$41.2	$230.1

Number of Bridges to be Retrofitted – 1
33 0027 Fifth Avenue Overhead

This project was advertised on November 26, 2007. The bid opening date has been set for February 4, 2009 (after previously being suspended). Progress was made recently by the Department through an agreement to make certain street improvements in order to reinstate the city permit to allow the railroad to use the city street for temporary use.

High Street Separation

In Alameda County on Interstate 880 in Oakland.

Retrofit Strategy: Replace Bridges.

	End Design	**End Constr**	**Budget (millions)**
Baseline Schedule	Mid 04	Mid 08	
Current Schedule	Mid 08	Early 14	
Funding:	SHOPP	Seismic	Total
Construction	$73.2	$ 0.0	$73.2
Right-of-Way	$20.1	$22.0	$42.1
Support	$32.4	$17.0	$49.4
Total	$125.7	$39.0	$164.7

Number of Bridges to be Retrofitted – 2
33 0040L High Street Separation Overhead
33 0040R High Street Separation Overhead

Substantial progress has been made in the acquisition of right of way parcels needed for the project. The biggest obstacle to starting construction is time needed to relocate utilities and realign a city street that are part of the conditions in acquiring right of way parcels.

The project met the ready to list milestone on June 30, 2008. Due to ongoing utility work, the plan is to allocate funds on December 11, 2008 and then advertise the project with anticipation that construction can begin next summer.

Schuyler Heim Bridge Interim Retrofit

In Los Angeles County on Route 47 in Long Beach.

Retrofit Strategy: Reinforce bridge approaches.

	End Design	**End Constr**	**Budget (millions)**
Baseline Schedule	Late 08	Late 09	
Current Schedule	Mid 08	Late 09	
Funding:			**Total**
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 has 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 construction contract is currently 10 percent complete.

Projects in Design

Schuyler Heim Bridge Replacement and Truck Expressway

In Los Angeles County on 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
Construction				
$125.0	$158.0	$270.0	$0.0	$553.0
Right-of-Way				
$ 81.0	$ 0.0	$ 5.0	$0.0	$ 86.0
Support*				
$ 18.9	$ 0.0	$ 25.1	$4.0	$ 48.0
Totals				
$224.9	$158.0	$300.1	$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 a public hearing was held on September 25, 2007.

A decision was made based on public hearing comments to prepare a Health Risk Assessment study. Once the study is completed, the environmental document will be re-circulated with another public hearing. This will delay planned approval of the environmental document to the beginning of 2009.

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

- Environmental issues (noise, air quality and traffic impacts).
- Property impacts to pier operations.
- Residents may oppose the project.
- 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.

The begin construction date has been revised to incorporate the planned date in the Transportation Corridor Improvement Fund (TCIF) application for the elevated expressway project, which will be combined with this bridge replacement project for construction.

Seismic Retrofit Program Budget, Expenditures and Current Estimates

(Phase 2 Funds Only)

Bridges	Projects	Baseline Budget*	Current Budget*	Expenditures To Date*
1,150	**Completed Projects**			
	Capital Outlay Support		$ 395.0	$ 393.1
	Capital Outlay	$ 840.0	$ 808.9	$ 798.7
	Total		$ 1,203.9	$ 1,191.8
	Projects In Bidding Phase or In Construction			
1	**5th Avenue Overhead**			
	Capital Outlay Support		$ 7.0	$ 7.0
	Capital Outlay (R/W Only)	$ 0.0	$ 17.2	$ 17.2
	Mitigation measures		$ 17.0	$ 0.0
	Total		$ 41.2	$ 24.2
2	**High Street Separations**			
	Capital Outlay Support		$ 17.0	$ 16.6
	Capital Outlay (R/W Only)	$ 0.0	$ 22.0	$ 11.3
	Total		$ 39.0	$ 27.9
1	**Ten Mile River Bridge**			
	Capital Outlay Support		$ 10.0	$ 8.1
	Capital Outlay	$ 25.0	$ 32.7	$ 17.9
	Mitigation Projects		$ 4.2	$ 0.0
	Total		$ 46.9	$ 26.0
Interim	**Schuyler Heim Interim Retrofit Approaches**			
	Capital Outlay Support		$ 2.0	$ 0.1
	Capital Outlay	$ 0.0	$ 4.0	$ 0.0
	Total		$ 6.0	$ 0.1
	Projects in Design			
1	**Schuyler Heim Bridge replacement**			
	Capital Outlay Support		$ 4.0	$ 4.0
	Capital Outlay	$ 66.0	$ 0.0	$ 0.0
	Total		$ 4.0	$ 4.0
1,155	**Program Totals**			
	Capital Outlay Support	$ 419.0	$ 435.0	$ 428.9
	Capital Outlay	$ 931.0	$ 906.0	$ 845.1
	Total	$1,350.0	$1,341.0	$1,274.0

* *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

Progress Report

The Local Bridge Seismic Retrofit Program (LBSRP) is currently 59 percent complete. To date, 725 local bridges, out of a total of 1,235 planned bridges, have been retrofitted under the LBSRP. Currently, there are 153 bridges under construction, 320 bridges under design, and 37 bridges in a pre-strategy phase.

Milestones Achieved This Quarter

The status as of December 31, 2008 of local bridges by phase is as follows:

	2004	2005*	2006	2007	2008
Complete	589	692	699	709	725
Construction	128	46	45	66	153
Design	248	291	295	333	320
Pre-Strategy	269	206	196	127	37
Total	1,234	1,235	1,235	1,235	1,235

**One bridge was added to the retrofit list in 2005.*

The funding for the LBSRP comes from Federal, State, and local sources. Federal funds are provided through the Department's Local Assistance Program. State funds were provided through the annual budget process as a match for Federal funds until 2002. 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 funds in this account will be available upon appropriation by the legislature, to provide 11.47 percent required match for the Federal Highway Bridge Program (HBP) funds, for eligible bridges listed in the LBSRP.

Program Budget and Expenditures

The estimated budget for the LBSRP is $2.149 billion. A total of $831.9 million has been encumbered (spent) to date.

Funds (millions)	Spent	Plan	Total
State	$ 72.2	$ 32.9	$ 105.1
Bond	$ 14.7	$ 107.8	$ 122.5
Federal	$745.0	$1,176.6	$1,921.6
Total	$831.9	$1,317.3	$2,149.2

Note: Minor changes downward in reported numbers reflect adjustments as projects are awarded or completed.

Program Delivery by Agency Group

Bridges By Agency Group	Number Of Agencies	Pre Strategy	In Design	In Construction	Complete or No Retrofit	Total # Bridges	Percent Program
All Other Agencies	193	8	123	51	615	797	65%
Los Angeles Region (City and County)	2	0	27	50	109	186	15%
Department of Water Resources	1	0	24	0	1	25	2%
BART	1	29	146	52	0	227	18%
Total	197	37	320	153	725	1,235	100%

Based on the information presented above, the following points are noted:

- One agency, Bay Area Rapid Transit (BART) is responsible for 227 bridges (18 percent of the entire program). BART bridges make up 44 percent of the 511 bridges in the program that are not completed. BART has recently started construction on 52 bridges and started design on another 86 bridges.
- BART's Seismic Retrofit Program consists of: Segment 1 - from the Montgomery Station in San Francisco to the Berkeley Hills tunnels, and Outside Segment 1. Right of way phase has begun for segment 1.
- Construction of nine Department of Water Resources (DWR) bridges is planned in 2009. The United States Bureau of Reclamation (USBR) owns the remaining 15 DWR bridges and recently completed the strategy phase on all 15 bridges with construction planned in the 2009/10 fiscal year.
- Excluding BART, DWR and Los Angeles region bridges, the other local agencies have completed 615 bridges out of a total of 797 bridges, which represents a 77 percent completion rate.
- Los Angeles area bridges are lagging slightly behind other agencies (excluding BART and DWR) for completion. LA recently had 20 bridges move from the design phase to construction.