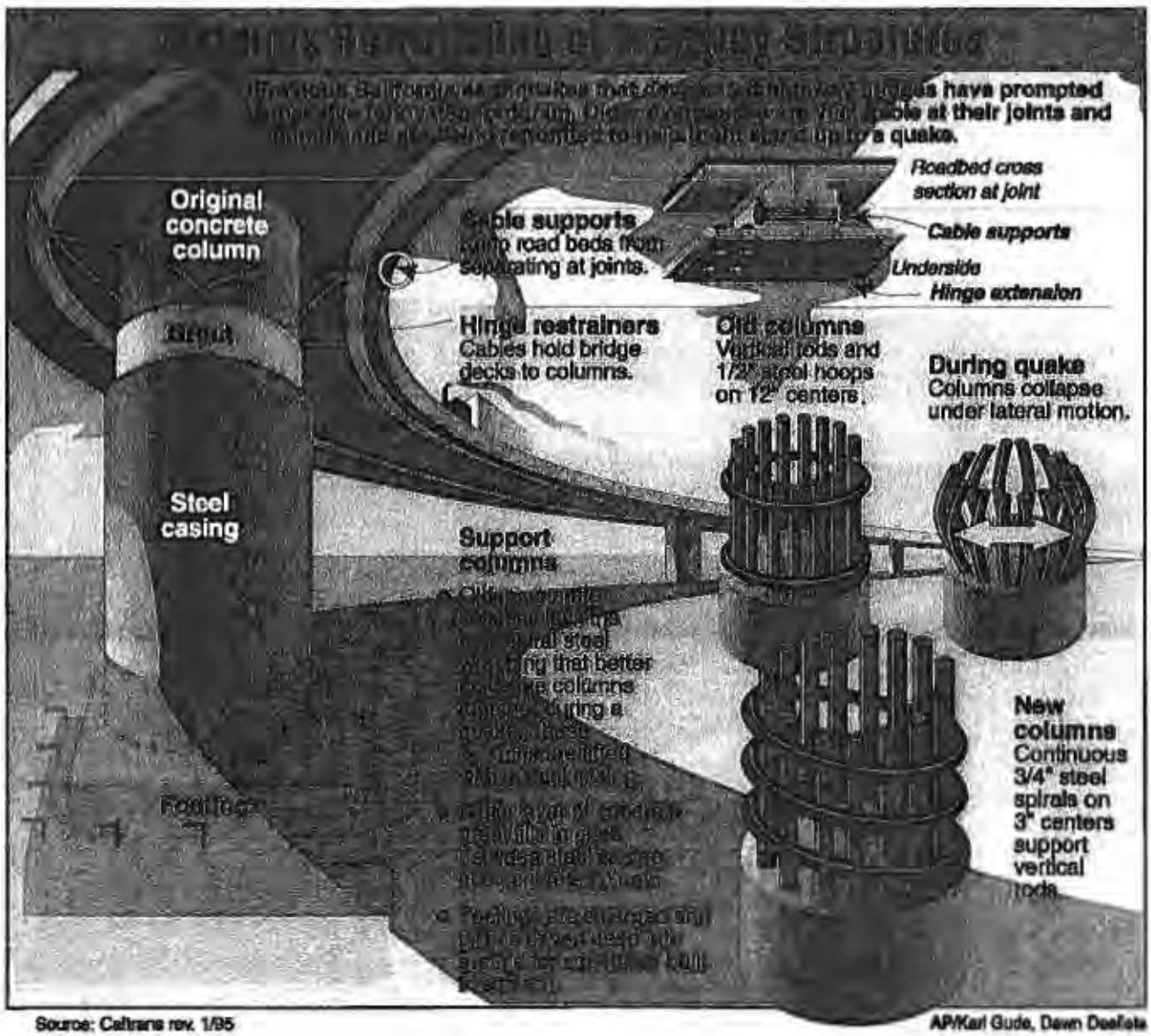
CALIFORNIA DEPARTMENT OF TRANSPORTATION

FOURTH QUARTER 2009 NON-TOLL SEISMIC RETROFIT PROGRAM QUARTERLY REPORT



Source: Caltrans rev. 1/95

AP/Karl Gude, Dawn Deefeta

Reporting Period Ending December 31, 2009

Report Overview

This report provides information on the status and progress of 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, three are under construction (two contracts), and one bridge is in design.

Milestones Achieved This Quarter

A project to provide an interim retrofit to the Schuyler Heim Bridge to enhance the safety of the bridge approach slabs was completed on November 25, 2009.

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 $433 million has been expended for support. The total of $1.322 billion committed to date uses approximately 98 percent of the available program funds.

Of the remaining $28 million, $17 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.

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

Program Costs
(millions)

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	$ 1,182.0
Total	$ 1,350.0	$ 1,322.0
Available		$ 28.0

- 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 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
Fifth Avenue	2006-07	$ 126.0	19.8
High Street	2008-09	$ 100.2	$ 20.1
Projects Allocated from SHOPP - $286.5 million			
Schuyler Heim	2009-10	$ 270.0	$ 42.0
Projects Programmed in SHOPP - $312.0 million			

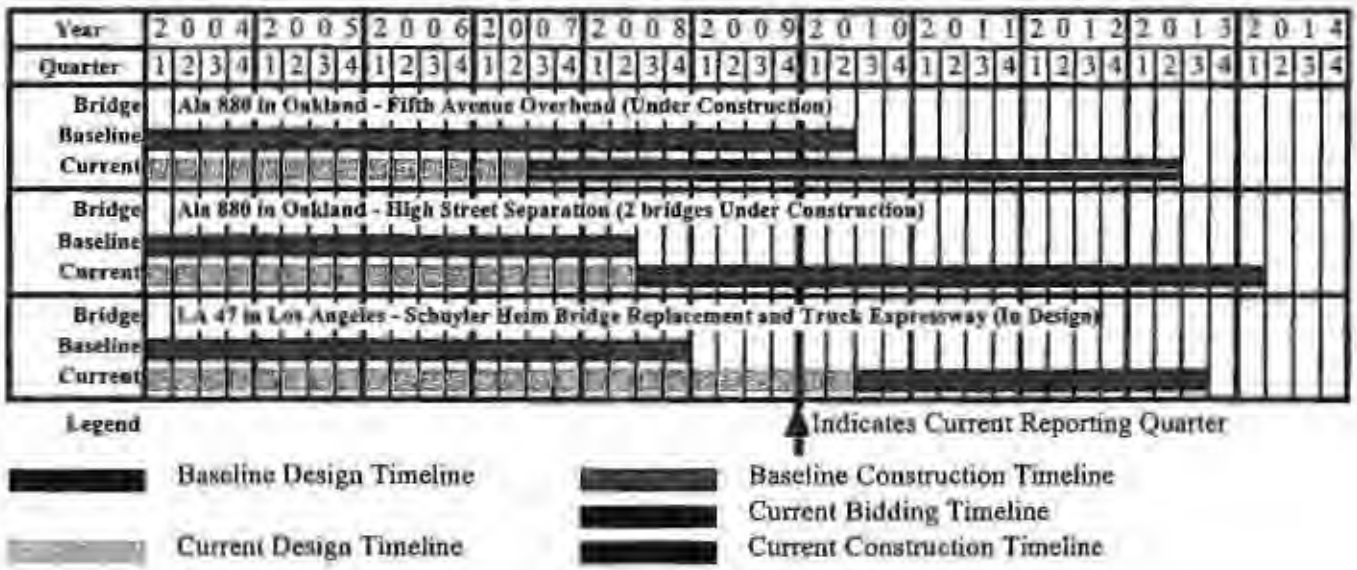
Program Delivery by Region/District

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 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)

Fifth Avenue Overhead

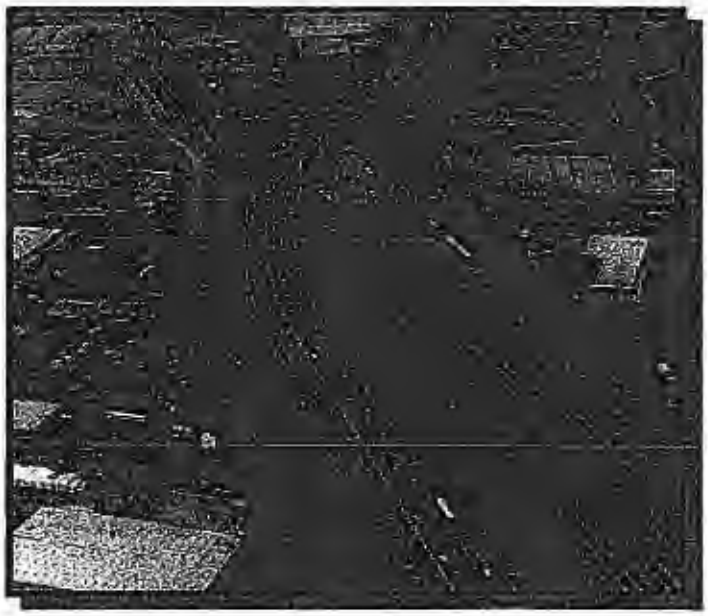
In Alameda County on Interstate 880 in Oakland.

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	$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
Total	$161.1	$43.5	$204.6

Number of Bridges to be Retrofitted – 1

33 0027 Fifth Avenue Overhead



The construction contract is 14 percent complete.

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	$20.0	$40.1
Support	$32.4	$19.0	$51.4
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

The construction contract is one percent complete.

Project 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
Construction				
$125.0	$158.0	$270.0	$0.0	$553.0
Right-of-Way				
$ 44.0	$ 0.0	$ 42.0	$0.0	$ 86.0
Support*				
$ 18.9	$ 0.0	$ 25.1	$4.0	$ 48.0
Totals				
$187.9	$158.0	$337.1	$4.0	$687.0

* Support costs for construction and right-of-way not identified in Trade Corridor Improvement Fund (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 was approved in June 2009.

The National Resources Defense Council (NRDC) is challenging the findings in the Health Risk Assessment study and has filed a writ of mandate. Specific language in the filing indicates the NRDC is not challenging the replacement bridge portion of the project. The project will be split into two projects to separate the seismic project (replacement bridge) from the expressway portion that is being challenged.

Seismic Retrofit Program Budget, Expenditures and Current Estimates

(Phase 2 Funds Only)

Bridges	Projects	Baseline Budget*	Current Budget*	Expenditures To Date*
1,151	Completed Projects			
	Capital Outlay Support		$ 405.0	$ 403.0
	Capital Outlay	$ 865.0	$ 846.3	$ 828.3
	Pending Capital Outlay Mitigation		$ 4.2	$ 0.0
	Total		$ 1,255.5	$ 1,231.3
4	Active Projects			
1	Fifth Avenue Overhead			
	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
2	High Street Separations			
	Capital Outlay Support		$ 19.0	$ 19.0
	Capital Outlay (R/W Only)	$ 0.0	$ 20.0	$ 14.3
	Total		$ 39.0	$ 33.3
1	Schuyler Heim Bridge Retrofit			
	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	$ 432.5
	Capital Outlay	$ 931.0	$ 907.0	$ 864.1
	Total	$1,350.0	$1,342.0	$1,296.6

* *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 that include 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. In previous quarterly reports, we have reported that 53 out of the 479 bridges adopted by the Commission were identified as not needing bond funds. Therefore this report will reflect the program delivery of 1,235 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, $21 million bond funds for FY 2008-09, and $12.2 million bond funds for FY 2009-10. 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, $16.1 million of seismic bond funds and $11.2 million of State funds have been encumbered.

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

LBSRP is 60 percent complete. To date, 747 local bridges, of 1,235 planned bridges, have been retrofitted under LBSRP. There are 161 bridges under construction, 320 bridges under design, and seven bridges in a pre-strategy phase.

LBSRP Milestones Achieved This Quarter

As of December 31, 2009, the status of local bridges by phases is as follows:

	2005	2006	2007	2008	2009
Complete	692	699	709	724	747
Construction	46	45	66	124	161
Design	291	295	333	349	320
Pre-Strategy	206	196	127	38	7
Total	1,235	1,235	1,235	1,235	1,235

Milestones Achieved This Quarter for Bond-Funded Bridges

As of December 31, 2009, the status of local bridges by phases is as follows:

	2005	2006	2007	2008	2009
Complete	0	0	0	4	25
Construction	0	0	15	99	117
Design	0	0	271	327	277
Pre-Strategy	0	0	193	38	7
Subtotal	0	0	479	*468	**426
Removed	0	0	0	11	**53
Total	0	0	479	479	479

* *Investigation by the Department removed 11 bridges in 2008.*
***42 BART bridges were removed from the bond list in 2009.*

LBSRP Program Budget and Expenditures

The estimated budget for the overall LBSRP is $2,113.3 million. This estimate does not include cost of other scopes of work that may be combined with seismic retrofit project. To date, $847.2 million has been encumbered (spent).

Funds (millions)	Spent*	Plan	Total
State	$71.1	$21.8	$92.9
Bond	$16.1	$106.4	$122.5
Federal	$760.0	**$1,137.9	$1,897.9
Total	$847.2	$1,266.1	$2,113.3

* *Expenditure = Unliquidated Encumbrances*
***Includes 15 percent of total estimated construction cost for Preliminary Engineering.*

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

Bridges By Agency Group	Number Of Agencies	Pre Strategy	In Design		In Construction		Complete or No Retrofit		Total # Bridges	Percent Program
		Bond	Bond	Non-Bond	Bond	Non-Bond	Bond	Non-Bond		
All Other	59	7	120	1	16	30	13	611	798	65
Los Angeles Region	2	0	14	0	39	14	9	109	185	15
DWR	1	0	23	0	0	0	0	2	25	2
BART	1	0	120	42	62	0	3	0	227	18
Total	63	7	277	43	117	44	25	722	1,235	100

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, BART is responsible for 227 bridges (18 percent of the entire program). The remaining 120 bond funded BART bridges in design phase are programmed to go to construction in FY 2009-10.