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January 31, 2011

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Legislative Counsel
State Capitol, Room 3021
Sacramento, CA 95814

Mr. Gregory Schmidt
Secretary of the Senate
State Capitol, Room 3044
Sacramento, CA 95814

Mr. E. Dotson Wilson
Chief Clerk of the Assembly
State Capitol, Room 3196
Sacramento, CA 95814

Dear Ms. Boyer-Vine and Messrs. Schmidt and Wilson:

I am pleased to submit the California Department of Transportation's (Caltrans') "Five-Year Maintenance Plan," prepared in accordance with Streets and Highway Code section 164.6 as amended by Senate Bill 1098, Chapter 212, Statutes of 2004. Section 164.6(b) states in part, "The department shall prepare a five-year maintenance plan that addresses the maintenance needs of the state highway system." Section 164.6(d) states in part, "The maintenance plan shall be transmitted to the Governor, the Legislature, and the commission not later than January 31 of each odd-numbered year."

Distribution to the Legislature has been made by Caltrans pursuant to California Government Code 9795. This report can be found at <www.dot.ca.gov/reports-legislature.htm>.

Sincerely,

CINDY McKIM
Director

Enclosure

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# California Department of Transportation

# 2011 Five-Year Maintenance Plan

## January 31, 2011

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# REQUIREMENTS OF STREETS AND HIGHWAYS CODE SECTION 164.6

Streets and Highways Code section 164.6 requires the California Department of Transportation (Caltrans) to prepare a five-year maintenance plan that addresses the maintenance needs of the State Highway System. Section 164.6 also requires Caltrans to attempt to balance the resources between the ten-year rehabilitation plan and the five-year maintenance plan.

Section 164.6 requires the five-year maintenance plan to include the following:

- Only maintenance activities that, if the activities were not performed, could result in increased State Highway Operation and Protection Program (SHOPP) costs in the future.
- Strategies, specific activities, and funding to reduce or prevent backlog over the five years of the maintenance plan.
- Specific goals and quantifiable accomplishments.
- Cost control and efficiency strategies.
- Cost estimates for the five years of the maintenance plan.
- SHOPP cost avoidance from implementation of the maintenance plan.
- A budget model in line with the requirements of this legislation.

The full text of section 164.6 is appended.

# EXECUTIVE SUMMARY

The 2011 Five-Year Maintenance Plan (2011 Maintenance Plan), as required by statute, addresses the maintenance needs of the State Highway System for maintenance activities that, if the activities were not performed, could result in increased SHOPP costs in the future. Caltrans accomplished the pavement objectives of the 2009 Maintenance Plan but could not keep up with the pace of increased bridge and culvert needs because of an increased repair backlog caused by an aging infrastructure.

The State Highway System includes approximately 50,000 lane miles of pavement. Caltrans met the goal for pavement maintenance to repair 2,700 lane miles annually. The 2009 Maintenance Plan was accomplished by reducing the backlog by 25 percent, from 5,941 lane miles in fiscal year (FY) 2008–2009 to 4,463 lane miles in FY 2010–2011, aided by an increased authorization of $57 million in American Reinvestment and Recovery Act funding.

The State bridge inventory includes approximately 12,900 bridges, and the 2009 Maintenance Plan identified an annual goal for bridge maintenance to reduce the bridge backlog to 10 percent of the total inventory, or approximately 1,290 bridges. Unfortunately, the actual backlogged bridge maintenance contract work had lagged the projections estimated in the 2009 Maintenance Plan by approximately 12 percent because of a higher than expected increase in bridge repair needs outpacing the contract work performed. However, the Bridge Program recorded a 30 percent reduction in new SHOPP recommendations from historic levels.

The State Highway System includes an estimated 205,000 culverts, and the 2009 Maintenance Plan had an annual goal to repair 174 culverts and perform 14,000 culvert assessments. Because of several external factors, such as higher than expected repair needs, furlough impacts, the State Budget impasse and deficit, and extreme difficulty in assessing various culvert locations, Caltrans was unable to meet the 2009 Maintenance Plan culvert goals. However, based on a two-year average, Caltrans was able to accomplish 95 percent of the annual culvert repairs and 61 percent of the annual culvert assessments identified in the 2009 Maintenance Plan.

The 2011 Maintenance Plan is recommending Caltrans' funding level remain unchanged at $412.1 million a year for pavement, bridge, and drainage major maintenance. Overall, recent decreasing material and energy costs and a declining California economy have increased the number of bidders for department work, thereby increasing the purchasing power of resources currently needed to deliver the pavement, bridge, and drainage contracts. It is expected that this trend will continue over the next few years, which should result in more preventive maintenance work being accomplished. The maintenance strategies identified in this 2011 Maintenance Plan will not reduce current SHOPP needs for pavement, bridges, and drainage culverts. However, the 2011 Maintenance Plan identifies specific strategies that will slow increases in the SHOPP by delaying the need for rehabilitation, reconstruction, or replacement. Preventive maintenance services will be provided by a combination of contract services and work done by State forces.

# THE MAINTENANCE PROGRAM

Section 6 of Senate Bill 1098, Chapter 212, Statutes of 2004, amended Streets and Highways Code section 164.6. In 2005, the Governor and the Legislature approved the inaugural Maintenance Plan for Caltrans as a means of ensuring the reliability of California's State Highway System by completing critically needed preventive maintenance work. The 2005 Maintenance Plan included baseline funding of $148 million beginning in July 2006 for preventive maintenance work associated with pavement, bridges, and drainage systems on the more than 50,000 lane miles of the State Highway System. The governing administration and the Legislature subsequently augmented the Maintenance Program by $138 million, of which $128 million was redirected from the SHOPP and $10 million from the approval of a Budget Change Proposal in FY 2006–2007. This additional funding brought the level of investment to a total of $286 million for the 2005 Maintenance Plan.

The 2007 Maintenance Plan recommended an additional increase of $147.1 million. As a result, SHOPP funding was redirected in FY 2007–2008 to augment the Maintenance Program by $85 million for pavement and $41.1 million for bridges, consistent with the recommendation. This funding was specifically directed to preventive maintenance-type work, bringing the total annual investment of the 2007 Maintenance Plan to $412.1 million. The 2009 Maintenance Plan did not recommend an increase in funding from the 2007 Maintenance Plan; however, a total of $57 million of American Recovery and Reinvestment Act one-time funding was authorized from FY 2008–2009 through FY 2009–2010.

Currently, the baseline annual funding is $234 million for pavement maintenance, $155.1 million for bridge maintenance, and $23 million for drainage maintenance. By sustaining the current funding level for pavement and structures, the backlog will continue to be reduced over the next ten to thirteen years as planned. Until the inventory is more complete and a large percentage of the needed rehabilitation work is identified, no additional funding for preventive drainage work will be requested. It is expected that the SHOPP cost avoidance benefit will continue for bridges but at a slower rate. The total cost avoidance benefit estimate for the five years of the 2011 Maintenance Plan is $2.06 billion.

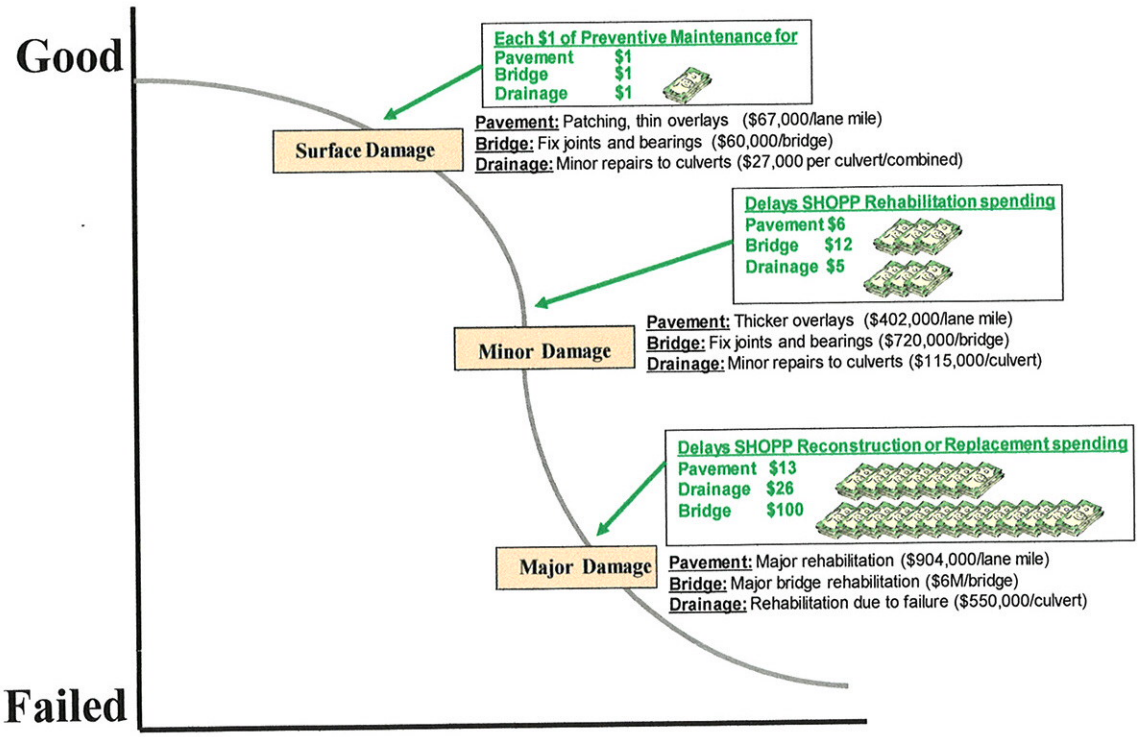
Preventive maintenance is the most cost-effective means of protecting the State's infrastructure investment. The 2011 Maintenance Plan prevents the deterioration and extends the life of pavement, bridge, and drainage culvert inventory that is in fair or good condition. As shown in Table 1, the average cost for a SHOPP roadway rehabilitation project to treat one lane mile of minor pavement damage in FY 2008–2009 was $402,000, a decrease in the average cost reported in the 2009 Maintenance Plan. The average cost of pavement maintenance was $67,000 a lane mile. Thus, preventive maintenance results in a cost-benefit ratio of about 6:1 greater than the least cost category of SHOPP projects. Similarly, the benefit ratio for bridge maintenance is 12:1 ($720,000 for minor damage rehabilitation versus $60,000 for preventive maintenance) and 5:1 for drainage maintenance ($115,000 for minor damage rehabilitation versus $27,000 for preventive maintenance). Table 1 lists these cost-benefit ratios and the following chart displays the preventive maintenance cost effectiveness.

**Table 1**

**COST-BENEFIT OF PREVENTIVE MAINTENANCE**

| FY 2008–2009 Capital Construction Costs Only | Cost of Rehabilitation in Dollars | Cost of Preventive Maintenance in Dollars | Unit of Measure | Cost-Benefit Ratio |
|---|---|---|---|---|
| Pavement | 402,000 | 67,000 | Lane mile | 6:1 |
| Bridge | 720,000 | 60,000 | Bridge | 12:1 |
| Drainage | 115,000 | 27,000 | Culvert | 5:1 |

## Cost Effectiveness Chart



## PAVEMENT MAINTENANCE

The State Highway System includes approximately 50,000 lane miles of pavement with a replacement value of more than $1.2 trillion. Approximately 12,988 lane miles (26 percent) of the State Highway System have surpassed their service life of ten years and are in need of major rehabilitation.

At the beginning of FY 2008–2009, Caltrans reported a backlog of 5,941 lane miles of pavement maintenance. At the beginning of FY 2010–2011, the backlog was reduced to 4,463 lane miles. Caltrans was able to achieve a 25 percent reduction in backlogged lane miles from FY 2008–2009 to FY 2010–2011. With current funding levels, the estimated backlog should continue to be reduced. The 2011 Maintenance Plan will reduce the backlog of lane miles to 772 by FY 2020–2021. Caltrans's long-term goal is to reduce the backlog of lane miles to approximately 1 percent of the total pavement inventory, or 500 lane miles. The 500 lane miles are the annual recurring distress of the pavement network.

The 2009 Maintenance Plan established a pavement maintenance goal of 2,700 lane miles to be delivered each year. Because of decreases in project construction costs and the increased number of bidders for each project, Caltrans has been able to meet the goals of the 2009 Maintenance Plan.

In FY 2008–2009 and FY 2009–2010, funds were increased by a total of $57 million from the one-time American Recovery and Reinvestment Act funding. This additional federal funding allowed Caltrans to deliver 3,539 lane miles in FY 2008–2009 and 3,446 lane miles in FY 2009–2010.

In this current construction-bidding environment and at the current funding level of $234 million, Caltrans is projecting 2,700 lane miles to be treated annually in FY 2010–2011 and for the next few years.

Currently, Caltrans is incorporating the latest technology for data collection. One technology is ground-penetrating radar, which provides a snapshot of the layers underneath the pavement surface and will provide pavement structure inventory data, including the thickness of the pavement layers for the entire State Highway System. Another innovation is the automated pavement condition survey vehicle that will travel at highway speeds and collect pavement distress data at the pavement surface using lasers.

In late 2010, a pavement management system contract will purchase commercial off-the-shelf software called PaveM. This software will support a strong pavement management system to forecast pavement needs and determine service life. In addition, Caltrans will continue to develop specifications for new products and applications that reduce costs and improve pavement performance.

## BRIDGE MAINTENANCE

Caltrans's structural assets include more than 12,900 State highway bridges. Caltrans' objective is to manage the bridge inventory safely and economically to limit operational restrictions and prevent sudden closure or collapse. Major structural rehabilitation caused by lack of preventive maintenance is more costly than preventive maintenance and has the potential to cause significant long-term disruptions to mobility.

Bridge maintenance needs are identified during regularly scheduled bridge inspections mandated by federal regulations. Bridge maintenance needs fall into two general categories: State forces and major maintenance contract work. Bridge needs identified for maintenance bridge crews or major maintenance contracts are considered backlogged two years after the recommendation is made by the inspector. Maintenance bridge crew needs have increased slightly over the past five years on work for smaller repairs that require immediate attention and other minor maintenance work. Maintenance bridge crew needs are approximately $15 million to $17 million of the backlog. Bridge maintenance needs that are larger in size or complexity are packaged together into major maintenance contracts that are awarded to construction companies to perform.

At the beginning of FY 2008–2009, Caltrans reported 2,713 bridges with backlogged major maintenance contract needs. Caltrans treated 805 bridges during FY 2008–2009 and 874 bridges during FY 2009–2010. At the beginning of FY 2010–2011, the number of bridges with backlogged major maintenance contract needs was 2,575, approximately 20 percent of the inventory. Caltrans's goal is to reduce the number of bridges with backlogged major maintenance contract needs to approximately 10 percent of the inventory, or 1,290 bridges.

The recent backlogged major maintenance contract needs are trending downward. However, the backlogged major maintenance contract needs are lagging projections estimated in the 2009 Maintenance Plan by approximately 12 percent.

The 2011 Maintenance Plan identifies more than $441 million in backlogged major maintenance contract needs for bridges, which equates to approximately 97 percent of all bridge maintenance needs.

The rate of backlog reduction is a function of project delivery on the positive side and the rate of new backlog needs being identified on the negative side. Since the 2005 Maintenance Plan, the average number of new bridges becoming backlogged annually has increased by 21 percent. The increased rate of needs is attributable to the general aging of the entire bridge network in California. The increase in needs identification has been partially offset by decreases in project construction costs and the increased number of bidders for each project. At the current construction authorization levels, it is expected to take approximately thirteen years to achieve the desired backlog levels. Caltrans is optimistic that the projected reductions identified in the 2011 Maintenance Plan will be realized.

The timely preventive maintenance made possible by authorized funding in previous maintenance plans has begun to slow the progression of bridges requiring major rehabilitation in the SHOPP.

For FY 2008–2009, the Bridge Program recorded a 30 percent reduction in new SHOPP recommendations from historic levels. This decrease in SHOPP recommendations is a welcome trend and demonstrates that SHOPP cost avoidance objectives in previous plans are being realized.

Caltrans is pursuing numerous activities to maximize efficiencies and control the costs of bridge maintenance. Among these are the uses of new materials that last longer and are easier to apply, such as epoxy paints, polyester concretes, corrosion-resistant rebar, and design details. In addition, Caltrans is implementing policies to ensure that new projects are constructed with cost-effective and easily maintainable elements as well as reviewing the activities of other state Departments of Transportation on an ongoing basis to ensure that the best business practices are employed in California.

## DRAINAGE/CULVERT MAINTENANCE

The State Highway System includes an estimated 205,000 culverts. These culverts drain the State's highways, serving as conduits for streams, drainage channels, and other waterways to flow under the highways. Culvert damage or failure can seriously damage the roadway, create the need for extensive repairs, and threaten the mobility and safety of the traveling public. The 2009 Maintenance Plan provided for continuation of a proactive inspection program to identify damaged or failed culverts. Management procedures have been developed to measure the health of drainage systems, prioritize potential culvert projects based on condition, cost, and traveler delay, and track accomplishments and delivery schedules for maintenance work.

At the beginning of FY 2008–2009, an estimated 9,614 culverts with backlogged preventive maintenance needs were identified. During FY 2008–2009, 178 culverts were repaired under the Culvert Inspection Program. In FY 2009–2010, the target repair of 174 culverts was projected with an estimated assessment rate of 14,000 culverts. A total of 156 culverts were repaired and more than 6,000 culverts were assessed in FY 2009–2010. The drop in assessment rate is attributed to several factors, including limited resource availability due to the State Furlough Program and reductions in the travel expense budget to conduct site visits for several months due to the State Budget impasse. At the beginning of FY 2010–2011, the culvert backlog requiring preventive repairs was estimated to be 13,185 and it was projected 174 culverts would need repair.

About 36 percent of approximately 58,000 culverts assessed to date require some form of maintenance. With an increase of 12 percent from the previous year, the corrective maintenance category, at 23 percent, is the fastest growing segment of the culvert inventory. Based on the target rate of 14,000 assessments a year and the estimated 23 percent of assessed culvert inventory requiring preventive work, an additional 3,220 culverts are estimated to be identified for corrective maintenance work each year. Assuming a 23 percent rate of inventory requiring

preventive work remains consistent for the entire inventory of 205,000 culverts, an additional investment of $119 million will provide sufficient funds to reduce the inventory by 3,314 culverts a year over a ten-year period. An additional investment of $244 million will provide sufficient funds to reduce the same amount of backlog in a five-year period, by 6,628 culverts a year. Culvert repair and replacement projects typically require multiyear environmental mitigation documents. In addition, right-of-way clearance must be obtained prior to entering private property. These right-of-way activities require long lead times that typically include the purchase of easements and/or titles in fees.

Approximately 28 percent of the total State drainage system has been inspected to date. Until the inventory is more complete and a large percentage of required rehabilitation work is identified, no additional funding for preventive drainage work will be requested. The 2011 Maintenance Plan is recommending a funding level of $23 million annually to inspect, assess, and address culvert preventive maintenance and repairs. This funding level slightly reduces the rate of backlog increase but in no way eliminates it. Preventive maintenance for culverts is performed by a combination of State forces and major maintenance contract work.

The Culvert Inspection Program will continue to improve understanding of the circumstances leading to culvert failure, and that knowledge will potentially lead to changes in design specifications, construction methods, and materials for improved culvert performance.

Management procedures have been developed to measure the health of drainage systems, prioritize potential culvert projects based on condition, cost, and traveler delay (measured both by traffic volume and detour length), and track accomplishments and delivery schedules of maintenance work. In addition, the use of geographic information systems technology will assist in reevaluating watersheds to ensure that culverts are meeting current design standards and will improve workforce expertise and the ability for quick response to emergencies involving culverts.

## MAINTENANCE PROGRAM BUDGET MODEL

The Maintenance Program budget model was developed to enhance budget management capabilities on an annual basis. The performance-based model uses a combination of historical expenditures, Level of Service (LOS) performance measures, and inventory data to project future resource needs with performance-level expectations for the entire State Highway System. While the budget model does include all resources, the model is used primarily to determine a performance-based budget for field maintenance activities.

Historically, the budget model grouped Caltrans' twelve districts into sets of comparable units (using geographic, population, and traffic volume characteristics). Current versions of the model have shifted the focus from a district-level analysis to a route-level analysis by grouping all routes based on traffic volumes and geographic locations. By creating a route-level analysis tool, the budget model provides detailed comparative analysis for determining relationships between performance and resource needs for each highway inventory unit, which creates standardized allocation and efficiency rates for each route.

The budget model is used:

- To measure the direct relation between funding and LOS and the effects of changes to either.
- To measure an efficiency curve at the State route level for statewide comparisons.
- To measure a standardized allocation process for inventory items at a State route level for life-cycle cost and asset management practices.
- To assist decision-makers in determining the best course of action relative to budgetary and performance issues.
- To predict funding needs based on project delivery actions and decisions.

# ANALYSIS OF ALTERNATIVE LEVELS OF MAINTENANCE INVESTMENT

## LEVEL OF INVESTMENT 1—BASELINE FUNDING

The current baseline annual funding level is $412.1 million as shown in Table 2. At the beginning of FY 2008–2009, the backlog was 5,941 pavement lane miles, 2,675 bridges, and 9,614 culverts. It was estimated that the backlog would be reduced to 4,463 lane miles by the beginning of FY 2010–2011 and 2,541 bridges by the beginning of FY 2009–2010. The pavement backlog in FY 2020–2021 is estimated to be 772 lane miles with the current funding. The extent of the drainage backlog as shown is projected until the inventory is more complete and a large percentage of the needed rehabilitation work is identified.

**Table 2**

**LEVEL OF INVESTMENT 1—CURRENT BASELINE FUNDING**

| | Annual PYs | Annual Cost in Million Dollars | Annual Accomplishments | Average Annual Change in Backlog | Future SHOPP Cost Avoidance in Million Dollars |
|---|---|---|---|---|---|
| Pavement[1] | 287 | 234.0 | 2,700 lane miles | 409 lane-mile decrease | 1,404 |
| Bridge[2] | 361 | 155.1 | 689 bridges | 92 decrease | 1,564 |
| Drainage[3] | 188 | 23.0 | 174 culverts, 14,000 inspections | 3,220 increase | 115 |
| Total | 836 | 412.1 | --- | --- | 3,083 |

[1] Pavement costs include personal services and major maintenance contracts. The current support funding is approximately 287 PYs (personnel years) and $30 million a year. Annual costs include $204 million in major maintenance contracts.

[2] Bridge structural resources include $92.5 million in major maintenance contracts, $58.3 million and 361 PYs in personal services and operating expenses in support of contract delivery, and $4.3 million in Architectural and Engineering contracts (PYEs).

[3] Drainage costs include $12.5 million and 134.5 PYs in State forces for maintenance and associated equipment and materials, $7 million and 15.5 PYs in major maintenance contract dollars and support, and $3.5 million and 38 PYs for the Culvert Inspection Program.

## LEVEL OF INVESTMENT 2—REDUCE BACKLOG (TEN YEARS)

As shown in Table 3, with an additional $208.9 million added in FY 2012–2013 to increase the annual funding level to $621 million, the backlog of maintenance needs will be reduced for pavement and bridges while reducing the known drainage backlog to zero at the end of the ten years. This increase in investment of $86 million for pavement and $3.9 million for bridges will reduce the pavement backlog annually by 604 lane miles and the bridge backlog by 126 bridges. The pavement backlog in FY 2020–2021 is estimated to be 561 lane miles, close to the 1 percent goal of the Pavement Program. The increase in investment of $119 million for drainage will reduce the culvert backlog by 3,314 culverts a year.

**Table 3**

**LEVEL OF INVESTMENT 2—REDUCE BACKLOG (TEN YEARS)**

| | Annual PYs | Annual Cost in Million Dollars | Annual Accomplishments | Average Annual Change in Backlog | Future SHOPP Cost Avoidance in Million Dollars |
|---|---|---|---|---|---|
| Pavement[1] | 375 | 320 | 3,900 lane miles | 604 lane-mile decrease | 1,920 |
| Bridge[2] | 361 | 159 | 723 bridges | 126 decrease | 1,641 |
| Drainage[3] | 452 | 142 | 3,314 culverts, 14,000 inspections | 3,314 decrease | 710 |
| Total | 1,188 | 621 | --- | --- | 4,271 |

[1] Pavement costs include personal services and major maintenance contracts. The proposed support funding is approximately 37 PYs and $40 million a year. Annual costs include $280 million in major maintenance contracts.

[2] Bridge costs include State forces for maintenance and associated equipment and materials, inspection, contract dollars, and support. Increased resources are shown as personnel year equivalents (PYEs) and are not included in the PYs. Funding includes $96.4 million in major maintenance contracts, $58.3 million and 361 PYs in support costs, and $4.3 million in Architectural and Engineering contracts (PYEs).

[3] Drainage costs includes $12.5 million and 134.5 PYs in State forces for maintenance and associated equipment and materials, $126 million and 279.5 PYs for major maintenance contract dollars and support, and $3.5 million and 38 PYs for the Culvert Inspection Program.

## LEVEL OF INVESTMENT 3—ELIMINATE BACKLOG (FIVE YEARS)

As shown in Table 4, with an additional $515.9 million added to increase annual maintenance funding to more than $928 million, all existing backlog of maintenance work will be eliminated over a five-year period. Future SHOPP needs will be significantly less than under either of the previously identified levels of investment. When funds are available starting in FY 2012–2013, the backlog of pavement and bridge projects will be reduced to zero after five years. The pavement backlog in FY 2015–2016 is estimated to be 510 lane miles with the increased funding, effectively eliminating the pavement backlog (at that point, annual maintenance funding could be decreased). At the projected rate of 14,000 inspections a year, there still will be 63,000 culverts remaining in the inventory to be inspected at the end of the five years, with an estimated 3,220 culverts still needing repair work each year.

**Table 4**

**LEVEL OF INVESTMENT 3—ELIMINATE BACKLOG (FIVE YEARS)**

| | Annual PYs | Annual Cost in Million Dollars | Annual Accomplishments | Average Annual Decrease in Backlog | Future SHOPP Cost Avoidance in Million Dollars |
|---|---|---|---|---|---|
| Pavement[1] | 536 | 460 | 5,600 lane miles | 655 lane-mile decrease | 2,736 |
| Bridge[2] | 361 | 201 | 849 bridges | 252 decrease | 1,928 |
| Drainage[3] | 731 | 267 | 6,628 culverts, 14,000 inspections | 6,628 decrease | 1,335 |
| Total | 1,628 | 928 | --- | --- | 5,999 |

[1] Pavement costs include personal services and major maintenance contracts. The proposed support funding is approximately 536 PYs and $60 million a year. Annual costs include $400 million in major maintenance contracts.

[2] Bridge costs include State repair crews, materials, equipment rental, contract dollars, and support. Increased resources are shown as PYEs and are not included in the PYs. Funding includes $120.1 million in major maintenance contracts, $58.3 million and 361 PYs in support costs, and $22.6 million in Architectural and Engineering contracts (PYEs).

[3] Drainage costs include $12.5 million and 134.5 PYs in State forces for maintenance and associated equipment and materials, $251 million and 558.5 PYs for major maintenance contract dollars and support, and $3.5 million and 38 PYs for the Culvert Inspection Program.

# RECOMMENDATION ON LEVEL OF INVESTMENT

In approving the 2011 Maintenance Plan, the Governor and the Legislature recognize the importance of completing critically needed maintenance work to the State's infrastructure, thus protecting California's unique quality of life and ensuring its economic competitiveness in the global marketplace. Overall, recent decreases in material and energy costs and a declining California economy have increased the number of bidders for department work, thereby increasing the purchasing power of currently identified resources needed to deliver the 2009 Maintenance Plan. It is expected that this trend will continue over the next few years.

Therefore, Caltrans recommends continuing the Level of Investment 1 with no additional resources requested at this time. The total cost estimate for the five years of the 2011 Maintenance Plan is $2.06 billion.

The best use of transportation resources demands a balanced mix of preventive maintenance and rehabilitation or replacement. This balance is consistent and supports the principles of "Go California" to ensure the wise investment of existing funding with a vision of improving mobility and safety.

# APPENDIX

## STREETS AND HIGHWAYS CODE SECTION 164.6

164.6.(a) The department shall prepare a 10-year state rehabilitation plan for the rehabilitation and reconstruction, or the combination thereof, by the State Highway Operation and Protection Program, of all state highways and bridges owned by the state. The plan shall identify all rehabilitation needs for the 10-year period beginning on July 1, 1998, and ending on June 30, 2008, and shall include a schedule of improvements to complete all needed rehabilitation during the life of the plan not later than June 30, 2008. The plan shall be updated every two years beginning in 2000. The plan shall include specific milestones and quantifiable accomplishments, such as miles of highways to be repaved and number of bridges to be retrofitted. The plan shall contain strategies to control cost and improve the efficiency of the program, and include a cost estimate for at least the first five years of the program.

(b) The department shall prepare a five-year maintenance plan that addresses the maintenance needs of the state highway system. The plan shall be updated every two years, concurrent with the rehabilitation plan described in subdivision (a). The maintenance plan shall include only maintenance activities that, if the activities were not performed, could result in increased State Highway Operation and Protection Program costs in the future. These activities may include roadway, structural, and drainage maintenance. The maintenance plan shall identify any existing backlog in these maintenance activities and shall recommend a strategy, specific activities, and an associated funding level to reduce or prevent any backlog during the plan's five-year period. The maintenance plan shall include specific goals and quantifiable accomplishments, such as lane-miles of highway to be repaved and the number of bridge decks to be sealed. The maintenance plan shall contain strategies to control cost and improve the efficiency of these maintenance activities, and include a cost estimate for the five years of the plan.

(c) The rehabilitation plan and the maintenance plan shall attempt to balance resources between State Highway Operation and Protection Program activities and maintenance activities in order to achieve identified milestones and goals at the lowest possible long-term total cost. If the maintenance plan recommends increases in maintenance spending, it shall identify projected future State Highway Operation and Protection Program costs that would be avoided by increasing maintenance spending. The department's maintenance division shall develop a budget model that allows it to achieve the requirements of this subdivision.

(d) The rehabilitation plan shall be submitted to the commission for review and comments not later than January 31 of each odd-numbered year, and shall be transmitted to the Governor and the Legislature not later than May 1 of each odd-numbered year. The maintenance plan shall be transmitted to the Governor, the Legislature, and the commission not later than January 31 of each odd-numbered year.

(e) The rehabilitation plan and the maintenance plan shall be the basis for the department's budget request and for the adoption of fund estimates pursuant to Section 163.