

CALIFORNIA DEPARTMENT OF TRANSPORTATION

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Letter from the Director

The Department is blessed with many outstanding employees. We have just said Hail and Farewell to one of the most illustrious employees of our illustrious history.

Jim Roberts is retiring.

Jim and his distinguished career are emblematic of the staff of this organization, one that I am proud to have become a part of. He exhibits, in large measure, the qualities all of us aspire to. He is honest, conscientious, loyal and a leader in his field. And, for fifty years, he has worked his tail off.

Jim's association with the Department began when he joined it as an engineering aide in 1951 while still a student at the University of California. He has held a number of engineering, management and administrative positions, including Chief Bridge Engineer for the State of California, Chief Deputy Director of Caltrans, Director of the Caltrans Engineering Service Center and Project Director for the Sacramento Light Rail Project.

In his nearly 15 years as the state's Chief Bridge Engineer, Jim spearheaded California's emergence as the world leader in the science of bridge earthquake engineering.



Jeff Morales

Jim's finest hours came when he directed the reconstruction of structures damaged in the 1989 Loma Prieta and 1994 Northridge earthquakes and California's \$4.5 billion bridge seismic strengthening program. Not content merely to put the system back in place, he initiated the most extensive seismic research program in the world.

For his efforts, Jim was named to the National Academy of Engineering in 1996; the only Caltrans engineer to be so honored in its more than 100 years. His many honors include achieving first place, American Institute of Steel Construction National Prize Bridge Award Competition, 1972 and 1978.

He was named Engineer of the Year in 1979 by the Engineering Council of Sacramento Valley and received the Alfred E. Johnson award for Engineering Management from the American Association of State Highway and Transportation Officials in October 1991. Just this summer, he was honored with the John A. Roebling Medal for Lifetime Achievement at the International Bridge Conference. He has received so many other honors and awards that his wall will not hold them all.

In demand worldwide as a structural expert, Jim will continue to advise transportation agencies from Washington D. C. to South Africa on structural matters, and as he does so, he will continue to carry the message of our Department's excellence.

On behalf of all of us, I thank him for his tremendous record of service and wish him all the best.

Jeff Morales

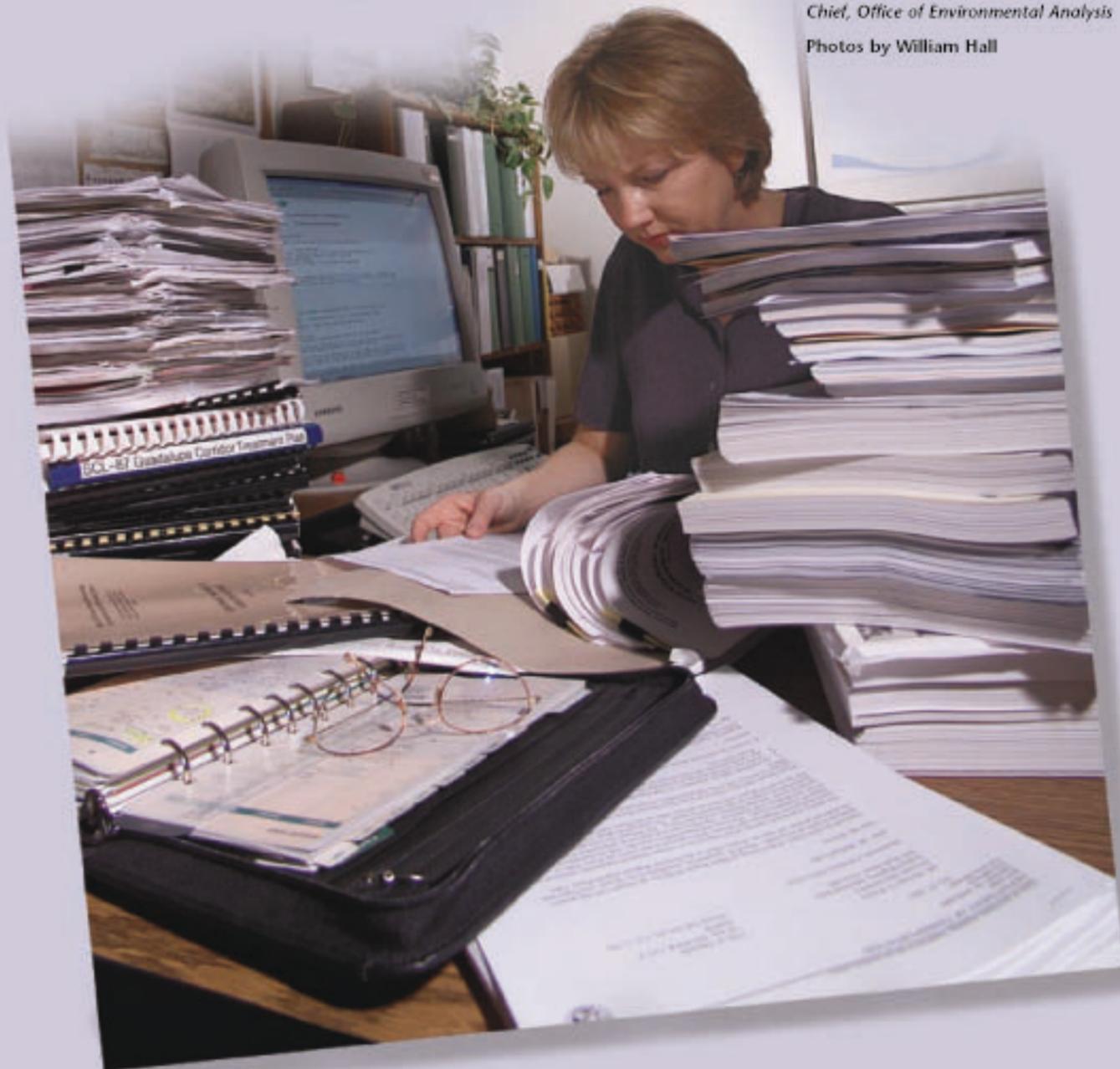
CALIFORNIA DEPARTMENT OF TRANSPORTATION Journal

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Speeding Environmental Workflow

By Gary Winters
Chief, Office of Environmental Analysis
Photos by William Hall



Passage of the Transportation Efficiency Act of the 21st Century, Governor Davis's \$8.6 billion traffic relief plan, further gas tax growth, and changes in other funding sources, mean that the California Department of Transportation and local agencies will spend more than \$9 billion in the coming year.

Caltrans will seek review approval from the Federal Highway Administration (FHWA) on more than 70 major environmental documents and many more technical reports in the next three years, an increase annually of more than 75 per cent over recent years. In addition, about 650 local agencies are developing environmental documents and technical studies that FHWA must forward to various state and federal resource and regulatory agencies for review and approval.

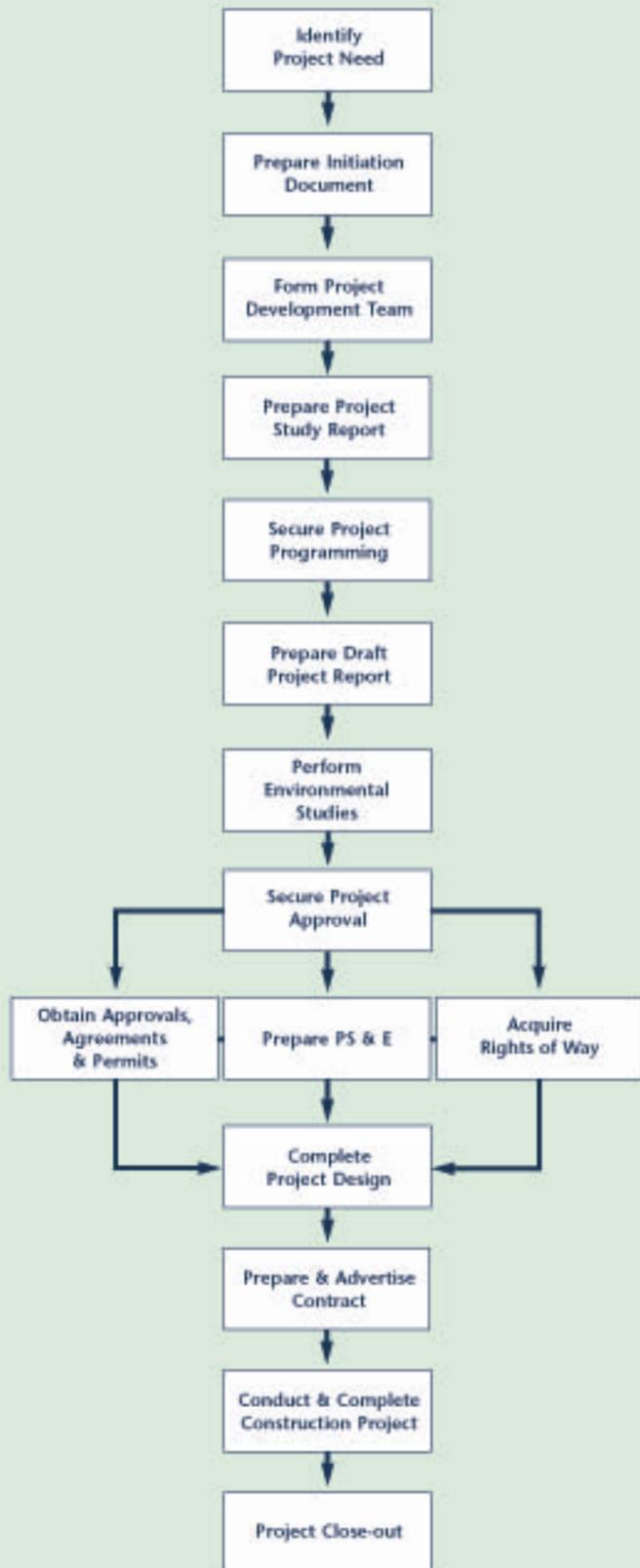
Today, Caltrans employs about 760 environmental planners, of whom about 270 prepare documents, 100 perform technical cultural studies and 120 perform biological surveys and develop technical reports. All of the work completed on major projects by these staff and by local agencies is funneled through FHWA for coordination with resource and regulatory agencies.

While Caltrans staffing has grown to meet its escalating workload, FHWA staffing has remained essentially unchanged in recent years. Given the number of documents and technical reports needing review, it is inevitable that FHWA would have difficulty performing consistent timely reviews and approvals. If Caltrans and the local agencies are to accomplish their very ambitious programs, they will need to work with FHWA to streamline compliance processes without compromising quality.

The Federal Highway Administration must deal with the workload produced by Caltrans' 760 environmental planners and 650 local agencies on billions of dollars worth of projects.



How Caltrans Builds Projects



With this in mind, Caltrans Director Jeff Morales and federal Transportation Secretary Norman Mineta have begun discussing actions to address the increased workload. These would affect state projects initially; then, as each is refined, it would apply to local projects as well. The department has asked FHWA to work together to:

- Define and commit to deadlines to expedite document review.
- Expand the Caltrans role as an agent of FHWA in dealing with federal resource and regulatory agencies.
- Expand Caltrans authority to approve minor projects, with appropriate monitoring by FHWA.
- Maintain a system to track movement of work products between Caltrans, FHWA and regulatory agencies.

In addition, Caltrans is taking its own actions to:

- Establish a document quality assurance program.
- Standardize document and technical study formats.
- Increase internal legal reviews of documents and augment legal staff for consultation on document development.
- Develop a tracking system, with mutual access and input by Caltrans and FHWA, to record movement of key work products.

ESTABLISH TIMELINES

The federal Council on Environmental Quality recently undertook to reduce paperwork and delays and produce better decisions related to the National Environmental Policy Act. The principal strategy that emerged from the effort was to define schedules for reviews or other actions on a state-by-state, region-wide or project-specific basis. The department has suggested reasonable FHWA review and approval timelines that range from three days for a minor project to 30 days for approval of a Final Environmental Impact Statement.



The results of environmental fieldwork could be moved through the pipeline more quickly if Caltrans proposals are adopted by FHWA.



Until now, no mutually agreed-on system has existed for tracking environmental products and assuring that they are developed within an agreed-on timeline. The department has requested that such a system be put in place.

EXPAND THE DEPARTMENT'S ROLE AS AN AGENT OF FHWA

Caltrans sends virtually all materials and requests destined for federal regulatory agencies through FHWA, which then forwards them for formal compliance approvals. Issues related to Section 106 of the National Historic Preservation Act and Section 7 of the Endangered Species Act can become particularly cumbersome. FHWA's reviews and transmittal may take as little as two weeks or more than six months. Once the material reaches the regulatory agency, regulatory deadlines apply, but FHWA is currently subject to no such deadlines.

The department proposes to work directly with the regulatory agencies for many aspects of Sections 7 and 106. First, materials would move more quickly to the regulatory agencies and, second, redundant reviews by FHWA staff would be eliminated. Compliance with the National Historic Preservation Act and the Endangered Species Act would be handled by master agreements between the department and the FHWA.

STREAMLINE NATIONAL HISTORIC PRESERVATION ACT COMPLIANCE

The National Historic Preservation Act allows federal agencies to use the services of states through programmatic or master agreements, to identify and evaluate historic resources, analyze effects, mitigate impacts and involve the public. FHWA has agreed, as it has with other states, to allow Caltrans to provide similar services. The department met with FHWA specialists in May to discuss quality control, legally sound decisions and proper scrutiny of local agency and consultant reports. The department hopes to sign an agreement by the end of this year.

Streamlining Environmental Compliance

The California Department of Transportation and the Federal Highway Administration are working together to streamline compliance procedures. The measures are designed to speed project development while continuing to safeguard the environment. The proposed actions would:

- Define review deadlines and commit to them.
- Expand Caltrans' role in coordinating and negotiating directly with federal resource and regulatory agencies.
- Increase the department's discretion in approving minor projects, with appropriate monitoring by the Federal Highway Administration.
- Track the movement of documents between Caltrans, FHWA and regulatory agencies.
- Establish a departmental quality assurance program with elements of peer, technical specialist and legal review; technical editing; document consistency; and document production improvements.
- Increase internal legal reviews and augment legal consultation during project and document development.



STREAMLINE ENDANGERED SPECIES ACT COMPLIANCE

Caltrans is proposing three measures to comply more effectively with the federal Endangered Species Act.

First, the department is asking that it be allowed to negotiate with permitting agencies on how to deal with an endangered species that may be near a project but not likely to be affected adversely. The Endangered Species Act allows states, after written notice, to consult informally with permitting agencies or prepare a biological assessment.



Second, Caltrans is asking FHWA to concur, before studies begin, on the scope and content of biological assessments where an endangered species may be adversely affected or "take" is expected. Review should take place within a specified schedule. Consistency with the pre-approved scope would provide the basis for subsequent reviews.

Third, to provide better documents to FHWA, Caltrans is developing a quality control effort. Senior department biologists and FHWA specialists, convened as a consultancy group to develop document standards, expect to deliver them in four to six months.

EXPAND THE DEPARTMENT'S PROGRAMMATIC CATEGORICAL EXCLUSION AUTHORITY

In September 1990, FHWA's California Division Administrator agreed to allow Caltrans to approve Programmatic Categorical Exclusions for federally financed projects that have a minimal

impact. But FHWA engineers annually still approve more than 1000 department actions that do not meet the conditions of this agreement. Collectively, these take considerable time that could be spent addressing more complex issues.

Using agreements of other states as models, the department proposes revising the master agreement. It would allow Caltrans to approve projects that do not have significant impacts, are not controversial, involve only minor amounts of right of way, impact fewer than .80 ha of wetlands and meet several other criteria.

DEVELOP A TRANSMITTAL TRACKING SYSTEM

No formal system currently exists to track work products between Caltrans, FHWA and regulatory agencies. The large and growing workload that Caltrans sends to FHWA for action exceeds the capacity of the informal system currently in place. As a result, the department must repeatedly contact FHWA to determine the status of its projects.

FHWA and Caltrans are developing a computer system to track documents and consultation requests. The system will improve delivery through efficient transmittal of work products. The tracking system should:

- Be low-cost and simple and without major software or hardware purchases or upgrades.
- Allow data to be entered easily.
- Allow tracking of specific items for specific projects.
- Allow prioritization of items, at the discretion of the district.

In addition to improving delivery, this system would provide valuable information on resource and time requirements, which, in turn, would help in scoping and in setting realistic schedules. It should identify bottlenecks quickly so action can be taken to keep documents and approvals on track.

ESTABLISH A QUALITY ASSURANCE PROGRAM

Caltrans has committed to submitting documents to FHWA only after assuring that they are ready for approval. Consistent, high-quality documents will reduce FHWA review time and increase its confidence in them.

Caltrans will standardize requirements and responsibilities for document review. It will require:

- Peer reviews to verify that documents meet standards.
- Technical specialist reviews to verify that documents are technically accurate.
- Technical editing to assure they are readable.
- Supervisor review and sign-off and a legal review.

DEVELOP ENVIRONMENTAL DOCUMENT STANDARDS

Caltrans currently does not have a standard format for its environmental documents and technical reports. As a result, districts produce documents with differing formats, approaches, lengths and quality. Caltrans will develop standards that include:

- A style guide to assure standard format and organization.
- Quality graphics prepared by staff or contract graphics specialists.
- Technical editors to edit major documents.
- Electronic publication of documents to speed distribution and reduce costs.

REPORTING AND EVALUATION MECHANISMS

Caltrans is proposing several changes in reporting and evaluative mechanisms. The department is committed to:

- Additional positions in the Caltrans Legal Division to review documents.
- Periodic meetings with FHWA to fine-tune quality assurance approaches and practices.
- Closeout meetings to assess successes and needs for improvement.

One central element of the project development process will not change. That is the continued, active participation by FHWA engineers on project development teams. Caltrans and FHWA have maintained a fruitful relationship since the start of the Interstate Program, which initiated federal funding of projects in the 1950s. The changes outlined above are meant to deepen that relationship and make the participation of the federal and state governments more productive and rewarding.

Caltrans has asked FHWA to provide it with authority to negotiate directly with federal permitting agencies on such matters as projects' effects on endangered species and cultural resources.



TRAFFIC CONGESTION RELIEF PROGRAM

SUMMARY OF PROGRESS:

Approvals and allocations to the Governor's Traffic Congestion Relief Program so far have exceeded expectations. To date, nearly two-thirds of the 141 projects (87 projects) have received project approval, either for all project phases or for early phases only.

The projects are, for the most part, major ones that require extensive environmental approval processes, complex design and right of way acquisition before construction begins. The applications approved so far are for initial, lower cost phases as the program provides funding, in many cases, to "jump start" the projects and allow lead agencies to build consensus and provide a basis for additional funding. When applications for higher-cost right of way and construction phases are received, after completion of environmental and design phases, expenditures will accelerate.

Overall, almost two thirds of the originally scheduled projects, totaling just over \$900 million, have received application approval. By July 2002, the department anticipates that 121 projects worth \$1.46 billion will have been approved, with more than \$800 million allocated.

About \$1.8 billion worth of projects are expected to begin construction by the end of this calendar year, with an initial commitment of about \$575 million. Projects include:

- Improvements on State Route 50 at Sunrise Boulevard in Sacramento County.
- Improvements to the interchange of Routes 85 and 87 in Santa Clara County.
- Soundwalls related to the Route 22 HOV project in Orange County.
- Improvements to the interchange of Routes 5 and 805 in San Diego County.
- The first of several phases to improve the interchange of Routes 94 and 125 in San Diego County.
- Improvements related to the Capital rail corridor at Harder Road in Hayward.
- Ocean Boulevard Light Rail in San Francisco.
- Santa Monica Boulevard in West Hollywood.
- Sidings and signal improvements on two Metrolink Lines.
- Improvements in the Caltrain Peninsula rail corridor.
- Phase 1 of the Balboa Park BART/SF Muni Metro station.

- Remodeling the intersection of Olympic Boulevard and Mateo and Porter Streets in Los Angeles.
- Improvements on State Route 4 in Pittsburg in Contra Costa County.

In addition to construction projects, the Governor's program has allocated funding for ferries for the Baylink Ferry in Vallejo, hydrogen fuel cell buses and a fueling facility for AC Transit in Alameda County, buses for Santa Cruz Metropolitan Transit District and the North County Transit District in San Diego County, and a locomotive for the Coaster Commuter Rail. Among the studies being financed by the program are:

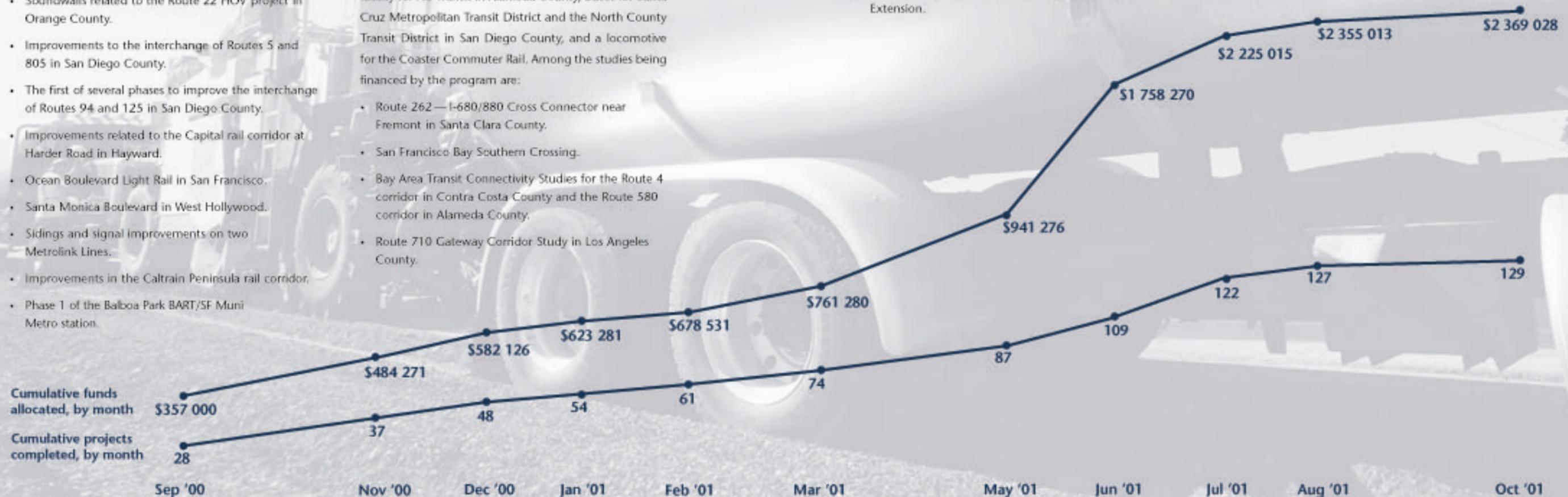
- Route 262—1-680/880 Cross Connector near Fremont in Santa Clara County.
- San Francisco Bay Southern Crossing.
- Bay Area Transit Connectivity Studies for the Route 4 corridor in Contra Costa County and the Route 580 corridor in Alameda County.
- Route 710 Gateway Corridor Study in Los Angeles County.

- Route 101 Corridor Study in Ventura and Los Angeles counties.
- Route 180 environmental studies in Fresno County

Funding of \$41.5 million has been allocated to two clean air programs—SECAT, near Sacramento and the San Joaquin Valley Emergency Clean Air Attainment Program. Funding has been provided to the North Coast Railroad Authority to initiate work to reopen and upgrade the railroad. Funding includes \$500,000 to define the scope, cost and schedule for the projects necessary to reopen and upgrade to Class 2 and 3 standards; \$100,000 for preliminary engineering to determine work required to comply with the Environmental Consent Decree; \$10 million to repay debts and \$5.5 million for a fund loan repayment. Funding has been allocated to initiate project development work on the following key projects:

- \$ 8 million for BART to San Jose in Santa Clara County.
- \$15 million for Route 24, Caldecott Tunnel, in Alameda and Contra Costa counties.
- \$19.5 million for the Los Angeles Eastside Transit Extension.

- \$ 4.7 million for Los Angeles Mid-City Bus Rapid Transit System.
- \$12.3 million for Los Angeles - San Fernando Valley Transit Extension.
- \$15 million for Route 405 northbound HOV through Sepulveda Pass.
- \$4 million for Route 101/405 Interchange improvements in LA County.
- \$955,000 for Route 15 southbound truck climbing lanes in San Bernardino County.
- \$25 million for Route 52, a new expressway in San Diego County.
- \$10.8 million for Route 56, a new freeway, in San Diego County.
- \$1.6 million for Route 99 at Shaw Avenue in Fresno.
- \$1.9 million for Route 99 at Seventh Standard Road in Kern County.



Getting Ready for When The *Snow Flies*

Photos by Don Tateishi



By August 15th, with smoke from the "Gap" forest fire rolling across Interstate 80 in the high Sierra in Nevada County, Dale Tenbroeck and his District 3 Maintenance Team in Placerville, Kyburz, Lake Tahoe, Kingvale, Whitmore and Auburn have already been long at work, getting ready for the winter snow season.

"Even as we wrapped up last year's snow season," Tenbroeck, a 44-year Maintenance veteran says, "we were gauging the wear and tear on our vehicle fleet and checking the inventory of abrasive and deicing materials in order to know what to request next year. Plow blades on our trucks and motor graders are worn and have to be replaced. Equipment sheds and dormitories, many of them decades old and in need of repair, also must be maintained. We also check on the condition of our storage buildings and often have to order repairs. They're getting old. Winters are tough on

them, vehicles back into them, loaders run into them and the abrasive and deicing materials are corrosive."

There is wear and tear on trucks and spreaders. Windshields often must be replaced and equipment must be painted after a winter spent fighting snow. Spreader bodies are replaced with dump bodies and snow plows and wing plows have to be taken off many of the trucks. Motor graders and trucks are shipped from the Sierra maintenance stations to those in the Valley to begin duty in regular maintenance work. As winter approaches, these will be brought back to the mountains and readied for the snow season. District 3 has ordered several systems that will allow it to refit dump and spreader bodies in a matter of minutes at maintenance stations, rather than having to make the trip to the equipment shop in Marysville.

Vacuum trucks clean abrasives from downdrains and deposit them at special holding areas for later safe disposal.



Maintenance staffs also have to look to the condition of their system. Temperature extremes, precipitation and chained-up trucks give the roads a beating, and the abrasives that provide traction for vehicles have been pushed to the side of the road where they build up on shoulders and clog culverts, drop inlets and slope drains. The materials must be swept from the shoulders and cleaned from the drains.

These activities generally are carried out over the summer and early fall. "If we're lucky, we're ahead of it by the time the first snow flies," says Tenbroeck.

As snow fighting operations have grown, they have more and more become a battle for runoff purity.

As fall approaches, the high mountain maintenance territories check their contracts for materials, go over their rosters of permanent intermittent operators who are brought in during storms, assure there are enough tire chains (a truck-mounted snowplow will go through a set of chains every two to three days), and stock with propane and oxygen the Gaz Ex exploders mounted at critical avalanche locations.



Fran Sandwith and her crew at Kingvale look after the snowfighters as if they were family.

The cooks in dormitories at Lake Tahoe, Whitmore and Kingvale have to make sure suppliers are available to provide food for the more than 50 000 meals to be cooked for hungry snowfighters, and the dormitories themselves must be cleaned, repaired and ready for occupancy.

Back in 1947, Maintenance's 45 employees operated six rotaries and nine push plows to keep 48 km of two-lane highway over the Sierra open. It was not uncommon to keep only one lane open and to escort the travelers through. Today, Caltrans spends about 175 person years over the winter months to keep the road operating. Its equipment fleet includes 18 plow trucks, 27 plow/sanders, 21 graders and 15 snow blowers. In the most recent winter, the department used more than 1250 tonnes of salt.

And even as the operation has grown and evolved, fighting the snow has become more and more a battle for water purity, especially amid the tender ecology of Lake Tahoe. Caltrans has whittled down its use of salt even as a flood-tide of skiers, gamblers, interstate travelers and mountain residents has taken to the roads.

The Caltrans maintenance station at Myers, just south of State Route 50 in the Tahoe Basin, is in a constant battle to keep abrasives and salt out of the lake. Today, Caltrans uses mostly brine, in combination with abrasives, rather

than straight salt, because it requires less salt and is easier to control and more effective as a de-icer. The department orders a special type of sand for Lake Tahoe

After the snow is off the roads, Caltrans sweepers are in operation 24 hours a day, seven days a week, sweeping up the salt and abrasives that the winter operations did not catch.

that is harder than the sand used elsewhere and contains a minimum amount of phosphates. It does not erode into dust as easily as other sands. And dust is how the majority of pollution, including phosphates that promote algae growth, arrives on the surface of Lake Tahoe.

In winter, Caltrans removes the snow from the roadways at Lake Tahoe as quickly as possible and trucks it to a snow storage area near South Lake Tahoe. The area, a 6.0 ha plot that is entirely contained by berms and silt fences, has been graded to allow slow surface movement of the melting snow into two successive settlement ponds to contain the salt and abrasives. After the snow is off the roads, Caltrans sweepers are in operation 24 hours a day, seven days a week, sweeping up the salt and abrasives that the winter operations did not catch. Caltrans also vacuums material from the drop inlet drains and culverts along Tahoe highways. All of this goes to the snow storage area, where it is stored and later sold as an ingredient for making compost.

Today, in late August, the pile of last year's snow at the storage area is still melting.

Pete Azevedo, Brian Carlson and Norm Butts, in South Lake Tahoe, keep the winter traffic moving around the lake.



retire this year, after 44 years of taking on the snow in one capacity or another. He leaves an operation in good hands – those of Pete Azevedo, Norm Butts and Brian Carlson at South Lake

Tahoe and Dale Bourne, Jim Edson and Jerry Lander at Kingvale – as well as hundreds of other snowfighters, people to whom the tourists, gamblers, skiers, truckers and thousands of other travelers along the Sierra's highways owe an enormous debt of gratitude.

—Gene Berthelsen

On 15.3 km of hot highway on this July day in Colusa County, between yellow-green rice paddies and geometric rows of tomato plants, Joe Peterson and Caltrans District 3 are exploring a roadway rehabilitation technique that has the promise of cutting cost, increasing motorist safety and adding years of pavement life.

The rehab method is known as cold-foam, in-place recycling, a technique that has been commonly in use in resource-hungry countries around the world for decades, but not in the United States, where energy and materials have been abundant.

State Route 20, which crisscrosses California's Sacramento Valley, has been a problematic road for a number of years. The original route of General John C. Fremont between the great valley and the California coast, the highway more or less evolved from an Indian trail, rather than as an engineered highway.

Caltrans has maintained the highway for several decades by digging out problem spots or overlaying the pavement with varying thicknesses of asphalt that range from 25 to 75 mm. Such treatments generally provide two to five years of service.

"Pavement generally fails from the bottom up," says Joe Peterson, Materials Engineer for Caltrans District 3. "And as long as we were not rebuilding the pavement down to the base, the same problems tended to occur over and over."

"Given the length of Route 20," says Peterson, "what that meant was a kind of continuous cycling of rehab and repair projects that we'd never finish. We'd get to the end of the road and have to start over."

Frustrated with this state of affairs, Peterson looked for other alternatives. In 1998 he attended a presentation on cold-foam recycling by David Collings of South Africa. "I was attracted by the fact that this technique recycled the pavement all the way down to the base, removing pavement failures and trouble spots at the point of origin."

Peterson then began a two-year campaign to try the technique at Caltrans and eventually was granted permission to use it on three pilot projects in North Region. The Route 20 project is the first. Two additional ones, another on Route 20 and one on Route 89, will be completed in the next three years.

Cold-foam asphalt recycling essentially rebuilds the highway from the base up at a rate of about eight meters per minute.



"Pavement generally fails from the bottom up," says Joe Peterson, Materials Engineer for Caltrans District 3. "And as long as we were not rebuilding the pavement down to the base, the same problems tended to occur over and over."



Cold-Foam Asphalt Recycling

Photos by Don Tateishi

Studies of cold-foam asphalt recycling elsewhere indicate that pavement lifetime is about doubled, when compared to overlays.

And today, two trains of equipment operated by Baldwin Constructors and Western Pavement Stabilization are eating up and spitting out State Route 20 at a rate of eight meters a minute, or up to 3.3 km a day.

The pavement is first dusted with the equivalent of 10 mm of Portland cement or 50 mm of Class II aggregate base. Then a pair of three-vehicle combinations move in, each consisting of a tanker loaded with binder at 180° C, a pavement recycler and a second tanker truck with water at ambient temperature. As the train moves forward, the recycler ingests the pavement and rotates it in a drum. The binder and water are injected into the drum, mixed with the recycled pavement, then deposited onto the base behind the recycler.

The finished product consists of 2.5 percent new AR-4000 binder, 2.0 percent water, existing asphalt concrete and 25 to 75 mm of the existing base.

"By injecting hot binder and cold water together we get the asphalt to foam much like a cup of cappuccino. This foam coats the flour-size recycled material, is remixed by the drum and, when compacted, forms a super-stabilized base," Peterson says. This base has many of the characteristics of asphalt

concrete. Two vibrating compactors follow the train and generally make four passes, "walking the roller" over the material to achieve 98 to 100-plus percent relative compaction. The material is then sprayed with water, rough

graded by "eyeball," then finished with a laser-controlled motor grader. The material is sprayed with water again, then a vibrating steel drum roller and a pneumatic roller make the surface ready for traffic. A wearing course of 25 mm of open-graded asphalt concrete is applied later.

None of the equipment in the train is proprietary.

The entire operation is done in segments of 300 meters each. It essentially rebuilds the roadway from the base to the crown in a matter of minutes, removing and recycling as much as 250 mm of pavement, the buildup from any number of previous overlays. The 300 m segments allow traffic control to be picked up and moved at the same pace as the train, minimizing the amount of inconvenience to the public.

When finished throughout the entire 15.3 km, the roadway will now be an engineered roadway. Joe Peterson chose the relatively long-length project in order to test the effectiveness of the recycling technique over a number of base and structural section conditions.

Studies of cold-foam asphalt recycling elsewhere indicate that pavement lifetime is about doubled, when compared to overlays. In addition, reuse of the existing pavement saves both energy and material costs, and the reduced amount of time spent working on the roadway results in greater safety both to motorists and workers. Other advantages of the technique include relatively low levels of noise and dust, and short durations of disruption at any particular location.

Peterson has high hopes for cold-foam asphalt recycling. "We could get as much as nine to 12 years out of this pavement for the equivalent cost of a 5-year strategy. And that would be a tremendous savings in cost, worker exposure, and delay to the traveling public," he says.

Cold-Foam Asphalt Recycling

Once the pavement has been recycled, it is rolled to 98 percent compaction, then graded for paving with a 25 mm wearing course of open-graded asphalt.



The entire operation is done in segments of 300 meters each. It essentially rebuilds the roadway from the base to the crown in a matter of minutes, removing and recycling as much as 250 mm of pavement, the buildup from any number of previous overlays.



The base is strengthened by dusting it with the equivalent of about 10 mm of Portland cement.

Caltrans Flexes its Power

By Stephen C. Prey
Coordinator,
Caltrans Energy Conservation Program



Managing a far-flung transportation system has always kept Caltrans conscious of the need for skillful management of energy usage. But when rolling blackouts loomed as a threat earlier this year, Governor Gray Davis asked the department to take extraordinary measures.

And it has done so. On average, in keeping with the objectives of the Flex Your Power program, Caltrans employees' actions reduced electricity

consumption by approximately 21 percent between January and July 2001 as compared to the same time in 2000, even accounting for variable weather conditions.

Added to the conservation efforts at Caltrans facilities, teams throughout the state continue to implement the award-winning light-emitting diode (LED) traffic signal upgrade program. When completed, Caltrans' statewide 24 hour per day traffic signal grid load will be reduced from 10.1 megawatts to about 0.8 megawatt, a reduction in power consumption of more than 92 percent.

At Caltrans facilities, staffers are working with the departments of Finance and General Services to implement a statewide energy and load management network. Activities include:

- Energy audits of Caltrans-owned facilities.
- Development/implementation of cost-effective conservation measures.
- Automation of current "Stage 2 and 3" turn-it-off activities.
- Installation of real time utility meters for local and remote energy consumption monitoring.

Energy conservation efforts on computer equipment have also contributed to the success. Turning off the equipment at the end of the day, phasing out non-energy efficient operating systems like Windows NT and using the "deep sleep" features in Windows or any version of Macintosh OS further reduce energy consumption during non-use periods. "Energy Star" computer equipment, flat screen video displays and replacing desk top computers with portables and docking stations all are reducing energy consumption by computers.

While it may seem as if everyone suddenly woke up and decided to save energy today, Caltrans and many other state and local agencies have a long history of conservation success. The recent crisis has made it possible to increase the speed of implementation for many conservation projects under development for the last five to 10 years.

Caltrans implemented its first major energy conservation program back in the mid-1970s. One of the department's largest electrical load groups is its lighting systems on roadways. In the days of cheap electricity, many roadways were fully lit. But even back then, Caltrans took a bold step and re-thought its lighting systems.

Safety, along with energy savings, drove the effort. Lighting up points of conflict and using lighting to highlight the unusual on roadways heightened drivers' awareness of changing conditions.



Lynn G. Harrison

Caltrans removed so many fixtures and poles that the Maintenance and New Construction divisions had a free source of material well into the 1980s. In fact, rumor has it that some districts still have a few of the poles and fixtures available for replacement use. In 1984, department staff estimated that more than 50 percent of the pre-1974 installed base and post-1975 project design packages were modified to meet the new standards. The legacy of this project has kept over 50 megawatts of load off the grid. Further energy savings occurred by upgrading incandescent fixtures to more efficient fixtures, as new systems became cost-effective. Today's sodium vapor lighting systems are a direct result of those efforts.

In the 1980s, Caltrans, like the rest of the state, focused its energy conservation activities on state-owned buildings. The majority of the efforts focused on identifying and implementing low-or no-cost conservation opportunities. In 1983, Caltrans management established the Department's Resource Conservation Program. All internal conservation programs, including energy, water, recycling and alternative energy technology efforts, were grouped into a single program. Since that date, this program's staff has assisted all Caltrans units in their efforts to conserve state resources.

By 1988, sample facility audits resulted in two prototype projects involving multiple sites. One project had Caltrans staff implement conservation measures using State Energy Efficiency Bond funds administered by the Public Works Board and General Services. The second involved Caltrans and a private sector energy services contractor, ESCO.

ESCO funded all phases of the audit, design, and implementation phases. Monthly energy savings were shared with the contractor to offset costs. The contractor's repayment period is 144 months. By 1990, ESCO had completed its work; Caltrans' annual net cost avoidance for that project has been about \$60,000 after payments to the contractor.

In 1993, Caltrans management directed the conservation staff to expand the ESCO prototype to all department-owned facilities. Caltrans worked with General Services and the University of California/California State University to develop a state ESCO program. After state law and statutes were modified, Caltrans leadership had demonstrated how the concept could work. But

just as the department was about to implement its statewide ESCO program, the energy shortages of 2000/2001 interfered. Due to emergency changes in how the state planned to fund energy projects, Caltrans and other agencies were forced to modify their facilities conservation programs.

Again, Caltrans staff found a way to do it better. While most state agencies are doing one building at a time, Caltrans staff has modified its ESCO contract to implement a statewide

program. That contract is currently awaiting final approval at General Services and Finance.

Also in the early 1990's, Caltrans staff in District 6 started development work on a conservation project that eventually grew into an international industry, LED traffic signal technology. The Caltrans LED program has won awards from the California Energy Commission and the federal Department of



William Hall

New energy-efficient buildings, such as the District 4 headquarters in Oakland, are providing more comfortable work environments while saving energy.

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Caltrans Met the Summer Energy Challenge

FALL AND WINTER WILL TEST OUR COMMITMENT

By Maria Contreras-Sweet

Congratulations to Caltrans employees! You contributed to the state's success in meeting the energy challenge this summer. This active commitment set an example that helped Californians conserve electricity and prevent rolling blackouts.

This year, Caltrans and other state offices significantly cut electricity use from January through the end of August compared to the same period in 2000. For example, in monitoring 37 of the state's largest office buildings covering nearly 1114 800 m², the Department of General Services recorded an average 22.4 percent drop in electricity use. Despite hikes in utility rates, the state still saved more than \$800 000 in cities such as Sacramento, Los Angeles, San Francisco, Oakland, San Diego, Van Nuys and Riverside.



While the state has made extraordinary progress in bringing new power generation on line, the threat of shortages remains real. Conservation, now and for the long term, will continue to be an important part of the strategy to keep the lights on.

Fall and winter months present challenges just as tough as the summer months. There are increased demands for power across the state for lighting, heating and other priorities. So we cannot let our guard down just because the seasons have changed.



Following are some practical cool weather tips from the Flex Your Power website that will help all of us to continue to save power, save money and continue serving the people of California.

- Use Your Appliances Wisely
- Turn off appliances, lights and equipment when not in use.

- To help prevent electricity outages, do not run large appliances between 5-9 a.m. and 4-7 p.m.
- Do your laundry efficiently by using the warm or cold water setting for washing your clothes and always use cold water to rinse clothes.
- Conserve energy by running your dishwasher only when it is fully loaded, and turn off the dry cycle to allow dishes to air-dry instead.

Inexpensive Energy Solutions

- Choose Energy Star® products. Purchase compact fluorescent light bulbs. They use a quarter of the energy and last five to 10 times longer than conventional light bulbs.
- Reduce your hot water temperature. Set your water heater to the "normal" setting or 120 degrees unless the owner's manual for your dishwasher requires a higher setting.
- Replace furnace filters once a month. Dirty filters restrict airflow and increase energy use. Keep your furnace clean, lubricated and properly adjusted.
- Install low-flow showerheads. You'll be surprised how much this simple device can cut your hot water costs.
- Wrap your hot water tank with jacket insulation. If your water is heated by gas, be sure to leave the air intake vent uncovered.

Eliminate Wasted Energy

- Turn off lights in unoccupied rooms.
- Unplug electronic devices and chargers when they're not in use.
- Close the damper on your fireplace when you're not using it.
- Unplug that spare refrigerator in the garage if you don't really need it.
- Set your thermostat to 68 degrees when you're home and 55 degrees at night, or off.

Check out www.flexyourpower.ca.gov for more information and ways to save money!

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Energy. In the spring of 2001, Gerald "Jerry" Tripp of District 6 Maintenance Electrical was awarded \$50,000 for his pioneering efforts in LED signal development.

As defined in Executive Order W-83-94, Caltrans has developed a conservation plan that identifies existing and potential energy conservation opportunities. Caltrans is currently in the study or implementation phase of 24 such energy conservation projects. The energy conservation measures are separated into seven categories:

Traffic Signals - Lighting modules to control the flow of traffic at intersections and "on ramp" metering (a sub-set of signals are beacons and status indicators).

Roadway Lighting - "Points of Conflict" on state-owned roadways (federal interstate highways, state highways and roads) are lighted at intersections, on/off ramps, and points of merging and separation.

Roadway Sign Lighting - Illumination of informational signage located over the roadway.

Bridges and Tunnels - Lighting systems used on bridges and tunnels.

Facility Operations - Energy consumed in the operation of office and other buildings occupied by Caltrans staff.

Procedures - Operational procedures that reduce energy consumption or utility costs.

Bulk Energy Procurement - Savings as a direct result of buying energy in large discount blocks.

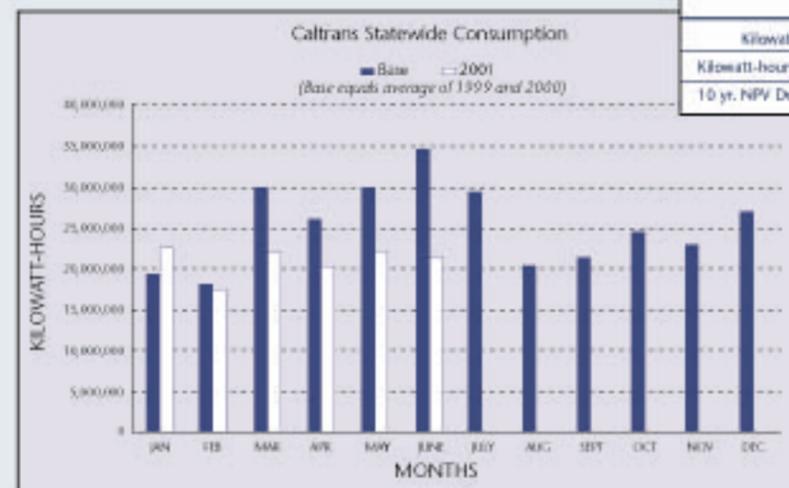
If all 24 conservation projects were fully implemented, the department would:

- Reduce daytime and/or nighttime electrical grid loads by about 31 megawatts.
- Save about 156 million kilowatt-hours in annual energy consumption.
- Save some maintenance costs for selected projects.
- Pay back project costs through savings in energy and maintenance costs.
- Save a combination of \$127 million in anticipated 10-year net savings from implemented project elements. Potential savings of an additional \$53 million over 10 years of operations from project elements are yet to be implemented.

Caltrans has identified a potential 10-year net savings (avoided costs) of about \$181 million to apply against a 10-year goal of \$51.06 million as established by General Services in response to Executive Order W-83-94.

Caltrans is in the middle of a success story and everyone who has contributed can be proud of his or her efforts. Hats off to every employee who turned off lights when leaving a room, turned off equipment at the end of the workday, worked in uncomfortable conditions or turned off unnecessary equipment during power alerts.

Your efforts have paid off.



SAVINGS AREAS	IMPLEMENTED PROJECTS	PLANNING STAGE PROJECTS	TOTALS
Kilowatts	15,955	15,389	31,344
Kilowatt-hours/year	92,300,000	64,090,000	156,390,000
10 yr. NPV Dollars	\$127,500,000	\$53,300,000	\$180,800,000

Desk Set

Photos by Don Tateishi

Every one of the staff of the Caltrans Library and History Center at 1120 N Street in Sacramento has seen "Desk Set," that fine old classic film that starred Spencer Tracy and Katherine Hepburn. In the film, Tracy has arrived to install a new computer that is thought to be capable of answering any question put to it. Hepburn heads up a staff of reference librarians who have been running down facts quite capably for years. There's the inevitable conflict, but the story resolves itself when the librarians and the computer realize they need each other.

Laurel Clark, who has served in a number of positions in the Caltrans library over her 20 years of service and is a bit of an honorary engineer, has trod much the same path. In fact, her library may be among the most computer-literate spots in all of Caltrans, as library staff use an array of databases, Internet sites and linkages to run down information requests that range from the routine to the arcane to the impossible.

Computers make the world Clark's reference oyster. In fact, as she explains, librarians have been at the forefront of using computers since they were invented.

The Caltrans library is a rich and responsive resource that moves heaven and earth to provide answers to just about any request imaginable for information about transportation and related matters. Last year, library staff answered more than 3000 requests for technical information on everything from the use of magnesium chloride for dust control to the habitat of the monadenia land snail and the lone manzanita.

Clark, who holds a masters degree in library science, is assisted by a staff of three professional librarians, who hold six additional advanced degrees between them. She is also ably assisted by one Caltrans administrator, a library technical assistant and a student assistant.



Laurel Clark oversees a staff of six that find answers to the thousands of questions asked by Caltrans employees each year.

Librarian Shirleigh Brannon specializes in Caltrans history and can run down just about anything that ever happened here (even when it was just the Division of Highways.) Librarian Susan Haake is a specialist in answering technical questions, especially those dealing with engineering. Librarian Diana

Watkins is the computer systems specialist and is responsible for cataloging the library's more than 70 000 volumes. Library Technical Assistant Kari Ehrman takes care of the library's web page, which, by the way, contains the library's quarterly newsletter. Administrator Patti Ehret works on reference and inter-library loan requests and handles the 525 periodical subscriptions received by the library. Student Assistant Nick Lamb helps things run smoothly around the library's history center and with the cataloging activities.

The library regularly provides assistance with locating old construction contracts, final construction reports, as-builts, plans and profiles, USGS maps and various department maps. Recently, from its collection of 100 000 historic

photographs, it has come up with old photographs of the Feather River Canyon Bridge on Route 70 and of the con-

struction and opening of the Arroyo Seco Parkway. Shirleigh found a photograph of the original construction of Route 66 in San Bernardino County that was used on television's Antiques Roadshow in May 2001. Because the historic Tower Bridge in Sacramento is in for a re-painting, the library was asked to do research into its original color.

Perhaps the most novel request came when an arts group in San Francisco asked Laurel Clark to find out whether it was possible to cut transverse grooves in a highway so that travelers could have their tires play "I Left My Heart in San Francisco" as they drove into the city. (It is possible, but would be a pain to maintain and could create safety problems.)

That's the fun stuff.

The library's workaday world involves 70 000 books and reports. It subscribes to more than 500 periodicals and newsletters covering a variety of transportation-related subjects including engineering, planning, policy, the environment, and management. The library's history collection includes maps, documents and historic photographs of the department and development of California's transportation system.

The library's sophisticated computer search capability uses an array of technical data bases, including the Transportation Research Information Service (TRIS); Compendex, an engineering data base that contains information about civil and other engineering as well as transportation information; Transport (CD-ROM), a specialized data base containing TRIS and additional transportation information resources; and a number of managerial, supervisorial, environmental and other data bases to run down questions that come from all over the department.

The journal, from experience, knows the library and its librarians as one of the most service-oriented organizations in Caltrans that regularly fields questions on obscure subjects and returns the answers promptly and with a smile.

— Gene Berthelsen



The Caltrans library staff takes requests by phone, fax or email, but a walk-in is best. Service with a smile.

The library provides the following services:

Reference: requests can be made in person, by phone, fax or email (please include a phone number with requests). Non-reference library materials circulate for a month and are renewable.

Literature searches: library staff search a wide range of online technical and business related databases for listings of specific journals and report titles that go beyond the walls of the library. Searches can be downloaded and emailed to staff. Topics of continuing interest can be updated periodically.

Online Catalog: the library's online catalog, covering titles cataloged since 1988, is accessible from its web page. Anyone needing assistance can call the library.

Interlibrary Loan: the library has access to the holdings of more than 36 000 libraries, including the Institute of Transportation Studies Library at UC Berkeley. If the Caltrans library does not have a needed title, it can borrow from another library.

Journal Routing: the library routes more than 250 journals and newsletters to headquarters-based staff, and loans individual issues to district staff upon request. A list of the titles received by the library is on its web page.

Library Publication: the library distributes Selected New Items, a quarterly list of the new titles. Anyone wishing to be added to the mailing list to receive a paper copy or an email copy should notify the library. The list is also posted on the library's web page.

Departmental Information and Current Awareness: the library serves as a central collection point for most departmental publications and for referrals to other Caltrans information sources. It maintains a pamphlet file of current news, trends, and statistics on topics relevant to California transportation and the economy.

Contact the library at (916) 654-4601, email: library@dot.gov.ca; or via the department's Intranet at <http://www.isc.dot.gov/library/>.

By Terry Parker
Mass Transportation Program
Photos by Don Tateishi

The TOD at Oakland City Center is transforming downtown Oakland into a dynamic, walkable beehive of commercial, educational and government activity.

Transit Oriented Development

A strategy for making transit work better

The tide of new Californians, it seems, never reverses.

Through good times and bad, about a half million new citizens pour across the state's borders every year. In general, California's record in making use of urban land compares well with those of other western states, but suburban development is threatening endangered habitat and open space and unique agricultural land.

From the perspective of growth accommodation and better quality of life, Transit Oriented Development is one approach that has the potential to lessen this threat.

Transit-Oriented Development – TOD – is, along with “new urbanism,” among the hottest subjects in community planning these days. What is a TOD, what makes one work, and what should Caltrans' role be? A report recently authored by the Caltrans Division of Mass Transportation, with assistance from the consulting firm of Parsons Brinckerhoff, attempts to deal with these questions.

What a TOD is

The more you look into the definition of TODs, the harder it is to get your arms around what they are. The outsider's notion,

that a TOD is a housing development near a rail station, is way too simplistic. The engine that drives the Oakland City Center, for example, is government and private offices. The Willow center in Long Beach contains a strip mall and a large grocery store. The budding TOD at 3rd Street in San Francisco contains lofts, restaurants and galleries. The city of Hayward, now embarking on developing a TOD, is using redevelopment funds to create a new central business district. And since the most successful TODs combine a multiplicity of uses, many of which may require parking, abundant parking is not always a negative factor.

Essentially, a TOD is an activity center, whether it be residential, commercial or offices, that is near a transit center. TODs vary widely, but usually have some or all of the following:

- Concentration of uses within a distance easily covered in a five-to-10 minute walk from a transit station.
- Pedestrian and transit-friendly site design that creates a safe, walkable environment.
- Orientation of a core commercial area (and the most intense development) around the central transit stop.
- Public spaces and supportive retail uses (dry cleaners, banks, ATMs, day care, etc) located immediately nearby.
- A mix of uses that allows daytime activities to be accomplished by walking, so that reliance on transit remains convenient.
- Reduction in parking and setback requirements.
- Gradual reduction in development intensity from the center to the periphery.
- Varying styles and densities of housing.

By concentrating residential and commercial land uses around a transit stop, transit-oriented developments invite residents and employees to use cars less and transit more. An increase in transit ridership is often cited as the primary benefit of TODs and, in fact, people who live near rail stations are much more likely to commute by transit than those living farther away.

Proponents of TODs argue that development around transit stops is likely to provide regional or community-wide benefits of:

- Increased regional accessibility and mobility.
- Reduced dependence upon cars.
- Better coordination of land uses and transportation investments.
- Cost-effective use of land near transit stations.
- Creation of additional revenue for transit agencies through joint development agreements or property sales.
- More affordable and greater variety of housing.

Communities benefit from TODs through:

- Station-area development and revitalization.
- Increased property values.
- Interesting communities and gathering places.

The record for significant new development around stations has been spotty, so far, although there is evidence that, as California's streets and highways get more crowded and transit ridership grows, investment around transit stations is

picking up. National experience suggests that the success of transit stations in stimulating development and redevelopment depends on secondary factors.

Producing a TOD Success

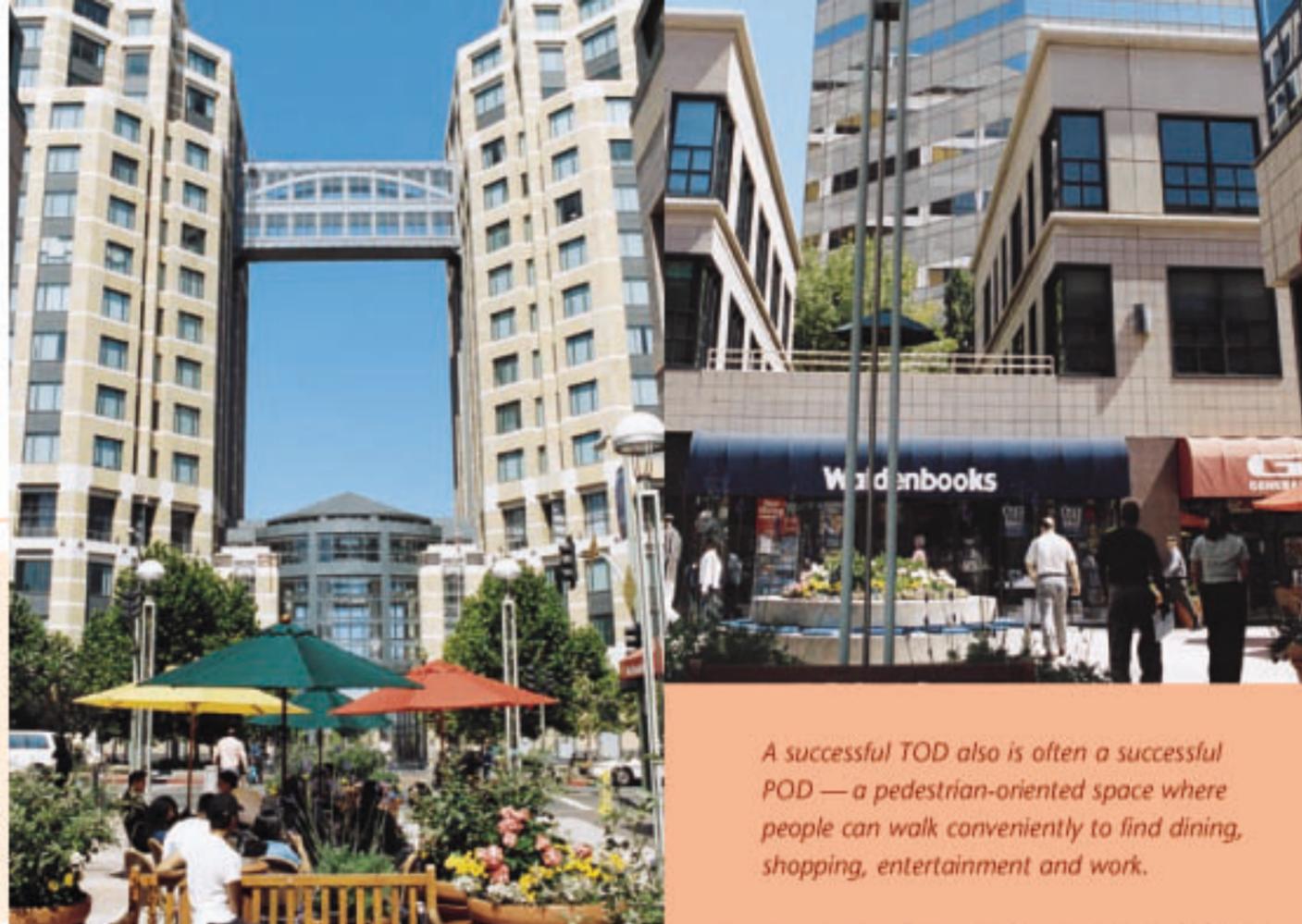
Ratna Amin, of Cambridge Systematics, which is developing a TOD Internet database for Caltrans, puts it simply: "You need a lot of everything," she says.

The most successful TODs in California have been helped along by urban redevelopment, often with the establishment of government offices, particularly those that offer services to the citizenry. The Oakland City Center, for example, is home to Oakland City Hall and other city offices, a mammoth California state office building, federal offices, the convention and visitor's bureau, and a satellite campus of Hayward State University. And these initial developments have stimulated private offices, hotels and public services.

Very often, a successful TOD is also a successful POD – a pedestrian-oriented space. Cities wishing to develop a TOD would do well to consider the streetscape around the development and do everything they can to make it an agreeable space in which to linger. Wide sidewalks, trees, lighting, textured paving, benches, trash cans that fit the overall streetscape and plantings all help, but a concentration of stores or other activity centers is crucial.

Most TODs take time, since activities around stations do not change overnight and often do so only after large investments, usually through urban redevelopment. Surrounding land uses that are unattractive or unsafe, or are primarily auto-oriented, tend to inhibit transit-oriented development, as do poorly designed connections to neighborhoods. Numerous, small parcels held by a variety of owners also can create a barrier to station area development.

TODs require supportive neighborhoods and communities; few successful station area development projects have occurred where surrounding neighborhoods oppose higher density or nonresidential developments. Leadership from regional and local institutions and, often, a political champion, are also helpful.



A successful TOD also is often a successful POD — a pedestrian-oriented space where people can walk conveniently to find dining, shopping, entertainment and work.

The benefits of TODs from connecting concentrated activity centers by transit include reduced automobile travel and associated air pollution and other impacts.



Local agencies can encourage TOD success by using the powers of redevelopment agencies to assemble land, institute tax increment financing, help pay for infrastructure investments or secure innovative financing. They can also enact zoning ordinances that are consistent with the desired development, provide density bonuses, transfer development rights and put approvals on a fast track. And, importantly, local master plans and design guidelines can ensure that nearby development is appropriate.

How Caltrans Could Help Influence TOD Success

The Caltrans Community Based Transportation Planning Grant Program already provides funds for transportation and land use planning projects that support livable communities. Planning projects that promote long-term sustainable economic growth or improve mobility and transportation choices are eligible for possible funding. These include transit-oriented and mixed-use development, pedestrian, bicycle and transit linkages, jobs and housing balance, re-use or infill and compact development.

In addition, the Caltrans report on TODs will recommend a set of promising state-level strategies for encouraging success of the developments. These can be grouped into state policies and practices, local planning and zoning actions, finance and implementation and information dissemination and research.

State Policies and Practices — Over the past several years, and particularly with implementation of the Governor's Traffic Congestion Relief Program, California has led the country in new bus and rail transit infrastructure, investing more than \$17 billion in transit between 1990 and 2000. Eighty percent of the approximately \$7.1 billion in transportation funds available to the San Francisco Bay Area over the next several years will be dedicated to mass transit projects. Plans include a system of express buses and money for infrastructure and roadways around high-density transit villages near BART stations.

If these investments are to affect California's development patterns, the state will have to adopt policies and practices that promote a transit-friendly urban form. Transportation, housing and other programs, properly directed, can help provide alternatives to automobiles, enhance overall transportation performance and reinforce this significant investment in transit. **State policies that are potentially fruitful include:**

- Targeting of investments to areas with locally adopted TOD plans.
- Allowing more flexibility in the use of transportation funds for TOD.
- Funding TOD demonstration projects.
- Making it easier to use excess state lands for TOD.
- Looking at ways to help expedite local development approvals for TOD.

Local Planning and Zoning

California's Transit Villages Act of 1994 encourages cities and counties to prepare transit village development districts with a mix of uses that cluster around transit stations. And although it establishes that transit village plans are eligible for transportation funding, it provides none. Consequently, TOD planning in California has been the exception rather than the rule. Developers still face difficulty in securing land use entitlements to build TODs, even when state and local policies seem to encourage this land use pattern.

The State of California could help overcome obstacles in the development entitlement process by accounting for the benefits of TOD more accurately, and offering incentives, guidance and funding that further TOD-friendly plans and policies by local governments.

For example, local jurisdiction development analyses, which are based on site-specific impacts rather than accounting for community-wide benefits, typically conclude that TODs produce more traffic around transit stops than would be created by lower density development. It is often true that TODs result in more localized traffic, even when accounting for the higher mode share for walking and transit. However, there are significant environmental and social benefits from connecting concentrated activity

centers by transit. These benefits, such as reduced growth in automobile travel and associated air pollution and other impacts, are not typically taken into account in individual site-specific project analyses that are required during the local government approval process.

Finance and Implementation

Transit-Oriented Developments offer an important option for helping to answer California's need for more affordable housing by providing residents easier access to employment and also to offset payment for better housing with lower transportation costs. The higher densities found in TODs help to lower the expenditures needed to develop that housing in the first place.

Despite a strong real estate market outlook for TODs and favorable demographic trends, significant finance and implementation barriers to successful TOD projects exist. The mixed uses of many TOD projects make obtaining development financing more complicated. Affordable housing components typically require seven or more funding sources. In addition, California's local jurisdictions often lack both the necessary funding to prepare TOD plans, or the ability to provide financial incentives. **The state could help overcome finance and other obstacles by:**

- Providing financial incentives.
- Encouraging construction of medium- to high-density housing near transit.
- Creating a statewide TOD financing program.
- Helping to make private TOD mortgage instruments more widely available.

Information Dissemination and Research

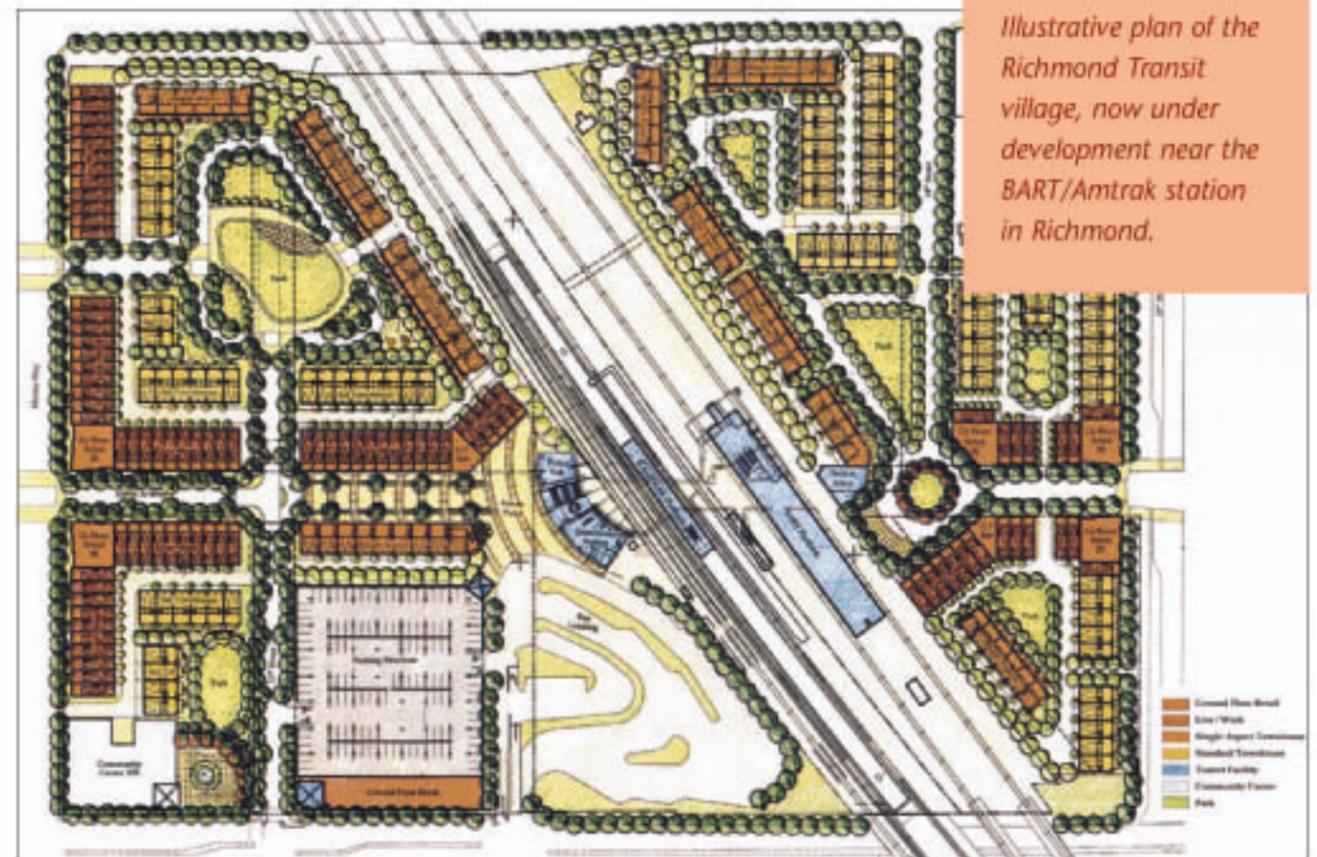
To assist with project entitlements and lender acceptance, local governments, transit agencies and developers need better information on benefits of TOD for neighborhoods, transportation networks and the fiscal health of cities. The state could define and fund research on such benefits and make them available. Furthermore, the state could develop strategies to get planning, implementation and benefits information into the hands of key stakeholders quickly and at low cost.

Architect's renderings depict homes at the Richmond Transit Village that is under development near the BART/Amtrak cross platform station in Richmond, California.



A policy committee that includes representatives from a number of state, regional, and local land use, transportation, housing, and private organizations is considering these strategies. The committee will determine a final set of recommendations that will be advisory but could lead to changes in legislation or establishing new state programs to facilitate and promote the broader implementation of transit-oriented development.

In the meantime, Caltrans is moving forward with several activities to promote TODs, including providing a database, via the Internet, of 25 California TOD case studies that will include photos and detailed implementation information. Caltrans also co-sponsored a nationwide conference in mid-September called "Rail-Volution," and is gathering and disseminating information for local agencies, developers and anyone who requests it.



Illustrative plan of the Richmond Transit village, now under development near the BART/Amtrak station in Richmond.



TOD is an Important Element of Oakland's Downtown Redevelopment

Downtown Oakland is a regional employment center in the Bay Area. But there are a number of areas within the downtown and surrounding it that are economically depressed or underutilized. After the Loma Prieta earthquake many brick buildings were damaged and have since been unused. The Oakland Redevelopment Agency is trying to reuse such properties while adding economic benefits for the city. Redevelopment in the downtown is an effort to revitalize the retail and housing sector.

Mayor Jerry Brown's '10K' program is another attempt at bring residents to the downtown and marketing it as a livable place. The city hopes this will make it a 24-hour activity area, thereby improving the perception of a safe neighborhood. The Jack London Square project, which is outside the station area, has been one such successful project for the city. The redevelopment agency is the proper agency that can handle redevelopment and revitalization but it faces an uncertain retail market and difficult environmental regulations. A favorable housing market has created the demand for housing near transit and urban facilities.

The agency has proposed a redevelopment area with downtown as one of the project areas. It participates in development by purchasing vacant and underutilized lots, then identifying feasible projects and, in partnership with the developer, financing the project. It also undertakes streetscape improvements and builds parking to accommodate higher traffic.

The city's Environmental Impact Analysis argues for lower parking requirements based on new development concentrated around BART Stations on 12th Street and 19th Street in addition to AC Transit Bus services and a proposed downtown bus shuttle system. The agency offers attractive financial incentives through redevelopment and historic preservation funds.

Downtown Oakland lies within a redevelopment area where tax increment financing is used to support public/private

Federal and State buildings in the City Center have attracted people and retail to the downtown as has the City Center project.

projects. The redevelopment agency currently is concentrating on building infrastructure and supporting market rate housing and retail development. Zoning requirements are already relaxed and favorable for high density mixed use development. The city is working in partnership with developers and investors to work out financing mechanisms and environmental assessments to make projects in the city more attractive.

The Oakland Redevelopment Agency has helped finance or has undertaken the preservation and seismic retrofitting of several office and retail

structures in the area. Successful projects include the Rotunda Building and the Plaza building. Similar policies to revitalize retail along Broadway have had limited success. More redevelopment is planned for the Uptown Area.

Federal and State buildings in the City Center have attracted people and retail to the downtown as has the City Center project. City Center Plaza and other landscape and pedestrian service improvements have been visibly successful. No new schools are proposed and no site is designated yet for other community amenities, but many mixed use projects are underway and more are being planned. More than 105 000 m² of office space, 700 residential units and 375 hotel rooms are under construction. About 5400 more units are under construction and about 2800 more are being planned.

Oakland's Redevelopment Agency has supplied much of the financial steam behind the revitalization of the city center.

HISTORIC PRESERVATION TAX CREDIT PROCESS:

Many of the buildings that were damaged in the Loma Prieta earthquake require huge investments for reuse. Expensive seismic retrofitting makes much development financially unfeasible. Such buildings are located in Oakland's downtown and are important historical landmarks. Their reuse will generate revenue for the city and contribute to the downtown appeal as a destination and attraction for cultural and economic activity. Oakland's Redevelopment Agency is the operating arm for implementing the Historic Preservation program and assessing project feasibility.

The agency uses city general funds and redevelopment funds to finance expensive seismic retrofitting in the redevelopment area. The agency has concentrated on important city landmarks such as The Rotunda building for reuse as office and retail development. Historic preservation funds are also provided to developers on a case-by-case basis.

Many of the old unreinforced brick buildings have been redeveloped. The Rotunda Building is a prize-winning project: the San Francisco Business Times Rehabilitation Deal of the Year Award. Other successful projects include the Plaza building and the Swans Market project.



The Road from Silicon

Photos by Don Tateishi



When the natives of the San Lorenzo Basin speak of the Silicon Valley, they pronounce the word "silicon" with a bit of ambivalence.

The San Lorenzo Valley, containing the bucolic towns of Boulder Creek, Brookdale, Ben Lomond and Felton along State Route 9, lies just over the Santa Cruz Mountains from the Santa Clara Valley. And as real estate values in the Santa Clara Valley have ratcheted skyward in synch with the dot-com revolution, two classes of newcomers have blessed the San Lorenzo Basin: those who can't afford Silicon Valley's real estate prices, and those who have so much money they don't have to live there.

Either way, silicon refugees are pouring over the mountain into the San Lorenzo Valley and driving real estate prices out of sight. They're also turning Route 9 into a racetrack.

Stand along Route 9 at 7:30 on a weekday morning, and you'll witness a parade of expensive iron, every SUV and luxury sport sedan occupied by a single driver and no one else. Drive toward Saratoga on Route 9 in the morning and expect to be swept aside by a river of BMWs, Boxsters, Jaguars and mountainous sport utes so threatening that you feel as if Alfred Hitchcock might have a camera set up on the cut-bank.

State Route 9 peels northward off Route 17 just after it rises out of San Jose toward Santa Cruz. A hook to the left and you're in the village of Los Gatos, a charming little burgh where sleek and trendy young mothers push babies in strollers that cost about as much as an upscale second-hand car. This village, tucked into the eastern foothills of the Santa Cruz Mountains, likes to call itself the "Gem of the Foothills," and we can see why. Its quaint buildings today show no sign of the 1989 Loma Prieta earthquake, which picked up the town and shook it like a dog with a sock.

Los Gatos got its name because Senora Noriega, wife of the original Spanish land grantee, was kept awake by the howl of mountain lions at night. Today, they're back, enjoying the occasional diet of a small dog or housecat that strays too far from the family digs.



On the hillsides of the Santa Clara Valley, Route 9 passes through the charming towns of Los Gatos and Saratoga.

Call Los Gatos "Carmel without the fog." There are lively taverns and restaurants, coffeehouses, galleries and boutiques with fashionable French names along streets adorned with wrought iron planters and antique streetlights. Route 9, also called Saratoga Road hereabouts, rumbles past, leaving all of this undisturbed, to course

northward toward Saratoga beneath tan oak, madron and eucalyptus, past homes, tucked back in the brush, that start at around a million dollars for three bedrooms and two baths.

Saratoga has its own set of charms, including sculpted trees adorned with twinkle lights along Route 9. Here,



The one-time Caltrans Maintenance Superintendent's house, near where Route 9 intersects with Route 85, is now used as a base of operations during snowstorms and other emergencies.

jaywalking is serious business as the sport utes bear down on you, but the street is narrow and friendly enough that you still feel you can do it. Up the hill from Saratoga are the Saratoga Springs, a popular campground. Once known as Congress Springs, it prefers the snootier moniker, "Saratoga."

Over the hill into Big Basin, Route 9, threading its way through back-country redwoods, is a race-way for SUVs from Silicon Valley.

Saratoga's European history started in 1776, when Captain Juan Bautista de Anza founded it, but it lay as a rancho until someone decided the redwood trees on the hills were an economic commodity. Route 9 came into existence as a toll road to serve the lumber industry in the mid-19th Century. But Saratoga really hit its stride in the 1890s when a Frenchman with some grape cuttings from his native France showed up and founded the Paul Masson winery. It's just up Route 9 from town.

The ladies behind the desk at the Saratoga Chamber of Commerce prefer not to venture up Route 9. We snicker behind our hand at their fear of a snaky uphill road, but when we get on it, we find out that it isn't the curves that make this road a terror. It's the other drivers. At the wheel of an expensive German sports car, we might be tempted by these treacherous switchbacks and 8 percent grades, but instead, we move our Dodge Durango sedately to the side every few hundred meters to let these Jackie Stewarts and Juan Manual Fangios roar skyward, unimpeded.

Once in a while, down the hillside, we get a glimpse of the cause of all the excitement: the Santa Clara Valley, once fruit orchards, but now chockablock with development. Must be pretty at night.



At the top, where Route 9 intersects with Skyline Boulevard (State Route 35) we are met by Loren Lazarotti, a District 5 Maintenance Superintendent and our guide for the rest of the trip. Loren is a big, ruddy, good-natured guy who has been around for 38 years and knows about a lot of stuff besides the road, which he knows very well.

Lazarotti was here when the Loma Prieta Earthquake struck in 1989, and again in 1995 for El Nino. "The earthquake changed the hydrology of the hills," he says. "Suddenly we were getting springs, slides and slipouts where we'd never had them before. And El Nino made things worse." A slide discovered by Lazarotti that year now bears his name. Every so often, Route 9 gets a dusting of winter snow that brings out sledders and snow boarders. Then there are those pesky drivers,

As if to punctuate Lazarotti's concerns, we aren't more than a kilometer down Route 9 into the Big Basin when we find a Toyota pickup on its top, the driver shaken but unhurt. A crew from the California Department of Forestry is tending to him.

A few hundred meters below that, from a grassy lookout point, we survey the entire Big Basin, from the San Gregorio River on the north, to the Monterey Peninsula



on the south. It's a spectacular view, with thousands of hectares of redwoods, Doug fir, maples, live oak and tan oak that, from here, obscure any evidence of human habitation. There are so many trees, it's hard to imagine that rapacious loggers a century ago denuded these slopes. Mother Nature, who dumps more than two meters of rain on this basin every year, doesn't get angry. She gets even.

Down the hill about 4 km, State Route 236 branches off for Big Basin State Park, the first state park ever designated in California. Who knew there was a world-class redwood forest down here? But there is, and the traffic into it today, maybe 30 vehicles per hour, is a pain to Dennis DeGroodt, Supervisor of the Saratoga Gap Maintenance Crew. With him today are Karen Kirby, Leadworker, and Don Sabjo, Dennis Groodt and Doug Umbarger, patching up the road.





Below the turnoff to the park, we cross the San Lorenzo River, the first of several crossings. It doesn't look like much more than a trickle, even later when we get to the end down by Santa Cruz, but Lazarotti assures us that when the rains come, particularly that famous El Nino, it can become a raging torrent.

As it descends along the river, Route 9 passes all manner of homes tucked discreetly behind the redwoods, chaparral, manzanita, Scotch bloom and poison oak. Geodesic domes sit alongside summer cabins, which sit alongside grand manors, which sit beside shacks with tufted couches on the porches. In these reside aging hippies, dot-com millionaires, loggers, retired folks and local businesspeople, among foliage so dense they don't have to rub elbows with each other. "You never know what who is doing to whom," says Lazarotti.

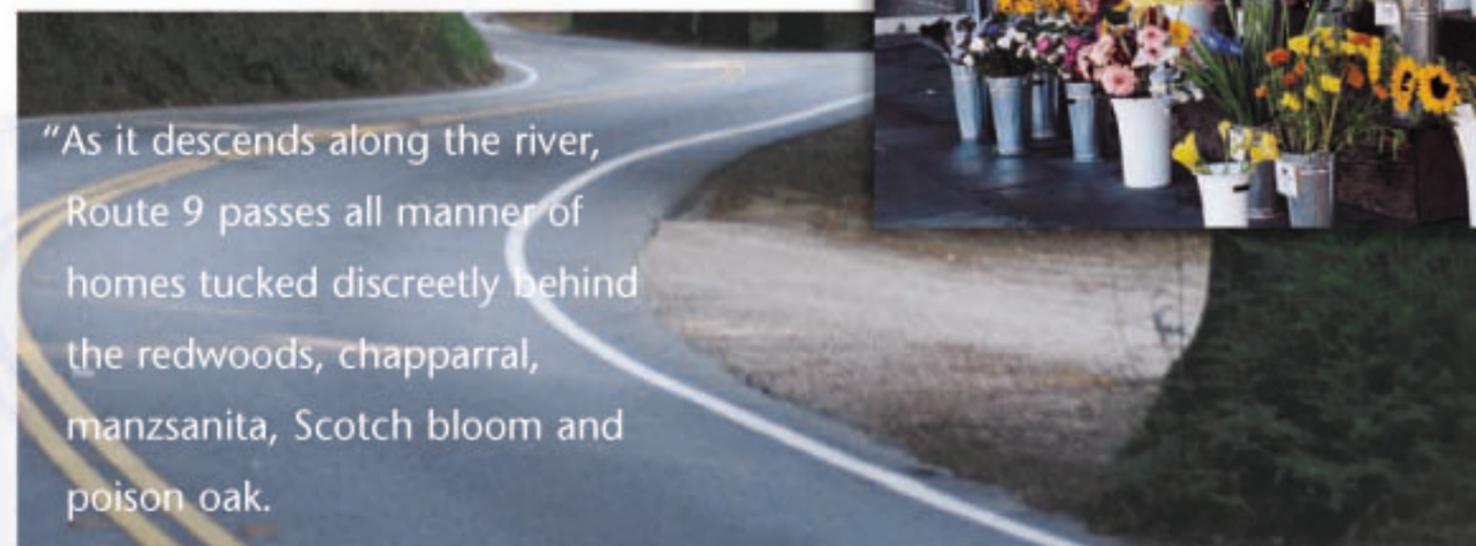
Four towns are situated along the San Lorenzo River, each with Route 9 as its main street. These are, at the upper end, Boulder Creek, then Brookdale, Ben Lomond and Felton, which is nearest to Santa Cruz. Each has a different character, shaped by its history, but also a common heritage as a summer recreation destination for the nabobs from inland, refugees from California's scorching summers.

Boulder Creek is, was, and probably always will be, a logging town. In spite of a smattering of boutiques, it remains a working town, with a hardware and grocery store and a bank and a barber shop all snug in historic buildings that have been there since the last good fire, in 1890. Lots of summer folks meander up and down the streets, but it's easy enough to imagine the clack of caulked boots on these sidewalks.

Down the road a piece you pass the Brookdale Lodge, which pretty much sums up Brookdale. It looks as if it

Boulder Creek, Brookdale, Ben Lomond and Felton, along Route 9, all have the feel of opportune places for a summer teenage romance.

might have been a work in progress, maybe, for the past 100 years. It's "Brookdale" because there's a stream that runs right through the dining room, where, it is said, you used to be able to catch a trout and give it to the chef for dinner. No longer. The trout are there but off limits. Lazarotti says it's an in-and-out place that goes out of



"As it descends along the river, Route 9 passes all manner of homes tucked discreetly behind the redwoods, chaparral, manzanita, Scotch bloom and poison oak."

business every once in a while, then is revived by hopeful new owners. From the parking lot, it has the look of someplace that might entertain a ghost.

Between Brookdale and Ben Lomond, Lazarotti points out the infamous "blue slide." They call it that because it was a blue clay formation that just wouldn't keep still until Caltrans came in and installed drainage and a half-viaduct. Until then, it was a chronic problem that turned acute one day during a storm when half the road slid away and almost took a Caltrans crew with it.

There's not much to Ben Lomond except a grocery store and a firehouse and a really neat-looking swimming hole that is strangely unpeopled on this hot August day. The librarian explains. The town built a new in-ground concrete swimming pool and all the kids are there. Ben



proudly acclaimed as an "historic" 1930s locomotive, pulls it. Out here, though, it really ought to be steam.

Felton is a place whose feet straddle the centuries. It needs definition. Here you see the bric-a-brac of a historic Victorian, but there it's the tilt-up slab side of a strip mall. And no matter where you look, those Silicon Valley types are whipping around in their fancy cars.

Below Felton, a few years ago, Route 9 washed out and it took a lot of hard work by everybody, including Loren Lazarotti, to get the road back together again. Along here, the acacia and sycamores and bay trees and buckeyes and vines crowd the road as if Mother Nature were ready to pounce and take it back. She crowds the road right to its end, but then you round a corner and there, as if you were coming out of a dark theater into bright sunlight, lies gaudy Santa Cruz with its freeways, tilt-a-whirls and roller coasters.

This might be the time to pick up some property along Route 9. About every fifth home seems to be for sale. It'd be nice to think the silicon tide has lapped against the shore and retreated, leaving the San Lorenzo Valley to return to its snooze, but probably not.

Eden, once found, probably won't ever be Eden again. – Gene Berthelsen

Route 9 is the main street of towns that you'd want to saunter through, maybe to buy a nosegay for a partner back home.

Lomond does have a Department of Open Space, which seems like a nice idea. Barbara Kennedy, back in Boulder Creek, explained that Ben Lomond was once a logging town, but when the forest was cut back at the turn of the 20th century, the town elected to become a hotel town, which it was until the hotels burned down. Now it's a vacation town that looks like a place where generations of teenagers have had their first summer romances.

Felton is our last stop on Route 9. Felton used to be the railhead where redwood logs arrived by flume and went out on trains. And indeed, today, you can take a ride on the Santa Cruz, Big Trees & Pacific Railway along the west side of the San Lorenzo River, here a stunning granite and sandstone whitewater canyon. It's a two-and-a-half-hour round trip between here and Santa Cruz. A diesel locomotive,

QC/QA

A recipe for improving the state's asphalt pavements

Photos by Don Tateishi

Out on State Route 1 near Fort Ross, Caltrans has just completed an overlay project that used Quality Control/Quality Assurance to ensure a long-lasting roadway surface.

Simply put, "QC/QA" means that the paving contractor is responsible for controlling the quality of the pavement while Caltrans is responsible for assuring that the contractor has accomplished that goal. Caltrans began applying Quality Control/Quality Assurance in the mid-1990s to asphalt pavement projects placing 10 000 tonnes or more of Type A or B asphalt. It does not apply to chip seals, seal coats or rubberized pavements. QC/QA was implemented at the direction of then-director James Van Loben Sels, who felt that contractors responsible for quality should have more control over their operations.

Today, on projects that qualify for QC/QA, contractors are to hire or have in their employ a certified, independent testing firm to do tests formerly done by Caltrans inspectors and testers. Caltrans then double-checks at least 10 percent of test results to verify that they have

been done correctly. More verification is recommended at the beginning of a project until there is confidence in the contractor's testing.

The basis for a bonus or deduct is whether the contractors' QC tests are on target and have a low variability. If the pavements consistently meet specifications, the contractor becomes eligible for a five percent bonus. If they do not, the contractor may be penalized as much as 25 percent. For critical quality characteristics, a pay factor below 95 percent results in stoppage of the operation until changes are made. Overall, on QC/QA projects around the state, contractors have received an average bonus of 3.5 percent.

Process control applies to items such as stability. If the test results are outside of limits twice in a row, the oper-

ation is stopped and production is limited until there is assurance the contract is back in specifications.

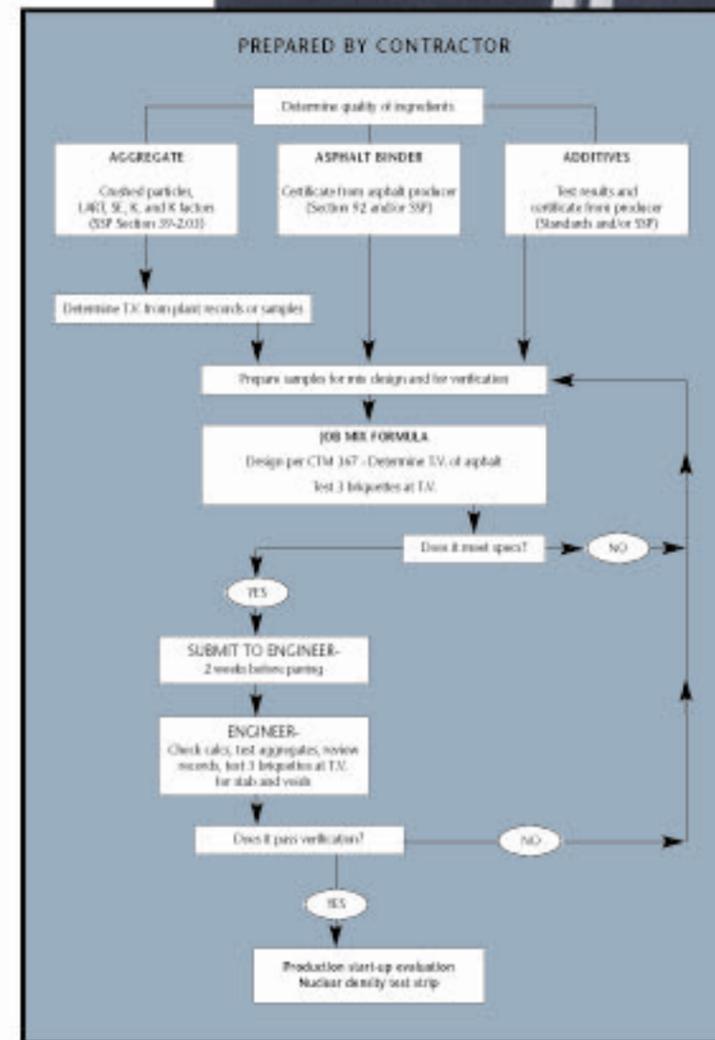
Argonaut Constructors of Santa Rosa was the contractor on the \$5.5 million, 24.1 km capital maintenance project on Route 1 on the Sonoma County coast to add an asphalt pavement overlay that varied from 60 to 135 mm.

As in all QC/QA projects, the contract required the construction firm to provide an asphalt concrete quality control plan that specified a quality control organization, a quality control manager, an inspection plan delineating quality characteristics, responsibilities and control tolerances, as well as inspection types, frequencies and locations. The plan also specified a random sampling plan and qualified laboratory facilities at which the tests would be processed. It specified inspection and testing reports, daily records of inspection, posting of graphical results and, if test results fell outside of specified ranges, corrective actions.

The Route 1 testing plan was reviewed by District 4 QC/QA coordinator Bob Rogers, a 13-year veteran of asphalt paving operations, but final approval is always given to the Resident Engineer — in this case, Hal Streater, also a veteran construction engineer.

Argonaut selected Signet Laboratories of Sacramento, an independent, certified testing firm, to carry out the tests. These tests would be used both to make acceptance decisions and to determine pay factors.

The first step in the process is for the contractor to design a mix and submit the mix design to Caltrans labs, which verifies that it meets the design criteria.



"QC/QA"
means that the paving contractor is responsible for controlling the quality of the pavement while Caltrans is responsible for assuring that the contractor has accomplished that goal.



Paving on the Route 1 project began in June 2001, covering about 4 km of one lane per day.

QC/QA required Argonaut to place one 500 tonne asphalt concrete test strip for each of the three thicknesses of pavement, using the same equipment that would be used on the actual job. These test strips establish gauge bias correction for nuclear density gauges that measure compaction. They show, before full production starts, that the AC mix designed in an aluminum bowl in a lab can be produced by an asphalt plant and paving machine.

Materials in the test strips were tested for all of the primary mix design qualities, including gradation, air voids, oil content, stability, sand equivalent and compaction. Samples were taken at the mat behind the paver and at the plant. QC/QA procedures called for Caltrans to perform the same tests as the contractor to verify their accuracy.

Generally, test strip results can be completed within 48 hours, but may take longer due to workload or a backlog of work at Caltrans; however, this testing is a top priority for district labs. The mix design is verified and the test strip material approved when the combined contractor and Caltrans test results are accurate and meet specifications. As Rogers says, the contractor is then "ready to rock and roll."

Paving on the Route 1 project began in June 2001 and was completed by mid-August, covering about 4 km of one lane per day. The project was complicated by the fact that Argonaut's asphalt supplier, Syar Industries, maintained its batch plant in Santa Rosa, 88 km to the east. The mix left the plant at 163° C; during its one-hour trip to the job, it cooled to about 135° C, but remained



within tolerances for application. The project personnel generally breathed a sign of relief as each bottom-dump arrived at the job site on time as the narrow, winding roads between Santa Rosa and the job presented numerous opportunities for holdups. The key is that the mix had to meet the end result related specifications – compaction, oil content and stability.

The frequency and fast return of QC test results on QC/QA jobs generally means that problems can be found and corrected quickly, ensuring a higher standard of pavement quality throughout the project. Signet performed about 95 tests on the Route 1 project, identical to those on the test strip with the exception of void testing. Caltrans verified about 10 percent of these. Test results verified that Argonaut had met specifications and that Signet's tests were accurate within tolerances.

Continued on page 42

The Caltrans QC/QA Program

Quality Control/Quality Assurance is the accepted procedure for Caltrans asphalt concrete pavement projects using 10 000 tonnes or more of Type A or B asphalt. It does not apply to chip seals or rubberized pavements. Overall, only about 15 percent of Caltrans pavement projects are subject to QC/QA guidelines. However, these are the largest projects and constitute a much larger percentage of the money spent on pavement.

Caltrans has now established Quality Control/Quality Assurance coordinators in all 12 of its districts and has a statewide coordinator in the Construction Division in Headquarters.

District coordinators review all Quality Control plans submitted by contractors and recommend approval to Resident Engineers. They are usually present when test strips are applied, visit the jobs as construction goes forward, and participate in evaluations and lessons learned at a project's conclusion. If there are disputes between Caltrans and the contractor, the district coordinators also assist the resident engineer with dispute resolution.

As QC/QA swings into full implementation, the district coordinators also provide training to resident engineers. Bob Rogers, District 4 QC/QA Coordinator and one of the first to be given the coordinator designation, worked with a

statewide team to develop a training course, "Introduction to QC/QA Specifications for Asphalt Concrete." The two-day class leads students through QC/QA procedures and methods, roles and responsibilities, testing methods and required actions and dispute resolution.

Elements of QC/QA are used in specifications for other products such as welding and rapid hardening concrete. These include contractor testing, requirement for a quality control plan and quality control manager, verification testing, PCC mix design done by the contractor, and a schedule for a reduction in pay, should strengths fall below target levels.

Quality Control/Quality Assurance

is the accepted procedure for Caltrans asphalt concrete pavement projects using 10 000 tonnes or more of Type A or B asphalt.





The frequency and fast return of QC test results on QC/QA jobs generally means that problems can be found and corrected quickly, ensuring a higher standard of pavement quality throughout the project.

Continued from page 40

A drive on the new pavement provides a testament to the effectiveness of QC/QA. It is baby-skin smooth and uniform. Streater and Rogers are happy with the results they got and are of the opinion that it is likely to wear very acceptably.

Streater, like many Resident Engineers approaching the QC/QA process for the first time, questions the cost of providing independent testing. However, he also agrees that, at least in this instance, the process seems to have produced an excellent product.

Argonaut's project manager, Tim Anderson, and estimator Russ Belden characterize the process as "a pain in the butt," but both agree that the taxpayers are getting a good deal for their money. They complain that the process takes the responsibility for quality out of the hands of the project manager and puts it in the hands of the independent testing laboratory. Caltrans responds

that the project manager remains in charge. The testing firm merely gives a project manager information on which to act.

Regardless, as Anderson says, "It reduces the guesswork."

And that is probably the chief argument for continuation of QC/QA. As Bob Rogers says, it gives the contractors an incentive for providing a superior pavement and provides a single target for quality with each of the pavement tests.

A drive

on the new pavement provides a testament to the effectiveness of QC/QA. It is baby-skin smooth and uniform.



What is QC/QA?

- It is a different approach to achieving quality in pavements.
- It is giving the contractor responsibility for the quality of the end product and rewarding him or her when targeted results are exceeded
- It is having the contractor perform quality control tests, which form the basis for bonus and deduct calculations, to determine if the product meets specifications.
- It is the use of bonuses to reward a contractor when he or she provides a pavement whose test result averages are closer to target values and with less variability.
- It is the use of deducts when material is off target or has large variability.
- It is the use of statistical methods to review test data as a group rather than as individual pass-fail tests.
- It is taking variability of sampling, testing and production into consideration in the acceptance of pavements.
- It is turning the mix design of AC over to the contractor, but with Caltrans verification.
- It is having everyone – contractors, Caltrans, testers and labs – qualified by Caltrans independent assurance staff.
- It is getting QC test results back by the next shift.
- It is the use of statistics (comparing two populations with the "t" test) to ensure that tests are verified.
- It is use of a test strip (the first day of production) to show that the AC mix designed in a lab can be produced by an asphalt plant and a paving machine before full production starts.
- It is having a third party available for resolution of test result disputes.
- It is having a contractor prepare a quality control plan and hire a quality control manager.
- It is having an inspector ensure that the contractor is following the QC plan.
- It is turning over to the contractor the methods used to produce a good pavement and meet quality measurements such as compaction. (For example, the contractor, rather than the inspector, determines when and how long to roll the mat to achieve compaction).
- It is still allowing the resident engineer to reject material because of poor quality (such as bleeding, rock pockets and segregation) by visual inspection.
- It is use of data for a lot (which can be all the test data from a project) to determine acceptance and a pay factor (bonus or deduct).
- It is use of process control. When a contractor runs outside upper or lower testing limits, production is stopped, adjustments made and production limited until test results are back within limits.
- It is computerized graphing of test data to display results against contract limits.

Quality Control/
Assurance

By George Hunter
Caltrans Value Analysis Coordinator

Photos by Don Tateishi

The “Pink House Curve” lies about 40 km east of Redding on State Route 299 on a conventional two-lane highway in mountainous terrain that follows the course of Cedar Creek. In 1991, the highway alignment consisted of three tight, reversing curves with little or no tangent.

The middle curve — the Pink House Curve because of a nearby historic pink house (since painted brown) — severely restricted the sight distance of westbound motorists and was difficult to negotiate at higher speeds. Numerous accidents involving logging trucks overturning or straying into the opposing lane resulted in an accident rate four times greater than the statewide average.

In 1987, a highway advocacy group identified the curve as one of the worst accident sites on Route 299 in Shasta County. Subsequently, District 2 installed warning signs and made other minor improvements, but they yielded no appreciable reduction in the accident rate.

Last summer, District 2 achieved its goal of improving the Pink House Curve. A project completed in the summer of 2000 provides a prime example of how Value Analysis can yield significant savings while serving the original purpose of the project.

In 1991, District 2 had completed a Project Study Report with two main alternatives: one, to cut back the hillside and the other, preferred one, to realign the roadway with fewer hillsides cut. The preferred PSR design improved the sight distance and the design speed, but it also had serious deficiencies. It violated mandatory design standards with 213 m radii and substandard tangent sections that did not pro-

vide the mandatory 80 km/h design speed. It also would have required a 60 m cut at a 1:1 slope and the removal of 160 000 m³ of surplus excavated material.

The \$7.7 million project originally would have required a 300 m-long retaining wall at its south end in order not to encroach into Cedar Creek. It also would have impacted the riparian habitat of the endangered Shasta salamander, Shasta



A project completed in the summer of 2000 District 2 provides a prime example of how Value Analysis can provide significant savings while serving the original purpose of the project.

The Pink House Curve Project

VALUE ANALYSIS AT WORK

sidesband snail and Shasta snow wreath and would have required relocation of the Pink House, which was on the eligible list for the National Historical Register.

It was clearly necessary to consider other options and, in 1992, District 2 decided to perform a VA study, with team members from project development staff, traffic operations, the Route 299 East Committee members and a California Department of Fish and Game biologist, who simplified obtaining the needed permits.

In its first study phase, the team considered the functions that the proposed project was to perform. These included improving the sight distance, accommodating environmental concerns, providing safe passage during construction and acquiring right of way.

Ed Anderson

In the creative phase, the Value Analysis team brainstormed to create alternative methods to deliver the project's two costliest functions, improving the sight distance and accommodating environmental concerns. Steve Rogers, District 2's original project engineer, points to the importance of following up on even the wackiest ideas during this phase. "When the notion of crossing Cedar Creek twice was tossed out, everyone in the room kind of gave each other one of 'those' looks," Rogers says. "But as we continued to look at it, the idea just got better and better."

In the development phase, the team developed numerous alternatives from the brainstorm list; however, the double crossing was clearly superior and became the preferred alternative. It consisted of a daring alignment that exited the mountainside into the flats with a pair of reversing, 260 m radius curves separated by a standard length tangent.

This design eliminated the earlier proposal's large hillside cut and the 300 m-long creek-side retaining wall.

The solution did require two crossings of Cedar Creek but, even so, was less damaging to

the environment. It reduced both encroachment on the creek and hillside erosion that would have degraded water quality.

Better yet, the VA alternative provided \$2.8 million in savings, primarily by avoiding the large cut, which would have involved blasting, working in the traveled way, hauling of surplus excavation material and traffic control. Other savings resulted from eliminating the long retaining wall and reduced environmental mitigation.

The resulting project's benefits were almost miraculous. It attained the full geometric standards to provide an 80 km design speed, eliminated the lane closures and other traffic impacts during construction and avoided the relocation of the historic pink house. It allowed for an environmental clearance with a Finding of No Significance rather than an Environmental Impact Statement, reduced environmental mitigation costs, and eliminated a hillside cut scar with a resultant reduction in water quality degradation.

The Value Analysis proposal, which was accepted by the district shortly after the conclusion of the study, received the FHWA's Most Outstanding Value Engineering Study Award for that year. A categorical exclusion under the National Environmental Policy Act and a negative declaration under the California Environmental Quality Act

The solution did require two crossings of Cedar Creek but, even so, was less damaging to the environment. It reduced both encroachment on the creek and hillside erosion that would have degraded its water quality.



PREPARATION

INITIATE STUDY <ul style="list-style-type: none"> Identify study project Identify study roles and responsibilities Define study goals Select team leader Prepare draft study charter 	ORGANIZE STUDY <ul style="list-style-type: none"> Conduct preparation meeting Select team members Identify stakeholders, decision-makers and technical reviewers Identify data collection Select study dates Determine study logistics 	PREPARE DATA <ul style="list-style-type: none"> Collect and distribute data Develop construction cost models Develop highway user benefit LCC model
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V.A. STUDY

SEGMENT 1	INFORM TEAM <ul style="list-style-type: none"> Review study activities and confirm reviewers Present design concept Present stakeholders' interests Review project issues and objectives Develop performance criteria Visit project site 	ANALYZE FUNCTIONS <ul style="list-style-type: none"> Analyze project data Identify project functions Prepare FAST diagram Determine functional cost drivers 	CREATE IDEAS <ul style="list-style-type: none"> Focus on functions List all ideas Use group brainstorming Use individual brainstorming 	EVALUATE IDEAS <ul style="list-style-type: none"> Apply key performance criteria Rate each idea List advantages and disadvantages Rank all ideas Assign alternatives for development 	
	DEVELOP ALTERNATIVES <ul style="list-style-type: none"> Develop alternative concepts Prepare sketches and calculations Measure performance Estimate costs, LCC, benefits/costs 	CRITIQUE ALTERNATIVES <ul style="list-style-type: none"> VA Alternatives Team Consensus Review VA Alternatives Technical Review Group alternatives Validate performance 	PRESENT ALTERNATIVES* <ul style="list-style-type: none"> Present findings Document feedback Confirm pending reviews Prepare preliminary report <small>*Informal presentation of study findings</small>		
	ASSESS ALTERNATIVES** <ul style="list-style-type: none"> Review preliminary report Assess alternatives for project acceptance Prepare draft implementation dispositions <small>**Activities performed by PDT, Technical Reviewers, and Stakeholders</small>	RESOLVE ALTERNATIVES <ul style="list-style-type: none"> Review implementation dispositions Resolve implementation actions with decision-makers and stakeholders Edit alternatives Revisit rejected alternatives, if needed 	PRESENT RESULTS* <ul style="list-style-type: none"> Present results Obtain management approval on implemented alternatives Summarize performance, cost, and value improvements <small>*Formal presentation of study results</small>		

REPORT

PUBLISH RESULTS <ul style="list-style-type: none"> Document process and study results Incorporate all comments and implementation actions Distribute printed report Distribute electronic report to HQ VA Branch

were obtained late in 1994.

The design developed during this phase remained very close to the Value Analysis team's concept, both in scope and budget.

Construction on the project started in 1999 and was completed in 2000. Julie Casey, who served as Project Engineer, found that the team's proposal remained solid as she proceeded through design. The final design was virtually identical to that proposed by the team, and the contractor's bid, at \$5.26 million, was within an acceptable range of the team's estimate of \$4.9 million, made eight years earlier.

This is not always the case. Mark Miller, currently District 2's Value Analysis Coordinator, emphasizes the need for rigorous analysis of the alternatives throughout the process. "We have had VA projects where that rigorous analysis was not done, and where we actually had to go back to square one when we got into design. The Pink House Curve project was one where that analysis was rigorous; the presence of the biologist and also of a geologist on this team was crucial to getting a successful project."

The Pink House Curve value analysis exercise was directed by Charly Ludwig, now retired. It followed value analysis procedures and was subject to rigorous analysis. It saved California taxpayers a considerable amount of money and avoided a number of negative impacts. It is an illustration of what the VA methodology can yield, when performed effectively.

Transferring the Load

DOWEL BARS IN CONCRETE SLABS

By Kevin Herritt,
Chair, Pavement Design and Rehabilitation Committee

Photos by Don Tateshi

The heyday of California freeway construction, during which the then-Division of Highways built as many as 560 km of pavement lanes a year, actually covered a relatively short period, from the mid-1960s to the mid-1970s. Design criteria during that era required a 20-year pavement lifespan; the majority of California's pavements thus are now well beyond their projected lifespan. Fortunately, the pavements have performed better than originally expected.

But Caltrans is now adopting strategies to produce asphalt and concrete pavements that will have a much longer design life. The concrete pavement design features that Caltrans will use to obtain this longer life include improved base design, increased concrete thickness, stronger shoulders and joint improvements.



Caltrans has recently begun using dowel bars imbedded in concrete pavements to improve the performance of joints and currently has several projects under way, either by retrofitting existing pavements, or placing dowel bars in new pavements.

New Portland cement concrete pavements crack naturally, because of shrinkage during drying, but they also crack because of daily and seasonal temperature variations due to curling and warping, variable base conditions, moisture and loading. To control the location and geometry of this cracking, road builders place joints in the pavement. Transverse joints, to control natural cracks, are sawed into new pavements at intervals that vary by 3.6, 4.6, 4.0 and 4.3 meters. These intervals are staggered to eliminate the "Buick bounce" – the rhythmic pumping of a car's suspension system as it crosses the joints. The joints are sawed to a depth one-third of the total pavement thickness.

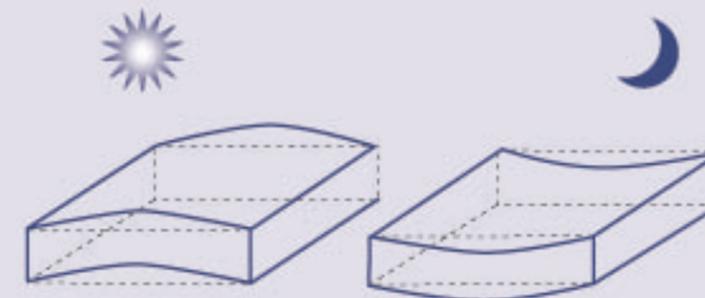
Longitudinal joints control cracking where two or more lane widths are placed at one time. Typically, pavement joints are filled with sealant (asphalt rubber, silicon or pre-formed neoprene) to reduce water penetration and, more importantly, to minimize the infiltration of small incompressible materials like sand and rocks.

Sawing the joints, while the pavement is still "green," induces cracking by creating a plane of weakness. Until recently, Caltrans design practices have relied on joint/crack aggregate faces between the slabs to interlock and keep the separate slabs from moving independently as loads traveled over them. When dowels are used at the transverse joints, the separate slabs move as a unit, and the loads are transferred between slabs, reducing the amount of stress experienced by each slab and allowing for longer life pavement.

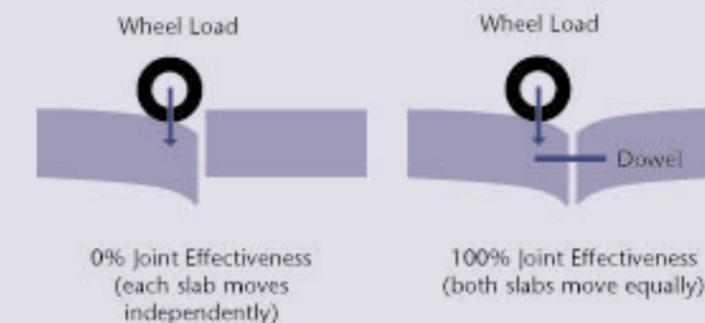
A load transfer of 90 percent is considered ideal to reduce faulting and differential settlement of slabs.

As few as four to five million accumulated 80 kN equivalent single axle loads can produce objectionable faulting in pavement joints that rely only on aggregate interlock to produce load transfer. Many of California's older concrete pavements have now reached this point.

CURLING AND WARPING



Natural cracking occurs in concrete slabs because of changes in temperature, variable base conditions, moisture and loading.





A dowel bar "basket" awaits placement of concrete.



Caltrans and the Federal Highway Administration now consider placement of dowel bars in new and existing pavements as desirable to achieve longer pavement service life.

Today, driving along the mammoth paving operation over the Donner Summit on Route 80, passersby observe bundles of purple metal rods, 30 mm thick and 450 mm long, stacked at 20 meter intervals along the project. The Caltrans web site daily fields several inquiries as to what they are for. They are dowel bars.

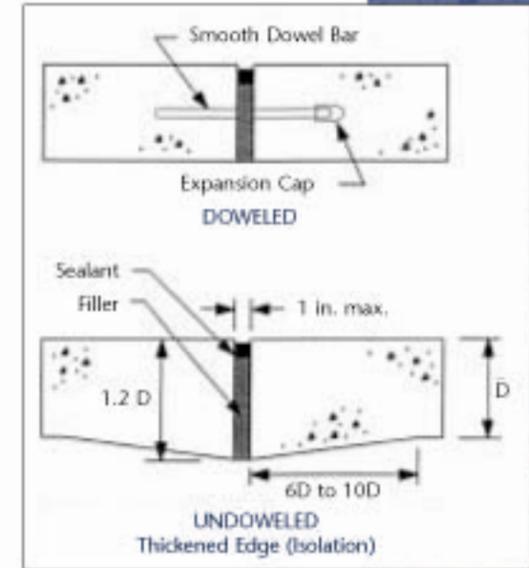
Dowel bars have been used in other states for a number of years. Many years ago, Caltrans evaluated the practice but chose not to adopt the technology until precision control of the placement was available. Caltrans' first dowel bar projects went to construction in 1998.

Caltrans and the Federal Highway Administration's California Division now consider placement of dowel bars in new and existing pavements, along with improved base design, increased concrete thickness and stronger shoulders and joint improvements as desirable features to achieve adequate load transfer and longer pavement service life. The Caltrans Division of Design issued standard plans for pavement joint design using dowel bars in 2000.

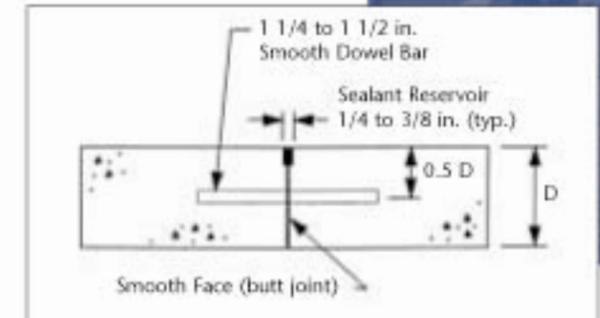
Dowel bars are smooth round bars placed across transverse joints to transfer loads without restricting horizontal joint movement. They also keep slabs in horizontal and vertical alignment. Since dowels span the joint, daily and seasonal curling and warping do not affect load transfer across doweled joints as much as it does undoweled joints.

Dowel bars reduce deflection and stress in the concrete slab and lower the potential for faulting, pumping and corner breaks. They increase pavement service life by reducing deflections and stresses by transmitting the load across the joint. For example, a 250 mm doweled slab with 80 percent load transfer will have the same deflection as a 300 mm undoweled slab with only 40 percent load transfer.

NEW PAVEMENTS In new pavements, dowels may be placed either by using load transfer assemblies, more commonly called "baskets," that hold the dowel bars in place or by automated dowel bar insertion devices attached to the paving machine. Dowel baskets are placed manually on the base material at varying intervals



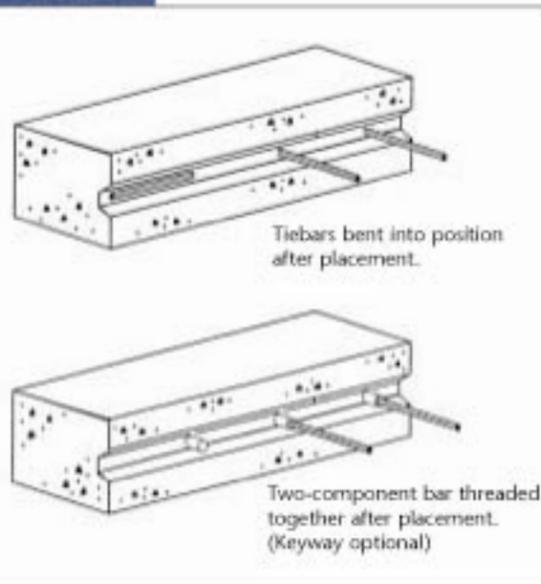
Transverse Construction Joint



Transverse Expansion Joint

to hold and support the dowels at the proper depth and alignment. The baskets are attached to the base with staking pins. Temporary spacer wires extend across the joint to stiffen and stabilize the basket and minimize movement during placement and are to be cut before paving. When a dowel bar insertion device is used on the paving machine, the dowels are placed using a computer-controlled inserting and vibrating process.

All dowels, no matter how they are placed, are coated with a bond breaking material, either a petroleum paraffin or a white pigmented curing compound. The dowels are coated to allow the concrete to move around the bar as it expands and contracts with temperature fluctuations.



Tiebars bent into position after placement.

Two-component bar threaded together after placement. (Keyway optional)

Typical placement of tiebars in fresh concrete

While the concrete is being placed, the joints are marked for sawing. Under normal conditions, sawing begins within two to four hours after placement of the concrete. The initial saw cut, to control natural cracking, is one third of the thickness of the slab. A widening cut, as necessary to establish the proper shape for sealant, is generally made within seven days of the initial sawing.

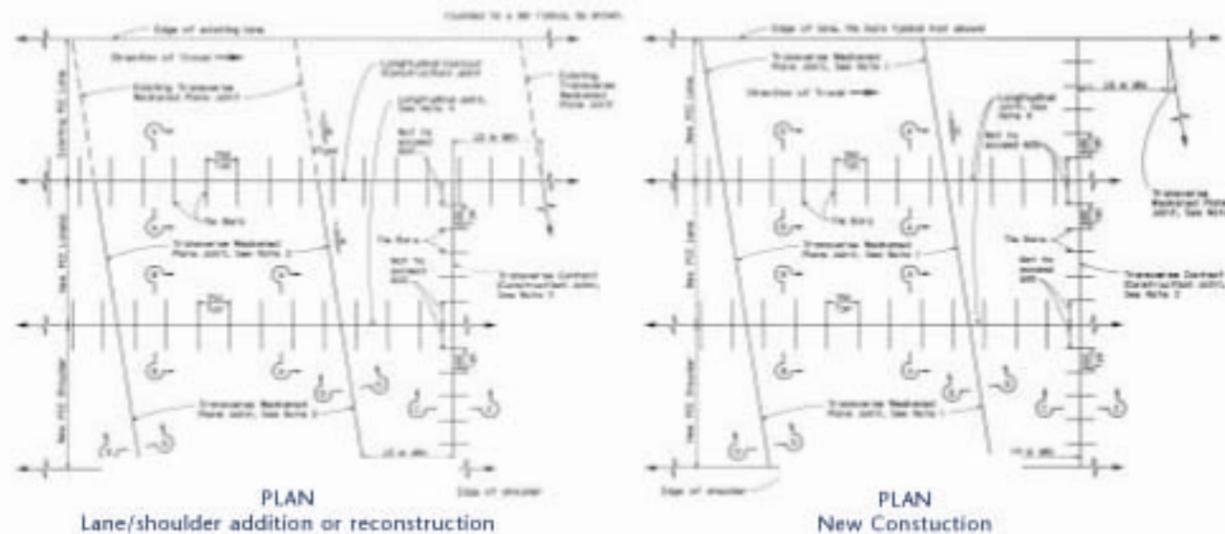
Prior to placing the sealant, the joint must be cleaned successively by sandblasting, vacuuming and with compressed air. Once the joint is properly cleaned, the sealant can be placed in the joint.

RETROFITS Dowel bars are also used to provide load transfer in existing pavements. When retrofitting, a gang saw is used to cut three pairs of longitudinal cuts that are 50 mm apart and 600 mm long. These parallel cuts are made at the transverse joints to a depth that allows the center of the dowel bar to be placed at mid-depth in the pavement slab. The material between the cuts is then jackhammered out so as not to damage the remaining pavement and the surfaces of the slot. The slot is then cleaned by sand blasting, vacuuming and blasted with moisture-free, oil-free compressed air. The dowels, rigidly controlled to achieve the desired horizontal and vertical alignment, are then placed in the slots. Prior to placement, the dowels are coated with a bond breaker. Expansion caps at each end of the dowel allow for thermal expansion and contraction within the slabs. Fast-setting grout is then pumped around the dowel and vibrated to assure a strong bond. After the grout dries, it is ground off, along with the rest of the lane surface, to produce a smooth ride travelers.

Retrofitting a concrete pavement with dowel bars can increase the load transfer efficiency between the slabs to 90 percent. This technology is expected to provide at least 20 years of low maintenance pavement.

The Caltrans Division of Design issued standard plans for pavement joint design using dowel bars in 2000.

PORTLAND CEMENT CONCRETE PAVEMENT (UNDOWELED TRANSVERSE JOINTS)



Manual dowel bar placement in a section of Interstate 80 near Kingvale.

Marathon Man Goes to Boston

The Marathon Man is alive and running in the far reaches of District 2 at the Yreka Maintenance Station. Clyde Aker, Caltrans Area Superintendent, competed in this year's running of the world-renowned Boston Marathon. To qualify for the Boston Marathon, a runner has to complete an earlier 26 plus mile race in less than 3:25 hours. Clyde ran a 3:21 to join a group of northstate runners for the 105th annual event.

Clyde had a great time in Boston, a fun town for a guy from Siskiyou County. "Using the T (the local subway system) was a lot easier than trying to get to the starting line on race day. I couldn't run a straight line, had to zigzag through this massive sea of humanity looking for the fast lane. It took me more than five minutes just to get to the start line," he says. Once on his way, Clyde kicked into high gear and ran his personal best of 3:14:34.

Aker ran his first marathon in 1990. Not being too excited about all the effort required to prepare for a race, he took a break and didn't run his next one until 1998. Since then, he has run in 17 marathons. Ultra-marathons are his specialty now, those being any race greater than 26 miles. In 2000, Clyde ran and ran, five races altogether, three of which were 100-mile ultra-marathons.

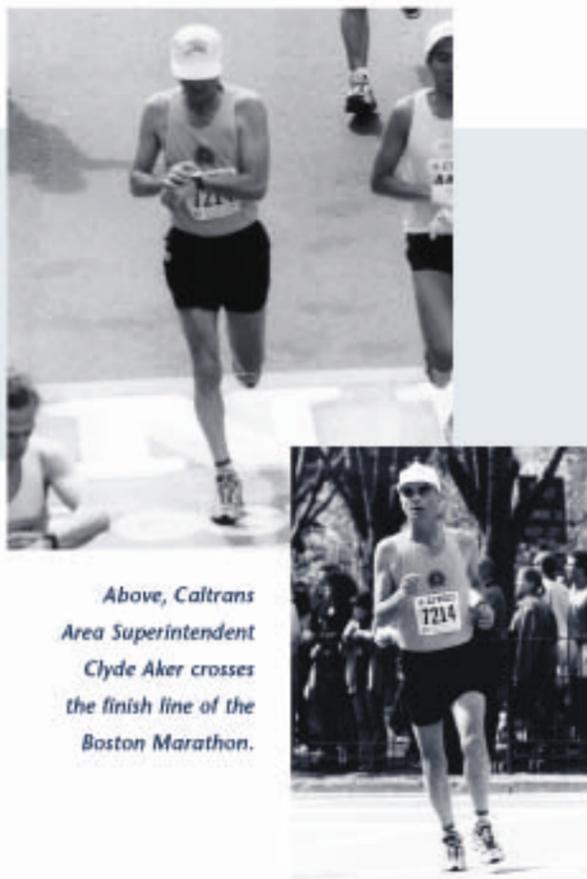
Training in the high, dry air of Siskiyou County, Aker enjoys mountain trail running. He recently completed the 50K "SOB" run. The Siskiyou Outback Run follows the Pacific Crest Trail for 50 km along the rugged California-Oregon border. Next up, in September, is a 160 km race in the Sacramento foothills, from Folsom to Auburn and back to Folsom, with a goal of finishing in fewer than 24 hours. "They take you off the course after 30 hours," Aker says. "That's a long time running."

To keep in shape for ultra-marathons, Clyde averages 100 km a week on the trails around Yreka. So far, he has over 2900 km under his feet this year. For an extra workout, he climbs Mount Shasta to sample air that is really rare at 4316 m.

Clyde sums up his adventure at the Boston Marathon as "being all it is advertised to be." Starting at position 7214 and finishing at 2700 in the field of 15 606 entrants, he collected over 4500 "roadkills," quite an accomplishment. In a runner's world, every time you pass another runner, that's a roadkill.

"That's a big day for a Caltrans guy," Aker says.

— Mark Fawver, District 2 Public Affairs



Above, Caltrans Area Superintendent Clyde Aker crosses the finish line of the Boston Marathon.

Caltrans Guy to 'Star' in Matrix Sequel

Lights. Camera. Action.

Warner Bros. is simultaneously filming two sequels to "The Matrix", the highly successful 1999 sci-fi movie that starred Keanu Reeves and Laurence Fishburne. They've completed work in Australia and were recently in the Posey Tube in District 4 to shoot some car chase segments.

This time, Mistery Reeves and Fishburne were joined by one of our own Caltrans stars. Tyrone Bowman, formerly the District 4 Labor Compliance Officer and currently working as a retired annuitant, got the call to be an extra in the film. Tyrone has worked in many movies around the Bay Area as a stand-in and extra.

Although filmgoers will have to wait until the movies are released to see the actual scenes from the Posey Tube, Mr. Bowman says the effort looks promising. The 16-hour location shooting in the tube cost about \$1 million (Tyrone gets a very small piece of that) and features 2002 and 2003 prototype automobiles. The film production company also spent another \$1 million to build a 1.6 km elevated stretch of freeway on the landing strip at the Alameda Naval Air Station. Each location will be onscreen for only a few minutes and Tyrone never knows until the final cut how much of his handsome face will be seen.

Tyrone had a regular job on "Nash Bridges" until that show recently cancelled production. Mr. Bowman loves working in films but his most visible appearance was on "Wheel of Fortune" when the show was in San Francisco recently. Actually Ty was not the contestant. His daughter won the money and Ty got the glory when he was invited on.

Over a year ago, well before casting for extras began, the film company approached Caltrans to close a freeway in the vicinity of the Bay Bridge. They were turned down due to severe traffic problems.

But after some further scouting and negotiations, Route 260, the Posey Tube, from Oakland to Alameda, currently being seismically retrofitted became acceptable to all.

The plan called for filming over successive nights to avoid causing traffic delays. After many years of working in Construction, Tyrone felt right at home on this jobsite. The Matrix filming was the first time Tyrone was able to combine both of his careers.

Caltrans District 4 is often the host to Hollywood features. Some have been notable and some not so notable. "Mumford" required traffic controls on Highway 29 through the Napa Valley. "George of the Jungle" had a two-minute scene that required two weeks of lane closures on the Bay Bridge. The District 4 office was used in an Italian bank commercial recently. That may sound dull but the all day filming involved about one hundred men and women wearing no pants or skirts. And, oh yes, Sharon Stone had the principle role.

Since the movies are one of California's biggest industries, Caltrans accommodates them when it can. The film company usually contacts Caltrans to discuss a proposed work site. They then apply to the California Film Office in Los Angeles and District 7, together with the local district, writes the permit. This all can take place in a matter of hours but usually requires at least a few days of planning and negotiation. We insist on maximum safety and minimal traffic delay.



Tyrone Bowman, District 4 Labor Compliance Officer, is one of the first actors called by big film studios when they hit the San Francisco Bay Area.

William Hall

Sky's The Limit

It's always fun to turn on the TV and say, "Hey, I know that guy."

This guy, on the show, "Win Ben Stein's Money," being shown around in syndication these days, happens to be Caltrans Television Specialist Steve DeVorkin.

"It was my two personalities crashing together," says DeVorkin, who had to settle for a consolation prize of a portable TV. "One personality is to be a famous actor. The other to win the \$5000."

The personality that won out on the program was the famous actor, as DeVorkin managed several snappy comebacks and prompted Stein to say, "You know, you're very funny."

To get on the show, DeVorkin "just went on their web site and signed up." He got on the show on his second try. "You have to have an outgoing personality and they have to like you," DeVorkin says.

He did the program last spring, and each time it is shown, he gets calls from friends around the state. "I don't like to watch it, though," he says, "because I didn't win the money."

Show business is old hat to DeVorkin, who worked as a professional actor for eight years before deciding that the stability of Caltrans was for him. (His sister-in-law, a Caltrans right-of-way agent, kept urging him to get a steady job.) DeVorkin specialized in improv comedy and had stints on "Cheers," "Night Court," and "a whole bunch of shows that will never see the light of day."

"I did improv with John Lovitz and Conan O'Brien and I knew Lisa Kudrow when she was a brunette," says DeVorkin.



Steve DeVorkin

Nowadays, being hoisted 20 m in the air in the bucket of a Caltrans lift truck or filming video a 300 m in the sky from the open door of a helicopter are all in a day's work for him. DeVorkin will do just about anything, with the proper safety precautions, to get the best shot for his vast library of Caltrans videos and photographs.

In addition to his feats of daring, DeVorkin spends much of his time at Caltrans working on anything and everything dealing with video. He coordinates all video productions, from setting up a television set for a training class or producing a broadcast public service announcement, to filling requests from media outlets and documentary television shows for footage from a vast archive dating to the 1930s of Caltrans film and video images.

Employed since 1993, DeVorkin says he feels fortunate to work at Caltrans because it offers him an outlet where he is able to "uncover new, creative possibilities for projecting a positive image of Caltrans to the public." He adds, "I am challenged every day to make the mundane interesting. I think it is a sin to be boring." He also says his background as an actor and performer helps him look at things at Caltrans a little differently.

An avid train enthusiast, DeVorkin volunteers his time during the holidays at the Travel Town Train Museum at Los Angeles' Griffith Park where he is affectionately known as "Santa Fe Claus." Dressed as Santa Claus in an engineer's overalls, he greets children as they take a short ride on one of the many vintage trains at the popular museum.

—Jean Bonfilio, Caltrans Public Affairs, District 7

A Gentle Hand on the Pulse

Joann Cole could have predicted a spate of phone calls volunteering to give blood after the recent tragedy at the World Trade Center in New York City. Cole, who configures routers, switches and data circuits with the other folks in Information Services, gets those calls every time there's a major calamity.

But Cole, who has been the chairperson of the Caltrans blood donation operation for the Sacramento area for the past 16 years, stresses that the system really works best if people donate regularly rather than when there's a crisis. "At any given time, the nation has a two-day supply of blood on hand," she says. "When there is a crisis, all kinds of things have to happen that would be a lot easier if there were a larger supply."

Joann Cole has been involved in Caltrans blood drives as a donor and a volunteer since the day in 1983 when she first came to work, uttering the magic words, "Is there anything I can do to help?"

In 1984 Cole became co-chair for drive, and since 1985, has been its chairperson. Five times a year, a week each time, the Sacramento Blood Center sends a mobile donation unit to four Caltrans locations. The circuit is the same each year: Monday, to Translab, where Lisa Dobeck coordinates things; Tuesday, to District 3 offices at Gateway Oaks, where Bruce Hartman sees to arrangements. Wednesday, it's at Headquarters under the watchful eye of Cole, then on Thursday, it goes to Farmer's Market where Gene Robbins and Harley Dabler are in charge.

Cole begins planning the drives a year in advance, reserving rooms and working with the blood center to schedule mobile staff. She sends emails to all staff and coordinates the activities of the 20-25 volunteers who provide refreshments and escort donors each day. She also sends publicity to the employee associations, other nearby departments and outlying offices.

Caltrans people who donate may designate that the credit for their blood go to employees and friends at Caltrans. "We have sent credits to other states for people who are relatives of Caltrans staff," Cole says. "Several years ago, one of our employees had a nephew in Pennsylvania who had leukemia. We put on a special drive to provide credits for the boy."

The blood drive program has been sponsored by the Public Works Association since 1941 and has the active support of Director Jeff Morales. Anyone wishing to donate or volunteer should email or call Joann Cole.

—Gene Berthelsen



Don Teleshi

Joann Cole has been chairperson of the Caltrans blood donation operation ever since she asked what she could do to help in 1985.

Oh, Them Dancin' Feet

Several times each year, Shirleigh Brannon, a yearling employee in the Caltrans headquarters library, shuffles off the cares and woes of the 21st Century and takes a trip into antique Irish and Scottish culture.

Ms. Brannon is the founder and director of Siamsa le Cheile, or Siamsa (pronounced "shimsa" and which, roughly translated, means a good time together, or a family party), an Irish and Scottish dance troupe



Shirleigh Brannon, Caltrans librarian, brings the culture of Scotland and Ireland to visitors to various pleasure and renaissance faires around Northern California.

that performs in the manner of Riverdance and Lord of the Dance. Siamsa performs at the Renaissance Pleasure Faire in Vacaville, the Dickens Christmas Fair in San Francisco, and at various Hibernian and Caledonian events throughout Northern California.

She refers to her role as head of the troupe as "a border collie, herding cats."

Ms. Brannon's troupe, which has been in business in various incarnations since 1984, evolved out of classes she taught at the University of California at Davis Experimental College.

Her immersion in Scottish and Irish culture actually came fairly late, she says. "My grandparents immigrated from

Ireland, and when they got here, they decided they would now be 'Americans,' not hyphenated Americans." While her family was musical, it was mostly traditional American music that they performed.

But when she was in her twenties, Brannon developed an interest in her family's culture. Traditional Irish culture had been something of an under-the-table matter in Ireland as the English dominated the country for several centuries. But with the rise of Irish nationalism at the turn of the Twentieth Century, traditional song and dance came out of the closet. The popular stepdance troupes now so much in vogue are an expression of that nationalism.

Today's Irish dancing has become more athletic as a result of going showbiz, and the most athletic activities, such as going en pointe, require dancers who have been studying since they were children, à la ballet. There are regional, national, and international Irish dance competitions, called feis (pronounced "fesh") and most all of the children and adults in Brannon's troupe compete in feis or in Highland dance competitions.

Siamsa gets together to rehearse for its major events, but everyone studies, performs and competes independently as well. They're all good at what they do, so it's just a matter of putting it all together.

Ms. Brannon received her undergraduate degree at Oberlin College, in Ohio. She received a Masters degree in theater from San Francisco State University and a Master's in Library and Information Science at UC Berkeley. She got her Ph.D. from UC Davis, and has also taught theater and film history.

Brannon has a love of history, and that's what brought her to the Caltrans library, where she is a specialist in historical matters. That, and the fact that her daddy was a career employee of the Ohio Department of Transportation.

But her feet are rarely still. Dancing, she wears a button that has a quote from Emma Goldman: "If I can't dance, I don't want to be part of your revolution."

— Gene Bertheisen

What I did on my Vacation, or Baseball, Baseball, Baseball ...

District 5 Public Information Officer John Burke's wife, Kristen, surely must be long-suffering. Burke recently managed to drag her on a two-week vacation during which he visited eight major league baseball stadiums, watching eight ballgames in the process.

The Burkes left their home in Santa Maria on July 27, and after a three-day cruise off Mexico with a few of John's high school friends (all celebrating a "special" birthday (his classmates were turning 50, but he is only "around 40 something.")

John had been on a quest to visit all the baseball stadiums in the United States and, last year, learned of a 10-day bus tour of eight stadiums that allowed for two days at the Baseball Hall of Fame in Cooperstown.

"July 31 found us at O'Hare in Chicago, along with 49 other baseball fans whose first quest, 130 km north, was the new Miller Park in Milwaukee." After a tailgate party, they toured the new stadium, then watched the Florida Marlins beat the Brewers 5 to 1. "I got very close to two foul balls," Burke says. But not close enough. Back on the bus.

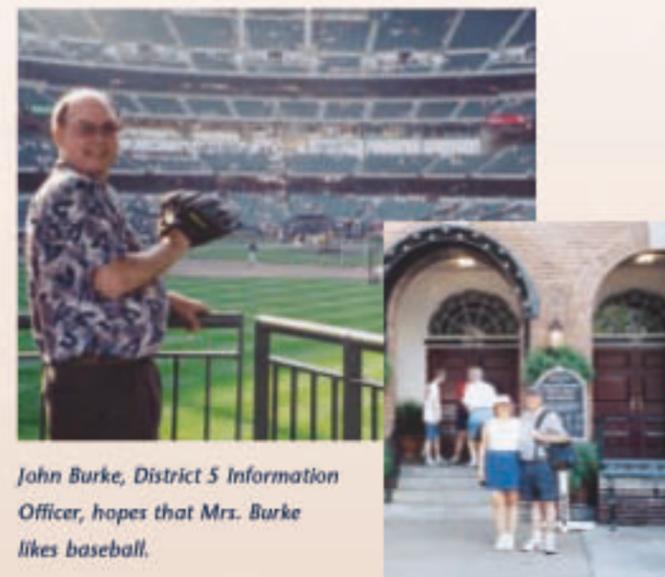
"On August 1st, we headed to Detroit, to the modern, clean and expansive Comerica Park, now in its second year," Burke says. "In 1999, we had visited old Tiger Stadium, built in 1912, for the Tigers' seventh-to-last game there." This day, they saw the Tigers lose to the Seattle Mariners, 7 to 1. No foul balls close this time. Back on the bus.

August 2 found the Burkes in Toronto for a day game at the Skydome. John got close to another foul ball. "Some kid got under the seat just before I did," he says. Minnesota Twins 9, Toronto Blue Jays 4. On the bus, they left Toronto, had a quick look at Niagara Falls, then it was off to Grand Island, New York.

An eight hour Friday ride past farms and small towns took them through most of the state of New York to Yankee Stadium in time to visit the Yankee memorials in center

field, then watch one of John's favorite teams, the Angels, lose to the Yankees, 4 to 2. Back on the bus.

August 4 took the Burkes to Boston where rain was threatening, but after a short delay, the Red Sox defeated the Texas Rangers 6 to 2. Back on the bus for Sunday's Induction Day at the Hall of Fame in Cooperstown. "I caught glimpses of some of my favorites of the 40 Hall of Famers in attendance: Sandy Koufax, Don Sutton, Duke



John Burke, District 5 Information Officer, hopes that Mrs. Burke likes baseball.

Snider, and Rod Carew," John says. The tour spent the next day in Cooperstown, giving ample time Monday to see the Hall of Fame.

On August 7 the tour headed to Pittsburgh to see the new PNC stadium and John's team, the Dodgers, beat the Pittsburgh Pirates 2 to 1. "Kristen got four Dodgers to sign a baseball for her," John says, proudly, although the ball was one they'd brought, not a foul ball. Back on the bus.

Continued on page 60

Continued from page 59

The next day the tour took the Burkes to a replica of old Crosley Field, the home of the Cincinnati Reds before Riverfront Stadium was built in 1970. That night, the San Francisco Giants played the Reds at CInergy Stadium (formerly Riverfront Stadium). "Barry Bonds struck out three times," Burke says. Reds 11, Giants 9.

"The last game of the trip was at Wrigley Field in Chicago where we saw the Chicago Cubs lose to the Colorado Rockies, 14 to 5. But Sammy Sosa hit three home runs," Burke says. Following the game, the bus departed for O'Hare Airport and the trip home.

Eight baseball games in eight stadiums in eight cities and a visit to the Baseball Hall of Fame. John Burke had a terrific 2001 vacation and traveled by car, ship, plane, and bus. Mrs. Burke did get a three-day cruise out of the deal.

"I'm already starting to plan a visit to Philadelphia, Baltimore and Houston to bite off another chunk of my objective," Burke says. "One problem, though, is that clubs keep moving or building new stadiums."

This could become a lifelong quest.

—John Burke

A "Traffic Jam" Like No Other

Unlike most commuters, four Caltrans employees and one of their friends don't mind getting into a traffic jam when not in the office. But this is a traffic jam like no other. The five are each members of a band called, appropriately, "Traffic Jam." The jamming these five do is all together different from what one would ever find on California's freeways.

"Traffic Jam" came together just two years ago when Information Systems Analyst Greg Panos, a guitarist, and Medardo De La Cruz from Project Development, a saxophone and keyboard player, discovered their mutual interest in music. The two decided to get together after work one day to "jam." Along came Cecilio Barriaga from Traffic Design, who played bass. Jesus Avalos, a friend of the group and drummer who works for the University of Phoenix, rounded out the foursome with a great sound. And with the recent addition of Marquita Scott, a student assistant from Information Services, Traffic Jam rocks!

This "Traffic Jam" truly works together and plays together. Its first gig was at a Caltrans Construction picnic, but the word spread and now, through word of mouth, they are kept busy.

"We have played at weddings, fundraisers, small concerts and parties, and we even worked at a United Way Campaign," said Panos. The band plays jazz, rock, blues and contemporary songs—a little something for everyone.

"We work together as a team," Panos adds. "That's what makes it fun. And we always discuss what we're going to do and in what direction we're headed."

Whatever the case, the group hopes to be together for a long time. Whether working together in the Caltrans district office, or playing music for a live audience, "Traffic Jam" jams like no other!

—Jeanne Bonlika, District 7 Media Affairs



Wof Jammin'. Freeway jammin'. Yeah.

Editor's Notebook

The ghastly events on the East Coast on September 11 have brought home, once again, the heroism of ordinary people everywhere who put their lives between danger and the rest of us.

Just this summer, Caltrans people in many parts of California had to do their duty at a time when fire was roaring down on them. Milt Apple is one of those. The so-called Oregon Fire broke out on the afternoon of August 28th and, driven by high winds, roared toward the historic community of Weaverville where Apple is a Maintenance Superintendent. The fire burned along both sides of State Route 299 and raced to the west end Weaverville in less than four hours, threatening the Caltrans Maintenance Station, the new Trinity High School and many residences. An emergency evacuation order was given.

Apple quickly coordinated work assignments for his crew with the agencies engaged in the fire fighting effort, but was soon confronted with the news that fire was advancing on his mother's home, one he himself had built for her 25 years ago. Apple helped his mother, Marian, gather her most important items—family pictures, keepsakes, papers and some clothes. "We had to leave in a hurry because another leg of the fire was approaching my own home on the other side of Weaverville," says Apple.

Milt and his mother headed to his new house to help his wife Carolyn and his son evacuate. "I just had time to empty the freezer of last year's venison and this summer's blackberries." Fortunately, the fire changed directions and they put everything back.

Now, Marian's home and several others nearby were engulfed in flames. One of those belonged to District 2's Deputy District Director of Planning, Brian Crane, whose parents had gathered up an elderly neighbor and fled to Redding. Nothing was left of the two-story house Crane had called home.

Even after losing his mother's home, and knowing that his own could go up with a change of wind, Apple went about his job of directing the Caltrans crews until the next day, when the Oregon Fire finally calmed down.

Later that week, California Governor Gray Davis visited the northstate to view the fire zone, landing at the Lewiston Incident Command Center to meet and congratulate fire crews and other workers who had supported them. After a news conference, a briefing and a sack lunch with the fire fighters, Governor Davis greeted Marian Apple and the rest of Apple's family and



Governor Gray Davis expresses his appreciation to Caltrans Maintenance Area Supervisor Milt Apple for his work in corralling the Oregon Fire.

expressed concern at their loss. He also expressed his gratitude to Milt for his dedication to his job at Caltrans.

California is a place that gets a little bit of everything. We get fires, we get floods, we get bombs, landslides, earthquakes, blizzards, you name it, we got it. Our people deal with those problems bravely and conscientiously.

In that sense, we are the brothers and sisters of the emergency personnel who gave so much at the World Trade Center last month.

Steven Nelson

