

CALIFORNIA DEPARTMENT OF TRANSPORTATION

Journal

July-September 2003 Volume 4 Issue 2

Caltrans Salutes Excellence in Transportation p. 2

Stopping that Old Rock n' Roll p. 16

A Whale of a Construction Story p. 26

Workin' on the Railroad p. 38

The Land that California Forgot p. 41



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Director's Corner

In January, as part of his plan to generate jobs and stimulate California's economy in the face of the lingering national economic slowdown, Governor Gray Davis announced a new initiative called "Build California."

Build California is an important part of the governor's plan to accelerate school and road construction and stimulate the construction of new affordable housing, accelerating the flow of \$21.5 billion in bonds into California's economy and creating jobs now.

Virtually every department in state government has been called on to take actions to speed job production, particularly those, like Caltrans, that have capital outlay programs. As an agency that has one of the largest capital outlay programs in state government, we have a responsibility to move as

quickly as possible to provide job opportunities for the citizens of our state. And we are doing just that.

In April the California Transportation Commission allocated a total of \$285 million in projects—\$165 million for STIP projects and \$110 million for the SHOPP. In May it will allocate another \$260 million. And even though the economic slowdown has had a negative effect on our spending stream, we will have put \$1.8 billion to work over the 18 months between January 2003 and June 2004.

The governor has asked us to move as quickly as possible in applying available funds to projects. He has directed us to work with the Resources Agency to cut a year from the environmental process for transportation projects, including adoption of integrated conservation and mitigation planning.

Jeff Morales

Caltrans is taking a multi-pronged approach to streamlining the environmental process while fulfilling and even enhancing our role as a steward of the environment. One element of this approach is to integrate environmental considerations into transportation planning at the earliest possible opportunity.

A second is to maximize the benefits of mitigation measures through corridor-level, pre-project strategies and programmatic approaches. A third is to improve the efficiency of environmental analysis, reporting and approval procedures. Fourth, we are making a conscious shift toward environmental stewardship, context-sensitive solutions and energetic alliances with resource and regulatory agencies.

Although any one of these elements would yield benefits in terms of streamlining the process, we expect the four taken together to create the synergy for dramatic improvements in our ability to provide mobility while protecting the environment.

The return on this investment is better projects whose benefits, both in transportation service and in job creation, arrive at a time when they are badly needed.



Jeff Morales

CALIFORNIA TRANSPORTATION

Journal

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CALTRANS SALUTES

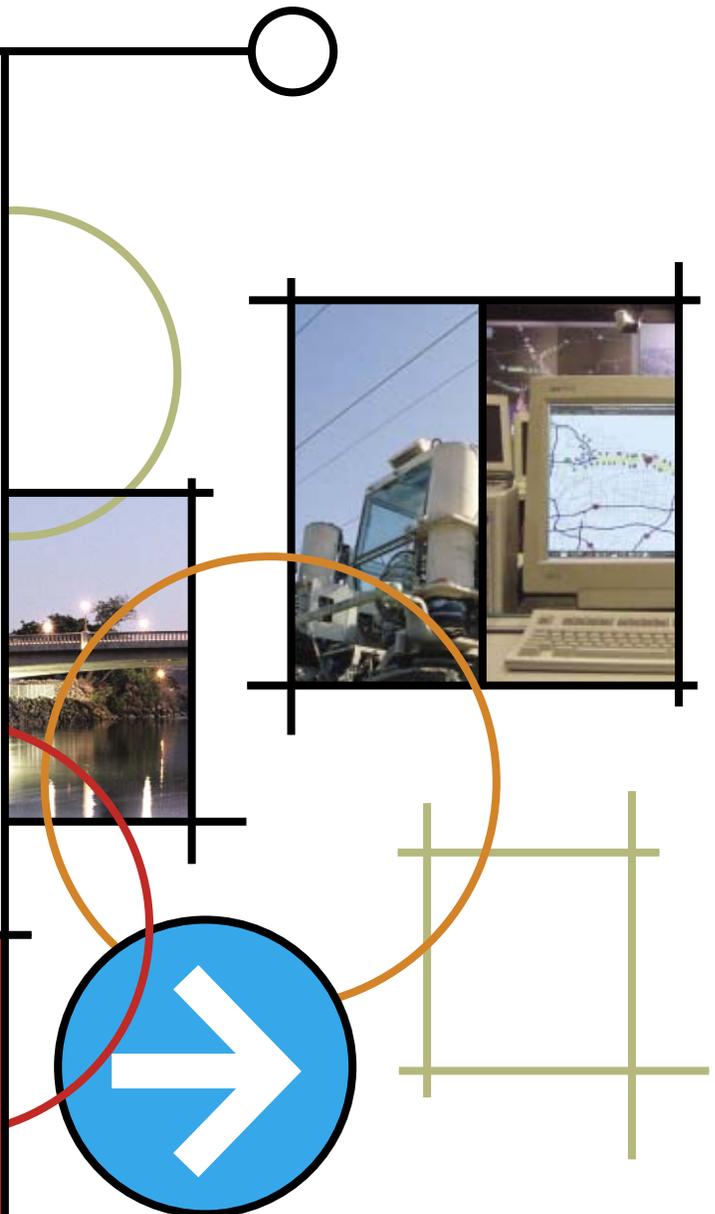
Transportation Excellence

In these pages, the Journal proudly features the recipients of the 2003 Excellence in Transportation Awards Program. For more than 100 years, Caltrans and its predecessors have lived excellence; 18 years ago, the department began showcasing outstanding work in transportation design, construction, operations and technology by establishing the Excellence in Transportation Awards program. Annually, this program salutes those in Caltrans, local agencies and business who are dedicated to producing excellence for California's taxpayers.

Recipients are named in categories for intermodal transportation, rural and urban highways, major structures, environment, other related transportation facilities, system operations, safety, historic preservation and cultural enhancement, maintenance equipment and operations, context-sensitive solutions, innovation and public awareness. The judges reserve special recognition for the biggest bang for the buck. All of these, taken together, reflect the vast scope of endeavor at Caltrans and its sister agencies.

The Journal publishes these accounts of projects and activities in the hope that the creativity and industry demonstrated therein may be emulated elsewhere.

The winners of the 2003 Excellence in Transportation Awards program:





Intermodal Transportation Alameda Corridor

- Alameda Corridor Transportation Authority
- Port of Los Angeles
- Port of Long Beach
- Caltrans District 7

The Alameda Corridor is a 32 km-long freight rail expressway linking the nation's two busiest ports in Los Angeles and Long Beach to rail yards near downtown Los Angeles. Completed at a cost of \$2.1 billion, it has eliminated more than 200 at-grade crossings and accommodates as many as 100 train movements daily, allowing trips of about a quarter of previous lengths. The project enhanced public safety, reduced vehicle emissions, removed more than 450 000 tons of contaminated soils and treated two billion liters of groundwater. The project's signature element, the mid-corridor trench, 10 m deep, 15 m wide and 16 km long, replaced an at-grade branch line that was an eyesore for residents and physically divided communities including central business districts.



Intermodal Transportation Rail 2 Rail: Amtrak-Metrolink Fare Integration Program

- SCRRRA
- Amtrak
- Caltrans Rail Division

Rail 2 Rail allows rail passengers to take the first available trip to their destination, whether a Metrolink train, an Amtrak Pacific Surfliner train or Amtrak bus at no additional charge to the rider. The annual cost of the program, \$450 000, provides additional public transportation capacity at a lower cost than adding additional service. Now, through a partnership with Southwest Airlines, the airline's tickets and boarding passes are also valid between Burbank Airport and SCRRRA and Amtrak destinations. Metrolink monthly pass holders on Amtrak trains increased from 9832 to 14 952 in the first month of operation.



Rural Highway

Sonoma Creek Bridge Seismic Retrofit and Barrier Placement

- Caltrans Division of Engineering Services
- U.S. Fish and Wildlife Service
- California Department of Fish and Game
- San Francisco Bay Conservation and Development Commission

The 550 m-long State Route 37 Sonoma Creek Bridge, sitting in an extremely sensitive tidal marsh environment in the northern San Francisco Bay Area, was retrofitted with seismic strengthening by a project completed in 2002. The structural design solution, prepared by Parsons-Brinckerhoff, was lauded by the SF Bay Conservation and Development Commission's Design Review Board for improving the bridge's aesthetic quality while protecting critical marsh habitat. The project represented a successful multi-agency collaboration to complete a project within habitat of endangered species. An interagency agreement for offsite mitigation minimized Caltrans' day-to-day involvement in implementing mitigation commitments; the department's partnership with permitting agencies received a public commendation from the Marin Audubon Society.



Rural Highway

Cold Foam, In-Place Recycling on State Route 20

- Caltrans North Region Materials Lab, Construction and Design

Cold foam in-place recycling, a new technology to the State of California, was used to rehabilitate the pavement on State Route 20 in Colusa County. The route, which carries large numbers of trucks, functions under difficult conditions between irrigated fields with water elevations higher than the roadway, basement soil with poor strength characteristics and summer pavement temperatures that reach 77° C. In the cold foam process, the pavement is excavated below the bottom of the asphalt and into the existing base material to eliminate problems at the root. Hot paving oil is mixed with cold water and air to create a foaming action, coating flour-sized material with foamed asphalt to provide a new pavement with a life approximately three times that of previously used techniques.



Urban Highway

Watt Avenue Improvement Project

- Sacramento County Department of Transportation
- Nolte and Associates
- MCM Construction

The Watt Avenue Bridge over the wild and scenic American River carries in excess of 100 000 vehicles daily, and by 1996 had become one of the most congested roadways in the Sacramento area. The improvement project widened the existing bridge to improve mobility and safety and to

make the area more aesthetically pleasing for motorists, bicyclists, pedestrians and area residents. The project improved circulation from US 50 to nearby neighborhoods, added one lane in each direction and added auxiliary merge lanes between local collector roads on either side of the river. Although the project, during planning stages, had been the subject of major controversy and neighborhood opposition, it received the congratulations of its most strenuous opponents when it was completed.



Urban Highway US 50 HOV Lanes/ Sunrise Interchange

- Caltrans District 3/North Region Project Program Management
- County of Sacramento
- El Dorado County Transportation Commission

Funded by the El Dorado County Transportation Agency but lying in Sacramento County, this project made major improvements to the Sunrise Boulevard Interchange with US 50. It also added almost 20 km of carpool lanes, widened the overcrossing and on- and off-ramps, eliminated two loop off-ramps and installed ramp meters. The project improved mobility in eastern Sacramento and western El Dorado counties, among the fastest-growing areas of the state. The level of partnership was extensive and included six different jurisdictions and various utilities which worked together to minimize disruption to the public. A joint public outreach team, established to explain the project and to provide information to drivers, nearby residents and businesses, was highly successful.



Major Structures Truckee River Bridge and Overhead

- Caltrans Division of Engineering Services Structure Design Branch 7
- Caltrans District 3

The Truckee River Bridge and Overhead is the primary component of the Truckee Bypass. Viewed from downtown Truckee, the 465 m bridge frames the eastern horizon. It consists of seven long spans with flaring columns that blend seamlessly with exterior girders and is aesthetically proportioned to maintain a

bold but graceful appearance. To withstand heavy use of tire chains and the abrasion of snow removal equipment, it incorporates high performance concrete, epoxy-coated reinforcement and a polyester concrete overlay to extend its service life. It contains provisions for future installation of a weather-sensing de-icing system, and carries a sanitary sewer line across the valley, completely concealed within the structure. In the strength and simplicity of its form, the bridge brings a rugged beauty that harmonizes with nearby mountains.

Major Structure

Pier View Way Bicycle and Pedestrian Rail Undercrossing

- City of Oceanside
- San Diego Association of Governments
- North San Diego County Transit District
- Amtrak
- Caltrans District 11

The Pier View Way Bicycle and Pedestrian Undercrossing is a multi-modal non-motorized bicycle and pedestrian crossing of the only interregional rail right of way serving San Diego County. It used innovative engineering and design elements to provide safe and efficient passage for pedestrians and bicyclists between downtown Oceanside and the Oceanside Pier. Project proponents expect that more than four million people will use it each year. Prior to construction, bicyclists and pedestrians, unwilling to travel the more than three city blocks to access the pier, frequently crossed the tracks, resulting in many pedestrian accidents and close calls with frequent high-speed train operations. The project was also designed with the coastal scenery in mind, using soft colors, gently sloping ramps, planters and other aesthetically pleasing accouterments.





The Environment Martinez Regional Shoreline Park Enhancement

- Caltrans District 4
- East Bay Regional Parks District
- City of Martinez
- Parsons

Caltrans resolved three environmental challenges—mitigating impacts of the Carquinez Bridge seismic safety project, reducing flood hazards to downtown Martinez and enhancing parklands by collaborating with local agencies to develop the Martinez Regional Shoreline Park Enhancement. The project enhances the existing drainage system, builds on the rail system in the Martinez Regional Shoreline Park and restores tidal sloughs in areas that had been filled with non-native soils. Native salt marsh vegetation was provided along the margins of the channels and over the restored marsh plain. The project reduces flood hazards in downtown Martinez and provides a new connection to the park. Trails, benches and interpretive signs allow park users to access and learn about tidal sloughs and salt marsh habitat; park users enjoy stunning vistas of San Francisco Bay and the Carquinez Strait.

The Environment Grass Valley Cloverleaf

- Caltrans District 3 Maintenance, Grass Valley

The six-person Nevada City Landscape Crew transformed this nearly-barren plot of land from eyesore to eye-catcher in just a month's time at minimal cost to the taxpayers. Using an underground automated irrigation system and 500 m³ of shredded cedar bark, they reduced crew exposure and cut maintenance costs by eliminating hand watering, weed pulling, mowing and herbicide spraying. They selected native trees and shrubs with a high survival rate and aesthetic appeal. The finishing touch was to circle the area with a 2.4 to 5 m border of 20 mm drain rock obtained from a canceled construction project. Community reaction has been overwhelming, with many calls and letters, including one from the mayor of Grass Valley. As a side bonus, litter in the area has dropped off and public reaction to work in other areas has been favorable.





Transportation Related Facilities Interior Noise Abatement for Route 15/40th Street

- Caltrans District 11
- Parsons Brinckerhoff Quade & Douglas

Steep terrain and poor soil conditions in backyards along Route 15 in San Diego limited locations for construction of soundwalls in the project area. Caltrans District 11 proposed a demonstration project to use interior noise abatement measures, including mechanical ventilation and double-pane windows in residential units. The process identified noise abatement strategies to attain an interior noise level of 52 dBA or lower. A Value Analysis Team recommended direct cash payments to homeowners who, in turn, hired contractors to install the abatement treatments; Caltrans secured permission from homeowners to inspect the proposed improvements within 18 months of execution of the contract to verify its utility. The cost of the treatment averaged about \$11 000, in comparison to an expected reasonable cost allowance of \$37 000 in this community.



Transportation Related Facilities San Buenaventura Bus Transfer Center

- City of Buenaventura
- Ventura County Transportation Commission

The seven-bay Bus Transfer Center project in San Buenaventura near the Pacific View Mall integrated an artistic concept “Bus Home” into a fully functional transit facility. Serving 2.5 million transit riders annually, the center provides a centralized location to transfer between South Coast Area Transit bus routes and VISTA intercity bus service. The shelter consists of a corkscrew-like pattern of arched and half-arched steel forms depicting a

bus changing into a home. The site also includes artist-designed restrooms, bicycle racks, benches, information kiosk, drinking fountain and trash containers, and accommodates a state-of-the-art bus tracking system. The project was completed on time and within budget at a cost of \$1.7 million. Design professionals included a public artist, architect, structural engineer, civil engineer, landscape architect and transit operators. The design was also assisted by the general public through meetings and workshops with the Public Arts Commission and the City Council.





System Operations

System-Wide Adaptive Ramp Metering

- Caltrans District 7

System-wide adaptive ramp metering is a new real-time tool developed by Caltrans District 7 and the National Engineering Technology Corporation. The technology looks at the entire freeway system and predicts when and where congestion will occur, using real-time traffic data. The system adjusts upstream metering rates to avoid developing freeway congestion, reduce traveler delays and improve operations. The technology increases mainline volumes and is responsive to real-time traffic conditions on the system. It improves traffic safety and reduces conflicts at merge areas and potential secondary accidents due to congestion. Its operational costs are minimal because ramp controllers do not need special maintenance and metering rates are generated by a central system.

Safety

Angeles Crest Highway Traffic Safety Corridor

- Caltrans District 7 Office of Traffic Investigations
- California Highway Patrol
- Los Angeles County Sheriff's Department
- Caltrans District 7 Division of Maintenance

State Route 2, the Angeles Crest Highway, was troubled by an increasing number of fatalities. A task force of Caltrans, the California Highway Patrol and a number of other local and state agencies was formed after the route was designated a Traffic Safety Corridor project. The task force recommended a number of actions to ameliorate the problem, of which 46 were implemented. These included reduction of the speed limit on selected segments, installation of winding road and rock slide area symbols, establishment of a daylight headlight section, implementation of a double fine zone for the entire corridor, installation of barrier and guardrail, and changeable message signs. The number of collisions and fatalities was reduced by 14 percent and is expected to drop further as additional measures recommended by the task force are put in place.





Public Awareness Irvine Public Works Community Connection Program

- City of Irvine

The City of Irvine Public Works Department's Community Outreach Effort is both demanding and dramatic in its planning, implementation and outcomes. On Saturday, May 19, 2001, the department hosted its third annual open house in honor of National Public Works Week. The event was a tremendous success, with more than 1400 adults and children attending the three-hour morning event. Children of all ages had their pictures taken on their choice of a street sweeper or dump truck; those pictures, wrapped in a commemorative folder, quickly became treasured keepsakes. Residents enjoyed games, exhibits, demonstrations and refreshments, and participated in prize drawings. The occasion was part of the department's larger, comprehensive outreach program that also utilizes newsletters, news articles, construction signage, a dynamic Web site and school outreach.

Maintenance Operations Culvert Inventory and Assessment

- Caltrans District 2
- Caltrans District 5 Roadside Maintenance
- Caltrans HQ Maintenance

District 2's inventory of its more than 30 000 culverts includes global positioning system coordinates, external photos of end treatment, internal photos of culverts, drainage as-built plans, type of end treatment, size and material type. An assessment for each culvert and end treatment is provided to determine future lifespan. Field crews use preplanned programs called data dictionaries to collect detailed drainage information expediently. A remote-controlled culvert camera is used to assess internal culvert components.





Maintenance Operations Coronado Bridge Painting Platform System

- Caltrans District 11 Division of Maintenance

The Coronado Bridge Painting Platform System was designed in 2001 to provide more flexibility, stability, cost efficiency and ability to meet environmental regulations and constraints. The stability of the wide platform allows multiple crews to work concurrently to perform 4600 m² of painting, sandblasting and power washing in a two-week period; painting crews can accomplish nine months worth of work in five months. Combined with its secondary tarp system, the platform can be built in collective angles to control water operations and capture water discharge, debris and dust. This eliminates regulatory violations and allows crews to continue production in adverse weather. The time required to deploy and remove the platform is minimal, resulting in fewer traffic disruptions.

Historic Preservation/ Cultural Enhancement Whittier Depot Transportation Center

- Caltrans District 7 Environmental Planning
- Save the Depot
- Metropolitan Transportation Authority
- City of Whittier

This Transportation Enhancement Activities project rehabilitated the 1886 Southern Pacific Depot in Whittier, the only one of its kind in Southern California. When a developer threatened to destroy it, the "Save the Depot" community group convinced the City of Whittier to acquire it for future use. Other than requiring minor adjustments for seismic retrofitting and restrooms, the depot was intact. It was moved to a new location and set on a new foundation and new wiring, plumbing and insulation were installed. The depot's exterior was painted in historically accurate colors. Its generously sized site, well-located in the center of town, provides ample parking and a lovely passive park. It has become a new community hub for multi-modal transportation, visitor information and historic interpretation in Whittier.





Context-Sensitive Solutions Sacramento Route 160 Undercrossing Treatment

- Caltrans District 3/North Region
- City of Sacramento Public Works
- The Broadway Task Force

Caltrans District 3 has completed a project to enhance two blocks that serve as a local street in Sacramento with visual features that reflect the nearby Broadway district's art deco stylings. The design incorporates historic post-type acorn lighting, a monument with art deco-style features, an artistic security fence, planters, and accent landscape lighting. Slope paving is partially tiled and painted; the art deco-themed design provides an aesthetic appeal to the user by introducing color into the environment. Slopes are lit at night with landscape accent lights providing a nighttime effect of a series of light and dark washes. Cobble blanket, mortared in place, replaces end portions of the original sidewalk to discourage illegal pedestrian crossing at on- and off-ramps. The project has been saluted in local media as well as by representatives of neighborhood organizations.

Context-Sensitive Solutions Third Street Bridge over the Napa River

- Earth Tech/J. Muller International
- City of Napa
- MCM Construction
- Parsons Brinckerhoff Construction Services

This project replaced the seismically deficient and inadequate Third Street Bridge in Napa with a longer and higher structure. As a gateway to downtown, the bridge contains aesthetic features, including a graceful, slightly arched form and variable-depth girders with shallow midspan sections to reduce its apparent mass. The bridge, which now carries two lanes of traffic, a turn lane and a bike lane in each direction with 10-foot sidewalks, provides a pedestrian connection between businesses, shops and restaurants of downtown Napa with the nearby county fairgrounds and the American Center for Wine, Food and the Arts. Broadened sidewalks and belvederes invite pedestrians to pause and enjoy views, and vehicular circulation is improved with new turn lanes, widened shoulders and a straightened roadway alignment.

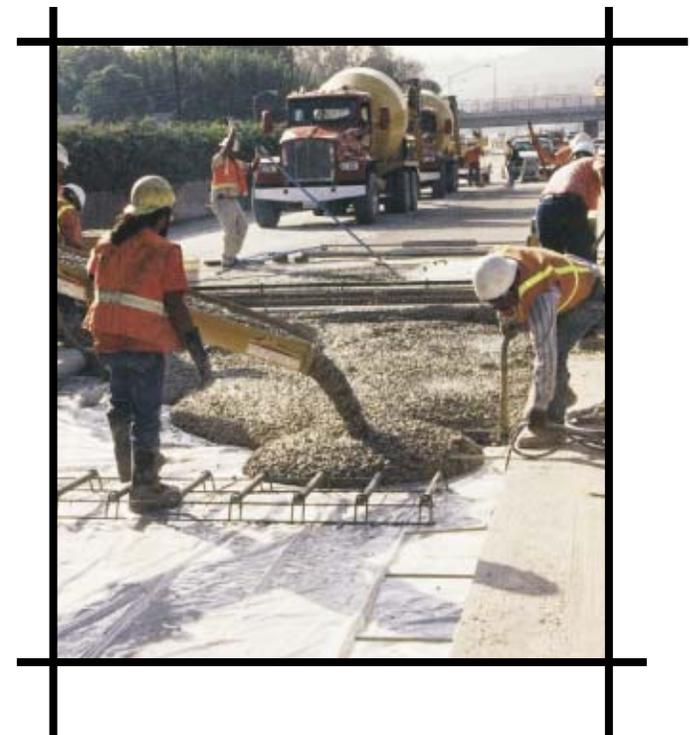


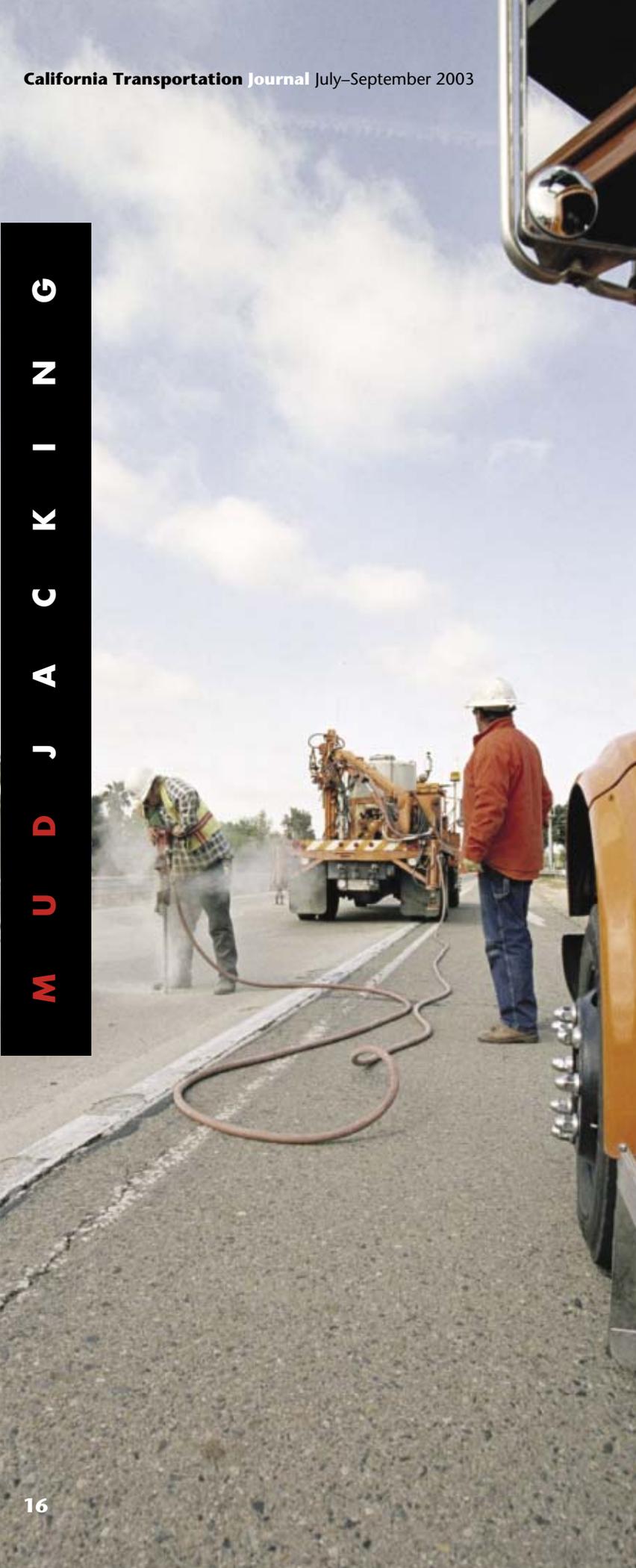


Transportation Innovations Fast-Setting Cement Concrete/ Long-Life Pavement Project

- Caltrans District 7
- Morrison-Knudsen Corporation

Caltrans District 7 gave Southern California commuters a break by rehabilitating within 55 hours a portion of the eastbound San Bernardino Freeway in Pomona with fast-setting concrete. The project was an innovative part of a \$16 million pilot project using fast-setting concrete for long-life pavement. This type of work usually takes three weeks of six-hour night closures. By contrast, the extended closure was very efficient, minimizing the time to achieve the end result. The district preserved and conserved natural resources by reducing fuel consumption and emissions. One key to the success of the project was an extensive public information campaign that warned highway users of the department's intent to close this busy freeway for 55 hours. The campaign was so successful that traffic tie-ups were minimal. Equally important were several computer programs used to schedule the workforce, monitor pay quantities and assess the quality of the work.





STOPPING THAT OLD



A 200 mm-thick pavement slab weighing more than 8000 kg is a pretty lively item in spite of all of the engineering expertise that goes into its placement.

Water, mostly, is the enemy, whether from a washout, a leaky culvert or the hydraulic action of the wheels under a 35 000 kg load. Differential settlement from seismic action or variable soils may also be a culprit. But once water gets under a slab, it'll flex like a springboard; hydraulic action starts moving materials around as heavy vehicles travel over it. Eventually a void is created, then more hydraulic action and, eventually, failure.

The first line of defense against this is engineering—careful choice of sub-base and base materials, impermeable membranes, dowels. Crack-sealing is the second line. But over time, in many places, maintenance forces are called on to employ still another: sub-sealing- or as the field guys like to call it—mudjacking.

Mudjacking consists of drilling a 100-mm hole through a concrete slab and forcing a fly-ash slurry under it to fill the void. This is best done to forestall a failure, one that would require replacement of the slab.

The question of when to perform the operation is up to an area maintenance supervisor. Savvy maintenance crew members can tell when voids are starting to materialize—either when a slab begins to rock as trucks traverse it (most mud-jacking is done in the far right or “truck” lane), when new cracks start to appear, or from the presence of a grayish residue at a pavement joint—evidence that “fines” are being pumped around underneath the slab.

And so today, on a warming spring day, a District 6 mudjack crew out of Fresno is out on Route 198 just west of Visalia, pumping “mud” under several rocking slabs. Today's crew is composed of Tim Kochheiser and Steve Musch, who are regular mudjackers, and Danny

Martin's Bridge Maintenance crew: Tom McCarthy, Chris Lancaster and Steve Choate. The two crews are working together as a single mudjacking crew because vacancies made it necessary for the crews to team up to achieve full strength.

The mudjack operation begins, as all pavement work does, with the creation of a .8 km-long work enclosure with a crash-cushioned shadow truck parked strategically to block the path of any errant vehicle. Even so, these workers are a scant meter from onrushing traffic—close enough to give you the willies when a large truck roars by.

With the enclosure set up, Steve Musch grabs a pneumatic drill to start the operation, punching several 100 mm holes in each slab to be treated. It's fun to watch an experienced roadwork crew in operation. They go at the work wordlessly, each crew member taking up a task without consulting another; everyone ends up with a job and they go about the work quickly and efficiently. You have the impression that each crew member has a kind of horror at the notion that he might present an impression of idleness to the hundreds of drivers whistling past.

After the drilling, crew members force water into the holes to provide lubrication so that the fly ash mixture will flow around under the slab and fill the voids. Usually, crews will drill and then lubricate a day's worth of slabs, to allow them to dry before injecting the mud the following day; but on this day, they are illustrating the entire process for the Journal.

"You never know where the water is going to come up," says Danny Martin. "It may emerge from the joints, or on the shoulder, or sometimes clear out on the embankment somewhere."

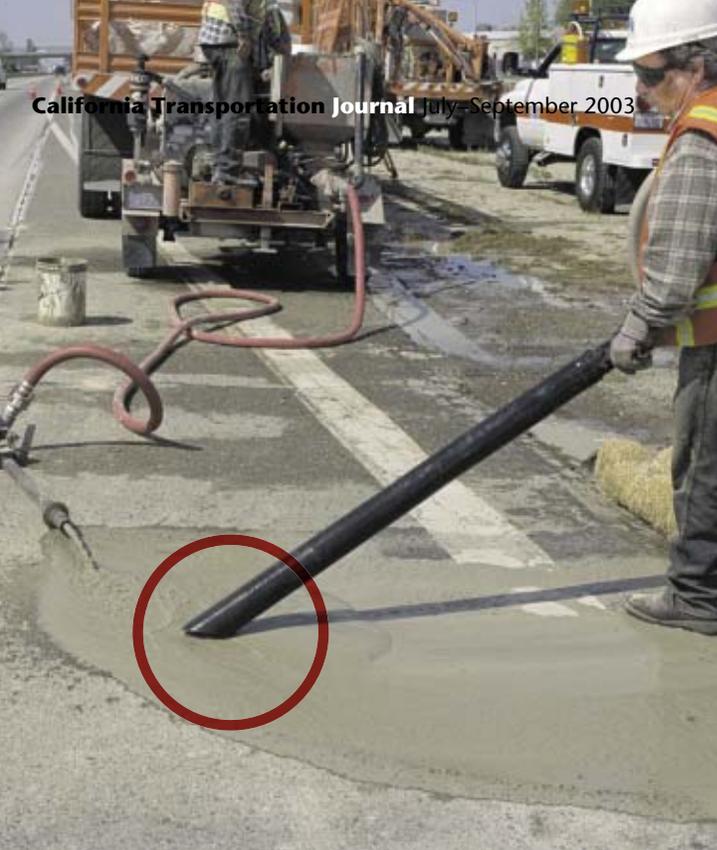
The impression is that there may be a labyrinth of tunnels and passageways under a typical pavement slab.

The next step is the injection of the fly ash mixture. Fly ash—a by-product of the burning of coal and a good thing to use environmentally since it disposes of what might otherwise be considered a waste product—is added to cement grout. It is a lubricant and makes concrete mixes flow more easily in pumping equipment. It improves workability, plasticity, permeability and sulfate resistance;

continued



Mudjacking consists of drilling a 100-mm hole through a concrete slab and forcing a fly-ash slurry under it to fill the void.



reduces alkali reactivity and the heat of hydration; and is a partial cement replacement or filler for economical reasons. Great stuff.

In a day, the crew will use four or five pallets—more than 5000 kg of the mixture. Mixed at the roadside by Tim Kochheiser, using what he would term the eyeball method, it has the approximate consistency of strained carrots in a jar of Gerber baby food. It is forced into the holes which are then filled with wooden plugs to keep it from seeping out. Steve Musch and Chris Lancaster place little mounds of the dry mixture at selected locations along the pavement joints. As the material is pumped under the slab, they watch these mounds for a crack, which means that the slab is starting to rise and it's time to stop pumping.

This elevation of the slab, by the way, is where the term “mud jacking” comes from. What the crew is doing today technically is sub-sealing, but these guys call it mud jacking anyway. The procedure can actually be used to raise the elevation of a slab by as much as several hundred millimeters.

The sub-seal procedure is repeated with each of the holes. The material is allowed to set for a few minutes, and then the wooden plugs are removed.

The end of the operation gives testimony to the care that Caltrans takes these days to protect California's water quality, even though there is no watercourse nearby. Crew members have placed straw wattles at the road's edge to trap and absorb any material flowing off the highway. Next, they employ a 1000 L Ditch Witch vacuum rig to suck up all of the excess fly ash mixture and residue from the drilling. The pavement is then washed off and the wastewater, too, is vacuumed up. Nothing of the operation remains on the highway or has been allowed to migrate off it. The waste material will be hauled to a certified disposal site and off-loaded.

“It ain't brain surgery,” Kochheiser says. “But there are some tricks to it that you learn after you've worked with it awhile.”

And those tricks, today, are keeping District 6's pavement slabs from rocking and rolling.—Gene Berthelsen

As the material is pumped under the slab, workers look for a crack which means that the slab is starting rise.



STAYIN' ALIVE ON 25

A SERIES OF HEART-WRENCHING ACCIDENTS ON A HIGHWAY THAT STARTED ITS HOPEFUL TENURE IN THE CALIFORNIA HIGHWAY SYSTEM AS A BUCOLIC COUNTRY ROAD IS EMBLEMATIC OF THE PRESSURES PLACED ON CALIFORNIA'S TRANSPORTATION SYSTEM AS 500 000 NEW CITIZENS ARRIVE IN THE STATE EACH YEAR AND WILDFIRE DEVELOPMENT OVERWHELMS ITS ROADS.

The effort to ameliorate the safety problems that cropped up as a result of the sudden increased use of the highway, in tandem with a change of its function from farm road to commute artery, is a story of cooperation by local, regional and state agencies as well as skillful grassroots organization by those using it. It also illustrates the success of two statewide programs, one at Caltrans and the other at the California Office of Traffic Safety.

State Route 25, which connects US 101 near Gilroy with Route 198 near King City, became a part of the State

Highway System in 1933, and the portion of it south of Hollister remains a meandering country road that sees fewer than 500 vehicles a day, despite appearing as if it should enter Brigadoon just there, down around the corner.

Especially at its northern end, between Hollister and Gilroy, Route 25 had for years served the farmers of the San Benito Valley, where lettuce, melons, alfalfa hay, cucumbers and a wealth of other crops leapt almost unbidden

continued

from the charcoal-black earth. The equipment to cultivate this fertile breadbasket lumbered along Route 25's shoulderless 3.6 m lanes at a top speed of 40 km/h and the few drivers who encountered produce trucks, tractors and harvesters were able to pull out and pass without incident.

Then development came to northern San Benito County. And nothing prepared Route 25 for the sudden inundation of development as the sleepy town of Hollister and its surroundings became an economical haven for workers in the Santa Clara Valley—Silicon Valley—who were fleeing stratospheric home prices and the crush of elbow-to-elbow residential construction there.

Starting in the 1980s, the area served by State Route 25 became the new home of 1000 new residents annually. The population of Hollister increased from 19 212 in 1990 to 34 414 in 2002, with more than half of the new residents commuting daily across the Santa Clara County line, just 25 km up the road.

Average daily traffic on Route 25 at the county line spurted from 9000 vehicles daily to more than 18 000 by 2000. With the increase in travel, the number of accidents increased from 0.43 per million vehicle miles to 1.08 in 1998 as San Benito's new commuters, hell-bent on the

trip between home and work, drove at the very cusp of danger. While the rate on Route 25 was not exceptionally out of line with the statewide average of 0.97 accidents per million vehicle miles, the highway was tragically the scene of several spectacular, cross-centerline head-on accidents that took the lives of 18 people over the decade. Between January and June 2000, these accidents killed 12 people and injured 27.

Pressure to provide new safety measures accompanied the increasing number of accidents; by the year 2000, Bradley Pike, a San Benito County resident, had collected more than 23 000 signatures on a petition to upgrade the highway. "Stay Alive on 25," Pike's rallying cry, had succeeded in garnering signatures of more than half of the residents of San Benito County.

In 2000, Caltrans and the California Highway Patrol crafted a two-pronged response. These were the approval of a \$100 500 grant by the California Office of Traffic Safety to Caltrans and the patrol to take action on the highway as part of a Corridor Safety Project Program. At the same time, Caltrans placed the highway in the statewide "Two- and Three-Lane Monitoring System for Cross Centerline Collisions."

The Office of Traffic Safety grant spurred formation of the Highway 25 Safety Task Force—individuals from 25 public and private organizations who took on the task of identifying enforcement, engineering, signing, striping and driver education actions that could contribute to a safer roadway. The effort was a reflection of a corridor approach that had been used successfully to reduce accidents on 21 separate routes since 1993.

Caltrans responded first to the task force with the fastest project it could produce, a safety project to place a 600 mm soft barrier, rumble strips, and enhanced delineation on the roadway, completed in December of 2001. While the accident rate fell from 1.08 accidents per million miles to 0.81, the dramatic cross-median accidents continued to occur.

The safety task force proposed a further widening of the median to 0.6 m with a soft barrier—rumble strips and reflective thermoplastic striping. It also recommended shoulder widening, with rumble strips, removal of obstacles such as poles, relocation of ditches and culverts,

Increased awareness is a critical component of the campaign by Caltrans and the Office of Traffic Safety.



designation of the corridor as a daylight headlight section and signs to warn of radar enforcement and aircraft patrols.

Other recommendations included additional enforcement by the California Highway Patrol and Hollister Police Department, joint driving-under-the-influence checkpoints and a public information campaign that included billboards to encourage people to drive more safely. The campaign's message, "Safe, Smart, Alive on 25," was carried on signs, flyers, lanyards, coffee mugs and a number of other media.

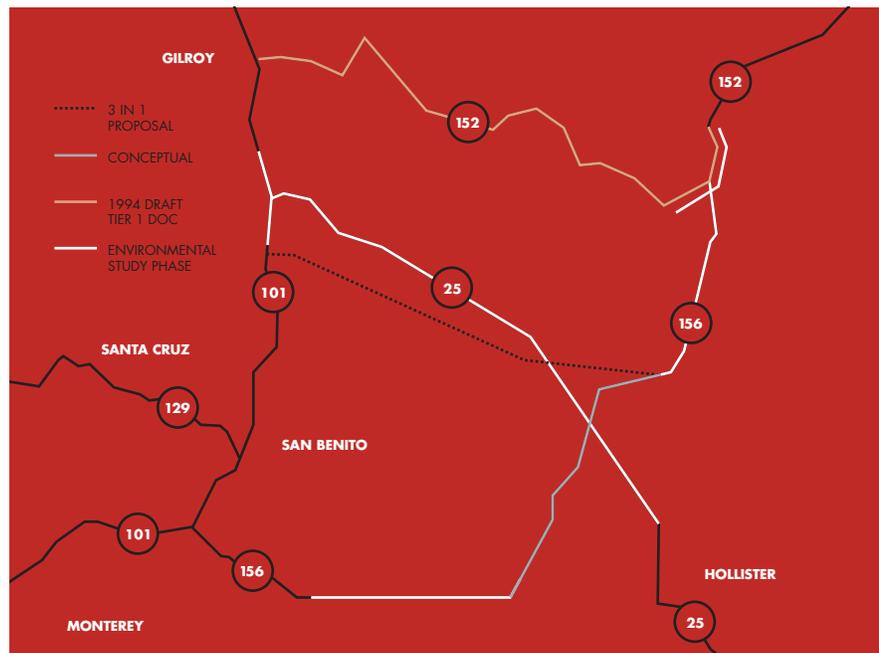
The campaign was effective. Accidents were reduced by 12 percent, injury collisions by 25 percent, and, most dramatically, fatalities dropped by 67 percent.

The second element of the response was Caltrans' placement of Route 25 in the cross-centerline accident program. In meeting the criteria for this program, the route qualified for accelerated implementation of a 1.2 m median rumble strip flanked by raised and inverted profile thermoplastic stripe, shoulder reconstruction and widening from 2.4 to 3.0 m, shoulder rumble strips, and a 3.0 m clear recovery zone. The project also called for resurfacing with 60 mm asphalt concrete to roll in rumble strips in the median and in the shoulders.

That project, which was completed in November of 2002 at a cost of \$6.5 million, has been a success. While statistics are still being compiled, Richard Rosales, Project Manager for Route 25 in Caltrans District 5, notes that reports of accidents have dropped dramatically and that there have been no fatalities in the project area since it was completed.

There remains a larger issue of Route 25. Even though the interim safety measures appear to have had a positive effect, travel on Route 25 is expected to double again over the coming 20 years, further complicating the mix of uses along it. Route 25 provides crucial transportation service to agriculture in the region; a steady stream of commute, business, recreational and school users will require additional upgrading.

But any transportation development in this area is complicated by the fact that it involves both Santa Clara and San Benito Counties, with vastly differing resources, popula-



tion bases and governmental agencies. And Route 25 is only one of three routes (the others being Routes 152 and 156) that serve the area. Local farming interests have proposed that improvements on all three be consolidated into a single route to save money. San Benito and Santa Clara Counties have differing priorities for improvements.

Caltrans has completed a draft of a project report recommending widening of Route 25 to a four-lane divided highway between Hollister and Route 101 in Santa Clara County, at a currently estimated cost of \$177 million. (Local agencies are also responding to travel demand on Route 25 by providing funds for a \$25 million, two-lane bypass of congested downtown Hollister.)

However, economic, environmental and transportation issues are fluid at this time, and District Director Gregg Allbright sees a period of intensive coordination with local interests before a solution can be found.

In the meantime, the city of Hollister basks in the sun of San Benito County and each year lives up to its name as the setting of the film, *The Wild Bunch*.

And Route 25 is a part of that setting: motorcyclists consider it a challenge to drive the 149 km of twisting curves between Route 198 and Hollister at an average speed of 160 km/h.—Gene Berthelsen

Rapid development in northern San Benito County has transformed Highway 25 into a major commuter route for workers headed for Silicon Valley.



(HOV)

High-Occupancy Vehicle Lanes

“What good are HOV lanes? There’s nobody in them, right?”

That’s a common complaint about these lanes, even though they usually carry more travelers than the next two lanes combined.

That complaint, in 1999, led to the passage of legislation to reduce the minimum occupancy requirement on the El Monte Busway from three to two persons. And it may have been the best thing that ever happened to Caltrans’ HOV lane program.

The busway, as it’s called, at the time was one of the most effective HOV facilities in the world. Before SB 63, it did the work of 2.5 mixed-flow lanes. The occupancy violation rate averaged 7 percent, well below the 10 percent threshold that triggers heightened enforcement. About 80 buses used it during the peak periods.

SB 63 changed all that. After two-person carpools were allowed into the lane, heavy congestion developed; speeds dropped from 65 to 20 mph during peak periods, delaying bus riders and carpools. The number of buses using the lanes during peak hour dropped from 80 to 55. And the mixed-flow lanes experienced only minor improvements.

Bus riders were outraged. Their travel time increased by 20 minutes in the morning and 30 minutes in the afternoon, causing those connecting to trains to howl about missed connections. Commuters complained that their incentive to carpool or take public transit had been removed, and that SB 63 had dealt environmental protection and the conservation of gas and other resources a serious blow.

By July 2000, new legislation restored the three-person requirement and the busway began to flow again, without significant impact to traffic in the mixed-flow lanes. Bus service returned to pre-SB 63 levels. A lingering impact was that occupancy violations jumped to as high as 40 percent, requiring more stringent enforcement by the California Highway Patrol. A public information campaign and heightened enforcement swiftly lowered the violation rates to levels below 10 percent. For most drivers, life returned to normal.

The short, unhappy life of SB 63 tested and verified a number of things about HOV lane operations that are likely to build support for other HOV systems. The reduction of the minimum occupancy requirement overburdened the facility during the peak periods. And while the purpose was to maximize the use of the busway, its ability to carry commuters was severely crippled. The beneficiary of SB 63, the mainline freeway, experienced only slight improvement in travel times and average speeds during the peak periods, because more drivers were attracted to it. Thus, the length of the congestion period did not change.

In essence, what SB 63 showed was that those lanes might look empty, but they're not; they're carrying a lot of people.

Since HOV lanes were introduced 30 years ago, they have been embroiled in controversy. The approach was simple: maximize

the people-moving capacity of congested metropolitan freeways by providing an exclusive lane for vehicles carrying more than one occupant. The time savings to those who shared rides would be an incentive. Congestion and energy consumption could be reduced and air quality and mobility improved.

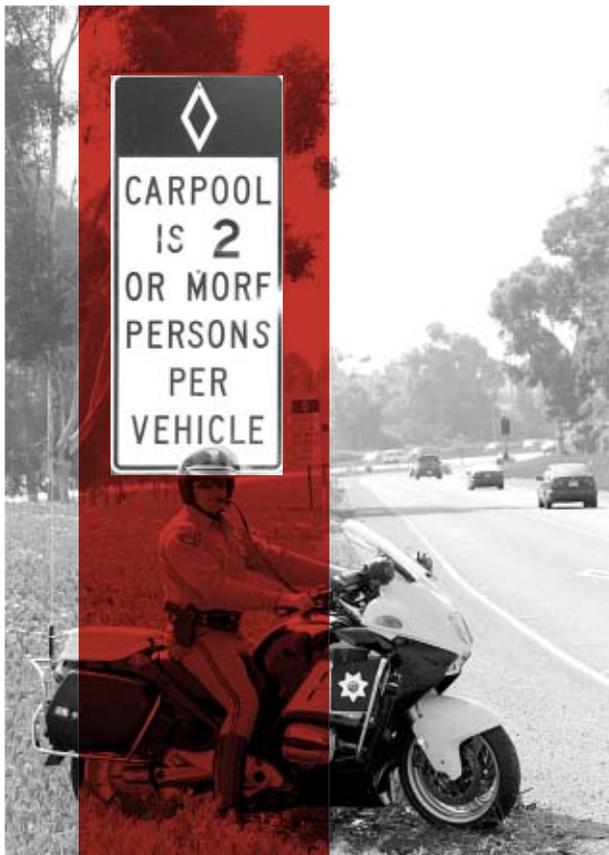
But the infamous Diamond Lane experiment on the Santa Monica Freeway in Los Angeles in 1976, which converted a mixed-flow lane in each direction to a three-or-more-person HOV lane, was a devastating early step, alienating nearly everyone in the Los Angeles Basin. Even so, by the time Caltrans was forced to pull the plug on it, it was doing what most other HOV lanes do: carrying more people than those parallel to it.

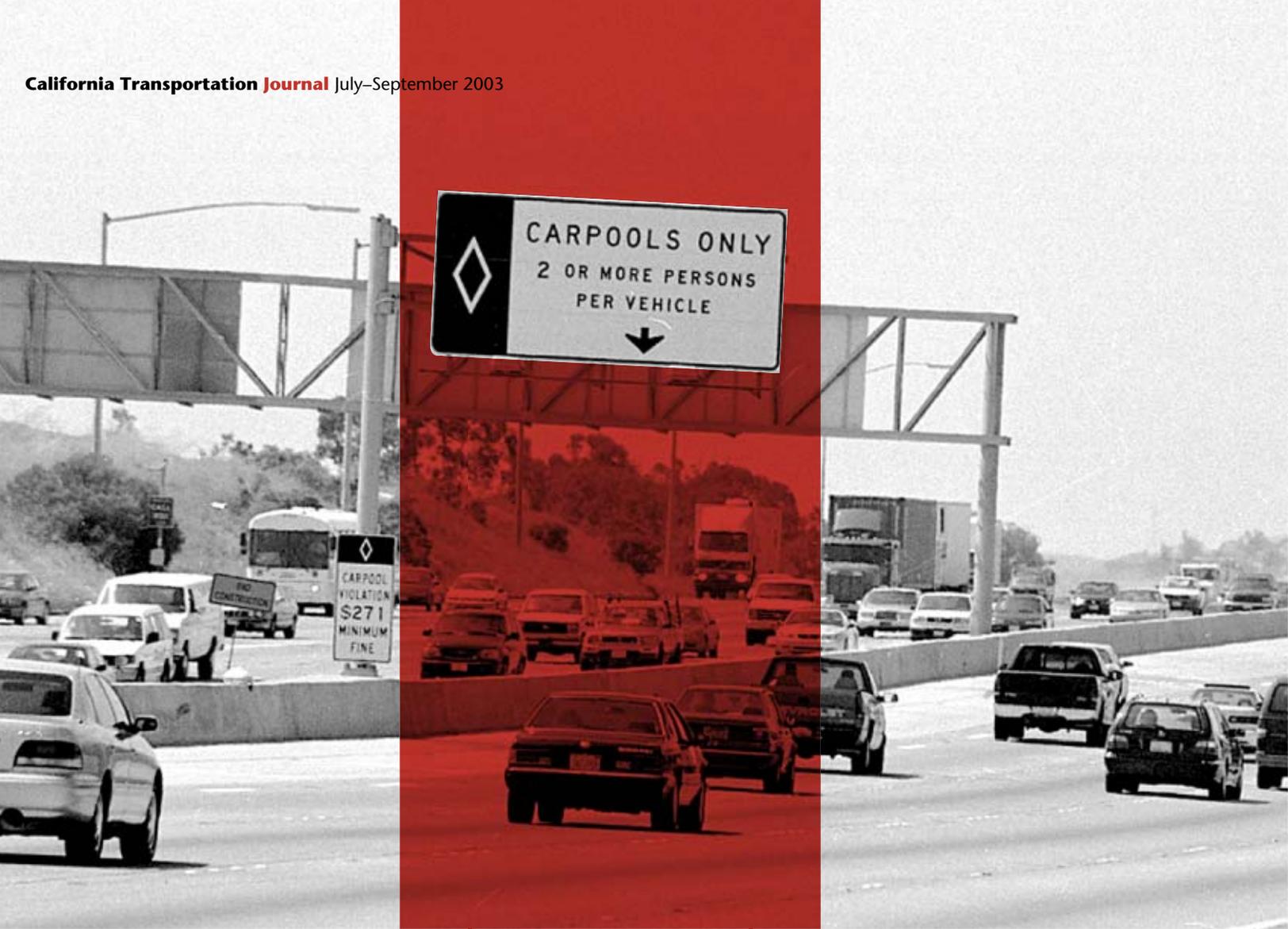
Caltrans has gone on to build many hundreds of kilometers of HOV lanes, but always after planning studies weigh the potential benefits of the "no build," HOV, or mixed-flow lane. Although HOV lanes are closely tied to stringent federal air

quality conformity standards, Caltrans, in partnership with local agencies, will build them only where they offer the greatest benefit. And when the HOV lane is the most useful option, it is implemented only by adding a lane, never a take-away.

Today, California has approximately 40 percent of the total of HOV lane mileage nationwide, carrying up to three times more people than the mixed-flow lanes next to them. The network has grown from 240 segmented lane-miles in 1990 to a comprehensive system in excess of 1100 in Sacramento, the San Francisco Bay Area, Los Angeles, the Inland

continued





Empire, San Diego and Orange County. Caltrans opens additional lanes each year and has programmed many more. A recent US census report concluded that while carpool rates were on the decline nationally, carpooling was up in California. In fact, the cities of Anaheim, Santa Ana and Oakland are the top three carpooling cities in the nation.

Recently, Caltrans teamed with the Los Angeles County Metropolitan Transportation Authority (MTA) to analyze traffic and user data—the most comprehensive such study to evaluate the effectiveness of HOV lanes in Los Angeles County. MTA committed the funding for the project, called the HOV Performance Program, to measure the impact of HOV lanes against a set of program goals and objectives. Performance data was supplemented by extensive market research to determine the level of support for the HOV system, to understand traveler needs and desires, and to expand ways to communicate the benefits of HOV facilities.

The results of the LA Performance Program were telling. In Los Angeles County, public support for HOV lanes is very high. An overwhelming majority, 88 percent, of Los Angeles County residents support the lanes; even the 70 percent of drivers who do not use them are in support. This support is evidenced in every area of the county by users on every freeway route and by all ethnic and income groups. Respondents indicate that the lanes provide time savings, although the savings vary. In fact, the most serious challenge to Los Angeles County's HOV lanes is that they have become so popular that they are getting too crowded. Several are close to reaching a maximum desirable operating capacity.

The 7.8 lane-mile Interstate 405 HOV lanes in Los Angeles, which closed a gap to create the nation's longest continuous stretch of HOV lanes, are a recent example of HOV lane effectiveness. Opened on January of 2003, this

Today, California has approximately 40 percent of the total of HOV lane mileage nationwide, carrying up to three times more people than the mixed-flow lanes next to them.

segment through the Sepulveda Pass relieved congestion throughout the I-405 corridor, including the SR-101/I-405 interchange. Previously congested for as much as 12 hours per day, the freeway now flowed freely except for two morning peak hours. The afternoon peak is congestion-free. HOV and non-HOV commuters alike have cut their travel time by at least half, saving 20 minutes. For this reason, Caltrans continues to receive accolades from the public and media.

Once a decision has been made to develop an HOV facility, whether to operate on a part- or full-time basis, depends largely on the level of congestion, length of peak and off-peak periods and number of peak periods in a day. Hours of operation throughout both a corridor and region must be consistent in order to avoid the potential for motorist confusion.

Caltrans and its partners strive to achieve uniform operation as much as possible; however, congestion, length of peak and off-peak periods and number of peak periods differ widely throughout the state. Studies and demonstration projects have shown that full-time operations, when peak periods are longer (typically between six to 11 hours), are better at relieving the rate of congestion, providing rideshare incentives, and easing enforcement. Further, restricting the number of access entrances and exits for HOV users allows them to travel at higher speeds, which translates to greater time saved per trip. This is why areas that experience lengthy periods of congestion with short off-peak traffic hours typically operate full-time with restricted access. Southern California's cities, which often reflect these traffic patterns, thus warrant full-time operations, while Northern California's cities do not.

The part-time operations in Northern California pose challenges. Motorists must understand the time, day, and minimum occupancy by which the lane operates. In addition, the part-time lane must provide a lane-line separation that allows access to all vehicles during the off-peak. Therefore, part-time HOV lanes are separated from the adjacent mixed-flow lanes by the same broken white

line or reflective marker pattern used on mixed-flow lanes. The unrestricted HOV lane traffic is free to enter and exit the lane throughout its length in order to provide optimum off-peak use of all lanes by all vehicles.

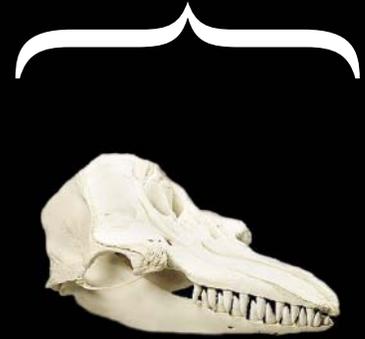
Caltrans closely monitors and evaluates the performance and effectiveness of HOV and adjacent mixed-flow lanes by studying mixed-flow lane volume, occupancy counts and tachograph runs. The districts monitor the lanes twice yearly after the first year in operation, providing annual status reports that evaluate and present their operational performance and effectiveness. The reports discuss hours of operation, violation rates, signage, extensions of existing facilities and comparisons of their performance with that of previous years. Peak period traffic volumes and occupancy are gathered through manual counts in the spring and fall. The collected traffic counts are recorded in various time intervals and used to calculate existing peak hour volumes.

Although HOV lanes have been proven effective, there is room for improvement. Because the most efficient HOV lanes are those that are heavily used by buses, transit should be considered in all levels of design for HOV projects. Advanced access improvements such as drop ramps and freeway-to-freeway connectors at strategic locations are needed to encourage public transit agencies and private transportation providers to use the lanes. On-line transit stations, providing seamless access to buses and patrons along HOV lane corridors, would also improve bus use, as well as connectivity to Park-and-Ride facilities, ramp metering and traveler information.

The divisions of Traffic Operations and Mass Transportation have begun a study of HOV transit enhancements to guide the development of a 10-year master plan and program of projects. The study will also recommend a public information campaign aimed at promoting the advantages of ride sharing and increasing transit use by the state's Park-and-Ride and HOV facilities.

But certainly, the experience of the El Monte Busway and SB 63 will buttress arguments for the continued development of these workhorse lanes.

A Whale of A Construction Story



Pseudorca Crassidens.

Sometime about 20 million years ago—give or take a couple million years—a female pseudorca crassidens (oh heck, let’s call her “Willie”) living near the coast of what is now Southern California somehow managed to get herself encased in sandstone.

How Willie did that is left to speculation. Ten million years ago, Orange County was an ocean margin, with islands offshore and beaches populated by marine mammals, including sea lions and creatures that resembled walruses and sea cows—and Willie. She might have been trapped in an underwater landslide or beached herself and gotten covered by something that preserved her. But however she did it, she lay in that sandstone and was compressed and hardened and finally uplifted into the grassy slopes of the Laguna Hills by 20 million years of geologic activity.

It took Caltrans and Carlos Angulo to free this particular Willie. On March 27, 2003, Angulo, a sharp-eyed monitor with the LSA Corporation, spotted her as a dozer from the SEMA Construction Co. ripped into the rock in which she lay as it was grading an excavation section for Route 133.

Willie, a pseudorca crassidens, is a “false orca”—a black dolphin about 5 m long; her head slopes gradually from

tip of her snout to her blowhole. She looks a bit like a short-finned pilot whale but without the bulbous forehead. Her small, narrow backward-directed dorsal fin is near the midpoint of her back, and her small pectoral fins are about one-eighth of her total length. She has 11 large, conical teeth 15-25 mm in diameter in each tooth row. An adult male pseudorca will reach a length of 5.7 m.

The oldest skeleton (by as much as 10 million years) ever found in Orange County, Willie is the subject of a great deal of excitement at the LSA Corporation, the firm hired to monitor the finds in the paleontologically rich Laguna Hills where Caltrans and its contractors today are tearing away at the landscape to rebuild Route 133 between State Route 73 and Interstate 405.

Willie didn’t stop the Route 133 construction. After Angulo spotted her, the SEMA Co. quickly dispatched a ripper to her and carefully extricated the chunk of sandstone

in which she was encased. She was loaded onto a truck and taken to LSA's laboratory, where she now sits in several pieces, waiting to be further analyzed. Her teeth, rib bones and blowhole are clearly evident in the chunks of sandstone encasing her.

"We always do a little dance when we find something like this," says Lloyd Sample, LSA's Field Director. If ever anyone could be identified as a rock hound, it would be Sample, a tall, amiable man who says that his favorite find is "always the next one."

Sample and his fellow paleontologists had to work quickly. Fossil digs sponsored by research grants can take months, even years, while the paleontology that comes with roads must avoid disrupting construction work if possible. "It could be referred to as 'pluck and run,'" Sample says.

Sample's company, LSA, is an employee-owned firm that provides environmental planning, design and technical services. It is monitoring biology, cultural and paleontological issues on the Route 133 project. Sample's laboratory in Tustin, is a dusty warren that is filled chock a block with the bones of giant ground sloths, woolly mammoths and sabre-toothed tigers, all labeled and ready for further analysis. At several tables, squads of archaeologists sit hunched over trays under high-intensity light to sift out shells, artifacts and other detritus of the geological forms, species and civilizations that preceded 21st century Orange County's opulent culture.

Willie will stay at Sample's laboratory for months and perhaps years, but at some time, she will be transported to an "accession collector," where she will be carefully excised from the rock, reassembled and made ready for display at a museum or educational institution. LSA will prepare a written analysis of Willie that will become a part of the permanent record of the Route 133 project.

But in addition to that, if Willie is as spectacular a find as she initially appears to be, she will be the subject of discussion, debate and scholarly papers. She will help rewrite the geologic and biological history of Orange County and, while not as glamorous as the Piltdown Man, she will help paleontologists limn a new picture of California's south coast.

Willie and her story are all a part of a process of road construction that can change the instant a dozer or a ripper



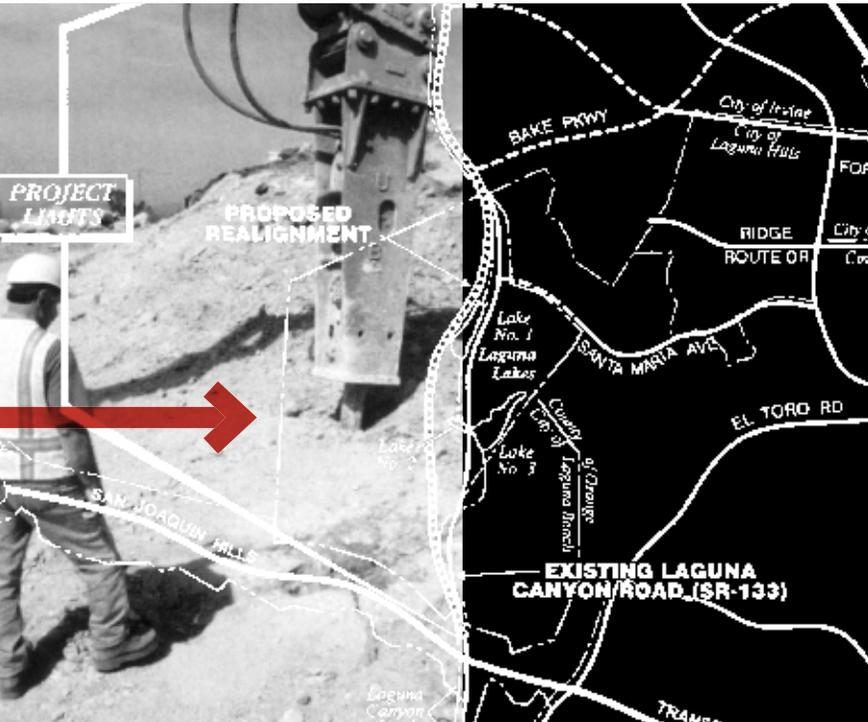
gets underneath the topsoil. That's why the Route 133 project has placed Cheryl Sinopoli out on the grade. A peppery, diminutive bundle of energy, Sinopoli, her wavy blond hair descending to her shoulders from her Caltrans hard hat, strides around the job in lace-up boots. An archaeologist, her job is to oversee LSA's monitors and to guard against the destruction of any cultural features that the project encounters. She's on the job at 6:30 a.m. to get a list of the day's construction activities and to direct the monitors to watch for any activities that may affect "paleo," archaeological or Native American sites.

"This is a big project with many constraints and we have a very ambitious contractor with a very tight schedule," says Octavio Rivas, Resident Engineer on the \$18.5 million project. "Cheryl and the other Caltrans professionals are indispensable for keeping the project on track and within budget."

The project, actually initially planned by the County of Orange, was to be paid for with local funds to solve a number of problems. These included a higher-than-expected accident rate, high and growing traffic demand that exceeded the capacity of the two-lane highway, and problems with highway drainage that resulted in flooding during high-rainfall winter seasons. In addition, the old highway had bisected two natural lakes and traversed wetlands; a highway on new alignment could get out of

Caltrans archaeologist Cheryl Sinopoli checks out the location where Willie, the oldest skeleton found in Orange County, was discovered during construction of the new alignment for Route 133.

continued



to 90 m with a split grade design and sculpted side slopes that allow the roadway to resemble a country road winding through the wilderness park. It includes three undercrossings for drainage and animal passage and another vehicular undercrossing. When the project is completed, the old highway will be obliterated to reconnect the lakes and restore wetlands and the ancient drainage channels.

“SEMA is a go-go construction firm and a very good one,” says Octavio Rivas. “They came in with a very low bid, partly to gain a foothold in California, and their ability to make a profit on this project depends on how quickly they can get it done.”

As with most projects of any size, this has brought a veritable alphabet soup into the picture. These include the U.S. Fish and Wildlife Agency, U.S. Army Corps of Engineers, Environmental Protection Agency, Federal Highway Agency, and a host of other state, regional and local agencies. Rivas points out that there are only 15 days each year in which the project is not subject to construction windows somewhere along its length to protect the nearby sensitive species. “This makes trying to produce a CPM for the project a bit of a nightmare,” he says. “And it makes the work of our monitors just that much more valuable to us. We have had great cooperation from other functional units within the district.”

Rivas notes, in particular, that District 12 Surveys unit basically flooded the project with its staff in order to allow clearing and grubbing to move forward rapidly. The result is that by early April the contractor had completed 26 percent of the work items within six percent of the allotted time.

Out yonder on a spring day lies another hillside that has yet to be ripped open for the construction of Route 133. As one looks at its gently rolling slopes and waving grasses, it is possible to imagine that there are other whales, mammoths and sabre-toothed tigers interred there, awaiting their turn in the sun.

It is also possible to look beyond, to the offices, houses and highways of Orange County, to wonder how much of this will be encased in sandstone 23 million years from now, and what a future Octavio Rivas, Cheryl Sinopoli and Lloyd Sample will think about it when it gets dug up again.—Gene Berthelsen

Realigned Route 133 will provide an improved direct link between Route 73 and Interstate 405.

the wetlands and allow the two lakes to be reconnected. The existing highway also was plagued by a substandard median, curve radii and shoulder widths.

The upper Laguna Canyon is considered a highly sensitive environmental area; much of it has been acquired by public agencies for preservation as a wilderness park. The area is home to the endangered gnatcatcher, least Bell’s vireo, coastal sage scrub and other sensitive species. Lying within the wilderness park (the park and the highway project were planned as part of the same process), it is crossed by a number of animal trails.

The County of Orange started preliminary engineering in 1992, but uncertain financial conditions made it impossible for the county to continue. Caltrans took over its development. The current project, on which SEMA Construction started in January 2003, is partially financed by the county and by Caltrans. Portions of the right of way have been donated by the Irvine Company and local agencies.

The project will construct four travel lanes and widened shoulders on new alignment with minimum-radius curves of 610 m and a design speed of 100 km/h for its entire length. The meandering median varies in width from 12



THE NOYO RIVER BRIDGE

SEE-THROUGH BRIDGE RAILS

A NEW BRIDGE FOR FORT BRAGG

THE NOYO RIVER BRIDGE, A GREEN, 50-YEAR-OLD, TWO-LANE TRUSS BRIDGE THAT SOARS ABOUT 35 M OVER THE HARBOR AT FORT BRAGG IN MENDOCINO COUNTY, PROVIDES A DRAMATIC VIEW OF THE WORKING FISHING VILLAGE BENEATH IT.



The Old Fish House, Seahawk Fishing Tours with Captain Tim, North Harbor Trading Company and a dozen other funky enterprises sit in a fume of sea air, stored fish and diesel, the roars of sea lions, the squawks of gulls and the horns of fishing boats. Out to the west, rugged cliffs, rocky outcroppings and coastal greenery flank the opening of the river to the ocean. Fishing boats chug busily out to sea in pursuit of the daily catch. On the right kind of day, it is possible to catch a glimpse of a sunset that any photographer in the world would give his or her eyeteeth for.

continued



Fort Bragg's deep ties to the sea and long history as the beehive of activity along the Mendocino coast are readily apparent as you cross the Noyo River Bridge.



Crossing the harbor on the old narrow bridge, pedestrians can gaze down on this harborscape and feel as if they had encountered a slice of Cape Cod in Mendocino County.

And so when Caltrans announced that the functionally obsolete and structurally deficient bridge, which was particularly susceptible to potential seismic damage, was to be replaced by a 26 m-wide concrete box-girder bridge with two lanes in each direction—plus a 3.6 m median and two 2.4 m pedestrian walkways flanked by a see-through Type 80 concrete barrier—a vigorous dispute erupted. Some of it due to the width of the bridge, but mostly due to the loss of views associated with the solid concrete railing.

There was little dispute that the old bridge needed replacement. The bridge was vulnerable to collapse during large seismic events. Its seismic restrainer cables had corroded to a state beyond repair and possessed minimal structural value. Grout pads had deteriorated and there was evidence of unsound concrete at the tops of the columns. Potential liquefaction of the underlying soils added to the risk of collapse. There was extensive corrosion from the harsh salty coastal environment.

Further, the accident rate was roughly twice that for similar facilities, mostly resulting from stopped and slow-moving traffic owing to the fact that two-lane bridge four-lane road segments. Walkways did not meet Americans with Disabilities Act requirements. It could not accommodate anticipated growth in traffic.

The urgency of the seismic requirement had pitched Caltrans into an expedited schedule that foreshortened much of the normal review process and reduced the involvement of local interests in the project. Yet Caltrans responded to the community's concern by rushing through the testing and approval of the Type 80 see-through concrete barrier rail. Prior to the Type 80's approval, no see-through railings had been approved in California.

When Caltrans presented the commission with the new rail design, sentiment remained that it did not provide enough viewshed. The California Coastal Commission, approving the project by a 5-to-4 vote, imposed a \$1 million "scenic loss" mitigation penalty in March 1999 because of its visual impact.

When Caltrans requested a staging amendment to the bridge permit in May 2001, pressure, led by a local preservation group—the Dharma Cloud Foundation, which stated its mission as one of “benefiting the quality of life on the Mendocino Coast with special interest in Buddhism, Jackson State Forest, Jughandle State Reserve, the Caspar Community and the Noyo Bridge”—began to build for a change to a more open design. The commission granted the staging amendment, with the condition that Caltrans provide alternative designs for the railing within 18 months that would provide a better view.

“It was not just a matter of substituting a see-through rail for the safety barrier,” says Nahed Abdin, Senior Bridge Engineer and Barrier/Rail Technical Specialist in charge of the new see-through rail program that the Noyo project has spawned. “The Federal Highway Administration will not reimburse Caltrans for construction of any rail that has not been rigorously tested for its ability to constrain and deflect errant vehicles safely. Nor would we propose one.”

So Caltrans went on a search for proven rail designs that would allow views of the harbor from the roadway while meeting stringent safety criteria. Guiding the search was Nahed Abdin.

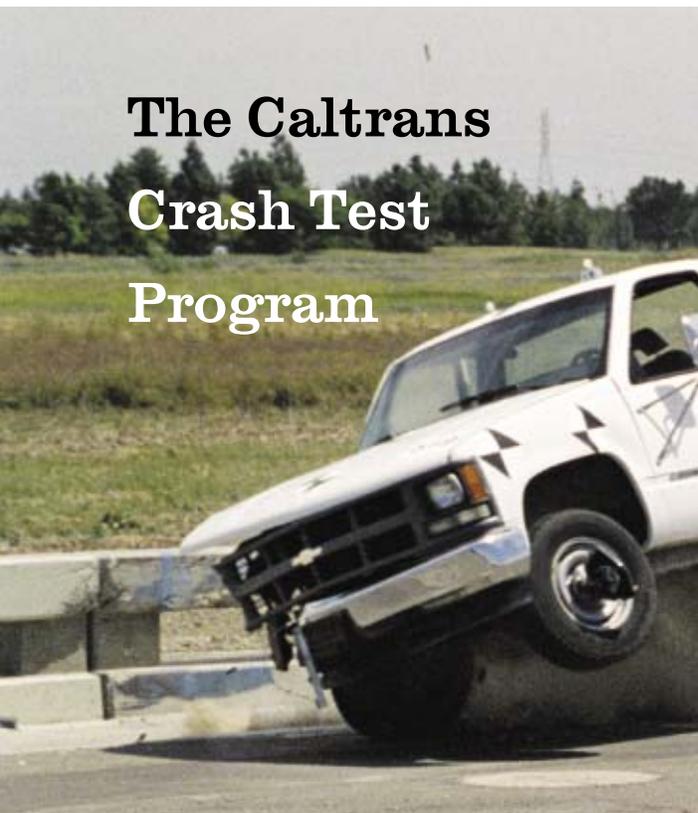
“The task is to develop new rail design concepts, evaluate them and to develop design details, partially by searching for approved and already-tested rails by other states to speed up the process. The concluding steps will be to construct test articles and conduct crash tests.”

Bridge engineers, led by Abdin, found six types, which were narrowed to four after workshops with the Coastal Commission. These included barriers developed in Alaska, Minnesota and Wyoming, and California’s own Type 80 concrete barrier. In response, the department has constructed all four types in a pilot project using these rails. These include Route 101 in Santa Barbara at the Sheffield Undercrossing, the Rush Creek Bridge on Route 3 in Trinity County, one on the South Fork of Dibble Creek on Route 36 in Tehama County, and the Posos Creek Bridge on Route 65 in Kern County.

The commission kept pushing for the Wyoming rail. “But when it was crash-tested by the Texas Transportation Institute, it exhibited significant snagging in the small-vehicle test. Caltrans was dissatisfied with this performance and opted to reduce the snagging potential by means of design modifications.”

continued

The Caltrans Crash Test Program



California is observing at least one Golden Anniversary in 2003, and it is truly a golden one for the citizens of our state. This is the 50th year of the Caltrans program to crash-test vehicles against highway hardware- longitudinal barriers, terminals, crash cushions, truck-mounted attenuators, breakaway supports, work zone barriers and guardrail-to-bridge rail transitions.

It is a program that has resulted in saving of thousands of lives, as well as dollar savings that may well run above \$100 million in tort liability alone.

The department conducted its first crash tests in January 1953.

“Crash-testing had been done previously to determine the crash-worthiness of vehicles,” says Rich Peter, who guides the Caltrans crash test program. “But California was a pio-

continued

Caltrans Engineers then studied the possibility of slightly modifying the design of the Wyoming railing to address the safety concerns without compromising the visual features. The result of these studies was the development of the California ST-10 rail. The ST-10 variation increased the Wyoming rail post setback distance without reducing the see-through characteristics of the original rail. With this modification, the ST-10 rail was similar in appearance to the Wyoming rail and was acceptable to the Coastal Commission.

Still, that was not the end of it. Had the new rail been placed at the edge of the structure on a raised pedestrian walkway, it could not have sustained a hit from a vehicle launching itself over the walkway. "What we ended up doing was placing the see-through rail between the travel way and the pedestrian walkway," says Abdin. A steel picket fence at the edge of the structure will flank the pedestrian walkway.

Placing the steel supports for the see-through rail in the concrete also presented potential corrosion problems," Abdin says. "So the rail will be anchored in the concrete by means of stainless steel bolts. They'll be expensive, but they'll be there a long time."

Caltrans presented ST-10 railing, along with five other alternatives, at an open house in Fort Bragg. The community overwhelmingly supported the ST-10 rail, which was subsequently amended into the Coastal Commission bridge permit.

"I am pleased that so many people within Caltrans and the community were able to come together to develop a railing that meets our standards, while satisfying the needs of the community. That's 'win-win' at its best." says Rick Knapp, District 1 Director.

The modification of the Noyo Bridge rail has provoked what Nahed Abdin terms a "return of the see-through rail era." The department is developing guidelines for the use of see-through rails. "I think you could term this another expression of context-sensitive solutions," he says. "Particularly in sensitive coastal regions, there is considerable pressure for see-through rails."

Today, in the area under the Noyo River Bridge, construction platforms have been placed on either side of the river, leaving only a narrow channel for fishing and pleasure boats to pass through. A beehive of activity is underway as workmen fabricate rebar cages that are approximately three meters in diameter and 30 m long to reinforce bridge

neer in testing to determine the effectiveness of roadway hardware. And as it is with so much of highway standards and procedures, the California findings have been applied worldwide."

Crash tests are used to gauge the effectiveness of new highway hardware, as well as to simulate what may have happened in cases where a plaintiff alleges that the hardware is inadequate. In several of these, particularly in high-profile cases where plaintiffs are asking for millions of dollars, the test program has allowed the department to prevail.

All roadside safety hardware must meet crash-testing criteria, many of which are established by National Cooperative Highway Research Program reports. The current report is numbered 350.

Vendors and manufacturers seeking approval of roadside safety products submit information on them to the Caltrans New Product Coordinator, who forwards it to the Highway Safety Features New Products Committee. If the committee determines that there is a need for the product, a full evaluation is implemented, including crash testing, usually done by the vendor or manufacturer. If the New Products Committee concludes that it meets applicable criteria and the overall review is satisfactory, the committee recommends that the product be approved.

Crash testing is performed at the Caltrans Dynamic Test Facility in West Sacramento. The program, until recently budgeted at \$100 000 to \$200 000 annually, tests anywhere from four to 20 vehicles ranging in size from a Geo Metro to a 8000 kg truck. These vehicles are purchased through brokers, used car lots or classified ads. Sometimes,



columns. Cranes drill holes for the 40-m piles that will anchor the columns. Engine noises from trucks, cranes, skip loaders and forklifts mix with those of the sea lions; the smell of diesel mixes with that of the sea.

The new Noyo River Bridge takes shape as its soaring columns rise out of the inlet. The northbound and southbound decks will be constructed alongside the old bridge, traffic will be turned onto them, the old bridge will be removed and the median constructed as a steady stream of vehicles goes on, uninterrupted.

And gracing the new bridge's deck will be Nahed Abdin's ST-10 rail, allowing pedestrians and motorists their view of the Noyo Harbor.

"We will continue to develop designs for see-through rails, after testing them," says Abdin. "We are looking forward to developing designs that are structurally sound, safe, and provide California's citizens with a view of their surroundings from their beautiful bridges."

Abdin adds that the Office of Structures will make design guidance available to designers by the end of 2003. In the meantime, anyone who is aware of a need for see-through rails should contact him at the Office of Structures.



Caltrans initially looked at six types of bridge rails. The design chosen guaranteed that motorists crossing the Noyo River Bridge in Fort Bragg will continue to be treated to spectacular views.

however, when a special vehicle is needed, Caltrans engineers approach owners on the street and ask if they can buy their car.

In a test, the vehicle is guided at a prescribed speed and angle under its own power toward the barrier by means of an aluminum rail. The front wheel of the vehicle next to the guide rail is connected to the rail with a detachable aluminum guide arm that steers it in the proper direction. As it approaches the barrier, the propulsion is cut off.

Instrumentation in test vehicles consists of rate gyros to measure roll, pitch and yaw, and accelerometers to take acceleration readings for vertical, lateral and longitudinal axes thousands of times per second during the collision period. Accelerometers may be placed in the dummies as an option, but the accelerometers in the test vehicle itself are most important. As the instruments on board gener-

ate data, these data are temporarily stored in an on-board data acquisition system.

After the test, the data acquisition system is removed from the vehicle and the data are downloaded to a computer. Occupant impact velocity and occupant ridedown acceleration are computed from the accelerometer data.

"With every test," says Peter, "we determine how the vehicle and the barrier will interact. In a successful test, the vehicle remains upright, the forces on the occupant are limited, and the vehicle does not break through the barrier but is contained and deflected within 60 degrees of the impact angle."

"But successful or not, with every one we learn something that aids us in developing a safer California highway system. And with see-through bridge rails and new textured median barriers, we are also helping to make it more beautiful."—Gene Berthelsen

S C E N I C E A S E M E N T

DRESSLER

SAVING THE

RANCH



Lands like these, once central to a thriving regional cattle operation, have yielded over the last few years to intense development pressure for recreational home sites.

On a spectacularly unseasonable April day, red-tailed hawks and harriers wheel over the green pastureland of the Dressler Ranch against towering, alabaster cumulus clouds that drop sheets of coarse-grained snow onto a backdrop of the sagebrush- and juniper-studded eastern Sierra. A frigid, 50 km/h north wind sends white-capped ripples across the surface of Bridgeport Lake.

This is raw country.

Looking down onto barbed-wire fences, gray-green meadows still trying to awaken from winter and craggy, snow-capped mountains, it is possible to imagine the day when ruddy-faced men rode, hunched in their mackinaws, astride pinto ponies to push white-faced dogies into fattening pens.

Once, such a scene defined most of the high meadows of the eastern Sierra, particularly the Bridgeport Valley, a broad, 1000 km² plain at 1500 m altitude. Sitting directly astride this valley lies the 2500 ha Dressler Ranch, a spread where, annually, hundreds of head of beef are fattened for market.

Lands like these, once central to a thriving regional cattle operation, have yielded over the last few years to intense development pressure for recreational home sites. Favorable zoning, unparalleled views and close proximity to recreational havens have created heavy demand and premium prices for vacation home and ranchette lots. Today, especially in the Carson Valley to the north, sprawling ranches like the Dressler Ranch are falling to the insatiable

appetite for 5 ha parcels to furnish home sites for Californians eager to run from the Golden State's spiraling real estate prices.

But now, thanks to a \$1 million Transportation Enhancement Activities grant recently approved by the California Transportation Commission, the Dressler Ranch is permanently safe from being cut up in this fashion. The funding, which augmented a \$3.2 million grant from the Wildlife Conservation Board, was used to purchase a scenic easement on the sprawling property, which is bisected by US 395 in Mono County.

The easement, which resulted from an application by the California Department of Fish and Game and the American Land Conservancy, will be administered by the California Rangeland Trust.

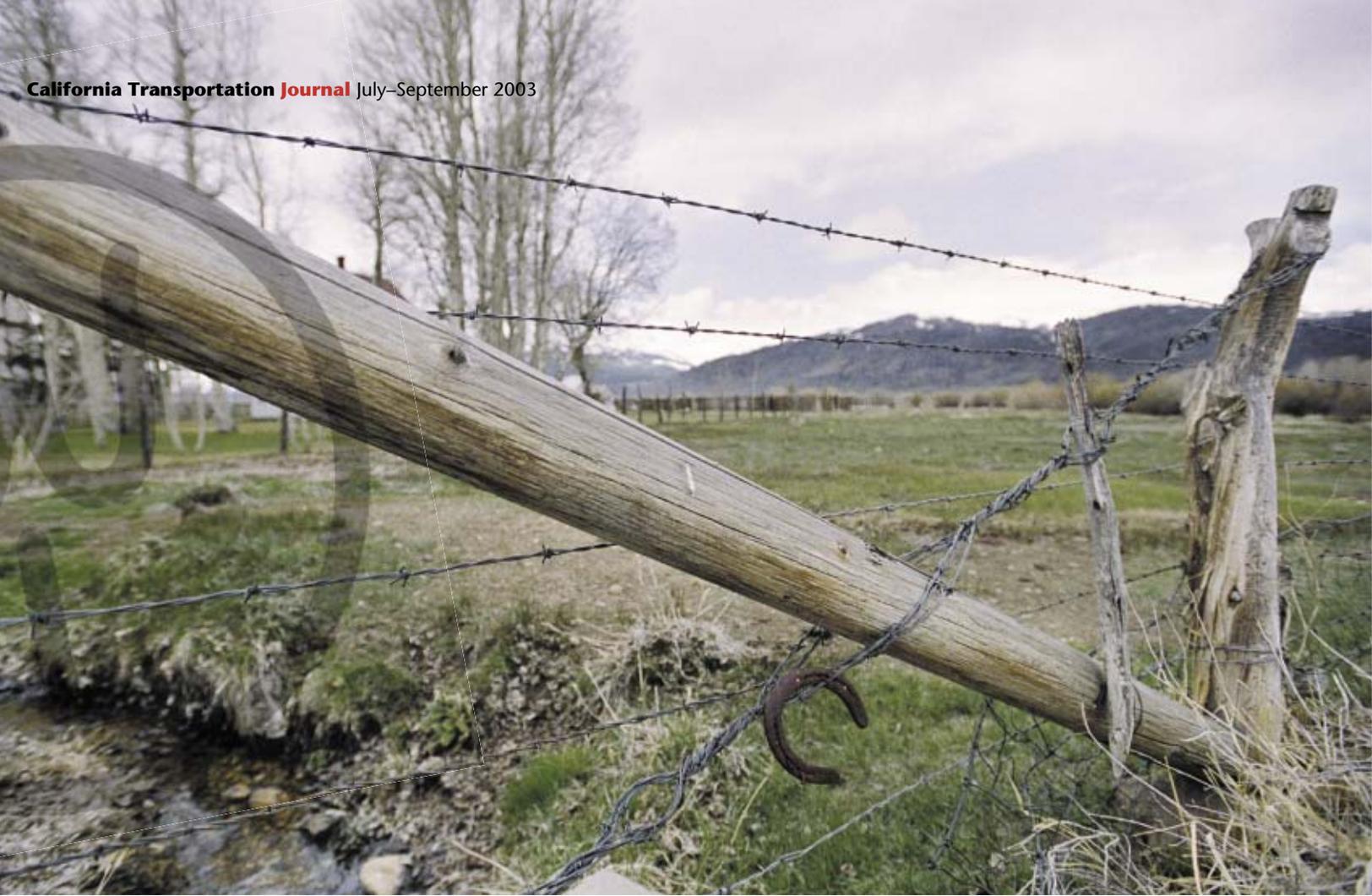
The Dressler Ranch, now known as the Centennial Ranch, was founded shortly after the Bridgeport Valley was settled in the 1860s. Settled by the Dressler family just after the turn of the century and purchased recently by the Centennial Livestock Partners, it rests at the heart of this spectacular eastern Sierra valley.

As a scenic corridor, few cattle ranches in California could match the Dressler-Centennial. US 395, designated a California Scenic Highway, runs through it. The picturesque county seat of Mono County—Bridgeport—lies just at its eastern boundary along the meandering East Walker River. To the west lie the rugged, snow-capped peaks

continued



This is raw
country.



The California Transportation Commission voted to allocate funds for the easement on November 7, 2002.

of the Sierra Nevada, including the Sawtooth Range, Mt. Dunderberg, the Hoover Wilderness Area and the northern boundary of Yosemite National Park. To the east are the Bodie Hills—arid, sagebrush-covered hills where mining towns and camps came and went during the mid-19th century.

The ranch treats highway travelers to views of lush meadows that support cattle herds and ranching much the same as they did to the stagecoach passengers journeying along the eastern Sierra 150 years ago.

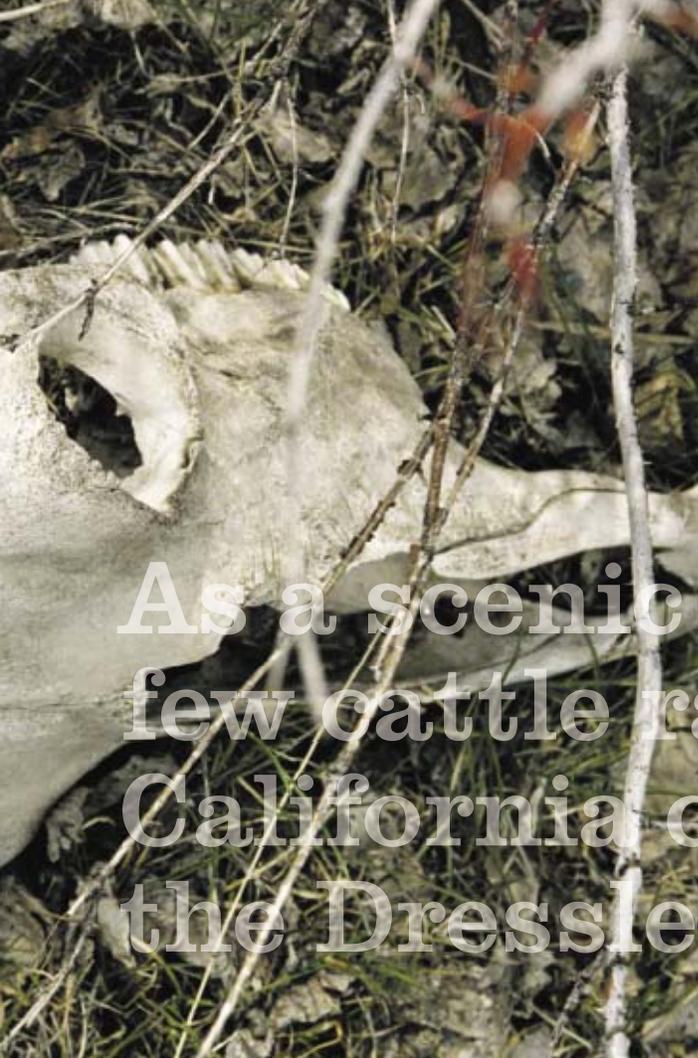
The ranch's rich and diverse habitat includes natural and man-made wetlands, irrigated meadows and sagebrush, along with multiple riparian corridors and pine forests. Wildlife abounds, with eagles and other raptors soaring overhead while cattle graze in the pastures below. Mule deer are common, along with sage grouse and a variety of waterfowl.

Purchase of the easement resulted from a massive team-work effort. "If you wanted to take a picture of everyone involved in this project," says Terry Abbott, Local Assis-

tance Chief, whose unit spearheaded the state's effort on the grant, "you'd have to use a wide angle lens to include everyone—more than 38 people from 10 agencies, departments, nonprofit organizations and private corporations, including five attorneys.

"The Dressler Ranch scenic easement acquisition started off like many TEA projects, with high expectations but with more complexities than the applicants were really aware of," Abbott says. "It turned into a potential script for a Mission Impossible sequel."

The project, chosen by a committee of Caltrans, Resources Agency and Federal Highway Administration representatives for the Statewide Transportation Enhancements share of the TEA Program, at first looked like a slam dunk (acquisitions don't, after all, involve either a design or a construction phase). Ann Malcolm, Department of Fish and Game legal counsel who reviewed the three-way agreement between her department, Caltrans and the American Land Conservancy, even exclaimed, "what a spectacular spot!"



As a scenic corridor, few cattle ranches in California could match the Dressler-Centennial.

But as is often the case, attorneys representing the applicants at first were not aware of the tangle of regulations governing allocation of money from the Federal TEA program and the requirement that the 12-step federal-aid process be completed before any money could be made available. Then, after the Caltrans legal staff reviewed language prepared by the American Land Conservancy attorney for the \$3.2 million state grant from the Wildlife Conservation Board, it found that additional restrictive covenants were necessary.

And because the easement would have to pass from the original applicant- the Department of Fish and Game, to the American Land Conservancy and then to the California Rangeland Trust for permanent maintenance and administration—another layer of complexity was added.

There were also misunderstandings about the requirements of scenic easements and their relationship to the continued operation of the ranch as a cattle operation as well as differences about wording of the deed of trust and the exact boundaries of the easement. None of this was particularly unique in matters of complex real-estate

transactions; what was different for the participants was a process that involved so many government and non-profit agencies.

“The department agreed to work closely with the land conservancy, the owners and the California Department of Fish and Game to ensure that all of the steps were being met, including assisting in completion of the necessary paperwork for the CTC allocation vote request,” Abbott says. It was also determined that several steps could proceed simultaneously to avoid missing critical delivery milestones. The California Transportation Commission voted to allocate funds for the easement on November 7, 2002.

“My staff, particularly Bart Newton and Howard Reynolds, along with Karen Lockhart of the legal staff and Tom Meyers in District 9, put in a tremendous number of hours and a lot of hard work to get this project done,” Abbott says. “They were beset by all kinds of pressures from private and political interests and other agencies. This was a great illustration of the effort that our people will go to, to serve our mission.”—*Gene Berthelsen*



Workin'



on the



Railroad



Amtrak Oakland Maintenance Yard

On a muddy, nine hectare lot in the shadow of Interstate 880 in West Oakland, a modern, state-of-the-art facility for the maintenance of Amtrak's West Coast passenger equipment is taking shape, thanks to a \$38 million investment by the California Department of Transportation.

Total cost of the facility, scheduled for completion in September of 2004, is expected to be \$65 million. Kiewit Pacific of Omaha, Nebraska is performing construction services. DMJM+Harris of New York City is managing the project.

When the facility is completed, it will include an 8000 m² main shop and a 6410 m² service and inspection building. It will be equipped for service, maintenance, inspection, repair and train washing, and a 425 m storage track will allow for storage of a complete train set. Ultimately, a control center and commissary will be on the site.

The City of Oakland is developing a project to continue 3rd Street through the site and connect it to the Mandela Parkway, which is currently undergoing a Caltrans-financed major rehabilitation.

Amtrak will perform turnaround servicing for the California Zephyr, Capitols and San Joaquins at the site when it is completed. Caltrans provides about \$200 million annually for capital improvements and operations of several Amtrak rail lines in California, including the Capitols, San Joaquins and Pacific Surfliners.

The maintenance yard, dedicated solely to Amtrak's use, will permit inspection and servicing of an entire train set, including locomotives, and make it possible for pre-positioning of supplies and parts, improved parts storage and control, and adequate room on site for storage of equipment. It also will allow Amtrak full control of all movements within the yard, freeing them from having to rely on operating railroads. The facility was designed by STV Group, Inc.

Until now, Amtrak has relied on an operation owned by Union Pacific that was built in 1916 and lacks covered work areas for servicing the equipment. Other limitations include disconnected work locations and space restrictions, reliance on Union Pacific for local locomotive servicing, and a lack of equipment

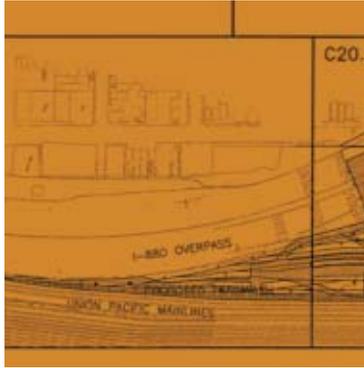


Amtrak's new maintenance facility will service cars on the Capitol and San Joaquin lines.



continued

The new facility is rising in the shadows of Oakland's Cypress Freeway.



to wash the rail cars. Locomotives are sent to Amtrak in Los Angeles for more extensive maintenance. All these limitations will be alleviated by the new maintenance facility.

At the recent groundbreaking of the facility, Gil Mallery, Vice President of Amtrak's Planning and Business Development Department, said, "Amtrak, with the help of local and regional agencies, is planning to expand California's intercity rail service. This new facility will accommodate the planned growth, as well as improve the efficiency and reliability for maintenance and operations so critical for enhancing the quality of service for our passengers."

Caltrans and Amtrak are investing \$88 million to improve tracks and platforms on the Sacramento to San Jose Capitol Corridor line, the fastest growing passenger rail service in the United States, which recently added an 11th daily round-trip run.

DMJM+Harris' man on the scene on this warm spring day, construction manager Rouzbeh Salim, works out of a wire-enclosed, mud-brown cantina trailer at the edge of the 8.9 ha site at Union and 3rd Streets

in Oakland. Prior to this job, he was construction manager on the big project to provide BART service at San Francisco International Airport.

"We're just getting started," says Salim, a jovial man with a ready smile. Today, Kiewit Pacific is completing site cleanup, installing fencing and moving in equipment and supplies.

"The site used to be a storage yard for Union Pacific," Salim says. "Mostly it has been cleaned up, although we're continuing to pump 250 000 liters of potentially contaminated groundwater daily to a treatment facility."

The brackish groundwater is being cleaned of hydrocarbons and metals so it can be diverted into Oakland's street drainage system.

Before development, the site was a tidal marshland; it is mostly underlain by bay muds. It was filled in the late 1800s and early 1900s, but nevertheless the water table remains very close to the surface. Structures will therefore sit on driven piles. "We have driven a number of test piles and found that ground resistance is better than had previously been estimated," Salim says. "Therefore, the

remaining piles will be about 15 m in length rather than the 25 m that had originally been specified."

"The project schedule is a very tight one," Salim says. "In order to keep on the schedule, work has already begun based on a letter of direction, although a final contract for it has not yet been signed."

Major work items include site work, track work, lube oil and fuel tanks, a train washer, the service, inspection and shop buildings, hardscape and pavement.

The maintenance facility is expected to have a positive economic impact on the surrounding area by adding about 200 jobs to Oakland's job base; West Oakland has fought for years to overcome urban decay and was hit hard in 1989 with the Loma Prieta earthquake and the collapse of Interstate 880.

"And," says Warren Weber, Chief of the Caltrans Rail Division, "we believe that the ease and speed of maintenance provided by this facility will make it possible for us to continue the development of more frequent and convenient rail service for Northern California."

—Gene Berthelsen

THE LAND THAT

CALIFORNIA

FORGOT

California's
fascinating
roads



UP IN LASSEN COUNTY A FEW YEARS AGO, THE FOLKS GOT RESTLESS. CALTRANS, ALONG WITH THE REST OF THE DAMNED BUREAUCRATS DOWN THERE IN SACRAMENTO, HAD FORGOTTEN THEY EXISTED AND **THEY MIGHT JUST AS WELL PULL OUT AND JOIN THE STATE OF NEVADA,** WHICH THEY HAD A TENDENCY TO RESEMBLE ANYWAY.

continued



Whether or not the secessionist movement had any real effect is questionable, since an influx of federal and state money in the 1990s allowed for rehabilitation of a lot of Lassen County's highways along with everyone else's. The steam went out of the separatists and, today, California schoolchildren continue to recite "Lassen" right after "Lake" and right before "Los Angeles" when memorizing their counties.

Riding along US 395, a traveler suspects there are two schools of thought up here about being forgotten. One wants more investment, more travelers, more development—more people. But you can't help feeling, looking at these pristine mountains, meadows and lakes, that a lot of people in Lassen and in the sparsely populated towns along 395 are perfectly to be happy to be forgotten.

Going north, you enter California on US 395 unceremoniously about 25 km north of Reno, leaving behind the clash and glitter of the Biggest Little City the World amid budding suburbs that look exactly like the ones these folks are fleeing in California. The lots get bigger, the houses farther apart, and finally there isn't much other than rocks and sagebrush and scrubby juniper to flank the blue and gold "You Are Entering California" sign at the edge of the road.

The storms of one of the wettest Aprils on record have dropped their moisture, as they usually do, on the western slopes of the Sierra and, down here in the desert, you can only look up at the rain and snow pounding the peaks. By the time the clouds have made it to where Route 395 courses along, they have a wispy, insubstantial look to them, like partially deflated balloons.

Up the road, at Hallelujah Junction, State Route 70 peters out and US 395 drops a couple of lanes to become a two-lane conventional highway. You'd expect a place with a name like Hallelujah Junction would have some distinction to it, but all there is, is a Shell station, tricked out like a log cabin.

The road map says that "Constantia" is just up the road, but when we arrive where it ought to be, in spite of the fact that the root of its name is "constant," Constantia appears to be no more, and there's just a wide gravelly spot along the road. So you wonder what it'll be like when you get to Doyle, another 40 km up the road.

Doyle, though, doesn't disappoint. For one thing, it nestles down in the first of about a half-dozen green valleys that you encounter alongside US 395 as you trek on toward Oregon. Fat Angus and Hereford cattle munch on spring pasture grasses and anywhere you stop, scents of juniper, sage and mountain heather delight your nose while hawks, magpies, meadowlarks wheel in the sky.

Riding along US 395, a traveler suspects there are two schools of thought up here about being forgotten.





But, ah, Doyle, a collection of weathered buildings, has one of those distinctions that mountain towns just can't leave alone: during "Doyle Days," it is the home of the "world famous lizard races."

Can't wait to see this.

The circular lizard track is about three meters in diameter, a set of wooden posts supporting clear plastic. Apparently, according to the few Doyle-ites who were willing to talk about it, you choose your blue bellied lizard, drop it onto the track and it races around, looking for a way to get out. The one that races the fastest wins. While they assured us that the SPCA would have no problems with the way the lizards are treated, we suspect that PETA would be more than a little upset.

Folks who have a vision of a California consisting of beaches, skyscrapers and freeways need to know that there are lots of different Californias. This is one of them, a raw, dry, windy, elemental world of tumbleweeds, horses and muddy pickups where people with weathered faces labor from dawn to dusk to wrest an honest living from the soil.

Out in this lonely place is the former Sierra Army Depot where they used to store rockets, bombs and bullets for the U.S. military. In 1995, the defense department cut out that mission and reduced it to a depot. Right nearby

there's a new federal prison. Easy enough to imagine the consternation that either a newly transferred soldier or a prisoner facing a stretch out here in this rough environment might have.

Susanville, the main metropolis up here in the high desert, commands the north shore of Honey Lake, which is either a lake or mostly an alkali flat, depending on what time of year you get here. One suspects that the green stands of alfalfa hereabouts are the reason that Honey Lake is more alkali flat than lake. Still, it supports an astonishing variety of wildlife. During peak migrations you could count as many as 30 000 snow and Canada geese and 20 000 ducks. There are bald eagles, sandhill cranes, white-faced ibis and bank swallow, ring-necked pheasants and California quail.

Susanville was founded by a fella named Isaac Roop, back around 1851. Roop apparently was especially partial to his daughter Susan, so he named the nearby river after her in spite of the fact that the Paiute Indians had been there for centuries and had a perfectly good name for it. "Susan," though, stuck both to the river and Roop's new town.

Susanville quickly became the county seat of Lassen County, even though there was a lot of early speculation as to whether it might lie on the wrong side of the line between Nevada and California. Fortunately, it turned out to be in California and over the years has acquired

Weathered buildings and the home of the World famous lizard races greet travelers when they reach Doyle.

continued



a population of about 4500 folks. It's a tidy town with comfy homes, a busy main street that looks as if a lot of motor homes might creep along it in the summer and, nestled discreetly in the hills out east of town, the state prison that has replaced lumbering, mining and agriculture as the main industry around here. Still, the city says it has embraced "economic gardening" as a strategy to grow and diversify.

Whether or not economic gardening turned up Lyle B. May and the May-Art Advertising Company is open to question. Nevertheless, out on Route 395, stands the Wind Drift Gardens, an Alice-in-Wonderland-ish warren of turrets, kitsch art, labyrinthine passageways hung with cryptic messages and rampant algae, and weeds that its owner insists will be cleaned up soon to host all kinds of social events. Actually it looks a bit as if the White Rabbit had got the place all ready for Alice but she never showed up, and so it sat there over a long, hard winter, waiting and moldering.

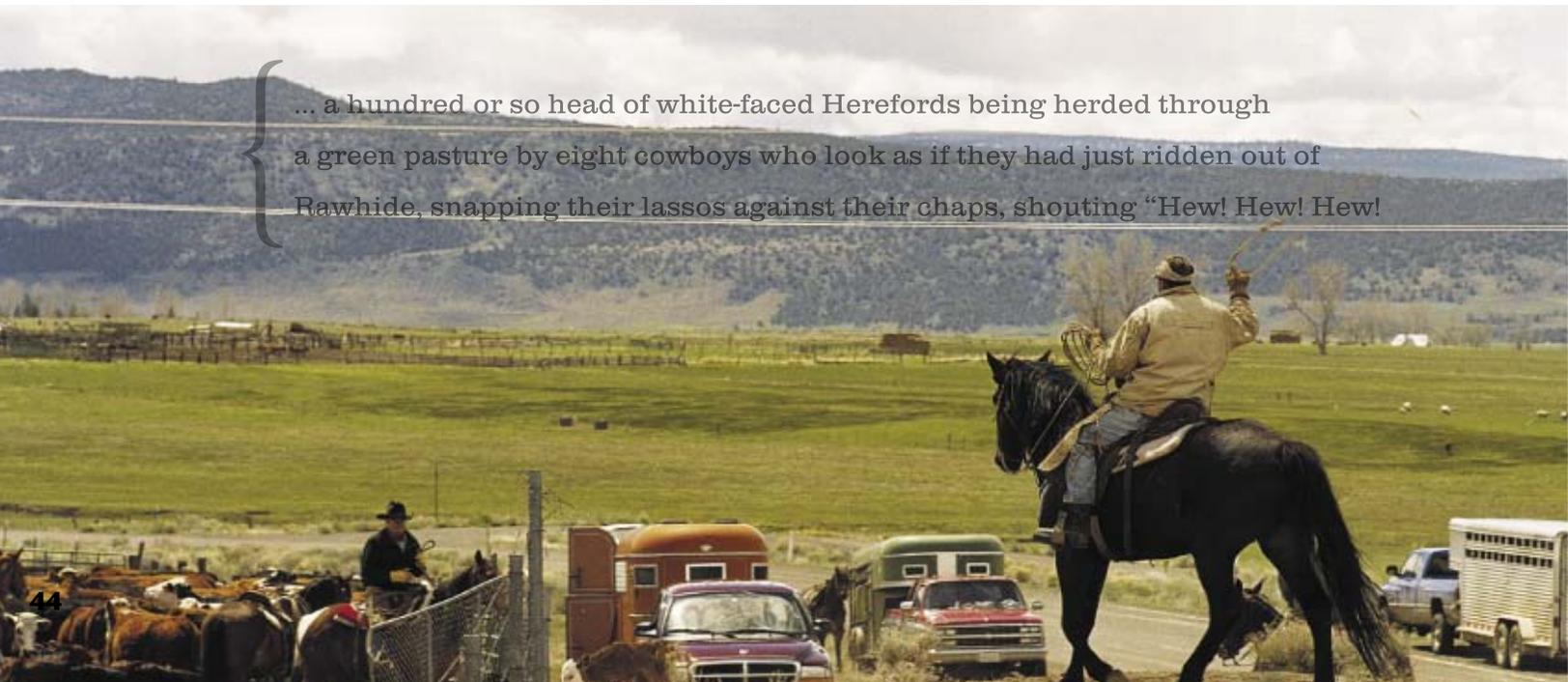
Out on the highway, we sprint to the east and then the north on a largely empty highway that consists of straight stretches so long that the parallel lines of the road edges appear to intersect in the distance; there's traffic between Susanville and Reno, but with those attractions out of the way and the mining and logging industries quiescent, this big, empty country just doesn't generate much traffic.

Route 395's surroundings yield a tapestry of granite peaks, snowy summits, verdant valleys and more sagebrush and juniper, except for the occasional quirk. One of those looms up between the settlements of Ravendale and Termo: the hulk of an old roadhouse emblazoned with graffiti and shaded by a lonesome cottonwood that today is festooned with 134 pairs of footwear draped over its branches: sneakers, running shoes, work boots, Oxfords, mukluks, track shoes and even a pair of cowboy boots. The traveler imagines weird alpine rites that culminate in some sort of shoe toss.

Up and over the Sage Hen Summit, the traveler crosses into Modoc County. Out here, we're due east of Mount Lassen so there's a deteriorating crust of lava on the surface of the mountains. After the summit, there's a long downgrade into Alturas and, partway down the hill, an honest-to-gosh cattle roundup: a hundred or so head of white-faced Herefords being herded through a green pasture by eight cowboys who look as if they had just ridden out of Rawhide, snapping their lassos against their chaps, shouting "Hew! Hew! Hew!" and emitting shrill whistles. The cows mill around, grumbling. From the sky, this herd probably looks like a paramecium oozing around under a microscope.

Alturas, county seat of Modoc County, lies down at the end of this long downgrade. Alturas, which basically

... a hundred or so head of white-faced Herefords being herded through a green pasture by eight cowboys who look as if they had just ridden out of Rawhide, snapping their lassos against their chaps, shouting "Hew! Hew! Hew!"





THE LAND THAT CALIFORNIA FORGOT

means “high,” (wo!) is a pleasant little city settled by Presley A. Dorris in 1870. The Native Americans of the Achomawi Tribe called it Kosealekte.

About 3000 folks live here, clustered around the Modoc County Courthouse, a beaut of a neo-Grecian style building with eight sturdy Doric columns surmounting a grand staircase that surely must be a nightmare in these ADA-sensitive times.

Alturas sits astride of the Pit River. Up here, it looks pretty tame, but this river somehow makes it all the way across the northern Sierra to Shasta Dam, about 300 km away. In a way, Alturas’ most distinguishing feature is the magnificent Warner Mountain Range, the jewel of the Modoc National Forest. Its peaks top out at more than 3000 m altitude and, according to the U.S. Geodetic Survey, they’re on the rise—about one millimeter a year, as if they weren’t impressive enough already. Beyond these green fields, the Warners’ snowy crests, blazing white in the spring sunshine, could just as easily be in Katmandu.

Leaving Alturas, the traveler races for the border, rising through a series of broad, green valleys, each one looking more as if corporate agriculture is involved. Then you’re upon the magnificent Goose Lake, probably the most spectacular big lake that nobody ever heard of. With a shoreline of about 100 km and an average depth of about

2.5m, it sprawls between the Warner Mountains to the east and a series of less-distinguished but nevertheless impressive mountains to the west.

Back in 1992, partly from diversions to agriculture and partly because of a very dry year, Goose Lake went completely dry. Realizing what they were losing, the folks up here formed the Goose Lake Fishes Working Group and today, the water is back.

On this spring day, a flight of geese slips across the surface of Goose Lake so low that their wings dot the water with rings, like skipping rocks. The mountains to the west, mirrored off the lake, look black under the afternoon sun, which is partially occluded by purple, puffy, scudding clouds. In the warming afternoon, the air is sweet and carries the honking of the geese.

Goose Lake and these northern counties generally present another of the awesome faces of California, this one in a rare corner that you could almost call Oregon or Nevada. The California State Highway System has a lot of functions. One of the most important is to knit this disparate patchwork of cities, fields, mountains and forests—and cultures—together into one grand tapestry.

And what a tapestry it is!—*Gene Berthelsen*

Goose Lake in the extreme northeast corner of the state offers a welcome respite for migrating birds and drivers on Highway 395.





Purcell/Roberts/Moskowitz Awards

The California Transportation Foundation's (CTF) Fourteenth Annual "Tranny Banquet" on May 21st at the Sacramento Grand Ballroom was the setting for the presentation of the 2003 Purcell Roberts Moskowitz Engineering Management Awards by Director Jeff Morales.

Each year the California Department of Transportation, in cooperation with CTF recognizes valued contributions by Caltrans registered engineers to the field of transportation engineering and management with two awards, the Charles H. Purcell and the Karl Moskowitz Award. A new award, the James E. Roberts, began its inaugural year in 2002, joining Purcell and Moskowitz. These awards acknowledge those who have made a distinct impression not only on California's transportation landscape, but that of the world. Processes and innovations with far-reaching influence, nationally and internationally are products of this celebrated group of individuals. The winners of the 2003 Purcell Roberts Moskowitz Awards are:

Rick Knapp, Caltrans District 1 Director and 38-year veteran of the Department is the winner of the 2003 Charles H. Purcell Management Award. Knapp has organized and promoted innovative transportation solutions throughout his career. From laying the foundation for California's Planning and Design Criteria for Bikeways in 1978 (later adopted by AASHTO) to his forward-thinking in establishing partnerships with local officials and resource agencies and laying the groundwork for the department's context sensitive solutions policy, he has played a starring role.

He is a recognized and respected voice both statewide and nationally in planning and presenting Context Sensitive solutions as well as in areas related to roadside vegetation management.

Dr. Brian Maroney, a 20-year Caltrans employee, is a leader in transportation structure engineering and is highly respected both by his peers in public service and in private practice for his knowledge, skills and integrity. He is the winner of the 2003 James E. Roberts Structure Engineering Award.

While Maroney has positively influenced thousands of other projects through his work on the department's Seismic Retrofit Program, his work on the San Francisco-Oakland Bay Bridge East Span Replacement Project has demonstrated leadership and engineering skills that are found in few individuals.

As Project Manager for the new span, Maroney exemplifies the highest engineering and consensus-building skills. He has worked tirelessly with all of the department's partners, including MTC, federal regulatory agencies, environmental groups and rail transit proponents. He teaches at UC Davis as an adjunct professor and educates public policy makers in the art of earthquake engineering design. He has written many papers and is a frequent speaker at professional and public groups on seismic safety and design.

Phil Jang, whose Caltrans history spans more than 30 years, is the 2003 winner of the Karl Moskowitz Engineering Award. District Traffic Liaison for District 4, 6, 9 and 10, Phil has been on the forefront of many innovative transportation management strategies that have been broadly adopted throughout the state and the country. Respected as an authority on high occupancy vehicle lane operations, he chaired a multi-agency task force to develop HOV lane guidelines.

Roberts award winner Brian Maroney (from left), Purcell recipient Rick Knapp and Moskowitz winner Phil Jang show off their hardware.



continued on page 48



Communicator Awards

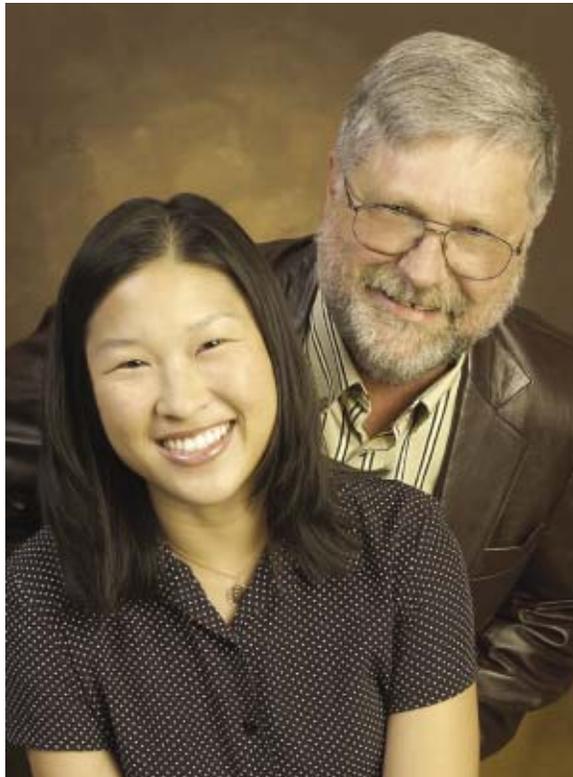
Congratulations to two employees of Headquarters External Affairs—photographer Jon Hirtz and graphic artist Karen Brewster—for picking up four awards of distinction in the 2003 Communicator Awards Print Media competition.

Winners of the Communicator Awards come from advertising and public relations agencies, corporate communications departments, educational institutions, government entities, designers, writers, video production professionals, broadcast and cable operations, and other businesses and individuals throughout the country.

The Communicator Awards recognizes outstanding work in the communications field internationally. Entries are judged by industry professionals who look for companies and individuals whose talent exceeds a high standard of excellence and whose work serves as a benchmark for the industry. There were 3730 entries from throughout the United States and several foreign countries.

Hirtz has been a Caltrans photographer for the past two years. Prior to that, he operated his own photography business in Roseville, California. His award of distinction was for photography for the Division of Accounting's 2002 annual report. He also won an Award of Distinction for: "Photography/Newsletter" for a photo of a marathon.

Karen Brewster has been with Caltrans for two years. Before that, she was in the University Publication and Design Department at Sacramento State. She received her degree in visual communication at CSU Chico in 1994.



Graphic artist Karen Brewster and Photographer Jon Hirtz won four awards in the Communicator Awards Print Media competition.

Ms. Brewster's awards of distinction were for the design of the Division of Local Assistance's Bicycle Facilities Brochure. She won another for her design of Caltrans recruitment brochures.

"We're proud of Jon and Karen," said Dennis Trujillo, Deputy Director for External Affairs. "These awards are for projects that exceed industry standards in communicating a message or idea. Our strong showing here is evidence that we're right up there with the best in government and private industry."—Gene Berthelsen



A Little Help for Humanity

Some people take their vacations on the beach at Hawaii. Others ski the Rockies, and others catch the theater season in New York.

But Chuck Zonta, an Associate Information Systems Analyst in the Division of Mass Transportation, recently spent his two-week vacation at his own expense, busting at the hard soil of Ecuador with a pick and shovel to build home foundations in the coastal town of Esmeraldas.

"This area is very poor," Zonta says. "The people live in shacks without plumbing and with few services. Ecuador exports a good portion of its oil through Esmeraldas, but the people who live there see very little of that."

"We had four picks and a couple shovels and a broken hammer or two, but in two weeks, our eight-person team managed to get the foundations built for one of the homes. We dug one-meter cubed holes, assembled rebar to insert into them, mixed cement and used lumber from torn-down structures as forms. We filled the holes with rocks and poured cement to produce the foundations that eventually would accommodate cinder block homes with concrete floors," Zonta says.

Contractors, called Maestros, were building the homes. The contractors spoke only Spanish, requiring the services of an interpreter to communicate.

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For many years Jang led the department's effort in the Park and Ride Program and wrote the original HB-4 Operational Improvements portion of the Priority Manual. He is a pioneer in traffic management for major construction projects, having created a statewide program for Traffic Management Plans.



Chuck Zonta of the Division of Mass Transportation joined with volunteers to build a home for the poor in Ecuador as part of the Habitat for Humanity program.

Zonta and his team from all over the world lived in a hotel and were bused to the site of the construction each day, about a half hour each way. "The recipient of the home made us lunch each day—homemade soups, chicken and rice. Very good food" he says.

"Each house takes about six weeks to complete," Zonta says. "The Habitat for Humanity affiliate in Esmeraldas has completed over a hundred homes in that region."

Zonta originally got involved helping Habitat for Humanity in rewiring a resale store for construction materials in Sacramento. "I found they had foreign tours, so I signed up for Ecuador in the hopes of seeing other lands and cultures."

As for the experience, Zonta says it was "fantastic. The people were great, gracious, hospitable and thankful for our efforts. I enjoyed it thoroughly, even though the weather was terribly humid. We went through a gallon of bottled water each day, and a few of the team members even got ill."

Still, Zonta has signed up to do it again next year, this time in Costa Rica. He's also angling for a trip to New Zealand.—*Gene Berthelsen*

Jang's role as District Traffic Liaison demands quick review and assessment of the most complex engineering problems to arrive at safe and efficient solutions. He leads two multi-department task forces that deal with complicated traffic engineering, legal and design considerations—one related to fog issues, another to context-sensitive solutions on urban state highways.—*Janis Deverter*

Editor's Notebook

In his second floor office at the transportation laboratory just off Folsom Boulevard in Sacramento, Rich Peter turns a red, plastic toy vehicle sideways, lifts its back bumper, then rolls it in his hand. He is demonstrating, he says, yaw, pitch and roll, the tri-axial potential movements of a vehicle as it slams into a concrete barrier.

A trim, graying, serious man, Peter is one of an army of Caltrans professionals who hold the lives of thousands of Californians in their hands. His specialty happens to be observing the effects of crashes on vehicles and the people inside them. And as with so many of the department's professionals, he is known nationwide for his constant push for new and better solutions to the knotty problems that accrue from having 35 million drivers in constant—and sometimes erratic—motion on our state's highways.

Peter's tests—and those of others like him in other state departments of transportation—have led to improvements in highway hardware that have saved countless lives and protected untold others from injury as their vehicles, rather than crashing across medians, have come to a harmless, if scary, rest at the side of the road.

Providing a safe road that a thoughtless driver can traverse, even drunk, at high speed is what we attempt to do. A 2000 kg vehicle, even at 40 km/h could, in a way, be termed a huge, moving ball of energy, bigger than most things in nature. At 150 km/h (the CHP is ticketing more and more drivers these days for speeds above 150 km/h), it is a potential explosion of mammoth proportions.



Rich Peter and other Caltrans professionals know this. It is the stuff of high seriousness that is implicit in the action of every engineer who puts his or her registration stamp to a set of plans, the work of every maintenance worker who cuts back a shock of brush so that a driver can clearly see oncoming traffic at an intersection or who replaces a warning sign in order to allow a motorist to make the correct decision about what to do with a 2000 kg vehicle.

One wishes that these responsibilities were better understood among the folks out there who want to adorn California's roadside with memorials to loved ones and the waving flaggage of patriotism. One wishes that those who sneer so contemptuously when a departmental representative is called upon to stand in a hostile crowd to make the case for "standards" could get just a taste of that responsibility.

A handwritten signature in black ink, likely belonging to Rich Peter, written in a cursive style.

