



DISTRICT 4

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INNOVATION FAIR 2014

Please visit <http://www.dot.ca.gov/dist4/ifair2014> for videos and handouts

FHWA EDC Partner Caltrans Delivers the Innovation Fair 2014

In alignment with the Federal Highway Administration's Every Day Counts (EDC) initiative goals, Caltrans employees seek creative solutions and innovative ideas for addressing current and future transportation challenges. District 4 San Francisco Bay Area Innovation Fair 2014 shared and highlighted the innovative approaches and methods that the District has undertaken to address a wide range of issues including safety improvements, congestion reduction, efficient project delivery acceleration, higher quality requiring less maintenance, carbon footprint reduction and response to climate change.

Following are some of the key topics of the Caltrans District 4 Innovation Fair 2014 held August 13-14 in Oakland:



Caltrans Innovation Fair (I-Fair) 2014 – FHWA California Division Administrator Vince Mammano joined Caltrans Director Malcolm Dougherty and District 4 Director Bijan Sartipi at I-Fair 2014 in Oakland as employees presented innovative transportation solutions and technologies being deployed to make a difference for the traveling public.



New "i-TEAM" Business Model for Santa Clara County

Caltrans and the Valley Transportation Authority (VTA) established a collaborative decision-making structure, the Innovative Delivery Team (iTEAM), to improve project delivery, highway traffic operations, and local assistance services in Santa Clara County and City of San Jose.

Planning Public Engagement Contract (PPEC)

District 4 uses the PPEC to work with our funding partners to enhance awareness of transportation options, to facilitate planning meetings/workshops, to promote public engagement events and to achieve measurable results. PPEC activities result in effective partner and public outreach during Caltrans' initial transportation planning activities, increase of public support of planning/programming efforts, and continuous public and local officials participation.



Planning the Future of State Route 9

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The Promise and Future of LiDAR

District 4 utilized Light Detection and Ranging (LiDAR) surveying technology for the preservation of the US-101 Presidio Parkway historic buildings during construction, the design and construction acceleration of the emergency repair of the 580/880 MacArthur Maze collapse, and for the accurate construction as-builts of the Route 1 Devil's Slide tunnels. Future use of LiDAR for safely collecting overhead sign vertical clearances was also presented.

Green Concrete on the SFOBB

Two percent of greenhouse gases in the U.S. come from cement manufacturing (1 ton of Portland cement manufacturing results in approximately 1 ton of CO₂). Caltrans used Supplementary Cementitious Materials (SCM) in place of Portland cement in quantities of up to 50% in the new I-80 Bay Bridge project. Some SCM, e.g. flyash and slag, are byproducts of power plant coal-fired furnaces and iron production blast furnaces. Use of SCM not only reduces Portland cement use, but also helps to recycle waste products as part of the Green Concrete solution.



Ergonomic Traffic Cones

I-Fair 2014 presented new 28" safety cones with a recess near the top providing a better grip for easier use, reduced weight by 3.5 pounds, and less sticking when stacked on the belt of a cone truck. They are made of at least 60% recycled materials by weight and are 100% recyclable, which exceeds the standards of Public Contract Code 12209(f)(1). These prototypes are being tested by Caltrans crews, who report easier deployment minimizes worker exposure and enhances work zone safety for all.

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Resident Engineer's Safety Toolbox Webpage

This online platform was implemented to share innovative ideas/methods/products proven to be effective in enhancing safety, reducing maintenance frequency, and shortening construction operations during the construction phase of projects. The Resident Engineer's safety toolbox webpage provides information, internet links, photos, and videos of the products and methods successfully used in previous construction projects to enhance lessons learned for designers and REs.



Smart Irrigation Controllers

In response to California's severe drought, District 4 uses smart irrigation controllers to help Caltrans achieve the Governor's goal of 20% water usage reduction by 2020 and Caltrans Director's goal of reducing Caltrans' water usage by 50%. By tailoring watering schedules and run times based on weather conditions, smart irrigation controllers reduce overall water usage by an average of 25%. It also minimizes on-site operations and time spent in the field improving employee safety.



Construct Roadway Diet and Install HAWK Pedestrian Signal

District 4, in partnership with the City and County of San Francisco, constructed a roadway diet project on Route 35 (Sloat Blvd) and installed the High intensity Activated crosswalk (HAWK) pedestrian crossing beacon, which was the first on a state highway. The project provides a protected crossing phase for pedestrians, reduces pedestrian exposure to vehicular traffic, enables pedestrians to become more conspicuous to motorists via bulb-outs, and provides greater off-set distance between vehicles and pedestrians crossing.

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Cormorant Management for the SFOBB Project

During the new I-80 Bay Bridge project, Caltrans managed Double Crested Cormorant habitats by the avoidance of impacts during nesting season (March-August) and by creation of new habitat. To mitigate the removal of the habitat on the original Bay Bridge, nesting platforms were added to the new east span. Decoy Cormorants, three sided mirror boxes, and Cormorant calls were used as the enticement measures to draw Cormorants to the new habitat during bridge demolition.



Noise Reduction and Air Quality Innovations

Occupational exposure to excessive noise and silica dust are serious health and safety problems. Along with personal protective equipment guidelines and administrative controls already in place, Caltrans is now providing additional safety solutions to significantly reduce noise and silica dust exposure in the workplace. Since January 2014, District 4 Maintenance crews have tested the use of innovative noise reduction and silica dust control equipment. Due to the positive results, those noise and silica dust reduction solutions may be adopted throughout District 4 in the near future.

Tunnel Control Systems for Safer Tunnels

Implementation of state of the art Tunnel Control and Traffic Operations Systems (TCTOS) at the Caldecott and Devil's Slide tunnels allows real-time monitoring of the facilities' life-safety systems and traffic operations while minimizing times for incident detection, response, and clearance. The TCTOS monitor and control numerous field elements such as lighting, signals, air quality, fire and intrusion detection, gas sensors, linear heat detector sensors, call boxes, AM/FM rebroadcast systems, traffic monitoring stations, CCTV cameras, changeable and variable message signs. In addition, TCTOS facilitates timely coordination and information exchange between the tunnel operators and Caltrans/CHP Transportation Management Center in Oakland to ensure efficient regional incident management and to help disseminate real-time traveler information about these critical transportation facilities to the traveling public.

