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16. ABSTRACT

OUTREACH & TECHNOLOGY TRANSFER: Communications for Accelerating Adoption of Innovation was intended to accelerate deployment and widespread adoption of the innovations and research results from Caltrans sponsored research by agencies statewide through communications, training and technical assistance. Activities included: development and dissemination of print and electronic communications; improved access to and distribution of research reports and technology transfer materials; delivery of conferences, workshops and other training programs; provision of information services and technical assistance; and representation at and participation in national technology transfer forums. Activities conducted under this agreement include the following tasks:

- Task 1. Production and Dissemination of Publications
- Task 2. Distribution of Research Reports and Technology Transfer Materials
- Task 3. Delivery of Conferences, Workshops and Other Training Programs
- Task 4. Provision of Information Services and Technical Assistance
- Task 5. Participation in National Research & Technology Transfer Forums
- Task 6. Reporting

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FINAL REPORT

OUTREACH & TECHNOLOGY TRANSFER

Communications for Accelerating Adoption of Innovation

TECHNICAL AGREEMENT
65A0357

PERIOD OF PERFORMANCE
JUNE 1, 2010 – SEPTEMBER 30, 2012

PRESENTED TO
DIVISION OF RESEARCH AND INNOVATION
CALIFORNIA DEPARTMENT OF TRANSPORTATION

SUBMITTED BY
TECHNOLOGY TRANSFER PROGRAM
INSTITUTE OF TRANSPORTATION STUDIES
UNIVERSITY OF CALIFORNIA, BERKELEY

DECEMBER 11, 2012

PROJECT SUMMARY

Title: **OUTREACH & TECHNOLOGY TRANSFER
Communications for Accelerating Adoption of Innovation**

Purpose: **To accelerate deployment and widespread adoption of the innovations and research results from Caltrans sponsored research by agencies Statewide, through communications, training and technical assistance**

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Contract Period: **June 1, 2010 through September 30, 2012**

Contract Amount: **\$790,000.**

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ABSTRACT

This report summarizes the activities under Technical Agreement 65A0357, Outreach and Technology Transfer: Communications for Accelerating Adoption of Innovation from June 1, 2010 through September 30, 2012.

EXECUTIVE SUMMARY

Economic, political, environmental and other pressures have made it harder than ever to deliver safe, efficient, effective surface transportation. Caltrans Division of Research and Innovation produces valuable research results that can help our public agencies do their jobs better, build and maintain our infrastructure over a longer lifespan at a lower cost, manage our resources more efficiently, operate our transportation systems and work zones more safely, and reduce congestion and delay to the public. However, convincing an agency to adopt a new technology or process is challenging, even when the research indicates that the new technology or process has obvious advantages over whatever technology or process it is intended to replace. Successful technology transfer – moving the agency from awareness, to a decision to adopt, and ultimately to implementation – takes sustained and multi-pronged effort. This project supported that effort.

OUTREACH & TECHNOLOGY TRANSFER: Communications for Accelerating Adoption of Innovation was intended to accelerate deployment and widespread adoption of the innovations and research results from Caltrans sponsored research by agencies statewide through communications, training and technical assistance. Activities included: development and dissemination of print and electronic communications; improved access to and distribution of research reports and technology transfer materials; delivery of conferences, workshops and other training programs; provision of information services and technical assistance; and representation at and participation in national technology transfer forums.

Activities conducted under this agreement include the following tasks:

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- Task 5. Participation in National Research & Technology Transfer Forums
- Task 6. Reporting

A detailed report of activity under each task follows.

TASK 1. PRODUCTION AND DISSEMINATION OF PUBLICATIONS

Written communication, in both print and electronic formats, remains a mainstay of the technology transfer process. Tech Transfer publications are produced jointly by subject matter experts who identify timely, relevant topics and provide quality content and technical oversight, and communications professionals, who understand the audience and how to use the media effectively.

1.1 Newsletter

The newsletter, titled “Tech Transfer,” featured timely articles and practical information including reports on innovation, practical applications of research and best practices relevant for transportation professionals. Three newsletters were produced under this contract, with issues dated Summer 2010, Fall 2010, and Winter/Spring 2011. Print copies were distributed to over 18,000 transportation practitioners in California. Electronic copies of these newsletters can be found at: <http://www.techtransfer.berkeley.edu/newsletter/>. Production of the newsletter was discontinued as of June 30, 2011.

The Summer 2010 issue was titled “Constructing California” and it focused on policy implementation. The centerpiece was a four-page article that provided an update on the American Recovery and Reinvestment Act in California, along with tips for compliance. The article was written by the California Division staff of the Federal Highway Administration in partnership with the Technology Transfer Program to share important updates about the Recovery Act timeline expressly for transportation agencies in California. Another article discussed implementation of California’s SB 375 and the impact the legislation will have on linking transportation to air quality. This issue of the newsletter also included original content about best practices for transportation agencies to follow when they need to share information about transportation construction and maintenance projects with the public. This article featured a case study on the public information blitz that was underway at that time to inform the public about the reconstruction of the San Francisco Bay Bridge. A two-page resource list from the Transportation Library included resources to help local agencies determine how to best measure sign retroreflectivity in compliance with new MUTCD standards for minimum retroreflectivity. Finally, the newsletter included announcements for several new Technology Transfer Program resources, including new resources in our multimedia library and our sign retroreflectometer loan program, which provided local agencies with free access to a device that can help ensure quality and accuracy when implementing a sign maintenance program.

The Fall 2010 newsletter was titled “Every Day Counts.” This issue focused on the Federal Highway Administration’s Every Day Counts (EDC) technology deployment initiative. The spread spanned eight pages and included five articles covering EDC technologies. A two-page overview introduced readers to the goals of the initiative, to the five effective, proven, and market-ready technologies, and to the shortening project delivery toolkit and accelerated project delivery methods. A two-page spread described Adaptive Signal Control Technology, with emphasis on the use of ASCT and ACS-Lite in California. Another two-page article described the Safety Edge,

with photos and information from a recent FHWA pilot of the technology in Plumas County, California. The article also included a schematic of a pavement wedge created with a Safety Edge and a list of resources for further information. There were two one-page articles describing the benefits of Prefabricated Bridge Elements and Systems and Geosynthetic Reinforced Soil Integrated Bridge Systems. Throughout the eight-page spread, we included photos relevant to the technologies, to help readers visualize how to use the technologies and ways to implement them in their own jurisdictions. We also provided links to in-depth FHWA resources on each topic. Although the EDC Overview described Warm Mix Asphalt, we did not include an additional article on that topic because we published a 12-page Pavement Technology Update article on Warm Mix in the 3rd Quarter of 2010. That article was inserted in the Summer 2010 Tech Transfer newsletter and is posted on line. In addition to the articles related to EDC, the newsletter included a one-page overview of research syntheses reports called Preliminary Investigations (PIs) that Caltrans Division of Research and Innovation commissions to support its research agenda. These in-depth scans of literature and practice among state DOTs help Caltrans prioritize research funding. The PIs are posted on the web, and many of them cover technologies and topics that are also relevant to local agencies, so we included this article in the newsletter to inform agencies about this valuable free resource. A two-page “Resources from the Transportation Library” column on Wildlife Management included references on how local agencies can balance the public’s transportation needs with wildlife habitats. Finally, the newsletter included announcements for several new Technology Transfer Program resources and training opportunities, including more than 250 training videos that were recently digitized and posted on our website; free resources that were available from our print information distribution service, Going...Going...Gone; dates for our Resident Engineer’s Academy in 2011; information on our new Social Media Marketing initiative using Twitter; and our quarterly training calendar.

The Winter/Spring 2011 issue was titled “Fraud-Proof Projects.” Kathryn Kerkhoff, Special Agent in the Office of the Inspector General, United States Department of Transportation, wrote the feature article, “Detecting and Preventing Fraud Schemes on Transportation Projects.” This article informed local agencies how to avoid risk explaining many common fraud schemes and what to look for. Other articles in this issue focused on use of FHWA’s new Highway Safety Manual; chip seal best practices and resources; resources on parking pricing for local agencies; and notices for free resources and upcoming training opportunities.

1.2 Technical Inserts

Pavement Technology Updates are intended to document and disseminate information on research results coming out of the University of California Pavement Research Center (PRC). PRC is funded by Caltrans and works in partnership with the Technology Transfer Program on this publication and other projects funded by the Division of Innovation. Four Pavement Technology Updates were produced under this contract:

1. Warm Mix Asphalt Hits the Road, Larry Santucci, v.2, n.1.
2. Minimizing Moisture Damage in Asphalt Pavements, Larry Santucci, v.2, n.2

3. California's Transition to Mechanistic-Empirical Pavement Design, John Harvey and Imad Basheer, v.3, n.1
4. Long-Life Asphalt Pavements, John Harvey, v.3, n.2

Depending on the subject matter, print copies were distributed to between 500 and 20,000 pavement practitioners in California. Electronic copies can be found here: <http://www.techtransfer.berkeley.edu/pavetech/>.

Pavement Technology Update v.2, n.1, "Warm Mix Asphalt Hits the Road," was published in July 2010 and distributed to approximately 20,000. Authored by Larry Santucci, a researcher at the University of California Pavement Research Center (PRC), this article provides a practical and extensive overview of a new pavement technology that has the potential to become one of the most important breakthroughs for the asphalt industry in 50 years. The article describes the history of the warm mix technology, from its origins in Europe in the mid-1990s to its early adoption by transportation agencies in the United States. The article describes the benefits of warm mix asphalt over hot mix asphalt -- which include energy conservation, improved worker conditions, reduced environmental impacts, and improved plant conditions -- as well as the concerns associated with the technology -- which include potential moisture sensitivity of warm mixes produced with aggregates that are not adequately dried. The article also provides an overview of the various WMA products available in the United States and abroad, tips for selecting a WMA technology, the results of research and testing in California, field performance case studies in California, Texas, and Pennsylvania, and information on WMA-specific compaction issues. The article was peer reviewed and contains a very detailed, yet accessible description of the current state of WMA technology. Although the article is written with a California focus, it provides a broad overview that is appropriate for people performing pavement activities nationwide.

Pavement Technology Update v.2, n.2, "Minimizing Moisture Damage in Asphalt Pavements," was published in October 2010 and distributed to approximately 20,000. Larry Santucci, a researcher at the University of California Pavement Research Center (PRC), authored the article, which provides a comprehensive discussion of the causes of moisture damage in asphalt pavements, tests to predict moisture sensitivity, treatment methods, and strategies adopted by the California Department of Transportation.

Pavement Technology Update v.3, n.1, "California's Transition to Mechanistic-Empirical Pavement Design," was published in May 2011. John Harvey, a Principal Investigator at the University of California Pavement Research Center (PRC) and Professor of Civil Engineering at UC Davis, was the lead author on this article. The article provides a comprehensive discussion of the California Department of Transportation's process of adopting Mechanistic-Empirical design and analysis procedures for concrete and asphalt surfaced pavements. Due to the limited size of the audience for this particular issue, we produced a significantly smaller than usual number of printed copies (only 500, compared to our usual production run of 20,000) to be distributed in person by PRC and Caltrans staff during meetings and training of the relevant audiences. The online version is available for download by all others.

Pavement Technology Update v.3, n.2, “Long-Life Asphalt Pavements,” was published in September 2011. Larry Santucci, a researcher at the University of California Pavement Research Center (PRC), authored the article. Long-Life Asphalt Pavements offer lower life-cycle cost, lower user-delay costs, reduced environmental impact, and greater worker safety compared to conventional asphalt pavements. The article provides an introduction to Long-Life Asphalt Pavements and covers the five key elements in creating a successful long-life asphalt pavement road: design, materials and testing, communication, construction, and performance. This Pavement Technology Update was posted online, and was printed and mailed to 5,128 addresses and emailed to 13,571 addresses. Following publication, Caltrans and PRC researchers requested substantial revisions to that article to respond to concerns from the concrete industry. Working closely with Caltrans, John Harvey, Director of PRC, authored a new version of the article. In November 2011, we posted the revised article online, printed and mailed it to 5,128 addresses, and notified our e-mailing list recipients of its availability on our website.

1.2 Two-Pagers

Under a previous contract, we began working with Caltrans on communicating and marketing innovations resulting from DRI sponsored research. We began by creating a Strategic Communications Plan and developing a template for a series of “two-pager” publications titled “I-Team Briefs.” These two-pagers presented results of DRI sponsored research to potential adopters. Each contained a clear, non-technical description of the innovation; the purpose and advantages of adopting the innovation; successes and metrics; photographs, charts, figures, and tables as appropriate; and strategies to implement for smooth adoption. Under this contract we produced ten I-Team Briefs:

1. Continuous Risk Profile
2. Networked Traveler
3. Rapid Rehab
4. Regional Trip Planning with Google Trips
5. Safety Edge
6. See-Through Bridge Rail
7. Shakecast
8. Virtual Design Construction
9. Warm Mix Asphalt
10. WeatherShare

I-Team Briefs were printed in batches of 500, with some issues reprinted when supply ran low. Caltrans staff distributed print copies to internal and external stakeholders at various meetings and events. Electronic copies can be found at: <http://www.dot.ca.gov/newtech/>.

In early 2012, we suspended development of new I-Team Briefs as Caltrans DRI decided to change direction. In Spring 2012, we met with the Communications Team multiple times to

scope and develop this new series of publications. We worked with the Communications Team on the design and developed templates for these three new publications:

1. Research Notes (two-pager), research projects in progress
2. Research Results (two-pager), completed research projects in detail
3. Research Applied (one-pager), completed research projects in brief

In Summer 2012, we began producing content-populated issues of the publications. We submitted the first draft of a Research Notes to the Communication Team and as of the end of the contract were awaiting the review and response comments. We expect to continue development of these publications under a subsequent contract.

TASK 2. DISTRIBUTION OF RESEARCH REPORTS AND TECHNOLOGY TRANSFER MATERIALS

2.1 Public access to Caltrans DRI sponsored research

To ensure global public access to Caltrans sponsored research, ITS librarians and information specialists pro-actively search for, identify, obtain, catalog, and index items in the TRID database. TRID, created and maintained by the Transportation Research Board, is the premier international bibliographic reference service for transportation publications. TRID combines TRB's Transportation Research Information Services (TRIS) Database and the International Transport Research Documentation (ITRD) Database, offering users the worlds' largest and most comprehensive resource on published and on-going transportation research information. As of January 2012, the TRID database contained 940,000 records and had over 1,000,000 unique visitors since it's launch in January 2011. The ITS Library is one of only a limited number of entities deemed to have sufficient professional capacity by TRB to enter materials directly into this database.

Under this contract, library staff received, cataloged, and entered a total of 333 Caltrans-sponsored publications into the database. Cataloged publications include research reports, technical memoranda, working papers and any other research sponsored by Caltrans, as well as publications from other California-related institutions. Appropriate thesaurus terms from the Transportation Research Thesaurus (TRT) were assigned to the entries and an abstract is included for each publication. The resulting records were then directly entered into the Transportation Research Board's national TRID Database.

2.2 Distribution of research reports and publications

Report Distribution. The Technology Transfer Program distributes copies of Caltrans research reports to depository libraries as required by state law, and to non-depository libraries and electronic depositories for access and archive. See Figure 1 for documentation of the report distribution process. See Figure 2 for the current distribution list. Under this contract, we have received 56 reports, distributed 53 of them, and have three on hold.

We withheld production and distribution of CA 09/1092, *Rest Areas – Reducing Accidents Involving Driver Fatigue*, and CA-0-0921, *Partnership Strategies for Safety Roadside Rest Areas*, because the report formatting as posted on the Caltrans website required corrections. We will produce and distribute these reports once the formatting issues are corrected, and we are notified that the corrected versions have been posted on the Caltrans website. The other report we have not distributed, Report FHWA/CA/TL-2006/19, remains on hold, pending direction from Caltrans as to how to publish the numerous oversized maps. This report contains seven appendices each with numerous oversize maps that would be very expensive to reproduce. Our initial quote for reproduction came in over \$20,000. We informed Caltrans of the exceptionally high cost of reproduction and were then directed not to reproduce that report until we had identified options to lower the cost, such as reducing the size of the maps

FIGURE 1
Report Distribution Process
Updated March 2012

STEP 1. CALTRANS POSTS THE FINAL REPORT ON THE CALTRANS WEBSITE

Caltrans posts the final report on this page:

http://www.dot.ca.gov/research/researchreports/dri_reports.htm

STEP 2. CALTRANS EMAILS NOTIFICATION THAT REPORT IS TO BE DISTRIBUTED

- Caltrans sends one email per report that needs to be distributed.
- The subject line should contain the words "Report Distribution" and the report's ID number.
- The body should contain the report title and the link to the pdf
- The email is sent to the following people:

UC Berkeley:

Laura Melendy, melendy@berkeley.edu, for project oversight

Helen Bassham, hbassham@berkeley.edu, for report production/distribution

Rita Evans, revans@library.berkeley.edu, for cataloging

Caltrans Library:

library@dot.ca.gov

Caltrans DRI:

Azzeddine Benouar

Rebecca Boyer

Kelly Takigawa

Mohamed Al Kaldri

Joel Retanan

Tori Kanzler

and/or others, as determined by Caltrans

STEP 3. UCB DISTRIBUTES PHYSICAL COPIES OF THE REPORT

Administrative staff coordinates reproduction and distribution of the hard copies of the final reports, to comply with California's Library Distribution Act (<http://sam.dgs.ca.gov/TOC/3100/3120.htm>).

- Reports are sent out for reproduction, with 21 copies produced. Standard format is 8.5" by 11", double-sided pages, on 24# laser, using black & white whenever possible, and color when needed. Reports are bound with clear plastic front covers, black plastic back covers, and tape binding.
- Final reports are mailed to California's 16 complete depository libraries, UC Berkeley's and Northwestern University's transportation libraries, the National Transportation Library, the Library of Congress and the National Technical Information Service.

STEP 4. UCB ELECTRONICALLY CATALOGS AND ARCHIVES THE REPORT

Library staff catalogs and indexes the reports so they can be found and accessed by transportation researchers and practitioners throughout the world. The library archives the reports in institutional repositories to ensure long-term preservation and access. Library staff does the following:

- Catalogs the report with the URL in the record. The record then appears in WorldCat (<http://www.worldcat.org/>) and OskiCat (<http://oskicat.berkeley.edu/>), with a link to the pdf.
- Archives the report in the California Digital Library's Merritt repository (<http://www.cdlib.org/services/uc3/merritt/>).
- Indexes the record with keywords assigned from TRB's Transportation Research Thesaurus. The record with the URL then appears in TRB's TRID (<http://trid.trb.org/>) database.

Archives the report in the National Transportation Library's Digital Archive (<http://ntl.bts.gov/>).

FIGURE 2
Report Distribution Mailing List
Updated June 2012

California State Document Depository Libraries

California State Archives 1020 O Street, Sacramento, CA 95814	San Diego State University Malcolm A. Love Library Gov't Publications & Maps Division 5500 Campanile Drive, San Diego, CA 92182-8050
California State Library (2 copies) Info Resources & Gov't Publications PO Box 942837, Sacramento, CA 94237-001	San Francisco Public Library Government Information Center 100 Larkin Street, San Francisco, CA 94102
California State University, Chico Merriam Library, 400 West 1st Street Gov't Publications Dept, Chico, CA 95929-0295	Green Library, Stanford University Government Document Serials Stanford, CA 94303-6004
Fresno County Free Library Government Publications 2420 Mariposa Street, Fresno, CA 93721-2285	University of California, Berkeley Gov't Documents Technical Services 250 Moffitt Library, Berkeley, CA 94720-6000
Library of Congress Anglo-American Acquisition Division Government Documents Section 101 Independence Ave SE, Washington DC 20540-4172	University of California, Davis Shields Library/Serials Receiving, HJSS & GA 100 North West Quad, Davis, CA 95616
Los Angeles Public Library Serials Division 630 W Fifth Street, Los Angeles, CA 90071-2002	University of California, Los Angeles Charles E. Young Research Library A4510 Government Information Box 951575, Los Angeles, CA 90095-1575
Dr. Martin Luther King Jr. Library Government Publications San Jose State University One Washington Square, San Jose, CA 95192-0008	University of California, San Diego Government Documents Unit 9500 Gilman Drive 0175P, La Jolla, CA 92093-0175
San Diego Public Library Science and Industry Department 820 E Street, San Diego, CA 92101-6478	University of California, Santa Barbara Library, Serial Receiving, Santa Barbara, CA 93106-9010

Additional Non-Depository Libraries

National Transportation Library Headquarters, W12-300 1200 New Jersey Avenue SE, Washington, DC 20590	Harmer E. Davis Transportation Library University of California, Berkeley 412 McLaughlin Hall, Berkeley, CA 94720-1720
National Technical Information Service 5301 Shawnee Road, Alexandria, VA 22312	Transportation Library Northwestern University Library 1970 Campus Drive, Evanston, Illinois 60208-2300

or not printing the maps at all (instead making the appendices refer to online links for the maps). Distribution of this report will remain on hold until Caltrans decides how to proceed.

Going...Going...Gone. Until June 30, 2011, Tech Transfer also distributed other publications to public agencies throughout the state upon request. Extra copies of research reports, miscellaneous bulk products, and a wide variety of duplicate, excess materials were made available to public agencies via an on-line shopping cart. ITS Library staff maintained the physical and database inventory and responded to G3 requests by packing and mailing the requested materials. Under this contract, library staff distributed 755 items through this service. Caltrans and UC mutually agreed in a contract amendment to discontinue this service as of June 30, 2011.

RAC TKN Task Force on Research Report Management. Under this contract library staff worked with the American Association of State Highway and Transportation Officials (AASHTO) Research Advisory Committee (RAC) Transportation Knowledge Networks (TKN) Task Force on Research Report Management. The Task Force is looked at access issues related to report management. They documented the policies and practices of the large transportation libraries (Berkeley, Northwestern, FHWA) in terms of systematic collection of DOT, UTC and federal reports: what's has/is being collected; are reports print, electronic, or both; and what long-term access and preservation is expected. They also compiled information on whether individual state DOTs are systematically cataloging and preserving their own agency reports. They examined the role of the National Transportation Library as the long-term digital repository for all state DOT reports and identified practices state DOTs are using so their reports are cataloged, entered into TRID, preserved at NTL, and made available through other channels.

TASK 3. DELIVERY OF WORKSHOPS, CONFERENCES AND OTHER TRAINING PROGRAMS

3.1 Workshops

Early in this contract, we completed work on a summary report documenting the Transportation Finance Research-Policy Lunch Series of workshops held in Spring 2010. This three part series was titled “Financing California’s Transportation System: Strategies for Moving from Crisis to Stability.” The three sessions were titled, “Transportation Finance in California: How did we get here, and where are we headed?,” “Moving Toward a Sustainable Transportation Finance System: Obstacles and opportunities,” and “Paying for Our Transportation System: Evaluating our options.” The summary report includes an overview of the series, agendas and notes from each of the three sessions, information on participant and audience recruitment and attendance, speaker biographies, participant feedback, and future directions.

Also under this contract, we helped formulate, facilitated and participated in a Peer-to-Peer Exchange on technology transfer practices at state DOTs. Activity included logistics support leading up to the peer exchange, facilitation and note taking at the peer exchange, and delivery of a summary report following the peer exchange. The peer exchange was held in Sacramento, California on March 16-18, 2011 to discuss best practices for implementing research results and to identify the characteristics of organizations and skills sets of individuals successful at accelerating adoption of innovation. The summary report can be found here: http://www.dot.ca.gov/newtech/docs/finalreport_2010_peer_exchange.pdf.

Late in this contract, we began discussion of a series of workshops to bring together Caltrans customers, DRI staff, and university faculty and researchers, in a series of Research Summits, each focused on a single, broad topic area, to inform research investment decision making by identifying status of what’s known on a topic, what research is currently underway within and outside California, and where California’s research program should be headed on that topic. The objective is to support DRI’s mission of improving mobility across California by performing applied research, developing innovations, and implementing solutions, by helping inform Caltrans DRI decision makers so they can best allocate the research program to the highest priority, highest potential research. Research Summits are envisioned to be one-day meetings of approximately 30 to 50 people. Participants will include DRI staff, high-level Caltrans customers, and subject matter experts from universities and research institutes across California. Research summit designs will be tailored to each topic and may include a combination of presentations, panel discussions, and facilitated group dialog. The Research Summits are intended to identify the highest priority research by topic and lay the foundation for a research road map for each topic area. Four initial topic areas were suggested: Safety, Mobility Management, System Preservation, Finance, and Project Delivery. Our expectation is that Caltrans will identify the topic areas for initial Research Summits, and we will begin developing those under a subsequent contract.

3.2 Conferences

Conferences are an effective way to disseminate latest research results, incubate new ideas and encourage collaboration among researchers and between government, industry and academia. Tech Transfer conferences are cutting-edge, informative, and balanced. They provide an opportunity to learn something new, to keep up with technological, regulatory, and legal developments, and to meet and network with experts, colleagues and stakeholders.

Pavement Preservation. Early in this contract, we began planning the fifth annual Pavement Preservation Conference. This conference was re-envisioned as the “California Pavement Maintenance Training Conference,” with a broader scope than previous years, to encompass all pavement management, preservation, maintenance, and rehabilitation topics. We held our first planning meeting, made initial decisions regarding dates, locations, content scope, and stakeholders to work with on program planning. After preliminary planning and exploratory market and sponsorship analysis for the next conference, but before we made contractual financial commitments to a venue, the governor issued travel restrictions that would prevent state employees from attending this conference. This travel restriction would have a significant impact on participant and speaker attendance, therefore, in mid-2011, Caltrans and Tech Transfer jointly decided to discontinue work on this task and not hold a pavement preservation conference during the term of this contract.

Accelerated Pavement Testing. Efforts that began in Fall 2010 culminated in September 2012 with delivery of a very successful and well-received 3-day International Conference on Accelerated Pavement Testing, held on campus at UC Davis, September 18-21, 2012. The conference was preceded by a full day of pre-conference workshops on APT Operations Experience Sharing, and Accelerated Pavement Testing Instrumentation. We coordinated and handled the local logistical arrangements and the registration for this conference, and produced all of the marketing and conference materials (with the exception of the published Conference Proceedings, which was edited by the APT2012 conference committee, and produced through a third-party vendor).

Over 100 people attended from 18 countries (including the US) and from 19 US states. 55 papers from 16 countries were accepted for presentation and discussion at the APT2012, and for publication in the conference proceedings. Papers covered a range of topics, including the establishment of new facilities arising from the growing interest in and proven benefits of APT, reviews of facilities that have been in operation for a number of years and the impacts that they have had on pavement engineering, findings from studies undertaken since the last conference with a focus on new material developments, and the role of APT in developing and calibrating mechanistic-empirical design procedures and performance models.

The conference was co-hosted by the University of California Pavement Research Center and the Illinois Center for Transportation, and sponsored by the Transportation Research Board (TRB), Committee AFD40, Full-Scale and Accelerated Pavement Testing, the Forum of European

National Highway Research Laboratories (FEHRL), the Federal Aviation Administration (FAA), Dynatest, MLS Test Systems, and the Council for Scientific and Industrial Research (CSIR).

3.3 Preliminary Investigations & Training

Prior to making investment decisions on research projects on a particular topic, Caltrans research managers should conduct Preliminary Investigations to review existing research and practices on that topic. These investigations will be used to ensure appropriate research investment and to shape the research project. Under a previous contract, we developed a template for these preliminary investigations and delivered 20 final reports. Under this contract, we completed ten additional final reports, and have two more in progress. Completed and approved Preliminary Investigations can be found on the DRI website: http://www.dot.ca.gov/research/researchreports/preliminary_investigations/index.htm.

In addition, we delivered training to Caltrans research managers on how to conduct preliminary investigations. The training sessions were held in Sacramento on two consecutive days in October 2010 and covered how to identify existing research and practices, analyze the information, and summarize it in a clear, concise report.

Under this contract, we have completed the following ten preliminary investigations:

1. Comparison of California to Other State DOTs on Project Initiation Documents and Reimbursement Schemes
2. Outreach Efforts Related to Mitigating Impacts on Cultural Resources: A Survey of State Practice
3. Safety Implications of the Use of the Flashing Yellow Arrow for Permissive Left Turn
4. Implementing Research Results: Highlighting State and National Practices
5. Environmentally Friendly Elimination of Moss from Pavement to Enhance Safety
6. Developing Air Quality Mitigation Measures for Projects' Operational Emissions
7. Inactive and Abandoned Rail Corridor Preservation
8. Improving Highway Advisory Radio Transmission and Predictability
9. Cool Pavements Research and Technology
10. Curb Radius and Injury Severity at Intersections

We are currently working on these two Preliminary Investigations:

1. Smart Mobility Implementation and Metrics
2. Best Practices for Environmental Consideration in Systems Planning Documents

3.4 Administration of the T2 Pooled Fund

This task was intended to provide administrative and technical support to the Caltrans- and FHWA-sponsored T2 Pooled Fund project, as needed. No requests were made for this support, so there was no activity on this task during the term of this contract.

TASK 4. PROVISION OF INFORMATION SERVICES AND TECHNICAL ASSISTANCE

Information services and technical assistance provided under this task via the Field Agents, the Ask-an-Expert Service, the Website and direct Outreach will support Caltrans' mission to improve mobility across California by providing local agencies across the state with up-to-date, practical and applicable information on best practices and innovations resulting from Caltrans' sponsored research so that those agencies can then apply the information to improve safety, mobility, delivery, stewardship and service at the local level.

4.1 Field Agents and Ask-an-Expert

City, county and regional agencies in California vary widely in their needs and interests for information services, technical assistance, and customized training to support adoption of innovation and best practices. To meet these diverse needs, Tech Transfer retained several experts to provide information, assistance, and customized training to local agencies.

Our field experts provided practical, peer-to-peer technical assistance, customized training on the fly, and information resources to local transportation agencies as needed.

4.2 Website

The Tech Transfer website (www.techtransfer.berkeley.edu) is the primary point of access to the services, training, and resources provided by Tech Transfer. Publications generated, such as the Pavement Technology Updates described earlier, and information about services offered under this contract are posted and maintained on the website.

On average, the Tech Transfer informational website, not including our training registration server, served over 20,000 hosts with over 100,000 pages viewed each quarter. A "findability" analysis conducted during the term of this contract gave our website a grade of 90 out of 100, and a rank of 281,459 out of 2,746,995 websites evaluated. According to "HubSpot's Website Grader," a grade of 90 means that "of the millions of websites that have previously been evaluated, our algorithm has calculated that this site scores higher than 90% of them in terms of its marketing effectiveness."

In addition to posting publications on the Tech Transfer website, Tech Transfer staff also contributed to upgrading DRI's websites. Substantial staff activity in May and June 2011 was dedicated to upgrading DRI's external and internal web pages to comply with statewide standards and templates. The first check for validation of all web pages came up with over 7,000 errors. After analyzing the errors, staff parsed the consistent, bulk validations errors, then went to work page-by-page fixing all the individual errors. By the end of the project, Tech Transfer provided DRI information technology staff with all DRI external web pages ready for use in both the 2007 and 2011 templates, and all DRI internal web pages in 2011 templates.

4.3 Outreach

Tech Transfer's marketing program disseminates information about services, resources, the latest innovations and training opportunities via: the Tech Transfer website, described above; monthly e-mail announcements that, at the start of this contract, went out to over 10,000 addresses each month, and by the end of this contract, went out to approximately 15,000 addresses each month; and topic specific fliers and brochures distributed by hand at events attended by Tech Transfer. Tech Transfer staff and field agents regularly participate in meetings of professional and trade organizations to speak to their membership, distribute information to attendees, facilitate information exchange and make training presentations. Partner organizations include AASHTO, APA, APWA, CEAC/NACE, FHWA, FRA, ITE, MSA, NLTAPA, OTS, and TRB. During the term of this contract we distributed thousands of promotional and informational items at dozens of local, regional, and statewide events, including, the Rail Corridor Safety Conference, the Western Regional Institute of Transportation Engineers Conference, monthly meetings of the San Francisco Bay Area chapter of the Institute of Transportation Engineers and the American Planning Association, the Northern California American Public Works Association Conference, monthly meetings of the American Society of Civil Engineers, the annual meeting of the California Chip Seal Association, and others.

TASK 5. PARTICIPATION IN NATIONAL RESEARCH & TECHNOLOGY TRANSFER FORUMS

Activity at the national level maximizes the visibility and impact of results of Caltrans sponsored research, showcases California’s successes in technology transfer, and brings lessons learned on technology transfer practices from around the country back to California. During the term of this contract, the Director of the Technology Transfer Program served as co-chair of the Technology Transfer (ABG30) committee, as a member of the Training and Education (ABG20) committee, and on the expert panel for “Bringing Highway Research to Market Quickly,” a research project conducted under the National Cooperative Highway Research Program (NCHRP) Project 20-5.

TASK 6. REPORTING

Quarterly progress reports were submitted within 30 days following the end of each quarter and monthly financial reports were submitted within 7 days following the end of each month. Additional information and interim reports were provided upon request.