

California Department of Transportation  
Division of Research and Innovation (DRI)

Nick Burmas  
Office Chief, Office of Materials and Infrastructure

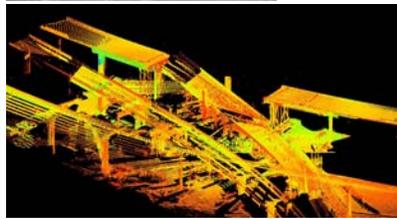


How do you ensure Tech Transfer Occurs?

- Technology Push
- Champions
- Senior Management Support
- Pilot Projects and Demonstrations
- Early Involvement of Users
- Partnerships
- Progress Monitoring and Committed Funding
- Marketing and Communications



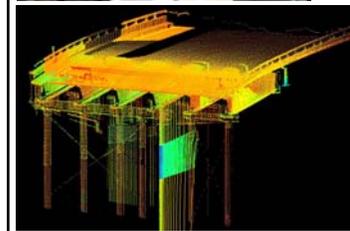
**TECHNOLOGY PUSH:**  
Laser Metrology  
Unexplored tool for rapid damage assessment and alignment data.  
Provided a Digital Topographical Map, Super Elevation and trajectory diagram of I-580 connector in Caltrans specified coordinates within 6 hours of scanning with absolutely no interference or work stoppage of construction and maintenance personnel on the site.



Real life and Laser Point Cloud images of MacArthur Maze



Real life and Laser Point Cloud images of cross-section of reinforced concrete truss (I-580 East side connector)



Research Process  
Committee Structure

- RDSC - Research and Deployment Steering Committee
- RDAC – Research and Deployment Advisory Committee
- PSCs - Program Steering Committees
- TAPs - Technical Advisory Panels

ShakeCast – A Tool for Post Earthquake  
Bridge Inspection



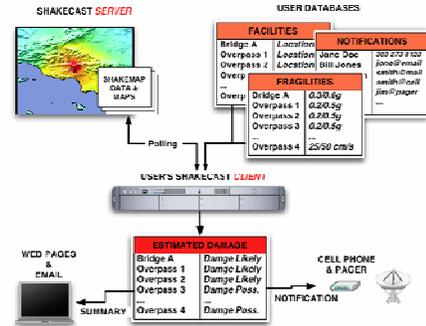
Division of Research & Innovation  
Office of Materials & Infrastructure

## Project Details

- Contract with the United States Geological Survey (USGS) initiated in March 2006.
  - 3 years
  - \$200,000
- Scope of Contract: Develop ShakeCast system that provides:
  - Automated earthquake and bridge performance analysis
  - Produce maps and bridge inspection priority lists.
  - Web-based interface to administer system and provide products to users.

7

## ShakeCast System



### Example ShakeCast Notification (Caltrans)

Caltrans ShakeCast Primary Earthquake Report

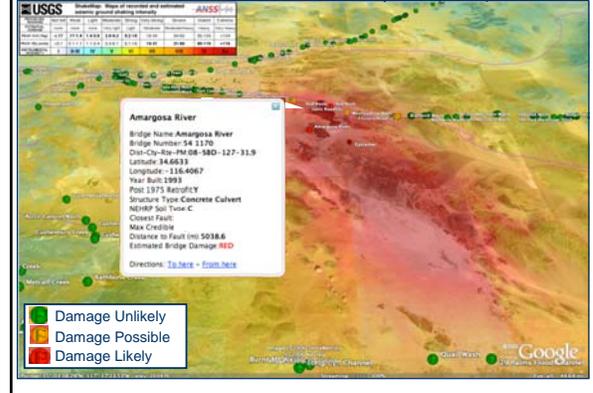
**Event Summary**

**Estimated Bridge Damage Summary**

**Facility Damage Estimates from ShakeMap**

Bridge Name	Bridge No	Dist-City-Rte-PM	Damage Level	Value	Exceedance Ratio
Pisgah Overhead	54 0689L	08-SBD-040-R37.41	RED	47.6856	1.163
Pisgah Overhead	54 0689R	08-SBD-040-R37.44	RED	47.6856	1.163
Lavie Road OC	54 0734	08-SBD-040-R41.91	YELLOW	56.4714	0.867
Ash Hill Wash	54 0758L	08-SBD-040-R54.75	GREEN	25.5495	0.887
Ash Hill Wash	54 0758R	08-SBD-040-R54.77	GREEN	25.5495	0.887
Argos Wash	54 0737L	08-SBD-040-R43.84	GREEN	48.8524	0.053
Argos Wash	54 0737R	08-SBD-040-R43.84	GREEN	48.8524	0.053

### 1999 Hector Mine, California Earthquake (M7.1)



## Balsi Beam

Telescoping the Beams



Patent Pending

## Increased National Involvement

- NCHRP
- TRB
- TIG
- POOLED FUNDS

12

