



↘ HIGH FRICTION  
SURFACE TREATMENTS

## PROJECT CASE STUDY

The Federal Highway Administration's Every Day Counts (EDC) initiative is designed to identify and deploy innovations aimed at shortening project delivery, enhancing the safety of our roadways and improving environmental sustainability. Building projects more quickly depends on the highway community advancing innovative practices to a level of routine use by highway agencies and contractors. One focus area of the EDC initiative is a pavement overlay option – High Friction Surface Treatments (HFST).

HFST are pavement surfacing systems with exceptional skid-resistant properties that are not typically provided by conventional materials. Through the spot placement of a thin layer of durable high friction aggregates as a topping on specially engineered resin or polymer binder, these aggregate systems provide long-lasting skid resistance, while also making the overlay much more resistant to wear and polishing. In this way, HFST restores pavement friction surfaces where high traffic volumes have polished existing pavement surface aggregates and can also serve to mitigate vehicle speeds that exceed existing geometric designs for sharp curves and superelevations.

### Case Study: California Department of Transportation

**The California Department of Transportation Caltrans Roadway Departure Safety Plan in 2011 identified 179 locations and approximately 50 other locations where HFST has been or will be placed.**

California has placed 10 HFST applications to date. However, 50 additional applications are planned, including one at a high-speed, signalized intersection. The majority of the applications will be for the end of on-ramps and on the curves of two-lane roadways. Caltrans is moving forward with the projects as a result of information obtained from other states and information provided during webinars. Based on the information from webinars, Caltrans' specifications call for calcined bauxite only. Previously, Caltrans mainly used open-grade asphalt concrete (OGAC) to reduce wet pavement collisions along with grinding and grooving. However, OGAC could not be installed at locations where there were freezing temperatures. An additional benefit of HFST when compared with OGAC is the ability to install on any pavement surface without concern for cross drainage.

#### CASE STUDY – RTE. 105 SEPULVEDA BLVD ON-RAMP IN LOS ANGELES, CALIFORNIA. HFST INSTALLED IN FEBRUARY 2011

The I-105 Sepulveda Blvd. on-ramp, a primary egress point from the Los Angeles Airport, was notoriously closed during rain events to prevent expected crashes. The average daily traffic is 31,000. Crashes occurred as a result of the tight curvature, the low friction, and aggressive driving by motorists. The closure of this highly utilized ramp resulted in numerous complaints to Caltrans. The latest five years of crash data showed that 68 of the 85 crashes were wet pavement crashes. Since Caltrans applied HFST to about 1,300 linear feet of the ramp, it has not been closed. The pre- and post-application friction values were 32 and approximately 60, respectively. Due to the volumes of crash data processed, post-application crash experience data is not available at this time.



For additional information, please contact:

**Joseph Cheung, P.E., HFST Lead**  
FHWA Office of Safety  
[joseph.cheung@dot.gov](mailto:joseph.cheung@dot.gov)

**Robert Peterson, Branch Chief, Caltrans**  
Highway Safety Improvement Program  
[robert.peterson@dot.ca.gov](mailto:robert.peterson@dot.ca.gov)

*Every Day Counts (EDC), a State-based initiative of FHWA's Center for Accelerating Innovation, works with State, local and private sector partners to encourage the adoption of proven technologies and innovations aimed at shortening and enhancing project delivery*

 U.S. Department of Transportation  
Federal Highway Administration