

Longitudinal Crack Sealing — News from San Diego



controls the entire sealing process from within the truck cab and additional crew is typically utilized to load the sealant blocks into the kettle, which they can do from within the confines of the truck body.

The LCSM driver deploys the head, steers the truck along the crack, controls sealing speed with the accelerator pedal, and remotely controls the sealant flow with a hand controller. A shoe pulls along a large puddle of sealant that overcomes the continuous change in crack size. A display screen in the cab relays machine status information to the driver.

Recent Developments

The Longitudinal Crack Sealing Machine (LCSM) has been in almost continuous field operations for three years. The field experience revealed a serious problem in melting and delivering sealant fast enough to keep up with the speed of the machine.

The District 11 Equipment Shop responded to the sealant problems by developing a double-boiler trailer. Using two kettles kept enough material molten, and after all sealant was used in the front boiler, material was replenished from the rear boiler. Problems still remain, such as the hose delivery system, that severely limit the overall speed of the machine.

Still, even with the problems, the District 11, Chula Vista Travelway Crew has recently reported some startling numbers.

Cost Comparison Data

Longitudinal Crack Sealing Machine
VS Hand Applied CRAFCO

Distance Compared: 32 miles along I-5

	LCSM	Hand Applied
Number of employees	3	4
Average miles per day	3.5	0.8
Work days	9	40
Bare rate cost	\$4,0179	\$23,820
Closures	NO	YES
Employees on foot	NO	YES

LCSM — In 17 days, 62 miles of AC/PCC joint line have been sealed on Routes 5, 52, and 125.

Hand Applied Method — The same amount of miles sealed would have required 77.5 days, 78 lane closures, and 465 hours of exposure to traffic on foot.

Concept

The Longitudinal Crack Sealing Machine (LCSM) was developed to automate the sealing of relatively continuous longitudinal cracks, such as those that occur between a concrete lane and asphalt shoulders.

The LCSM removes the sealing crew from the exposed road surface and places them in the safety of the truck. The driver

Some pictures taken in Chula Vista

Hand application



Route 5, January 2002



No one on the ground



Super clean joint



Looking back



Looking ahead



Route 5, December 2002





Transfer Tank Longitudinal Sealer — COMING THIS SPRING

Transfer Tank Longitudinal Sealer (2TLS)

The Transfer Tank Longitudinal Sealer (2TLS) machine is the third generation longitudinal sealing machine developed by AHMCT and Caltrans. All of the prior machines have been adopted by Caltrans maintenance crews for highway use.

Over a year ago, AHMCT was contracted by Caltrans to design the next generation longitudinal sealing machine in response to feedback from users.

After examining the deployed LCSM in the field, AHMCT has designed a next generation machine and is half way through the development process. The new machine is called the **Transfer Tank Longitudinal Sealer (2TLS)** and is scheduled to be deployed in the field with Caltrans in Spring 2004. This machine is highly anticipated by Caltrans maintenance.

NEW AND IMPROVED

Features of the new Transfer Tank Longitudinal Sealer include:

- **Faster operation**

The 2TLS will be more (probably much more) than 8 times faster than the present Longitudinal Crack Sealer.

- **Continuous operation**

The 2TLS will demonstrate an innovative new technique of bringing all sealant out to the highway hot and ready to be applied, rather than cold in boxes. This will provide for a vastly expanded sealant capacity and eliminate any direct traffic exposure for its highway crew of one.

A special supply melter trailer heats the boxed sealant supply off the highway and transfers the hot sealant to the application truck for highway application. This

approach has the added benefit of eliminating any worked direct traffic exposure on the highway related to crack sealing.

- **Comfortable operation**

The ergonomics of the driver/operator will be improved to make the driver more comfortable during long periods of sealing and improve the accuracy at which the driver guides the applicator along the longitudinal cracks. This will be accomplished with the purchase of a newly designed high visibility standard cab truck.

- **Automated operation**

Automated controls will make the operators job much easier. Training can be problematic in the field, so the simpler the controls the safer a machine is to operate. The controller will handle the direct control of the machine and with its additional sensors is able to operate the machine more efficiently than a human operator. The controller will prompt the operator at a higher level for easy to understand choices of what the machine is expected to accomplish.

- **Safer for operators**

The single operator will never have to leave the truck.

- **Safer for motorists**

There will be no chance of a car darting in front of a shadow vehicle and colliding with a trailer filled with kettles of hot asphalt.

- **Less pollution**

There will less pollution due to use of propane fuel in the melting operation.

These features will allow the 2TLS to dramatically increase highway seal production and safety compared to the current LCSM.