

COLD IN-PLACE RECYCLING (CIR)

DEL AMO BOULEVARD

PROJECT

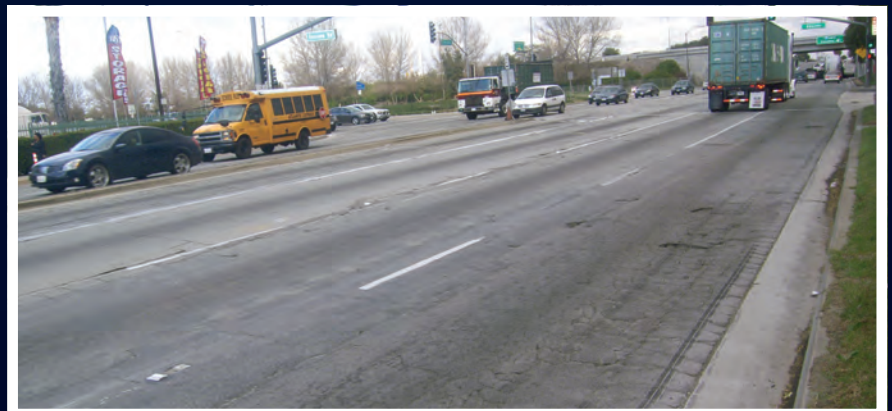
By: Greg Kelley, Assistant Deputy Director, Los Angeles County Public Works Department



(Left) Pre-Condition - Overview – Severe alligator cracking on wheel track.

(Below) Pre-Condition - Overview – Severe alligator cracking throughout the width of roadway.

(Bottom) Pre-Condition - Overview – Heavy trucks and commuters traffic along Del Amo Boulevard.



The Los Angeles County Department of Public Works is committed to preserving and improving the overall quality of local streets and road system in a cost-effective and environmentally friendly way. The Del Amo Boulevard project is just one example of how Public Works has embraced this commitment.

Public Works has encompassed a greener, cost-effective three prong sustainable approach in maintaining its road network. This approach incorporates principles that (1) take care of roads that are in good condition, first; (2) use recycled materials in the pavement treatment selections; and (3) reutilize the existing materials in-place.



(Above) Pre-Condition - Close-up – Severe alligator cracking along existing edge of gutter (pop-outs).

(Right) During Construction – Cold milling process of the existing edge of asphalt pavement.



The Del Amo Boulevard project, involved the approach of reutilizing a portion of the existing pavement in-place. The scope of work included rehabilitating 1.5 miles of Del Amo Boulevard by removing the top two inches of the existing pavement followed by recycling the next three inches in-place by using the Cold In-Place Recycling (CIR) process. CIR is an in-place engineered process that grinds, crushes and sizes the existing asphalt pavement into a recycled material; processes the recycled material with an engineered asphalt emulsion to rejuvenate the existing material; and then repaves this recycled asphalt material uniformly back to the roadway in one continuous operation. After the CIR process was completed, a 2 inch hot mix asphalt surface course was constructed over the CIR asphalt pavement to return the road to the original grade. The project is located within the unincorporated community of Rancho Dominguez and within

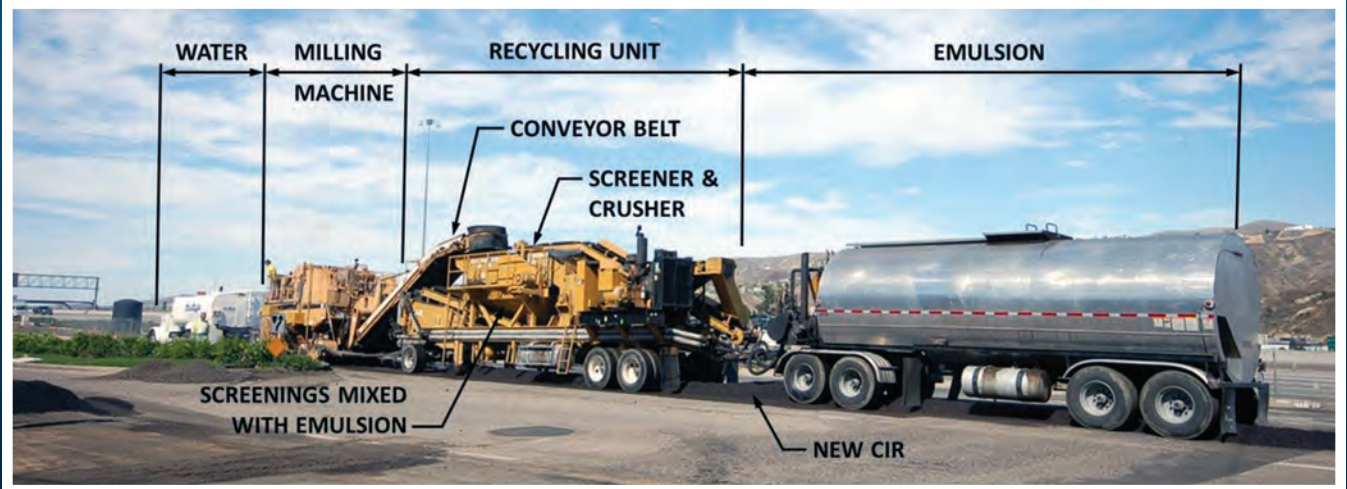
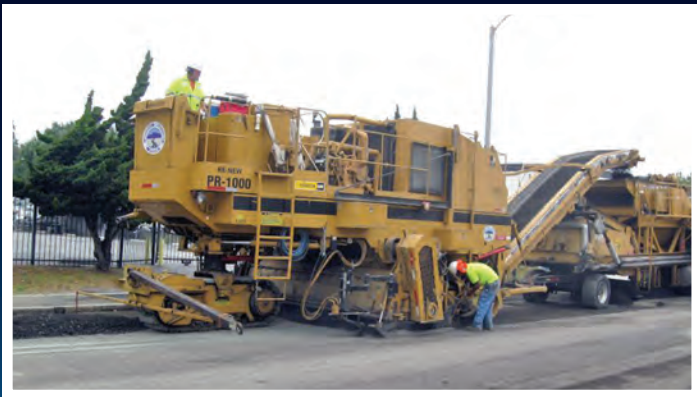
the cities of Carson and Long Beach.

Del Amo Boulevard is a heavily used industrial corridor and over the years the sustained truck traffic resulted in poor pavement condition. Over time, the frequency to repair the road increased. The County's Road Maintenance forces expressed their concerns about the large amount of repairs and the difficulty in making the repairs on the heavily traveled corridor. The approach to rehabilitate the road was a factor in the selection of using CIR as a treatment option. By reusing the existing pavement through the CIR process, we were able to eliminate both the hauling of three inches of the existing pavement from the project location and the importing of conventional asphalt replacing the three inches of asphalt. Eliminating these steps from the project resulted in shorter construction durations and reduced road closure times, which lessened the impact on

the commuters and surrounding businesses.

The General Contractor on this project was Shawnan Corporation, the CIR subcontractor was Pavement Recycling Systems, and the engineered emulsion supplier was Western Emulsions. The contract cost for the project was \$1,300,000 (\$2.45/SF). This application will extend the service life to the pavement for 10 years at an extremely cost-effective rate. When comparing the cost of 3 inches of conventional asphaltic concrete with 3 inches of CIR, the cost savings of performing the CIR is equivalent to \$522,000.

In addition to being cost-effective, the Del Amo Boulevard project is an environmentally friendly project. When compared to the hot mix asphalt alternative, the CIR process reduces energy consumption by 76 percent and reduces greenhouse gas (GHG) emissions into the environment by 79 percent. In addition,



reusing the existing asphalt in place, instead of virgin material, not only prevented tons of old asphalt pavement from going to a landfill, it also saved tons of new material from being removed from the earth.

In summary, the Del Amo Boulevard Project preserved and improved the overall quality of the local streets and road system in a cost-effective and environmentally friendly way. The County's three prong approach is a commitment to implement sustainable projects like Del Amo Boulevard, and helps address existing funding shortfalls and meet the objectives of AB 32 of reducing GHG emissions.

For additional information on the CIR process, please contact Western Emulsions at (888) 705-4137 and Pavement Recycling Systems at (800) 966-7774. **CC**

(Top Left) During Construction – One continuous operation of the Cold In-Place Recycling (CIR) train.

(Top Right) During Construction – Existing Reclaimed Asphalt Concrete (RAP) millings into recycling mixer.

(Above) Typical Cold In-Place Recycling (CIR) Train Equipment.

(Below) Post-Condition – Final rubberized asphalt paved roadway.

