

State Gives Returned Concrete a Green Light

By Charley Rea, Director of Communications & Policy, CalCIMA

Looking for the perfect way to reduce greenhouse gases, reduce waste, save embodied energy, conserve natural aggregates, save water, decrease transportation, decrease infrastructure costs, and supply quality concrete for construction projects?

Well, Caltrans, the Division of Measurement Standards (DMS), and the ready mixed concrete industry have found a way.

It is to allow the use of returned plastic concrete.

As industry members know, returned plastic concrete is concrete left over in a mixer drum. It is concrete that is still fresh and liquid—termed plastic—and still useable. It happens when a project does not require as much concrete as originally expected. In all, 2-8% of all concrete goes unused. Until recently, it had to be dumped out, dried, and sorted, or sent to a landfill.

This unused concrete has been a major concern of regulators. CalEPA estimates it results in 2.2 million pounds of excess carbon emissions per year.

Caltrans, DMS, and industry recently found a solution by developing a specification that will allow re-use of the returned plastic concrete in certain applications. To our knowledge, Caltrans is the first Department of Transportation in the country to specifically allow returned plastic concrete.

This specification came about from the two state agencies and industry working together. A work group was

formed in November 2012. Industry members included Mike Donovan (Central Concrete Supply), Don Vivant (Sully-Miller), Pat Imhoff (CalPortland), Mark Hill (Cemex), and Tarek Khan (BASF), among others.

The team met monthly for 18 months before coming up with a final version in June of 2014. Caltrans published it as a non-standard special provision in June 2015. The work included extensive discussions on ready mixed concrete and plant operations, development of a report on the carbon impacts, a tour of a ready mixed concrete operation, and a review of weighing and measuring procedures.

The final product is found in new Sections 90-7 to 90-9 of the Caltrans specifications. It says the following:

- Returned plastic concrete can be used in curbs, gutters, sidewalks, and slurry applications.
- Concrete may contain a maximum of 15% returned plastic concrete.
- It may not exceed 100° F.
- Must be proportioned within 4 hours after original batching if hydration stabilizing ad-mixture (HSA) is not used; if HSA is used, it must be added within 4 hours of original batching.

In addition, procedures were worked out with the DMS to address weighing and measuring of the returned concrete. Batch plants will

need to have an endorsement complying with Caltrans Material Plant Quality Program (MPQP).

So, now a specification is available that can help reduce by 15.5% the carbon footprint and by 16.2% the embodied energy per yard of concrete, according to the carbon study completed for the project.

“The development of the new Returned Plastic Concrete specification is a great example of engineering innovation, sound sustainable practice, and positive teamwork between Caltrans, its Industry partners, and the Division of Measurement Standards,” says Dan Speer, Chief of the Caltrans Office of Structural Materials. “The collaboration amongst the various stakeholders was extraordinary, and certainly embodied the Caltrans goal of making long-lasting, smart mobility decisions that improve the environment and support California’s economy.”

Importantly, having the specification developed by Caltrans means that it is now available to all other entities, including local governments, in California.

Ready mixed concrete producers now have an important tool available to demonstrate environmental benefits. Producers are encouraged to work with contractors and Caltrans districts, as well as local governments, to use it on projects.