Many TDA applications were developed through CalRecycle’s research efforts. CalRecycle is continuing to expand the understanding of TDA applications and material properties through university research and pilot projects. Current research topics include: Seismic testing of TDA with foundations and retaining walls, Mechanically Stabilized Tire Derived Aggregate (MSTDA), TDA in septic and storm water applications. These types of applications show great promise to eventually become future sustainable and beneficial uses of TDA.
EVERY YEAR, California is faced with safely managing and diverting more than 40 million waste tires from landfills—that amounts to a tire for every man, woman and child in the state. One of CalRecycle’s key innovations for removing tires from the waste stream is the use of Tire Derived Aggregate (TDA), a sustainable, lightweight, free-draining engineering material produced from shredded waste tires.

TDA not only helps California divert waste tires from landfills, it also solves a variety of engineering problems, often with safer and more cost effective results. In fact, TDA is often a cost effective alternative when used as: a lightweight solution in retaining walls, landslide stabilization and embankment fill projects; a vibration mitigation solution in light rail projects; and an alternative gravel solution in landfill projects.

Constructing embankments on weak foundation soils can provide numerous challenges such as slope instability and excessive settlement. This is primarily due to the weak foundation soils not being able to support the weight of the overlying soil fill. The solution is to use the lightweight properties of TDA to limit settlement and increase stability.

Living next to active commuter rail lines can be annoying because of ground borne vibrations that transmit the noise of the passing train right into your homes. This solution is to put a vibration absorbing material under the tracks. CalRecycle developed a cost-effective alternative method of placing a 1-ft thick layer of TDA under the traditional stone ballast and gravel sub-ballast layers. Field scale tests have shown that the TDA layer is effective in controlling vibrations transmitted away from the tracks.

The relatively low cost of the TDA solution compared to past solutions is an added bonus. Transit agencies in both northern and southern California are currently using TDA for vibration mitigations when constructing new track extensions.

With in-place densities of less than 50 pounds per cubic foot, TDA is less than half the weight of conventional soil. This lightweight property makes TDA an ideal material for long term repair of roads that have been damaged by landslides.

CalRecycle TDA program has developed and supported construction of Mechanically Stabilized TDA (MSTDA) road repair projects across the state of California. MSTDA utilizes the current practice of stabilizing fill material with plastic geo-grids that are attached to rock filled gabion baskets. The TDA along with the geo-grids and rock filled gabion baskets are combined to create a long-term, lightweight, free draining, and very cost-effective road slide repair. This approach can be used to work with a multitude of typical road repair scenarios and results in a technique that substantially lengthens the life of the repair by using the beneficial properties of TDA to help create a cost effective solution for community engineers and contractors.

Dixon Landing Embankment
Fill under construction

Dixon Landing Embankment
Completed

TDA vibration mitigation has saved BART, VTA, and L.A. Metro millions of dollars!