

Inventor

Samuel G. Bonasso, P.E., a career civil engineer, Fellow American Society of Civil Engineers with extensive national and global, private and public civil and structural engineering design and construction experience

Construction Operating System

To design Mechanical Concrete® apps requires basic engineering knowledge. Like designing in steel and reinforced concrete it can be used in a wide range of COS APPS. Please contact us to discuss your app and its potential business opportunity.

Product Sales

TDGC, tire-derived-geo-cylinders, are only sold through licensed distributors. REAGCO offers a **Mechanical Concrete®** TDGC regional distributorship license and, a **POTHOLE TERMINATOR** construction license.

National Cylinder Distributor TIRELAND, INC.

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www.mechanicalconcrete.com

www.pothole-terminator.com

<https://www.facebook.com/mechanical.concrete/>

Patents: U.S. 7,470,092 B2, Canada 2,594,808

Mechanical Concrete®

Registered US Trademark

Building With



- **Road Bases, Foundations**
- **Walls & Erosion Control**
- **Pothole Termination**

ASCE GREEN ENGINEERING INNOVATION WINNER

Mechanical Concrete® is a confined aggregate concrete—a geosynthetic product. A thin-walled cylinder provides lateral confinement for all types of stone aggregates. Lateral confinement improves the structural performance of all aggregate materials. Removing the sidewalls from a waste auto tire creates an industrial strength, low cost *tire-derived-geosynthetic-cylinder*; and it reuses one of society's most important and high-quality industrial products.

Mechanical Concrete® functions in a variety of applications. As a road-base it creates a mechanically stabilized free-draining base. Its Applications have been lab tested and field proven. For example it has functioned as highway bases and shoulders, earth retaining walls, bridge abutments, & slope and channel erosion protection.

Mechanical Concrete® have been researched, developed and demonstrated since 2005. It's a strong and economical method for improving the structural performance of crushed stone aggregates and other man made and natural aggregates. It's simple to understand and easy to use. But it took a flash of insight and American ingenuity to optimize confinement into a simple, strong, economical *tire-derived-geo-cylinder, TDGC*. **Mechanical Concrete®** is patented and only available through licensees in the U.S. and Canada.

Mechanical Concrete® offers a multiple bottom line—rugged; economical; re-uses a major societal waste product; uniquely sustainable and bright **GREEN**.

Confinement

Confinement is one of nature's main ways of holding aggregate and soil particles together; plus, gravity, friction and adhesion. Geosynthetic fabric technologies work by improving friction. **Mechanical Concrete®** is the first economical, industrial strength method of confining aggregates. New-tire design factors make a *tire-derived-geo-cylinder, TDGC*, as much as 5x stronger than most designs require—that's *virtually indestructible* in civil engineering, mining, heavy construction and agricultural applications. Reusing waste-tire-cylinders is green, strong *and* economical; costs 30% to 50% less than other confinement technologies.

Uniquely Green and Sustainable

The 2016 American Society of Civil Engineers Grand Challenge Infrastructure Innovation Contest selected **Mechanical Concrete®** for the Green Engineering—Most Feasible award.

Mechanical Concrete® was discovered by seeking a better re-use for waste tires. Worldwide, societies generate nearly 1.4 billion waste automotive tires per year (300 million from the USA).

Mechanical Concrete® provides four-way sustainably. 1. *Technical Superiority*: Easy to use and install; with consistent outcomes—every time, everywhere, without testing. 60 to 100% stronger than compacted crushed stone construction. *Economic Viability*:

Available in all 50 states. Reduces all costs—initial; maintenance, & life cycle.

3. *Environmental Friendliness*: Reuses a major societal waste. Uses less material, energy, water, and skilled labor. 4. *Societal Effectiveness*: Uses unskilled labor, smaller equipment, preserves resources, improves productivity.

Load Support APPS

Mechanical Concrete® stabilized, free-draining road bases physically bind together crushed stone aggregates and then spreads out applied loads over the subgrade. This improves overall performance of both paved and unpaved roads. *TDGC* confinement redistributes wheel loads over 3 to 6 times more sub-base area. Proof tested to withstand min. 200psi, *TDGC* confinement multiplies the load supporting capacity of crushed stone, sand, and soils.

Experience with coal mining roads shows **Mechanical Concrete®** reduces road maintenance by 75%. It virtually eliminates serious road edge and ditch collapse failures, loss of road width, potholes and ruts.

Since 2010 **Mechanical Concrete®** road bases have supported over 500,000 coal trucks per year, resisted floods, freeze and thaw cycles. These heavily traveled industrial roads have crushed stone, concrete, and asphalt surfaces on WV and Ohio subgrades. It also supports low volume roads on super-soft California sand and Arizona desert sand, and public roads in the South Texas, Eagle Ford play. **Mechanical Concrete®** builds strong, economical road bases in *any* environment, on *any* subgrade soil.

Walls & Erosion Control APPS

Mechanical Concrete® crib retaining wall system eliminates active soil pressure and cuts costs by half compared with gabions, cribs or MSE concrete facings. As an erosion control system, it dramatically reduces water velocity and energy.

Pothole Termination APP

Pothole and rut failures cost consumers \$Billions annually. Water penetrates the surface—into the compacted base-stone binder causing it to lose friction & strength. **Mechanical Concrete® tire-derived-geo-cylinders**, laid down “round-to-the-eye”, physically confines and holds AASHTO #57 base stone together. This process consistently creates a virtually indestructible, water-permeable base.

It reduces or eliminates:

- Potholes & Ruts
- Road Edge Collapse
- Soft Sub-Grade Failures
- Ditch & Channel Scour
- Active Soil Pressure

Approved

Mechanical Concrete® has been approved on a project basis by the West Virginia Division of Highways Materials Division. The use of buried waste tire derived materials in civil engineering applications is encouraged by all state and federal environmental agencies.

Anyone can build or maintain a green, strong, road base. Fast, uses small equipment, and instantly supports loads and controls erosion. Visit our websites, www.mechanicalconcrete.com & www.pothole-terminator.com and watch the videos.