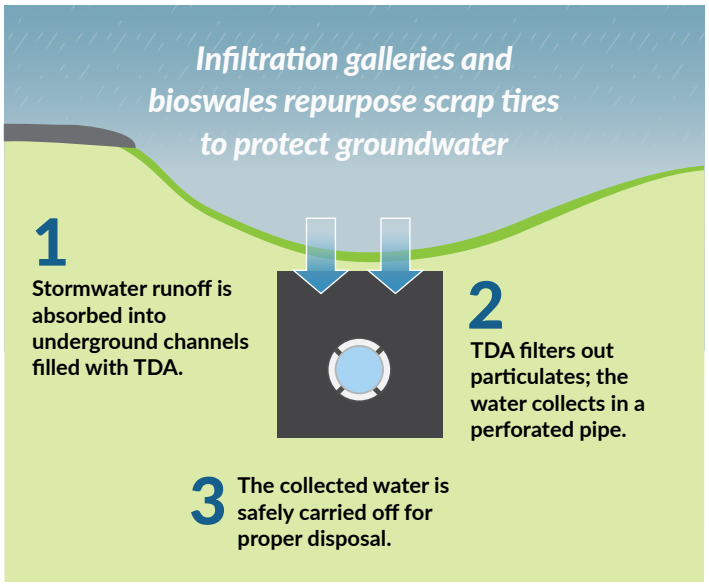
IMPLEMENTING THE INFRASTRUCTURE LAW USING SCRAP TIRE TECHNOLOGY

Tire derived aggregate and rubber modified asphalt are ideally suited to help meet the goals of the Bipartisan Infrastructure Law and to fulfill the Biden Administration's mission to minimize waste, advance pollution prevention and support markets for recycled products to promote a circular economy.

WHAT IS TIRE DERIVED AGGREGATE (TDA)?

Tire derived aggregate is a cost-effective infill material made from shredded pieces of recycled scrap tires. It frequently outperforms traditional infill materials when used in civil engineering applications, including roadside embankments, light railways, retaining walls, and stormwater infiltration galleries.

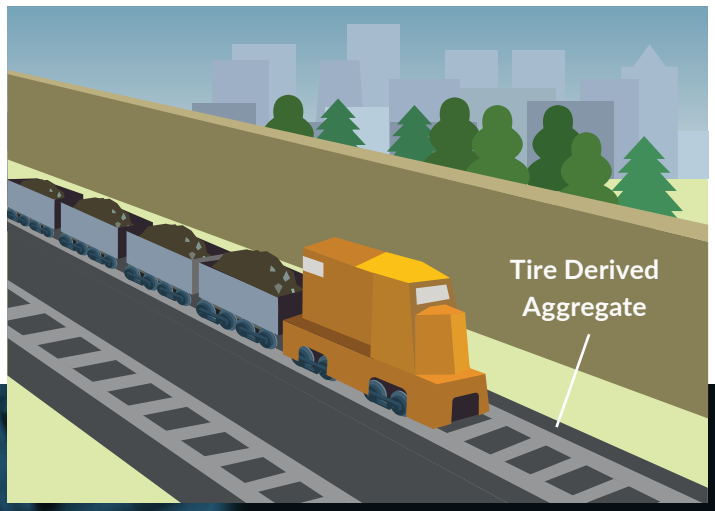


TDA outperforms traditional gravel in stormwater infiltration galleries by capturing potentially harmful runoff, including mircoplastics and heavy metals, before they reach groundwater.[1]

The rubber shreds in TDA are easily compressible to fill spaces, while still maintaining their permeability. Open spaces remain between the shreds even when it is packed down. Its ability to drain water and gases from landfills is **ten times better than soil**, which compresses over time.

TDA reduces vibration transmitted through the ground, decreasing the impact on surrounding buildings.[2]

It can also function as a sound dampening layer, making trains quieter and less disruptive to the local population.[3]



WHAT IS RUBBER MODIFIED ASPHALT (RMA)?

Rubber-modified asphalt (RMA) is a mixture of asphalt with ground rubber from scrap tires. This paving solution provides demonstrated performance, economic and environmental benefits compared to traditional asphalt and other pavement materials.

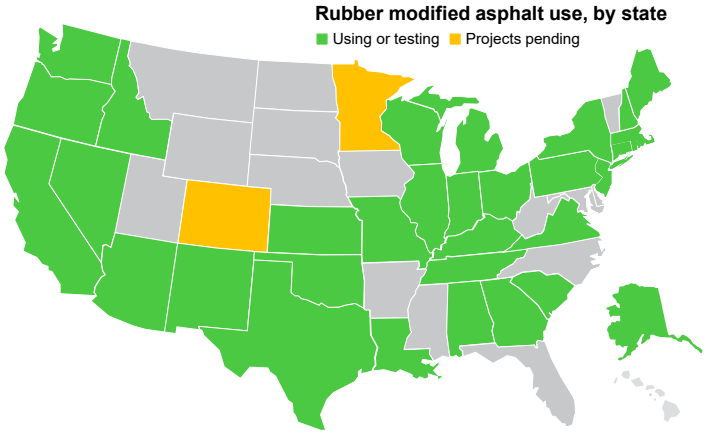
RUBBER MODIFIED ASPHALT PROVIDES...

Increased pavement service life & **Reduced road maintenance**

= Significant cost savings

32% reduction of CO_2 emissions and lower energy consumption over the lifetime of pavement

A sustainable asphalt option



Road performance benefits:

- A longer service life
- Less road spray in wet conditions
- Increased skid resistance
- Significant noise reduction
- Better ride quality

RMA has been shown to create smoother pavements and therefore better ride quality for motorists.[4]

In wet conditions, RMA's permeability reduces water spray and increases road safety.[5]

HOW BOTH RMA AND TDA APPLY TO THE INFRASTRUCTURE LAW

Sec. 11520 – Study on Stormwater Best Management Practices

This provision requires the Secretary and Administrator of EPA to offer to enter into an agreement with Transportation Research Board (TRB) to conduct a study on stormwater runoff from highways and pedestrian facilities and provide recommendations regarding potential stormwater management for State departments of transportation.
RMA supports the reduction of stormwater runoff from road surfaces. Studies should be required to include further exploration of RMA's effectiveness in this situation.
TDA supports the operation of water infiltration galleries as a proven technology that should be included among the strategies evaluated for qualification as a best practice.

Sec. 11521 – Stormwater Best Management Practices Reports

This provision requires the Administrator of Federal Highway Administration (FHWA) to update and reissue two existing stormwater best-management-practices reports to reflect new information and advancements in the field.
RMA supports the reduction of stormwater runoff from road surfaces. Should research supported through the Act (and other testing) yield the expected results, RMA as a stormwater management technology should be included in the required five-year best practices updates.
TDA supports the operation of water infiltration galleries as a proven technology that should be included among recommended strategies.

Sec. 50217(b) – Stormwater Infrastructure Technology

This provision deems that eligible research includes stormwater and sewer overflow reduction, project enhancement, and other infrastructure.
RMA supports research demonstrating RMA's effectiveness in reducing stormwater runoff from road surfaces.
This would further support its profile as an environmentally beneficial, cost- effective, and high-performance material.
TDA supports the operation of water infiltration galleries as a proven technology. Additional development research could optimize their benefits.

HOW RMA APPLIES TO THE INFRASTRUCTURE LAW

Sec. 13006 – Research and Technology Development and Deployment

This provision extends authorization for the Accelerated Implementation and Deployment of Pavement Technologies program and adds pavement-related considerations to enhance the environment and promote sustainability in it.
RMA supports sustainability by providing a market for end-of-life scrap tires, contributes to reductions in CO_2 emissions and fuel consumption, and decreases ambient noise.

Sec. 70402 – Consumer Recycling Education and Outreach Grant Program; Federal Procurement

This provision requires the EPA Administrator to consult with procuring agencies, clarifying their responsibilities to procure products made with recycled materials.
RMA supports a recycling market for end-of-life tires, making it a proven societally and environmentally beneficial material that federal sourcing policies should support.

Sec. 11518 – Permeable Pavements Study

This provision requires the Secretary to conduct a study on the effects of permeable pavements on flood control and to develop related models and best practices.
RMA supports the reduction of water spray in wet road conditions, due to a greater void space versus traditional asphalt. Its predicted benefits in reducing stormwater runoff should be confirmed through research.

HOW TDA APPLIES TO THE INFRASTRUCTURE LAW

Sec. 50204 – Sewer Overflow and Stormwater Reuse Municipal Grants

This provision provides grants for use in the planning, construction and design of treatment works for municipal combined sewer overflows, sanitary sewer overflows, or stormwater, and any measures to manage, reduce, or recapture stormwater or subsurface drainage.

TDA supports the operation of water infiltration galleries as a proven technology that should be recommended for use in funded projects.

Sec. 50217(c) – Stormwater Infrastructure Technology

This provision provides grants for eligible entities to carry out stormwater control infrastructure projects that incorporate new and emerging, but proven, technologies.

TDA supports the operation of water infiltration galleries as a proven technology that should be included among recommended strategies.

Sec. 11110 – Nationally Significant Freight and Highway Projects

This provision expands eligibility to include projects to reduce stormwater runoff.

RMA and TDA support the reduction of stormwater runoff impacts on the environment by reducing tire abrasion and filtering water through infiltration galleries respectively.

Sec. 11405 – Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Program

This provision allows eligible activities for resilience improvement grants including upgrades to and installation of structural stormwater controls.

TDA supports the operation of water infiltration galleries as a proven technology that should be included among recommended strategies.

Secs. 22101, 22103, 22105, 22106 – Various Grants to Amtrak

This provision provides grants to Amtrak for programs including Consolidated Rail Infrastructure & Safety, Restoration & Enhancement, and Federal-State Partnership for Intercity Passenger Rail.

TDA supports the reduction of ground vibrations from rail lines, which has proven to be an effective and cost-efficient benefit to neighboring communities.

Secs. 22102(b), (c) and (d) – Railroad Research and Development

This provision provides funding towards Railroad Research & Development, Transportation Technology Center, and Rail Research & Development Center of Excellence.

TDA supports the reduction of ground vibrations from rail lines, which has proven to be an effective and cost-efficient benefit to neighboring communities.

SOURCES

1. CalRecycle Presentation "Civil Engineering Applications Using TDA" at 12, 16 (2017). https://www.greentechnology.org/gcsummit17/images/LID_with_TDA_tires_Joaquin_wright.pdf; Properties of Tire Derived Aggregate for Engineering Applications. Chandler (2013); University of Minnesota Report: "The Impact of Stormwater Infiltration Practices on Groundwater Quality" (2014) http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.739.3625&rep=rep1&type=pdf
2. https://www.calrecycle.ca.gov/Tires/TDA/Uses
3. https://www.calrecycle.ca.gov/Tires/TDA/Uses
4. https://www.sciencedirect.com/science/article/abs/pii/S0048969715309189?via%3Dihub
5. Use of PFC to Improve the Performance of CRPC, Texas Department of Transportation (2003)