



Tire Derived Products & LEED Construction



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Agenda

- **CalRecycle Purpose**
- **Health & Safety Research Findings**
- **LEED Resources**
- **Funding Assistance**
- **Tire Derived Products & Benefits**
- **Feedback/Discussion**

Seeks to protect public health and the environment by effectively and efficiently managing California's waste disposal and recycling efforts.

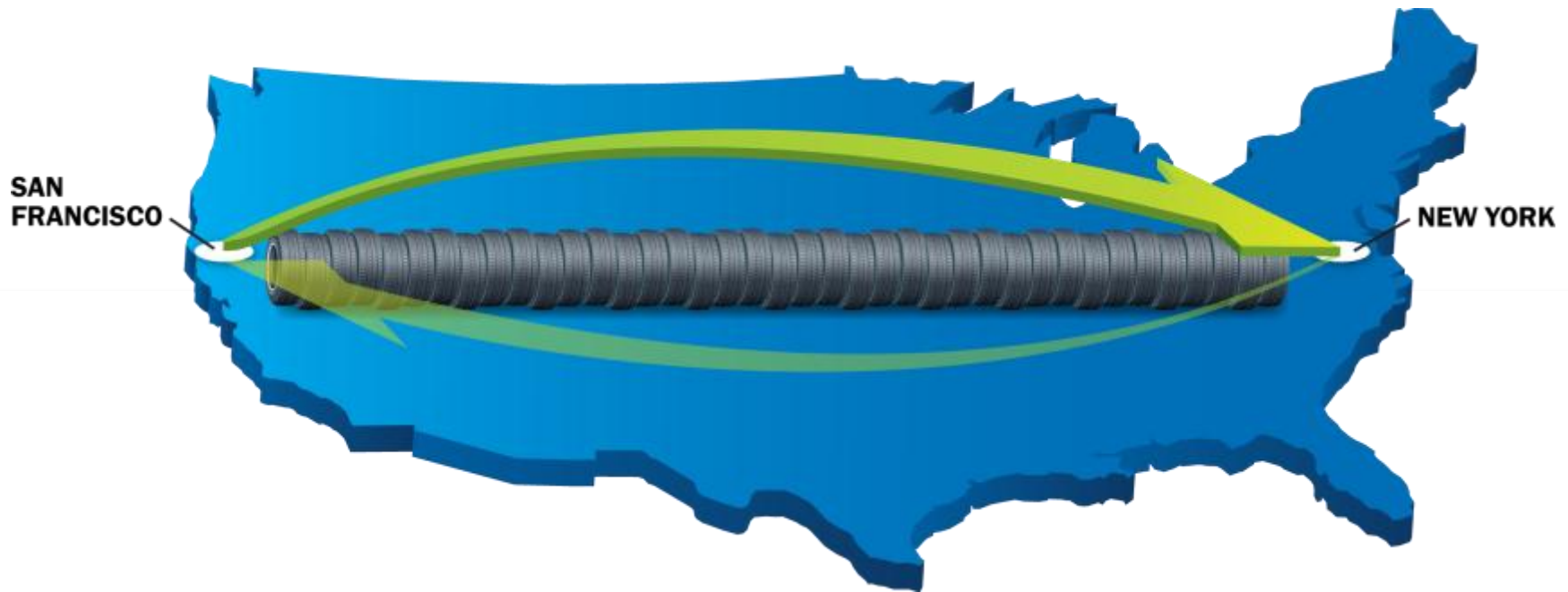
Divisions:

- **Administration, Finance & Information Technology Services**
 - **Materials Management and Local Assistance**
 - **Recycling**
 - **Waste Permitting, Compliance and Mitigation**

How Much is 40 Million Passenger Waste Tires?

40 Million Tires = 5,681 Miles

Distance from San Francisco to New York City..... AND BACK!



Waste Tires

2 Major Threats: Pests and Fire

Negative Impacts

- Hazardous
 - Potential for fire and toxic chemicals from smoke
- Public Health
 - Tires are a breeding ground for mosquitoes
- Environmental
 - Air, water and land pollution with potential public health effects
- Aesthetic
 - Ugly piles of tires stockpiled on a parcel of land



Health & Safety Research

- **Building Materials Emissions Study (BMES)- 2003**
- **Tire-Derived Rubber Flooring Chemical Emissions Indoor Reference Exposure Limits (IREL) Study**

Research Findings posted at:

www.calrecycle.ca.gov/greenbuilding/Materials/Research/TireStudy.htm

www.calrecycle.ca.gov/Publications/Tires/2010009.pdf

Health and Environmental Impacts of Tire-Derived Product Business Assist - Windows Internet Explorer

http://www.calrecycle.ca.gov/Tires/Products/BizAssist/Health/default.htm

File Edit View Favorites Tools Help

★ Favorites ★ TBAP 2 Sectorwide CPCFA Financing Program... Web Slice Gallery LoGIC -EAR TBAP-Tire markets

Health and Environmental Impacts of ...

CA.GOV CalRecycle

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Tire-Derived Product Business Assistance

Health and Environmental Impacts of Tire-Derived Products

The following links provide access to recent articles, research, studies, and fact sheets that specifically examine the potential health and environmental risks associated with various tire-derived product types. These references are also included in the literature review mentioned directly below.

[Tire-Derived Product Performance Literature Review](#) (MS Excel, 97 KB)--Results of an extensive literature review undertaken by R.W. Beck in 2009 to identify publications relevant to tire-derived product performance and research addressing health and environmental concerns, and life cycle costs for marketing purposes. The spreadsheet indicates the name of identified articles, source/author, applicable product types, and where the article can be found online, if available.

[Artificial Turf](#) | [Crumb Rubber](#) | [Pour-In-Place Products](#) | [Rubber Mulch](#) | [Tire-Derived Aggregate](#)

Artificial Turf

→ [OEHHA Artificial Turf Study](#)--The Office of Environmental Health Hazards Assessment (OEHHA) has been contracted to study the health effects of the new generation of artificial turf playing fields.

→ [Synthetic Turf Council Position Paper Regarding Health and Environmental Impacts](#) (Adobe PDF, 29 KB)

→ [New York State Department of Health Fact Sheet on Crumb Rubber Used as Infill Material in Athletic Fields in Synthetic Turf Fields \(August 2008\)](#)

→ [Connecticut Department of Public Health Fact Sheet on Artificial Turf Fields \(October 2007\)](#) (Adobe PDF, 63 KB)

→ [New York City Department of Health and Mental Hygiene Questions and Answers Regarding Artificial Turf](#)

→ [An Assessment of Chemical Leaching, Releases to Air and Temperature at Crumb-Rubber Infilled Synthetic Turf Fields \(May 2008\)](#) (Adobe PDF, 966 KB)

→ [Air Quality Survey of Synthetic Turf Fields Containing Crumb Rubber Infill \(March 2009\)](#) (Adobe PDF, 670 KB)

→ [A Review of the Potential Health and Safety Risks from Synthetic Turf Fields Containing Crumb Rubber Infill \(May 2008\)](#) (Prepared for New York City Department of Health and Mental Hygiene by TRC) (Adobe PDF, 958 KB)

→ [Review of the Human Health and Ecological Safety of Exposure to Recycled Tire Rubber Found at Playgrounds and Synthetic Turf Fields \(July 2008\)](#) (Prepared for the Rubber Manufacturers Association by Chem Risk, Inc.)

→ [San Francisco Recreation and Park Department Synthetic Playfields Task Force Findings and Department Recommendations \(August 2008\)](#)

http://www.calrecycle.ca.gov/Tires/Products/BizAssist/Health/default.htm#Mulch

Internet | Protected Mode: On

120%

www.calrecycle.ca.gov/Tires/Products/BizAssist/Health



Material Safety Data Sheet

Prepared 01/31/2012



315 S. Graham Ave. Orem, UT
84057-0000 (801) 224-3311 P (801)
785-2113 Email: info@rerubber.com
www.rerubber.com

reRubber Infrastructural Coating System

HAZARDS IDENTIFICATION

Primary Route(s) of Exposure: Inhalation, skin contact, eye contact, ingestion.

effects of overexposure:

Inhalation: Irritation of respiratory tract. Prolonged inhalation may lead to mucus membrane irritation, dizziness and / or light headedness, headache, nausea, coughing, central nervous system depression.

Skin Contact: Irritation of skin

Eye Contact: Irritation of eyes. Prolonged or repeated can cause conjunctivitis, tearing of eyes, and redness of eyes.

Ingestion: May cause fatigue, drowsiness, dizziness and / or light headedness.

Medical Conditions Aggravated by Exposure: Eye, skin, respiratory disorders.

FIRST-AID MEASURES

Inhalation: Remove to fresh air. Restore and support continued breathing. Get emergency medical attention. Have trained person give oxygen if necessary. Get medical help for any breathing difficulty. Remove to fresh air if inhalation causes eye watering, headaches, dizziness, or other discomfort.

Skin Contact: Wash thoroughly with soap and water. If any product remains, gently rub petroleum jelly, vegetable or mineral/ baby oil on to skin. Repeated applications may be needed. Remove contaminated clothing. Wash contaminated clothing before re-use. If irritation occurs, consult a physician.

Eye Contact: Flush immediately with large amounts of water, especially under lids for at least 15 minutes. If irritation or other effects persist, obtain medical treatment.

Ingestion: Do not give liquid if unconscious or drowsy. Give no more than 2 glasses of water. Obtain medical attention.

ACCIDENTAL RELEASE MEASURES

Steps to be taken in case material is released or spilled: Comply with all applicable health and environmental regulations. Ventilate area. Clean up with towels, boom, or other absorbents. Large spills – Use a respirator if not in a ventilated area. Shut-off leak. Surround and contain spill. Pump to storage or salvage vessel. Use absorbent to pick up excess residue. Keep salvageable material and rinse water out of sewers and water courses. Small spills – use absorbent to pick up residue and dispose of properly. Clean up with soap and water.

HANDLING AND STORAGE

Handling and Storage: Keep out of surface waters, sewers, and waterways entering or leading to surface waters. Keep containers tightly sealed when not in use. Store in temperatures between 40°F - 100°F. DO NOT FREEZE.

TOXICOLOGICAL INFORMATION:

Routes of Entry: Irritation caused through all routes of Entry. Hazard through repeated or prolonged inhalation and ingestion.

Toxicity to Animals: Not established.

Ecotoxicity: This product has not been tested to determine environmental effects.

CARCINOGENIC EFFECTS: None of the ingredients in this product are listed with OSHA, IARC, or NTP as carcinogenic.

DISPOSAL CONSIDERATIONS

Waste disposal: Dispose in accordance with all applicable regulations. Avoid discharge to natural waters. Under EPA-RCRA (40 CFR 261). This material is not a hazardous waste.

REGULATORY INFORMATION:

As of the date of this MSDS, all of the components in this product are listed (or are otherwise exempt from listing) on the TSCA inventory. This product has been classified in accordance with the hazard criteria of the CPR (controlled products regulations) and the MSDS contains all the information required by the CPR.

Toxic Substances Control Act: This product is in compliance with the U.S. Toxic Substances Control Act (TSCA) inventory requirements.

FOR EMERGENCY CALL: 1-800-424-9300 (CHEMTREC)

HIMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 0

Reactivity Hazard: 0

Personal Protection: B

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, expressed or implied, with respect to such information, as we assume no liability resulting from its misuse. Users should take their own investigations to determine the suitability of the information for their own particular purposes. In no event shall reRubber LLC be liable for any claims, losses, or damages, howsoever arising, even if reRubber LLC has been advised of the possibility of such damages.

Requirement Resources

- **Standards and Specification Development Resources**
 - CA Dept. of Public Health Standard Practice ([Section 01350](#))
 - [CALGreen](#)- State Green Building Standards Code
www.bsc.ca.gov/Home/CALGreen.aspx
 - C&D Debris Recyclers (CalGreen 50% diversion required) resource:
www.calrecycle.ca.gov/condemo/recyclers
- **Collaborative for High Performance School (CHPS) Products**
(to help meet CHPS and other green building criteria):
www.chps.net/dev/Drupal/node/445

State Agency Buy Recycled Campaign (SABRC)

- **The State Legislature has mandated that State agencies purchase recycled content goods and materials.**
- **SABRC requires that every State department, board, commission, office, State universities, and the Legislature buy recycled products and report purchases on an annual basis.**
- **TDPs are one of the 11 recycled content product reportable categories.**

Learn more at: www.calrecycle.ca.gov/buyrecycled/stateagency/Buying.htm

Market Incentive Funds

Tire-Derived Product Grant Program

- Eligible: Public schools, CA cities, counties and state agencies
- Reimbursement Grant
- Max \$150K/applicant, based on \$5 for passenger tire equivalent diverted

Contact CalRecycle at: 916/341-5062 or
grants@calrecycle.ca.gov

Market Incentive Funds Continued

Highway Safety Improvement Program (HSIP) and Cycle 3 High Risk Rural Road Program (HR3)

- HSIP ~ \$100 Million / HR3 ~ \$15 Million

Jim Day HSIP/HRRR Coordinator (530) 741-5116 james_p_day@dot.ca.gov

Bike Transportation Account

- \$7.2 Million

Deborah Lynch (916) 653-0036

deborah.lynch@dot.ca.gov

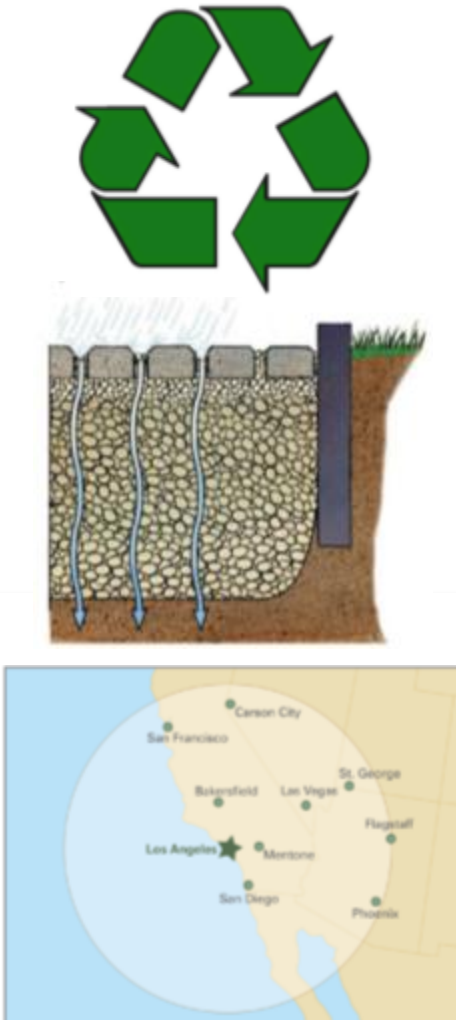
Environmental Enhancement and Mitigation (EEM) Program

- \$10 Million Annually

Brenda Herron(916) 653-6930

brenda.herron@dot.ca.gov

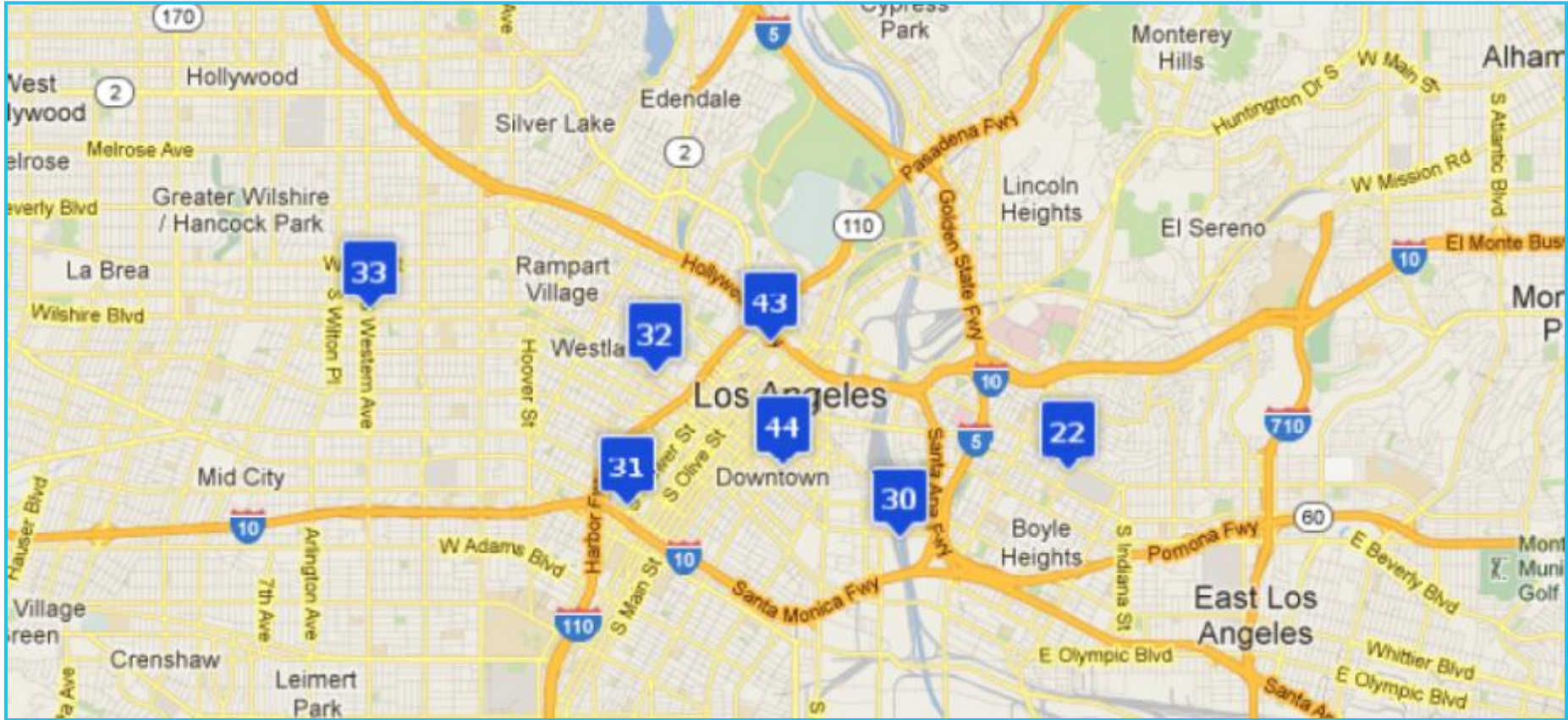
Tire Derived Products Contribute to LEED



- Waste materials / resources diverted from waste stream
- Materials & resources containing recycled content
- Integrating stormwater design principles
- Reduce heat island effect
- Water efficient landscaping options
- Low emitting materials
- Materials & resources extracted, processed and manufactured regionally

Locations of Installed Tire-Derived Products

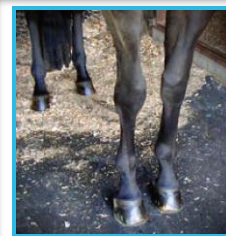
City of Los Angeles



Locations statewide are listed at: <http://goo.gl/maps/VoPu>

Tire Derived Product Categories

- Accessibility Ramps, Paths & Sidewalks
- Animal Care Products
- Artificial Turf
- Flooring & Mats
- Green Roads
- Landscaping & Rubber Mulch
- Outdoor Surfacing, Pavers & Tiles
- Playground Surfacing
- Sports Surfacing
- Traffic Related Products



Accessibility Ramps, Paths & Sidewalks

Product benefits may include:

- Enhanced durability & resilience
- Easy maintenance & installation
- Enhanced safety & reduced liability
- Enhanced comfort
- Absorbs and retains less heat than concrete
- Reduced storm water run-off depending on product permeability

Potential LEED® NC v3 Credits:

Stormwater Design (*SS Credits 6.1 & 6.2*)

Heat Island Effect (*SS Credits 7.1 & 7.2*)

Construction & Waste Management
(*MR Credit 2*)

Recycled Content (*MR Credit 4*)

Regional Materials (*MR Credit 5*)

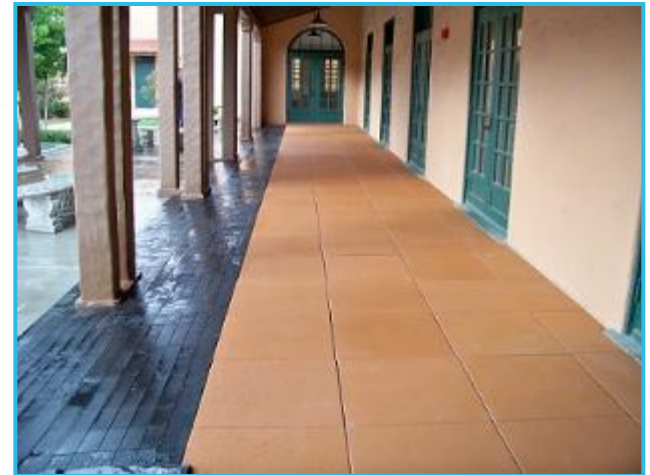
Innovation in Design (*ID Credit 1*)



Accessibility Ramps

Liberty Station, San Diego, CA

- Made from **100% California recycled tires**
- California tires diverted from landfills: **3,200 tires**
- **Benefits:**
 - Compliance with federal ADA access laws codified in local building requirements
 - These recycled rubber tire ramps have no load-weight limitations
 - Unlike other construction materials such as aluminum, wood and plastic
 - Installation of recycled tire rubber accessibility ramps do not require jack-hammering or sawing



Accessibility Ramps, Paths & Sidewalks

Product Types

- Sidewalks
- Paths, Trails & Tracks
- Ramp End Landings
- Tree Wells



LIVE CITY | VILLE
CITY | VIVANTE
VANCOUVER

Vancouver 2010
Winter Olympics

Used rubber tiles
from recycled tires
instead of asphalt

Break Out Former Surface



Set & Lock Flexible Sidewalk Modules



Flexible & Sustainable

Potential LEED® NC v3 Credits:

Stormwater Design (SS Credits 6.1 & 6.2)

Reduces storm water runoff (*MR Credit 4.1*)

Reduces the heat island ratio by absorbing and retaining less heat. (*MR Credit 4.1*)

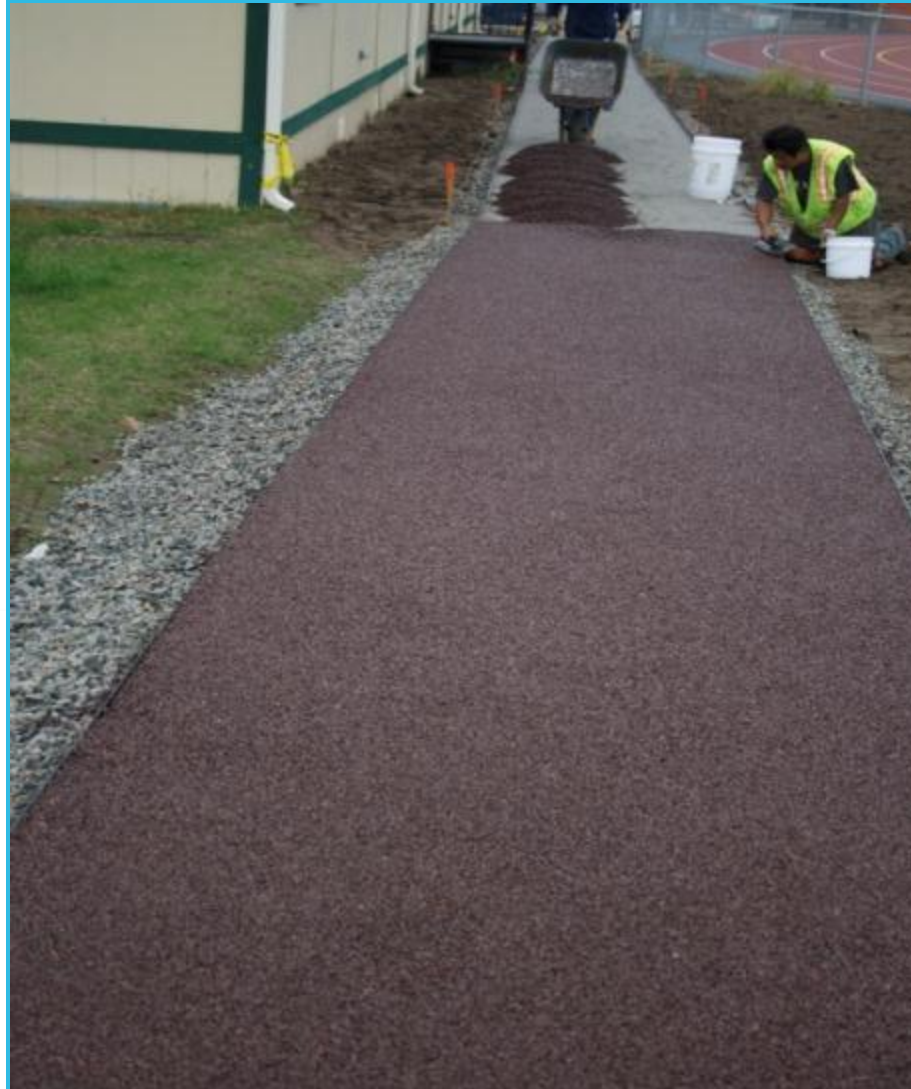
Recycles approximately 1 scrap tires per square foot of sidewalk. (*MR Credit 4.1*)

BROKEN GROUND?

- **TDP allows tree root movement without breaking or heaving concrete.**



100% Recycled Rubber for Pigmented Pervious Pavement for walkways



Safer Sidewalks for City Blocks



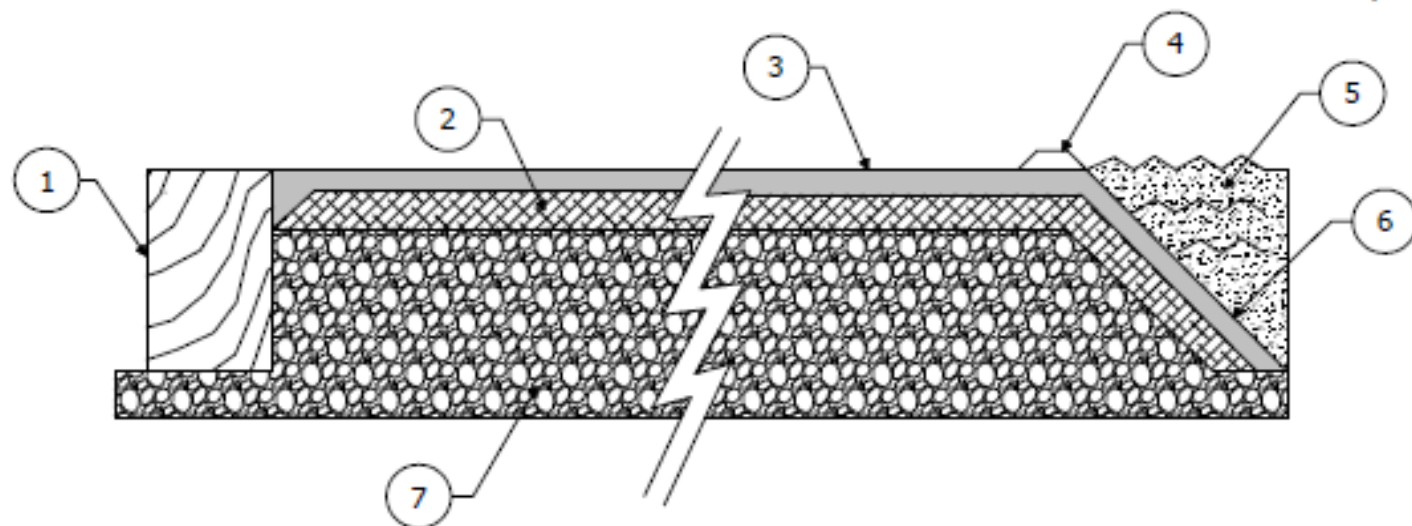
RubberWay Tree Wells

Monrovia High School



DETAIL - 1: TURNDOWN TO SAND OR WOOD FIBER

(Detail is N.T.S.)



1) Concrete Edge

2) Poured-In-Place Shredded SBR Cushion Layer (Depth Varies Depending Upon Fall Height of Equipment)

3) Poured-In-Place Wear Course, .5" Min. Thk. (2% Max Slope)

4) Optional Wheel Chair Stop

5) Sand/Wood Fiber

6) 18" Minimum Turndown Recommended (Turndown at 45° Angle)

7) 4" Min. Sub-Base (Concrete, Asphalt, or 95% Compacted Aggregate Installed in 2-2" Lifts), Slope 2% Max.

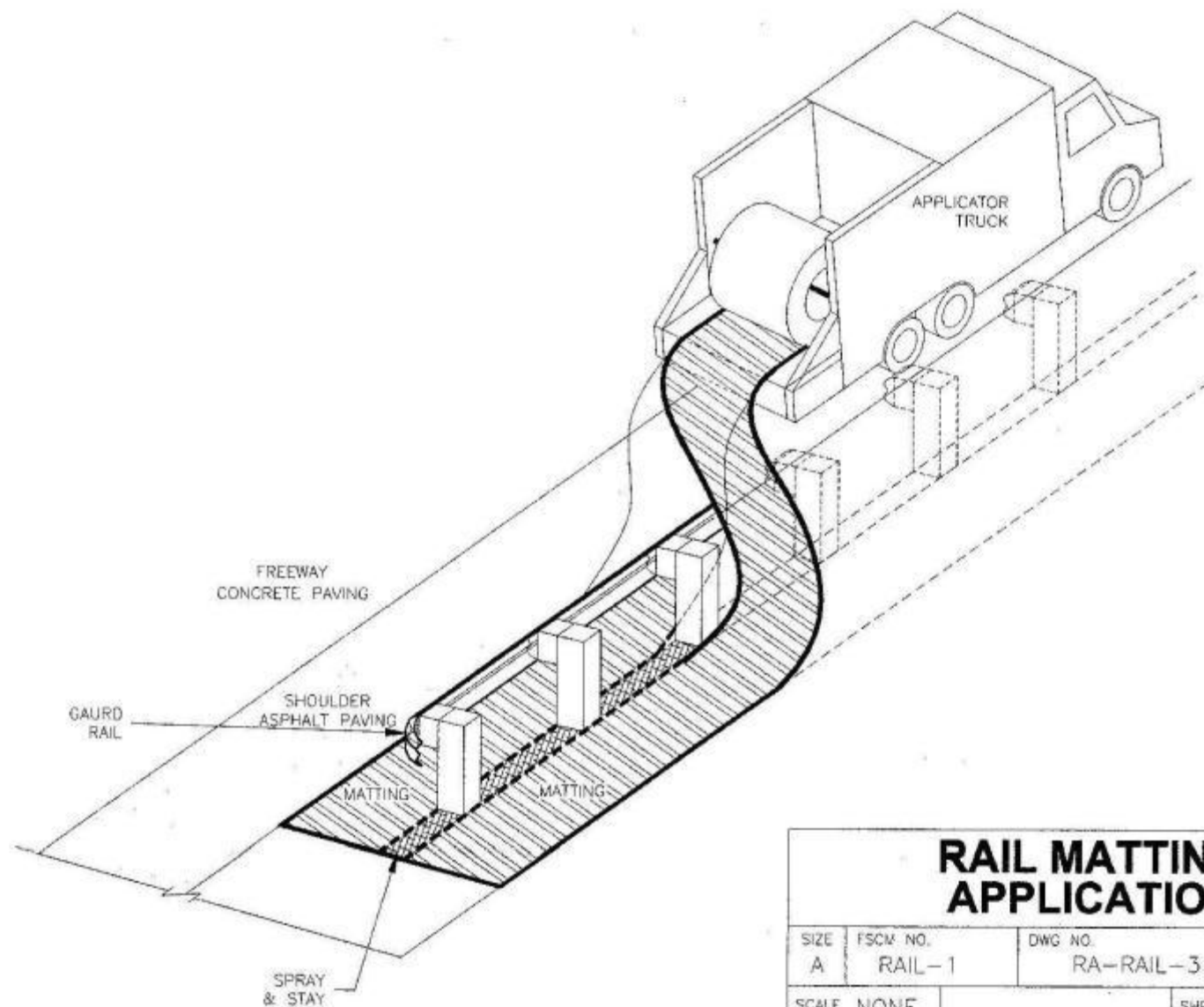
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DATE: 02/17/10

SIGNED: _____
TITLE: _____
DATE: _____



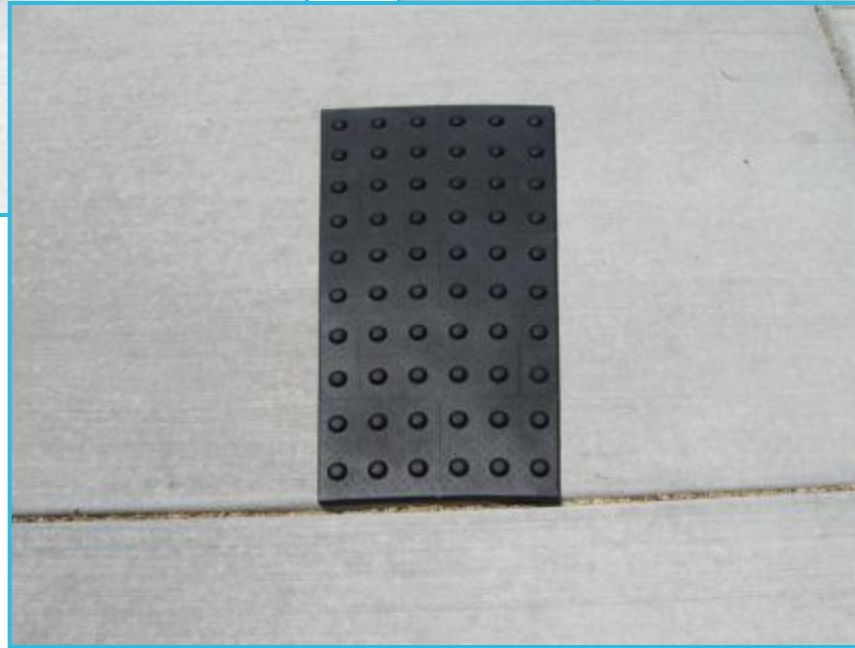
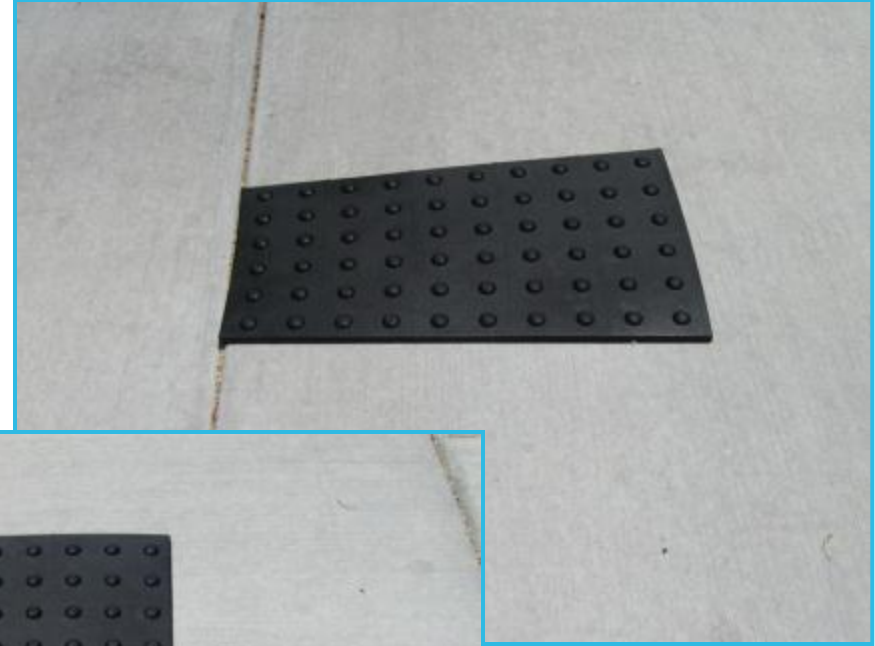
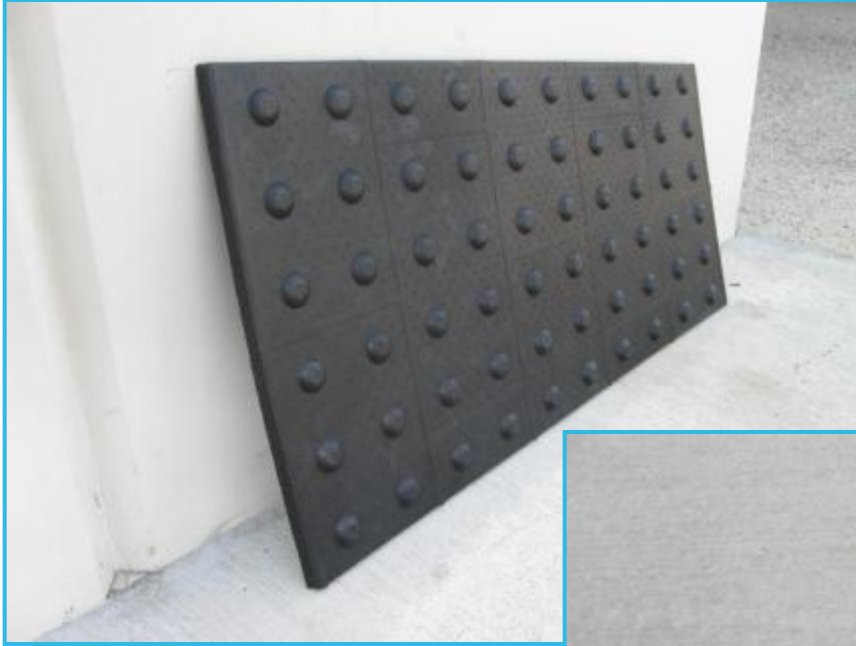
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



RAIL MATTING APPLICATION

SIZE A	FSCM NO. RAIL-1	DWG NO. RA-RAIL-3	REV 0
SCALE NONE			SHEET 1 OF 3

Detectable Warning Mat Molded Rubber



Examples of the color black used on a sidewalk retrofit



Artificial Turf

Product benefits may include:

- Durability in all climates
- Easy installation
- Low maintenance
- Reduced injuries
- Enhanced comfort
- Reduced water usage



Potential LEED® NC v3 Credits:

Water Efficient Landscaping (*WE Credit 1*)

**Construction & Waste Management
(*MR Credit 2*)**

Recycled Content (*MR Credit 4*)

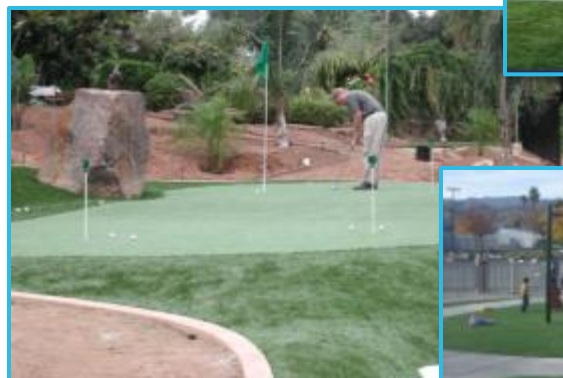
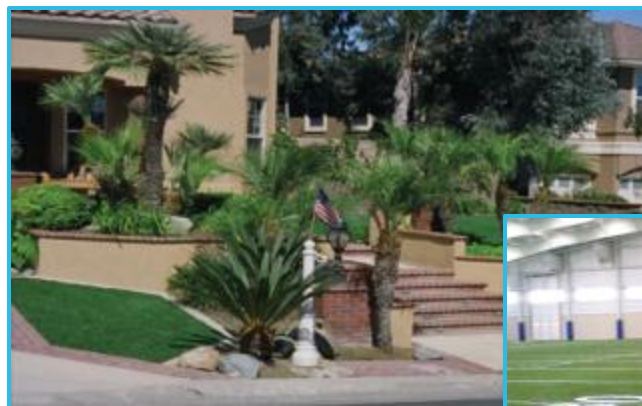
Regional Materials (*MR Credit 5*)

Innovation in Design (*ID Credit 1*)

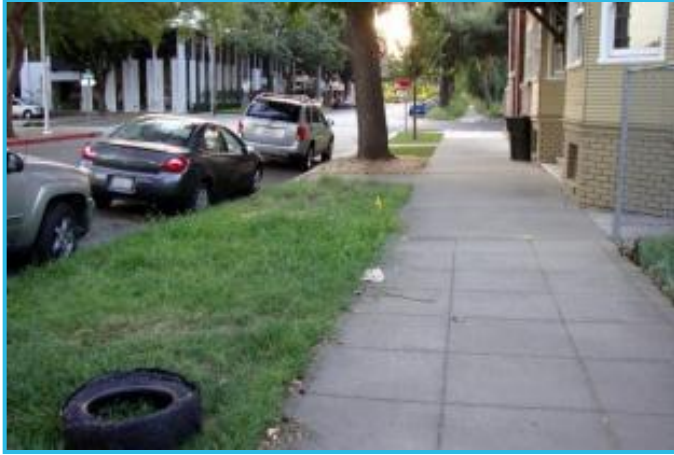
Artificial Turf

Product Types

- Landscaping
- Playground Surfacing
- Sports Applications
 - Soccer Fields
 - Football/Rugby Fields
 - Golf Courses
 - Tennis Courts
 - Public Sector Applications
 - School Fields & Playgrounds
 - Public Parks & Landscaping



Low Maintenance



PolyTurf Green Fields with Solar Reflectance

Potential LEED® NC v3 Credits:

SRI Value-33

Water Efficient Landscaping (*WE Credit 1*)

Recycled Content (*MR Credit 4*)

Recycled Content Underlay (*MR Credit 4.1*)

Regional Materials (*MR Credit 5*)

Innovation in Design (*ID Credit 1*)

**Multi Purpose System
with pervious paving,
resilient underlayment
and Cool Plus Fiber
technology**



Flooring & Mats

Product benefits may include:

- Durability & wear-ability
- Low installation & maintenance costs
- Reduced injuries & enhanced comfort
- Non-skid surface & slip resistance in both wet / dry conditions
- Reduced fatigue & improved productivity

Potential LEED® NC v3 Credits:

Construction & Waste Management

(MR Credit 2)

Recycled Content *(MR Credit 4)*

Regional Materials *(MR Credit 5)*

Low Emitting Materials *(IEQ Credits 4.1 & 4.3)*

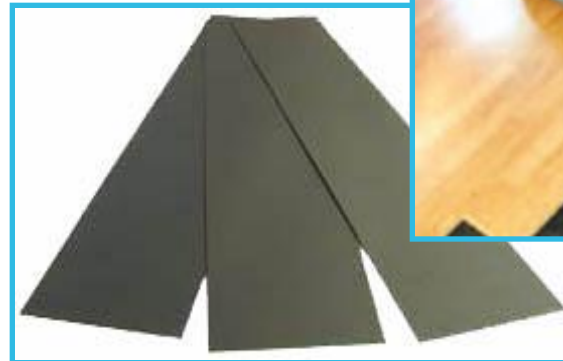
Innovation in Design *(ID Credit 1)*



Flooring & Mats

Product Types

- Commercial Flooring
- Anti-Fatigue Mats
- Residential Flooring
- Acoustical Underlayment



Flooring Underlayment

Location:

- Concerto Lofts, Los Angeles, CA
- Solair Condos, Los Angeles, CA

Benefits:

- Reduces the noise from foot traffic, televisions and stereos
- Superior impact sound isolation required for multi-family, condominium and commercial installations
- Resilience of tire rubber maintains its form over time
- Durable compared to other underlayment materials



Outdoor Surfacing, Pavers & Tiles

Product benefits may include:

- Durable and resilient to various climates and exposure to elements
- Resistant to fading and cracking
- Low installation and maintenance costs
- Reduced injuries and enhanced comfort
- Non-skid surface & slip resistance in both wet /dry conditions
- Permeable surface, depending on product

Potential LEED® NC v3 Credits:

Stormwater Design (SS Credits 6.1 & 6.2)

Heat Island Effect (SS Credits 7.1 & 7.2)

Construction & Waste Management
(MR Credit 2)

Recycled Content (MR Credit 4)

Regional Materials (MR Credit 5)

Innovation in Design (ID Credit 1)



Outdoor Surfacing, Pavers & Tiles

Product Types

- Patios & Decks
- Walkways
- Courtyards
- Pool Decks & Hot Tub Areas
- Sports Arenas
- Ski Resorts
- Water Parks



Landscaping & Rubber Mulch

Product benefits may include:

- Easy installation and maintenance
- Durable and fade resistant
- No deterioration from water absorption
- Does not decompose, produce fungus or mold
- Contributes to weed control and doesn't attract insects, cats or dogs
- Reduces issues with material blowing away

Potential LEED® NC v3 Credits:

Stormwater Design (*SS Credits 6.1 & 6.2*)

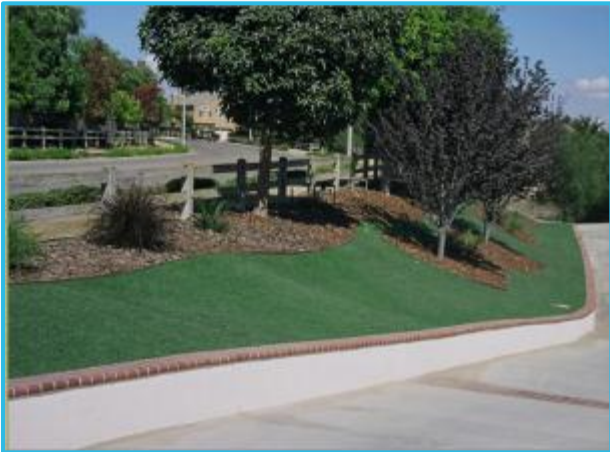
Water Efficient Landscaping (*WE Credit 1*)

Construction & Waste Management
(*MR Credit 2*)

Recycled Content (*MR Credit 4*)

Regional Materials (*MR Credit 5*)

Innovation in Design (*ID Credit 1*)



Landscaping Bark

Redding Recycling and Transfer Station

- California tires diverted from landfills: **6,183 tires**

Savings

- Reduced labor, maintenance and replacement of wood chips every few years
- The bark controls weed growth, reduces dust, provides excellent drainage and is long lasting

Benefits:

- Durable
- Aesthetically pleasing
- Diverts tires from landfills



Rubber Mulch

City of Redding Recycling and Transfer Station

- Lower Maintenance
- Discourages pests



“The old style bark was faded and just never covered very well. The recycled tire bark is more vibrant, lasts longer and looks cleaner and neater.” - Public Works Supervisor Christina Piles

Rubber Mulch



Santa Clara County Sheriff's Office, Training Academy

- Prevents weeds
- Reduced mulch erosion
- Discourages animals

"We are located right against the foothills near a county park, and the landscape generates weeds very quickly. This mulch prevents weeds from growing and provides cushioning for falls." - Deputy Sheriff Devin Fontana

Landscape Edgings

- Colors available:



Mather FAA Center





Playground Surfacing

Product benefits may include:

- Durable & resilient to various climates and exposure to elements
- Various color options / custom designs
- Low installation and maintenance costs
- Resistant to fading & cracking
- Reduced injuries from falling due to shock absorption



Potential LEED® NC v3 Credits:

Stormwater Design (SS Credits 6.1 & 6.2)

Construction & Waste Management
(MR Credit 2)

Recycled Content (MR Credit 4)

Regional Materials (MR Credit 5)

Innovation in Design (ID Credit 1)

Pour-in-place Playground Surface

Livermore Area Recreation and Park District

- California tires diverted from landfills: **3,281 tires**
- **Benefits:**
 - Requires less maintenance
 - Less frequent replenishment vs sand and wood
- Meets ASTM F1292 and ASTM F1951 standards



Playground Tiles

Glen Paul School, Eureka, CA



BEFORE

- Woodchips float on puddles
- Mushrooms grow



AFTER

- Improved safety
- Increased access for students with disabilities

“The tiles have made a big difference. Kids bounce off them when they fall and are surprised that they don’t get hurt.” Tess Ives, Principal

Sports Surfacing

Product benefits may include:

- Durable & resilient surface
- Easy maintenance & installation
- Slip resistant & traction in both wet / dry conditions
- Enhanced cushioning & comfort walking / running
- Enhanced safety and reduced injuries from falls
- Enhanced performance as shock absorption reduces stress on joints, muscles, legs & back

Potential LEED® NC v3 Credits:

Stormwater Design (*SS Credits 6.1 & 6.2*)

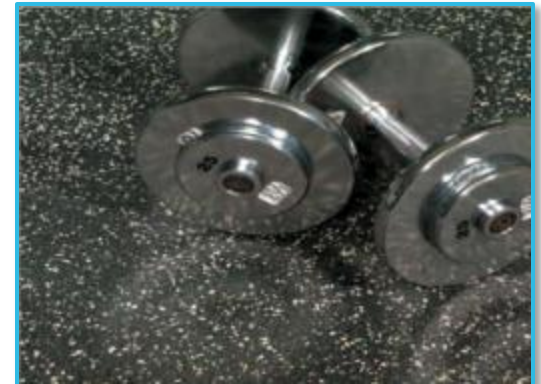
Construction & Waste Management (*MR Credit 2*)

Recycled Content (*MR Credit 4*)

Regional Materials (*MR Credit 5*)

Low Emitting Materials (*IEQ Credits 4.1 & 4.3*)

Innovation in Design (*ID Credit 1*)



Flooring Mats

Product Types

- Flooring Tiles
- Stall Mats
- Arena Cover
- Bedding Options



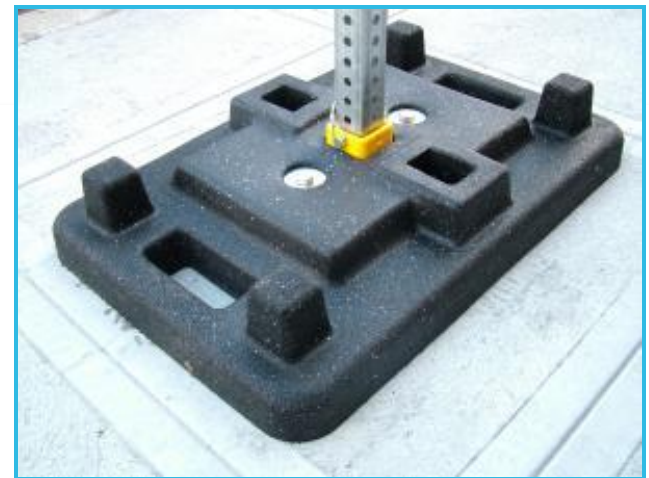
Traffic Products

Location: Throughout California

- 1 – 3 tires used in sign base
- Provides stability for a variety of portable signs
- Maybe used in pedestrian zones near K-12 schools, in parking garages and at public events

Benefits:

- Heavy weight of the recycled tire rubber provides stability
- Rubber bases are reboundable or detach upon impact
- Divert scrap tires from the landfill



Traffic Related Products

Product benefits may include:

- Durable & resilient to various climates and exposure to elements
- Low installation & maintenance
- Weighs less than many non-recycled product substitutes
- Reduced cost
- Variety of product options



Potential LEED® NC v3 Credits:

Construction & Waste Management
(MR Credit 2)

Recycled Content (MR Credit 4)

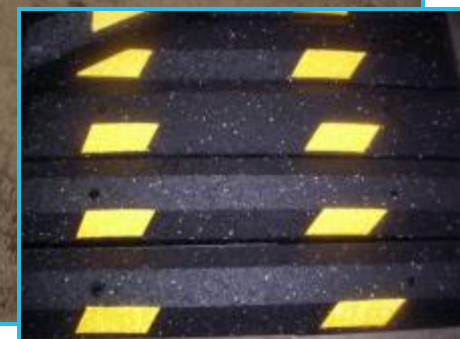
Regional Materials (MR Credit 5)

Innovation in Design (ID Credit 1)

Wheel Stops

Product benefits may include:

- Reduced risk of Damage to vehicle
- Longer lasting compared to conventional concrete
- Maintenance Free
- Easy to Install
- Lightweight
- 3 ft and 6ft lengths



Potential LEED ® NC v3

Credits:

Recycled Content

(MR Credit 4)

Regional Materials

(MR Credit 5)

Other Products

Product benefits may include:

- Durable & resilient in all climates
- Low maintenance & easy installation
- Enhanced comfort & safety
- Reduced noise levels from sound absorption
- Absorbs & retains less heat than traditional counterparts
- Enhanced permeability reduces storm water run-off



Potential LEED® NC v3 Credits:

Construction & Waste Management

(MR Credit 2)

Recycled Content *(MR Credit 4)*

Regional Materials *(MR Credit 5)*

Innovation in Design *(ID Credit 1)*

Stormwater Design *(SS Credits 6.1 & 6.2)*

Water Efficient Landscaping *(WE Credit 1)*

Heat Island Effect *(SS Credits 7.1 & 7.2)*

Bass Lake, CA



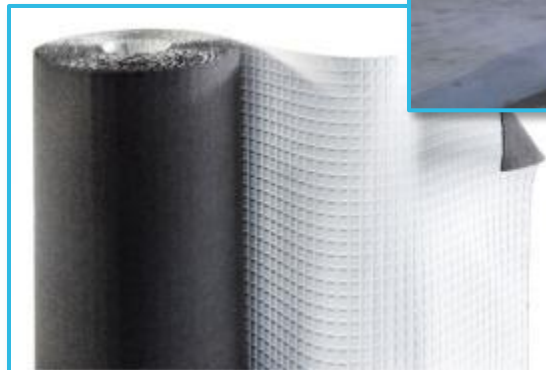
Eco-Blok™ is Versatile



Other Products

Product Types

- Paints
- Sealants
- Rubber Drains



Janitorial Products



Product Types

- Janitorial Cart
- Recycling and Waste Containers

Ballistics Backstop

- **Savings:**

- Cost of backstop system \$500,000 vs. \$1.5 million remediation effort
- The recycling of lead bullets covers the maintenance costs of cleaning out the bullets.



- **Benefits:**

- Reduced hazardous waste remediation costs
- Easier to separate out and reclaim discharged rounds
- Reduced lead dust pollution into waterways and groundwater
- Quieter – rubber backstop is about 30 decibels quieter than a steel trap
- Safer for law enforcement personnel who are training

Tire Sealants

Product benefits may include:

- Eliminates punctures for life of tire
- Helps maintain tire pressure
- Optimizes gas mileage
- Extends life of tire





Hyperflex® Rubber Parking Lot & Driveway Sealer

- Durable
- flexible
- specially formulated to coat and protect asphalt and concrete against moisture and water penetration.

Hyperflex® Rubber Parking Lot & Driveway Coating

- reduces oxidation,
- protects against freeze and thaw cycles protects against permanent tire marking and oil spills.



A brand new
way of thinking
about crack repair.

Hyperflex® Crack Filler

Did You Know?

Most caulks on the market that are designed to repair cracks in asphalt are composed of similar asphaltic compounds and are subject to the same environmental damages, such as rain, solar radiation, and hot & cold weather. This can cause failure to the surface making it subject to costly resurfacing.

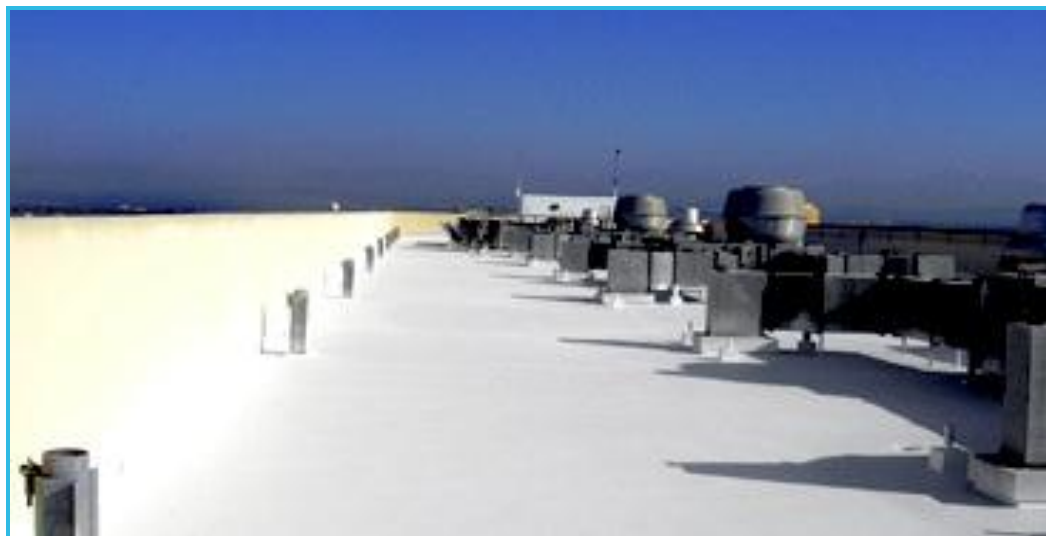
Hyperflex® Crack Filler is a pourable material that fills cracks up to an inch wide and half an inch deep and cures to a solid flexible rubber. It is composed of over 70% recycled rubber and glass which give it impressive flexibility and tensile strength. It is extremely resistant to damage caused by heat, sunlight, water, snow and vehicular traffic.

Cool Roof Sealants

Anaheim Hilton Hotel

Options for leaking roof:

- \$1,000,000 to replace roof
- \$450,000 to repair roof
- **Best option: \$150,000 to reseal roof**




Benefits:

- Diversion of tires from the landfill
- Energy savings
- Reduction of carbon emissions
- Mitigation of the heat island effect where dark, non-reflective hardscapes and buildings absorb heat.

Before start of work





Prep work rust treatment and caulking

enzed primer application





Finishing application of
White top-coat



Rubberized Asphalt Concrete

Product benefits may include:

- Durable & long lasting
- Resistant to cracking
- Cost-efficient installation
- Low maintenance costs
- Enhanced traction & visibility in wet weather, leading to fewer accidents
- Enhanced comfort due to noise reduction

RAC Expert: Nate Gauff 916/341-6686

Potential LEED® NC v3 Credits:

Stormwater Design (*SS Credits 6.1 & 6.2*)

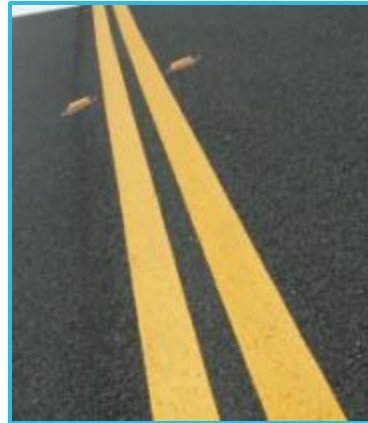
Heat Island Effect (*SS Credits 7.1 & 7.2*)

Construction & Waste Management
(*MR Credit 2*)

Recycled Content (*MR Credit 4*)

Regional Materials (*MR Credit 5*)

Innovation in Design (*ID Credit 1*)





09/0

TDP Pricing

- Some TDPs typically have higher initial costs than competing products
- But these TDPs usually have lower life-cycle costs because they
 - Are more durable
 - Last longer and
 - Reduce replacement and maintenance costs
- Plus, TDPs often provide other performance or safety benefits

TDP Pricing Examples

Product	Approximate Initial Price*
Pour-in-Place Surfacing	\$8 - \$17 per square foot**
Rubber Sidewalks	\$9 - \$17 per square foot**
Synthetic Turf (1,000 sq. ft. job)	\$8.25 per square foot with \$3.75 of this for installation
Rubber Mulch	\$2.25 per square foot
Rubber Tiles	\$9 - \$13 per square foot

* These prices do not account for life-cycle cost savings related to reduced maintenance and/or replacement costs associated with TDPs.

** About \$3 - \$5 per square foot accounts for installation costs.

Discussion/Questions?

- Feedback on TDPs & effective marketing methods
- 2010 TDP Catalog on-line at:

www.calrecycle.ca.gov/Tires/Products/BizAssist/Marketing/Catalog.htm

Contains product specification sheets, etc.

**We hope this presentation
has been informative.**

Let us know how we might improve.