

Environmentally Preferable Traffic Control Products in Alameda County

Throughout the nation, local and state transportation departments have approved for use high quality road and highway products made with recycled materials. These agencies are purchasing a variety of products, including recycled content traffic cones, traffic barricades, channelizers, delineators, parking stops, sound barriers, object markers, reflective glass beads and much more.

- ◆ Over a dozen recycled items are found on the California Department of Transportation’s “*Pre-qualified and Tested Signing and Delineation Materials*” list. (For Caltrans approved products made with recycled content, please refer to the Appendix.)

These traffic control products have been found to deliver high performance and often reduce maintenance costs.

Traffic Control Products Containing Recovered Materials

The U.S. Environmental Protection Agency (EPA) recommends minimum recycled content levels to look for when purchasing traffic control products, as shown in the table below. Rather than specifying just one level of recycled content, ranges are offered that reflect actual market conditions.

EPA’s Recommended Content Levels for Transportation Products	
Transportation Products	Recovered Material Content
Traffic Cones	
Plastic (PVC and LDPE)	50-100%
Crumb Rubber	50-100%
Traffic Barricades (type I and II only)	
Plastic (HDPE, LDPE, PET)	80-100% postconsumer/100% total
Parking Stops	
Plastic and/or Rubber	100% postconsumer
Concrete Containing Coal Fly Ash	Generally, 20-30%, but could be up to 40%. 15% when used as a partial cement replacement as an admixture in concrete
Concrete Containing Ground Granulated Blast Furnace Slag	25-70%

Traffic Control Devices	
Channelizers	
Plastic	25-95% postconsumer
Rubber (base only)	100% postconsumer
Delineators	
Plastic	25-90% postconsumer
Rubber (base only)	100% postconsumer
Flexible Delineators	25-85% postconsumer

Traffic Cones



Traffic cones are used to direct traffic or indicate a road hazard. Postconsumer plastics (PVC or LDPE) are used in the upper portion of the cones. Crumb rubber or plastics can be used in the base or stabilizer.

“These light-weight orange cones are great. They’re easy to work with and may eliminate some potential back injuries. It is also a pleasure to have purchased recycled materials.”

Sergio Ramirez, System Collection Lead,
Castro Valley Sanitary District

Barricades

Traffic barricades are used to redirect or block traffic usually associated with highway construction or repair. Barricades can be made from wood, steel, plastic or a combination of these materials. Many manufacturers have switched to the use of recycled materials in both the supporting frame and rails of the barricades.

“Our recycled plastic barricades have worked quite well for the last 4-5 years. They hold up better than metal, and there's no rust or corrosion. They don't become potential projectiles when hit, and they're light and easy to use.”

City staff, City of Oakland

Traffic Control Devices (Delineators, Channelizers)



Delineators are temporary pavement markers available in a variety of shapes and sizes. Most of the recycled delineators are manufactured from postconsumer plastics, such as PET (soda bottles) or polycarbonate plastic (CDs). Delineator bases are either steel stakes that are driven into the ground or rubber to support the delineator on the road surface. Flexible delineators have stakes that are driven into the ground to strengthen their flexibility when struck by a vehicle.

Channelizers are relatively large barrels or drums that direct traffic around areas of road repair and construction. Channelizers can be constructed from postconsumer plastics and/or rubber (usually in the base for weight and stability).

Case Study — Performance, Flexibility and Safety

The City of Livermore in California has been using several recycled content traffic control devices successfully, namely traffic cones, barricades and traffic calming devices (or flexible curb systems).

Cones with recycled rubber bases and barricades made from recycled plastic are used for special events and for traffic control work zone safety.

The traffic calming devices are removable, providing City staff the flexibility to assess whether or not such devices would actually slow the speed of automobiles in several residential neighborhoods. After many months, staff concluded that these devices, made from recycled rubber tires, performed as needed - slowing cars down and increasing the safety of neighborhood children. The curb systems will continue to be reused and tested in other areas of the City before the City decides on permanent curbing and landscaping.

Parking Stops, Speed Bumps/Humps, and Chock/Wheel Blocks



Parking stops are used in parking areas to mark parking spaces and to keep vehicles from rolling beyond a designated area. Recycled content parking stops are generally made from recycled plastic, rubber or concrete containing recovered materials (coal fly ash or ground granulated blast furnace slag).

A Cost Study for Parking Stops — Finding Value and Savings

When purchasing parking stops, here are a few things to keep in mind. Recycled plastic car stops may be:

- ◆ easier to install and cost less to ship because of their lighter weight,
- ◆ easier to maintain (they don't crack, break or need repainting),
- ◆ more durable, and
- ◆ lower cost over the life of the products, despite higher initial costs.

One study found that over a ten-year period, a traditional concrete car stop might cost six times more than a recycled plastic car stop. The table on the next page demonstrates these findings.

Life Cycle Cost Example

- Assumptions:
1. Life of concrete stop is 3 years in northern climates.
 2. Inflation is projected to be 4% per year.
 3. Minimum wage labor is used for painting and installation.
 4. Retail price for 100-quantity purchase.
 5. Cost of hardware is included in the original purchase cost.

Source: *Buy Recycled Training Manual* - Sixth Edition.
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Traditional Concrete Stop											
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Original Purchase Cost	\$14.00	-	-	-	-	-	-	-	-	-	\$14.00
Installation	\$4.00	-	-	-	-	-	-	-	-	-	\$4.00
Painting	-	\$3.00	\$3.12	\$3.24	\$3.37	\$3.51	\$3.65	\$3.80	\$3.95	\$4.11	\$31.75
Replacement Cost	-	-	-	\$16.86	-	-	\$18.88	-	-	\$21.15	\$56.89
Replacement Labor	-	-	-	\$5.00	-	-	\$5.60	-	-	\$6.27	\$16.87
Total Cost of Ownership											\$123.51
Total Cost of 100-space Parking Lot											\$12,351
Recycled Plastic Stop											
Original Purchase Cost	\$25.50	-	-	-	-	-	-	-	-	-	\$25.50
Installation	\$3.00	-	-	-	-	-	-	-	-	-	\$3.00
Total Cost of Ownership											\$28.50
Total Cost of 100-space Parking Lot											\$2,850.00
TOTAL COST SAVINGS											\$9,501.00

Speed bumps are used to calm or slow vehicle traffic down to 5-15 miles/hour and can be made from recycled plastic or rubber. Speed bumps are generally 10-12 inches wide in the driving direction and 2-4 inches tall. On the other hand, **speed humps** are 12 -14 feet long in the vehicular driving direction and about 3 inches high. Speed humps are designed for 25-40 miles/hour. Speed humps can be made from recycled rubber.

Since 1995, the City of Portland has tested and now successfully uses rubber speed humps. The rubber speed humps meet their criteria for slowing auto traffic on residential streets. Many other uses have been identified for the product. For a list of uses and additional information, visit www.portlandonline.com/transportation/index.cfm?&a=61189&c=35933.

Chock/Wheel Blocks placed against vehicle tires help prevent vehicles from moving. Most recycled wheel blocks contain 80-100% postconsumer recycled plastic or rubber.

Sample Specifications for Traffic Control Products

The Commonwealth of Massachusetts, Operational Services Division, uses the following procurement language for recycled plastic transportation products:

Mandatory Product Specifications

The following products must contain the following minimum recycled content:

- ◆ Parking stops, 80% postconsumer plastic and/or rubber
- ◆ Speed bumps, 80% postconsumer plastic and/or rubber
- ◆ Barricades, 80% postconsumer plastic
- ◆ Chock/wheel blocks, 80% postconsumer plastic and/or rubber
- ◆ Delineators, 25% postconsumer for plastic parts, 100% postconsumer for rubber base
- ◆ Channelizers, 25% postconsumer for plastic parts, 100% postconsumer for rubber base

General Contract Specifications

All Contractors must agree to:

- ◆ Provide products that meet all specified minimum recycled content requirements; recycled content shall be based on the dry weight of the raw materials, exclusive of any additives such as adhesives, binders, coloring agents, or UV inhibitors.

Definition

"Postconsumer content" means a finished material which would normally be disposed of as a solid waste, having reached its intended end-use and completed its life cycle as a consumer item, and does not include manufacturing wastes.

Traffic Paint

There have been two efforts nationally to identify environmental criteria for ready-mixed, waterborne acrylic traffic line paint that can be applied to either asphalt concrete or portland cement concrete pavements. One was a 1997 project by the Department of Defense (jointly with US EPA), the Environmentally Preferable Pilot Parking Lot Project (www.epa.gov/opptintr/epp/pubs/dodfct.pdf). Another was a 2003 study by INFORM comparing state government specifications for traffic paint. The environmental criteria from these two efforts basically pointed to the following criteria:

- ◆ Water-based
- ◆ Lead free
- ◆ Chromate free
- ◆ 125-150 g/L VOC Content (max)
- ◆ Complying with State air quality laws at the time

Sample Specifications for Traffic Paint

In 2004, the Alameda County General Services Agency used the following language in their specifications for the Public Works Agency's Paint/Traffic Stripes Request for Quote.

Paints shall conform to all applicable Federal, State and local regulations for air pollution control, including but not limited to the South Coast Air Quality Management District Rule 1113 regarding The Architectural Coatings and State Implementation Plan for California which contains rules limiting the content of VOC in traffic coatings to one hundred twenty-five (125) grams per liter.

All ready-borne, rapid dry paint, white, yellow, red, green and black shall be chromium free and shall not contain any hazardous materials at levels that would cause the paint (when dry) to be classified as a hazardous waste under Title 22, Division 4, Section 6621.20 of the California Code of Regulations (CCR).

Vendor and Product Resources

- ◆ A sample listing of traffic control products made with recycled content (many approved by Caltrans) — **delineators, traffic cones, barricades, channelizers, parking stops, speed bumps, sound barriers, object markers, and reflective glass beads/spheres** is included in the Appendix at the end of this Fact Sheet. Local sources for these products are listed.
- ◆ For local agencies interested in Caltrans approved products, check the **California Department of Transportation's List of Prequalified and Tested Signage and Delineation Materials**, updated regularly. This list does not indicate which products have recycled content and which do not.
(www.dot.ca.gov/hq/esc/approved_products_list/)
- ◆ **U.S. EPA Environmentally Preferable Purchasing Database**, including contract language and specifications, environmental standards and guidelines, lists of vendors and product brands, and other useful sources of information
(www.epa.gov/opptintr/epp)

Additional Resources

There are many resources available to help identify recycled content products and their performance, see sample bids and specifications, and read case studies of successful programs.

- ◆ **StopWaste.Org** offers technical assistance and grant funding for applicable recycled content product purchasing. Visit the Agency's website (www.StopWaste.Org/EPP) for an annotated list of resources and links to other environmental purchasing websites and documents.
- ◆ Contact **Rachel Balsley** at rbalsley@stopwaste.org for information about the StopWaste Partnership for technical assistance and funding for Alameda County businesses. See also www.StopWaste.Org/Partnership/

- ◆ Contact **Debra Kaufman** at dkaufman@stopwaste.org for information about environmental purchasing technical and financial assistance to local governments in Alameda County.
- ◆ Contact the **Alameda County Recycling Hotline**, toll-free at **1-877-STOPWASTE (786-7927)** for information about recycling and waste prevention opportunities in Alameda County.

Disclaimer

The information provided in this Fact Sheet should be considered by public agency and business purchasers who are interested in buying environmentally preferable products. It is provided as a public service by StopWaste.Org in an attempt to provide environmental benefits and reduce costs. The information on products listed is supplied by the manufacturers. Listing in this Fact Sheet is not a recommendation or an endorsement. This Fact Sheet is not a substitute for the exercise of sound judgment in particular circumstances and is not intended as recommendations for particular products or processes.

This Fact Sheet was last updated in November 2008 by EPE Consulting and Kies Strategies on behalf of StopWaste.Org.

Appendix

Sample of Recycled Content Traffic Control Products and Sources

The product types are specific to Caltrans specifications. Ask the distributor for alternative recycled content product types that may better suit your needs.

Product information is supplied by the manufacturers and is not verified. Exercise sound judgment and research products for your specific application. The information listed is subject to change and does not represent all available sources for products. Refer to the resources provided in this Fact Sheet for additional information.

The information in this Appendix was last updated in December 2008.

Delineators – Flexible

Recycled Products Available	Caltrans Prequalified and Tested Products	Type	Company	%Recycled/Made From What?/Other Environmental Info	Distributors in the Bay Area
Davidson FG 400 and 500 Guide Posts	Filtrona Extrusion, Flexi-Guide Models 400 and 566	Class I, one piece drivable flexible	Filtrona Extrusion Alpharetta, GA Local Rep: Billy Daly (408) 269-9902 www.filtronaextrusion.com	5% postconsumer/ 50% total recycled (recycled polycarbonate plastic)	Bay Area Barricades Concord, CA (925) 686-1089 Contact: Craig
Davidson FG 400 and 500 Guide Posts	Filtrona Extrusion, Model FG 560	Class I, special use flexible type			Highway Technologies San Jose, CA (408) 295-8210

Delineators – Flexible (cont.)

Recycled Products Available	Caltrans Prequalified and Tested Products	Type	Company	%Recycled/Made From What?/Other Environmental Info	Distributors in the Bay Area
All FlexStake Ground Mount Series	FlexStake Model 654 TM	Class I, one piece drivable flexible	FlexStake Fort Myers, FL (800) 348-9839 www.flexstate.com	Minimum 51% postconsumer (PET, polycarbonate plastic)	Bay Area Barricades Concord, CA (925) 686-1089 Contact: Craig
	FlexStake, Model 604	Class I, special use flexible			SC Signs and Supplies Anaheim, CA (877) 731-7446 Contact: Brian Lagenwalter
All GreenLine Delineators and Markers	GreenLine Model CGDI-66	Class I, one piece drivable flexible	Carsonite Composites Early Branch, SC (800) 648-7916 www.carsonite.com	50% postconsumer/ 100% total recycled (polycarbonate plastic-ground up CDs)	Lake Traffic Solutions Walnut Creek, CA (925) 930-9603 www.laketraffic.com Contact: Art Lake
	GreenLine Model CGD	Class I, special use flexible			Sierra Highway Safety Walnut Creek, CA (800) 558-5850 Contact: Bill Thurston

Delineators – Portable

Recycled Products Available	Caltrans Prequalified and Tested Products	Type	Company	%Recycled/ Made From What?/ Other Environmental Info	Distributors in the Bay Area
Channelizer Cone	Not listed	Portable, stackable	Work Area Protection St. Charles, IL (800) 327-4417	95-100% recycled rubber base	Flash Safety Oakland, CA (510) 836-0861 Contact: Mike Farmer
Traffic Delineator, TD 5000, 5100	42" Ring Top Stackable Cone listed under "Traffic Cones"	TD 5100 is Ring Top, comes in different sizes	Three D Traffic Works Burbank, CA (877) 843-9757 www.trafficwks.com	90% postconsumer LDPE cone, 100% postconsumer rubber base	Bay Area Barricades Concord, CA (925) 686-1089 Contact: Craig

Delineators - Guard Railing

Recycled Products Available	Caltrans Prequalified and Tested Products	Type	Company	%Recycled/ Made From What?/ Other Environmental Info	Distributors for the Bay Area
GreenLine Guard Railing Delineator	GreenLine GRD 27	Guard Railing Delineator, wood post type	Carsonite Composites Early Branch, SC (800) 648-7916 www.carsonite.com	51-100% postconsumer content	Lake Traffic Solutions Walnut Creek, CA (925) 930-9603 www.laketraffic.com Contact: Art Lake
					Sierra Highway Safety Walnut Creek, CA (800) 558-5850 Contact: Bill Thurston
All FlexStake sizes	FlexStake Model 102 GR	Guard Railing Delineator, wood post type	FlexStake Fort Meyers, FL (800) 348-9839 www.flexstake.com	100% postconsumer (polycarbonate plastic)	SC Signs and Supplies Anaheim, CA (877) 731-7446 Contact: Brian Lagenwalter

Channelizers

Recycled Products Available	Caltrans Prequalified and Tested Products	Type	Company	% Recycled/Made from What?/ Other Environmental Info	Distributors in the Bay Area
All FlexStake Channelizers, Surface Mount	FlexStake Channelizer Model 703 and 753 TM	Surface Mount	FlexStake Fort Meyers, FL (800) 348-9839 Contact: Cindy Horton www.flexstake.com	100% postconsumer (polycarbonate plastic)	SC Signs and Supplies Anaheim, CA (877) 731-7446 Contact: Brian Lagenwalter
					Bay Area Barricades Concord, CA (925) 686-1089 Contract: Craig
All GreenLine Models, Surface Mount	GreenLine Model SMD-36	Surface Mount	Carsonite Composites Early Branch, SC (800) 648-7916 www.carsonite.com	50% postconsumer (polycarbonate plastic)	Lake Traffic Solutions Walnut Creek, CA (925) 930-9603 www.laketraffic.com Contact: Art Lake
					Sierra Highway Safety Walnut Creek, CA (800) 558-5850 Contact: Bill Thurston
Channelizer Drum	Not listed	Portable	Work Area Protection St. Charles, IL (800) 327-4417 www.workerprotectionarea.com	95-100% postconsumer recycled rubber base	Flash Safety Oakland, CA (510) 836-0861 Contact: Mike Farmer
Chanelizer, Surface Mount	FlexiGuide Models FG300PE, FG300UR and FG300EFX	Surface Mount	Filtrona Extrusion Alpharatta, GA Local Rep: Bill Daly (408) 269-9902 www.filtronaextrusion.com	Base and curb are minimum 5% recycled thermoplastic	Highway Technologies San Jose, CA (408) 295-8210
Flexi-Guide FG 300 Curb System	Yes, as a lane separation system	Modular lane separation system			Bay Area Barricades Concord, CA (925) 686-1089 Contact: Craig

Traffic Cones

Recycled Products Available	Meets Caltrans Standard Specs	Type	Company	%Recycled/ Made From What?/ Other Environmental Info	Distributors for the Bay Area
Traffic Cone	No, slight size variance; affects stacking	Various sizes, one piece	Work Area Protection St. Charles, IL (800) 327-4417 www.workareaprotection.com	7-8% postconsumer (mostly in base/stabilizer) Made from PVC	Flash Safety Oakland, CA (510) 836-0861 Contact: Mike Farmer
42" Ring Top Stackable Cone	TD 7000 "Ring Top" and TD 7500 as conical delineators	2-part system; conical top and rubber base	Three D Traffic Works Burbank, CA (877) 843-9757 Contact: Frank www.trafficwks.com	90% postconsumer LDPE in cone, 100% recycled rubber base	Bay Area Barricades Concord, CA (925) 686-1089 Contact: Craig

Barricades

Recycled Products Available	Meets Caltrans Standard Specs	Type	Company	%Recycled/ Made From What?/ Other Environmental Info	Distributors for the Bay Area
Traffic Barricade TD 2100	Yes	Type I and Type II, depending on reflective sheeting	Three D Traffic Works Burbank, CA (877) 843-9757 Contact: Frank www.trafficwks.com	30% postconsumer plastic, 65% secondary materials	Bay Area Barricades Concord, CA (925) 686-1089 Contact: Craig
Workguard Barrier System	Not applicable	Safety barricade		100% postconsumer rubber base	

Parking and Traffic Control Devices

Recycled Products Available	Company	% Recycled/ Made From What?/ Other Environmental Info	Distributors in the Bay Area	Purchasing Resources
Parking Stops and Speed Bumps	Carsonite Composites Early Branch, SC (800) 648-7916 www.carsonite.com	100% postconsumer recycled rubber	Sierra Highway Safety Walnut Creek, CA (800) 558-5850 Contact: Bill Thurston	
			Lake Traffic Solutions Walnut Creek, CA (925) 930-9603 www.laketraffic.com Contact: Art Lake	
Parking Stops and Speed Bumps	The Plastic Lumber Company Murrietta, CA (909) 696-5771 (in CA) (800) 886-8990 (in OH) www.plasticlumber.com	100% postconsumer recycled plastic (HDPE)	Call manufacturer	GSA Advantage GS-07F-0212L
Parking Stops and Speed Bumps	Plastic Recycling of Iowa Falls Iowa Falls, Iowa (800) 338-1438 www.hammersplastic.com	100% postconsumer plastic	Call manufacturer	
Speed Bumps and Wheel Stops		100% postconsumer plastic	Lake Traffic Solutions Walnut Creek, CA (925) 930-9603 www.laketraffic.com Contact: Art Lake	
Speed Cushions, Breakers, and Flexible Curbing	Road Kare International Grand Prairie, TX (800) 942-9305 www.roadkare.com	98% postconsumer rubber		
Speed Cushions, Humps, Bumps, Tables and Circles	Traffic Logix Spring Valley, NY (866) 915-6449 www.trafficlogix.com	95% postconsumer rubber	Call manufacturer	
Wheel Chocks	High Grade Manufacturing Murietta, CA (877) 304-7016 www.highgrademfg.com	80% postconsumer rubber	Call manufacturer	

Sound Barriers

Recycled Products Available	Caltrans Prequalified Noise Barrier Systems	Company	% Recycled/ Made From What?	Distributors in the Bay Area
Carsonite Sound Barrier	Yes	Carsonite International Early Branch, SC 800-648-7974 www.carsonite.com	Recycled scrap tires in the shell; 4 pounds of tire per sq. ft.; CA tires can be requested	Sierra Highway Safety Walnut Creek, CA (800) 558-5850 Contact: Bill Thurston
				Lake Traffic Solutions Walnut Creek, CA (925) 930-9603 www.laketraffic.com Contact: Art Lake

Object Markers

Recycled Products Available	Caltrans Prequalified and Tested Products	Type	Company	% Recycled/ Made From What?	Distributors in the Bay Area
Flexstake, Model 701KM	Type "K" and Type "K-4"/"Q" Object Markers	Flexstake, Model 701KM	FlexStake Fort Meyers, FL (800) 348-9839 Contact: Cindy Horton www.flexstake.com	51% postconsumer recycled plastic	SC Signs and Supplies Anaheim, CA (877) 731-7446 Contact: Brian Lagenwalter
					Bay Area Barricades Concord, CA (925) 686-1089 Contact: Craig

Reflective Glass Beads/Spheres

Recycled Product	Type	Company	% Recycled	Distributors in the Bay Area	Purchasing Resources
Glass Beads/Spheres	Type II Glass Spheres (50 lb per bag) per State Specification 8010-004	Potters Industries, Inc. Philadelphia, PA (800) 552-3237	State contract requires 10% postconsumer content.	Potters Industries Plants Canby, OR (888) 821-2965 Kingman, AZ (800) 821-2968	California State contract