

AN OVERVIEW

### PENNDOT AND PADEP SRP MEMORANDUM OF UNDERSTANDING (MOU)

- 1) Establishing and implementing a waste reduction program for materials used in PENNDOT operations;
- 2) Continually reviewing and revising existing procedures and specifications;
- Evaluating materials that may be recycled in transportation and civil engineering applications;
- 4) Employs procurement and contract bidding options encouraging recycled materials use.

# PENNDOT'S STRATEGIC RECYCLING PROGRAM (SRP)

#### **PennDOT SRP Development:**

Created in 1998 as a tool to systematically identify, evaluate, and implement recycling opportunities throughout Pennsylvania.

#### **PennDOT SRP Objectives:**

- 1) Realize economic savings and environmental enhancement to PENNDOT and the Commonwealth;
- 2) Continued development and improvement to pollution prevention, recycling, energy efficiency efforts; and
- 3) Sound environmental management practices.

# STRATEGIC RECYCLING PROGRAM FIVE KEY FOCUS AREAS

- <u>Research</u> To collect information on recycled materials and to identify and resolve data gaps associated with the use of recycled materials.
- <u>Specifications</u> To develop, obtain, and/or disseminate user guidelines, provisional special provisions and Publication 408 specifications at the Municipal, District and Statewide levels.
- <u>Projects</u> The overall objective is to successfully incorporate recycled materials in transportation-related projects, including post-construction monitoring.
- Outreach To disseminate the results and experiences of recycled materials projects to PENNDOT, Commonwealth agencies and the public.
- <u>Contracting</u> To provide technical assistance to the Engineering Districts in developing construction contract mechanisms to specify or provide for recycled material use.

## CURRENT RECYCLE MATERIAL SPECIFICATIONS

<u>Recycled Asphalt Pavement (RAP)</u> – Used as aggregate, sub-grade, and sub-base material and roadway shoulders; may be blended with steel slag, virgin aggregate, or crushed waste concrete in these same applications – currently governed under a PA DEP Co-product Determination or General Permit);

<u>Crushed Glass</u> – embankment fill - Sound Wall/Jersey barrier, aggregate base course base drains/reinforced concrete pipe bedding/storm sewer/u-drains.

<u>Asphalt Shingles</u> – Over-cuts, tabs, and post-consumer shingles as ingredients in Hot Mix Asphalt;

<u>Reclaimed Portland Cement Concrete (RPCC)</u> – as aggregate, road sub-base, rip-rap, gabions, concrete pavement, and miscellaneous drainage;

<u>Blast Furnace Slag</u> – anti-skid material, fine or coarse aggregate, concrete pozzolan, select granular material;

<u>Steel Slag</u> – fine or coarse aggregate, sub-base, select granular material, select materials surfacing, shoulders, and bituminous surface courses, blending with RAP materials;

## CURRENT SPECIFICATIONS (CONTINUED)

<u>Fly Ash</u> – cement concrete, flowable fill, concrete pozzolan;

**Bottom Ash** – anti-skid material;

**Spent Foundry Sand** – fine aggregate, flowable fill;

**Aluminum** – road, highway, and recycling center signs;

Scrap Tires – Tire Shreds as Structural Fill (TDA), Crumb Rubber with Stone Mix Asphalt (SMA) DRY or WET Method, Crumb Rubber as a Stabilizer, Crumb rubber for Absorptive Noise Barriers, Tire chips filler for Carsonite Sound Walls (plastic wall modules containing recyclable tire rubber).

<u>Compost</u> – Soil Amendments, Mulching, Compost FilterSock, Compost Blanket and Compost Filter Berm.

# Current Projects





## CRUSHING OPERATION FOR RECLAIMED PORTLAND CEMENT CONCRETE (RPCC)





- Project Location: Interstate 79 (I-79), District 1-0 approximately 1.5 miles from the McKean exit;
- Source of RPCC Material: derived from previous work done on I-79 and Interstate 90 (I-90). A mixture of pavement, bridge piers and abutments, posts for signs and guiderails, remnants of slab and joint repair work, and other miscellaneous concrete-related materials.

#### <u>Materials Generated</u>:

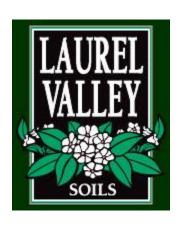
- **R4 Stone**, used for repairing roadway washout areas;
- **2A Stone**, used as pipe backfill replacement, restoration, and roadway shoulder backup. The 2A stone will also be blended with the fines generated from the RAP/#8 stone project to create an asphalt binder.



#### COMPOST - SOIL STABILIZATION

- State Route 222 Gouglersville Interchange Erosion Control Blanket Project
- © Compost came from the approved supplier in Bulletin 15, Laurel Valley Soils located in Avondale, PA











#### CRUMB RUBBER PROJECTS

Current District Maintenance Projects Asphalt-Rubber Gap-Graded Wearing Course

#### **First Project**

- Project Name: District 3-0 resurfacing of State Route 15 (Segment 0010/0214 to Segment 0100/2680 NB and Segment 0010/0161 to Segment 0101/2746) Asphalt-Rubber Gap-Graded Wearing Course. Currently Paving
- Output
  Description
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- Second Project
  - Project Name: District 4-0 crumb rubber modified asphalt paving along State Route 2005 (Seg/Off 0010/0000 to 0060/0000) Currently Paving
- © Location: Blackman Street in Luzerne County

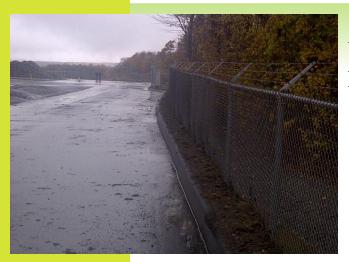
## ASPHALT RUBBER GAP GRADED PROJECT

- District 5-0 Berks County, I-78 from mile post 11 to mile post 16 east and west bound.
- Mill existing 3" of bituminous material to concrete, 24' wide and two feet into outside shoulder.
- Pave two lifts of 1.5" AR-GG (asphalt rubber gap graded) for total of 3".
- Mill outside shoulder of pave with regular bituminous asphalt mix.
- A total of 27,500 tons of AR-GG will be placed.
- 467.5 tons of CRM @ \$0.35/lb = \$327,250

27500 tons at 8.5% liquid binder = 2337.5 tons liquid binder, at 20% crumb rubber = 467.5 tons



#### SMA CRUMB RUBBER PROJECT



Utilized Crumb Rubber Modified Asphalt (CRMA) at District 9-0 Nicktown Stockpile staging area

- ☐ Minimize stormwater runoff from leaving the site;
- ☐ Direct stormwater to the existing detention system;
- ☐ Evaluate performance of CRMA in an area which see use of heavy equipment in a confined area.





#### GLASS CULLET PROJECTS

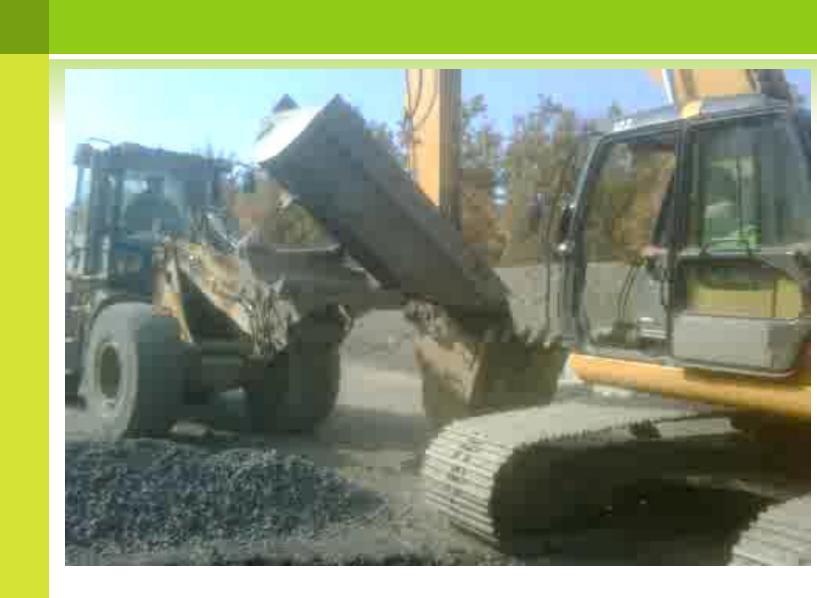
#### Lackawanna County – District 4-0 at SR 6 and 247

- Pipe trenches bedded with glass aggregate and topped with crushed glass;
- Four feet of glass aggregate capped with 12-inch layer of natural aggregate.
- Four-year inspection/evaluations performed;
- Provisional Specification for Glass Cullet as backfill, meeting Pub. 408, Section 703, AASHTO No. 8 gradation requirements; Table B, Type C quality requirements (expect allowance of 100% glassy particles.









#### RECENT SRP PROJECTS



Admiral Peary Vo-Tech School Project (Cambria County, District 9-0): Use of Compost Filter Socks for Wetland Mitigation).

Bull Creek Box Culvert/Bridge Project (Allegheny County, District 11-0): Use of Compost Filter Socks for Erosion Control.



Picnic Tables (Various Roadside Rest Areas,

<u>**District 1-0):**</u> Using plastic picnic tables to replace wooden picnic tables – this occurred on two occasions

Roadside Project (Blair County, District 9-0): Use of Rubber Mulch Mats to Reduce Erosion and Burn-Out Sequences from Herbicide Spraying.

#### PROJECT OPPORTUNITIES

#### **Potential Materials**

- □ Compost E&S Controls
- Rubber Absorptive Barrier Sound Walls
- Reclaimed Portland Cement Concrete (RPCC) –
   Misc Drainage, Gabions and Rip-rap
- Crushed Glass Embankment Material
- ☐ Tire Derived Aggregate (TDA) Embankment Material
- Spent Foundry Sand Aggregate and Flowable Fill

## PENNDOT'S WASTE AUDIT PROGRAM





- measuring progress of PennDOT District and Central Office solid waste management activities;
- provide a large picture of where PennDOT stands with its overall office waste management practices;
- allows each District to benchmark their current recycling programs and enable District Offices to determine areas that can be improved upon;
- increase employees' awareness to recycling methods;
- big picture look at overall costs for waste disposal and recyclable management;
- and demonstrate PennDOT's support of the Commonwealth's overall recycling goals;



#### THANK YOU

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