Crumb Rubber Modified Asphalt Grant

Administered by:
Indiana Department of Commerce
Energy Policy Division
Recycling Market Development Program

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Intermodal Surface Transportation Efficiency Act (ISTEA)

The Intermodal Surface Transportation Efficiency Act of 1991 was enacted into law on December 18, 1991. Section 1038 of the Act specifically addressed the use of crumb rubber modifiers (CRM) as recycled paving materials. In summary, this section required:

- Relaxed federal regulations to permit State and local agencies to use CRM.
- Study of the performance, recycling and environmental aspects of CRM.

ISTEA, Section 1038(b) required the U.S. Department of Transportation and the Environmental Protection Agency to conduct a study of asphalt pavements containing scrap tire rubber and synthesize the experience with other recycled materials. The resulting report, "A Study of the Use of Recycled Paving Material", was submitted to Congress in 1993.

Although ISTEA set requirements for use of recycled materials in all federally-funded highway projects, there is currently no action being taken to enforce those requirements.
Introduction

Waste tires have become a significant solid waste concern in Indiana. It is estimated that at least 12 million tires are currently stockpiled throughout the state, with millions more generated annually.

In 1993, the Indiana General Assembly directed the Indiana Department of Commerce (IDOC), Energy Policy Division to develop markets for scrap tires. IDOC's Recycling Market Development program receives a portion of the fee charged to consumers of new tires for disposal of waste tires. The Waste Tire Fund will be used to aggressively attack the waste tire issue by finding innovative solutions.

To assist in stimulating markets for recycled tires in Indiana, IDOC is initiating a Crumb Rubber Modified Asphalt Grant program. This grant will allow county transportation departments to offset increased costs associated with adding crumb rubber to pavement projects. In other successful crumb rubber modified asphalt projects across the country, crumb rubber has added:

• increased pavement flexibility;
• improved crack resistant characteristics;
• extended life;
• improved traction;
• reduced noise;
• lighter weight material; and
• deicing qualities.

Project Purpose

The purpose of the program is to provide a grant to offset costs for county crumb rubber modified asphalt pavement construction projects that will be completed during the 1995 pavement construction season.

Program goals include:
• establishing a market for waste tires;
• testing crumb rubber in asphalt pavement under freeze/thaw conditions;
• testing crumb rubber modified asphalt in four distinct Indiana transportation alternatives.
PROJECT ELIGIBILITY

Applicant Criteria

- Eligibility is limited to county transportation departments.
- Eligible county must meet or exceed minimum road base standards as outlined;
- Eligible county must meet one of the four project alternatives outlined;
- Eligible county must resurface a minimum of three quarters (3/4) of a mile of road at least twenty feet (20') wide;
- Eligible county must meet or exceed minimum standards as outlined;
- Eligible county must meet additional requirements as outlined;
- Eligible counties must agree to complete annual monitoring and reporting requirements as outlined.

Minimum Road Base Standards

- Existing road with adequate drainage to avoid erosion, as determined by the Independent Review Team (as explained in SELECTION CRITERIA Section).
- Existing road with adequate base material consisting of at least six inches (6") of granular material or equivalent.
- Any obvious base failure in existing road would have to be repaired before applying new road cover.
Alternative 1

One county shall receive up to $25,000 grant for a **cold mix, dry process** for a rural road with a minimum of 100 ADT (average daily traffic), including a minimum of forty (40) pounds of crumb rubber per ton of mix.

- This road will be rehabilitated using the cold mix/dry process.

- This involves mixing at least ten (10) mesh or smaller crumb rubber with aggregate and asphalt emulsion through a pugmill. These mixtures tend to require higher asphalt contents (0.5 percent) normally than mixtures without crumb rubber.

- The test project being sought is a rural road which meets minimum criteria for drainage and existing base thickness.

- A certificate of analysis shall be provided to the county from the asphalt mix provider and a copy forwarded to IDOC.

- The cold mix must be placed three (3) inches thick, shall be allowed to cure for thirty (30) days after placement and

- Road must be sealed with a single chip seal by September 30, 1995.

- A control section of standard cold mix will also be placed and sealed of equal thickness.
Alternative 2

One county shall receive up to $25,000 grant for a cold mix, wet process for a rural road with a minimum of 100 ADT, including a minimum of eight percent (8%) crumb rubber by weight of asphalt.

- This road will be rehabilitated using the cold mix/wet process.

- This process involves mixing at least forty (40) mesh or smaller crumb rubber into asphalt cement. The combined mixture will be emulsified to make an asphalt emulsion. The emulsion will be mixed with a suitable aggregate in a pugmill to make a cold mix asphalt.

- A certificate of analysis shall be provided to the county from the asphalt supplier and a copy forwarded to IDOC.

- The cold mix will be placed three (3) inches thick, shall be allowed to cure for thirty (30) days after placement and must be sealed with a single chip seal by September 30, 1995.

- A control section of standard cold mix will also be placed and sealed of equal thickness.
Alternative 3

One county shall receive up to $25,000 grant for a **hot mix, dry process** for a heavily traveled road with a minimum of 1000 ADT, including a minimum of forty (40) pounds of crumb rubber per ton of mix.

- This road will be rehabilitated using the hot mix/dry crumb rubber process.

- This involves adding crumb rubber at least ten (10) mesh or smaller to a hot mix asphalt. The crumb rubber must be incorporated at the hot mix plant and be uniformly dispersed. Mixing, placement and compaction shall be in accordance with standard hot mix procedure.

- A certificate of analysis shall be provided to the county from the asphalt mix provider and a copy forwarded to IDOC.

- The minimum overlay thickness for the mixture shall be three (3) inches placed as a binder and surface containing the crumb rubber.

- A control section of standard hot mix shall be included of equal thickness.
Alternative 4

One county shall receive up to $25,000 grant for a **hot mix, wet process** for an industrial road with 15% traffic made up of industrial truck traffic, including at least twelve percent (12%) crumb rubber by weight of asphalt. (Applicant must submit estimated truck traffic with an explanation of the businesses or industry served by the road.)

- This road will be rehabilitated using the hot mix/wet process.

- This involves premixing the forty (40) mesh or smaller crumb rubber with the asphalt cement. The liquid mixture shall be stable in storage with no signs of separation.

- A certificate of analysis shall be provided to the county from the asphalt supplier and a copy forwarded to IDOC.

- This road should carry concentrated truck traffic. Specify in Grant request the percentage of heavy trucks and number of trucks on the proposed test section daily.

- The minimum overlay thickness shall be three (3) inches placed as a binder and surface containing the crumb rubber.

- A control section of standard hot mix shall be included for comparison of equal thickness.
Eligible Use Of Grant Funds And County Matching Funds

The Grant shall cover costs, up to $25,000, for the following items:
• The cost of the crumb rubber,
• The cost of the crumb rubber modifier, (if needed) and
• Any additional costs associated with adding crumb rubber to the asphalt mix that would not be incurred without the crumb rubber component.

Participating counties must provide:
• Other costs associated with typical paving project.
• A letter from the county Board of Commissioners indicating that the appropriate local contribution has been committed to meet the local match.
• Actual cost for control section for comparison.

Additional Requirements

• All eligible counties must agree to have a control section of standard mix asphalt contiguous to a modified mixed asphalt road for testing purposes. (verification must be submitted and attached to the agreement)
• All eligible counties must document actual cost per mile of test project area compared to the standard mix per mile. (verification must be submitted and attached to the agreement)
• All eligible counties must estimate their mix design to the best of their ability for the application and MUST SUBMIT, upon grant approval, ACTUAL MIX DESIGN to IDOC before state grant money may be drawn down.
• Project must be completed during the 1995 pavement construction season.
• Letter of intent must be provided by asphalt supplier or producer who will supply the asphalt mix.
Selection Criteria by the Independent Review Team

Members of the Independent Review Team include:
- Highway Extension Research Products for Indiana Counties and Cities (HERPICC),
- Asphalt Institute
- Indiana Association of County Highway Engineers and Supervisors (IACHES) [who would not be eligible for the grant]
- Indiana Department of Commerce, Recycling Market Development

The Independent Review Team has been established to:
- inspect road base
- review applications
- assist in annual monitoring of test projects.

The Independent Review Team will review all applications and confer on final selections.

Criteria used for application evaluation include:
- Rubberized asphalt mix using the highest percentage of crumb rubber added.
- Counties that will purchase crumb rubber within the state of Indiana, processed from Indiana tires.
- Counties that can pave the longest stretch of road utilizing crumb rubber modified asphalt under this grant program.
- Awarding of grants to four different counties that can provide the best test conditions, including:
  - a variety of weather conditions (freeze/thaw conditions);
  - spreading program out through each quarter of the state;
  - most closely meets or exceeds the outlined criteria.
Monitoring/Reporting Requirements

All eligible counties will be required to:

• Complete a one-page annual report describing the condition of the test strip and the control section for five (5) consecutive years.

• The Independent Review Team members will complete on-site inspections of each location annually for five (5) consecutive years.

• IDOC will complete an annual report on conditions based on review team findings.

• The goal of this grants project is to successfully test crumb rubber modified asphalt to encourage future use of tires in pavement projects. Therefore, all reports will be available for public review, distribution and promotion.

Due Date

Grant application deadline has been extended until March 31, 1995.