
QUARTERLY PROGRESS REPORT

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| Project Title: | Appropriate Implementation of Pavement Preservation Treatments (2012-20) | | |
| RFP NUMBER: 2012-20 | NJDOT RESEARCH PROJECT MANAGER: Daniel LiSanti | | |
| TASK ORDER NUMBER: TO 288 / RU Acct 4-35525 | PRINCIPAL INVESTIGATOR: Nicholas Vitillo, Ph.D. | | |
| Project Starting Date: 04/01/2013 Project Ending Date: 04/01/2015 Modified Completion Date: | Period Covered: 3rd Quarter 2014 | | |



Center for Advanced
Infrastructure and
Transportation

| Task # | Task | % of Total | Fixed Budget | % of Task this quarter | Cost this quarter | % of Task to date | Total cost to date |
|--------|--|------------|--------------|------------------------|-------------------|-------------------|--------------------|
| L/S | Literature Search | 7.69% | \$ 17,221 | 0.00% | \$ - | 100.00% | \$ 17,221 |
| L/S | Literature Search; Surveys: Interviews with state PMS engineers, development of PMS inputs & impletentation of these into NJDOT dTIMS PMS | 12.37% | \$ 27,720 | 0.00% | \$ - | 100.00% | \$ 27,720 |
| 1 | Assessment of the Appropriateness of Pavement Preservation Treatments | 15.89% | \$ 35,612 | 0.00% | \$ - | 100.00% | \$ 35,612 |
| 2 | Develop NJDOT Draft Specification & Construction Procedure for Each Appropriate Pavement Preservation Treatment | 21.51% | \$ 48,196 | 10.00% | \$ 4,820 | 88.00% | \$ 42,413 |
| 3 | Effects of Constraints on Pavement Preservation Treatment Material Suppliers & Contractors | 8.83% | \$ 19,791 | 0.00% | \$ - | 60.00% | \$ 11,875 |
| I/T | Implementation & Training | 16.63% | \$ 37,266 | 20.00% | \$ 7,453 | 40.00% | \$ 14,906 |
| Q/F | Quarterly, Final Reports | 17.08% | \$ 38,275 | 10.00% | \$ 3,827 | 70.00% | \$ 26,792 |
| | TOTAL | 100.00% | \$ 224,081 | | \$ 16,100 | | \$ 176,539 |

Blue text is entered once at the beginning of the project

Green text is updated ever quarter

Black text is automatically updated or static

Project Objectives:

The objectives of this research study are to:

- Develop a list of appropriate pavement preservation treatments for use on HMA, Composite and PCC pavements on the NJDOT state-maintained road network
- Develop and Implement Pavement Management System inputs for Pavement Preservation Treatments
- Develop NJDOT Specifications for each Pavement Preservation Treatment
- Document the Constraints on Pavement Preservation Treatments on Material Suppliers and Contractors
- Develop and Facilitate Pavement Preservation Treatment Training and Implementation

Project Abstract:

The research project will include a comprehensive literature search of National, industry and state Pavement Preservation Treatment sources and a National survey of State DOTs to summarize the use of Pavement Preservation Treatments used on high volume roads and the incorporation of these treatments into the State's Pavement Management System. The study will analyze the information to identify Pavement Preservation Treatments that are suitable for use in New Jersey or could be modified to be use in the State. The study will develop PMS inputs and analyses (triggers, condition resets, life extension, performance models and treatment costs) for Pavement Preservation Treatments. It will develop draft standalone construction specifications and construction procedures for selected Pavement Preservation Treatments. It will identify constraints on Pavement Preservation Treatment due to availability of material suppliers and contractors. It will identify opportunities to implement Pavement Preservation Treatments on pilot and demonstration projects to coincide with State-wide or regional training workshops and coordinate training from National and Industry Organizations.

1. Progress this quarter by task:

LITERATURE SEARCH AND SURVEYS –

The task is complete

The CAIT and Deighton team will continue to input reports and specification, mix designs and construction practices in the database and reports on NJDOT's network and provide training on the search capabilities.

Task 1 – ASSESSMENT OF THE APPROPRIATENESS OF PAVEMENT PRESERVATION TREATMENTS FOR USE ON STATE-MAINTAINED ROADS FOR BITUMINOUS, COMPOSITE, AND CONCRETE PAVEMENTS IN NEW JERSEY

The task is complete.

The treatment types that will be developed into specification and where necessary, mix designs are:

Pavement Preservation Treatments

| <u>HMA</u> | <u>PCC</u> |
|--------------------|----------------------|
| Crack Seal | Joint Sealing |
| Chip Seal | Diamond Grinding |
| Profile Milling | Partial Depth Repair |
| Cape Seal | Full Depth Repair |
| Thin Overlay | |
| Ultra-Thin Overlay | |
| Microsurfacing | |
| Slurry Seal | |
| Fog Seal | |

Pavement Rehabilitation and Reconstruction

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|-------------------------------|
| Hot In-place Recycling (HIR) |
| Cold In-place Recycling (CIR) |
| Full Depth Reclamation (FDR) |

Based on the reports, the Rutgers-CAIT and Deighton team recommend these Pavement Preservation Techniques be pursued in tasks 2-4. These will include variations on the treatment (e.g., with emulsion, asphalt-rubber, foamed asphalt, etc.)

Task 2 – NJDOT DRAFT SPECIFICATIONS AND CONSTRUCTION PROCEDURE FOR EACH APPROPRIATE PAVEMENT PRESERVATION TREATMENT

Work Completed this quarter:

Robert Blight provided the CAIT team with the NJDOT construction specification for Slurry Seal and Microsurfacing Treatment. The CAIT team reviewed the NJDOT construction specification for Slurry Seal and Microsurfacing Treatment.

The CAIT team contacted Wright Asphalt to explore the use of Tire Rubber Modified Slurry Seals/Microsurfacing. Wright Asphalt staff provided information for the development of a specification for the use of terminal-blend rubber modified asphalt for use in slurry seals and microsurfacing pavement treatments. A draft specification was developed for Tire Rubber Modified Slurry Seal and microsurfacing.

Greg Bitsko worked with Monmouth County to develop a Demonstration Project on a county route. Mike Marshall supplied their CIR with Foamed Asphalt lab equipment to the Rutgers Asphalt Paving Laboratory for the development of the mix design. Wirtgen staff provided training to county, NJDOT pavement and material staff, and Rutgers CAIT staff on the use of the equipment and the development of the mix design for CIR with Foamed Asphalt. The CIR with foamed asphalt mix design was developed for Monmouth County.

In addition, Mike Marshall has offered to supply a Wirtgen Reclaimer for use on the construction project. CAIT-Cherry Weber-Wirtgen will continue to develop the mix design and training for the Monmouth County project while waiting for NJDOT Local Aid funds.

The CAIT team facilitated the Full Depth Reclamation with cement project in Rockaway Township. The CAIT team collected HMA material from the existing pavement on the Bernards Township HIR project. A total of 16 full depth cores were taken before the HIR process was started. An additional 16 full depth cores will be taken after the project is completed to test the asphalt binder properties and HIR layer.

**Task 3 – EFFECTS OF CONSTRAINTS ON PAVEMENT PRESERVATION TREATMENTS
MATERIAL SUPPLIERS AND CONTRACTORS**

Work Completed this quarter:

-Task completion 60%-no progress to report this quarter

2. Proposed activities for next quarter by task:

**Task 1 – ASSESSMENT OF THE APPROPRIATENESS OF PAVEMENT PRESERVATION
TREATMENTS FOR USE ON STATE-MAINTAINED ROADS FOR BITUMINOUS,
COMPOSITE, AND CONCRETE PAVEMENTS IN NEW JERSEY**

The task is complete.

The CAIT and Deighton team will work with Deighton and NJDOT to review and modify the NJDOT PMS triggers, condition resets, performance models and budgets for Pavement Preservation Techniques.

**Task 2 – DEVELOP NJDOT DRAFT SPECIFICATIONS AND CONSTRUCTION PROCEDURE
FOR EACH APPROPRIATE PAVEMENT PRESERVATION TREATMENT**

The CAIT-Deighton team will meet with the Pavement PMS/Design unit and Bureau of Materials to refine the draft specifications and mix design procedures for Cold In-place Recycling with Foamed Asphalt and Asphalt Emulsion, HIR, Slurry Seal, Microsurfacing, and Tire Rubber Slurry Seal, and Tire Rubber Microsurfacing.

The CAIT-Deighton team will continue to review NJDOT specifications.

**Task 3 – EFFECT OF CONSTRAINTS ON PAVEMENT PRESERVATION TREATMENT
MATERIAL SUPPLIERS AND CONTRACTORS**

IMPLEMENTATION AND TRAINING

The CAIT team organized training to county, NJDOT pavement and material staff, and Rutgers CAIT staff on the use of the equipment and the development of the mix design for CIR with Foamed Asphalt.

The CAIT team organized the field demonstration of
FDR with cement in Rockaway Township
HIR in Bernards, NJ

The CAIT team provided training for Morris County, Spring Lake Township, Montclair Township, and Plainsboro on Pavement Preservation Treatments.

3. List of deliverables provided in this quarter by task (product date):

Draft specifications and mix design procedures for
Cold In-place Recycling using Foamed Asphalt and Asphalt Emulsion
Slurry Seal (review)
Microsurface (review)
Tire Rubber Slurry Seal
Tire Rubber Microsurface
HIR

4. Progress on Implementation and Training Activities:

The CAIT team has worked with Rockaway Township and the Portland Cement Association on implementation of FDR with Cement.

The CAIT team continues to work with Monmouth County to develop the demonstration project for CIR with Foamed Asphalt.

The CAIT team continues to work with Mike Polak on CIR with Asphalt Emulsion for Blairstown, NJ.

The CAIT team continues to work with Galleger Asphalt on HIR project for Bernards, NJ

5. Problems/Proposed Solutions:

The lack of survey returns should not cause a major problem.

The two SHRP final reports should provide sufficient summary of state practices.

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|------------------------------------|---------------|
| Total Project Budget | \$ 224,081.36 |
| Year 1 funding | \$92,410.79 |
| Year 2 funding | 131,670.57 |
| Modified Contract Amount: | |
| Total Project Expenditure to date | \$176,539 |
| % of Total Project Budget Expended | 78.7% |

NJDOT Research Project Manager Concurrence: _____ Date: _____