This report was sponsored by the New England Transportation Consortium, a cooperative effort of the Departments of Transportation and the Land Grant Universities of the six New England States, and the U.S. Department of Transportation’s Federal Highway Administration.

The contents of this report reflect the views of the author(s) who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Departments of Transportation or the Land Grant Universities of the six New England States, or the U.S. Department of Transportation’s Federal Highway Administration. This report does not constitute a standard, specification, or regulation.
NEW ENGLAND TRANSPORTATION CONSORTIUM

POLICY COMMITTEE
David B. Bernhardt, Commissioner, Maine Department of Transportation
George N. Campbell Jr., Commissioner, New Hampshire Department of Transportation
Matthew Hake, Division Administrator, FHWA, Vermont Division
Michael P. Lewis, Director of Transportation, Rhode Island Department of Transportation
Jeffrey B. Mullan, Secretary of Transportation & Chief Executive Officer, Massachusetts Department of Transportation
James P. Redeker, Acting Commissioner, Connecticut Department of Transportation
Brian Searles, Secretary of Transportation, Vermont Agency of Transportation

ADVISORY COMMITTEE

Transportation Agencies
William Ahearn, Materials & Research Engineer, Vermont Agency of Transportation
Ravi V. Chandran, District Engineer, District 1, Connecticut Department of Transportation
Christopher Jolly, Planning & Programming Engineer, FHWA, Vermont Division
Colin Franco, Associate Chief Engineer, Rhode Island Department of Transportation
Dale Peabody, Director of Transportation Research, Maine Department of Transportation
Stephen L. Pepin, Manager of Research and ITS Planning Programs, Massachusetts Department of Transportation
Glenn E. Roberts, Chief of Research, New Hampshire Department of Transportation

Universities
Lisa Aultman-Hall, Director, Transportation Research Center, University of Vermont
John Collura, Professor, University of Massachusetts, Amherst
David Gress, Professor, University of New Hampshire
K. Wayne Lee, Professor, University of Rhode Island
Roberto Lopez-Anido, Associate Professor, University of Maine
Adam Zofka, Assistant Professor, John Ivan, Associate Professor (Alternate), University of Connecticut

LEAD STATE
William Ahearn, Materials & Research Engineer
Vermont Agency of Transportation

COORDINATOR
Gerald M. McCarthy
University of Massachusetts Dartmouth
TABLE OF CONTENTS

A. INTRODUCTION ........................................................................................................1

B. 2011 HIGHLIGHTS .................................................................................................2

C. PROGRESS OF ACTIVE PROJECTS .......................................................................5

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>02-6 (Phase 2)</td>
<td>Sealing of Small Movement Bridge Expansion Joints – Phase II: Field Demonstration and Monitoring .........................5</td>
</tr>
<tr>
<td>03-6</td>
<td>Fix It First: Utilizing the Seismic Property Analyzer and MMLS to Develop Guidelines for the Use of Polymer Modified Thin Lift HMA vs. Surface Treatments ...............7</td>
</tr>
<tr>
<td>04-1 (Phase 2)</td>
<td>Recycling Asphalt Pavements Containing Modified Binders – Phase 2 .........................................................................9</td>
</tr>
<tr>
<td>05-1</td>
<td>Development of Supplemental Resistance Method for the Design of Drilled Shaft Rock Sockets ..................................10</td>
</tr>
<tr>
<td>05-5</td>
<td>Measurement of Adhesion Properties Between Topcoat Paint and Metallized/Galvanized Steel with Surface Energy Measurement Equipment .................................................11</td>
</tr>
<tr>
<td>06-3</td>
<td>Establishing Default Dynamic Modulus Values for New England ..................................................................................15</td>
</tr>
</tbody>
</table>

D. FINANCIAL STATUS OF PROJECTS ACTIVE DURING 2011 ........................................16
   D.1 Financial Status of Active Projects ...............................................................16
   D.2 Fund Balance ....................................................................................................17

E. REPORTS, PAPERS AND PRESENTATIONS ................................................................22
   E.1 Policies and Procedures ..................................................................................22
   E.2 Annual Reports ...............................................................................................22
   E.3 Reports, Papers, and Presentations (1988-1994) ..........................................22
   E.4 Reports, Papers, and Presentations (1995-2011) ..........................................25
A. INTRODUCTION

The New England Transportation Consortium (NETC) is a cooperative effort of the transportation agencies of the six New England States, the six New England state land grant universities and the Federal Highway Administration (FHWA). Through the Consortium, the states pool professional, academic and financial resources for transportation research leading to the development of improved methods for dealing with common problems associated with the administration, planning, design, construction, rehabilitation, reconstruction, operation and maintenance of the region’s transportation system. The Consortium’s activities are currently being managed by the University of Massachusetts, Dartmouth (UMass-D), with the Connecticut Department of Transportation (ConnDOT) acting as the Lead Agency.

The program is intended to supplement, not to replace, ongoing state and federal research activities and other national programs such as the National Cooperative Highway Research Program (NCHRP). To this end, a Memorandum of Understanding (MOU), establishing NETC has been consummated by the six New England state transportation agencies.

The following goals were established for NETC in order to focus the resolve of participating state transportation agencies and universities:

- Implementation of a three-pronged program for the New England region consisting of research and development; technology transfer; and education and training.
- Development of improved methods for dealing with common transportation problems.
- Providing an important source of trained professionals for employment in the Region.

NETC membership now extends to the following agencies: ConnDOT; Massachusetts Department of Transportation; Maine Department of Transportation; New Hampshire Department of Transportation (NHDOT); Rhode Island Department of Transportation (RIDOT); Vermont Agency of Transportation (VAOT); and, FHWA.

Each of the member state transportation agencies has designated a state university to participate with the state transportation agency in developing and conducting the transportation research program. The following universities have been designated as member universities: University of Connecticut, University of Maine, University of Massachusetts System, University of New Hampshire System, University of Rhode Island, and University of Vermont.

NETC was first established, and work began, in 1986 and, over the years, has undergone a transformative process wherein the management and administrative processes have been under the governance of various governmental and non-governmental organizations. With each change in leadership, the experiential and institutional lessons that have been learned were incorporated into the administration of the program. And so, at the current time, the collective experience of over two decades is now addressed and incorporated in
the administration of the NETC program.

In 1984, the Massachusetts Institute of Technology (MIT), the state transportation agencies of five New England states (Maine, Massachusetts, New Hampshire, Rhode Island and Vermont), the American Association of State Highway and Transportation Officials (AASHTO) and FHWA initiated the first transportation pooled fund (TPF) study, administered by RIDOT, to determine the feasibility of establishing a regional consortium. In 1985, the same group of organizations initiated a second TPF study, again administered by RIDOT, to develop a work program. From 1986 to 1995, various research projects were funded through the NETC program in five funding blocks called “Rounds”.

RIDOT was the Lead Agency for the first two pooled fund studies. For the five Rounds, state funds were transferred to AASHTO, the Lead Agency (i.e., Administrative Agency), through FHWA, and a single contract was effected between AASHTO and MIT, the Coordinator. MIT would then enter into a contract with the selected university for a particular research project.

In 1994, ConnDOT stated its intention to participate in NETC and offered to act as Lead Agency. During Federal Fiscal Year (FFY) 1994, FHWA assumed the Lead Agency designation to facilitate the transition process. MIT and AASHTO exited NETC, effective FFY1994. ConnDOT entered NETC, effective FFY1995, and was the Lead Agency until the Vermont Agency of Transportation assumed the responsibility in March 2010.

B. 2011 HIGHLIGHTS

1. THE FOLLOWING NETC-FUNDED TRANSPORTATION RESEARCH PROJECTS, VALUED AT $567,678 WERE ACTIVE AT NEW ENGLAND STATE UNIVERSITIES IN 2011:

   a) UNIVERSITY OF CONNECTICUT: $267,751
      - Dr. Ramesh Malla: “Sealing of Small Movement Bridge Expansion Joints - Phase II Field Installation and Monitoring” - $75,000
      - James Mahoney:
        1) “Recycling Asphalt Pavements Containing Modified Binders” - $82,751
        2) “Establish Default Dynamic Modulus Values for New England” - $110,000

   b) UNIVERSITY OF MAINE: $100,000
      - Dr. Thomas Sanford: “Develop Base Resistance Load Displacement Curves for the Design of Drilled Shaft Rock Sockets”

   c) UNIVERSITY OF MASSACHUSETTS AMHERST: $100,000
d) UNIVERSITY OF MASSACHUSETTS DARTMOUTH: $99,927
   - Dr. Walaa Mogawer: “NETC Research Challenge – Fix It First: Utilizing the
     Seismic Property Analyzer and MMLS to Develop Guidelines for the Use of
     Polymer Modified Thin Lift HMA vs. Surface Treatments”

e) UNIVERSITY OF NEW HAMPSHIRE: $150,295
   - Dr. Jo-Sias Daniel: “New England Verification of NCHRP 1-37A
     Mechanistic-Empirical Pavement Design”

f) UNIVERSITY OF RHODE ISLAND: $125,000
   - Dr. Sze Yang: “Measurement of Adhesion Properties between Topcoat Paint
     and Metalized/Galvanized Steel with ‘Surface-Energy’ Measurement
     Equipment”

2. TECHNOLOGY TRANSFER:

a) REQUESTS FOR INFORMATION AND TECHNICAL ASSISTANCE:
   The NETC Coordinator’s office responded to the following requests:
   - **Vermont Agency of Transportation, Structures Section:** Technical
     assistance re: selection of bolts to be used with the NETC Bridge Rail
   - **Federal Highway Administration, Structures PDP:** Copy of final report for
     NETC 05-1: “Develop Base resistance Load Displacement Curves for the
     Design of Drilled Shaft Rocket Sockets”
   - **Victaulic Corporation:** State DOT contacts interested in the use of non-
     metallic material for bridge construction
   - **George Roberts Co.:** How to obtain multiple state over-limit truck permits

b) NETC RESEARCH PROJECT REPORTS, TECHNICAL PAPERS AND
   PRESENTATIONS:
   - **Research Project Reports:** Findings from the following research projects
     were distributed to: New England’s State Transportation Agencies and State
     Universities, The American Association of State Highway and Transportation
     Officials’ Region 1 Research and Advisory Committee, The National
     Technical Information Service, and the US Department of Transportation’s
     National Transportation Library:
     - **NETC 02-6 Phase II:** “Sealing of Small Movement Bridge Expansion
       Joints – Phase 2: Field Demonstration and Monitoring”
     - **NETC 04-1:** “Recycling Asphalt Pavements Containing Modified
       Binders”
     - **NETC 05-1:** “Development of Supplemental Resistance Method for
       the Design of Drilled Shaft Rocket Sockets”
     - **NETC 06-3:** “Establishing Default Dynamic Modulus Values for New
       England”
- Technical Papers and Presentations:

3 OTHER:

a) NEW LEAD AGENCY:
   - Proposals for providing coordination services for the Consortium were accepted and evaluated. The Transportation Research Center at the University of Vermont was selected to provide the coordination services.

b) PROJECTS UNDER FHWA AGREEMENTS:
   - The FHWA CT-DIV office will continue to assist with the following studies officially started by the previous NETC lead state agency (CT DOT) that are not yet finished but for contractual reasons could not be given time extensions by the state of Connecticut: NETC 03-6, NETC 05-5, NETC 06-1. The funding to complete these 3 studies is presently reserved in SPR-3 (089).
C. PROGRESS OF ACTIVE PROJECTS

PROJECT NUMBER: 02-6 (Phase 2)

PROJECT TITLE: Sealing of Small Movement Bridge Expansion Joints - Phase II: Field Demonstration and Monitoring

PRINCIPAL INVESTIGATOR(S) & UNIVERSITY(S): Ramesh B. Malla, PI, and Montgomery Shaw, Co-PI, University of Connecticut

STATUS: Completed

AGREEMENT TERM: 8/1/2008 – 7/31/2011

ANTICIPATED COMPLETION: N/A

PROJECT OBJECTIVES:
The main objective of this NETC 02-6 (Phase 2) project is to test the behavior of the silicone foam sealant under various in-field conditions, make any necessary changes, and evaluate its performance while on an operating highway bridge in order to determine its cost effectiveness and durability. The project involves pre-field laboratory testing, field installation, post installation monitoring, report preparation, and specification preparation.

PROGRESS/ACCOMPLISHMENTS THROUGH NOVEMBER 30, 2011:
All tasks were completed

REPORTS/PAPERS PUBLISHED, PRESENTATIONS MADE RELATING TO THIS PROJECT FROM THE START OF THE PROJECT THROUGH NOVEMBER 30, 2011:


PROJECT NUMBER: 03-6

PROJECT TITLE: Fix It First: Utilizing the Seismic Property Analyzer and MMLS to Develop Guidelines for the Use of Polymer Modified Thin Lift HMA vs. Surface Treatments

PRINCIPAL INVESTIGATOR(S) & UNIVERSITY(S): Walaa S. Mogawer, PI, UMass Dartmouth; Jo Sias Daniel, Co-PI, University of New Hampshire

STATUS: Continuing

AGREEMENT TERM: 10/1/2009 – 9/30/2011

ANTICIPATED COMPLETION: 2/1/2012

PROJECT OBJECTIVES:
- Define and compare thin lift overlay maintenance mixes and surface treatments currently used in the New England States.
- Evaluate the thin lift overlay maintenance mixes and surface treatments currently used in the New England States and compare to those currently used worldwide.
- Determine the current New England DOT procedures for picking rehabilitation methodologies.
- Perform and evaluate non-destructive testing to better determine the optimum time to apply surface treatments or thin lift overlay mixes to the existing pavements in order to properly prioritize rehabilitation projects.
- Evaluate the benefits and drawbacks of using PMA thin lift mixes versus surface treatments with lab testing.
- Evaluate the cost comparisons between PMA thin lift mixes and surface treatments.

PROGRESS/ACCOMPLISHMENTS THROUGH NOVEMBER 30, 2011:
1. Thin lift mixtures prepared with six binders (modified and unmodified) using two sources of aggregates (crushed stone and gravel) were fabricated and delivered to UNH for evaluating the thermal cracking characteristics of the mixtures.

2. The low temperature cracking of the aforementioned mixtures were measured using the Asphalt Concrete Cracking Device (ACCD) at UMass Dartmouth.

3. The University of New Hampshire (UNH) began evaluating the thermal cracking characteristics of the thin lift mixtures prepared with six binders (unmodified and polymer modified) using two sources of aggregates. UNH is testing these mixtures in accordance with AASHTO T322 “Determining the Creep Compliance and Strength of Hot-Mix Asphalt (HMA) Using the Indirect Tensile Test Device” and the low temperature cracking properties of the mixtures are being determined from an analysis program (LTStress).
4. Commenced evaluation of the cracking characteristics of the thin lift mixtures using the Texas Overlay tester in accordance with Texas Specification Tex-248-F.

5. University of New Hampshire (UNH) continued evaluations of the thermal cracking characteristics of the thin lift mixtures and subsequent low temperature cracking properties determination from an analysis program (LTStress).

REPORTS/PAPERS PUBLISHED, PRESENTATIONS MADE RELATING TO THIS PROJECT FROM THE START OF THE PROJECT THROUGH NOVEMBER 30, 2011: None
PROJECT NUMBER: 04-1 (Phase 2)

PROJECT TITLE: Recycling Asphalt Pavements Containing Modified Binders - Phase 2

PRINCIPAL INVESTIGATOR(S) & UNIVERSITY(S): James Mahoney, Connecticut Transportation Institute, University of Connecticut

STATUS: Completed


ANTICIPATED COMPLETION: N/A

PROJECT OBJECTIVES:
Phase 2

The objectives of the second Phase of this project will attempt to address incompatibilities that may arise when RAP is used in a new HMA pavement that contains a virgin modified asphalt binder. This Phase of the project will also provide guidance as to the proper amount of RAP that can be added to the HMA without causing problems. In addition, the interaction of polyphosphoric acid modified virgin asphalts and the aggregates in the RAP will also be tested to determine if there is a negative impact on the HMA mixes performance.

PROGRESS/ACCOMPLISHMENTS THROUGH NOVEMBER 30, 2011:
The research team completed the final report and submitted the final report to NETC. All tasks were completed.

REPORTS/PAPERS PUBLISHED, PRESENTATIONS MADE RELATING TO THIS PROJECT FROM THE START OF THE PROJECT THROUGH NOVEMBER 30, 2011:


PROJECT NUMBER: 05-1

PROJECT TITLE: Development of Supplemental Resistance Method for the Design of Drilled Shaft Rock Sockets

PRINCIPAL INVESTIGATOR(S) & UNIVERSITY(S): Thomas C. Sanford, University of Maine

STATUS: Completed


ANTICIPATED COMPLETION: N/A

PROJECT OBJECTIVES:
The objective of this study is to produce a drilled shaft design method for evaluating the now unused side shear or end bearing to supplement the AASHTO allowable load. The magnitude of unused side shear or end bearing corresponding to the AASHTO allowable load will be the magnitude that occurs at the same shaft movement as the allowable load. This method should reflect different rock socket geometry and different rock properties typical of New England. The method should be based on past load tests and be robust and easy-to-use.

PROGRESS/ACCOMPLISHMENTS THROUGH NOVEMBER 30, 2011:
All tasks were completed.

REPORTS/PAPERS PUBLISHED, PRESENTATIONS MADE RELATING TO THIS PROJECT FROM THE START OF THE PROJECT THROUGH NOVEMBER 30, 2011:
PROJECT NUMBER: 05-5

PROJECT TITLE: Measurement of Adhesion Properties Between Topcoat Paint and Metallized/Galvanized Steel with Surface Energy Measurement Equipment

PRINCIPAL INVESTIGATOR(S) & UNIVERSITY(S): Sze C. Yang, PI, and K. Wayne Lee, Co-PI, University of Rhode Island

STATUS: Continuing


ANTICIPATED COMPLETION: 2/1/2012

PROJECT OBJECTIVES:

1. Compare the adhesion properties of NEPCOAT-approved topcoat paint over metallizing to topcoat paint over galvanizing using specialized “surface-energy” measuring lab methods. As a control the adhesion properties of topcoat paint over zinc primer painted steel substrates will also be measured.

2. Investigate various factors affecting the adhesion of topcoat paint over galvanizing.

3. Report and recommend practices which produce the best adhesion of NEPCOAT-approved topcoat paints over metalized and particularly galvanized steel surfaces.

PROGRESS/ACCOMPLISHMENTS THROUGH NOVEMBER 30, 2011:

The third phase of the research work was conducted according to the Work Plan. The objective of this phase is to fabricate and test 16 painted test panels that use zinc rich epoxy paint as the primer layer. The purpose is to provide a reference data set for comparison with the other 4 groups of coated panels fabricated and tested in the first two phases of this research project.

This group of panels was produced during the period of 6/20/2011 to 6/30/2011 at Boyd Coatings Research. The 16 steel test panels were blast cleaned according to SSPC-SP10 near-white blast cleaning, followed by spray painting of zinc rich primers for 4 different paint systems specified in the Work Plan. After the top coatings (polyurethane) were cured for three weeks, we performed pull-off strength tests and X-cut adhesion tests. A preliminary conclusion from our test data is that the paint adhesion to steel is very good for 3 out of 4 paint systems, and has moderately good performance for 1 of the paint systems. We concluded that the average pull-off strength of the previously tested 4 groups of test panels are comparable with the zinc rich primer coated test panels tested in this phase of study. The full details will be reported in the next Technical Committee meeting and in the first draft of the final report.
REPORTS/PAPERS PUBLISHED, PRESENTATIONS MADE RELATING TO THIS PROJECT FROM THE START OF THE PROJECT THROUGH NOVEMBER 30, 2011:
PROJECT NUMBER: 06-1


PRINCIPAL INVESTIGATOR(S) & UNIVERSITY(S): Jo Sias Daniel, PI, University of New Hampshire; Ghassan R. Chehab, Co-PI, Pennsylvania State University

STATUS: Continuing

AGREEMENT TERM: 10/1/2009 - 9/30/2011

ANTICIPATED COMPLETION: 2/1/2012

PROJECT OBJECTIVES:

- Determine the design and data collection methods, material tests, and testing equipment currently in use by each state.
- Identify the Level 2 and Level 3 design guide inputs for which regional or local values are required.
- Provide state specific recommendations on implementation of the MEPDG including changes in data collection & measurement, equipment needs, training, and anticipated benefits.
- Provide specific recommendations for regional and local calibration of the MEPDG by identifying appropriate field test & monitoring sites, data to be collected, and perform local calibrations if appropriate field data is available.

PROGRESS/ACCOMPLISHMENTS THROUGH NOVEMBER 30, 2011:

1. Finalized the M-E PDG sensitivity analysis for Level 3 in Massachusetts.
Table 1. Ranking of Input Variable Significance for MA Level 3 Sensitivity Analysis.

<table>
<thead>
<tr>
<th>Most Significant Variable</th>
<th>Bottom-Up Cracking</th>
<th>Top-Down Cracking</th>
<th>AC Rutting</th>
<th>Total Rutting</th>
<th>IRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMA thickness</td>
<td>HMA thickness</td>
<td>Operational speed</td>
<td>Operational speed</td>
<td>Initial IRI</td>
<td></td>
</tr>
<tr>
<td>HMA air voids</td>
<td>Operational speed</td>
<td>HMA binder grade</td>
<td>HMA binder grade</td>
<td>HMA CTC</td>
<td></td>
</tr>
<tr>
<td>Traffic distribution</td>
<td>HMA air voids</td>
<td>Climate</td>
<td>Traffic distribution</td>
<td>Subgrade type/modulus</td>
<td></td>
</tr>
<tr>
<td>Operational speed</td>
<td>Traffic distribution</td>
<td>Traffic distribution</td>
<td>HMA thickness</td>
<td>Operational speed</td>
<td></td>
</tr>
<tr>
<td>HMA binder grade</td>
<td>HMA binder grade</td>
<td>AADTT value</td>
<td>Climate</td>
<td>HMA binder grade</td>
<td></td>
</tr>
</tbody>
</table>

| Least Significant Variable | AADTT value | Subgrade type/modulus | HMA mix gradation | AADTT value | Traffic distribution |

2. Prepared the final draft of sensitivity analyses in Vermont (Level 2 and 3), New York (Level 3) and Massachusetts (Level 3).

3. Prepared state specific conclusions and recommendations.

4. Prepared recommendations for future work.

REPORTS/PAPERS PUBLISHED, PRESENTATIONS MADE RELATING TO THIS PROJECT FROM THE START OF THE PROJECT THROUGH NOVEMBER 30, 2011:


PROJECT NUMBER: 06-3

PROJECT TITLE: Establishing Default Dynamic Modulus Values for New England

PRINCIPAL INVESTIGATOR(S) & UNIVERSITY(S): James Mahoney, PI, University of Connecticut

STATUS: Completed

INITIAL AGREEMENT DATE: 7/1/2008 – 4/30/2010

ANTICIPATED COMPLETION: N/A

PROJECT OBJECTIVES: RESEARCH OBJECTIVE:
The objective of this research is to test commonly used HMA mixtures throughout New England to determine their respective moduli. The results of this testing will be:

• Used to determine if there is a significant difference between dynamic modulus values for materials from throughout the region.
• Used to compare the dynamic modulus of lab produced mixes and plant produced mixes.
• Compared against the master curves derived by performing the reduced testing as outlined by Bonaquist and Christensen. This will reduce the number of temperatures as well as the number of frequencies tested. If this process correlates well with the full set testing master curves, it will reduce the amount of time required to conduct the testing.
• Compared against the predicted moduli obtained by using the Witczak Predictive Model and the Hirsh Model. If there is a strong correlation between the tested and predicted values then this would provide a reasonable value for the dynamic modulus for most HMA designs in the 2002 Pavement Design Guide.

PROGRESS/ACOMPLISHMENTS THROUGH NOVEMBER 30, 2011:
All tasks were completed.

REPORTS/PAPERS PUBLISHED, PRESENTATIONS MADE RELATING TO THIS PROJECT FROM THE START OF THE PROJECT THROUGH NOVEMBER 30, 2011:

## D. FINANCIAL STATUS OF PROJECTS ACTIVE DURING 2011

### D.1 FINANCIAL STATUS OF ACTIVE PROJECTS:

**Table 1: Financial Status of Projects Active During 2011**  
(As of November 30, 2011)

<table>
<thead>
<tr>
<th>NO.</th>
<th>PROJECT TITLE, PI, UNIVERSITY</th>
<th>APPROVED BUDGET</th>
<th>INVOICES APPROVED FOR PAYMENT</th>
<th>PROJECT BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>02-6</td>
<td>Sealing of Small Movement Bridge Expansion Joints - Phase II: Field Demonstration and Monitoring, R. Malla, M. Shaw, University of Connecticut</td>
<td>$75,000.00</td>
<td>$74,558.62</td>
<td>$441.38</td>
</tr>
<tr>
<td>03-6</td>
<td>Fix It First: Utilizing the Seismic Property Analyzer and MMLS to Develop Guidelines for the Use of Polymer Modified Thin Lift HMA vs. Surface Treatments, W. Mogawer, University of Massachusetts Dartmouth, J. Daniel, University of New Hampshire (under FHWA agreement)</td>
<td>$45,842.00</td>
<td>Available from FHWA-CT Division Office</td>
<td>Available from FHWA-CT Division Office</td>
</tr>
<tr>
<td>04-1</td>
<td>Recycling Asphalt Pavements Containing Modified Binders - Phase 2, J. Mahoney, University of Connecticut</td>
<td>$82,751.00</td>
<td>$82,750.99</td>
<td>$0.01</td>
</tr>
<tr>
<td>05-1</td>
<td>Development of Supplemental Resistance Method for the Design of Drilled Shaft Rock Sockets, T. Sandford, University of Maine (under FHWA agreement)</td>
<td>$47,755.00</td>
<td>$47,755.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>05-5</td>
<td>Measurement of Adhesion Properties Between Topcoat Paint and Metallized/Galvanized Steel with Surface Energy Measurement Equipment, S. Yang, K. W. Lee, University of Rhode Island (under FHWA agreement)</td>
<td>$20,012.00</td>
<td>Available from FHWA-CT Division Office</td>
<td>Available from FHWA-CT Division Office</td>
</tr>
<tr>
<td>06-1</td>
<td>New England Verification of NCHRP 1-37A Mechanistic-Empirical Pavement Design Guide with Level 2 &amp; 3 Inputs, J. Daniel, University of New Hampshire (under FHWA agreement)</td>
<td>$68,085.00</td>
<td>Available from FHWA-CT Division Office</td>
<td>Available from FHWA-CT Division Office</td>
</tr>
<tr>
<td>06-3</td>
<td>Establishing Default Dynamic Modulus Values for New England, J. Mahoney, University of Connecticut</td>
<td>$109,787.00</td>
<td>$109,787.00</td>
<td>$0.00</td>
</tr>
</tbody>
</table>
## D.2 NETC FUND BALANCE

**As of November 16, 2011**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>OBLIGATION</th>
<th>ENCUMB/EXPEND.</th>
<th>INVOICE</th>
<th>BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unexpended Balance of NETC funds from AASHTO as of 6/5/95 (Per AASHTO memo 12/4/95)</strong></td>
<td>450,000.00</td>
<td>58,761.32</td>
<td>FINAL</td>
<td>524,015.75</td>
</tr>
<tr>
<td><strong>Member Obligations 1994 = 6 X $75,000</strong></td>
<td>450,000.00</td>
<td>58,761.32</td>
<td>FINAL</td>
<td>524,015.75</td>
</tr>
<tr>
<td><strong>Coord./Admin. of NETC: Calendar Year 1995 Bdgt. = $73042</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Continued Projects:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Construction Costs of New England Bridges-Phase II</td>
<td>39,500.00</td>
<td>16,000.00</td>
<td>FINAL/CLOSED</td>
<td>484,515.75</td>
</tr>
<tr>
<td>- Tire Chips as Lightweight Backfill-Phase II: Full-Scale Testing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Supplemental Funding)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Bridge Rail Crash Test - Phase II: Sidewalk-Mounted Rail</td>
<td>134,127.00</td>
<td>6,752.57</td>
<td>FINAL/CLOSED</td>
<td>327,636.18</td>
</tr>
<tr>
<td>- New England Vehicle Classification and Truck Weight Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Member Obligations 1995 = 7 X $75,000</strong></td>
<td>525,000.00</td>
<td>852,636.18</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>&quot;95&quot; Project Series:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95-1: Use of Tire Chips/Soil Mixtures to Limit Pavement Damage</td>
<td>75,000.00</td>
<td>120,812.12</td>
<td>FINAL/CLOSED</td>
<td>777,636.18</td>
</tr>
<tr>
<td>of Paved Roads</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95-2: Suitability of Non-Hydric Soils for Wetland Mitigation</td>
<td>39,867.70</td>
<td>61,705.61</td>
<td>FINAL/TERT.</td>
<td>355,250.75</td>
</tr>
<tr>
<td>95-3: Implementation and Evaluation of Traffic Marking Recesses</td>
<td>106,124.00</td>
<td>224,901.80</td>
<td>FINAL/CLOSED</td>
<td>448,126.75</td>
</tr>
<tr>
<td>for Application of Thermoplastic Pavement Markings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>on Modified Open Graded Mixes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95-5: Buried Joints in Short Span Bridges</td>
<td>61,705.61</td>
<td>120,812.12</td>
<td>FINAL/CLOSED</td>
<td>616,956.36</td>
</tr>
<tr>
<td>95-6: Guidelines for Ride Quality Acceptance of Pavements</td>
<td>106,124.00</td>
<td>224,901.80</td>
<td>FINAL/CLOSED</td>
<td>448,126.75</td>
</tr>
<tr>
<td><strong>&quot;94&quot; Project Series:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94-1: Structural Analysis of New England Subbase Materials and</td>
<td>10,057.38</td>
<td>110,057.38</td>
<td>FINAL/CLOSED</td>
<td>339,069.37</td>
</tr>
<tr>
<td>Structures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94-2: Nondestructive Testing of Reinforced Concrete Bridges</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using Radar Imaging Techniques</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Member Obligations 1996 = 6 X $75,000</strong></td>
<td>450,000.00</td>
<td>564,167.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Coord./Admin. of NETC: Calendar Year 1996; Bdgt. = $75,000</strong></td>
<td>69,123.85</td>
<td>77,244.35</td>
<td>FINAL</td>
<td>495,043.72</td>
</tr>
<tr>
<td><strong>Member Obligations 1997 = 7 X $75,000</strong></td>
<td>450,000.00</td>
<td>945,043.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Coord./Admin. of NETC: Calendar Year 1997; Bdgt. = $82,494</strong></td>
<td>450,000.00</td>
<td>945,043.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>&quot;94&quot; Project Series:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94-3: Procedures for the Evaluation of Sheet Membrane Waterproofing</td>
<td>67,002.00</td>
<td>135,000.00</td>
<td>FINAL/CLOSED</td>
<td>506,613.27</td>
</tr>
<tr>
<td>Note: Project administered by VAOT under TPF Project No. SPB-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94-4: Durability of Concrete Crack Repair Systems</td>
<td>72,036.04</td>
<td>9,551.06</td>
<td>FINAL</td>
<td>497,062.21</td>
</tr>
<tr>
<td><strong>&quot;96&quot; Project Series:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>96-1: SUPERPAVE Implementation</td>
<td>60,139.25</td>
<td>22,028.41</td>
<td>FINAL/TERT.</td>
<td>641,613.27</td>
</tr>
<tr>
<td>96-2: Optimizing GPS Use in Transportation Projects</td>
<td>27,008.81</td>
<td>67,002.00</td>
<td>FINAL/CLOSED</td>
<td>800,797.37</td>
</tr>
<tr>
<td>96-3: Effectiveness of Fiber Reinforced Composites as Protective</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coverings for Bridge Elements, etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>T2 (per 12/29/97 Adv. Committee Mtg.) for 1998 = $10,000</strong></td>
<td>80,422.65</td>
<td>9,551.06</td>
<td>FINAL</td>
<td>416,639.56</td>
</tr>
<tr>
<td><strong>Coord./Admin. of NETC: Calendar Year 1998; Bdgt. = $73,021</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>**Refund Check (No. 15-663337), for CY '98 Management of NETC, from</td>
<td>336.00</td>
<td>416,975.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UConn DSP; Ref. 7/19/00 letter to J. Sime from J. Devereux, UConn DSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Member Obligations 1998 = 6 X $75,000</strong></td>
<td>450,000.00</td>
<td>866,975.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>&quot;97&quot; Project Series:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>97-1: A Portable Method for Determining Chloride Concentration on</td>
<td>96,669.50</td>
<td>96,669.50</td>
<td>FINAL/CLOSED</td>
<td>770,306.06</td>
</tr>
<tr>
<td>Roadway Pavements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>97-2: Performance Evaluation &amp; Economic Analysis</td>
<td>90,667.79</td>
<td>90,667.79</td>
<td>FINAL/CLOSED</td>
<td>679,638.27</td>
</tr>
<tr>
<td>of Durability Enhancing Admixtures, etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>97-3: Determining Properties, Standards &amp; Performance</td>
<td>108,318.73</td>
<td>108,318.73</td>
<td>FINAL/CLOSED</td>
<td>571,319.54</td>
</tr>
<tr>
<td>of Wood Waste Compost, etc.:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alloc. to ConnDOT for Constr. Costs of Test Site (Approved 1/21/99 Ballot)</td>
<td>10,700.00</td>
<td>10,700.00</td>
<td>FINAL/CLOSED</td>
<td>516,765.60</td>
</tr>
<tr>
<td>97-4: Early Distress of Open-Graded Friction Course</td>
<td>57,495.71</td>
<td>57,495.71</td>
<td>FINAL/CLOSED</td>
<td>459,269.89</td>
</tr>
<tr>
<td>Travel Tech. Comm. (Aug. 98 tel. poll) for 1998 = $5,000</td>
<td>0.00</td>
<td>459,269.89</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### D.2 NETC FUND BALANCE

**As of November 16, 2011**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>OBLIGATION</th>
<th>ENCUMB/ EXPEND.</th>
<th>INVOICE</th>
<th>CUM. BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Member Obligations 1999 = 6 X $75,000</strong></td>
<td>450,000.00</td>
<td>909,269.89</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Coord./Admin. of NETC: Calendar Year 1999:</strong></td>
<td></td>
<td></td>
<td>909,269.89</td>
<td></td>
</tr>
<tr>
<td>- Administration</td>
<td>= $77,666</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Technology Transfer &amp; Technical Committee</td>
<td>Travel = $20,400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Total</td>
<td>= $98,066</td>
<td>79,101.20</td>
<td>FINAL</td>
<td>830,168.69</td>
</tr>
<tr>
<td><strong>99</strong> Project Series:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>99-1: Bridge Rail Transitions</td>
<td>240,000.00</td>
<td>FINAL/CLOSED</td>
<td>590,168.69</td>
<td></td>
</tr>
<tr>
<td>99-2: Evaluation of Asphaltic Expansion Joints</td>
<td>62,234.76</td>
<td>FINAL/CLOSED</td>
<td>527,933.93</td>
<td></td>
</tr>
<tr>
<td>99-3: Bridge Scour Monitoring Systems</td>
<td>78,523.32</td>
<td>FINAL/CLOSED</td>
<td>449,410.61</td>
<td></td>
</tr>
<tr>
<td>99-4: Quantifying Roadside Rest Area Usage</td>
<td>44,857.00</td>
<td>FINAL/CLOSED</td>
<td>404,553.61</td>
<td></td>
</tr>
<tr>
<td>99-6: The Effects of Concrete Removal Operations on Adjacent Concrete That Is to Remain</td>
<td>96,008.36</td>
<td>FINAL/CLOSED</td>
<td>830,168.69</td>
<td></td>
</tr>
<tr>
<td><strong>Member Obligations 2000 = 6 X $100,000</strong></td>
<td>600,000.00</td>
<td>908,545.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Coord./Admin. of NETC: Calendar Year 2000:</strong></td>
<td></td>
<td></td>
<td>908,545.25</td>
<td></td>
</tr>
<tr>
<td>- Administration</td>
<td>= $85,788</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Technology Transfer &amp; Technical Committee</td>
<td>Travel = $16,800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Total</td>
<td>= $102,588</td>
<td>816,645.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>00</strong> Project Series:</td>
<td></td>
<td></td>
<td>816,645.88</td>
<td></td>
</tr>
<tr>
<td>00-1: Ground-Based Imaging and Data Acquisition Systems for Roadway Inventories in New England - A Synthesis of Practice</td>
<td>31,251.92</td>
<td>FINAL/CLOSED</td>
<td>785,393.96</td>
<td></td>
</tr>
<tr>
<td>00-2: Evaluation of Permeability of Superpave Mixes</td>
<td>95,499.16</td>
<td>FINAL/CLOSED</td>
<td>689,894.80</td>
<td></td>
</tr>
<tr>
<td>00-3: Composite Reinforced Timber Guard Rail - Phase I: Design, Fabrication and Testing</td>
<td>81,889.38</td>
<td>FINAL/CLOSED</td>
<td>607,905.42</td>
<td></td>
</tr>
<tr>
<td>00-4: Falling Weight Deflectometer Study</td>
<td>100,000.00</td>
<td>FINAL/CLOSED</td>
<td>507,905.42</td>
<td></td>
</tr>
<tr>
<td>00-5: Guard Rail Testing - Modified eccentric Loading Terminal at NCHRP 350 TL2</td>
<td>61,287.00</td>
<td>FINAL/CLOSED</td>
<td>446,618.42</td>
<td></td>
</tr>
<tr>
<td>00-6: Implementation of Visualization Technologies to Create Simplified Presentations Within Highway agencies to be Used at Public Hearings</td>
<td>74,914.49</td>
<td>FINAL/CLOSED</td>
<td>371,703.93</td>
<td></td>
</tr>
<tr>
<td>00-7: A Complete Review of Incident Detection Algorithms and Their Deployment: What Works and What Doesn’t</td>
<td>45,369.94</td>
<td>FINAL/CLOSED</td>
<td>326,334.48</td>
<td></td>
</tr>
<tr>
<td>00-8: Performance and Effectiveness of A Thin Pavement Section Using Geogrids and Drainage geocomposites in A Cold Region</td>
<td>150,000.00</td>
<td>FINAL/CLOSED</td>
<td>176,334.48</td>
<td></td>
</tr>
<tr>
<td><strong>Member Obligations 2001 = 6 X $100,000</strong></td>
<td>600,000.00</td>
<td>776,334.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Coord./Admin. of NETC: Calendar Year 2001:</strong></td>
<td></td>
<td></td>
<td>776,334.48</td>
<td></td>
</tr>
<tr>
<td>- Administration</td>
<td>= $89,448</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Technology Transfer &amp; Technical Committee</td>
<td>Travel = $16,800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Total</td>
<td>= $106,248</td>
<td>671,949.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>01</strong> Project Series:</td>
<td></td>
<td></td>
<td>671,949.13</td>
<td></td>
</tr>
<tr>
<td>01-1: Advanced Composite Materials for New England’s Transportation Infrastructure - Technology Transfer Phase I</td>
<td>47,559.27</td>
<td>FINAL/CLOSED</td>
<td>624,389.86</td>
<td></td>
</tr>
<tr>
<td>01-2: Development of A Testing Protocol for Quality Control/Quality Assurance of Hot Mix Asphalt</td>
<td>80,000.00</td>
<td>FINAL/CLOSED</td>
<td>510,103.68</td>
<td></td>
</tr>
<tr>
<td>01-3: Design of Superpave MMA for Low Volume Roads</td>
<td>120,324.15</td>
<td>FINAL/CLOSED</td>
<td>398,779.53</td>
<td></td>
</tr>
<tr>
<td>01-6: Field Evaluation of A New Compaction Device</td>
<td>49,944.50</td>
<td>FINAL/CLOSED</td>
<td>348,835.03</td>
<td></td>
</tr>
<tr>
<td><strong>Member Obligations 2002 = 6 X $100,000</strong></td>
<td>600,000.00</td>
<td>948,835.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NY DOT Obligation = $52,500</strong></td>
<td>52,500.00</td>
<td>1,001,335.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Coord./Admin. OF NETC: Calendar Year 2002</strong></td>
<td></td>
<td>109,207.12</td>
<td>FINAL</td>
<td>892,127.91</td>
</tr>
</tbody>
</table>

As of November 16, 2011

(D.2 NETC FUND BALANCE (Cont'd))
<table>
<thead>
<tr>
<th>ITEM</th>
<th>OBLIGATION</th>
<th>ENCUMB/EXPEND</th>
<th>INVOICE</th>
<th>CUM. BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>02</strong> Project Series:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02-1: Relating Hot Mix Asphalt Pavement Density to Performance</td>
<td>103,260.73</td>
<td>FINAL/CLOSED</td>
<td>788,867.18</td>
<td></td>
</tr>
<tr>
<td>02-2: Formulate Approach for 511 Implementation in New England Phase 1</td>
<td>48,158.19</td>
<td>FINAL/CLOSED</td>
<td>740,708.99</td>
<td></td>
</tr>
<tr>
<td>02-3: Establish Subgrade Support Values (Mr) for Typical Soils in New England</td>
<td>32,813.16</td>
<td>FINAL/CLOSED</td>
<td>707,895.83</td>
<td></td>
</tr>
<tr>
<td>02-4: Determination of Moisture Content of De-Icing Salt at Point of Delivery</td>
<td>79,936.86</td>
<td>FINAL/CLOSED</td>
<td>627,958.97</td>
<td></td>
</tr>
<tr>
<td>02-5: Sealing of Expansion Joints - Phase 1</td>
<td>9,679.99</td>
<td>FINAL/CLOSED</td>
<td>608,278.98</td>
<td></td>
</tr>
<tr>
<td>02-6: Calibrating Traffic Simulation Models to Inclement Weather Conditions with Applications to Arterial Coordinated Signal Systems</td>
<td>74,037.57</td>
<td>FINAL/CLOSED</td>
<td>459,258.60</td>
<td></td>
</tr>
<tr>
<td>02-7: Formulate Approach for 511 Implementation in New England Phase 2</td>
<td>54,724.71</td>
<td>FINAL/CLOSED</td>
<td>404,533.89</td>
<td></td>
</tr>
<tr>
<td>02-8: Intelligent Transportation Systems Applications to Ski Resorts in New England</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>03</strong> Project Series:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03-1: Ability of Wood Fiber Materials to Attenuate Heavy Metals Associated with Highway Runoff</td>
<td>70,690.16</td>
<td>FINAL/CLOSED</td>
<td>854,988.54</td>
<td></td>
</tr>
<tr>
<td>03-2: Field Studies of Concrete Containing Salts of An Alkenyl-Substituted Succinic Acid</td>
<td>133,385.33</td>
<td>FINAL/CLOSED</td>
<td>721,603.21</td>
<td></td>
</tr>
<tr>
<td>03-3: Feasibility Study and Design of An Erosion Control Laboratory in New England Phase 2</td>
<td>20,682.70</td>
<td>FINAL/CLOSED</td>
<td>700,920.51</td>
<td></td>
</tr>
<tr>
<td>03-4: Measuring Pollutant Removal Efficiencies of Storm Water Treatment Units</td>
<td>80,000.00</td>
<td>FINAL/CLOSED</td>
<td>607,784.71</td>
<td></td>
</tr>
<tr>
<td>03-5: Evaluation of Field Permeameter As A Longitudinal Joint Quality Control Indicator</td>
<td>77,318.43</td>
<td>FINAL/CLOSED</td>
<td>530,466.28</td>
<td></td>
</tr>
<tr>
<td>03-6 (FHWA): Fix It First: Utilizing the Seismic Property Analyzer &amp; MMLS to Develop Guidelines for the Use of Polymer Modified Thin Lift HMA vs. Surface Treatments: Cont’d as 03-6 (FHWA)</td>
<td>54,085.45</td>
<td>FINAL</td>
<td>476,380.83</td>
<td></td>
</tr>
<tr>
<td>03-6 (Alt.): Basalt Fiber Reinforced Polymer Composites</td>
<td>64,092.29</td>
<td>FINAL/CLOSED</td>
<td>366,446.54</td>
<td></td>
</tr>
<tr>
<td><strong>04</strong> Project Series:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04-1: Recycling Asphalt Pavements Containing Modified Binders - Phase I</td>
<td>27,166.58</td>
<td>FINAL</td>
<td>878,267.09</td>
<td></td>
</tr>
<tr>
<td>04-2: Driver-Eye-Movement-Based Investigation for Improving Work Zone Safety</td>
<td>70,387.66</td>
<td>FINAL/CLOSED</td>
<td>725,128.44</td>
<td></td>
</tr>
<tr>
<td>04-3: Estimating the Magnitude of Peak Flows For Steep Gradient Streams in New England; Cont’d as 04-3 (FHWA)</td>
<td>98,025.49</td>
<td>FINAL</td>
<td>605,124.95</td>
<td></td>
</tr>
<tr>
<td>04-4: Determining the Effective PG Grade of Binder in RAP Mixes</td>
<td>130,876.00</td>
<td>FINAL/CLOSED</td>
<td>474,248.95</td>
<td></td>
</tr>
<tr>
<td>04-5: Network-Based Highway Crash Prediction Using Geographic Information Systems</td>
<td>129,020.04</td>
<td>FINAL/CLOSED</td>
<td>345,228.91</td>
<td></td>
</tr>
<tr>
<td><strong>05</strong> Project Series:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05-1: Develop Base Resistance Load-Displacement Curves for The Design of Drilled Shaft Rock Sockets: Cont’d as 05-1 (FHWA)</td>
<td>52,155.25</td>
<td>FINAL</td>
<td>814,139.41</td>
<td></td>
</tr>
<tr>
<td>05-2: Enhancing the Reflectivity of Concrete Barriers Phase 1</td>
<td>48,090.00</td>
<td>FINAL</td>
<td>718,294.41</td>
<td></td>
</tr>
<tr>
<td>05-3: Develop Base Resistance Load-Displacement Curves for The Design of Drilled Shaft Rock Sockets</td>
<td>47,155.00</td>
<td>FINAL/CLOSED</td>
<td>766,384.41</td>
<td></td>
</tr>
</tbody>
</table>

**Member Obligations 2003 = 6 X $100,000**

<table>
<thead>
<tr>
<th>OBLIGATION</th>
<th>ENCUMB/EXPEND</th>
<th>INVOICE</th>
<th>CUM. BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>600,000.00</td>
<td>1,004,533.89</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Coord./Admin. Of NETC Calendar Year 2003 = $124,258**

| Coord./Admin. Of NETC Calendar Year 2003 | 118,855.19 | FINAL | 925,678.70 |

**Member Obligations 2004 = 6 X $100,000**

<table>
<thead>
<tr>
<th>OBLIGATION</th>
<th>ENCUMB/EXPEND</th>
<th>INVOICE</th>
<th>CUM. BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>52,000.00</td>
<td>1,018,446.54</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Coord./Admin. Of NETC Calendar Year 2004 = $126,559**

| Coord./Admin. Of NETC Calendar Year 2004 | 113,012.87 | FINAL | 905,433.67 |

**Member Obligations 2005 = 6 X $100,000**

<table>
<thead>
<tr>
<th>OBLIGATION</th>
<th>ENCUMB/EXPEND</th>
<th>INVOICE</th>
<th>CUM. BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>50,000.00</td>
<td>995,228.91</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Coord./Admin. Of NETC Calendar Year 2005 = $130,528**

| Coord./Admin. Of NETC Calendar Year 2005 | 128,934.25 | FINAL | 866,294.66 |

**05** Project Series:

<p>| 05-1: Develop Base Resistance Load-Displacement Curves for The Design of Drilled Shaft Rock Sockets: Cont’d as 05-1 (FHWA) | 52,155.25 | FINAL | 814,139.41 |
| 05-2: Enhancing the Reflectivity of Concrete Barriers Phase 1 | 48,090.00 | FINAL | 718,294.41 |
| 05-3: Develop Base Resistance Load-Displacement Curves for The Design of Drilled Shaft Rock Sockets | 47,155.00 | FINAL/CLOSED | 766,384.41 |</p>
<table>
<thead>
<tr>
<th>ITEM</th>
<th>OBLIGATION</th>
<th>ENCUMB/EXPEND.</th>
<th>INVOICE</th>
<th>CUM. BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>05-3: Analysis of Roundabout Operational Characteristics Utilizing Microscopic Simulation Models</td>
<td>75,000.00</td>
<td></td>
<td>572,294.41</td>
<td></td>
</tr>
<tr>
<td>05-5: Measurement of Work of Adhesion Between Paint and Metalized/Galvanized Steel</td>
<td>104,987.55</td>
<td>571,294.41</td>
<td>466,306.86</td>
<td></td>
</tr>
<tr>
<td>05-5 (FHWA): Measurement of Work of Adhesion Between Paint and Metalized/Galvanized Steel</td>
<td>20,012.00</td>
<td></td>
<td>446,294.86</td>
<td></td>
</tr>
<tr>
<td>05-6: Employing Graphic-Aided Dynamic Message Signs to Assist Elder Drivers’ Message Comprehension</td>
<td>46,712.74</td>
<td>446,294.86</td>
<td>399,582.12</td>
<td></td>
</tr>
<tr>
<td>05-6 (FHWA): Employing Graphic-Aided Dynamic Message Signs to Assist Elder Drivers’ Message Comprehension</td>
<td>13,278.00</td>
<td></td>
<td>386,304.12</td>
<td></td>
</tr>
<tr>
<td>05-7: Warrants for Exclusive Left Turn Lanes at Unsignalized Intersections and Driveways Phase I: Cont’d as 05-7 Phase II</td>
<td>92,000.36</td>
<td>286,872.50</td>
<td>191,908.28</td>
<td></td>
</tr>
<tr>
<td>05-7: Warrants for Exclusive Left Turn Lanes at Unsignalized Intersections and Driveways Phase II</td>
<td>7,431.26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05-8: Evaluation of Alternative Traffic Simulation Models, Including CA4PRS for Analysis of Traffic Impacts of Highway Construction, Reconstruction and Rehabilitation: Cont’d as 05-8 (FHWA)</td>
<td>94,964.22</td>
<td>186,873.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05-8 (FHWA): Evaluation of Alternative Traffic Simulation Models, Including CA4PRS for Analysis of Traffic Impacts of Highway Construction, Reconstruction and Rehabilitation</td>
<td>5,035.00</td>
<td></td>
<td>186,873.28</td>
<td></td>
</tr>
</tbody>
</table>

**Member Obligations 2006 = 5 x $100,000 (no ME DOT allocation)**

<table>
<thead>
<tr>
<th>Obligation</th>
<th>Amount</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>500,000.00</td>
<td></td>
<td>666,873.28</td>
</tr>
<tr>
<td>100,000.00</td>
<td></td>
<td>786,873.28</td>
</tr>
</tbody>
</table>

**Note:** Maine 2006 Obligation as of 11/06/06 per Peabody 11/30/06

**Coord./Admin. Of NETC Calendar Year 2006 = 131,814**

**06** Project Series:

<table>
<thead>
<tr>
<th>Project</th>
<th>OBLIGATION</th>
<th>ENCUMB/EXPEND.</th>
<th>INVOICE</th>
<th>CUM. BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>06-1: New England Verification of NCHRP 1-37A Mechanistic-Empirical Pavement Design Guide With Level 2 &amp; 3 Input</td>
<td>82,209.78</td>
<td>603,944.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>06-2: Infrastructure Management Systems Enhancement and Integration to Support True Integrated Management Decision-Making</td>
<td>68,085.00</td>
<td>535,859.58</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Member Obligations 2007 = 600,000**

<table>
<thead>
<tr>
<th>Obligation</th>
<th>Amount</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>600,000.00</td>
<td></td>
<td>752,432.96</td>
</tr>
</tbody>
</table>

**Coord./Admin. Of NETC Calendar Year 2007 = 136,061**

**07** Project Series:

<table>
<thead>
<tr>
<th>Project</th>
<th>OBLIGATION</th>
<th>ENCUMB/EXPEND.</th>
<th>INVOICE</th>
<th>CUM. BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>07-1: In-Place Response Mechanisms of Recycled Layers Due to Temperature and Moisture Variations</td>
<td>150,000.00</td>
<td>479,788.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07-2: Estimating the Potential of Intelligent Intersections Deployment in New England</td>
<td>100,000.00</td>
<td>379,788.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07-3: Determining Optimum Distance for a Lane Drop Downstream from a Signaled Intersection</td>
<td>100,000.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Member Obligations 2008 = 600,000**

<table>
<thead>
<tr>
<th>Obligation</th>
<th>Amount</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>600,000.00</td>
<td></td>
<td>879,788.17</td>
</tr>
</tbody>
</table>

**NY DOT Obligation**

<table>
<thead>
<tr>
<th>Obligation</th>
<th>Amount</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>72,000.00</td>
<td>50,000.00</td>
<td>89,788.17</td>
</tr>
</tbody>
</table>

**Coord./Admin. Of NETC Calendar Year 2008 = 134,998**

**08-2: Evacuation Modeling to Assist Hazard Management and Response in Urban and Rural Areas of New England**

<table>
<thead>
<tr>
<th>Project</th>
<th>OBLIGATION</th>
<th>ENCUMB/EXPEND.</th>
<th>INVOICE</th>
<th>CUM. BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>08-3: Best Management Practices for the Invasive Polygonum Cuspidatum (Japanese Knotweed) Along Transportation Corridors</td>
<td>140,000.00</td>
<td>528,278.27</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As of November 16, 2011

**D.2 NETC FUND BALANCE**

**Member Obligations 2006 = 5 x $100,000 (no ME DOT allocation)**

<table>
<thead>
<tr>
<th>Obligation</th>
<th>Amount</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>500,000.00</td>
<td></td>
<td>666,873.28</td>
</tr>
<tr>
<td>100,000.00</td>
<td></td>
<td>786,873.28</td>
</tr>
</tbody>
</table>

**Note:** Maine 2006 Obligation as of 11/06/06 per Peabody 11/30/06

**Coord./Admin. Of NETC Calendar Year 2006 = 131,814**

**06** Project Series:

<table>
<thead>
<tr>
<th>Project</th>
<th>OBLIGATION</th>
<th>ENCUMB/EXPEND.</th>
<th>INVOICE</th>
<th>CUM. BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>06-1: New England Verification of NCHRP 1-37A Mechanistic-Empirical Pavement Design Guide With Level 2 &amp; 3 Input</td>
<td>82,209.78</td>
<td>603,944.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>06-2: Infrastructure Management Systems Enhancement and Integration to Support True Integrated Management Decision-Making</td>
<td>68,085.00</td>
<td>535,859.58</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Member Obligations 2007 = 600,000**

<table>
<thead>
<tr>
<th>Obligation</th>
<th>Amount</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>600,000.00</td>
<td></td>
<td>752,432.96</td>
</tr>
</tbody>
</table>

**Coord./Admin. Of NETC Calendar Year 2007 = 136,061**

**07** Project Series:

<table>
<thead>
<tr>
<th>Project</th>
<th>OBLIGATION</th>
<th>ENCUMB/EXPEND.</th>
<th>INVOICE</th>
<th>CUM. BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>07-1: In-Place Response Mechanisms of Recycled Layers Due to Temperature and Moisture Variations</td>
<td>150,000.00</td>
<td>479,788.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07-2: Estimating the Potential of Intelligent Intersections Deployment in New England</td>
<td>100,000.00</td>
<td>379,788.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07-3: Determining Optimum Distance for a Lane Drop Downstream from a Signaled Intersection</td>
<td>100,000.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Member Obligations 2008 = 600,000**

<table>
<thead>
<tr>
<th>Obligation</th>
<th>Amount</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>600,000.00</td>
<td></td>
<td>879,788.17</td>
</tr>
</tbody>
</table>

**NY DOT Obligation**

<table>
<thead>
<tr>
<th>Obligation</th>
<th>Amount</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>72,000.00</td>
<td>50,000.00</td>
<td>89,788.17</td>
</tr>
</tbody>
</table>

**Coord./Admin. Of NETC Calendar Year 2008 = 134,998**

**08-2: Evacuation Modeling to Assist Hazard Management and Response in Urban and Rural Areas of New England**

<table>
<thead>
<tr>
<th>Project</th>
<th>OBLIGATION</th>
<th>ENCUMB/EXPEND.</th>
<th>INVOICE</th>
<th>CUM. BALANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>08-3: Best Management Practices for the Invasive Polygonum Cuspidatum (Japanese Knotweed) Along Transportation Corridors</td>
<td>140,000.00</td>
<td>528,278.27</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### D.2 NETC Fund Balance

#### As of November 16, 2011 (Cont'd)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ENCUMB/</th>
<th>CUM.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OBLIGATION</td>
<td>EXPEND.</td>
</tr>
<tr>
<td>08-4 NETC Research Implementation Survey &amp; Synthesis (Rev. from $35,000 to $60,000 NETC Adv. Comm. Mtg 5/21/09)</td>
<td>60,000.00</td>
<td>468,278.27</td>
</tr>
<tr>
<td>08-5 NETC/UVM-UTC Transportation Research Challenge: Commute Rideshare, etc.</td>
<td>50,000.00</td>
<td>418,278.27</td>
</tr>
<tr>
<td>02-6 Phase II Sealing of Small Mumtt Bridge Expan joints - F ld Inst. &amp; Mtrng</td>
<td>74,558.62</td>
<td>343,719.65</td>
</tr>
<tr>
<td>08-6 (ALT) Interaction Between Salinity, Soil Quality and Amendments in Roadside Plantings</td>
<td>75,000.00</td>
<td>268,719.65</td>
</tr>
<tr>
<td>Member Obligations 2009 = 600,000</td>
<td>600,000.00</td>
<td>868,719.65</td>
</tr>
<tr>
<td>NYS DOT Obligation</td>
<td>50,000.00</td>
<td>918,719.65</td>
</tr>
<tr>
<td>Coord/Admin. Of NETC Calendar Year 2009 (Approved) = 139,309</td>
<td>131,157.45</td>
<td>787,562.20</td>
</tr>
<tr>
<td>08-1 Applying the Highway Safety Manual in New England</td>
<td>120,000.00</td>
<td>667,562.20</td>
</tr>
<tr>
<td>09-1 Active Structural Control of Candleveered Support Structures:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 1</td>
<td>150,000.00</td>
<td>517,562.20</td>
</tr>
<tr>
<td>Phase 2</td>
<td>100,000.00</td>
<td>417,562.20</td>
</tr>
<tr>
<td>09-2 Effective Establishment of Native Grasses on Roadsides</td>
<td>90,000.00</td>
<td>327,562.20</td>
</tr>
<tr>
<td>09-3 Advanced Composite Materials: Prototype Development and Demonstration</td>
<td>48,847.00</td>
<td>278,715.20</td>
</tr>
<tr>
<td>Member Obligations 2010 = 600,000</td>
<td>600,000.00</td>
<td>878,715.20</td>
</tr>
<tr>
<td>NYS DOT Obligation</td>
<td>50,000.00</td>
<td>928,715.20</td>
</tr>
<tr>
<td>Coord/Admin. Of NETC Calendar Year 2010 (Approved) = 134,809</td>
<td>127,097.21</td>
<td>801,617.99</td>
</tr>
<tr>
<td>10-1 A Field Evaluation of SuperPave Hot Mix Asphalt Pavement Containing 30% RAP</td>
<td>180,000.00</td>
<td>621,617.99</td>
</tr>
<tr>
<td>10-2 Synthesis of Practice: Electronic Bridge Inspection Document Management Systems</td>
<td>70,000.00</td>
<td>551,617.99</td>
</tr>
<tr>
<td>10-3 Field Evaluation of Corrosion Protection on Bridges with A Spray Application of Disodium Tetrapropenyl Succinate (DSS)</td>
<td>100,000.00</td>
<td>451,617.99</td>
</tr>
<tr>
<td>10-4 Low Temperature and Moisture Susceptibility of RAP Mixtures with Warm Mix Technology</td>
<td>150,000.00</td>
<td>301,617.99</td>
</tr>
<tr>
<td>Member Obligations 2011 = 600,000</td>
<td>600,000.00</td>
<td>901,617.99</td>
</tr>
<tr>
<td>Coord/Admin. Of NETC Calendar Year 2011 (Approved) = 133,793</td>
<td>133,793.00</td>
<td>767,824.99</td>
</tr>
</tbody>
</table>

**Notes:**

1. = Member FFY allocations are obligated between October 1 and December 31
2. = A credit of $6,599.70 for NETC’s overpayment to UConn for CY 2004 NETC Management was applied, by UConn, to the ‘Indirect Cost’ for project 02-5. Therefore although the total expenditures of the project were $26,279.69 the amount paid by NETC was $19,679.99
3. = Per minutes of NETC Adv. Comm. Mtg. 5/12/08: “It was agreed that since the encumbered amount for NETC 05-7 was incorrectly shown in the Fund Balance Report [April 10, 2008] as $70,000 and the correct amount is $100,000, the amount of funding to be allocated for the third ranked problem statement for the FFY 09 research program (NETC 09-3) would be set at the amount of the revised unencumbered fund balance remaining after the allocation of funds for NETC 09-1 and NETC 09-2, i.e., $48,847."
4. = Work on project suspended pending resolution of authorization of payment for costs incurred prior to execution of project agreement. VAOT to submit request to FHWA for approval of costs incurred prior to execution of the project agreement in accordance with 23CFR Section 1.9.
E. REPORTS, PAPERS AND PRESENTATIONS

E.1 POLICIES AND PROCEDURES:

E.2 ANNUAL REPORTS:
“Annual Report For Calendar Year 1995,” March 1996, NETCR3
“Annual Report For Calendar Year 1996,” January 1997, NETCR4
“Annual Report For Calendar Year 1997,” January 1998, NETCR9
“Annual Report For Calendar Year 1998,” January 1999, NETCR10
“Annual Report For Calendar Year 1999,” January 2000, NETCR21
“Annual Report For Calendar Year 2000,” August 2001, NETCR27
“Annual Report For Calendar Year 2001,” December 2002, NETCR40
“Annual Report For Calendar Year 2002,” November 2003, NETCR41
“Annual Report For Calendar Year 2003,” September 2005, NETCR55
“Annual Report For Calendar Year 2005,” August 2006, NETCR61
“Annual Report For Calendar Year 2006,” April 2007, NETCR68
“Annual Report For Calendar Year 2007,” February 2008, NETCR70
“Annual Report For Calendar Year 2008,” April 2009, NETCR75
“Annual Report For Calendar Year 2009,” March 2010, NETCR79
“Annual Report For Calendar Year 2010,” April 2011, NETCR84

E.3 REPORTS, PAPERS, AND PRESENTATIONS 1988-1994:
“The Development of a Common Regional System for Issuing Permits for
Oversize and Overweight Trucks Engaged in Interstate Travel,” Humphrey, T.F.,
May 1986.

“Agreement to Implement a Common Set of Procedures for Issuing Permits for
Nondivisible Oversize and Overweight Trucks Engaged in Interstate Travel,” The

“The New England Transportation Consortium, Round One Activities,”


“Handbook for Use by the Trucking Industry to Implement The NETC Common
Truck Permit Procedures for Certain Nondivisible Oversize/Overweight Vehicles
Traveling on State Highways,” MIT Center for Transportation Studies, January
1989.

“Bridge Rail Design and Crash Worthiness - Final Report,” Elgaaly, M., Dagher,
E.3 NETC REPORTS, PAPERS, AND PRESENTATIONS 1988-1994 (cont’d):


E.3 NETC REPORTS, PAPERS, AND PRESENTATIONS 1988-1994 (cont’d):

“Regional Rail Planning In New England,” Martland, C.P. Little, and Alvaro, A.E., MIT, August 1993. (Accepted for publication 1994)


### E.4 REPORTS, PAPERS AND PRESENTATIONS 1995-2011:

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Construction Costs Of New England Bridges</td>
</tr>
<tr>
<td></td>
<td><strong>Reports:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Papers and Presentations:</strong></td>
</tr>
<tr>
<td>N/A</td>
<td>Tire Chips As Lightweight Backfill For Retaining Walls, Phase II: Full-Scale Testing</td>
</tr>
<tr>
<td></td>
<td><strong>Reports:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Papers and Presentations:</strong></td>
</tr>
<tr>
<td></td>
<td>“Civil Engineering Uses for Tire Chips,” Humphrey D.N. A six-hour short course presented to the Nebraska Department of Environmental Quality, the Maine Dept. of Transportation, the Texas Engineering Extension Service, the Manitoba Tire Stewardship Board, the Alberta Tire Recycling Management Board, and the Arkansas Department of Pollution Control and Ecology.</td>
</tr>
</tbody>
</table>
| N/A | **Tire Chips As Lightweight Backfill For Retaining Walls, Phase II:**  
|     | **Full-Scale Testing (cont’d):**  
|     | **Papers and Presentations (cont’d):**  
|     | “Highway Applications of Tire Shreds,” Humphrey, D. A 7-hour short course presented to the RI DOT, April 1999.  
| N/A | **New England Vehicle Classification And Truck Weight Program, Phase I:**  
|     | **Reports:**  
|     | **N/A** |
**New England Vehicle Classification And Truck Weight Program, Phase I (cont’d):**
Reports (cont’d):


**Papers and Presentations:**


**Bridge Rail Crash Test, Phase II: Sidewalk-Mounted Rail**
Reports:


**Papers and Presentations:** None
94-1  Structural Analysis Of New England Subbase Materials And Structures

Reports:
“Structural Analysis of New England Subbase Materials and Structures,”
Lee, K.W., Huston, M.T., Davis, J., Vajjhalla, S., June 30, 2001,
NETCR26.

Papers and Presentations:
“Structural Analysis of New England Subbase Materials and Structures,”

“Structural Analysis of New England Subbase Materials and Structures.”
Presented at the Northeast Graduate Student Symposium on Applied Mechanics, University of Rhode Island, April 26, 1997.

“Structural Analysis of New England Subbase Materials and Structures.”
Presented at the Rhode Island Transportation and Civil Engineering Forum, University of Rhode Island, October 15, 1997.

“Structural Analysis of New England Subbase Materials and Structures,”


Nondestructive Testing of Reinforced Concrete Bridges Using Radar Imaging Techniques

Reports:

Papers and Presentations:


Nondestructive Testing of Reinforced Concrete Bridges Using Radar Imaging Techniques (cont’d):
Papers and Presentations (cont’d):


Procedures For The Evaluation Of Sheet Membrane Waterproofing:
Reports:
“Procedures for the Evaluation Sheet Membrane Waterproofing,”
Korhonen, C.J., Buska, J.S., Cortez, Edel R., and Greatorex, Alan R.,

Papers and Presentations: None

Durability Of Concrete Crack Repair Systems:
Reports: None

Papers and Presentations:
“Durability of Concrete Crack Repair, Projects,” Robinson, J. Presented at
the University of Rhode Island Graduate Seminar Series, Kingston, RI,
November 19, 1997.

“Durability of Concrete Crack Repair System,” Tsiatas, G. and Robinson,
J. Presentation to representatives of the Chemical Grouting Division of
Kajima Corporation (Japan), University of Rhode Island, College of
Engineering, October 26, 1999.

Use Of Tire Chip/Soil Mixtures To Limit Frost Heave And Pavement
Damage Of Paved Road
Reports:
“Use of Tire Chip/Soil Mixtures to Limit Frost Heave and Pavement
Damage of Paved Roads,” Brian, K.L., and Humphrey, D. N., June 2000,
NETCR12.

Papers and Presentations:
“Laboratory and Field Measurement of the Thermal Conductivity of Tire
Chips for Use as Subgrade Insulation,” Humphrey, D., Chen, L.H. and
Eaton, R. A paper submitted to the Transportation Research Board for
presentation at the session on “Properties of Unconventional Aggregates”
at the Annual Meeting of the Transportation Research Board, Washington,
D.C., January 1997.

“Highway Applications of Tire Shreds," Humphrey, D. A 7-hour short
course presented in each of the six New England States, 1998.

"Highway Applications of Tire Shreds,” Humphrey, D. A 7-hour short
course presented to the RI DOT, April 1999.

“Field Trial of Tire Shreds as Insulation for Paved Roads,” Humphrey, D.,
Chen, L.H., Lawrence, B. A paper presented at the 10th International
Conference on Cold Regions Engineering: Putting Research into Practice,
held in Hanover, NH, August 16-19, 1999.
Suitability Of Non-Hydric Soils For Wetland Mitigation
Reports:

Papers and Presentations: None

Implementation And Evaluation Of Traffic Marking Recesses For Application of Thermo-Plastic Markings On Modified Open Graded Mixes
Reports:

Papers and Presentations:


Buried Joints In Short Span Bridges
Reports: None

Papers and Presentations:

Guidelines For Ride Quality Acceptance Of Pavements
Reports:

Papers and Presentations: None
<table>
<thead>
<tr>
<th>96-1</th>
<th>Implementation of Superpave</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reports:</td>
</tr>
<tr>
<td></td>
<td>“Superpave Implementation,” Mahoney, James, Stephens, Jack E., September 1999, NETCR18.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>96-3</th>
<th>Effectiveness Of Fiber Reinforced Composite As Structural And Protective Coverings For Bridge Elements Exposed To Deicing Salt Chlorides</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reports:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Papers and Presentations:</th>
</tr>
</thead>
</table>
96-3 Effectiveness Of Fiber Reinforced Composite As Structural And Protective Coverings For Bridge Elements Exposed To Deicing Salt Chlorides (cont’d):
Papers and Presentations (cont’d):


97-1 A Portable Method To Determine Chloride Concentration On Roadway Pavements
Reports:

Papers and Presentations: None

97-2 Performance Evaluation And Economic Analysis Of Combinations Of Durability Enhancing Admixtures (Mineral And Chemical) In Structural Concrete For The Northeast U.S.A
Reports:

Papers and Presentations:
“Performance Evaluation of Durability Enhancing Admixtures (Mineral and Chemical) in Structural Concrete,” Sund, D., Report in Partial Fulfillment of Master of Science in Civil Engineering Degree, Department of Civil and Environmental Engineering, University of Massachusetts, Amherst, September, 1999.
97-2  Performance Evaluation And Economic Analysis Of Combinations Of Durability Enhancing Admixtures (Mineral And Chemical) In Structural Concrete For The Northeast U.S.A (cont'd):

Papers and Presentations:


97-3  Determining Properties, Standards And Performance Of Wood Material As An Erosion Control Mulch And As A Filter Berm

Reports:

Papers and Presentations:

97-4  Early Distress Of Open-Graded Friction Course (OGFC)

Reports:

Papers and Presentations: None

99-1  Bridge Rail Transitions – Development and Crash Testing

Reports:

Note:
Design documents for the NETC 2-Bar Curb-Mounted and 4-Bar Sidewalk-Mounted Bridge Rail Transitions are available from the NETC Coordinator.
99-1 Bridge Rail Transitions – Development and Crash Testing (cont’d):
Papers and Presentations:


99-2 Evaluation of Asphalitic Expansion Joints
Reports:

Papers and Presentations: None

99-3 Development Of Priority Based Statewide Scour Monitoring Systems In New England
Reports:

Papers and Presentations:

99-4 Quantifying Roadside Rest Area Usage
Reports:

Papers and Presentations:
Results from the rest-area research were included in a presentation by the PI: “The Efficacy and Use of Continuous Shoulder Rumble Strips: Engineering a Solution,” presented at the November 20-21, 2002 National Summit to Prevent Drowsy Driving, National Academy of Sciences, Washington, DC, November 21, 2002 (taped by C-SPAN. Summit also covered by CNN Live Today, CNN Live on Location, CBS Early Show, National Public Radio’s Market Place, and national radio network coverage by ABC, CBS, and AP as well as two stories by nationally syndicated health columnist Jane Brody of The New York Times).
99-6 Analytical and Experimental Investigation Of The Effects Of Concrete Removal Operations On Adjacent Concrete That Is To Remain

Reports:

Papers and Presentations:


“Effect of Demolition on Remaining Part of Concrete Bridge, Numerical Analysis Vs. Experimental Results.” Presented and published in the proceedings of Internationales Kolloquium uber die Anwedungen der Informatik in Architectur und Bauwesen, Germany, June 2000

“The Effect of Bridge Rehabilitation on the Remaining Structural Parts.” Presented and published in the proceedings of the ASCE conference at Stanford University, August 2000.

00-1 Ground-Based Imaging And Data Acquisition Systems For Roadway Inventories In New England - A Synthesis Of Practice

Reports:

Papers and Presentations: None
00-2 Evaluation Of Permeability Of Superpave Mixes
Reports:

Papers and Presentations:


00-3 Design, Fabrication and Preliminary Testing of a Composite Reinforced Timber Guardrail
Reports:

Papers and Presentations: None

00-4 Portable Falling Weight Deflectometer Study
Reports:

Papers and Presentations: None

00-5 Guardrail Testing Modified Eccentric Loader Terminal (MELT) at NCHRP 350 TL-2
Reports:

Papers and Presentations:
Dean Alberson, Texas Transportation Institute, Principal Investigator presented the results of the crash tests conducted on the MELT guardrail terminal to the Association of General Contractors/American Road Transportation Builders Association/American Association of State Highway Transportation Officials Task Force 13 meeting in Seattle, Washington, April 2002.
**00-6 Effective Visualization Techniques for the Public Presentation of Transportation**

*Reports:*

*Papers and Presentations:*

---

**00-7 A Complete Review of Incident Detection Algorithms and Their Deployment: What Works and What Doesn’t**

*Reports:*

*Papers and Presentations:*
“Use of Driver-Based Data for Incident Detection,” Parkany, Emily, Submitted to the 7th International Conference on Applications of Advanced Technologies in Transportation Engineering (AATT), Boston, August 2002.

---

**00-8 Performance and Effectiveness of a Thin Pavement Section Using Geogrids and Drainage Geocomposites in a Cold Region**

*Reports:*

*Papers and Presentations:*
01-1  Advanced Composite Materials for New England's Transportation Infrastructure: A Study for Implementation and Synthesis of Technology and Practice  

Reports:  

Papers and Presentations: None

01-1  Advanced Composite Materials in New England's Transportation Infrastructure - Technology Transfer Phase 1: Selection of Prototype  

Reports:  

Papers and Presentations: None

01-2  Development of a Testing Protocol for QC/QA of Hot Mix Asphalt  

Reports:  

Papers and Presentations:  

01-3  Design of Superpave HMA for Low Volume Roads  

Reports:  

Papers and Presentations:  
01-6  Field Evaluation of a New Compaction Monitoring Device
Reports:

Papers and Presentations: None

02-1  Relating Hot Mix Asphalt Pavement Density to Performance
Reports:

Papers and Presentations:


02-2  Formulate Approach for 511 Implementation in New England
Reports:

Papers and Presentations: None

02-3  Establish Subgrade Support Values for Typical Soils in New England
Reports:

Papers and Presentations:

02-5 Determination of Moisture Content of Deicing Salt at Point of Delivery

Reports:

Papers and Presentations: None

02-6 Sealing of Small Movement Bridge Expansion Joints

Reports:

Papers and Presentations:


Sealing of Small Movement Bridge Expansion Joints - Phase II: Field Demonstration and Monitoring

Reports:

Papers and Presentations:


**02-7**

**Validating Traffic Simulation Models to Inclement Weather Travel Conditions with Applications to Arterial Coordinated Signal Systems**

*Reports:*


*Papers and Presentations:*


**02-8**

**Intelligent Transportation Systems Applications to Ski Resorts in New England**

*Reports:*


*Papers and Presentations:*


**03-1**

**Ability of Wood Fiber Materials to Attenuate Heavy Metals Associated with Highway Runoff**

*Reports:*


*Papers and Presentations: None*
03-2  Field Studies of Concrete Containing Salts of an Alkenyl-Substituted Succinic Acid
Reports:

Papers and Presentations:


03-3  Feasibility Study of an Erosion Control Laboratory in New England
Reports:

Papers and Presentations: None

03-3 Phase 2  Design Considerations for a Prototype Erosion Control Laboratory in New England
Reports:

Papers and Presentations: None
03-4 Measuring Pollutant Removal Efficiencies of Stormwater Treatment Units
Reports:

Papers and Presentations:


03-5 Evaluation of a Field Permeameter as a Longitudinal Joint Quality Indicator
Reports:

Papers and Presentations:


03-7 Basalt Fiber Reinforced Polymer Composites
Reports:

Papers and Presentations:


“Investigation of Basalt Fiber Composite Aging Behavior for Applications in Transportation,” Q. Liu, M. T. Shaw, R. S. Parnas, A.M. McDonnell, Polymer Composites.


04-1 Phase2 Recycling Asphalt Pavements Containing Modified Binders - Phase 2
Reports:

Papers and Presentations:

04-2  Driver-Eye-Movement-Based Investigation for Improving Work-Zone Safety

Reports:

Papers and Presentations:

“Understanding and Quantifying Driver Response,” Muttart, J.W., Texas Association of Accident Reconstructionist Specials, Houston, TX, February 17 & 18, 2006.


04-3  Estimating the Magnitude of Peak Flows for Steep Gradient Streams in New England

Reports:

Papers and Presentations:

04-4  Determining the Effective PG Grade of Binder in RAP Mixes

Reports:

Papers and Presentations:

04-5  Network-Based Highway Crash Prediction Using Geographic Information Systems

Reports:

Papers and Presentations:


05-1  Development of Supplemental Resistance Method for the Design of Drilled Shaft Rock Sockets

Reports:

Papers and Presentations: None
05-5  Measurement of Adhesion Properties Between Topcoat Paint and Metalized/Galvanized Steel with Surface Energy Measurement Equipment
Reports: None

Papers and Presentations:

05-6  Employing Graphic-Aided Dynamic Message Signs to Assist Elder Drivers’ Message Comprehension
Reports:

Papers and Presentations:


05-7  **Warrants for Exclusive Left Turn Lanes at Unsignalized Intersections and Driveways**

**Reports:**

**Papers and Presentations:**
“A Decision Support System for Predicting the likely Benefits of Left-turn Lane Installation,” Ranade, S., Sadek, A.W. and Ivan, J., 2007, TRB Annual meeting, Paper No. 07-0992; January 2007; Transportation Research Record, 2023:28-36, 2007. This paper received the Best Paper Award from the Committee on Operational Effects of Geometrics at the 2008 Annual Meeting.


05-8  **Evaluation and Implementation of Traffic Simulation Models for Work Zones**

**Reports:**

**Papers and Presentations:**

New England Verification of NCHRP 1-37A Mechanistic-Empirical Pavement Design Guide with Level 2 & 3 Inputs

Reports: None

Papers and Presentations:


Establishing Default Dynamic Modulus Values for New England

Reports:

Papers and Presentations: None