				Start Date		End Date		Most Recent Quarterly Report Date =	4/1/15	Spent Burdget (as of most recent		Progress (as of most recent		
Project Number	Project Name	PI	Contract Execution Date	Anticipated	Actual	Anticipated	Actual	Reasons for variations	Total Budget	Anticipated	Actual Invoiced	Anticipated	Actual	Progress Broken Down by Task
06-4	Preventative Maintenance and Timing of Applications	Walaa S. Mogawer, Umass	8/21/13	9/16/13	9/16/13	9/15/16	TBD	NOTE: No Cost Extension was requested and approved by the Technical and Advisory Committee. New end date is 9/15/16. Old end date was 9/15/15. 4/2015 - Research Team is awaiting completed surveys (Task 3&4) from state DOTs before moving to Task 5&6.	$ 242,909.00	$ 124,671.10	$ 11,786.73	51%	5%	Task 1: Kick-Off Meeting (100%) Task 2: Literature Review (30%) Task 3: Internet Survey (70%) Task 4: Assess Current Preventive Maintenance (PM) Practices in New England States (0%) Task 5: Development of Pavement Preventive Maintenance Procedures for New England (0%) Task 6: Laboratory and Field Testing (10%) Task 7: Determination of Feedback Mechanism (0%) Task 8: Development of Pavement Preventive Maintenance (PPM) Manual (0%) Task 9: Training (0%) Task 10: Preparation of the Final Report (0%)
07-1	In-Place Response Mechanisms of Recycled Layers Due to Temperature and Moisture Variations	Jo Sias Daniel, UNH	7/23/13	7/1/13	7/23/13	3/31/16	TBD	1. The PI originally listed a Project End Date beyond 4/2/16, which is the end date of UVM's contract to Coordinate NETC. The contract and proposal had to be revised accordingly.	$ 198,154.00	$ 124,502.05	$ 95,348.99	63%	48%	Task 1: Conduct Survey and Identify Potential Test Sites (100%) Task 2: Select Test Sites and Develop Work Plan (100%) Task 3: Execution of Work Plan (80%) Task 4: Data Analysis (25%) Task 5: Final Report (0%)
09-2	Effective Establishment of Native Grasses on Roadsides	Julia Kuzovkina, Uconn	10/16/13	9/1/13	10/16/13	2/28/16	TBD	1. Uconn requested some revisions to the contractual language with respect to final financial reporting and insurance requirements.	$ 80,000.00	$ 49,202.31	$ 17,846.08	62%	22%	Task1: Literature Review (30%) Task 2: Interviews (85%) Task 3: Field Inspections/Testing (50%) a. Select a suite of native grasses with the most potential for roadside establishment in New England b. Develop effective establishment protocols through modification of existing approaches Refinement of previously developed protocols Establishments of the demonstration plots c. Evaluate native grass tolerances and potential for degradation of roadside contaminants Final Task: Publication of a Manual
09-3	Advanced Composite Materials: Prototype Development and Demonstration	Roberto Lopez-Anido, UMaine	10/14/13	9/1/13	9/25/13	8/31/15	TBD	1. Umaine requested some revisions to the contractual language with respect to insurance requirements (and some other minor requests) 3/2015 - looking for other bridge drains to inspect - if none found, will ask for NCE to finish the report (TC will meet again in May to decide)	$ 165,000.00	$ 129,425.53	$ 107,748.37	78%	65%	Task 1: Conduct review of typical bridge drain details that are representative in New England. (99%) Task 2: Develop standard drain requirements for new and rehabilitation projects (99%) Task 3: Identify and contact FRP composite manufacturers (100%) Task 4: Identify two or three bridges being constructed within New England where the FRP standard drains can be used. (80%) Task 5: Coordinate with field personnel at each of the bridge sites selected and document the installation (5%) Task 6: Document the FRP drain initial condition after installation (60%) Task 7: Prepare a final project report highlighting the outcomes of the research (50%)
10-3	Low Temperature and Moisture Susceptibility of RAP Mixtures with Warm Mix Technology	Walaa S. Mogawer, UmassD	8/21/13	9/16/13	9/16/13	9/15/15	TBD	NOTE: No Cost Extension has been requested, and is currently being reviewed by the Technical Committee.	$ 150,158.00	$ 115,759.67	$ 18,063.04	77%	12%	Task 1: Literature Review (70%) Task 2: Determine Critical Information (50%) Task 3: WMA Technologies Selection Process (50%) Task 4: Identify Moisture Susceptibility Test (25%) Task 5: Development of a Testing Matrix (60%) Task 6: Obtain Plant Produced Samples (15%) Task 7: Laboratory Testing of Plant Produced Samples (0%) Task 8: Prepare a Final Report (0%) Task 9: Execute Implementation Plan (0%)
13-1	Development of High-Early Strength Concrete for Accelerated Bridge Construction Closure Pour Connections	Sergio F. Breña University of Massachusetts Amherst	8/18/14	9/1/14	9/1/14	8/31/16	TBD	The proposed project period was for 24 months. However, the NETC Coordinator's contract was set to end 4/2/16. We needed a No Cost Extension to the NETC Coordinator's Contract so that we could extend the research subawards to their actual end date (24 month project). This NCE was received and processed in Jan/Feb 2015.	$ 174,923.00	$ 50,799.56	$ 24,294.21	29%	14%	Task 1: Literature Search – 80% complete Task 2: Develop Mixture Design Specification – 30% Task 3: Develop Mix Design – Work for this task has not started (0%) Task 4: Test Mixture – Work for this task has not started (0%)
13-2	HMA Mixtures Containing Recycled Asphalt Shingles (RAS): Low Temperature and Fatigue Performance of Plant-Produced Mixtures	Walaa S. Mogawer, UmassD	7/21/14	6/1/14	7/21/14	5/31/16	TBD	7/21/14 was the date the research contract with the PI was signed. The proposed project period was for 24 months. However, the NETC Coordinator's contract was set to end 4/2/16. We needed a No Cost Extension to the NETC Coordinator's Contract so that we could extend the research subawards to their actual end date (24 month project). This NCE was received and processed in Jan/Feb 2015.	$ 249,785.00	$ 93,302.04	$ -	37%	0%	Task 1: Kick-Off Meeting (0%) Task 2: Literature Review (0%) Task 3: Determine Critical RAS Information (0%) Task 4: Determine Regional Asphalt Mixture Producers in New England with Capabilities and Willingness to Produce Mixtures Incorporating RAS for this Study (15%) Task 5: Assist Producers in Evaluating the Properties of the RAS and RAP to be used in Production (0%) Task 6: Assist Producers in Developing Laboratory Mixture Designs Utilizing RAS and Determine Actual RAS Binder Contribution to Mixtures (0%) Task 7: Produce and Obtain Plant Produced RAS Mixtures (0%) Task 8: Vary Production Parameters (Temperatures, Silo Storage, etc.) to Obtain Similar Virgin and RAS Mixtures (0%) Task 9: Construct Test Matrix and Evaluate the Performance of the Plant-Produced Mixtures (0%) Task 10: Identify Critical Material Properties and Plant Operations that Yield RAS Mixtures with Performance Properties Equivalent to Typical All-Virgin Material Mixtures (0%) Task 11: Develop a Plant Guideline for the Use of RAS in Virgin and RAP Mixes (0%) Task 12: Prepare a Final Report (0%) Task 13: Execute Implementation Plan (0%)
13-3	Improved Regionalization of Quality Assurance (QA) Functions	Eshan Dave, UNH	3/4/15	12/1/14	3/27/15	3/31/16	TBD	Contract Amended 3/27/15 change PI and extend end-date. Kick-off meeting being planned	$ 100,000.00	$ 1,351.35		1%	0%	Task 1: State of the Practice Review (%) Task 2: Development of Common Acceptance Standards for PCE/PSE (0%) Task 3: Reporting and Technical Committee Meetings (0%)
14-1	Measuring the Effectiveness of Competency Models for Job-Specific Professional Development of Engineers & Engineering Technicians	Christopher Ahmadjian, Umass Amherst	New Project						$ 100,000.00	$ -			0%	Contract being executed with PI (final documents sent to UMASS for Signature)
14-2	Investigation of Northern Long-Eared Bat Roosting Sites on Bridges	Scott Civjan, Umass Amherst	New Project						$ 205,554.00	$ -			0%	Contract being executed with PI (final documents sent to UMASS for Signature)
14-4	Optimizing future work zones in New England for safety	TBD	New Project						$ 200,000.00	$ -			0%	AC approved Scope of Work. RFP distributed - deadline 4/17/15.

Note: Highlighted boxes are used to demonstrate which projects are either behind schedule or over budget. Keep in mind that the "Anticipated" columns are calculated by dividing the days the project has been open by the total length of the project. Seeing as some project schedules and budgets are either front loaded or end loaded, these estimates are not always accurate. If a box is highlighted, the PI has been contacted and asked to explain the deviation in more detail to ensure we stay on track.

NEW ENGLAND TRANSPORTATION CONSORTIUM
QUARTERLY PROJECT PROGRESS REPORT

A. PROJECT NUMBER AND TITLE:

NETC 06-4 "Preventative Maintenance and Timing of Applications"

B. PRINCIPAL INVESTIGATOR(s) & UNIVERSITY(s):

Dr. Walaa Mogawer, P.E. University of Massachusetts Dartmouth

C. WEB SITE ADDRESS (*If one exists*):

http://www.uvm.edu/~transctr/?Page=netc/netc_fy/netc_fy2006.php#netc064

D. START DATE (*Per NETC Agreement*): 9/16/2013

E. END DATE (*Per NETC Agreement*): 9/15/2015

F. ANTICIPATED COMPLETION DATE:

9/15/2015 (9/15/2016 requested)

G. PROJECT OBJECTIVES:

The purpose of this project is to research existing best practices for pavement preventative maintenance strategies and adapt them to the unique variety of road conditions in New England (different traffic volumes, pavement materials, and northern climates). Additionally this research will attempt to outline pavement maintenance techniques and the inter-relationship with the timing of their application in New England. To meet the purpose of this project, the following objectives have been established:

1. Identify the components of a Pavement Preventive Maintenance (PPM) program.
2. Evaluate the state-of-the-practice relative to agencies (both US and worldwide) that have demonstrated successful implementation of a pavement preservation program. Identify both single treatment and multi-treatment strategies.
3. Use current and past projects as appropriate to evaluate techniques that have been successfully used to effectively extend the life of the pavement.
4. Identify and quantify the factors that influenced the successful implementation of a preservation technique, including **time** of treatment application in the existing pavement life cycle.
5. Validate the treatment parameters and methodologies using available tests for surface treatments as well as those for conventional flexible pavements (Hot Mix Asphalt mixtures) that might be modified to test these treatments
6. Determine the approximate cost for pavement preservation technique identified.
7. Develop an implementation pavement preservation manual for distribution to the state and local transportation agencies within the New England states.

H. REPORT PERIOD:

2015 Quarter 1 – January through March

I. ACCOMPLISHMENTS THIS PERIOD:

1. Work continued on the literature review for this project (Task 2).

2. The research team developed and distributed a survey to each of the New England State DOT's to assess the current status of pavement preservation activities (Task 3 & 4).

3. A project progress meeting was held via an online internet meeting on March 31st, 2015. A task by task update was presented. Currently, the research team is awaiting the completed surveys (Task 3 & 4) from a majority of the New England State DOT's before being able to proceed to Task 5 & 6. All states responded that they would complete the survey as soon as possible. A time frame on two weeks was suggested by the project PI. It was agreed to hold another update meeting in six to eight weeks.

J. PROBLEMS ENCOUNTERED (If any):

1. UMass Dartmouth requested a no-cost time extension (September 2014) in order to include more new pavement preservation projects ongoing in the New England states to this study, investigate and purchase the needed testing devices, and to allow more time for field evaluation of the preservation projects included in the study. The requested time extension was for one year with a new end date of 9/15/2016.

K. TECHNOLOGY TRANSFER ACTIVITIES:

List any reports, papers, presentations published/presented during the report period or anticipated for the next quarter.

None during the current period.

L. STATUS BY TASK:

Show Work Task Number, description and % complete for each task including those completed, those underway, and those not started.

Task 1: Kick-Off Meeting (100%)
Task 2: Literature Review (30%)
Task 3: Internet Survey (70%)
Task 4: Assess Current Preventive Maintenance (PM) Practices in New England States (0%)
Task 5: Development of Pavement Preventive Maintenance Procedures for New England (0%)
Task 6: Laboratory and Field Testing (10%)
Task 7: Determination of Feedback Mechanism (0%)
Task 8: Development of Pavement Preventive Maintenance (PPM) Manual (0%)
Task 9: Training (0%)
Task 10: Preparation of the Final Report (0%)

M. PERCENT COMPLETION OF TOTAL PROJECT: 25%

N. ACTIVITIES PLANNED FOR NEXT QUARTER:

Continue work on the literature review. Compile and tabulate survey responses for Task 3 & 4. Commence work on Task 5 & 6.

O. FINANCIAL STATUS:

As of: *03/31/15*

Total Project Budget: $ $242,908.82
Total Expenditures: $ 27,045.53

Note: This report should not require more than 2-3 pages & should be e-mailed to the NETC Coordinator so as to arrive no later than three (3) working days after the end of each calendar quarter.

NEW ENGLAND TRANSPORTATION CONSORTIUM
QUARTERLY PROJECT PROGRESS REPORT

A. PROJECT NUMBER AND TITLE:

NETC 07-1 "In-Place Response Mechanisms of Recycled Layers Due to Temperature and Moisture Variations"

B. PRINCIPAL INVESTIGATOR(s) & UNIVERSITY(s):

Jo Sias Daniel, Ph.D., P.E., Department of Civil Engineering, University of New Hampshire

C. WEB SITE ADDRESS (*If one exists*):

http://www.unh.edu/civil-engineering/materials
http://www.uvm.edu/trc/netc/netc-research-projects/ffy-2007-research-projects/

D. START DATE (*Per NETC Agreement*):

7/1/2013

E. END DATE (*Per NETC Agreement*):

3/31/2016

F. **ANTICIPATED COMPLETION DATE:**
If different from the END DATE in paragraph E., the reason must be given. It is the responsibility of the Principal Investigator to insure that the project, including review of the draft report by the Project Technical Committee and the printing of the Final Report, is completed prior to the Agreement End Date. Costs incurred after the Agreement End Date cannot be reimbursed. ***Requests for extensions of the Agreement End Date must contain the reasons for the request and be submitted so as to arrive in the Coordinator's office at least 90 days prior to the Agreement End Date.***

3/31/2016

G. PROJECT OBJECTIVES:

The main objectives of this research are to:

- Determine the in-place properties of pavement cross-sections containing recycled materials common to the New England region
- Relate changes in those properties to variations in temperature and moisture, particularly during the spring thaw period

H. REPORT PERIOD:

2015 Quarter 1 – January through March

I. ACCOMPLISHMENTS THIS PERIOD:

This quarter has been focused on FWD testing at the NH and ME sites. The research team has been analyzing the temperature data to determine the appropriate timing for FWD tests at all sites, and several sets of FWD tests have been conducted at each site.

The data logger at the Waterford site was replaced and the issue with the thermistor string at Warren Flats was resolved. Currently, all four sites are collecting and transmitting data as expected.

J. PROBLEMS ENCOUNTERED (If any):

None during the current period.

K. TECHNOLOGY TRANSFER ACTIVITIES:

List any reports, papers, presentations published/presented during the report period or anticipated for the next quarter.

None during the current period.

L. STATUS BY TASK:

Show Work Task Number, description and % complete for each task including those completed, those underway, and those not started.

Task 1: Conduct Survey and Identify Potential Test Sites (100%)
Task 2: Select Test Sites and Develop Work Plan (100%)
Task 3: Execution of Work Plan (80%)
Task 4: Data Analysis (25%)
Task 5: Final Report (0%)

M. PERCENT COMPLETION OF TOTAL PROJECT: 60%

N. ACTIVITIES PLANNED FOR NEXT QUARTER:

The FWD testing will continue through the spring thaw and recovery period. The research team will be analyzing the results in combination with the measurements from the in-place instrumentation. Pavement evaluations will also begin.

O. FINANCIAL STATUS:

As of: *4/2/15*
Total Project Budget: $ 198,154
Total Expenditures: $ 95,349

NEW ENGLAND TRANSPORTATION CONSORTIUM
QUARTERLY PROJECT PROGRESS REPORT

A. PROJECT NUMBER AND TITLE:

NETC 09-2: "Effective Establishment of Native Grasses on Roadsides"

B. **PRINCIPAL INVESTIGATOR(s) & UNIVERSITY(s):**

Julia Kuzovkina, Cristian Schulthess, Robert Ricard, Department of Plant Science and Landscape Architecture, University of Connecticut, Storrs, CT
Glenn Dryer, Director, Connecticut College Arboretum, New London, CT

C. WEB SITE ADDRESS (*If one exists***):**

D. START DATE (*Per NETC Agreement***): 09/1/2013**

E. END DATE (*Per NETC Agreement***): 02/28/2016**

F. **ANTICIPATED COMPLETION DATE: 02/28/2016**
If different from the END DATE in paragraph E., the reason must be given. It is the responsibility of the Principal Investigator to insure that the project, including review of the draft report by the Project Technical Committee and the printing of the Final Report, is completed prior to the Agreement End Date. Costs incurred after the Agreement End Date cannot be reimbursed. ***Requests for extensions of the Agreement End Date must contain the reasons for the request and be submitted so as to arrive in the Coordinator's office at least 90 days prior to the Agreement End Date.***

G. PROJECT OBJECTIVES:

To build a comprehensive knowledgebase for a gradual transition toward sustainable native roadside vegetation cover which will support transportation goals for safety and infrastructure reinforcement while providing economic, ecological and aesthetic advantages. The direct deliverables to the New England Departments of Transportation include the Manual with guidelines for the effective establishment of native grasses on roadsides in New England and a model for an accelerated adoption and commercialization of this novel ecological restoration approach.

A. REPORT PERIOD: 1/1/2015 - 3/31/2015

B. ACCOMPLISHMENTS THIS PERIOD:

The following activities were implemented during this reporting period:

Survey and Interviews:

January 6, 2015 – interviewed the Massachusetts DOT

Throughout January-February 2015: The attempts to schedule a visit to interview the Vermont DOT managers were unsuccessful (contacted 8 times Bill Ahearn and his colleagues by e-mail and phone).

March 2015: The decision was made to proceed with the interview analyses without input from Vermont. The complete transcripts for 5 states, visited during October-January, were prepared and analyses were completed. The write-up is in preparation.

Maintenance of the demonstration sites along Rt. 6:

Discussion of the treatments for field installation in spring 2015 is in progress.

C. **PROBLEMS ENCOUNTERED (If any):**
No problems were encountered during this reporting period.

D. TECHNOLOGY TRANSFER ACTIVITIES: *List any reports, papers, presentations published/presented during the report period or anticipated for the next quarter.*

No technology transfer activities are reported for this period.

E. **STATUS BY TASK:** *Show Work Task Number, description and % complete for each task including those completed, those underway, and those not started.*

Task1: Literature Review

Research the information resources to provide a synthesis of the knowledgebase relevant to the establishment and management of native grasses and forbs in New England. This literature review will survey scholarly articles, books, working papers and other relevant sources (dissertations, conference proceedings), providing a description, summary, and critical evaluation of the materials to determine which information sources make a significant contributions to the understanding of the topic of the potential of native grasses for roadside planting.

30% complete

Task 2: Interviews

Develop a questionnaire to invite New England DOT's to be the target audience to evaluate the current status of the use of native and exotic plants on roadsides, to assess the interest level in using native species, and to examine the likelihood of roadside managers adopting this approach.

85% complete

Task 3: Field Inspections/Testing

Identify native species with the best potential for roadside plantings in New England; identify ecotypes which should be recommended for New England. Develop effective establishment protocols through modification of existing approaches. Evaluate native grass tolerances and potential for degradation of roadside contaminants.

50% complete

F. PERCENT COMPLETION OF TOTAL PROJECT: 55%

G. ACTIVITIES PLANNED FOR NEXT QUARTER:

Complete the interview analyses and write-up. Continue writing a chapter about the establishment of the demonstration plots along Rt. 6. Evaluate the plots installed last fall. Establish additional experimental plots in May.

H. FINANCIAL STATUS:

As of: *Month, Day, Year*

Total Project Budget: $ 80,000.00

Total Expenditures: $ 15,100.25

NEW ENGLAND TRANSPORTATION CONSORTIUM
QUARTERLY PROJECT PROGRESS REPORT

A. PROJECT NUMBER AND TITLE:

NETC 10-3 "Low Temperature and Moisture Susceptibility of RAP Mixtures with Warm Mix Technology"

B. PRINCIPAL INVESTIGATOR(s) & UNIVERSITY(s):

Professor Walaa S. Mogawer, PE, F.ASCE, Highway Sustainability Research Center (HSRC), University of Massachusetts

C. WEB SITE ADDRESS (*If one exists*):

http://www.uvm.edu/~transctr/?Page=netc/netc_fy/netc_fy2010.php#netc103

D. START DATE (*Per NETC Agreement*):

9/16/2013

E. END DATE (*Per NETC Agreement*):

9/15/2015

F. **ANTICIPATED COMPLETION DATE:**
If different from the END DATE in paragraph E., the reason must be given. It is the responsibility of the Principal Investigator to insure that the project, including review of the draft report by the Project Technical Committee and the printing of the Final Report, is completed prior to the Agreement End Date. Costs incurred after the Agreement End Date cannot be reimbursed. ***Requests for extensions of the Agreement End Date must contain the reasons for the request and be submitted so as to arrive in the Coordinator's office at least 90 days prior to the Agreement End Date.***

9/15/2015

G. PROJECT OBJECTIVES:

The research project will evaluate the moisture susceptibility and low temperature cracking properties of RAP mixtures produced with WMA technologies. Plant mixtures produced with varying RAP contents and warm mix technologies will be sampled. Laboratory testing will include an evaluation of mixtures susceptibility to moisture damage using one or more of the following tests: (1) AASHTO T324 "Hamburg Wheel-Track Testing of Compacted Hot Mix Asphalt (HMA)", (2) AASHTO T-283 "Resistance of Compacted Hot Mix Asphalt (HMA) to Moisture-Induced Damage", and (3) ratio of wet to dry dynamic modulus measured at 20ºC. The test(s) selection will be based, as described later in the proposal, on the literature review conducted under Task 1. Also, the low temperature cracking susceptibility will be evaluated using the following two tests: (1) AASHTO TP10-93 "Standard Test Method for Thermal Stress Restrained Specimen Tensile Strength (TSRST)" and (2) AASHTO T322 "Standard Method of Test for Determining the Creep Compliance and Strength of Hot Mix Asphalt (HMA) Using the Indirect Tensile Test Device." Additional testing will include evaluating the effect of

the different WMA technologies on the workability of the mixtures and evaluating the degree of blending between the RAP binder and the virgin binder using a procedure developed by Bonaquist.

H. REPORT PERIOD:

2015 Quarter 1 – January through March

I. ACCOMPLISHMENTS THIS PERIOD:

1. UMass Dartmouth contacted Tilcon CT about reproducing the mixtures produced in October 2014 that did not meet the required volumetric properties.

2. UMass Dartmouth contacted the other contractor (Palmer Paving) who agreed to produce mixture for this study. This contractor stated that they will produce the mixtures in April or May 2015.

3. An additional contractor was contacted (PJ Keating) to determine if they would help with producing the mixtures for this study in the event one of the selected contractors cannot supply the mixtures.

J. PROBLEMS ENCOUNTERED (If any):

1. In September 2014, UMass Dartmouth formally requested a no additional cost time extension for this project of twelve month (new end date 9/15/2016). The basis of the request is that the contractors have not produced or provided the mixtures required for this study.

K. TECHNOLOGY TRANSFER ACTIVITIES: *List any reports, papers, presentations published/presented during the report period or anticipated for the next quarter.*

None during the current period.

L. STATUS BY TASK: *Show Work Task Number, description and % complete for each task including those completed, those underway, and those not started.*

Task 1: Literature Review (70%)
Task 2: Determine Critical Information (50%)
Task 3: WMA Technologies Selection Process (50%)
Task 4: Identify Moisture Susceptibility Test (25%)
Task 5: Development of a Testing Matrix (60%)
Task 6: Obtain Plant Produced Samples (15%)
Task 7: Laboratory Testing of Plant Produced Samples (0%)
Task 8: Prepare a Final Report (0%)
Task 9: Execute Implementation Plan (0%)

M. PERCENT COMPLETION OF TOTAL PROJECT: 40%

N. ACTIVITIES PLANNED FOR NEXT QUARTER:

UMass Dartmouth will attempt to obtain and begin testing the plant produce mixtures.

O. FINANCIAL STATUS:

As of: *3/31/15*
Total Project Budget: $ 150,157.70
Total Expenditures: $ 28,449.28

Note: This report should not require more than 2-3 pages & should be e-mailed to the NETC Coordinator so as to arrive no later than three (3) working days after the end of each calendar quarter.

NEW ENGLAND TRANSPORTATION CONSORTIUM
QUARTERLY PROJECT PROGRESS REPORT

A. PROJECT NUMBER AND TITLE:

NETC 13-2 "**HMA Mixtures Containing Recycled Asphalt Shingles (RAS): Low Temperature and Fatigue Performance of Plant-Produced Mixtures**"

B. PRINCIPAL INVESTIGATOR(s) & UNIVERSITY(s):

Professor Walaa S. Mogawer, PE, F.ASCE, Highway Sustainability Research Center (HSRC), University of Massachusetts

C. WEB SITE ADDRESS (*If one exists*):

http://www.uvm.edu/trc/netc/netc-research-projects/ffy-2013-research-projects/

D. START DATE (*Per NETC Agreement*):

06/01/14

E. END DATE (*Per NETC Agreement*):

05/31/16

F. ANTICIPATED COMPLETION DATE:

05/31/16

G. PROJECT OBJECTIVES:

The goal of this research will be to evaluate plant-produced HMA mixtures that contain RAS to identify the critical material properties and plant operations that are needed to produce RAS mixtures with fatigue and low temperature cracking properties equivalent (or better than) typical mixtures that are produced. In order to accomplish this goal, the following research objectives are proposed:

1. Determine the current state-of-practice with regards to recycled shingle usage in paving mixtures.
2. Locate regional asphalt mixture producers in New England with capabilities and willingness to produce mixtures incorporating RAS for this study. From this list of producers, select producers so that both batch and drum plant are utilized for production.
3. Assist the selected producers in evaluating the properties of the RAS and RAP to be used in production.
4. Construct a matrix of mixtures that will be produced. An all-virgin material control mixture, 5% RAS mixture and a 5% RAS + RAP mixture will be designed.
5. Assist the selected producers in developing laboratory mixture designs utilizing RAS that meet the required volumetric criteria.
6. Produce the mixtures using a batch plant and drum plant. Produce mixtures assuming 100% blending of the RAS and virgin binder and at the calculated actual RAS binder contribution.

7. Sample the mixture at the plant and verify volumetric properties. Mixtures not meeting the volumetric properties should be produced again with alteration to the production parameters (i.e. use higher temperatures, longer silo storage times or increased mixing times).
8. Construct a matrix for evaluating the performance of the mixtures with emphasis of low temperature and fatigue cracking. The matrix should contain a component to evaluate the effect of aging on the degree of blending between aged and virgin binders.
9. Identify critical material properties and plant operations that yield RAS mixtures with performance properties equivalent to typical all-virgin material mixtures.
10. Develop a guideline for the use of RAS in virgin and RAP mixtures.

H. REPORT PERIOD:

2015 Quarter 1– January through March

I. ACCOMPLISHMENTS THIS PERIOD:

1. UMass Dartmouth continued to contacted several producers of asphalt mixtures in New England about their availability and willingness to participate in the study. Due to inclement weather no mixtures were able to be produced this quarter.

2. Work commenced on the literature review for this project.

J. PROBLEMS ENCOUNTERED (If any):

None

K. TECHNOLOGY TRANSFER ACTIVITIES: *List any reports, papers, presentations published/presented during the report period or anticipated for the next quarter.*

None during the current period.

L. STATUS BY TASK: *Show Work Task Number, description and % complete for each task including those completed, those underway, and those not started.*

Task 1: Kick-Off Meeting (0%)
Task 2: Literature Review (0%)
Task 3: Determine Critical RAS Information (0%)
Task 4: Determine Regional Asphalt Mixture Producers in New England with Capabilities and Willingness to Produce Mixtures Incorporating RAS for this Study (15%)
Task 5: Assist Producers in Evaluating the Properties of the RAS and RAP to be used in Production (0%)
Task 6: Assist Producers in Developing Laboratory Mixture Designs Utilizing RAS and Determine Actual RAS Binder Contribution to Mixtures (0%)
Task 7: Produce and Obtain Plant Produced RAS Mixtures (0%)
Task 8: Vary Production Parameters (Temperatures, Silo Storage, etc.) to Obtain Similar Virgin and RAS Mixtures (0%)
Task 9: Construct Test Matrix and Evaluate the Performance of the Plant-Produced Mixtures (0%)
Task 10: Identify Critical Material Properties and Plant Operations that Yield RAS Mixtures with Performance Properties Equivalent to Typical All-Virgin Material Mixtures (0%)
Task 11: Develop a Plant Guideline for the Use of RAS in Virgin and RAP Mixes (0%)
Task 12: Prepare a Final Report (0%)

Task 13: Execute Implementation Plan (0%)

M. PERCENT COMPLETION OF TOTAL PROJECT: 0%

N. ACTIVITIES PLANNED FOR NEXT QUARTER:

Complete Literature Review. The contractor (PJ. Keating) will deliver the virgin materials (asphalt binder, aggregates, and shingles) that will be used in producing the mixture to UMass. UMass will start performing mix designs.

O. FINANCIAL STATUS:
As of: *03/31/15*
Total Project Budget: $ 249,784.92
Total Expenditures : $ 0

Note: This report should not require more than 2-3 pages & should be e-mailed to the NETC Coordinator so as to arrive no later than three (3) working days after the end of each calendar quarter.

NEW ENGLAND TRANSPORTATION CONSORTIUM
QUARTERLY PROJECT PROGRESS REPORT

A. PROJECT NUMBER AND TITLE: NETC 13-3

B. PRINCIPAL INVESTIGATOR(s) & UNIVERSITY(s): Eshan V. Dave, University of New Hampshire

C. WEB SITE ADDRESS (*If one exists***):**

D. START DATE (*Per NETC Agreement***): 3/27/2015**

E. END DATE (*Per NETC Agreement***): 3/31/2016**

F. **ANTICIPATED COMPLETION DATE: 3/31/2016**

G. PROJECT OBJECTIVES:

(1) Review of current QA process used by New England DOTs for precast and prestressed concrete elements (PCE/PSE).
(2) Review of QA specifications for PCE/PSE.
(3) On the basis of the review and through working with the technical review committee of the project, develop common acceptance standards for PCE/PSE to be used by NETC constituents.
(4) Develop a cost-sharing mechanism to accompany the common acceptance standards.
(5) Identify agencies and contractors to conduct pilot implementation of the common acceptance standards.
(6) Develop a list of additional materials and services for which common acceptance standards might be beneficial and feasible.

H. REPORT PERIOD: 1/1/2015 – 3/31/2015

I. ACCOMPLISHMENTS THIS PERIOD:

The final contract execution for this research study occurred just before the end of the quarter, thus it was not possible to make significant progress on this research study. However, during this past quarter the researchers collected the information on the QA process of PCE/PSE form all constituent states. The information is currently being processed to develop the state of the practice review.

J. PROBLEMS ENCOUNTERED (If any): None

K. TECHNOLOGY TRANSFER ACTIVITIES: None

L. STATUS BY TASK:

Task 1: State of the Practice Review: The collection of the information on the QA processes for various New England DOTs in underway. A brief review of QA process for CT, ME and VT has been completed.

Task 2: Development of Common Acceptance Standards for PCE/PSE: No progress to report.

Task 3: Reporting and Technical Committee Meetings: No progress to report.

M. PERCENT COMPLETION OF TOTAL PROJECT: ____1_____%

N. ACTIVITIES PLANNED FOR NEXT QUARTER:

- **Project Kick-off Meeting**
- **Completion of QA Process Review**
- **Interview with DOT engineers and QA inspectors**

O. FINANCIAL STATUS:
As of: *4/1/2015*
Total Project Budget: $ 100,000
Total Expenditures : $ 0

Note: This report should not require more than 2-3 pages & should be e-mailed to the NETC Coordinator so as to arrive no later than three (3) working days after the end of each calendar quarter.

NEW ENGLAND TRANSPORTATION CONSORTIUM
QUARTERLY PROJECT PROGRESS REPORT

A. PROJECT NUMBER AND TITLE: NETC 09-03: Advanced Composite Materials in New England's Transportation Infrastructure: Design, Fabrication and Installation of ACM Bridge Drain System

B. PRINCIPAL INVESTIGATOR(s) & UNIVERSITY(s): Dr. Roberto Lopez-Anido P.E. University of Maine's Advanced Structures and Composites Center

C. WEB SITE ADDRESS: *www.composites.umaine.edu*

D. START DATE: September 1, 2013

E. END DATE (*Per NETC Agreement***): August 31, 2015**

F. **ANTICIPATED COMPLETION DATE: Same as End Date**
If different from the END DATE in paragraph E., the reason must be given. It is the responsibility of the Principal Investigator to insure that the project, including review of the draft report by the Project Technical Committee and the printing of the Final Report, is completed prior to the Agreement End Date. Costs incurred after the Agreement End Date cannot be reimbursed. ***Requests for extensions of the Agreement End Date must contain the reasons for the request and be submitted so as to arrive in the Coordinator's office at least 90 days prior to the Agreement End Date.***

G. PROJECT OBJECTIVES:

1. Design and fabricate a standard FRP drain that can be produced economically for use throughout New England bridges; and
2. Install the fabricated drain system in two to three representative bridge applications in New England to provide information on its performance, ease of construction, and cost.

H. REPORT PERIOD: 1/1/2015 to 3/31/2015

I. ACCOMPLISHMENTS THIS PERIOD:

Task 4 – Product validation: baseline mechanical properties and durability
The laboratory tests to assess environmental durability and generate mechanical properties for the three vendors (Kenway, ACO, and Grace Composites – FRP Bridge Drain Pipe) were completed. Draft reports summarizing baseline mechanical properties and durability performance based on coupon tests for three vendors were submitted to the Technical Committee.

Tasks 5 and 6 - Document installation of FRP drains in bridges
Contacted MaineDOT to coordinate the monitoring of the Westbrook Bridge FRP drains installation, which is scheduled for construction in the Fall.

J. PROBLEMS ENCOUNTERED (If any):
None

K. TECHNOLOGY TRANSFER ACTIVITIES: *List any reports, papers, presentations published/presented during the report period or anticipated for the next quarter.*

The final report for Tasks 1-3 was previously submitted to the Technical Committee. Some minor revisions are on going. The revised report will to be submitted in the next period.

The final report for Task 4 will be submitted to the Technical Committee in the next period.

L. STATUS BY TASK: *Show Work Task Number, description and % complete for each task including those completed, those underway, and those not started.*

M. PERCENT COMPLETION OF TOTAL PROJECT: 79%

Task	Percent of project	Percent complete
1 - Review of typical bridge drains	10%	99%
2- Develop standard drain requirements	40%	99%
3 - Identify and contact FRP manufacturers	10%	100%
4 -Baseline mechanical properties and durability	10%	80%
5 - Coordinate installation at demonstration bridges	10%	5%
6 - Document drain condition after installation	10%	60%
7 - Prepare final reports	10%	50%
	100%	79%

N. ACTIVITIES PLANNED FOR NEXT QUARTER:

- Submit draft report for Task 4 summarizing test data and discussing compliance with specifications.
- Ask for a no-cost extension to be able to include the Westbrook Bridge, and possibly other bridges, in Tasks 5 and 6 of the NETC technical report.
- Coordinate with DOTs documentation of bridge drain installations.

O. FINANCIAL STATUS:
As of: April 2nd, 2015
Total Project Budget: $ 165,000
Total Expenditures: $ 110,168

Note: This report should not require more than 2-3 pages & should be e-mailed to the NETC Coordinator so as to arrive no later than three (3) working days after the end of each calendar quarter.