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New Hampshire DOT
Department of Transportation

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Victoria F. Sheehan
Commissioner

William Cass, P.E.
Assistant Commissioner

Bureau of Materials & Research
April 5, 2021

His Excellency, Governor Christopher T. Sununu
and the Honorable Council
State House
Concord, New Hampshire 03301

REQUESTED ACTION

Authorize the Department of Transportation to enter into a **SOLE SOURCE** Cooperative Project Agreement with the University of New Hampshire Sponsored Programs Administration (vendor 315187), Durham, New Hampshire, for a fee not to exceed $87,862.00, for a cooperative evaluation of green stormwater infrastructure implementation to reduce runoff and improve water quality at the Welcome and Information Center rest area along Interstate 89 southbound in Sutton, NH effective upon Governor and Council approval through January 31, 2024. 100% Federal Funds.

Funds to support this request are available in the following account for FY 2021 and is contingent upon the availability and continued appropriation of funds in FY 2022, with the ability to adjust encumbrances between State Fiscal Years through the Budget Office, if needed and justified.

	FY 2021	FY 2022
04-96-96-962015-3036		
SPR Research Funds		
046-500464 General Consultants Non-Benefit	$50,000.00	$37,862.00

EXPLANATION

The following research study will address an immediate Department need; is unique to New Hampshire's environment and conditions, thereby requiring substantial local experience; and is directly aligned with a particular area of University expertise. In addition, the Principal Investigator is a nationally recognized expert in their field. As such, the proposed work does not lend itself to a selection process that includes private industry or out-of-state organizations, and it is in the Department's and the State's best interest to work directly with the University of New Hampshire, requiring this **sole source** agreement.

This work is part of the Department's Statewide Planning and Research (SPR) program. The Department of Transportation and the University of New Hampshire (UNH) have a long-standing cooperative relationship in transportation research. This relationship has been mutually beneficial, culminating in savings to the State while enhancing work force development and maintaining New Hampshire's position on the leading edge of new technology. Research studies conducted by UNH for the Department have led to numerous innovations in the highway and bridge industry, including improved pavement design, increased use of recycled materials, stormwater management evaluation, and rapid construction techniques.

Statewide-SPR 42372H, Water Quality Test Site and Public Outreach at the Sutton Rest Area

The Department is collaborating with UNH to conduct a cooperative research study, "Water Quality Test Site and Public Outreach at the Sutton Rest Area". NHDOT is reconstructing the outside area of the Welcome and Information Center rest area along Interstate 89 southbound in Sutton, NH. One facet of this reconstruction is the design of green stormwater infrastructure (GSI) that not only improves water quality but also reduces runoff via infiltration. Additionally, there is an unnamed stream under the site that flows eastward to Stevens Brook. The reconstruction project offers the opportunity to investigate improvements to aquatic organism passage along this section of the stream.

The objectives of this research are to: develop GSI designs for the Sutton rest area; estimate costs for GSI systems; investigate aquatic organism passage (AOP) for the buried stream; develop cost estimates for the AOP aspects, monitor existing site runoff characteristics and water quality; monitor post-construction runoff characteristics and water quality; develop maintenance plans; and develop public outreach information for the GSI and AOP designs. For a total fee not to exceed $87,862 effective upon Governor and Council approval though January 31, 2024, this research could result in water quality measures that will more often fit within the available Right of Way of a traditional highway project. This will result in lower costs to purchase additional land and it will lower the impact on the community. This research may also discover lower maintenance options that will allow our maintenance staff to focus on other highway maintenance tasks that are needed.

The funding is 80% Federal Funds with 20% state match. Turnpike toll credit is being used for the match requirement, effectively using 100% Federal Funds. The Capital Budget Overview Committee approved the use of Turnpike Toll Credits on April 2, 2021.

This Agreement has been approved by the Attorney General as to form and execution. Copies of the fully-executed Agreement are on file at the Secretary of State's Office and the Department of Administrative Services, and subsequent to Governor and Council approval will be on file at the Department of Transportation.

It is respectfully requested that authority be given to enter into these sole-source Agreement for consulting services as outlined above.

Sincerely,

Victoria F. Sheehan
Commissioner

Attachments

CAP 21-002

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Victoria F. Sheehan
Commissioner

Approved by the Capital Budget Overview Committee April 2, 2021

William Cass, P.E.
Assistant Commissioner

Bureau of Materials and Research
February 17, 2021

The Honorable Chairman
Capital Budget Overview Committee
State House
Concord, New Hampshire 03301

REQUESTED ACTION

Pursuant to the provisions RSA 228:12-a, Use of Toll Credits, the Department requests the Capital Budget Overview Committee approve the Department of Transportation's use of Toll Credits to meet funding match requirements for seven (7) proposed research projects as described in the federally approved Department's 2021 State Planning and Research Part II (SPR2) Work Program. The estimated cost of research related work is $863,409.70. Based on the estimated cost, the maximum amount of Turnpike Toll Credit needed is $172,681.94.

EXPLANATION

As part of the Federal-Aid Highway Program, the Federal Highway Administration (FHWA) requires that 2% of the State's apportioned funds be set aside for State Planning and Research activities with 75% dedicated to planning and 25% to research. This is a federally mandated program and these funds can only be used for these purposes. To meet this requirement, the NHDOT's State Planning and Research Part II (SPR2) annual Work Program includes a blend of in-house and contracted research work.

Research activities included in the requested action are undertaken in accordance with federal regulations and state priorities and were selected by the Department's Research Advisory Council and approved by the NH Division Federal Highway Administration. They include the following:

- Crushed Gravel for Shoulder Leveling 304.32
- Use of Drilling Parameters for Enhancing Geotechnical Site Investigations
- Subsurface Investigations for the 21st Century - Advancing our Practices beyond the Borehole
- Water Quality Test Site and Public Outreach at the Sutton Rest Area
- Wildlife Vehicle Collisions Data Gathering and Best Management Practices
- Concrete Slab Jacking
- Bus Stops and Passenger Amenities in Public Highway Right-Of-Ways

Research studies conducted under the SPR2 program have led to numerous gains and innovations in the state's highway and bridge industry, including such successes as improved pavement treatment,

alternative materials and methods for bridge construction and repair, validation of environmental compliance, and forensic analysis of transportation construction activities.

Funding is from the annual State Planning and Research (SPR) program, a mandated federal program set-aside.

The balance of toll credits at the end of federal fiscal year 2020 is $202.6 million.

Your approval of the above action is respectfully requested.

Sincerely,

Victoria F. Sheehan
Commissioner

Attachments

COOPERATIVE PROJECT AGREEMENT
between the
STATE OF NEW HAMPSHIRE, **DEPARTMENT OF TRANSPORTATION**
and the
University of New Hampshire of the UNIVERSITY SYSTEM OF NEW HAMPSHIRE

A. This Cooperative Project Agreement (hereinafter "Project Agreement") is entered into by the State of New Hampshire, **Department of Transportation**, (hereinafter "State"), and the University System of New Hampshire, acting through **University of New Hampshire**, (hereinafter "Campus"), for the purpose of undertaking a project of mutual interest. This Cooperative Project shall be carried out under the terms and conditions of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, except as may be modified herein.

B. This Project Agreement and all obligations of the parties hereunder shall become effective on the date the Governor and Executive Council of the State of New Hampshire approve this Project Agreement ("Effective date") and shall end on **1/31/24**. If the provision of services by Campus precedes the Effective date, all services performed by Campus shall be performed at the sole risk of Campus and in the event that this Project Agreement does not become effective, State shall be under no obligation to pay Campus for costs incurred or services performed; however, if this Project Agreement becomes effective, all costs incurred prior to the Effective date that would otherwise be allowable shall be paid under the terms of this Project Agreement.

C. The work to be performed under the terms of this Project Agreement is described in the proposal identified below and attached to this document as Exhibit A, the content of which is incorporated herein as a part of this Project Agreement.

Project Title: **WQ Test Site & Public Outreach at the Sutton Rest Area (SPR Project # 42372H)**

D. The Following Individuals are designated as Project Administrators. These Project Administrators shall be responsible for the business aspects of this Project Agreement and all invoices, payments, project amendments and related correspondence shall be directed to the individuals so designated.

State Project Administrator

Name: Ann Scholz
Address: NHDOT Bureau of Materials & Research
5 Hazen Dr. PO Box 483
Concord, NH 03302-0483

Phone: 603 271-1659

Campus Project Administrator

Name: Cheryl Moore
Address: University of New Hampshire
Sponsored Programs Administration
51 College Rd. Rm 111
Durham, NH 03824-2620

Phone: 603-862-1992

E. The Following Individuals are designated as Project Directors. These Project Directors shall be responsible for the technical leadership and conduct of the project. All progress reports, completion reports and related correspondence shall be directed to the individuals so designated.

State Project Director

Name: Tobey Reynolds
Address: NHDOT Bureau of Highway Design
7 Hazen Drive, PO Box 483
Concord, NH 03302-0483

Phone: 603 271-7421

Campus Project Director

Name: Dr. Thomas Ballestero
Address: University of New Hampshire
Gregg Hall, Room 238
Colovos Road
Durham, NH 03824603 862-1405

Phone: 603 862-1405

Campus Authorized Official KJ
Date 3/4/21

F. Total State funds in the amount of **$87,862** have been allotted and are available for payment of allowable costs incurred under this Project Agreement. State will not reimburse Campus for costs exceeding the amount specified in this paragraph.

Check if applicable

☐ Campus will cost-share % of total costs during the term of this Project Agreement.

☒ Federal funds paid to Campus under this Project Agreement are from Grant/Contract/Cooperative Agreement No. **NA** from **USDOT Federal Highway Administration** under CFDA# **20.205**. Federal regulations required to be passed through to Campus as part of this Project Agreement, and in accordance with the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, are attached to this document as Exhibit B, the content of which is incorporated herein as a part of this Project Agreement.

G. Check if applicable

☐ Article(s) of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002 is/are hereby amended to read:

H. ☒ State has chosen **not to take** possession of equipment purchased under this Project Agreement.

☐ State has chosen **to take** possession of equipment purchased under this Project Agreement and will issue instructions for the disposition of such equipment within 90 days of the Project Agreement's end-date. Any expenses incurred by Campus in carrying out State's requested disposition will be fully reimbursed by State.

This Project Agreement and the Master Agreement constitute the entire agreement between State and Campus regarding this Cooperative Project, and supersede and replace any previously existing arrangements, oral or written; all changes herein must be made by written amendment and executed for the parties by their authorized officials.

IN WITNESS WHEREOF, the University System of New Hampshire, acting through the **University of New Hampshire** and the State of New Hampshire, **Department of Transportation** have executed this Project Agreement.

By An Authorized Official of:
University of New Hampshire
Name: Karen M. Jensen
Title: Sponsored Programs Administration, Director Pre-award
Signature and Date: Karen Jensen 3/4/21

By An Authorized Official of:
Department of Transportation
Name: Peter E. Stamnas
Title: Director of Project Development
Signature and Date: 4/7/21

By An Authorized Official of: the New Hampshire Office of the Attorney General
Name: Allison Greenstein
Title: Asst. Attorney General
Signature and Date: Allison B Greenstein 4/14/21

By An Authorized Official of: the New Hampshire Governor & Executive Council
Name:
Title:
Signature and Date:

Campus Authorized Official KJ
Date 3/4/21

EXHIBIT A

A. **Project Title:** WQ Test Site & Public Outreach at the Sutton Rest Area (SPR Project # 42372H)

B. **Project Period:** Upon Governor and Council approval - 01/31/2024

C. **Objectives:** The objectives of this research are to: develop GSI designs for the Sutton rest area; estimate costs for GSI systems; investigate aquatic organism passage (AOP) for the buried stream; develop cost estimates for the AOP aspects, monitor existing site runoff characteristics and water quality; monitor post-construction runoff characteristics and water quality; develop maintenance plans; and develop public outreach information for the GSI and AOP designs.

D. **Scope of Work:**

Introduction

NHDOT is reconstructing the Welcome and Information Center rest area along Interstate 89 southbound in Sutton, NH. One facet of this reconstruction is the design of green stormwater infrastructure (GSI) that not only improves water quality but also reduces runoff via infiltration. Additionally, there is an unnamed stream under the site that flows eastward to Stevens Brook. The reconstruction project offers the opportunity to investigate improvements to aquatic organism passage along this section of the stream.

Scope of Work

The proposed scope of work focuses on stormwater management and aquatic organism passage designs intended to demonstrate compatibility between NHDOT infrastructure and natural systems.

The watershed area draining to the site from the west is approximately 40 acres (StreamStats) and the present rest area impervious area is approximately 2.2 acres. Given the setting, runoff from the rest area impervious areas from small storms dominates the runoff to the small stream. Impervious area runoff quality aside, the increased runoff from the rest area impervious surfaces can result in stream instabilities..

For stormwater management system designs, the initial efforts shall be to work collaboratively with NHDOT on their design intentions for the rest area transportation and associated infrastructure. Collaboration here is meant to understand the intention of the transportation infrastructure in the framework of stormwater and whether in the planning stage there might be some minor modifications. For example, changing the way the finished surface pitches, leaving some areas unpaved, or simply leaving as many GSI options applicable as possible.

GSI possibilities include permeable pavements, bioretention systems, tree filters/trenches, subsurface gravel wetlands, and subsurface gravel filters. In collaboration with NHDOT personnel, various GSI options will be presented. A very important aspect of these initial collaborations is to include NHDOT maintenance and inspection personnel: GSI practices are only as successful as their maintenance. Lack of maintenance will result in system failures, failure here meaning that the GSI does not meet design expectations. NHDOT personnel will be presented with the maintenance requirements of each type of GSI system, and in turn NHDOT personnel will inform the GSI design

Campus Authorized Official KJ
Date 3/4/21

team those practices they routinely perform, and those that might be considered atypical. The intent being to implement GSI systems that fit within the realm of present NHDOT maintenance practice and that NHDOT will maintain the GSI systems long into the future. For example, if permeable pavements are suggested, which require street vacuuming equipment the NHDOT does not possess nor will subcontract for such services, it would be a mistake to include permeable pavements in the design. The permeable pavements could "fail" within a few years. Failure here means that although the pavement is still a solid transportation surface, its stormwater function of infiltration ceases because the surface is clogged.

Once initial discussions with NHDOT provides guidance and constraints for the GSI designs and locations, the GSI designs will be completed and draft designs submitted to NHDOT for review and comment. When NHDOT comments are then used to modify and adapt the GSI designs, final designs shall be prepared along with cost estimates and maintenance plans.

As feasible, programmable water samplers and real time water quality probes will be installed in the unnamed stream flowing through the site. Rather than tap into electricity onsite or use cumbersome batteries for power, separate research funding will purchase solar panels/batteries for operating the units. One sampler shall be placed upstream of the rest area and one immediately downstream of the site and west of south bound I89 (2 sampling locations). Instream real time water quality instrumentation shall also be set at the same locations. The real-time probes will monitor: temperature, conductivity, water depth and pH. The programmable samples will be set to monitor runoff events (as many as possible until construction starts). Samples from these runoff events will be flow-weighted composite samples from which event mean concentrations are developed for each contaminant in the study. Contaminants analyzed for in samples from the automated samplers shall include: chloride, total suspended solids, nitrate, TKN, Total nitrogen, total phosphorus, and orthophosphate. Additional monitoring shall include precipitation and atmospheric pressure. UNHSC will assist with construction inspection.

The stream flowing under the site will be studied for geomorphic dimensions (bankfull width, bankfull area, riffle particle size distribution). These geomorphic dimensions will be used to either assist NHDOT in sizing replacement culverts at the site or developing instream structures that will transition from the stream to the culverts and back to the stream with limited loss of AOP.

Once the GSI systems are constructed and the site stabilized, the stream shall again be monitored at the same three locations for the same water quality variables as the pre-construction sampling.

E. **Deliverables Schedule:** Quarterly summary reports will be submitted at the end of each three-month calendar year. The research group will meet with the Technical Advisory Group (TAG) quarterly or at major milestones. Expected project start date is following Governor and Council approval early (spring 2021). A three-year project timeline is envisioned from pre- to post-construction. Office efforts may be completed year-round, whereas field efforts will be constrained to May through October.

Date	Deliverable
May 2021	Kickoff TAG meeting
June 2021	Quarterly Report
September 2021	Quarterly Report
December 2021	Quarterly Report
March 2022	Quarterly Report
June 2022	Quarterly Report

Campus Authorized Official KJ
Date 3/4/21

June 2022	TAG meeting
September 2022	Quarterly Report
December 2022	Quarterly Report
March 2023	Quarterly Report
June 2023	Quarterly Report
June 2023	TAG meeting
September 2023	Quarterly Report
December 2023	Draft Final Report and TAG meeting
January 2024	Final Report, one-page project tech brief, and poster will be prepared for the NHDOT website.

F. Budget and Invoicing Instructions:

Cost Item (May 1, 2021 start date)	($)
Personnel	$ 33,495
Fringe benefits	$ 10,365
Equipment charges	$ 7,200
Travel-mileage	$ 3,623
Supplies	$ 2,000
Lab costs	$ 8,400
Total direct costs	$ 65,083
UNH F&A	$ 22,779
Total Cost	$ 87,862

Campus will submit invoices to State on regular Campus invoice forms no more frequently than monthly and no less frequently than quarterly. Invoices will be based on actual project expenses incurred during the invoicing period, and shall show current and cumulative expenses by major cost categories. State will pay Campus within 30 days of receipt of each invoice. Campus will submit its final invoice not later than 60 days after the Project Period end date. State may withhold 10% of funds until receipt of final report from UNH. State will provide final payment within 30 days of receipt of the accepted final report.

Campus Authorized Official KJ
Date 3/4/21

EXHIBIT B

This Project Agreement is funded under a Grant/Contract/Cooperative Agreement to State from the Federal sponsor specified in Project Agreement article F. All applicable requirements, regulations, provisions, terms and conditions of this Federal Grant/Contract/Cooperative Agreement are hereby adopted in full force and effect to the relationship between State and Campus, except that wherever such requirements, regulations, provisions and terms and conditions differ for INSTITUTIONS OF HIGHER EDUCATION, the appropriate requirements should be substituted (e.g., OMB Circulars A-21 and A-110, rather than OMB Circulars A-87 and A-102). References to Contractor or Recipient in the Federal language will be taken to mean Campus; references to the Government or Federal Awarding Agency will be taken to mean Government/Federal Awarding Agency or State or both, as appropriate.

Special Federal provisions are listed here: ☐ None or **X Uniform Guidance issued by the Office of Management and Budget (OMB) in lieu of Circulars listed in paragraph above.** .

Campus Authorized Official KJ
Date 3/4/21