



REGION 2
UNIVERSITY TRANSPORTATION RESEARCH CENTER
RFP COVER SHEET

Title: Living Snow Fences

RFP Number: C-06-09:

Sponsor: NYSDOT

Date Issued: March 29, 2007

Pre-Proposal Meeting Date: None

Draft Budget Due at UTRC: May 7, 2007 (send to ckamga@utrc2.org)

Final Proposal Due at UTRC: May 9, 2007 (send to rbaker@utrc2.org, cc: ethor@utrc2.org)

RFP Closing Date: May 10, 2007

If you plan to apply:

Please contact Robert Baker at rbaker@utrc2.org (cc: ethor@utrc2.org) to let us know you are assembling a proposal. We will make sure you receive any additional information that becomes available about this proposal.

Proposal submission guidelines:

Please submit your proposal electronically to UTRC. We will confirm that the proposals make comparable budget assumptions and will deliver the proposals to the sponsoring agency by the closing date.

Funding available:

Up to \$235,000 is available from NYMTC. USDOT (UTRC) will provide up to \$50,000 in matching funds for requested funding above this budgeted amount. To the extent possible, we request that PIs identify sources of in-kind funding from their home institution (e.g., tuition waiver/reductions, overhead cost-sharing, faculty release time, etc.)

For questions about this proposal, please contact:

Paul Hoole, Director
Research and Policy Studies Section, 6th Floor
New York State Department of Transportation
50 Wolf Road
Albany, NY 12232

For questions about budget preparation, please contact:

Camille Kamga, ckamga@utrc2.org

Request for Proposals
C-06-09: Living Snow Fences
3/29/07

RESEARCH PROBLEM STATEMENT

At many locations along State highways, snow and ice control is more difficult because winds blow snow off adjoining property and onto the highway and right of way. Blowing and drifting snow requires frequent plowing or applications of de-icing chemicals. Blowing and drifting snow can also create safety problems by decreasing driver visibility; in western New York, "white-outs" on highways can occur as early as October.

In severe storms, or storms where Department plowing forces are depleted, snow can cover a road faster than it can be removed. This could result in impaired or dangerous driving conditions.

Snow and ice control researchers have discovered that roadside design and permanent or temporary engineered snow fences, from manmade materials, can provide relief from blowing snow. However, road design cannot solve every problem.

In some Regions, temporary snow fences typically are installed and at times removed seasonally, which is time consuming and labor-intensive. A four feet high temporary snowfence, a standard height, is often not effective in some settings; raising such fences to six feet heights may not work if the materials are not strong enough.

Permanent snow fence eliminates the need for installation in the fall and removal in the spring. However, it can be costly, it may not be popular with landowners and it may affect land uses such as agriculture or athletic fields.

In response, researchers are re-examining the potential of vegetation to eliminate or control blowing and drifting snow on highways. These efforts have been inspired by a practice, popularized during the Depression, of planting evergreens to reduce wind or snow. The terms for this practice were "windbreaks," "shelterbelts" or "snow breaks."

Researchers in the western United States have investigated the effectiveness of living snowfences composed of evergreens and have learned about their effectiveness.

However, the New York State Department of Transportation needs more applied research, guidance documents and training, relevant to conditions in New York State, before the agency can increase its effective use of living snowfence. The following considerations are of particular importance:

- New living snowfence methods have been discovered in New York, such as leaving eight to 10 rows of corn in a field alongside a road or planting a new hybrid called shrub willow. Some experimental plantings have been done with these methods, but a systematic study is needed - - to see what the best practices are for design, planting and maintenance.
- Regardless of vegetation type, the Department does not have a systematic means of instructing its frontline highway designers, landscape designers and operational staff in how to design, install and maintain living snowfence projects. Training materials are needed for designers and residency staff who will install, or manage installation of, living snowfence.

- Existing assessments of living snowfence were undertaken in the West, where snow is more powdery than in the Northeast and where the frequency of snow is different. Snow in the Northeast is frequently wetter than in the West and this may require different approaches to design, installation and effectiveness of living snowfence.

OBJECTIVES

This project will develop training and information so that Department designers and maintenance residencies can design and install the most appropriate living snowfences for a given site. A secondary objective of this project will be to share the training and information with local municipal transportation operators in the State and the nation, so they could more quickly understand and adapt the techniques of living snow fences to their roadsides.

PROPOSED RESEARCH TASKS AND RESEARCH PRODUCTS

Task descriptions are intended to provide a framework for conducting the research. NYSDOT is seeking the insights of Proposers on how to best achieve the research objectives. Proposers are expected to describe research plans that can be realistically accomplished within the constraints of available funds and research period. Proposals must present the Proposer's current thinking in sufficient detail to demonstrate their understanding of the issues and the soundness of their approach to meeting the research objectives.

Table 1 lists the proposed research tasks and the product or products associated with each task.

The expectation is that this project will include information about a wide variety of vegetation used for living snow fences, including rows of corn, grasses, evergreens, shrub willows or other vegetation that the researcher or project manager believes warrants investigation.

The project does not include a task to evaluate living snow fence installed as a result of this project. Several vegetation types used in living snow fence will not grow to effective heights and sizes within the anticipated duration of this project. However, the scope of work includes the researcher preparing a tentative evaluation plan to be implemented when the vegetation reaches suitable size and height.

For living snow fence installed as part of the training and for the evaluation segments of the project, NYSDOT expects the investigator will provide a complete set of supplies, materials and equipment for each test. NYSDOT and the investigator will identify locations that jointly meet the investigator's needs and NYSDOT operational and safety requirements.

Task	Description	Research Products
1. Prepare Living snow fence process guidelines and Training Materials		
1-A	Review current literature	Summary of literature search
1-B	Prepare recommended guidelines for the following elements of the living snow fence process <ul style="list-style-type: none"> • Design, including evergreens, grasses, corn rows, shrub willows or other vegetation researcher/project manager believes warrants investigation. • Installation • Maintenance 	A report or reports presenting guidelines for living snow fence design, installation and maintenance.
2. Living snow fence training		
2-A	Prepare training documents and presentations.	Training documents and PowerPoint presentations that the Department may use for future training.
2-B	Deliver training, teaching design, installation and maintenance in the classroom and on site.	Training presentations would consist of <ul style="list-style-type: none"> • Two train the trainer sessions to reach up to 60 total Department employees from across the State. • Sessions to include classroom, hands-on field training. • The researcher attending two presentations by Department trainers, to provide support and advice on any improvements needed for future training.
3. Evaluate living snow fences in New York		
3-A	Conduct field measurements on installations in New York before living snow fence is installed.	Report on field measurements at four sites, where control will be provided with corn rows, grasses, evergreens and shrub willows or other vegetation.
3-B	Provide a basis for field measurements after living snow fence vegetation has reached operational heights.	Evaluation plan for measuring living snow fence effectiveness after vegetation is at operational heights.
3-C	Analyze data and determine key factors for living snow fence success in New York.	Report on key factors for living snow fence success.
3-D	Based on reviews of living snowfence already installed by the Department and planned installations, provide benefit cost information that is as specific as possible.	A benefit-cost analysis that identifies specific data or identifies data that the Department must obtain for a complete benefit-cost analysis.

URGENCY / EXPECTED BENEFITS

Snow is a major issue for winter safety, mobility and system reliability. Living snow fences consisting of vegetation may limit or eliminate blowing and drifting snow on highways with an attractive, durable mechanism. Reducing or eliminating blowing snow will reduce the potential for accidents. Living snow fence may also help reduce wear and tear on equipment and reduce callouts in some locations.

Living snow fence may reduce de-icing chemical applications to keep roads clear, minimizing/reducing environmental impacts. The Department's current winter maintenance costs are in excess of \$100 million. Relatively low cost solutions, such as living snow fence, have the potential for savings in labor, equipment and materials.

Other benefits of living snow fence are that it provides good wildlife habitat and is aesthetically pleasing. Many living snow fences are designed with the assistance of landscape architects and are aesthetically pleasing to travelers.

Increasing winter travel safety and reliability improves the State's economic competitiveness with Sunbelt states. If living snow fence becomes a widely used technique, it may create a new business opportunity for contractors and nursery suppliers.

Success in this project adds to New York State's reputation as a national leader in transportation and environmental protection.

RESEARCH PERIOD

24-36 months

FUNDING

\$235,000 (exclusive of consortium administrative fees).

PROJECT REPORTS

All project reports and project communications are to be directed through the NYSDOT Project Manager. Quarterly progress reports will be required in a concise format, no longer than 1 to 2 pages. Comprehensive project reports, as specified in individual task deliverables, will be required upon completion of each task. Please submit all draft project reports electronically, in Microsoft Word format, and in hard copy directly to the NYSDOT Project Manager. The Principal Investigator shall submit the final report in conformance with NYSDOT and FHWA final report requirements. The final project report shall be provided in PDF format and hard copy to the NYSDOT Project Manager for distribution purposes.

SPECIAL NOTES

- Principal investigators should be familiar with and follow the requirements of New York State (the Compliance Procurement Lobbying Law of 2005) with regard to consultant contract procurement. Information can be found on the NYSDOT web site (www.NYSDOT.gov) under "Business Center," then "Consultants," then "Non-Architectural Engineering," then Active Solicitations."

In particular, please note that communications between Contractors, Consultants/Principal Investigators, and Vendors with the Department are restricted during the period of time when services for more than \$15,000 have been requested (Request for Proposals issued), up until the time when the Consultant is selected. During this time communications, where *a reasonable person would infer that the communication was intended to influence the procurement*, should be limited to Department staff identified in the solicitation as “designated contact.”

Any communication with an employee, who is not a designated contact which is intended to influence the solicitation, could result in the outside party being prohibited from competing for the solicitation. A second violation will ban the Consultant/Principal Investigator from competing for any Department solicitation for four years.

The designated contact for this solicitation is Deborah Mooney. Clarifying questions on the RFP should be e-mailed to: dmooney@dot.state.ny.us

- Proposals should indicate direct and indirect costs, hourly rates and hours by task, travel costs, equipment costs and material costs to assist NYSDOT in understanding how the total cost for the work was estimated. The winning proposal will result in a fixed cost contract based on details provided.
- Please provide a budget chart which shows for each task the deliverable and cost. Task headings in the Budget Chart are to match the scope task headings.
- Please include a Gantt Chart, showing the duration (start to finish) for each task in terms of months (i.e. Month 1, Month 2, etc) since the actual start date is an estimate.
- If the proposal involves a joint venture or sub-consultants, it must be clear as to how tasks will be distributed or shared in the scope of work.
- **Nine (9)** copies of the proposal should be provided. Cost information should be kept separate from the remainder of the proposal.
- The final report on the research will be expected to contain as a minimum the information described in Attachment A, *Requirements for the Final Report*.
- NYSDOT has an ongoing contractual relationship with three research consortia. This Request for Proposals is being offered to the members of these consortia only. Proposals should be submitted through one of the applicable consortia in time for them to forward the proposals to NYSDOT by the due date of May 10, 2007.
- Proposals, where the New York State costs total more than 10 percent over the budgeted cost, will not be considered for selection. If a potential principal investigator believes the research cannot be reasonably conducted without an increase in the budget, they should write to:

Paul Hoole, Director
Research and Policy Studies Section, 6th Floor
New York State Department of Transportation
50 Wolf Road
Albany, NY 12232

If a sufficient number of potential principal investigators indicated in writing that they believe the research cannot be reasonably conducted within the funding constraints specified and there are only a limited number of proposals submitted within the funding constraints, New York State reserves the option of not proceeding with the work or revising the budget estimate and issuing a new Request for Proposals.

CRITERIA FOR SELECTION

Expertise / Understanding / Approach (Weight: 50 percent)

Expertise: What is the extent of the Principal Investigator's relevant experience? What is the extent of the relevant experience of others who will be involved in the research?

Understanding of the Problem: Does the proposal reflect an understanding of the problem and its relevance to New York State? Does the proposal reflect an understanding of existing data and the current state of knowledge in New York State?

Approach: Is the proposed approach clear, especially in how it will build upon and enhance the state of knowledge in New York State? Will it yield the deliverables called for in the RFP? Does the approach show insight that will lead to results that will sufficiently assist New York State in addressing the problem? Is the proposed approach practical given the schedule and total budget? Will the proposed research draw upon all critical sources of pertinent information?

Investigators Previous Experience with Similar Projects (Weight 15 percent)

Successful completion of previous projects by the Investigator(s) will be considered. These projects should be in the area of expertise required for successful completion of this project, such as living snow fence with willows, evergreens and other vegetative matter.

Investigators Previous Experience with NYSDOT (Weight 15 percent)

Previous experience in understanding and working with NYSDOT's vegetation management program in the design and delivery of living snow fence by the Investigator(s) will be considered.

Cost to New York State (Weight 20 percent)

The lower the New York State cost, the greater consideration a proposal will receive.

Requirements for the Final Report

Copies of Report – The researcher shall provide 25 copies of a bound final report at the end of the research study. A PDF copy of the report is required as well.

Required Organization for the Final Report

Title Page - that contains:

- the research number assigned by Policy and Strategy Division;
- the name of the research study as stated in the contract;
- the words *Final Report*;
- the date (month & year) the final report is finalized;
- the name(s) of the consultant(s) / principal investigator(s), along with the name of the organization(s) they represent and their address(es); and,
- if the report has a security classification, it shall be noted on the title page.

Disclaimer - as follows:

DISCLAIMER

The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the New York State Department of Transportation, the United States Department of Transportation, or the Federal Highway Administration. This report does not constitute a standard, specification, regulation, product endorsement, or an endorsement of manufacturers.

Form DOT F 1700.7 – A copy of USDOT form DOT F 1700.7

Executive Summary

Introduction – a discussion of the problem, its background, a concise history of research previously completed on the topic, and a discussion of what NYSDOT policies, procedures, and practices are currently in place related to the research topic.

Research Method – a description of the methods used in conducting the research

Findings and Conclusions – a discussion on the analysis of the data (findings) and the conclusions reached based on the findings. Suggestions for additional research, if appropriate, would appear in this section.

Statement on Implementation – the statement shall discuss the potential for implementation, along with what resources and actions will be required to have the benefits of the research fully achieved.

Appendices – as appropriate