Invitation for Proposals

CEATI International Inc. (CEATI)
1010 Sherbrooke Street West, Suite 2500
Montreal, Quebec, Canada H3A 2R7
Website: www.ceati.com

OVERHEAD LINE DESIGN ISSUES & WIND AND ICE STORM MITIGATION INTEREST GROUP (WISMIG)

CEATI PROJECT No. T123700-3385

GUIDE FOR DETERMINING DEFLECTION CRITERIA

CEATI International Inc. (CEATI) invites the submission of proposals to perform research work on the following topic:

TITLE

Guide for Determining Deflection Criteria

INTRODUCTION

Transmission line support structures (monopole, H-frames, and lattice structures) are quite flexible and can undergo large deflections under various climatic and other loading conditions. Large deflections of these structures can cause secondary moments on structural members, can affect clearances to the ground and structures and between wires, can cause increase in magnitude of longitudinal loads, can affect stringing of the conductors, and cause significant appearance problems. Therefore, most design codes and utility practices specify maximum limits for support structure deflections and other actions (e.g., performing non-linear analysis, tilting structure during installation). Deflection limits are usually set arbitrarily based on a utility's past experience and vary from utility to utility. Similar problems are caused by vertical or lateral displacement and/or rotation of structural foundations, and the limits on the foundation rotation and displacements are set in a similar manner.

PROJECT OBJECTIVES

The objective of this investigation is to develop a guide for determining deflection criteria for transmission line support structures and foundations. The investigation will result in a document containing:

- Recommended deflection limits for self-supported transmission structures.
- Recommended displacement and rotation limits for the foundations of the self-supported structures.
- Recommendations relative to pole camber and tilting.
- Basis and justification for the recommended limits.

SCOPE OF THE STUDY

Although the intent of the investigation is to develop deflection criteria for all self-supported structure types, namely wood, steel, concrete, and FRP poles, H-Frames, and lattice steel structures, it is envisioned that the first phase of the project would deal with one type of structures as selected by WISMIG participating utilities. The scope of the project will include:

Performing an analysis on a representative transmission line, considering a range of load conditions per NESC and/or select utility practices. The transmission line would contain a normal distribution of tangent structures, running angles, and dead end structures.

Carrying out sensitivity analyses by varying allowable structure and foundation displacements and assessing the impact on: (1) conductor sag, (2) vertical and other clearances, (3) hardware and other limitations, (4) constructability during sagging

operations, (5) aesthetics and camber and tilting requirements and (6) total cost of structures and foundations.

The deflection limits should be based on poor to average soil conditions (such as glacial clay, alluvial soil, etc.) and, as a minimum, must include everyday and maximum loads and sagging load (the sagging of conductors to one face of dead-end structure) load conditions.

The proponent shall clearly state the methodology and identify various tasks (with demonstrable outcome) to meet the objectives of the project. Once the results of this study are available, other phases of work may be undertaken with different structure types or in different materials. Such work may be identified as optional tasks in the proposal.

POTENTIAL BENEFITS

The project will provide guidelines for determining the deflection criteria for self-supported transmission structures and their foundations, based on sound investigation and sensitivity analyses.

DELIVERABLES

Project Report:
The primary deliverable will be a comprehensive report including full details of the investigation (analysis of the selected transmission line, load cases considered, sensitivity analyses carried out, and results) and guidelines for determining structure and foundation criteria. As stated in the objective, the guide will contain:

- Recommended deflection limits for self-supported transmission structures.
- Recommended displacement and rotation limits for the foundations of the self-supported structures.
- Recommendations relative to pole camber and tilting.
- Basis and justification for the recommended limits.

The successful proponent is expected to prepare a ready-to-publish report on the results of the investigation and present the results to funding consortium members. The completed report must be submitted for CEATI approval in editable, electronic format (Microsoft Word). In addition, the platform and version should be specified for any software or programs to be developed. Should Excel or Access files be developed, compatibility with version 2003 is required.

Progress Reports:
Progress reports, in reasonable detail, will also be required on either a quarterly or milestone basis—normally these are scheduled to coincide with the completion of the identified tasks. It is expected that the details submitted with the progress reports would also be incorporated into parts of the final project report.

Power Point Presentation:
A ten to fifteen (10-15) slide Power Point Presentation is required to summarize the work. This should be composed of three main sections:

1. The factors motivating the initiation of the work;
2. A description of the main findings;
3. Summary of the conclusions and recommendations for future research.

Technical Brief:
The successful proponent shall prepare the contents for the Project's Technical Brief. This is a summary of the report (between 1,000 and 1,500 words), which is published separately by CEATI. Proponents are not responsible for the preparation of a ready-to-print Technical Brief, but solely to provide the contents for the following 4 sections: Background, Summary, Conclusions, and Recommendations.

1. The Report Background section should be short (approximately 200 words) and should detail the reasons the work was conducted.
2. The Summary section should be approximately 700 words. It must provide a general description of the work program.
3. The Conclusions section should be about 150 words and should provide a general outline of the key results (do not include specifics).
4. The Recommendations section should be about 200 words and should include a description of the potential applications of the results.

Please note that all reporting must be submitted in English. If written English is not the author's strong suit, it is recommended that a technical writer be hired to review the document prior to submission.

BUDGET AND SCHEDULE

The proposal must contain a schedule and a quote of required remuneration for the work in US dollars. Proponents' responses to this section must include a full breakdown of the budget and schedule, including an indication of rates and hours and the task allocation for the key personnel by task and must correspond to any phases or milestones outlined above. (Please refer to the Proposal Template for more information).

It is estimated that the budget for this project would be around $50,000 USD. It is expected that this project can be completed (draft final report submitted for review and approval) within twelve (12) months of initiation.

The proposal must include the names and qualifications of the key individuals who will be involved, as well as the name of the accountable manager.

CEATI is not bound to accept any proposal but any selection will take into account technical merit (as displayed by the description and details presented in the proposal regarding the ways in which the proponent plans to meet the scope and objective of the project), qualifications including relevance of the experience of the proposed project team in undertaking similar work, price and schedule. A proposal may be accepted in whole or in part. A commitment to proceed with the first phase of a multi-phase project does not automatically imply that the work of the subsequent phases will be undertaken.

ALTERNATIVE WORKS

Proponents shall generally follow the above description of work, but are encouraged to offer alternative works if these alternatives will meet the objectives and provide a better end product to the utilities sponsoring this work. Alternatives shall be fully described including logistics explaining why the alternate works are being offered and the benefits to be realized by the funding utilities. Where alternatives are proposed, separate budgets shall be calculated for each alternative.

SUBMISSION OF PROPOSALS

The consideration of proposals received will be limited to those who indicate their intent to employ a suitable experienced project team and who possess proper facilities to perform the work. Receipt of this "IFP" does not necessarily constitute a prior determination by CEATI that your organization has the requisite experience and facilities.

The proposal must be properly completed and executed in accordance with the CEATI guidelines available at http://www.ceati.com/technology-providers/submission-guidelines, and shall be submitted to CEATI as an attachment in Microsoft Word at the following website: http://prs.ceati.com/proposals/. Be sure to indicate project number "**T123700-3385**" on the submission form. For assistance, please contact us at 514-866-5377.

The successful proponent will be required to sign the CEATI Standard Agreement upon project initiation. Proponents are encouraged to download a copy of the Standard Agreement for review from http://www.ceati.com/technology-providers/submission-guidelines prior to submitting a proposal, if they are not already familiar with these terms. Proponents may contact CEATI at projects@ceati.com to discuss any questions or concerns regarding these terms.

CLOSING DATE FOR RECEIPT OF PROPOSALS

~~**Thursday, February 9, 2012, 4:00 pm EST**~~
Now: Friday, February 17, 2012, 4:00 pm EST