

Title: Load Resistance Factor Bridge Design and Rating Specifications Support (LRFD)

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Date Posted:
Solicitation

Expires:

Start Year: 2002

End Year: 2006

Duration: 5 years

Total Dollar
Commitments:

Commitments
Received: \$1,590,000

Background: In cooperation with AASHTO the FHWA has proposed that by 2007 all of the states utilizing the "Standard Specification for Highway Bridges" move to the LRFD method. As the LRFD Specifications are put into use by the states and others, there will be a need for technical and editorial

corrections, clarifications, and potential additions resulting from practice and research studies.

Objective: The objective of this project is to provide timely assistance to the AASHTO Highway Subcommittee on Bridges and Structures in implementing, revising, and refining the AASHTO Bridge Load Resistance Factor documents.

Scope of Work:

This contract is comprised of four major tasks, as follows:

Task 1 – Maintenance of Specifications:

Resolve areas in Bridge LRF Design and Rating documents requiring modification, clarification, or interpretation. This task includes the performance of special studies for provisions of the Bridge LRF Design and Rating documents needing additional development, as directed by the LRFD Oversight Committee.

***Existing Status:** Several studies are in progress under the NCHRP 12-42 contract but should be completed before the end of the 12-42 contract period (June 2003). The Oversight Committee will develop and evaluate a list of special studies annually.*

Task 2 – Technical Assistance and Support:

Assist the AASHTO Bridge Subcommittee including the LRFD Oversight Committee with special interpretations of the LRF documents as required. Maintain a database of existing and ongoing study information used to calibrate the load and resistance factors that appear in the specifications and respond to questions regarding this information.

Task 3 – Support of Document Preparation:

Provide technical assistance to the AASHTO Bridge Subcommittee including the LRFD Oversight Committee in the preparation of new and revisions to existing LRF Design and Rating documents. Specific tasks include: prepare and submit recommended revisions or new provisions, with supporting documentation, for the LRF Design and Rating documents. The contractor is responsible for the final document layout for each of the LRF titles, and must follow the Style Guide and Production Guidelines for AASHTO's LRF Design and Rating Titles provided by the AASHTO Publications Department. The contractor will assist with editing of documents prior to balloting and publication. This includes the preparation of an agenda book for the subcommittee's annual meeting. Meet with the LRFD Oversight Committee annually at the AASHTO's Bridge Subcommittee meeting.

Task 4 – Format Conversion

All documents will be provided with all content finalized in Microsoft Word. In order to produce the documents in Microsoft Word, the

contractor is responsible for converting documents from existing Word Perfect format. It is understood that a thorough review will be required from both the contractor and the AASHTO Publications Department to confirm that conversion was done correctly. The additional time and expense of this conversion and review should be added to the contractor's initial proposal.

An electronic and a hard copy format, in the approved layout style authorized by Oversight Committee, shall be sent to the AASHTO Publications Department by the agreed upon due date. A defined publishing schedule should be established, agreed upon, and maintained by both contractor and AASHTO Publications Department and modified periodically, at least on an annual basis.

Task 5 – Project Documentation:

Submit a quarterly project report to the LRFD Oversight Committee. The Report should discuss how the project was administered, what the technical and other accomplishments were, the status of special studies, who participated in the study, and a financial report including actual costs to accomplish each task. Further information on financial issues may be requested by the Oversight Committee and the lead state for the Pooled Fund Project. Agenda books, prepared for the annual meeting of the bridge committee under Task 3, may be included as separate appendices in the appropriate quarterly report.

Comments:
(Modjeski &
Masters)

Task 1 – Maintenance of Specifications:

We spent a little time responding to how to interface with work by Dr. McGrath as described under “Fiscal Status”.

Task 2 – Technical Assistance and Support:

There was a series of emails from a Swiss engineer regarding the variation of Phi in the moment controlled region of concrete column interaction curves which led to comparisons with ACI and a series of emails with members of T-10. The issue seemed to come down to the provision being perfectly understandable to U.S. engineers because the subject is covered in virtually every text on concrete design used in this country, versus a precise reading by someone without that background. In reviewing this issue, we also found that ACI has recently changed their provisions in the area to a strain basis. This was also passed along to T-10.

We had a couple of “call back” messages from engineers who were able to solve their own questions before we could get back to them, which is good.

We also worked with Ms. Rehm and Mr. Friedland on the form for agenda items for next year.

Task 3 – Support of Document Preparation:

There has been little activity on the Task so far. We have provided some files to members of Technical Committees working of 2004 Agenda Items. Much of the activity will probably take place in the first quarter of 2004.

Task 4 – Format Conversion:

The conversion to WORD has gone quite well, but complying with the Style Guide has required more work than the conversion to WORD per se. We have also had continual problems with fonts. For a while we were dealing directly with Hewlett Packard trying to get problems resolved, but with little progress. Except for Section 6 – Steel, we have now completed the first pass of proofreading by four engineers and are in the process of addressing what they have found, much of which is related to the font issues. Many of the font problems involve substitution of spurious characters which show up on printed pages, but not necessarily on the screen. The changes to Section 6 were so extensive that it requires a few more days work before it is ready from the proofreaders.

The ballot items from the '03 SCOBS meeting have now all been incorporated into the text of the 3rd Edition and checked.

Task 5 – Project Documentation:

This is the first quarterly report.

Future
Expenses:

(1) We will be reviewing work currently underway by Dr. Timothy McGrath of Simpson, Gumpretz & Heger, Inc. to resolve culvert design issues for which we have budgeted \$16,000 in Task 1. This will increase the budget usage 25%.

(2) Dr. Andy Nowak had requested support to rewrite his Calibration Report from 1994 as indicated in our proposal for this project. It appeared that this would be funded as an NCHRP 20-7 project with review including some sample calculations by us for which we had budgeted \$19,000 under Task 2. Since a 20-7 project was authorized we became aware of two other calibration related efforts involving the LRFD and LRFR Specifications. We have proposed to organize a small workshop to get involved people and several of the Bridge Engineers together to coordinate these separate efforts. This will probably raise the cost to \$35,000 - \$40,000. This will increase the budget usage to 66% - 76%.

(3) Continuation of Task 4 will probably consume the entire budget for this task and some additional funds which will affect resources available to other tasks. The budget for this task was set before the Style Guide for

the work was available from AASHTO. We hired two computer proficient college students to work on the WORD conversion and much of the style changes (under supervision and using a lot of macros developed by us) which saved \$10,000. One of them is currently working ahead on the WORD conversion of the LRFD Construction Specifications, originally included in the 2004-2005 budget, to take advantage of the reduced cost.