

**Long-Term Maintenance of Load and Resistance
Factor Design Specifications Fund:
Final Summary Report**



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For:

The AASHTO Highway Subcommittee on Bridges and Structure

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Introduction

At the 1993 Annual Meeting of the Bridges and Structures Subcommittee (SCOBs), member departments voted 41 to 5 to adopt the new AASHTO Load Resistance Factor Design (LRFD) Bridge Specifications. In 1994, AASHTO published the first edition of LRFD in both customary (U.S.) and SI units. In anticipation of changes during the early years of LRFD, AASHTO and FHWA funded NCHRP 12-42 to provide maintenance and enhancements to LRFD. LRFD is based on new developments in bridge engineering, sound principles, and a logical approach in ensuring constructability, safety, serviceability, inspectability, economy, and aesthetics. The LRFD philosophy is consistent with other major bridge design codes adopted or being developed in Asia, Canada, Europe, and other parts of the world.

Subsequent to the development of the new LRFD specifications, FHWA announced that all state bridge projects using federal funding must use the new and superior code. The implementation date for the switch to LRFD was set for October 31, 2007. Seeing that states would need help with this implementation through training, example problems, and guidance, AASHTO initialized the LRFD Oversight Committee. This Committee was made up of chairs from several of the most relevant technical committees within the Highway Subcommittee on Bridges and Structures, as well as representatives from the AASHTO staff and FHWA.

Also, in June 2003, the NCHRP 12-42 project to provide maintenance and enhancements to LRFD ended. Because of the continued need for maintenance of the code and implementation of new research in these areas, AASHTO took over the contract with the original consultant used for the NCHRP project. At this time, the LRFD Oversight committee oversees this maintenance contract and initiates special studies with this consultant as they are needed to enhance the code.

Funding for the maintenance and special studies comes from two sources. States can contribute money through a voluntary fund paid directly to AASHTO. States also have the option to contribute to a Pooled Fund which assists the Subcommittee in implementing, revising, and refining the AASHTO Bridge Load and Resistance Factor documents. These funds are SP&R funds (federal funds each state is allotted for research) and are 100 percent matched. Collectively, both funding sources are pledged through the year 2006.

In 2006, the decision was made to continue the pooled fund study through FY 2010. A Memorandum of Agreement was drafted with Iowa to continue the managing relationship between AASHTO and Iowa for this project (see Appendix). States were sent invoices to ask for obligations through 2010. Also, in 2008, a resolution was passed by the Subcommittee on Bridges and Structures stating the need for continued funding to be used expressly for the updating of Bridges and Structures documents (see Appendix).

In October 2010, the Iowa pooled fund was closed out and the program was transferred entirely to AASHTO to become a Technical Service Program. States were invoiced in

August of 2010 for the upcoming fiscal year 2011 for continuation of the program independently from the Iowa pooled fund.

2002 Spending and Accomplishments

LRFD Oversight Committee

In 2002, the Oversight Committee for Load and Resistance Factor Design (LRFD) for Highway Bridges was formed.

Mission: To promote LRFD as the national standard for bridge design and develop a strategic plan to successfully implement LRFD by 2007 for all new bridge designs.

The resolution passed by the Highway Subcommittee on Bridges and Structures is seen here:

AASHTO HIGHWAY SUBCOMMITTEE ON BRIDGES AND STRUCTURES

PROPOSED RESOLUTION TITLE—LONG TERM MAINTENANCE OF LRFD DESIGN SPECIFICATIONS

WHEREAS, Load and Resistance Factor Design (LRFD) Specifications are published by AASHTO; and

WHEREAS, NCHRP has assisted in the development and maintenance of LRFD specifications, through its Project 12-42, since 1995; and

WHEREAS, NCHRP Project 12-42 funding will cease in July 2002; and

WHEREAS, There is a need to continue the maintenance and development of LRFD specifications; and

WHEREAS, It is estimated that the cost of maintenance would be \$400,000 per year; now, therefore be it

RESOLVED, That the AASHTO Highway Subcommittee on Bridges and Structures fully supports the pooled fund study for the maintenance and development of the Load and Resistance Factor Design Specifications for the next 4 years; and be it further

RESOLVED, That the AASHTO Highway Subcommittee on Bridges and Structures will convene a Technical Working Group to manage the Pooled Funds implementation; and be it further

RESOLVED, That the AASHTO Highway Subcommittee on Bridges and Structures will solicit support from the Member States for support of the Pooled Fund Study.

Funding

Voluntary Contributions began arriving at AASHTO. The first states to contribute to the fund were as follows:

Alabama	New Hampshire	Wisconsin
Illinois	Vermont	
Montana	West Virginia	

No spending took place during this developmental time.

2003 Spending and Accomplishments

Planning and Organization

During 2003 the LRFD Oversight Committee became active, holding quarterly conference calls to discuss LRFD needs. During this time, the LRFD Training Task Force to the SCOBS LRFD Oversight Committee was also formed. The mission of the task force was to draft a long term plan for LRFD Training for the state DOTs, and to manage and direct the services that AASHTO needs to continually implement evolving design standards. The Oversight Committee

Funding

Also during 2003, approval for the LRFD Pooled Fund was obtained. The fund became TPF-5(068), Long-Term Maintenance of Load and Resistance Factor Design Specifications, and was housed at the Iowa Department of Transportation. The commitment form shown on page 6 was sent to all states and commitments were made. The table on page 7 summarizes those commitments.

**POOLED FUND STUDY
FUNDING COMMITMENT FORM**

PROJECT NUMBER: TPF-5(068)

PROJECT TITLE: Long-Term Maintenance of Load and Resistance Factor Design Specifications

This project is being sponsored by: Iowa Department of Transportation

STATE: _____ DATE: _____

PROPOSED TOTAL LEVEL OF FUNDING SUPPORT: \$ _____

(Note: This is a commitment of funds. States will be asked to obligate funds later through the Federal-aid process.)

COMMENTS ON FUNDING LEVELS (If a State plans to use funds other than SP&R, please comment below.)

2004 \$ _____

2006 \$ _____

SIGNATURE

DATE

Total LRFD Pooled Funds Commitment through FY 2006

State	Paid to AASHTO Voluntary (2003)	FY 2003	FY 2004	FY 2005	FY 2006	Total \$ Commitment per State
Alabama	20,000					20,000
Alaska		20,000				20,000
Arkansas	20,000		20,000			40,000
California	20,000		20,000			40,000
Colorado		10,000		10,000		20,000
Connecticut	20,000			20,000		40,000
Delaware		10,000	10,000	10,000	10,000	40,000
Florida	20,000			20,000		40,000
Georgia	20,000	20,000				40,000
Hawaii			20,000	20,000		40,000
Idaho		20,000		20,000		40,000
Illinois	20,000	20,000				40,000
Indiana	20,000					20,000
Iowa (fund sponsor)		20,000		20,000		40,000
Kansas	20,000		20,000			40,000
Kentucky	20,000		20,000			40,000
Louisiana		20,000		20,000		40,000
Maine	20,000					20,000
Maryland	20,000			20,000		40,000
Massachusetts		20,000		20,000		40,000
Michigan		40,000		40,000		80,000
Minnesota		40,000				40,000
Mississippi	20,000	20,000				40,000
Missouri		20,000		20,000		40,000
Montana	20,000	20,000				40,000
Nebraska	20,000					20,000
Nevada		20,000		20,000		40,000
New Hampshire	20,000					20,000
New Jersey	20,000					20,000
New York		20,000		20,000		40,000
North Carolina	20,000		20,000			40,000
North Dakota		20,000		20,000		40,000
Ohio		20,000		20,000		40,000
Oklahoma		20,000	10,000	10,000		40,000
Oregon		30,000				30,000
Pennsylvania		20,000		20,000		40,000
Puerto Rico	20,000					20,000
South Carolina		20,000		20,000		40,000
South Dakota		20,000		20,000		40,000
Tennessee	20,000		20,000			40,000
Texas	20,000					20,000
Utah	20,000					20,000
Vermont	20,000					20,000
Virginia	20,000			20,000		40,000
Washington	20,000					20,000
West Virginia	20,000					20,000
Wisconsin	20,000		10,000	10,000		40,000
Wyoming	20,000			20,000		40,000
Total \$ Commitment per Year	560,000	490,000	170,000	440,000	10,000	1,670,000
Number of States per Year	28	23	10	23	1	

No Participation	Arizona	New Mexico	Rhode Island	Washington DC
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In the meantime, states continued to contribute to the voluntary fund housed at AASHTO. Twenty-three additional states contributed to this fund in 2003, including the following:

Alaska	Kentucky	Puerto Rico
Arkansas	Maine	Tennessee
California	Maryland	Texas
Connecticut	Mississippi	Utah
Florida	Nebraska	Virginia
Georgia	New Jersey	Washington
Indiana	New York	Wyoming
Kansas	North Carolina	

Spending from this fund had not yet begun in FY 2003. The financial statement for 2002 and 2003 contributions can be seen in Appendix A.

2004 Spending and Accomplishments

Staff and Contractor

As part of the pooled fund agreement, a full-time AASHTO staff engineer was employed to aid the Highway Subcommittee on Bridges and Structures in matters involving LRFD and its implementation. In early 2004, Tamara Reid was hired to fill this position and her work with the SCOBS was funded through the LRFD pooled fund.

Also in January 2004, AASHTO negotiated a contract with Modjeski and Masters, Inc. to continue the technical support on the LRFD specifications that they had provided earlier through the NCHRP program. This contract was also funded with the LRFD pooled and voluntary fund monies. The contract included:

- Task 1: Maintenance of Specifications
- Task 2: Technical Assistance and Support
- Task 3: Support of Document Preparation
- Task 4: Format Conversion of the LRFD documents—WordPerfect to Word
- Task 5: Project Documentation

Calibration Workshop

Also included in the LRFD pooled and voluntary funds was money allotted to special studies and programs that would aid in the development and implementation of LRFD specifications. In 2004, the first special study was funded. An LRFD Calibration Workshop took place on January 14, 2004 with the objective of identifying any gaps and inconsistencies in the calibration of the AASHTO load and resistance specifications that must be addressed to permit full implementation by 2007. The expected outcomes were:

1. Agreement on standards for calibration.
2. Agreement on data requirements.
3. Agreement on the required documentation of a calibration.
4. Agreement on a repository for calibration documentation.
5. Prioritized list of needed calibrations.

Overall, this workshop led to an NCHRP 20-07 proposal that was funded and is still in progress—Task 186, *Updating the Calibration Report for AASHTO LRFD Code*.

Culverts Study

The Modjeski and Masters contract also included participating in or overseeing subcontractors on special studies requested by the LRFD Oversight Committee. During 2004, Modjeski and Masters reviewed issues dealing with culverts for the Pennsylvania Department of Transportation. This project was for the technical review of a Penn DOT contractor's work, *Critical Review of Research for Live Load Distribution Widths for Reinforced Concrete Box Culvert*. This research and review was later useful in technical updates to the LRFD specifications.

Other Accomplishments

Other goals accomplished by the LRFD Oversight Committee in 2004 included:

1. Development of an LRFD website: <http://bridges.transportation.org>
2. Development of Format Rules and Templates for Agenda Item Submissions
3. Listing of LRFD Resources on AASHTO website:
 - Reference Manuals/Textbooks (7)
 - Computer Design/Analysis Software (14)
 - Training Courses and State-specific design Examples (6)
4. LRFD Training and Implementation Plan to help states make the 2007 deadline, developed by the LRFD Training Task Force. The plan included:
 - General State Implementation Plan Guide and Tips (generic plans and state visits to help write state specific plans)
 - NHI LRFD Superstructure and Substructure Courses
 - LRFD Resource List
 - Two Design Examples

A Training Needs Survey was conducted and results were used in the implementation plan.

5. Development of Process for Resolving LRFD Issues and Identifying Special Studies document.

Financial incomes and expenditures for 2004 are listed in Appendix A.

2005 Spending and Accomplishments

Staff and Contractor

In December 2005, Tamara Reid left AASHTO and Kelley Rehm was contracted to continue to aid the SCOBS in LRFD specifications issues and implementation. The LRFD funds continued to be used to fund this contractor. The Modjeski and Master's contract continued through August 2005.

Special Studies

During this time, the Oversight Committee also funded several special studies:

- The Oversight Committee provided \$43,800 in funding to FHWA and NHI to develop LRFD training courses and design examples.
- Committee members wrote and reviewed a White Paper report on the use and history of calibration methods for the Load Factors presently used in the LRFD specifications. This paper was also reviewed by two independent contractors, Dr. Rojiani and Dr. Paikowsky. It was published by NCHRP.
- An Electronic Bridge Publications Task Force was formed to help inform the AASHTO Publications Department of the SCOBS members' needs in digital media, including network CD licensing for electronic versions of the LRFD specifications and initial discussion of using web-based electronic editing for future changes to specifications.
- The Oversight Committee contributed \$75,000 to NCHRP 20-07: Task 193, *Development of LFRD Guidelines for the Seismic Design of Highway Bridges, Version 2*.

LRFD Implementation Support

The LRFD Oversight Committee continued to support the implementation of the LRFD Design specification in all states, which is still mandated for October 2007.

2006 Spending and Accomplishments

Staffing and Support

In August 2005, the contract with Modjeski and Masters was renewed for another year. The tasks included in the contract are detailed below:

Contract Task 1: Technical Assistance and Support—Assist the AASHTO Highway Subcommittee on Bridges and Structures, including the LRFD Oversight Committee, with special interpretations of the LRF documents as required. This assistance also includes travel to and participation in technical committee meetings when the chair of a technical committee determines that there is a need.

Contract Task 2: Document Preparation—Provide technical assistance to the Association, including the LRFD Oversight Committee, in the preparation of new LRF Design and Rating documents and revisions to existing ones.

Contract Task 3: Project Documentation—Submit a quarterly project report to the LRFD Oversight Committee.

Timber Structures Subcontract

In addition to the normal contract tasks, Modjeski and Masters also agreed to subcontract out a special study for the T-16 Technical Committee on Timber Structures. \$17,000 was allotted for the following tasks:

Subcontract Task 1—Review AASHTO LRFD (2004) and NDS (2005), identify inconsistencies, identify required needs for immediate changes, and identify the requirements for further research to be included in the future long-term project.

Subcontract Task 2—Develop the revised code provisions.

Subcontract Task 3—Develop a research plan for calibration of the design provisions for wood bridges as a long-term project following NCHRP format.

Subcontract Task 4—Prepare the proposed changes using AASHTO format and submit them to the AASHTO T-16 Technical Committee.

The T-16 project was completed in March 2006.

Calibration Study

Additional funding was provided to the NCHRP 20-07: Task 186, *Updating the Calibration Report for AASHTO LRFD Code*, in the amount of \$35,000 for continued study. The study is ongoing.

\$45,000 was allotted to a special study with the USGS dealing with 1000-yr. return seismic hazard maps. The project will be complete in June 2006. The work expected is as follows:

1. Peak ground accelerations (*PGA*) and spectral accelerations at 0.2- and 1.0-sec. periods (S_5 , and S_1 , respectively) with five percent probability of exceedance in 50 yr. (return time of 975 yr.) for the contiguous U.S., Alaska, Hawaii, and Puerto Rico/American Virgin Islands will be calculated.
2. Preparation of computer software tools to simplify determination of the seismic design parameters will be done. Specifically the tools will be packaged on a CD-ROM and will include features that allow the user to calculate the following basic design ground motion parameters:
 - *PGA*, S_5 , and S_1 —Determination of the mapped parameters *PGA*, S_5 , and S_1 by latitude-longitude or zip code from the USGS gridded data.
 - Site Coefficients—Determination of site coefficients for the mapped values of *PGA*, S_5 , and S_1 . The site factors will be those included as part of the AASHTO design provisions and will require the user to specify a site class.
 - Site-Modified *PGA*, S_5 , and S_1 —Modification of *PGA*, S_5 , and S_1 by the site factors to obtain site-modified coefficients. These will be calculated using the mapped parameters and the site coefficients.

Manual for Bridge Evaluation

Also, as a subcontract through Modjeski and Master's, \$75,000 was provided for a project concerning the *Guide Manual for Condition Evaluation and Load and Resistance Factor Rating of Highway Bridges (LRFR)* and the *Manual for Condition Evaluation of Bridges*. During the 2005 meeting, T-18 proposed a ballot item to incorporate the three rating methods into the Guide Manual and to adopt as the *Manual for Bridge Evaluation* to replace the existing *Manual for Condition Evaluation of Bridges*. This ballot item was accepted by the AASHTO Highway Subcommittee on Bridges and Structures at the June 2005 meeting. The development of this manual is now required. The scope of the proposed project includes the following tasks:

1. Incorporate 2005 balloted agenda items into the Guide Manual.
2. Move Appendix B (Illustrative Examples) of the *Manual for Condition Evaluation of Bridges* into Section 6 of the new *Manual for Bridge Evaluation*. Edit to ensure consistency. Update to show ratings for new legal loads.
3. Update the LRFR steel provisions of the new Manual in accordance with the 3rd edition of the LRFD specifications.

4. Update the Manual's LRFR steel examples in accordance with the 3rd edition of the LRFD specifications.

LRFD Network CD Prototype

In addition, an investigation into the feasibility of the development of electronic network versions of the LRFD Specification was also begun. The Electronic Bridge Publications Task Force (formed in 2005) chose a contractor to develop a prototype to be presented to the Highway Subcommittee on Bridges and Structures at their business meeting in May 2006 in Snowbird, UT. Funding for the development of the prototype was provided through the LRFD fund in the amount of \$35,000. \$10,000 was also allocated from the LRFD funds to pay for travel to meetings for the task force members. If the Subcommittee members decide to continue with the development of this software, a pooled fund will be formed to finance the efforts.

Travel Support

Lastly, in 2006, travel support was provided for members of T-8 and T-12 to allow them to hold productive mid-year meetings to discuss needed technical updates in the LRFD specifications.

2007 Spending and Accomplishments

States were re-solicited for funding in 2007 and asked for commitments through FY2010. The following table reflects the final contributions.

State	FY 2007	FY 2008	FY 2009	FY 2010	Total \$ Commitment per State
Alabama	20,000		20,000		40,000
Alaska					0
Arkansas		20,000		20,000	40,000
California		20,000		20,000	40,000
Colorado					0
Connecticut					0
Delaware					0
Florida	20,000		20,000		40,000
Georgia			20,000		20,000
Hawaii					0
Idaho	20,000				20,000
Illinois		20,000			20,000
Indiana		20,000	20,000		40,000
Iowa (fund sponsor)	20,000		20,000		40,000
Kansas		20,000	20,000		40,000
Kentucky					0
Louisiana	20,000	20,000	20,000		60,000
Maine					0
Maryland		20,000		20,000	40,000
Massachusetts					0
Michigan		20,000		20,000	40,000
Minnesota		20,000		20,000	40,000
Mississippi	20,000		20,000		40,000
Missouri		20,000		20,000	40,000
Montana	20,000		20,000		40,000
Nebraska		20,000		20,000	40,000
Nevada					0
New Hampshire	20,000		20,000		40,000
New Jersey					0
New York	20,000	20,000			40,000
North Carolina	20,000				20,000
North Dakota	20,000		20,000		40,000
Ohio	20,000		20,000		40,000
Oklahoma			10,000	10,000	20,000
Oregon	20,000		20,000		40,000
Pennsylvania		20,000	20,000		40,000
Puerto Rico					0
South Carolina	20,000		20,000		40,000
South Dakota		20,000		20,000	40,000
Tennessee	20,000		20,000		40,000
Texas	10,000	10,000	10,000	10,000	40,000
Utah	20,000		20,000		40,000
Vermont					0
Virginia	20,000		20,000		40,000
Washington	20,000				20,000
West Virginia					0
Wisconsin	20,000	20,000	20,000	20,000	80,000
Wyoming	20,000		20,000		40,000
Total \$ Commitment per Year	410,000	310,000	420,000	200,000	1,340,000

In 2007, several technical committee mid-year meetings were funded. T-15, T-12, T-5, T-13, and T3 were all able to hold meetings using these funds.

Modjeski and Masters were also retained for technical assistance and ballot item preparation, and Kelley Rehm was retained as Program Manager for Bridges and Structures.

Special studies performed in 2007 included updates to the LRFD chapter on Seismic design completed by Roy Imbsen and two special studies on loadings and electronic specification prototypes by Jay Puckett were continued from 2006 and completed. Lastly, AASHTO contributed \$170,000 to the FHWA effort to update design examples for LRFD Design of Steel and Concrete Bridges.

Also, in 2007, the LRFD Oversight Committee was sunsetted, and the oversight of the LRFD Specification Maintenance Pooled Fund was transferred by the newly formed Executive Committee. The Executive Committee is made up of the Chair, Vice-Chair and the twenty technical chairs. FHWA and AASHTO also have representatives.

2008 Spending and Accomplishments

In 2008, several technical committee mid-year meetings were funded. T-12, T-15, T-3, T-13, and T-6 were all able to hold meetings using these funds.

Modjeski and Masters were also retained for technical assistance and ballot item preparation, and Kelley Rehm was retained as Program Manager for Bridges and Structures.

The contract with Roy Imbsen for seismic research was continued and Dr. Lee Marsh was also contracted with to do further seismic guideline development. Bala Sivakumar was retained on contract to complete the new *Manual for Bridge Evaluation*. Jay Puckett's contract was also extended to complete load calibration studies. Lastly, funding was supplied toward travel of T-20 members to an NCHRP conducted tunnel workshop.

2009 Spending and Accomplishments

In 2009, several technical committee mid-year meetings were funded. T-18, T-13, T-5, and T-20 were all able to hold meetings using these funds.

Modjeski and Masters were also retained for technical assistance and ballot item preparation, and Kelley Rehm was retained as Program Manager for Bridges and Structures.

In 2009, all previous contracts from 2008 were carried over from the previous year. In addition, Bala Sivakumara also signed an agreement with AASHTO to provide additional technical support to T-18 as needed on bridge load rating issues. Also, Dr. Dan Kuchma

was contracted with to do a special research project on concrete shear and torsional forces.

2010 Spending and Accomplishments

FY2010 was the final year of the LRFD Specification Maintenance Pooled Fund solicitation. In this final year, mid-year meetings were funded for T-18, T-17, T-13, T-5, and T-20. Final payments and contract close-outs were completed for Jay Puckett's and Lee Marsh's projects. Bala Sivakumara was again retained on contract for technical support for T-18 dealing with bridge load rating issues. Eric Williamson was also contracted with to draft a new Bridge Security Design Guide.

Lastly, Modjeski and Masters, as well as Kelley Rehm were contracted the same as in previous years.

Final Spending Summaries

The next section of this paper includes funding summaries for all project years from FY2002 to FY2010. The FY2011 budget is also included to show future direction of the AASHTO Technical Service Program.

LRFD Specification Maintenance Fund
 (#6320)

	July	August	September	October	November	December	January	February	March	April	May	June	TOTALS
Deposits													
MS	20,000.00												20,000.00
TN	20,000.00												20,000.00
AR	20,000.00												20,000.00
GA	20,000.00												20,000.00
NE	20,000.00												20,000.00
UT	20,000.00												20,000.00
KY	20,000.00												20,000.00
ME	20,000.00												20,000.00
WY	20,000.00												20,000.00
WA	20,000.00												20,000.00
MD	20,000.00												20,000.00
CT		20,000.00											20,000.00
FL			20,000.00										20,000.00
VA			20,000.00										20,000.00
TX			20,000.00										20,000.00
CA			20,000.00										20,000.00
KS			20,000.00										20,000.00
IN			20,000.00										20,000.00
NJ				20,000.00									20,000.00
NC				20,000.00									20,000.00
PR				20,000.00									20,000.00
AK								20,000.00					20,000.00
NY								20,000.00					20,000.00
	220,000.00	20,000.00	120,000.00	60,000.00	0.00	0.00	0.00	40,000.00	0.00	0.00	0.00	0.00	460,000.00

Staff Expenses

salaries, benefits, overhead,
 travel, office expenses

0.00

Contractors

Modjeski and Masters,
 Kelley Rehm, Other
 contracts as needed

0.00

Special Studies

As defined

0.00

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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- Note: Negative Signs (-) indicate corrections in the fund

TOTAL SPENT FY 2003 = 0.00

SUMMARY

Beginning Balance	140,000.00
Deposits	460,000.00
Spending	0.00

SPENDING SUMMARY

Total staff expenses	0.00
Total Contractor expenses	0.00
Total Special Studies/Projects	0.00

Total Remaining in Fund 600,000.00

	July	August	September	October	November	December	January	February	March	April	May	June	TOTALS
<i>Deposits</i>													
WA	2,000.00												2,000.00
AR	20,000.00												20,000.00
NE	20,000.00												20,000.00
TN	20,000.00												20,000.00
TX		20,000.00											20,000.00
FL			20,000.00										20,000.00
IN				20,000.00									20,000.00
NY					20,000.00								20,000.00
WV						20,000.00							20,000.00
CO							10,000.00						10,000.00
	0.00	62,000.00	40,000.00	0.00	0.00	0.00	0.00	0.00	70,000.00	0.00	0.00	0.00	172,000.00

Staff Expenses

salaries, benefits, overhead, travel, office expenses

Contractors

Modjeski and Masters, Kelley Rehm, Other

contracts as needed

Special Studies

LRFD Calibration Workshop

	0.00	0.00	0.00	0.00	0.00	0.00	9,198.85	9,081.75	3,561.34	16,094.67	40,771.85	40,749.80	54,997.44
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- Note: Negative Signs (-) indicate corrections in the fund

SUMMARY

Beginning Balance

600,000.00

Deposits

172,000.00

Spending

-248,713.72

Total Remaining in Fund 523,286.28

Total staff expenses

146,053.25

Total Contractor expenses

90,017.38

Total Special Studies/Projects

12,643.09

SPENDING SUMMARY

TOTAL SPENT FY 2004 = 248,713.72

	July	August	September	October	November	December	January	February	March	April	May	June	TOTALS
Transfer from Iowa													
correction for Lee Smithson		5306.8											
reimbursement from RI for expenses					1112.51								
Staff Expenses													
salaries, benefits, overhead, travel,													
office expenses													
Contractors													
Modjeski and Masters, Kelley Rehm,	\$9,991.61												
Other contracts as needed													
Special Studies													
NCHRP updating calibration report		\$35,000.00											
Network CD Travel Expenses													
T-8 Travel Reimbursement													
T-12 Travel Reimbursement													
T-16 Timber Study													
LRF R Rewrite													
Electronic Specs - Jay Puckett													
USGS Maps													
Modjeski and Masters, Kelley Rehm,	\$51,126.09	\$51,126.09	\$7,739.63	\$3,567.56	\$5,623.55	\$5,132.64	\$24,269.92	\$11,702.88	\$30,516.89	\$3,735.68	\$3,482.10	\$60,438.09	\$217,326.64
Other contracts as needed													
Special Studies													
NCHRP updating calibration report		\$35,000.00											
Network CD Travel Expenses													
T-8 Travel Reimbursement													
T-12 Travel Reimbursement													
T-16 Timber Study													
LRF R Rewrite													
Electronic Specs - Jay Puckett													
USGS Maps													
Modjeski and Masters, Kelley Rehm,	\$51,126.09	\$51,126.09	\$7,739.63	\$3,567.56	\$5,623.55	\$5,132.64	\$24,269.92	\$11,702.88	\$30,516.89	\$3,735.68	\$3,482.10	\$60,438.09	\$217,326.64
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Modjeski and Masters, Kelley Rehm,	\$51,126.09	\$51,126.09	\$7,739.63	\$3,567.56	\$5,623.55	\$5,132.64	\$24,269.92	\$11,702.88	\$30,516.89	\$3,735.68	\$3,482.10	\$60,438.09	\$217,326.64
Other contracts as needed													
Special Studies													
NCHRP updating calibration report		\$35,000.00											
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Other contracts as needed													
Special Studies													
NCHRP updating calibration report		\$35,000.00											
Network CD Travel Expenses													
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T-12 Travel Reimbursement													
T-16 Timber Study													
LRF R Rewrite													
Electronic Specs - Jay Puckett													
USGS Maps													
Modjeski and Masters, Kelley Rehm,	\$51,126.09	\$51,126.09	\$7,739.63	\$3,567.56	\$5,623.55	\$5,132.64	\$24,269.92	\$11,702.88					

	July	August	September	October	November	December	January	February	March	April	May	June	TOTALS
Staff Expenses													
salaries, benefits, overhead, travel, office expenses	4	4	4	34		73.14			113.1	22.33	68.42		\$318.99
Contractors													
Modjeski and Masters, Kelley Rehm, Other contracts as needed	\$5,099.82	\$56,345.47	\$20,223.03	\$10,590.79	\$7,912.76	\$14,159.55	\$5,758.68	\$45,521.13	\$21,497.30	\$25,161.28	\$32,412.92		\$244,682.73
Special Studies													
T-15 mid year meeting			\$3,831.44	\$39,420.00	\$10,580.00								\$3,831.44
Roy Imbisen - T-3 Contract													\$50,000.00
USGS - Maps		\$1,565.49											\$1,565.49
T-12 meeting					\$3,302.35								\$3,302.35
T-5 travel						\$472.04							\$472.04
T-5 travel							\$154.43						\$154.43
T-13 travel								\$3,516.01					\$3,516.01
T-3 travel assistance													\$154.43
T-5 special study - Jay Puckett													\$472.04
T-5 special study - Jay Puckett													\$3,302.35
Carry Over - Jay Puckett - electronic spec project													\$154.43
Update of Design Examples													\$3,516.01
	\$0.00	\$6,669.31	\$56,349.47	\$20,257.03	\$53,842.23	\$21,868.25	\$14,631.59	\$5,913.11	\$49,150.24	\$32,019.63	\$25,161.28	\$213,481.34	\$170,000.00
	\$0.00												\$10,500.00
	\$0.00												\$170,000.00
SPENDING SUMMARY													
Total staff expenses	\$733,868.00												
Total Contractor expenses	\$0.00												
Total Special Studies/Projects	-\$499,343.48												
	\$318.99												
SUMMARY													
Beginning Balance	\$733,868.00												
Deposits	\$0.00												
Spending	-\$499,343.48												
Total Remaining in Fund	\$234,524.52												

- Note: Negative Signs (-) indicate corrections in the fund

TOTAL SPENT FY 2007 = \$499,343.48

Invoiced from Iowa Pooled Fund		TOTALS											
	July	August	September	October	November	December	January	February	March	April	May	June	TOTALS
salaries, benefits, overhead, travel, office	\$4.60	\$163.00		\$283.40	\$113.00	\$18.10	\$53.40	\$292.08					\$927.58
Contractors													
Modjeski and Masters, Kelley Rehm, Other			\$37,801.23	\$4,446.37	\$53,101.36	\$12,197.11	\$12,946.21	\$11,912.42	\$5,837.39	\$39,219.77	\$16,833.95	\$24,311.86	\$289,440.53
Special Studies													
T-3: Contract with Dr. Lee Marsh								\$20,375.65					\$20,375.65
T-5 and T-14: Continuation of Calibration													\$0.00
Study													\$0.00
T-18 : Complete the Manual on Bridge								\$17,905.05					\$26,447.20
Evaluation (Bala)													\$1,582.77
T-18 : travel assistance to meeting													\$8,387.59
T-20 - toward a tunnel workshop													\$2,519.19
Annual meeting travel support (Marsh,	\$912.30	\$1,606.89				\$6,246.12	\$2,141.47						\$0.00
Zokate)													\$0.00
T-12													\$0.00
T-15 / T-3 meeting WA						\$7,004.01	\$4,307.24	\$993.72	\$438.55				\$12,743.52
T-13													\$0.00
T-6													\$0.00
T-3 Seismic Contract - Roy Imbsen													\$25,000.00
	\$916.90	\$39,571.12	\$4,446.37	\$53,101.36	\$37,480.51	\$26,309.34	\$18,379.23	\$6,831.11	\$39,711.72	\$55,114.65	\$32,854.01	\$72,707.71	\$387,424.03
SPENDING SUMMARY													
Total staff expenses	\$234,525.00												\$927.58
Total Contractor expenses	\$330,000.00												\$289,440.53
Total Special Studies/Projects	-\$387,424.03												\$97,055.92
Total Remaining in Fund	\$177,100.97												\$387,424.03
TOTAL SPENT FY 2008 = \$387,424.03													

FY 2011 Budget - LRFD Pooled Fund

Amount Available

\$400,645.57	- Carryover from FY10
\$250,000.00	- Invoiced from Iowa pooled fund
\$90,000.00	- Received Payment from AASHTO Technical Service Program
\$660.74	- Other Income
\$741,306	Available for FY 2011

BUDGETED	COMMITTED	UNCOMMITTED	SPENDING
\$280,500.00	\$296,500.00	0	\$7,509.76
Administration and Maintenance Costs			
\$85,000.00	\$500.00		\$7,189.00
Staff Maintenance			
Administrative Expenses			
M&M LRFD contract - maintenance and technical assistance			
AASHTO Overhead - Technical Service Program			
\$10,000.00			\$320.76
Special Studies and 20-07 Supplements			
\$220,000.00	\$219,695.00	\$305.00	\$4,293.00
\$30,000.00	\$30,000.00		
T-5 Special Study			
\$20,000.00	\$20,000.00		
T-6 Special Study			
\$40,000.00	\$40,000.00		
T-18/T-5/T-15 Special Study			
\$20,000.00	\$20,000.00		
T-18 Pontis/Vertis Studies			
\$20,000.00	\$20,000.00		
T-1 Develop Guidelines for Bridge Security (carryover FY10)			
\$25,000.00	\$25,000.00		
T-10: Special Studies Contract (carryover from FY10)			
\$16,550.00	\$16,550.00		
T-3: Contract with Dr. Lee Marsh (carry over from FY10)			
\$48,145.00	\$48,145.00		\$4,293.00
T-18 MBE Support / Reviews Proposal (carryover from FY10)			
Technical Committee Assistance			
\$87,000.00	\$87,000.00	\$0.00	\$0.00
\$10,000.00	\$10,000.00		
T-18			
\$10,000.00	\$10,000.00		
T-12			
\$2,000.00	\$2,000.00		
T-13			
\$10,000.00	\$10,000.00		
T-17			
\$15,000.00	\$15,000.00		
T-15 / T-3			
\$10,000.00	\$10,000.00		
T-6			
\$10,000.00	\$10,000.00		
T-20			
\$10,000.00	\$10,000.00		
T-5			
\$10,000.00	\$10,000.00		
T-10			
\$587,500.00	\$602,195.00	\$305.00	\$11,803
Total Budgeted Expense			
\$153,806.31			
Carryover to FY 2012			

APPENDIX

LONG TERM MAINTENANCE OF LRFD DESIGN SPECIFICATIONS

(June 30, 2008)

WHEREAS, Load and Resistance Factor Design (LRFD) Specifications are published by AASHTO; and

WHEREAS, NCHRP has assisted in the development and maintenance of LRFD Specifications, through its Project 12-42, since 1995; and

WHEREAS, NCHRP Project 12-42 funding ceased in July of 2002; and

WHEREAS, There was a need to continue the maintenance and development of LRFD Specifications; and

WHEREAS, It is estimated that the cost of maintenance would be \$400,000 per year; and

WHEREAS, The AASHTO Highway Subcommittee on Bridges and Structures convened a Transportation Technical Service Program Pooled Fund to maintain the LRFD specifications and established an Oversight committee to manage this pooled fund and in which a voluntary yearly contribution of \$10,000 per member department was requested; and

WHEREAS, The AASHTO Standing Committee on Highways supports the action of the Subcommittee on Bridges and Structures to fund the maintenance and development of the Load and Resistance Factor Design Specifications until 2010 at which time the Subcommittee will reevaluate the need to continue the technical service program. During this reevaluation the Subcommittee will provide a report on its accomplishments and make a recommendation to sunset or continue support of the program; therefore be it

RESOLVED, That the AASHTO Board of Directors supports the establishment and continuation of a technical service program and to solicit voluntary contributions from the member departments to continue the program.

TPF-5(068)
Long-Term Maintenance of Load and
Resistance Factor Design Specifications

**MEMORANDUM OF UNDERSTANDING
BETWEEN
AMERICAN ASSOCIATION OF STATE HIGHWAY AND
TRANSPORTATION OFFICIALS (AASHTO)
AND THE IOWA DEPARTMENT OF TRANSPORTATION**

THIS AGREEMENT, made and **entered** into in 2007 by and between the American Association of State Highway and Transportation Officials Inc, a corporation of the District of Columbia with offices at 444 N Capitol St. NW, Suite 249, Washington DC 20001, hereinafter referred to as the “**Association**”, and the Iowa Department of Transportation, with offices at 800 Lincoln Way, Ames, Iowa 50010 hereinafter referred to as the “**Department**”.

WITNESSETH:

WHEREAS, the **Department** has accepted the position of the lead state for the Pooled Fund project TPF-5(068), Long Term Maintenance of Load and Resistance Factor Design (LRFD) Specifications, hereinafter referred to as the “**Project**”; and

WHEREAS, the Association desires to manage this **Project** through the use of a committee that is part of the Subcommittee on Bridges and Structures, which in the past has been called the LRFD Oversight Committee, with support by the assistance of AASHTO staff and

NOW, THEREFORE, in consideration of these premises and the mutual covenants contained herein, the parties hereby agree as follows:

1. The **Association** with the support of the Subcommittee on Bridges and Structures will establish a priority of research and implementation projects submitted by the various technical sections within the Highway Subcommittee on Bridges and Structures.
2. The Subcommittee on Bridges and Structures has an Oversight Committee that has in the past been known as the LRFD Oversight Committee. This Committee will, in the future be called the Executive Committee. For purposes of this Agreement the Executive Committee will hereinafter be known as the **Committee**. The members of the **Committee** will be chosen by the Chair of the Subcommittee on Bridges and Structures and will mainly be chairs of technical committees within the Subcommittee. The members will be chosen to represent a range of technical expertise as well as to equally represent all regions of the country.
3. The **Committee** will be responsible for establishing a budget for the identified priority of approved projects.
4. The **Committee** will approve an annual budget for the program at the Subcommittee on Bridges and Structures annual meeting.
5. Once the projects have been approved, the **Committee** will furnish to the **Association** the project list along with a list of qualified potential consultants to be considered to undertake the work. The Association will consider initiating a Request for Proposals (RFP) from the list of qualified consultants. The **Committee** will review the proposals submitted and make a recommendation to the **Association** to award the contract to the successful consultant.
6. The **Department** will manage and oversee the fulfillment of the pooled fund commitments from the participating states.

7. The **Association** will invoice the **Department** from the pooled funds for reimbursement after the commitments are fulfilled.
8. The **Association** will manage and pay invoices from the pooled funds for the **Committee** approved projects as the work is accomplished.
9. The **Association** staff managers for the program will be paid from the pooled funds and the **Association** reserves the right to outsource this function.
10. The **Association** will include all the projects within the Single Audit as prescribed in OMB Circular A133.

IN WITNESS WHEREOF, the parties have caused these presents to be executed by their officers thereunto duly authorized.

Iowa Department of Transportation

**American Association of State Highway
and Transportation Officials (AASHTO)**

Director of Iowa DOT

Executive Director

Date: _____

Date: _____