STATE OF KANSAS

KANSAS DEPARTMENT OF TRANSPORTATION
Bureau of Materials and Research
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Bill Graves
Governor

E. Dean Carlson
Secretary of Transportation

Lon Ingram, P.E.
Bureau Chief

G. Norman Clark, P.E.
Geotechnical Engineer

Rodney A. Montney, P.E.
Engineer of Tests

Richard L. McReynolds, P.E.
Engineer of Research

August 14, 2002

Ms. Joanne Altieri, Director
Contract Negotiations
and Research Compliance
University of Kansas
Center for Research, Inc.
2385 Irving Hill Rd.
Lawrence, Kansas 66045-7563

Dear Ms. Altieri:

We have enclosed an executed copy of a contract amendment for the following project:

C1226 (RE-0225-01) Technical Assistance for "FIXS – Fabrication Error Indexed eXamples and Solutions."

Sincerely,

L. S. Ingram, P.E., Chief
Materials and Research

R. L. McReynolds

Richard L. McReynolds, P.E.
Engineer of Research

cc: W. M. Roddis, Ph.D., Professor of CEAE, KU (w/a)
Ken Hurst, Bureau of Design (w/a)

THE UNIVERSITY OF KANSAS
Agreement for Technical Assistance
Modification No. 1
July 26, 2002

This document modifies the Agreement for Technical Assistance between the Secretary of Transportation of the State of Kansas, (hereinafter referred to as "Secretary") and The University of Kansas (hereinafter referred to as "KU"), that was effective May 16, 2000, for work on the project entitled "Fabrication error Indexed eXamples and Solutions" under the direction of Dr. Kim Roddis.

Modification No. 1 provides additional time and funds and an expansion to the scope of work. The following wording supplements language in the original Agreement for Technical Assistance:

Section 1: Scope of Services
KU will perform research specifically described in the expansion of the Scope of Work, as described in Attachment A.

Section 2. Contract Dates
Additional time of one (1) month is provided to complete activities covered by this Agreement. The previous ending date was May 15, 2003, and the revised ending date is now June 15, 2003.

Section 3. Basis of Payment
The Secretary agrees to reimburse KU for the work completed and actual costs incurred in performance of the expanded Scope of Work in accordance with the supplemental Budget presented in Attachment B, in an amount not to exceed $47,500. The total reimbursable cost for this project is now $230,000.

All other terms and conditions of the Agreement for Cooperative Research, effective May 16, 2000, remain in force.

THE UNIVERSITY OF KANSAS

Joanne Altieri
Joanne Altieri, Director
Contract Negotiations &
Research Compliance

Date 7/29/02

Attest

Date 7/29/02

SECRETARY

Warren L. Sick
E. Dean Carlson
Secretary of Transportation
By: Warren L. Sick, P.E., Assistant Secretary
and State Transportation Engineer

Date August 13, 2002

Attest

Date 8-13-2002

SCOPE OF WORK: Expansion
FHWA Pooled Fund Study

I. Research Project Title: FIXS: Fabrication error Indexed eXamples and Solutions

II. Research Problem Statement

During the fabrication of steel bridges errors occur. These errors need to be recognized and corrected properly and efficiently according to each individual situation. To arrive at the best possible solutions, engineers need not only knowledge of material and fabrication specifications but also experience and good understanding of the practical limitations faced by fabricators. This expertise is scattered and varies among both individuals and DOTs. A database of corrective actions can provide guidance to bridge engineers and improve engineers' confidence in non-textbook solutions to unusual but not unique problems. When a sharable and well reasoned repair database is used by several state DOTs within a geographical region, the database can lead to standardized solution procedures that would expedite bridge fabrication and would be expected to reduce fabrication costs, which could result in a reduction of costs passed back to the DOTs.

A research project at the University of Kansas has developed a fabrication repair database. The repair database software, Fabrication error Indexed eXamples and Solutions (FIXS), examines fabrication errors of steel bridge members when detected in the plant and recommends corrective action. FIXS provides solutions and examples to steel bridge fabrication errors with graphical and instructive explanations based on both rule-based and case-based reasoning. The purpose of the on-going FHWA (Federal Highway Administration) Pooled Fund Study is to make the results of the previous FIXS project widely available and to enhance the repair database. The deliverables from the on-going study are: 1) a software program consisting of a revised FIXS, and 2) a technical report documenting research procedures and results. See the original Project Description, contained in "Special Attachment #3" of the Agreement for Technical Assistance between The Secretary of Transportation and the University of Kansas for additional details.

Since the project was initiated and the agreement signed, two states have requested to be added to the pooled fund project and were approved by the rest of the states and the Principal Investigator. This document gives the scope of additional work to utilize the additional available funds.

III. Research Objectives

The purpose of the on-going study is to make the results of the previous FIXS project widely available and to enhance the repair database. To enhance the deliverables of the on-going study, additional work will be done on the review process of the Steel Bridge Collaboration FIXS document as well as on initiation of the web-based use of FIXS. The following tasks enumerate the additional work covered under this project description.

1. In addition to the repair database itself, the on-going research project is producing a tutorial introducing bridge engineers to issues necessary for good resolution of fabrication error situations. This tutorial provides not only recommendations of fixes to consider but also examples of options to avoid. To enhance the quality and

authority of this document as well as increasing its distribution, it will be expanded to be in a form suitable for publication as a Steel Bridge Collaboration Guideline. Work included under this additional scope is the expansion of the tutorial, the submission to committee review, resolution of committee comments, submission to the Collaboration membership, and resolution of Collaboration membership comments.

2. The mere availability of the FIXS software in a web-browser accessible form does not mean the technology transfer is complete. Additional work covered in this scope is the initial hosting of the FIXS software on a server at the University of Kansas, technical support answering users questions and helping make necessary changes and updates during operation through June 15, 2003, and development and implementation of a detailed plan for continued operation and maintenance under the auspices of the AASHTO/NSBA National Steel Bridge Collaboration.

IV. Budget and Schedule

Additional Budget: $47,500
Duration of Additional Work: 1 year covering the period from 6/16/02 to 6/15/03.
Amended Contract Duration: 5/16/00 to 6/15/03

V. Project Personnel

W. M. Kim Roddis, Professor
Civil, Environmental and Architectural Engineering Department
University of Kansas, Lawrence, KS 66045, roddis@ukans.edu
PHONE (785) 864-3736 FAX (785) 864-5631

PROPOSED BUDGET

Attachment B

Modification #1: 05/16/02 to 6/15/03

SALARIES AND WAGES

Senior Personnel		% time	Months	Rate		
W. M. Kim Roddis, PI						
summer		25.0	1.0	9,160	2,290	
Total senior personnel						2,290
Other Personnel	**Persons**	**% time**	**Months**	**Rate**		
Graduate Student(s)						
acad	1	25	9.0	2,600	5,850	
summer	1	50	3.0	2,600	3,900	
Undergraduate Student(s)	Persons		Hours	Rate		
calendar	1		520.0	9.00	4,680	
Other personnel, Information Technology specialist						
calendar	1	10	12.0	4,917	5,900	
Total other personnel						20,330
Total salaries and wages						22,620

FRINGE BENEFITS

28% faculty and staff	2,293	
12% students (employed 76% or more)	0	
4% students (employed 75% or less)	577	
Total fringe benefits		2,870
Total salaries, wages & fringe benefits		25,490

EQUIPMENT

1. None		0
Total equipment		0

TRAVEL

(a) to east/west coast for professional meeting

	# Persons	Trips	Days	Amount		
	2	2	2			
Transportation (airfare)				500	2,000	
Registration				0	0	
Per diem				140	1,120	
Car rental				50	200	
Total (a)						3,320
Total travel						3,320

PARTICIPANT SUPPORT COSTS

Total Participant Support Costs	0

OTHER DIRECT COSTS

Research materials & supplies			250
Publications (copying and distribution of research results)			100
Consultant Services			
Computer Services			
Subawards			
Other:			
Tuition (Fall '02 and Spring '03		3,253	
Communications (long distance, fax, postage)		250	
computer supplies & software		1,000	
Total "Other"			4,503
Total Other Direct Costs			4,853

TOTAL DIRECT COSTS	33,663
BASE	30,410
INDIRECT COSTS (45.5% of total direct costs excluding equipment and tuition allowance)	13,837
TOTAL PROPOSED COSTS for Modification #1	**$47,500**