



KANSAS DEPARTMENT OF TRANSPORTATION

Bureau of Materials and Research

Materials and Research Center

2300 Van Buren

Topeka, Kansas 66611-1195

Ph. (785) 296-2231 FAX (785) 296-2526

TTY (785) 296-3585

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

May 17, 2000

Ms. Kim Moreland, Director
Contract Negotiations
and Research Compliances
University of Kansas
Center for Research, Inc.
2385 Irving Hill Road
Lawrence, KS 66044-7552

Dear Ms. Moreland:

We have enclosed an executed copy of an Agreement for Technical Assistance to study the following project:

Re-0225-01: "Fabrication error Indexed eXamples and Solutions"

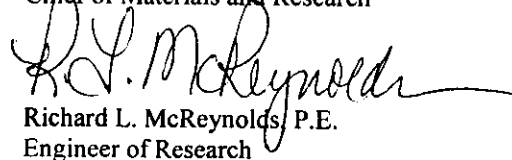
Mr. Ken Hurst will be the project monitor so progress reports and vouchers should be sent to him at the following address:

Mr. Ken Hurst, P.E., Engineering Manager
State Bridge Office, Bureau of Design
Docking State Office Building, 9th Floor
915 S.W. Harrison St.
Topeka, KS 66612

We look forward to working with the University of Kansas on this research study.

Sincerely,

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


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

c: William Klassen, FHWA (w/a)
Dr. W.M. Kim Roddis, Assoc. Prof. of CEE, KU (w/a)
Mr. Ken Hurst, P.E., Design, KDOT (w/a)

AGREEMENT FOR TECHNICAL ASSISTANCE
BETWEEN THE SECRETARY OF TRANSPORTATION
AND THE UNIVERSITY OF KANSAS

THIS AGREEMENT made this 16th day of May, 2000, by and between the Secretary of Transportation of the State of Kansas, hereinafter called "**Secretary**," and The University of Kansas, hereinafter referred to as "**KU**," acting by and through Kim Moreland, Director, Contract Negotiations and Research Compliances, its duly authorized representative.

WITNESSETH

WHEREAS, the **Secretary** has determined that research regarding "Fabrication error Indexed eXamples and Solutions" is needed and approved as part of the **KDOT** Research Program, and

WHEREAS, the proposed program is hereinafter called "Project," and

WHEREAS, the **KU** has qualified personnel with demonstrated expertise available to conduct the Project, and

WHEREAS, the **Secretary** is willing, subject to the terms of the **Agreement**, to reimburse **KU** for the assistance provided.

NOW THEREFORE, in consideration of the mutual covenants herein contained, the parties hereto agree as follows:

Section 1. Scope of Services. The **KU** shall furnish the necessary personnel, facilities, and such other services as may be required to fulfill the tasks identified and described in the Workplan which is attached hereto and incorporated herein as Special Attachment No. 3.

Section 2. Contract Dates. The **KU** may commence work in conformity with the Workplan (Special Attachment No. 3) of this **Agreement** upon acceptance by the **Secretary** of the Workplan and shall prosecute the work outlined herein to begin on or after May 16, 2000, and with completion not later than May 15, 2003; unless the time is extended by the **Secretary**, as evidenced in writing.

Section 3. Basis of Payment. The **Secretary** agrees to reimburse the **KU** for the work completed and actual costs incurred in performance of the **Agreement** in accordance with the proposed budget, pages three through five of the Workplan, in an amount not to exceed a total price of \$182,500. A combination of Federal monies and the **KU** matching monies are used to fund this Project. The project costs referred to in this **Agreement** shall be comprised of the allowable direct costs incidental to the performance of the work described in the Workplan and indirect costs. Indirect costs shall not exceed 45.5 percent of the total direct costs to the extent that Federal-aid funds are used for payment. In the event final approval of Federal appropriation

is not obtained, the **Secretary** will be responsible for only those noncancelable obligations incurred by **KU** for work under this **Agreement**.

The **Secretary** agrees to make progress payments to the **KU** upon presentation of proper billing and certification of work performed. The **Secretary** will reimburse allowable costs as requested by the **KU** less two percent retainage. Certification of work performed will be documented by progress reports required under Section 11 of the **Agreement**. The **KU** shall indicate on the last project billing that it is the final billing. The final request for payment shall not be disbursed until the **Secretary** determines that all obligations of the **Agreement** have been completed. Reimbursement of any cost pursuant to this **Section** shall not constitute a final determination by the **Secretary** of the allowability of such cost and shall not constitute a waiver of any violation of the terms of the **Agreement** committed by the **KU**.

The **KU** agrees to obligate matching funds for additional direct and indirect costs included in the proposed budget in an amount of \$0.00. In the event final approval of Federal appropriation is not obtained, the **KU** will be responsible for only those additional direct and indirect costs associated with noncancelable obligations incurred by **KU** for work under this **Agreement**.

The portion of funds provided under the provisions of 23 U.S.C. 504 as amended by Section 5104 of the 1998 TEA-21 may not be used to reimburse travel, subsistence or salary costs of trainees.

The test of allowability of a cost to be applied in this **Agreement** is based on the reasonableness of the allocation of the cost under generally accepted cost accounting principles and practices and in accordance with 48 Code of Federal Regulations (CFR) 1-31.00 et. seq., and relevance to tasks identified and described in the Workplan. However, such costs are subject to limitation as per **Agreement**.

The final payment due under provisions of this **Agreement** shall be made within ninety (90) days after the **Secretary's** and the appropriate Federal agency's acceptance and approval of the Final Evaluation Report and **KU'S** compliance with OMB A-133, Single Audit Act.

Section 4. Covenant Against Contingent Fees. The **KU** warrants and guarantees that provisions for covenants against contingent fees found in Special Attachment No. 2 are incorporated in this **Agreement** and made a part hereof. For breach or violation of this warranty, the **Secretary** shall have the right to annul this **Agreement** without liability, or in his discretion to deduct from the **Agreement** price or consideration, or otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift, or contingent fee.

Section 5. Rights in the Project.

A. Rights in Data. The **KU** grants to the **Secretary**, for any governmental purposes, the right to publish, translate, reproduce, deliver, use and dispose of, and to authorize others to do so, all data, including reports, drawings, blueprints, computer software which includes but is not limited to documentation and source code, and other technical information resulting from the performance of work under this **Agreement**. When the **Secretary** authorizes

others to use, for governmental purposes, any patented or copyrighted items arising from the project, the **Secretary** will issue a standard restriction **Agreement** to each party receiving authorization for return to **KU**.

- B. Rights in Equipment. It is mutually agreed by the **KU** and the **Secretary** that all apparatus and equipment purchased with funds provided by the **Secretary** shall be used by the **KU** for the project. Upon the **KU** notifying the **Secretary** of completion of the project, the **Secretary** shall determine and notify the **KU** if such apparatus and equipment shall be used by the **Secretary** in the conduct of its works. During the contract dates, **KU** shall not bear the risk of loss or damage to apparatus or equipment purchased under this project and the **Secretary** has the option of whether or not to replace the loss or repair the damage to apparatus or equipment. The **Secretary** reserves the right to take possession of apparatus and equipment purchased for this **Agreement** within one year either after termination of the **Agreement** or completion of the project.
- C. Rights in Intellectual Property. Consistent with KDOT and Kansas Board of Regents policy, the **KU** will retain all rights to intellectual property including patents and copyrights arising from the project. The **Secretary** and the **U.S. Government** shall retain a royalty—free, nonexclusive, irrevocable license to use any patent or copyright arising from the project for any governmental purposes. If the **KU** elects not to pursue the patenting or copyrighting of intellectual property, the **KU** will provide written notification to the **Secretary** who shall be free to do so. The **KU** agrees to include, within the specification of any United States patent or copyright application and any patent and copyright issuing, the following statement, "The invention (copyright) was made with funds provided by the Federal government and State of Kansas through the Kansas Department of Transportation."
- D. Confidentiality. **Secretary** and **KU** agree that information exchanged and generated pursuant to this **Agreement**, will generally be non-confidential and suitable for publication. Nevertheless **Secretary**, and its duly authorized representatives may disclose to **KU**, during the course of the project, confidential information including data and statistics not suitable for public dissemination. **KU** agrees to maintain such information in confidence, and to prevent the disclosure thereof to others to the extent that such information is disclosed in writing and marked as confidential or proprietary; if orally disclosed, noted at the time of disclosure as being confidential and or proprietary, and reduced to writing within thirty (30) days after such oral disclosure, the writing being marked as confidential or proprietary. **KU** agrees that neither the **KU** nor any of its colleagues, employees or agents shall use any of the confidential information for any purpose whatsoever, other than to complete this assignment for KDOT. The **KU** agrees that the **KU** or any of its colleagues, employees or agents shall not keep any copies of the information provided by the **Secretary** or its duly authorized representatives that has been identified as confidential or proprietary, and provided pursuant to this **Agreement**.

Section 6. Work Responsibility. The parties hereto mutually agree that the services to be performed under the terms of this **Agreement** are to be performed by the **KU**, with principal

offices at the University of Kansas, Lawrence, Kansas and that their time and effort as defined in the Workplan, Special Attachment No. 3, cannot be assigned, sublet, or transferred to any other party without the written consent of the **Secretary**. **KU** accepts full responsibility for the Project and its conduct. The **KU** will bill the **Secretary** for reimbursement as specified in the **Agreement** as awarded. For the purposes of administrative efficiency, the **KU** will subcontract to the Center for Research, Inc. (CRINC), as CRINC is the normal administrative agency for projects under The University of Kansas. This subcontractual arrangement will in no way affect the work on the project, the scientific personnel, or the billing between the **KU** and the **Secretary**.

Section 7. Inspection and Approval of Work. The **KU** shall permit the **Secretary** or his duly authorized representative to inspect and audit all work, material, computer programs and other data and records either during the performance of project or for three years after final acceptance of the project. All work will be performed according to the requirements as outlined in the Workplan, Special Attachment No. 3. Final inspection of the project will be conducted by the **Secretary** or his duly authorized representative.

Section 8. Publication Provisions. Publication by any party to this **Agreement** shall give credit to all other parties. However, if the **Secretary** does not wish to subscribe to the findings or conclusions of an interim report, the following statement shall be added: "The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the Kansas Department of Transportation." In the event of failure to reach a consensus between the **Secretary** and the **KU** relative to the publication of a final report, or any other reports during the period of the **Agreement**, the **Secretary** reserves the right to publish independently in which event the nonconcurrence of the **KU** shall be set forth in said publication, if requested by the **KU**.

Section 9. Audit and Retention of Records. Arrangements shall be made by the **KU** for the required financial and compliance audit to ensure that the audit will be made within the prescribed audit reporting cycle, and a copy of the OMB A—133 audit will be provided to the **Secretary**.

The **KU** shall be required to maintain accounting records and other evidence pertaining to the costs incurred and to make the records available to their office at all reasonable times during the **Agreement** period and for three (3) years from the date of the final payment to the **KU** under this **Agreement**. Such accounting records and other evidence pertaining to the costs incurred will be made available for inspection by the **Secretary** or his duly authorized representatives and copies thereof shall be furnished if requested.

Section 10. Termination of Agreement. Either party has the right to terminate this **Agreement** by giving thirty (30) days written notice in the event a determination is made that the project should be abandoned or indefinitely postponed; **Provided**, however, that in any case, the **KU** shall be paid the amount due for the services rendered and for any noncancelable obligations incurred prior to the date of termination on the basis of the provisions of this **Agreement** and provided that the **Secretary** shall receive full reports of all work performed to the date of termination of this **Agreement**.

Section 11. Reports. The **KUTC** shall advise the **Secretary** regarding the progress of the project at such times and in such a manner as the **Secretary** may require, including but not limited to the following:

- 1) A monthly summary of project expenditures by task including the following cost elements: salary & fringe benefits, overhead, professional services, supplies, travel, cumulative total task cost, and cumulative total cost expressed as percent of estimated total task cost.
- 2) A final report evaluating the effectiveness of the program.

Section 12. Cooperation and Disputes. The **Secretary** and the **KU** agree to make a reasonable effort to promptly resolve any disputes or questions concerning the project. The **Secretary** and the **KU** ensure that personnel will cooperate fully in carrying out the intent and provisions of this **Agreement**. The **Secretary** shall, in all cases not disposed of by **Agreement** among or between the parties to this **Agreement**, resolve any disputes which may arise in connection with the work being performed under this **Agreement**.

Section 13. Compliance with Laws. The **KU** in the implementation of the administrative service and the **KUTC** in the implementation of the Workplan, both as provided for in this **Agreement**, agree to comply with all federal, state and local laws, ordinances and regulations, including but not limited to Title VI, Title VII and Title IX of the Civil Rights Act of 1964 and Executive Order 11246 as amended by Executive Order 11375 entitled "Equal Employment Opportunity;" Executive Order 12549 regarding debarment, eligibility, indictments, convictions, or civil judgements; and 31 U.S.C. Section 1352: Section 319 P.L. 101.21 prohibiting use of Federal funds for lobbying activities which are incorporated herein as Special Attachments Nos. 1, 5 and 6, respectively.

Section 14. Responsibility to Employees. The **KU** accepts full responsibility for payment of unemployment insurance, workmen's compensation, and social security as well as all income tax deductions and any other taxes or payroll deductions required by the law for its employees engaged in the work authorized by the **Agreement**.

Section 15. Employment of Secretary's Employees. The **KU** will not, without written permission from the **Secretary**, engage the services of any person or persons in the employment of the **Secretary** for any work required by the terms of the **Agreement**.

Section 16. Contractual Provisions Attachment. The provisions found in Contractual Provisions Attachment Form DA—146a, Special Attachment No. 4, which is attached hereto, are hereby incorporated in this **Agreement** and made a part hereof.

Section 17. Indemnification Agreement. The **KU** agrees to indemnify and hold harmless the **Secretary** and the **Secretary's** duly authorized representatives from any and all costs, liabilities, expenses, suits, judgments, damages to person or property or claims of any nature whatsoever arising out of the negligent acts of the **KU**, the **KU** employees or subcontractors, in the performance of this **Agreement**. The **KU** shall not be required to indemnify and hold the

Secretary harmless for negligent acts of the Secretary or his or her duly authorized representatives or employees. Nothing in this indemnification clause is meant to affect Section 4 Disclaimer of Liability of DA—146a, Special Attachment No. 4.

Section 18. Prohibited Interest. No member, officer or employee of the KU during his/her tenure or one year thereafter shall have any interest, direct or indirect, in this Agreement or the proceeds thereof other than that allowed by Board of Regents policy.

IN WITNESS WHEREOF: the parties hereto have caused this Agreement to be signed by their duly authorized officers on the day and year first above written.

KU

Secretary

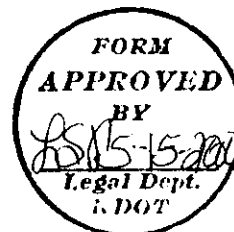
Kim Moreland
Kim Moreland
Director
Contract Negotiations and
Research Compliances

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

Barbara C. Earl
ATTEST

ATTEST

- Special Attachment No. 1, Civil Rights Act
- Special Attachment No. 2, Certification - Covenant Against Fees
- Special Attachment No. 3, Workplan
- Special Attachment No. 4, Form DA-146a
- Special Attachment No. 5, Certification - Debarment
- Special Attachment No. 6, Certification - Federal Aid Contracts



KANSAS DEPARTMENT OF TRANSPORTATION

Special Attachment
To Contracts or Agreements Entered Into
By the Secretary of Transportation of the State of Kansas

NOTE: Whenever this Special Attachment conflicts with provisions of the Document to which it is attached, this Special Attachment shall govern.

THE CIVIL RIGHTS ACT OF 1964, and any amendments thereto,
REHABILITATION ACT OF 1973, and any amendments thereto,
AMERICANS WITH DISABILITIES ACT OF 1990, and any amendments thereto,
AGE DISCRIMINATION ACT OF 1975, and any amendments thereto,
EXECUTIVE ORDER 12898, FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN
MINORITY POPULATIONS AND LOW INCOME POPULATIONS (1994), and any amendments thereto,
49 C.F.R. Part 26.1 (DBE Program), and any amendments thereto

NOTIFICATION

The Secretary of Transportation for the State of Kansas, in accordance with the provisions of Title VI and Title VII of the Civil Rights Act of 1964 (78 Stat. 252), §504 of the Rehabilitation Act of 1973 (87 Stat. 3555) and the Americans with Disabilities Act of 1990 (42 USC 12101), the Age Discrimination Act of 1975 (42 USC 6101), the Regulations of the U.S. Department of Transportation (49 C.F.R., Part 21, 23, and 27), issued pursuant to such ACT, Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations (1994), and the DBE Program (49 C.F.R., Part 26.1), hereby notifies all contracting parties that, the contracting parties will affirmatively insure that this contract will be implemented without discrimination on the grounds of race, religion, color, gender, age, disability, national origin, or minority populations and low income populations as more specifically set out in the following seven "Nondiscrimination Clauses".

CLARIFICATION

Where the term "consultant" appears in the following seven "Nondiscrimination Clauses", the term "consultant" is understood to include all parties to contracts or agreements with the Secretary of Transportation of the State of Kansas.

Nondiscrimination Clauses

During the performance of this contract, the consultant, or the consultant's assignees and successors in interest (hereinafter referred to as the "Consultant"), agrees as follows:

- (1) Compliance with Regulations: The consultant will comply with the Regulations of the U. S. Department of Transportation relative to nondiscrimination in federally-assisted programs of the U.S. Department of Transportation (Title 49, Code of Federal Regulations, Parts 21, 23 and 27,

hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

- (2) **Nondiscrimination:** The consultant, with regard to the work performed by the consultant after award and prior to the completion of the contract work, will not discriminate on the grounds of race, religion, color, gender, age, disability, national origin or minority populations and low income populations in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The consultant will not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.
- (3) **Solicitations for Subcontractors, Including Procurements of Material and Equipment:** In all solicitations, either competitive bidding or negotiation made by the consultant for work to be performed under a subcontract including procurements of materials and equipment, each potential subcontractor or supplier shall be notified by the consultant of the consultant's obligation under this contract and the Regulations relative to nondiscrimination on the grounds of race, religion, color, gender, age, disability, national origin or minority populations and low income populations.
- (4) **Information and Reports:** The consultant will provide all information and reports required by the Regulations, or orders and instructions issued pursuant thereto, and the Secretary of the Transportation of the State of Kansas will be permitted access to the consultant's books, records, accounts, other sources of information, and facilities as may be determined by the Secretary of Transportation of the State of Kansas to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of a consultant is in the exclusive possession of another who fails or refuses to furnish this information, the consultant shall so certify to the Secretary of Transportation of the State of Kansas and shall set forth what efforts it has made to obtain the information.
- (5) **Employment:** The consultant will not discriminate against any employee or applicant for employment because of race, religion, color, gender, age, disability, or national origin.
- (6) **Sanctions for Noncompliance:** In the event of the consultant's noncompliance with the nondiscrimination provisions of this contract, the Secretary of Transportation of the State of Kansas shall impose such contract sanctions as the Secretary of Transportation of the State of Kansas may determine to be appropriate, including, but not limited to,
 - (a) withholding of payments to the consultant under the contract until the contractor complies, and/or
 - (b) cancellation, termination or suspension of the contract, in whole or in part.
- (7) **Disadvantaged Business Obligation**

- (a) Disadvantaged Businesses as defined in the Regulations, shall have a level playing field to compete fairly for contracts financed in whole or in part with Federal funds under this contract.
 - (b) All necessary and reasonable steps shall be taken in accordance with the Regulations to ensure that Disadvantaged Businesses have equal opportunity to compete for and perform contracts. No person(s) shall be discriminated against on the basis of race, color, gender, or national origin in the award and performance of federally-assisted contracts.
 - (c) The contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of Federally-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the recipient deems appropriate.
- (8) Executive Order 12898
- (a) To the extent permitted by existing law, and whenever practical and appropriate, all necessary and reasonable steps shall be taken in accordance with Executive Order 12898 to collect, maintain, and analyze information on the race, color, national origin and income level of persons affected by programs, policies and activities of the Secretary of Transportation of the state of Kansas and use such information in complying with this Order.
- (9) Incorporation of Provisions: The consultant will include the provisions of paragraphs (1) through (8) in every subcontract, including procurements of materials and equipment, unless exempt by the Regulations, order, or instructions issued pursuant thereto. The consultant will take such action with respect to any subcontract or procurement as the Secretary of Transportation of the State of Kansas may direct as a means of enforcing such provisions including sanctions for noncompliance: PROVIDED, however, that, in the event a consultant becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the consultant may request the State to enter into such litigation to protect the interests of the State.

CERTIFICATION OF THE PROJECT APPLICANT

I hereby certify that I am the Director of Contract Negotiations and Research Compliances, and duly authorized representative of The University of Kansas, and that neither I nor the above agency I here represent has:

- (a) employed or retained for the payment of a commission, percentage, brokerage, contingent fee, or other consideration, any firm or person (other than a bona fide employee working solely for me or a consultant) to solicit or secure this Agreement,
- (b) agreed, as an express or implied condition for obtaining this Agreement, to employ or retain the services of any firm or person in connection with carrying out the contract, or
- (c) paid, or agreed to pay, to any firm, organization of persons (other than a bona fide employee working solely for me or a consultant) any fee, contribution, donation, or consideration of any kind for, or in connection with, procuring or carrying out the Agreement;

except as here expressly stated (if any):

I acknowledge that this certificate is to be furnished to the Secretary of Transportation for the State of Kansas in connection with this Agreement and is subject to applicable State and Federal laws, both criminal and civil.

5/2/2000
(Date)

Kim Moreland
Kim Moreland
Director, Contract Negotiations & Research Compliance
The University of Kansas

CERTIFICATION OF THE SECRETARY OF TRANSPORTATION

I hereby certify that I am the Secretary of Transportation for the State of Kansas, and that the above Project Applicant or his representative has not been required, directly or indirectly as an express or implied condition in connection with obtaining or carrying out this Agreement to

- (a) employ or retain, or agree to employ or retain, any firm or person, or
- (b) pay, or agree to pay, to any firm, person, or organization, any fee, contribution, donation, or consideration of any kind;

except as here expressly stated (if any):

I acknowledge that this certificate is to be furnished to the above referenced firm in connection with this Agreement, and is subject to applicable State and Federal laws, both criminal and civil.

5-16-00
(Date)

Warren L. Sick
E. Dean Carlson, P.E.
Secretary of Transportation
By: Warren L. Sick, P.E.
Assistant Secretary & State Transportation Engineer
Special Attachment No. 5

Proposal to

Kansas Department of Transportation

for

Fabrication error Indexed eXamples and Solutions

Period of Performance: 05/16/00 - 05/15/03

Funds Requested: \$182,500

Ken Hurst:

Kansas DOT

2300 SW Van Buren St.

Topeka, Kansas 66611

from

The University of Kansas

2385 Irving Hill Road

Lawrence, KS 66044-7552

Project Personnel:

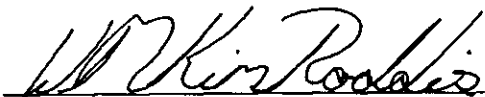
W. M. Kim Roddis

Associate Professor, Department of Civil and Environmental Engineering

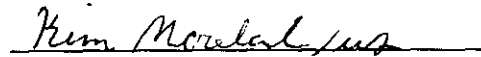
The University of Kansas

Lawrence, KS 66045

APPROVALS:



W. M. Kim Roddis, PI
Principal Investigator



Kim Moreland, Director,
Contract Negotiations
and Research Compliance

This is a proposal from the University of Kansas to the Kansas Department of Transportation for the period May 16, 2000 to May 15, 2003. The University of Kansas accepts full responsibility for the project and its conduct. The University will bill KDOT for reimbursement as specified in the contract as awarded. For the purposes of administrative efficiency, the University will subcontract to the Center for Research, Inc. (CRINC), as CRINC is the normal administrative agency for projects under the University of Kansas. This subcontractual arrangement will in no way affect the work on the project, the scientific personnel, or the billing between the University and the Department of Transportation.

THE UNIVERSITY OF KANSAS

Kim Moreland

Kim Moreland
Director, Contract Negotiations
and Research Compliance
2385 Irving Hill Road
Lawrence, Kansas 66044-7552
Phone: (785) 864-7431
FAX: (785) 864-5049

5/2/2000

Date

PROJECT DESCRIPTION FOR 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 completed research project was jointly funded by the Kansas Department of Transportation (KDOT) under the Kansas Transportation Research and New Developments Program (K-TRAN), the Federal Highway Administration under the Mid America Transportation Center (MATC), and the American Institute of Steel Construction under the National Steel Bridge Alliance (NSBA). Results of this project were presented at meetings of the AASHTO/NSBA Steel Bridge Collaboration. There remains a major opportunity to enhance the benefits of this successful project by initiating a pooled funds study to disseminate and expand FIXS.

III. Research Objectives:

The purpose of this study is to make the results of the previous FIXS project widely available and to enhance the repair database. The following tasks would be followed to achieve this objective.

1. Develop a version of FIXS that is easily available to multiple DOTs. The anticipated delivery mechanism is the World Wide Web. This task includes the selection of an appropriate software tool for web implementation, porting of the existing FIXS software to run in the web environment, and adding necessary features to support a web interface.
2. Software enhancements need to be added to FIXS to readily address the needs of multiple DOTs. The repair database needs to accommodate information sharing .
3. Gather the information needed from DOTs and fabricators to enhance the repair database. This may include visits to fabrication plants, site trips, and consultation with bridge experts and targeted users.
4. Implement the gathered information into the web-based version of FIXS. Provide a mechanism for integration of new information collected through submittal to the web site.
5. In addition to the repair database itself, produce a tutorial introducing bridge engineers to issues necessary for good resolution of fabrication error situations. This tutorial should provide not only recommendations of fixes to consider but also examples of options to avoid.
6. To ensure validity of information contained in knowledge base, submit knowledge base contents to National Steel Bridge Collaboration membership for review and comment.

7. Compile material to teach use of the revised FIXS system. Plan for maintenance of web site beyond end date of pooled funds study.
8. Evaluate performance of the revised FIXS. National Steel Bridge Collaboration membership to be included in evaluation.
9. Use the results of the development and evaluation of the revised FIXS to make recommendations of ways DOTs and fabricators could make mutually beneficial changes to prevent the occurrence and/or ease the resolution of common fabrication errors.
10. Resolution of fabrication errors is just one example where similar problem situations are encountered on a semi-regular basis by a DOT organization but infrequently by an individual engineer. Feasibility of application of the developed technology to other applications in bridge engineering will be investigated and reported on
11. Document research procedures and results.

The deliverables from the proposed work are:

1. A software program consisting of a revised FIXS.
2. A technical report documenting research procedures and results.

The project will be overseen by a technical committee structured with one representative from each state providing pooled funds. It is anticipated that status report meetings will be held annually. An attempt will be made to schedule status report meetings to concur with meetings of the AASHTO/NSBA National Steel Bridge Collaboration.

IV. Benefits:

Regional standardization of the approach used to resolve fabrication errors would expedite bridge fabrication and would be expected to reduce fabrication costs. Use of a common approach by DOTs would reduce uncertainty for fabricators, reducing their costs and in turn reducing costs to DOTs. In addition, documentation and exchange of information on fabrication errors could be used by fabricators to prevent the occurrence of such errors in the first place, leading to a reduced number of errors, improving the quality of bridge member fabrication, directly benefiting both fabricators and DOTs. The proposed work has the potential to achieve better and less costly fabrication of highway bridges to meet the needs of the driving public.

V. Budget and Schedule:

Estimated Budget: \$ 182,500

Estimated Duration: 3 years (start 5/16/00 end 5/15/03)

VI. Project Personnel:

Kim Roddis, principal investigator, in an associate professor in the Civil and Environmental Engineering Department at the University of Kansas. Dr. Roddis' research in applying advanced technology to civil engineering problems includes experience in applications of artificial intelligence to civil and structural engineering, design of computer-aided tools for civil engineering, nondestructive testing and evaluation of structures, and fatigue and fracture in steel bridges. She teaches undergraduate and graduate courses in structural steel design, as well as undergraduate structural analysis and a graduate course in knowledge-based expert systems. Prior to joining the University of Kansas, she was a Hertz Fellow at the Massachusetts Institute of Technology where she obtained her doctorate. Professor Roddis will be assisted in this research by one or more students and researchers in the School of Engineering at the University of Kansas who have the appropriate training in steel structures and computer applications.

VII. Contact Information:

W. M. Kim Roddis, Associate Professor (785) 864-3736 FAX (785) 864-5631
Civil and Environmental Engineering Department, 2008 Learned Hall
University of Kansas, Lawrence, KS 66045, roddis@ukans.edu

PROPOSED BUDGET

Year 1: 05/16/00 to 05/15/01

SALARIES AND WAGES

<u>Senior Personnel</u>		% time	Months	Rate		
<i>W. M. Kim Roddis, PI</i>						
summer		100	1.0	7,676	<u>7,676</u>	
Total senior personnel						7,676
<u>Other Personnel</u>	Persons	% time	Months	Rate		
<i>Technician (Computer Web Developer)</i>						
calendar	1	17.3	12.0	3,333	6,919	
<i>Graduate Student(s)</i>						
acad	1	50	9.0	1,400	6,300	
summer	1	50	3.0	1,400	2,100	
<i>Undergraduate Research Assistant</i>	Persons		Hours	Rate/hr		
calendar	1		100.0	8.00	<u>800</u>	
Total other personnel						<u>16,119</u>
Total salaries and wages						23,795

FRINGE BENEFITS

28% faculty and staff	4,087	
12% students (employed 76% or more)	0	
4% students (employed 75% or less)	<u>368</u>	
Total fringe benefits		<u>4,455</u>
Total salaries, wages & fringe benefits		28,250

EQUIPMENT

None		
Total equipment		0

TRAVEL

to east/west coast for professional meeting (Technical Committee)

	# Persons	Trips	Days	Amount		
	1	2	1			
Transportation (airfare)				500	1,000	
Per diem				130	260	
Car rental				50	<u>100</u>	
Total						1,360

(b) Travel for DOT Technical Committee Members

	# Persons	Trips	Days	Amount		
Total (b)						<u>5,727</u>
Total travel						7,087

OTHER DIRECT COSTS

Research materials & supplies	0	
Publications (copying and distribution of research results)	250	
Software	3,000	
Other:		
Tuition (Fall 2000 \$1,345, Spring 2001 \$1,345)	2,690	
Communications (long distance, fax, postage)	<u>250</u>	
Total "Other"		<u>2,940</u>
Total Other Direct Costs		<u>6,190</u>

TOTAL DIRECT COSTS

41,527

INDIRECT COSTS (45.5% of total direct costs excluding equipment and tuition allowance)

17,671

TOTAL PROPOSED COSTS - YEAR 1

\$59,198

PROPOSED BUDGET (Continued)

Year 2: 05/16/01 to 05/15/02

SALARIES AND WAGES

Senior Personnel

W. M. Kim Roddis, PI
summer

% time	Months	Rate
100	1.0	8,060

8,060

Total senior personnel

8,060

Other Personnel

Technician (Computer Web Developer)
calendar

Persons	% time	Months	Rate
1	17.5	12.0	3,500

7,350

Graduate Student(s)

acad

1 50 9.0 1,470

6,615

summer

1 50 3.0 1,470

2,205

Undergraduate Research Assistant

calendar

Persons	Hours	Rate/hr
1	100.0	8.40

840

Total other personnel

17,010

Total salaries and wages

25,070

FRINGE BENEFITS

28% faculty and staff

4,315

12% students (employed 76% or more)

0

4% students (employed 75% or less)

386

Total fringe benefits

4,701

Total salaries, wages & fringe benefits

29,771

EQUIPMENT

None

Total equipment

0

TRAVEL

to east/west coast for professional meeting (Technical Committee)

# Persons	Trips	Days	Amount
1	2	1	

Transportation (airfare)

500

1,000

Registration

0

0

Per diem

130

260

Car rental

50

100

Total

1,360

(b) Travel for DOT Technical Committee Members

# Persons	Trips	Days	Amount

Total (b)

5,727

Total travel

7,087

OTHER DIRECT COSTS

Research materials & supplies

0

Publications (copying and distribution of research results)

250

Software

3,000

Other:

Tuition (Fall 2001 \$1,406, Spring 2002 \$1,406)

2,812

Communications (long distance, fax, postage)

250

Total "Other"

3,062

Total Other Direct Costs

6,312

TOTAL DIRECT COSTS

43,170

INDIRECT COSTS (45.5% of total direct costs excluding equipment and tuition allowance)

18,363

TOTAL PROPOSED COSTS - YEAR 2

\$61,533

PROPOSED BUDGET (Continued)

Year 3: 05/16/02 to 05/15/03

SALARIES AND WAGES

Senior Personnel

	% time	Months	Rate		
W. M. Kim Roddis, PI summer	100	1.0	8,463	<u>8,463</u>	
Total senior personnel					8,463

Other Personnel

	Persons	% time	Months	Rate		
Technician (Computer Web Developer) calendar	1	17.5	12.0	3,675	7,718	
Graduate Student(s) acad	1	50	9.0	1,544	6,948	
summer	1	50	3.0	1,544	2,316	
Undergraduate Research Assistant calendar	Persons		Hours	Rate/hr		
	1		100.0	8.82	<u>882</u>	
Total other personnel						<u>17,864</u>
Total salaries and wages						26,327

FRINGE BENEFITS

28% faculty and staff	4,531	
12% students (employed 76% or more)	0	
4% students (employed 75% or less)	<u>406</u>	
Total fringe benefits		<u>4,937</u>
Total salaries, wages & fringe benefits		31,264

EQUIPMENT

None	
Total equipment	0

TRAVEL

to east/west coast for professional meeting (Technical Committee)

	# Persons	Trips	Days	Amount		
Transportation (airfare)	1	2	1	500	1,000	
Registration				0	0	
Per diem				130	260	
Car rental				50	<u>100</u>	
Total						1,360

(b) Travel for DOT Technical Committee Members

	# Persons	Trips	Days	Amount		
Total (b)						<u>5,727</u>
Total travel						7,087

OTHER DIRECT COSTS

Research materials & supplies	0	
Publications (copying and distribution of research results)	250	
Software	1,560	
NCS (Computer)		
Other:		
Tuition (Fall 2002 \$1,470, Spring 2003 \$1,470)	2,940	
Communications (long distance, fax, postage)	<u>271</u>	
Total "Other"		<u>3,211</u>
Total Other Direct Costs		<u>5,021</u>

TOTAL DIRECT COSTS

43,372

INDIRECT COSTS (45.5% of total direct costs excluding equipment and tuition allowance)

18,397

TOTAL PROPOSED COSTS - YEAR 3

\$61,769

TOTAL PROPOSED COSTS YEAR 1 - YEAR 3

\$182,500

CONTRACTUAL PROVISIONS ATTACHMENT

Important: This form contains mandatory contract provisions and must be attached to or incorporated in all copies of any contractual agreement. If it is attached to the vendor/contractor's standard contract form, then that form must be altered to contain the following provision:

08/99

"The Provisions found in Contractual Provisions Attachment (Form DA-146a, Rev. _____), which is attached hereto, are hereby incorporated in this contract and made a part thereof."

The parties agree that the following provisions are hereby incorporated into the contract to which it is attached and made a part thereof, said contract being the _____ day of _____, _____.

1. **TERMS HEREIN CONTROLLING PROVISIONS**

It is expressly agreed that the terms of each and every provision in this attachment shall prevail and control over the terms of any other conflicting provision in any other document relating to and a part of the contract in which this attachment is incorporated.

2. **AGREEMENT WITH KANSAS LAW**

All contractual agreements shall be subject to, governed by, and construed according to the laws of the State of Kansas.

3. **TERMINATION DUE TO LACK OF FUNDING APPROPRIATION**

If, in the judgment of the Director of Accounts and Reports, Department of Administration, sufficient funds are not appropriated to continue the function performed in this agreement and for the payment of the charges hereunder, State may terminate this agreement at the end of its current fiscal year. State agrees to give written notice of termination to contractor at least 30 days prior to the end of its current fiscal year, and shall give such notice for a greater period prior to the end of such fiscal year as may be provided in this contract, except that such notice shall not be required prior to 90 days before the end of such fiscal year. Contractor shall have the right, at the end of such fiscal year, to take possession of any equipment provided State under the contract. State will pay to the contractor all regular contractual payments incurred through the end of such fiscal year, plus contractual charges incidental to the return of any such equipment. Upon termination of the agreement by State, title to any such equipment shall revert to contractor at the end of State's current fiscal year. The termination of the contract pursuant to this paragraph shall not cause any penalty to be charged to the agency or the contractor.

4. **DISCLAIMER OF LIABILITY**

Neither the State of Kansas nor any agency thereof shall hold harmless or indemnify any contractor beyond that liability incurred under the Kansas Tort Claims Act (K.S.A. 75-6101 *et seq.*).

5. **ANTI-DISCRIMINATION CLAUSE**

The contractor agrees: (a) to comply with the Kansas Act Against Discrimination (K.S.A. 44-1001 *et seq.*) and the Kansas Age Discrimination in Employment Act (K.S.A. 44-111 *et seq.*) and the applicable provisions of the Americans With Disabilities Act (42 U.S.C. 12101 *et seq.*) (ADA) and to not discriminate against any person because of race, religion, color, sex, disability, national origin or ancestry, or age in the admission or access to, or treatment or employment in, its programs or activities; (b) to include in all solicitations or advertisements for employees, the phrase "equal opportunity employer"; (c) to comply with the reporting requirements set out at K.S.A. 44-1031 and K.S.A. 44-1116; (d) to include those provisions in every subcontract or purchase order so that they are binding upon such subcontractor or vendor; (e) that a failure to comply with the reporting requirements of (c) above or if the contractor is found guilty of any violation of such acts by the Kansas Human Rights Commission, such violation shall constitute a breach of contract and the contract may be cancelled, terminated or suspended, in whole or in part, by the contracting state agency or the Kansas Department of Administration; (f) if it is determined that the contractor has violated applicable provisions of ADA, such violation shall constitute a breach of contract and the contract may be cancelled, terminated or suspended, in whole or in part, by the contracting state agency or the Kansas Department of Administration.

Parties to this contract understand that the provisions of this paragraph number 5 (with the exception of those provisions relating to the ADA) are not applicable to a contractor who employs fewer than four employees during the term of such contract or whose contracts with the contracting state agency cumulatively total \$5,000 or less during the fiscal year of such agency.

6. **ACCEPTANCE OF CONTRACT**

This contract shall not be considered accepted, approved or otherwise effective until the statutorily required approvals and certifications have been given.

7. **ARBITRATION, DAMAGES, WARRANTIES**

Notwithstanding any language to the contrary, no interpretation shall be allowed to find the State or any agency thereof has agreed to binding arbitration, or the payment of damages or penalties upon the occurrence of a contingency. Further, the State of Kansas shall not agree to pay attorney fees and late payment charges beyond those available under the Kansas Prompt Payment Act (K.S.A. 75-6403), and no provision will be given effect which attempts to exclude, modify, disclaim or otherwise attempt to limit implied warranties of merchantability and fitness for a particular purpose.

8. **REPRESENTATIVE'S AUTHORITY TO CONTRACT**

By signing this contract, the representative of the contractor thereby represents that such person is duly authorized by the contractor to execute this contract on behalf of the contractor and that the contract agrees to be bound by the provisions thereof.

9. **RESPONSIBILITY FOR TAXES**

The State of Kansas shall not be responsible for, nor indemnify a contractor for, any federal, state or local taxes which may be imposed or levied upon the subject matter of this contract.

10. **INSURANCE**

The State of Kansas shall not be required to purchase, any insurance against loss or damage to any personal property to which this contract relates, nor shall this contract require the State to establish a "self-insurance" fund to protect against any such loss of damage. Subject to the provisions of the Kansas Tort Claims Act (K.S.A. 75-6101 *et seq.*), the vendor or lessor shall bear the risk of any loss or damage to any personal property in which vendor or lessor holds title.

11. **INFORMATION**

No provision of this contract shall be construed as limiting the Legislative Division of Post Audit from having access to information pursuant to K.S.A. 46-1101 *et seq.*

CERTIFICATION BY PROSPECTIVE PARTICIPANTS
AS TO CURRENT HISTORY REGARDING DEBARMENT, ELIGIBILITY,
INDICTMENTS, CONVICTIONS, OR CIVIL JUDGMENTS

KIM MORELAND, Director, Contract Negotiations and Research Compliances, The University of Kansas, being duly sworn (or under penalty of perjury under the laws of the United States), certifies that, except as noted below, The University of Kansas, or any person associated therewith in the capacity of director, officer, principal investigator, project director, manager, auditor, or any position involving the administration of federal funds:

- (a) is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency;
- (b) has not been suspended, debarred, voluntarily excluded or determined ineligible by any federal agency within the past 3 years;
- (c) does not have a proposed debarment pending; and,
- (d) has not been indicted, convicted or has a civil judgment rendered against (it) by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

Exceptions: _____

Providing false information may result in criminal prosecution or administrative sanctions.

5/2/2000
Date

Kim Moreland
Kim Moreland
Director, Contract Negotiations and Research Compliance
The University of Kansas

This project or contract is being funded in part by federal funds, and therefore the following certification applies:

CERTIFICATION FOR FEDERAL AID CONTRACTS

The following provision shall apply to all applicants for or recipients of federal funding on federal contracts, grants, loans, or cooperative agreements in excess of \$100,000, pursuant to 31 U.S.C. Section 1352: Sect. 319 of P.L. 101.121.

Each applicant for or recipient of any amount of federal funding shall signify in writing below the amount of federal funding applied for or received by this contract, loan, grant, or cooperative agreement, if known.

The prospective participant certifies, by signing below and submitting this bid, proposal, grant, loan, cooperative agreement, or contract, to the best of his or her knowledge and belief, that:

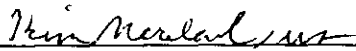
(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any federal agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete Standard Form LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions. (A copy of Standard Form LLL is attached.)

A disclosure form must also be submitted at the end of each calendar year quarter in which there occurs any event which requires disclosure or that materially affects the accuracy of the information contained in any previously filed disclosure form. The original of the disclosure form shall be submitted to: William L. Jacobs, the KDOT Project Manager for this project or contract.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Signature of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The prospective participant also agrees by signing below that he or she shall require that the language of this certification be included in all lower tier subcontracts which exceed \$100,000, and that such subrecipients shall certify and disclose accordingly. The originals of all disclosure forms submitted to the prime contractor by lower tiers shall be sent to the KDOT Project Manager named above.

 Signature Kim Moreland	5/2/2006 Date
Director, Contract Negotiations & Research Compliance Title	The University of Kansas Agency
\$165,000 Amount of Federal Funds (if known)	Project or Contract No.