

PRELIMINARY ENGINEERING WORK AREA
AUDIT REPORT

Period Covered: April 1979 through March 1981

Royce C. Seales
Senior Internal Auditor

Roger Wheatley
Internal Audit Manager

Approved by:

Donald M. Brennan
Director, Office of Audits

IOWA DEPARTMENT OF TRANSPORTATION

To Office Highway Division Date July 20, 1981
At in Don McLean Ref. No. 192.4
From Roger Wheatley *RW*
Office Audits
Subject Preliminary Engineering Audit Report

Attached is our final report on the Preliminary Engineering Work Area. This audit was conducted in conformity with our single audit agreement with FHWA and offers recommendations for management consideration regarding consultant contract administration.

Audits, by nature, result in exception reports. We wish to emphasize that many of the activities and functions reviewed were found to be in full accord with policies, procedures and control standards and that excellent cooperation was received from all persons involved.

Draft copies of the recommendations and findings were sent to the affected offices for their verbal or written comments and questions. Comments received before the release date are attached to the report.

We request that written response be made on the recommendations within thirty days of the report release.

RDW:mh
Attachment

cc: Jon McCoy
George Calvert
George Sisson
Fay Bloomfield ✓
Ken McLaughlin
Brian Ford, FHWA

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PRELIMINARY ENGINEERING AUDIT

Background

The Preliminary Engineering audit work area, as defined by the FHWA, consists of those activities necessary to advance highway projects from the end of the planning stage to the construction letting stage.

The major components involved in this advancement are: (1) location studies and determination; (2) design activities, principally road and bridge; and (3) railroad and utility adjustments. These components are inclusive of performance by others, including consultants and political subdivisions.

Purpose

The purpose of the audit is to provide a report to management of the adequacy of controls employed to manage this work area. Where appropriate, recommendations and comments are provided for management consideration.

Consideration is given to compliance with applicable policies and procedures, both federal and state. Economy and efficiency of operations are considered to the degree feasible but are not primary objectives.

Scope

Reliance was placed on previous audit reports and control area evaluations. Accordingly, the extent of project review and testing was limited to those areas that were necessary, in the auditor's judgment, to render an audit opinion on the work area.

Detailed review of the corridor location program component was not conducted. Limited review of performance by state personnel was made. Detailed review of control over work performed by others, particularly consultants and utilities, was made.

The audit was conducted in accordance with "Standards for Audit of Governmental Organizations, Programs, Activities, and Functions," 1981 Revision. According to the general standard on independence we are obligated to report that we are employees of Iowa DOT, the audited entity. Also, while our ability to do work and report findings impartially has not been affected, knowledgeable third parties might question our independence based on organizational impairment.

OPINION

The preliminary engineering area, with the exceptions noted in the Recommendations and Comments, is being efficiently and effectively administered and possesses an adequate system of internal controls.

We believe that improvement is needed in negotiated contract administration in order to prevent loss of federal funds, improve internal control, and provide assurance that utility adjustments are properly monitored by field personnel.

RECOMMENDATIONS

1. Policy 300.12 and 300.13

Compliance with policy 300.13 be emphasized.

2. Lump Sum Contracts

Use of Lump sum contracts be more restricted or their provisions be modified.

3. Unauthorized Costs

Procedures be started to prevent unauthorized contract costs from being incurred and paid by the Iowa DOT.

4. Contract Modifications

Changes in scope of work and/or funding of work should have an approval process to insure adequate authorizations.

5. Contract Terminations

Contracts be terminated in accordance with contract provisions or appropriate approvals to do otherwise be required.

6. Pre-Contract Costs

Procedure be reinforced to prevent payment of costs billed by external parties for work done prior to federal and/or state approval.

7. Utility Adjustments

We recommend that the necessity for adequate field monitoring of utility adjustments be re-emphasized.

8. Federal Aid Programming

Review of project no. GRF-76-2(13)-2B-03 indicates that procedures for programming "in-house" costs for federal reimbursement in special fund categories should be examined to provide assurance that available federal funds are claimed.

FINDINGS

1. Policy 300.12 and 300.13

The requirements of Iowa DOT PPM 300.13 (Negotiated Contract Administration) Section VI.5, Pre-audit Requirements, were not met for project BRI-NBIS(1)-20-82. The inspection contract with the firm of Modjeski and Masters is for an estimated \$147,000.00.

Evidence of compliance with selection committee activities in policy 300.12 (Negotiated Contracts for Professional Services) was not present in the Schemmer Associates, Inc. file for project F-3-5(900)-20-12. The procedure was apparently not used for the above noted Modjeski and Masters contract and evidence of compliance with 300.12 was not in the Henningson, Durham and Richardson file for project F-30-2(901).

The lack of pre-audit was evidently caused by an oversight but does illustrate the need to maintain a consistent project control mechanism. The non-compliance or non-documentation of compliance with 300.12 was discussed with the Office of Bridge Design. The reason stated by the Office was that the subject policy was a Highway Division policy and could be waived at the Division's discretion.

The policy was formulated to meet specific management control requirements and assure compliance with federal and state regulations. As such, the policy requirements are not optional. Lack of compliance creates the potential for audit citations and does not preserve a unified managerial approach to contracts.

We recommend that the need for compliance with the above policies be re-emphasized.

2. Lump Sum Contracts

Use of lump sum contracts is permissible under federal and state procedures. However, we believe that use of this form of contract may create potential opportunities for the earning of excess profits by the contractee and may also serve to obscure questionable cost proposals.

Analysis of a Howard, Needles, Tammen and Bergendoff (H.N.T.B.) contract (#264) for project I-380-6(3)259-01-57 indicates that if the project were completed using the manhours and direct expenses contained in the proposal the consultant would receive an additional \$7,897.00 "profit" above that contemplated. Similar

analysis for H.N.T.B. contract #291 indicates a potential extra profit of \$20,897.00. These were the result of using projected overhead rates that were higher than those actually experienced in the contract period.

Review of Terry A. Shuck contracts for projects I-380-7(17)304-01-57 and I-380-7(28)287-01-06 indicates that questionable elements were included in the development of an overhead cost factor that was used in the consultant's cost proposal. In one contract, some of these items were questioned by the contracting officer. Since both were lump sum contracts under \$50,000, audit evaluation was not required. (It is noted that the combined value of these contracts, signed within two weeks of each other exceeds \$50,000).

A pre-audit for a Terry A. Shuck (T.A.S.) contract (F-6-4(902)-20-58) was requested on May 18, 1979. The contract was proposed on a cost-plus basis. On June 18, 1979 an External Audit Report was issued stating that T.A.S. accounting systems were inadequate and overhead rate development inaccurate. Costs of \$9,727 were questioned in the \$164,654.00 proposal total. However, the contract had been signed on a lump sum basis for the proposed amount by T.A.S. on May 23, 1979 and the Iowa DOT on June 14, 1979.

As a result of meetings with T.A.S., audit report PA-79-06-306-09-2-1 Revised was issued on June 28, 1979. This report gave assurance as to the T.A.S. adequacy subject to report provisions . . . "(1) that an amended/supplemental proposal would be submitted to the contracting officer to correct the above noted omission. . . . (2) current accounting system employed by the firm does not provide an adequate basis for recording direct labor costs . . . "(3) including audited overhead rates of 95.36%, and ". . . (4) it was agreed to conform with accounting procedures necessary to comply with state and federal requirements"

We find no evidence that a revised proposal was submitted. The original proposal contained potentially overstated costs creating possible excess profits. The contract was signed prior to the pre-audit on a basis inconsistent with the proposal submitted to the auditors.

In a Wallace Holland contract, F-63-7(901)-20-09, the consultant, upon being notified that the contract was being terminated early, offered to complete the contract at a reduced price. The reasons given were reduced costs associated with . . . "economics we have affected within our office," as well as changes in scope.

We are informed that use of lump sum contracts is considered when the scope and nature of work is clearly definable. Additionally, such contracts provide an incentive to bring the project in under budget.

We believe that, with the possible exception of small and/or emergency situations, such contracts provide a potential to generate excess profits. This may occur, as demonstrated above, even if the project is definable and on budget. The potential to overstate the budget by even small percentages, when viewed in relation to total project costs, resulting in relatively large profit increases cannot be overlooked.

Where lump sum contracts are used, we believe that provisions similar to those provided by Public Law 87-653, Truth in Negotiations, should be used. (This law applies to federal defense contracts). The provisions give the government the right to adjust the contract price in the event that the price agreed on was based on inaccurate, incomplete, or non-current cost or pricing data.

Recognizing management discretion in contract type selection, we recommend that use of lump sum contracts be restricted to the extent possible and, where used, include contract provisions as noted above.

3. Unauthorized Costs

Review of three H.N.T.B. contracts indicated payments made to the consultant in advance of written authorization by the FHWA. These contracts have been discussed with the appropriate offices and the result of a joint meeting with the FHWA is shown in Attachments 1 and 2 of this report.

The actions to be taken, as shown in Attachment 2, will serve to address the specific and some of the general questions raised. In addition, we recommend that the Iowa DOT develop specific oversight procedures to reduce the possibility of recurrence and attendant loss of federal funding.

Attachment 3 represents the FHWA action taken per item I.C. of Attachment 2. We note that the question of whether the costs incurred were eligible for federal-aid funding or within the scope of the agreement was not the question raised. The question was whether they were authorized at the time of incurrence. We understand that the intent of this memo is to provide such retroactive authorization.

Title 23 CFR provides specific procedures in paragraph 1.9 (Limitation on Federal Participation) to be followed in cases of retroactive authorization. We recommend that the required action be taken and be formally documented within the proper files.

4. Contract Modifications

- A. In a Stanley Consultants contract for project GRF-99-1(6)-2B-29, there were 23 items identified as extra work by the consultant. However, contract amendment was denied by the Iowa DOT. The consultant was advised that payment for these extra items would be made within existing contract funding and consideration given if an overrun occurred.
- B. H.N.T.B. contract #205, project I-380-6(3)259-01-57 file reflects a decision to transfer work authorized under the contract to state forces but allow use of all the authorized funding by the consultant.
- C. The file for the Alfred Benesch & Co. contract for project F-67-1(900)-20-92 reflects an authorization to use contingency funding to accomplish work not within the scope of the original agreement.

The above represent alterations in the scope of intended services without being subjected to the approval process normally required for new contracts or additional services.

Contingency fund use is interpreted by us as funding for costs incurred in the achievement of work within the scope of the contract. Altering the scope of a contract without benefit of an established formal approval process is contrary to management concepts inherent in the approval process. Such action creates the potential for contract mismanagement.

We recommend that all significant changes in scope of work, whether or not requiring additional funds, be subjected to a formal approval process.

5. Contract Termination/Modification

Payment for contract GRF-99-1(6)2B-29 with Stanley Consultants for early termination was made at an administratively determined level rather than in accord with contract requirements (Attachments 4 and 5). Evidence of approval of this decision at the levels required to initiate the contract or approve substantive changes was not presented.

Nullification of contract provisions without such an approval process creates a lack of management control and could, in theory, apply to any contract element.

We recommend for the subject contract and any similar contracts that payment be made in accordance with contract provisions or that an approval process be followed and documented.

Also recommended is that the process to alter contract provisions be clearly defined for all contracting officers.

6. Pre-Contract Costs

Alfred Benesch Contract #303 for project IG-380-7(42)316-02-07 has approximately \$16,002.61 of costs incurred prior to federal and state approval. To our knowledge, the contract has been under suspension for over a year.

Stanley contract #004 for project GRF-99-1(6)-2B-29 contained costs incurred after state authorization but prior to FHWA authorization.

In our opinion, the need to provide assurance that consultants do not begin work prior to authorization is demonstrated by the above. We recommend that specific instructions be issued to cover this point and that future initial billings for new and/or revised contracts be closely monitored.

7. Utility Adjustments

Due to a lack of adequate field documentation, the auditor could not determine that all costs charged to two utility projects were properly billable for state reimbursement. These projects were as follows:

- A. Project FN-181-1(2)-21-63-gas line adjustment, ~~Northern~~
Natural Gas Pipeline *Co. of America*

Project billing indicated 388' of 24" line billed. Project records indicated only 306' installed with no reconciliation. The external auditor obtained credit for 41' of defective pipe. According to the company, the other 41' "bubbled" when being bent. The company did not know why scrap or salvage credit was not extended.

- B. Project I-29-7(15)150-01-97 gas line relocation contract with Iowa Public Service Co. of Sioux City.

Available fieldbook documentation for this project states that in May 1979 "this completes work on this agreement," with 3241' of 16" line installed. The final bill indicates 3290' installed and approximately \$16,000 of labor and equipment costs billed to the project in October 1979.

Review at the utility company supported indirectly the number of feet of pipe laid by reference to subcontract billings. According to the utility, the labor and equipment costs were necessary to finish the disconnection of the old line and make service connections to the new line. Due to the apparent lack of notification by the utility to the RCE and fieldbook documentation, independent confirmation as required by FHPM Vol. 6; Ch6, Sect 3; Subsect 2; Para 6g; was not obtainable.

We recommend that increased emphasis be placed on field verification of utility adjustment costs. Such verification should include, at a minimum, independent confirmation of major material, labor and equipment charges and a reconciliation of any significant variations between project cost estimates, as-built plans and utility billing.

8. Federal Aid Programming

Project GRF-76-2(13)-2B-03 did not receive FHWA authorization for in-house preliminary engineering costs. These costs are reimbursible from the Great River Road program and if not claimed are lost to the state. According to the 10-22-79 Project Cost Record, these costs were \$27,974.80.

This apparently occurred due to the special project nature of the Great River Road funding and the lack of definition as to responsibility. We recommend that procedures be examined to provide assurance that this will not recur.

Previous Audits

U.S. DOT Office of Inspector General audit report No. R7-FH-1-015 dated 12-22-80.

This report recommends that selection procedures used by local governments for obtaining consultant services be improved to insure compliance with applicable regulations and criteria. This was a multi-state report and the principle finding relevant to the state of Iowa was non-publication of requests for proposals and lack of attempts to secure proposals from other firms.

The Offices of Urban Systems and Secondary Roads have prepared an analysis of the I.G. report that adequately addresses the issues raised.

SUMMARY

Howard, Needles, Tammen & Bergendoff Contracts 205, 239, 247:

<u>Contract #</u>	<u>Potential Citation</u>
205	\$111,592.67+
239	27,644.33
247	16,814.20+

In all contracts:

- (1) A contract increase was requested.
- (2) Billing by H.N.T.B. (normally on a monthly basis) was suspended.
- (3) The increase was approved at a later date.
- (4) A billing containing costs exceeding the authorized limits prior to the approval of the increase was submitted and paid.
- (5) No evidence of prior approval by the Iowa DOT, the FHWA, or in one case, the State of Nebraska, has been obtained.

Good contract administrative control is achieved when written approval for increased costs is obtained before those costs are incurred. State and Federal approvals on file allow costs to be incurred only on or after the dates of approval. The potential exception amounts above represent payments made by Iowa DOT without documented Iowa DOT and FHWA approvals for those costs to be incurred.

IOWA DEPARTMENT OF TRANSPORTATION

Bridge Design, C. A. Pestotnik
Road Design, G. Sisson
FHWA - Brian Ford, Dennis Cook, Bruce Brakke

Date April 27, 1981

Ref. No.

Roger Wheatley *RW*

Audits

Meeting Re: Howard, Needles, Tammen, Bergendoff Contracts #204, #239, #247

This memo is to document the results of the meeting April 24, 1981 re the above contracts. If there are additions or corrections to the following, please contact the Office of Audits.

I. Contract Actions

- A. #205 I-380-6(3)259-01-57
The FHWA will provide documentation establishing a March date under which costs billable under Supplemental #2, approved July 17, 1978, may be incurred. External Audits will then determine the amount of costs to be billed back to H.N.T.B.
- B. #239 I-380-6(3)259-01-57
The ineligible costs incurred prior to authorization will be billed to H.N.T.B.
- C. #247 BRE-20-1(26)38-97
The FHWA will provide written confirmation that all costs incurred prior to the 12/5/78 approval date for a contract increase were authorized to be billed under that increase and are eligible for reimbursement.

II. General Actions

- A. The FHWA is preparing a new contract format to clarify contract requirements and ambiguous language. Audits will review this format when it is made available.
- B. The possible use of a conditional letter of approval will be explored. This would provide evidence of proper authority to incur costs in advance of determination of specific cost proposals and formal agreement. Audits notes that this has legal implications and that a specific Iowa DOT policy should be formulated and approved to detail limitations and circumstances for use of such a procedure.
- C. In the future, FHWA will not approve costs incurred without prior written approvals.

RDW:RCS:mh

Iowa-Nebraska Project BRF-20-1(26)
Missouri River Bridge

April 24, 1981

H. A. Willard
Division Administrator, FHWA
Ames, Iowa

HER-IA

Mr. D. E. McLean, Director
Highway Division, Iowa DOT
Ames, Iowa

ATTENTION: Mr. George Calvert

The purpose of this is to clarify the intent of our October 25, 1978, memorandum.

Review comments regarding the preliminary detail superstructure plans for the subject bridge were provided to the consultant during meetings on December 21, 1977, and March 7, 1978. The consultant subsequently studied these comments and completed the plans for an anticipated July 1978 letting. Work performed by the consultant resulting from those meetings is within the scope of the engineering agreement executed on April 1, 1976. In view of this and the wording of the last paragraph of Article 5 of the agreement, we consider the costs associated with the work to be eligible for Federal-aid funding.

Bruce L. Brakke
Division Bridge Engineer

cc: Mr. C. A. Pestotnik
Mr. Roger Wheatley

RECEIVED
APR 29 1981
OFFICE OF AUDITS

IOWA DEPARTMENT OF TRANSPORTATION

To Office Audits
At n Roger Wheatley
From George F. Sisson
Office Road Design
Subject Internal Audit of Road Design

Date March 23, 1981

Ref. No. Des Moines County
GRF-99-1(6)--2B-29

We are aware of the terminology of the contract relative to termination and its application to contract fixed fee. However, in this instance work was concluded on the basis of a mutually agreed upon reduced scope of services. The fixed fee of \$28,972.46 is equitable for services rendered, and we are approving payment at this level.

GFS:RES:MJN:cb

cc: Rob Forrest
Don Breniman
H. A. Willard - FHWA
R. E. Stoecker
M. J. Nutt
J. C. Hocker

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MAR 24 1981

OFFICE OF AUDITS

IOWA DEPARTMENT OF TRANSPORTATION

Office Road Design Date March 18, 1981
Written by George Sisson Ref. No. 192.4
From Roger Wheatley *RW*
Office Audits
Subject Internal Audit of Road Design

Through internal audit of Road Design we have determined that a probable basis exists for audit citation of Stanley Consultants contract #004(Project GRF-99-1(6)--2B-29) for Great River Road work in Des Moines County.

Final payment for this contract included 86.9% of the agreed upon fixed fee. Since the contract was terminated before completion, final payment is to be based on costs billed as a percentage of estimated costs (Contract p.8, part D.) rather than the consultant's percentage of contract completion.

We are bringing this problem to your attention now so that corrective action may be taken before closing of another contract with Stanley Consultants (Projects F-20-8(900)--20-28 and F-20-9(901)--20-31) involving similar items.

For your convenience, our summary of final payment changes is attached.

RDW:mh
Attachment

cc: Chuck Newhouse

Stanley Consultants Contract #004:

Final bill as submitted:

Total Project Costs	\$184,983.51	
Fixed Fee	<u>28,972.46</u>	
Total		<u>\$213,955.97</u>
Total amount paid Stanley (includes external audit citations)		<u>\$210,634.42</u>

Payment should be:

Total Project Costs	\$184,983.51	
Less Audit Citations	<u>3,321.55</u>	
Allowable Project Costs	\$181,661.96	
*Fixed Fee	<u>24,248.18</u>	
Total		<u>\$205,910.14</u>
Amount Overpaid to Stanley Consultants		<u>\$ 4,724.28</u>

Federally Non-participating Project Costs:

Approved Project Costs	\$ 13,490.67	
Fixed Fee as Paid	<u>2,177.98</u>	
Total Paid		\$ 15,668.65

Payment should be:

Approved Project Costs	\$ 13,490.67	
*Fixed Fee	<u>1,800.36</u>	
Total		\$ 15,291.03
Amount of project costs and fee underclaimed to FHWA		<u>\$ 377.62</u>

Fixed Fee Calculations

Approved Project Costs $\frac{\$181,661.96}{\$249,764.00} = 72.73\% \times \$33,340 = \$24,248.18$ Allowable Fixed Fee

Note: Both numbers include outside contract with Aero-Metric Engineering

Non-participating Portion:

Approved Project Costs $\frac{\$ 13,490.67}{\$249,764.00} = 5.40\% \times \$33,340 = \$1,800.36$ Allowable Fixed Fee for Non-participating Costs

Recap:

Gross amount by which final payment to Stanley Consultants should be reduced and by which Federal participating costs should be reduced -		\$ 4,724.28
Amount of non-participating costs paid by Iowa DOT which should be included as federal participating -		\$ 377.62
Net reduction in federal participating costs -		<u>\$ 4,346.66</u>

Total allowable project costs	\$205,910.14	
Less 100% state participating project costs	<u>15,291.03</u>	
Total amount eligible for federal participation		<u>\$190,619.11</u>

IOWA DEPARTMENT OF TRANSPORTATION

to Office

Audits


Date July 16, 1981

Atte

Roger Wheatley

Ref. No. 521.4

from

C. A. Pestotnik 

RECEIVED

Office

Bridge Design

JUL 17 1981

Subject

Preliminary Engineering Audit Report

OFFICE OF AUDITS

We have reviewed the recommendations and findings in letter of July 7, 1981. The following comments pertain to contracts of the Bridge Design Office.

FINDINGS1. Policy 300.12 and 300.13

The selection of Modjeski and Masters as consulting engineers for the Bettendorf I-74 bridge inspection and for the Clinton U.S. 30 bridge inspection was made without benefit of the selection committee because:

- A. M & M has been under contract for several years to make annual inspections of the Clinton bridge and this agreement is still in effect.
- B. M & M was the original designer of these bridges and acted as consulting engineers to both the Clinton and Davenport Bridge Commissions until the bridges were taken into the state system.
- C. The FHWA in Washington informed the Bridge Engineer by telephone that few consulting engineers had experience or capability to inspect suspension bridge cables but that M & M was qualified.
- D. An M & M report on inspection of an Ohio River bridge had considerable influence on our decision to inspect the cables.

In consideration of the above, M & M was selected to perform the inspection as a "sole source", which is covered by Policy 300.12, VI B7.

No pre-audit was deemed necessary as M & M has been under contract to make annual inspections of three Mississippi River bridges for the past several years. This contract is a cost plus fixed fee type similar to the subject contract. We assumed because of this, that Audits had already approved ~~at~~ M & M's accounting methods. OF

Schemmer Associates, Inc. was selected by the selection committee by letter of April 11, 1979. Bridge Design split 11 bridge replacement projects throughout the state into 3 contracts and retained Schemmer and (Terry A. Shuck) and (Henningson, Durham & Richardson) for this work. A copy of the selection committee letter is now in each consultant's contract file.

2. Lump Sum Contracts

We appreciate your advice concerning lump sum contracts.

3. Unauthorized Costs

All of HNT&B's costs for the design of the Combination Bridge at Sioux City are eligible for Federal-aid funding.

Thank you for your recommendations. They will be considered in any of our future negotiations of consultant contracts.

CAP:WLS:slu