IMPROVING CONTRACT MANAGEMENT BY END USERS

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In Cooperation with
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The New Mexico Department of Transportation (NMDOT) identified the need for improvement of both quality and consistency in developing and managing contracts.

Of particular concern were:

- Absence of one or more of the following:
  - specific scopes of work
  - clearly defined deliverables
  - quantifiable performance measures
- Invoices not linked to contract scope or deliverables
- Payment of invoices when vendor had made inadequate progress
- Inconsistent monitoring of contracts
The objectives of this project were to:

1. examine the NMDOT contracting process
2. determine aspects that could be improved
3. develop recommendations that would ensure contracts are monitored effectively and public funds expended efficiently

The focus of the research was on non-architectural and engineering (non-A&E) professional services contracts.
Project Tasks

Task 1: Interview Key Department Personnel

Task 2: Evaluation of Sample of Contracts

Task 3: Literature Review and Survey of Contract Management Principles


Task 5: Development of a Training Program for Contract/Project Managers and Initial Training

Task 6: Development of an Implementation Plan for Improved Contract Management Techniques
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Task 1 – Description

In this task, New Mexico Tech (NMT) requested from the Technical Panel a sample of contracts to be evaluated and the selection of Department personnel to be interviewed.

The goals of the research team in this task were to:

• gain a broad understanding of NMDOT contracting processes
• conduct a thorough analysis of this process
• identify its strengths and weaknesses
• review key contract principles
A sample of 19 contracts were received along with a list of NMDOT personnel associated with the contracts.

The NMT Research Team developed a questionnaire to survey NMDOT personnel responsible for developing and managing contracts.

The survey considered a range of questions to understand the administrative roles and expectations in managing and administering NMDOT contracts.

To ease concerns and assure interviewees that results of this project would not be used to evaluate their performance within NMDOT, questionnaires were forwarded to participants prior to the meetings.

The interviews took the form of a relaxed and friendly conversation, nevertheless, the interviewers made sure that all items on the list of questions were addressed.
Employees find contracting process confusing, particularly forms and documents required for the different types of contract.

Employees experienced in the contracting process learned it on their own (no training or orientation).

Program management and contract administration duties are often conducted by the same person.

Person administering and managing contracts is often the one “that knows the most about this type of work”. Unfortunately, this person does not always have experience or training in program management and/or contract administration.

Filing procedure is inconsistent.

There is no procedure to assure that:

- all necessary documents are filed and organized
- documentation is transferred to appropriate personnel should individual in charge of the contract leave the Bureau
• Bureaus that delegate contract administration duties to a single individual have a better understanding and a more positive view of the contracting process
• Position held by the person in charge of writing the RFP varies from Bureau to Bureau
• Personnel interviewed do not feel that scope creep is a problem
• Most interviewees are satisfied with contractors’ performances
• Problems related to poor performance are usually resolved by notifying the contractor before an invoice is submitted
• Amendments are often viewed as unavoidable
• The amendment process is often considered lengthy, burdensome, and sometimes confusing
• Most amendments add personnel, grant time extensions or additional compensation. Changes in scope are not common
Contracts which were perceived to be functioning well also had the characteristics of addressing the research issues listed on the RFP and a satisfactory contract amendment process.
Project Tasks

Task 1  • Interview Key Department Personnel

Task 2  • Evaluation of Sample of Contracts

Task 3  • Literature Review and Survey of Contract Management Principles

Task 4  • Development of a Contract Management Recommendations Handbook

Task 5  • Development of a Training Program for Contract/ Project Managers and Initial Training

Task 6  • Development of an Implementation Plan for Improved Contract Management Techniques
The objective of this task was to conduct an independent review of a sample of non-A&E contracts provided by NMDOT.

The review focused on the determination of the adequacy of:
- scopes of work
- deliverables
- budget
- performance measures

Results of this analysis were used to develop a Recommendations Handbook, a Training Program, and an Implementation Plan for the recommendations.
Most contracts had specific and detailed scopes of work, lists of deliverables, and performance measures.

Some concerns were found in reporting timelines, budgets and milestones.

One contract in particular exhibited serious deficiencies:

- lack of details in the scope of work
- vague performance requirements
- absence of milestones
- lack of a detailed budget (only a maximum agreed upon hourly rate was included)
Task 2 – Findings
Amendments

- Of the 19 contracts supplied, 5 were amended
- Justifications were presented for all amendments
- Justifications for amendments consisted in:
  - addition of information to scope of work
  - corrections to the original contract
  - inclusion of new budget line items
  - reallocation of funds
  - time extensions
  - increased compensation
- Time extensions and increased compensation were deemed essential to the completion of the contract
- Circumstances leading to these amendments were deemed unforeseeable
- Amendments granting time extensions and additional compensation were the most common, changes in scope were rare
In general, contracts appeared to be properly monitored, with the following exceptions:

- There was a lack of consistency in procedures followed by different project managers and contract administrators.
- In some cases, the monitoring process was informal and not documented.
- Responsibilities of contract administration and monitoring are unclear.
- In most cases, the person who knew the most about the project was responsible for its monitoring and for managing the contract, regardless of this person’s experience or training in contract administration and project management.
Although most projects were ongoing, and success could not yet be determined, interviewees felt that:

- the contractors were performing satisfactorily
- services provided fulfilled the contracts’ terms
- amendments to increase compensation were adequately justified
Task 2 – Regression Analyses of Contract Data

First Analysis

- A regression analysis was used to study average contract expenditures across the sample of contracts.
- Results indicate that the mean value of contract cost increases by 8.2% given a 10% increase in monthly price of services.
Task 2 – Regression Analyses of Contract Data
Second Analysis

- A logarithmic regression model was used to study the effect of contract life on contract cost.
- Results indicate that the mean value of contract costs increases by 7.5% given a 10% increase in contract life.
**Project Tasks**

- **Task 1**
  - Interview Key Department Personnel

- **Task 2**
  - Evaluation of Sample of Contracts

- **Task 3**
  - Literature Review and Survey of Contract Management Principles

- **Task 4**

- **Task 5**
  - Development of a Training Program for Contract/Project Managers and Initial Training

- **Task 6**
  - Development of an Implementation Plan for Improved Contract Management Techniques
The objective of this task was to search the literature for contract development and management best practices.

To this end, the NMT research team reviewed basic contract principles from the economics literature and visited websites of state DOTs and other entities issuing contracts similar to those let by the NMDOT.

Several documents were obtained regarding contract management best practices, lessons learned, and recommendations.

These recommendations were summarized and carefully considered in the development of the Contract Management Recommendations Handbook (Task 4), the Training Program (Task 5), and the Implementation Plan (Task 6).
Well managed contracts tend to reduce to basic causes of economic inefficiencies:
- adverse selection risk and moral hazard risk

- Adverse selection risk arises when contractors are chosen on a no-bid basis, which can potentially escalate project costs.
- Adverse selection risk can be managed by choosing project contractors through competitive bidding.

- Moral hazard risk occurs when contracts have no built-in incentives for efficient performance over the life of a project.
- Moral hazard risk can be managed by improving contract oversight, specifying contract terms which limit the burden of cost overruns.
Recurring recommendations encountered include:

- Good communication should be maintained between all parties throughout the life of the contract
- Careful documentation should be kept of all aspects of the contract
- Proper filing practices should be followed throughout the project
- A monitoring plan should be in place before the contract begins
- Performance should be closely monitored and when necessary corrective measures should be taken
- Satisfactory performance should be assured before invoices are paid
- Clear definition and understanding of each participant’s role and responsibilities should be ensured before the project begins
Project Tasks

- **Task 1**: Interview Key Department Personnel
- **Task 2**: Evaluation of Sample of Contracts
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- **Task 4**: Development of a Contract Management Recommendations Handbook
- **Task 5**: Development of a Training Program for Contract/Project Managers and Initial Training
- **Task 6**: Development of an Implementation Plan for Improved Contract Management Techniques
Task 4 – Description

Task 4 consisted in using the information obtained in the previous tasks to develop a Handbook that would assist NMDOT personnel in managing and administering non architectural and engineering professional services contracts.

Task 1 - interviews of NMDOT personnel and Task 2 - evaluation of contract sample allowed the NMT research team to understand:

- the contracting process at NMDOT
- the strengths and weaknesses of this process
- the challenges faced by NMDOT employees involved in contract administration and project management

Task 3 - survey of the literature for best practices and lessons learned in contract management and administration provided a large number of useful information.
The Handbook developed follows the chronology for a project’s life:

- development of scope of work and request for proposals
- proposal evaluation and selection
- contract negotiation and processing
- monitoring the contract
- closure

To assist NMDOT personnel in the development and administration of non-architectural and engineering professional services contracts, it includes, for each phase of the contract:

- guiding principles and recommendations
- flowcharts showing administrative procedures to be followed
- documentation required
- roles of project managers and contract administrators
- references to applicable rules
- ethical considerations
## Project Tasks

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The NMT research team developed a training program to assist NMDOT personnel in understanding the contracting process in the agency.

The program focused on the development, management and administration of non-architectural and engineering (non-A&E) professional services contracts.

Like the Handbook, it follows the chronology for a project’s life, from the point at which the initial solicitation is developed through monitoring of the ongoing project, and ending with closure and final evaluation of goals.
To create a training session that benefits and engages participants of different levels of experience with the contracting process, the NMT research team used a workshop approach, where participation of all attendees was encouraged:

- Slides and brief explanations were used to familiarize inexperienced participants with each contract phase
- Participants were then asked to take part in small group discussions on the topics, focusing on:
  - problems encountered and possible solutions
  - lessons learned
  - challenges
  - concerns
- Groups were then asked to share the main points of their discussion with the entire audience
An initial training session was offered by the NMT research team on March 7, 2012 from 8:00 AM until 11:00AM. To better understand the needs of future participants, a survey was conducted at the beginning of the program. Results showed that:

- Half of the participants had previously written RFPs for NMDOT and 17% did so on a regular basis.
- 56.5% had evaluated proposals for NMDOT, and 21% did so regularly.
- 29% had negotiated contracts and 9% did so on a regular basis.
- 62% had monitored contracts and did so habitually.
- 69% understood the difference in duties of a project manager and a contract administrator and 73% were familiar with these duties.
- 92% were familiar with the process used to review invoices and 62.5% reviewed them regularly.
- Although 62.5% had received and evaluated deliverables for NMDOT, only 56.5% claimed to be familiar with the process used to evaluate and accept deliverables.
- Only 33% of the participants had been trained in the contracting process.
- 100% believed that a training program on the contracting process would benefit NMDOT employees.
To determine the effectiveness of the training program, an evaluation form was developed by the research team and distributed during the training program of March 7, 2012.

Results of the evaluation show that:

• 81% of the participants believed that time allocated to the training program was appropriate

• 95% believed that time was used efficiently, however, responses to open-ended questions showed that some would like certain sections to be covered more extensively and for the training session to be longer

• Although copies of the Recommendations Handbook were not distributed to the participants, the majority felt that current and new employees would benefit from such document

• Finally, 96% of the participants believe that current and new employees would benefit from this particular training program
Project Tasks

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Task 6
• Development of an Implementation Plan for Improved Contract Management Techniques
The objective of this task is to develop an Implementation Plan (IP) that sets out a step-by-step approach for implementing the contract management recommendations described in the Contract Management Handbook and preliminary training workshop.

In doing so the IP provides a checklist for integrating these recommendations into Department procedures and policies for effective management of non-A&E PSA contracts let by the Department.

The IP also describes approaches for evaluating the cost effectiveness of these recommendations over the various phases of the contract management process, and lessons learned for avoiding deficiencies in past contract development, execution, management and performance.
## Task 6 – RFP Process

<table>
<thead>
<tr>
<th>Goals for step one</th>
<th>Develop and issue RFPs which motivate contractors to offer detailed proposals for Department consideration.</th>
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<tbody>
<tr>
<td>Recommendations for avoiding deficient practices/procedures</td>
<td>Develop RFPs which specify precise terms and conditions. Rely on fixed-price contracts when possible. Open the RFP process to encourage competition for public projects.</td>
</tr>
<tr>
<td>Department staff implementing recommended practices/procedures</td>
<td>To be determined by NMDOT</td>
</tr>
<tr>
<td>Cost-effectiveness of implementing recommendations</td>
<td>Well-written RFP’s avoid administrative costs of revising/reissuing RFPs. Specifying fixed-price contracts avoids cost overruns due to inefficient contractor behavior. Increasing the number of potential contractors may lower project costs by raising the degree of competition.</td>
</tr>
</tbody>
</table>
## Task 6 – Proposal Evaluation and Selection

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<tr>
<th>Goals for step two</th>
<th>Administer a fair/competitive proposal evaluation &amp; selection process.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendations for avoiding deficient practices/procedures</td>
<td>Limit evaluations to proposals submitted on time and conforming to RFP criteria; conduct oral presentations with top proposals for grasp of tasks and goals; scrutinize top proposals to avoid conflicts of interest or procurement code violations.</td>
</tr>
<tr>
<td>Department staff implementing recommended practices/procedures</td>
<td>To be determined by NMDOT</td>
</tr>
<tr>
<td>Cost-effectiveness of implementing recommendations</td>
<td>A fair and competitive evaluation/selection process avoids lawsuits from potential contractors; avoids administrative costs in duplicating steps one and two; avoids cost overruns from selecting inefficient contractors.</td>
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## Task 6 – Contract Negotiation

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<th>Goals for step three</th>
<th>Negotiate contract terms to ensure desired tasks and services are conducted successfully, on time and within budget.</th>
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<tr>
<td>Recommendations for avoiding deficient practices/procedures</td>
<td>Review contract draft for consistency with scope of work in RFP; specify fixed-price contract agreements; ensure negotiated fees and payments coincide with schedule of tasks and deliverables;</td>
</tr>
<tr>
<td>Department staff implementing recommended practices/procedures</td>
<td>To be determined by NMDOT</td>
</tr>
<tr>
<td>Cost-effectiveness of implementing recommendations</td>
<td>Thorough review/specification of contract terms avoids costs of litigation; avoids cost overruns from poor understanding of project tasks; and lowers the costs of monitoring contracts.</td>
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## Task 6 – Monitoring the Contract

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<tr>
<th>Goals for step four</th>
<th>Enforce contract terms to ensure contractor performs tasks and provides deliverables consistent with tasks and goals outlined in the RFP.</th>
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<tr>
<td>Recommendations for avoiding deficient practices/procedures</td>
<td>Maintain documentation of technical reviews, progress reports and invoice accounting; resolve contract disputes at lowest possible level; follow formal review procedures for amending tasks, deliverables, project personnel, timeline extensions and fees; use purchase documents for payments to the contractor - never making direct payments.</td>
</tr>
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<td>Department staff implementing recommended practices/procedures</td>
<td>To be determined by NMDOT</td>
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<tr>
<td>Cost-effectiveness of implementing recommendations</td>
<td>Effective monitoring of contractor performance avoids cost overruns from inefficient contractor or Department behavior such as late or incomplete tasks assignments or illegitimate payments for non-allowable expenses.</td>
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## Task 6 – Contract Closure

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<th>Goals for step five</th>
<th>Verify work is completed satisfactorily.</th>
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<td><strong>Recommendations for avoiding deficient practices/procedures</strong></td>
<td>Conduct a closure meeting to certify that all deliverables have been received and meet the Departments’ expectations for the corresponding tasks outlined in the contract; certify that documentation for accounting and invoicing throughout the contract life conform with Department policies.</td>
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<td><strong>Department staff implementing recommended practices/procedures</strong></td>
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<td><strong>Cost-effectiveness of implementing recommendations</strong></td>
<td>Help avoid the acceptance of poor or incomplete work, which would results in a poor value to the public.</td>
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Conclusions

This project aimed at improving the development and administration of New Mexico Department of Transportation non architectural and engineering professional services contracts to ensure that public funds are wisely and effectively expended.

Strengths and weaknesses of the current contracting process were determined via the review of a set of contracts and the interview of selected NMDOT personnel. In addition, literature on best practices in contract development and management was surveyed.

Guidelines and recommendations were developed and compiled into a Handbook that took a step-by-step approach in guiding NMDOT personnel in formulating, awarding and monitoring contracts. A training program was also developed and an initial session conducted on March 7, 2012. An implementation plan was prepared for implementation of these recommendations. A Final Report detailing each task of this project was prepared and submitted to the NMDOT.
To determine the prospective effectiveness of the recommendations provided, pre- and post- training surveys were distributed at the workshop conducted on March 7, 2012.

Responses obtained suggest that the training program was useful since a larger percentage of the participants answered that they were familiar with the different phases of the contracting process and with the duties of project managers and contract administrators after the workshop than before the session.

In addition, while 100% of the participants believe that current and new employees would benefit from a training program, 96% believe that these employees would benefit from the training program developed.

These are good indications that this program will be effective.
The authors are grateful for funding provided by the US Department of Transportation Federal Highway Administration and the New Mexico Department of Transportation (NMDOT) Research Bureau.

Special thanks to Keli Daniell, project manager for this contract and Deirdre Billingsley, contract administrator. Their experience and assistance was essential to the completion of this project.

Thanks are also extended to Javier Lopez for indicating the need for this project, presenting the idea to the NMDOT Research Bureau, and assisting the research team in the initial tasks.

This work was developed in close collaboration with members of the Technical Panel: Richard Martinez, Marlene Sandoval, SandraLee Rosen, and Cynthia Christ, who reviewed all drafts, offered invaluable suggestions, and answered numerous questions. The authors are very thankful for their patience and contribution to this project.
The authors would like to acknowledge the contribution made to the preliminary tasks of this project by Dr. Andrew Budek-Schmeisser and Mrs. Barbara Budek-Schmeisser who were valuable members of the research team.

Thanks also to Ms. Sehin Faris, a former Civil Engineering student at New Mexico Tech who served as Research Assistant in the beginning of this project.

Finally, the authors are grateful to Ms. Jessica Meyer who kindly donated her time and experience in the development of the surveys presented to NMDOT Personnel.