

**Study Number:** TPF-?

**Status:**

**Title:** Next-Generation Transportation Construction Management

**Contract/Other Number:**

**Sponsoring Agency:** Federal Highway Administration

**Lead Agency:** Colorado Department of Transportation

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**Commitments Received:**

**Background:**

The Transportation Construction Management Group (TCM) is a coordinated effort between AASHTO, FHWA, ARTBA, AGC, and academia with representatives whose shared goal is the improvement of transportation construction management practices. This group was initiated to facilitate the sharing of best practices and to expedite the dissemination of information regarding new technology, procedures and programs. The TCM will accomplish this by:

- Sharing current practices through case studies, reports, evaluations, web pages, webinars, etc.;
- Developing and publishing sample guidelines, specifications and model procedures;
- Hosting meetings, conferences, webinars, and other means of exchanging information;
- Coordinating issues with industry associations representatives; and
- Designating lead states for implementation efforts.

The TCM is an outgrowth of the 2004 SCAN of Construction Management Practices in Canada and Europe. The SCAN Team's findings and recommendations are documented in a report titled: "[Construction Management Practices In Canada and Europe](#)."

The TCM has been very active over the past several years and has been successful at producing many products. A sample of significant accomplishments to date includes:

- Development and coordination of the "[1<sup>st</sup> International Conference in Construction Management](#)";
- The development of a guide on risk management titled "[Risk Assessment and Allocation for Highway Construction Management](#)" and the implementation of risk workshops with multiple state highway agencies;
- The development of a white paper on the use of alternative payment methods in the US titled "[Alternative Payment and Progress Reporting Methods](#)";

- Participation in best-value research through the incorporation of European case studies in an NCHRP research project on the subject titled "NCHRP Report 561: Best-Value Procurement Methods for Highway Construction";
- Development and coordination of construction management related webinars;
  - October 6, 2008 - "Design-Build Alternate Technical Concepts"
  - January 26, 2009 - "Design-Build and Emergency Contracts"
  - July 8, 2009 - "Design-Build and Project Selection"
  - October 9, 2009 - "Estimating Design-Build Projects"
  - April 12, 2010 - "Construction Manager at Risk"
  - April 20, 2010 - "Top-Down Bridge Construction Minimizes Environmental Impacts"

For the past six years, funding has been provided by the FHWA and the International Scanning Program. However, it is imperative that the AASHTO states participate in the funding of this effort to ensure a stable funding source and viability. It is also recognized that the pooled fund states will have a significant role in assisting the TCM with the identification and prioritization of work activities.

### Objectives:

The TCM's objectives have been and will remain focused in three broad areas:

1. Efficiency - Improve the efficiency of the delivery of transportation projects through the use of appropriate project delivery methods, contracting methods and contract management provisions, new technology, new communication and documentation practices, etc.,
2. Quality - Improve the quality of construction through the use of advanced construction management tools, practices, and performance measures and
3. Improve Risk Management Procedures

### Scope of Work - Deliverables:

Outlined below is an abbreviated list of tasks under consideration for development. Those participating in this pooled fund will be involved with the creation of the annual work plan. The annual work plan will be created in June of each year for work from July 1 through June 30 of the following year. Prioritization of work items will depend on the amount of funding available and the consensus decisions of the participating agencies.

It should be noted that technology transfer is a critical function of this pooled fund study. The typical NCHRP synthesis approach is appropriate for technology transfer efforts, but it does not provide the flexibility to study many technology construction management topics that are changing rapidly in the field. The timely documenting and sharing of successes and lessons learned is critical to staying current with the rapidly evolving alternative contracting culture within the United States.

The following tasks will be the prioritized for the first year of the pooled fund study. Some of these tasks will take more than one year to complete.

- Alternative Contracting Selection Manual. Create an Alternative Contracting Selection Manual that documents consistent definitions of project delivery systems, procurement methods, and contract management methods. There will be a focus on the advantages and disadvantages of each such that it can be used for project

selection purposes. These include design-build, construction manager/general contractor, best-value procurement, lane rental, and many others. This will include a project delivery method selection tool that will provide contracting agencies with a method for selecting the best delivery strategy for a given project.

Document Case Studies. Document and disseminate case studies of alternative contracting successes. Up to five case studies per year will be prepared and posted on the "TCM Steering Group Website"

- for rapid dissemination. As alternative contracting rapidly evolves the documentation of case studies is a primary goal. Successes and lessons learned need to be shared timely.
  - Develop experimental or pilot projects to test new methodologies,
  - Share information on new / emerging project delivery strategies such as design-build, public-private partnerships, construction manager at-risk, construction manager/general contractors, alliancing, early contractor involvement, etc.
  - Share information on new construction management techniques that will improve the efficiency of delivering projects (accelerated bridge construction technology, prefabricated bridge elements, performance specifications, "green highways", contractor prequalification systems, etc.),
  - Perform case studies of new contract management techniques that will improve agency accountability and oversight including: web-based payroll compliance systems, web-based civil rights compliance systems, etc.
- Construction Performance Measures and Key Performance Indicators. This study will produce Construction Performance Measures and Key Performance Indicators for use in contracts to help align agency goals, performance measures, and key performance indicators on projects is an area for improvement. These measures and indicators will be updated by the pooled fund study group as projects are completed in an effort o continuous improvement. Based on lessons learned internationally and within the United States these concepts need to be documented and taught for expanded and successful use.
- Technology Transfer and Outreach. The Transportation Construction Management Group has distributed information through a variety of methods that includes on-demand webinars, classroom trainings, published documents, national and international conferences and exchanges such as the Transportation Construction Management Conference, etc. The pooled fund group will prioritize these technology transfer outreach efforts annually to maximize the impact of the pooled fund study.
- Risk Management. The pooled fund study will pay for training, workshops and documentation of case studies involving risk management. The Transportation Construction Management group has developed a framework for risk assessment and allocation workshops. The framework has been extended through the SHRP II Project R-09 Guide for the Process of Managing Risk on Rapid Renewal Projects. The pooled fund group will seek implementation opportunities and documentation of lessons learned through the following mechanisms.
  - Continue to promote project risk management procedures using the TCM's "Guide to Risk Assessment and Allocation for Highway Construction Management", October 2006.
  - Continue to promote the TCM Risk Management Workshop that provides a case study approach for implementing risk management principles.

- Share lessons learned, case studies, recent research findings, and other information related to risk management.
- Constructability Reviews. Create an updated guide for improving constructability reviews and implementation procedures in both traditional and non-traditional delivery systems. Alternative contracting methods create constructability challenges that are not currently addressed in detail in FHWA guidance. Included within this concept are integrated project delivery methods that allow much more contractor input in project considerations earlier in the process including during the NEPA stages of project development.

**Commitments Required:**

\$600,000

**Comments:**

Suggested contribution is \$25,000/yr for each of 3 years - total of \$600,000.