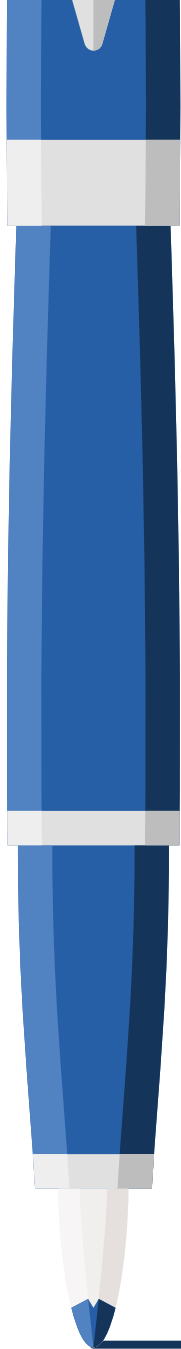


Michigan Department of Transportation

# Innovative Contracting **Best Practices Research** Final Report

August 2021





Michigan Department of Transportation

# Innovative Contracting

## Best Practices Research Final Report

August 2021

**Prepared for:**

Michigan Department of Transportation

**By:**

David Chenault, PE, DBIA  
WSP Michigan, Inc.  
Lansing, Michigan

**In association with:**

John Bale, PE, DBIA, CRS Engineers  
Michael Loulakis, Esq., DBIA, Capital Project Strategies, LLC



**WSP Michigan, Inc**

David Chenault, PE, DBIA

6015 West St Joseph

Suite 400

Lansing, MI 48917

517-886-7472

[Jeff.Chenault@wsp.com](mailto:Jeff.Chenault@wsp.com)



**Michigan Department of Transportation**

Ryan Mitchell, DBIA, PMP

Van Wagoner Building

425 West Ottawa Street

Lansing, MI 48933

517-614-7025

## TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. SPR-1694	2. Government Accession No. N/A	3. MDOT Project Manager Ryan Mitchell, DBIA, PMP	
4. Title and Subtitle Innovative Contracting Best Practices	5. Report Date August 2021	6. Performing Organization Code N/A	
7. Authors David J Chenault, PE, DBIA John Bale, PE, DBIA, MBA Scott Shea, PE		8. Performing Organization Report No. Enter any/all unique alphanumeric report numbers assigned by the performing organization, if applicable.	
9. Performing Organization Name and Address WSP Michigan Inc. 500 Griswold Street, Suite 2600 Detroit, Michigan 48226	10. Work Unit No. N/A	11. Contract or Grant No. Contract 2020-0222	
12. Sponsoring Agency Name and Address Michigan Department of Transportation (MDOT) Research Administration 425 West Ottawa Street Lansing, Michigan 48933	13. Type of Report and Period Covered Final Report, 2/1/2020 to 3/31/2021	14. Sponsoring Agency Code N/A	
15. Supplementary Notes Conducted in cooperation with the U.S. Department of Transportation, Federal Highway Administration. MDOT research reports are available at <a href="http://www.michigan.gov/mdotresearch">www.michigan.gov/mdotresearch</a> .			
16. Abstract The Michigan Department of Transportation (MDOT) has been using innovative contracting methods to deliver projects for several years. While these innovative delivery practices save time and reduce costs, the potential benefits of alternative delivery have not been fully realized. This research focuses on identifying best practices from owners across the country, evaluating the effectiveness of the best practices and determining barriers and solutions to successfully incorporate the best practices into MDOT's program. The research included conducting a literature review of published academic research and other Design-Build Institute of America (DBIA) publications, hosting a peer exchange event, conducting a survey of other owners regarding their innovative contracting programs, and conducting an industry outreach effort to obtain open feedback from contractors and engineers who have participated in MDOT's program. The data collected from the research are used to conduct a gap analysis comparing the existing state of MDOT's program to the identified best practices. The analysis determined what MDOT is currently doing well, identified areas that could be enhanced and highlighted best practices to include in MDOT's program. The results of the gap analysis are used to make programmatic updates to MDOT's Innovative Construction Contracting Guide and Design-Build and Construction Manager/General Contractor manuals.			
17. Keywords Transportation, Planning and Design, Facilities, Design-Build, Innovative Contracting, Alternative Project Delivery, Innovation, Public-Private-Partnership, Construction Manager/General Contractor		18. Distribution Statement No restrictions. This document is also available to the public through the Michigan Department of Transportation.	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 322	22. Price N/A

## *Research Report Disclaimer*

This publication is disseminated in the interest of information exchange. The Michigan Department of Transportation (hereinafter referred to as MDOT) expressly disclaims any liability, of any kind, or for any reason, that might otherwise arise out of any use of this publication or the information or data provided in the publication. MDOT further disclaims any responsibility for typographical errors or accuracy of the information provided or contained within this information. MDOT makes no warranties or representations whatsoever regarding the quality, content, completeness, suitability, adequacy, sequence, accuracy or timeliness of the information and data provided, or that the contents represent standards, specifications, or regulations.

This material is based upon work supported by the Federal Highway Administration under SPR-1694. Any opinions, findings and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the Federal Highway Administration.

Innovative Contracting  
Best Practices Research

# Executive Summary of the Final Report



**Consultant Team:**

Deborah Brown, PE, WSP

Tim Day, PE, WSP

Ryan Hoenscheid, PE, WSP

Ellen Lurie, PE, WSP

Mary Drechsler, CRS Engineers

Scott Shea, PE, CRS Engineers

**MDOT Research Advisory Panel:**

Mark Dubay, PE, DBIA

James Ranger, PE

Jonathon Stratz, PE

Adam Wayne, PE

Corey Hackworth, PE

Keith Simons, PE

Matthew Chynoweth, PE

Michael Townley

Faith Rodriguez

Kitty Rothwell, PE

Michele Fedorowicz, AICP

Mike DeBoer, PE

Dharmesh Valsadia, PE

## Research Overview

The Michigan Department of Transportation (MDOT), in conjunction with MDOT Research Administration, selected a team led by WSP Michigan, Inc., (WSP) to investigate innovative contracting best practices used throughout the country. The primary purpose of the research was to identify areas within MDOT's current innovative contracting program that could benefit from these best practices and determine potential enhancements to policies, procedures, practices, organizational structure and other aspects of the program. These enhancements could help MDOT optimize its innovative contracting methods and maximize the benefits associated with design-build (DB), construction manager/general contractor (CM/GC), Public-Private-Partnerships (P3) and other delivery methods.

## Outline of Tasks

The objectives of the research project were accomplished through the following activities:

1. **Reviewing best practices across the country:**
  - A. Conducting a literature review related to innovative contracting delivery practices and methods identified within academic research and white-papers and position statement publications from the Design-Build Institute of America (DBIA).
  - B. Interviewing owners across the country regarding their innovative contracting programs, policies, and procedures.
2. **Evaluating the as-is state of MDOT's innovative contracting program:**
  - A. Reviewing MDOT's current Innovative Construction Contracting guidance document and DB and CM/GC manuals.
  - B. Reviewing a cross section of the procurement documents from past DB projects to evaluate the consistency between projects, including a review of change orders from previous projects to determine if there were patterns in areas that could indicate the need for possible enhancements.



- C. Conducting an industry outreach effort using a questionnaire and holding follow-up meetings with industry partners to solicit open feedback from contractors and engineers who have participated in MDOT's Innovative Contracting program.
3. **Conducting a peer exchange event to discuss best practices.** MDOT hosted representatives from 10 peer agencies to discuss the policies and procedures being used by those agencies with respect to innovative contracting delivery methodologies. MDOT was particularly interested in the following topics:
    - A. Delivery models (CM/GC, DB, P3) and delivery method selection
    - B. Best-value versus low-bid selection
    - C. Risk management
    - D. Alternative technical concepts (ATCs)/ one-on-one meetings
    - E. Alternative delivery infrastructure
    - F. Training
    - G. Use of general engineering consultants (GECs) and owner's representatives
    - H. Quality assurance/quality control
    - I. Program/project metrics
  4. **Conducting a gap analysis** using the information collected to determine MDOT's alignment with the identified best practices.
  5. **Making recommendations for improvement** based on the results of the gap analysis.
  6. **Implementing the recommendations**, including developing a strategy and timeline for implementation.
  7. **Updating guidance documents and manuals.**

The WSP team worked closely with the MDOT Project Manager and the Research Advisory Panel (RAP) to complete the project. The RAP provided feedback, input and insight throughout the project on the work products submitted by the consultant team. The recommendations in this report are solely those of the consultant team based on the analysis of the research materials and results. The consultant team provided the RAP with regular updates as the work progressed over an 18-month period from February 2020 through August 2021.

## Summary of Findings

While MDOT successfully uses various innovative contracting methods, it is seeking the opportunity to strengthen its program by investigating best practices across the country. The best practice research focused on programmatic items such as organizational structure, guidance documents and manuals, performance metrics, project identification and selection, procurement method selection, risk assessment, ATCs, stipends, design and construction oversight and training and development. A brief synopsis of the findings is provided below.

---

### What MDOT Currently Does Well

Compared to national best practices, MDOT is in alignment in the following areas:

- ◆ **Support of Senior MDOT Leadership.** MDOT's senior leadership is supportive of the innovative contracting unit (ICU) and is committed to its success. The ICU Program Manager has regular communication with leadership and champions the growth and continuous improvement of the program within MDOT.
- ◆ **Organizational Structure.** The ICU has centralized staff, including a program manager, several project managers and support staff, who are solely dedicated to delivering projects using innovative contracting methods. The group is supported by GECs who assist with the development, procurement and administration of DB and P3 projects while taking a more limited role in CM/GC projects, if involved at all.
- ◆ **Programmatic Documents and Guidance Manuals.** MDOT developed an Innovative Construction Contracting Guide (ICCG) that describes various innovative contracting methods and includes a DB Manual and a CM/GC Manual to assist staff who use these methods to deliver projects.
- ◆ **Standardized Templates and Forms.** MDOT uses standardized templates for its Requests for Qualifications (RFQ) and Requests for Proposals (RFP) documents on each project to promote consistency within the program. These documents help streamline the development of the contract documents and promote industry familiarity, which assists in the proposal process.
- ◆ **Training and Development.** MDOT conducts DB training on a project-by-project basis. The training provided to project staff prior to the procurement phase includes a cursory discussion of the processes and procedures required to complete the contract documents and select a design-builder. The training provided to project staff prior to the administration phase (post-award) discusses the process and procedures required for performing design reviews and construction oversight.
- ◆ **Procurement Method Selection.** MDOT has a well-defined procurement process and generally uses a two-step, low-bid selection.

- ◆ **Project Identification and Selection.** MDOT uses a consistent process to identify candidate projects and delivery methods. This process includes staff from the local region or Transportation Service Center (TSC) office, the Innovative Contracting Committee (ICC) and the Engineering Operations Committee (EOC). Once the ICC approves a project, it is moved to the EOC for final approval and recommendation.
- ◆ **Shortlisting.** MDOT shortlists proposers which assures only qualified bidders which is particularly important when using a low-bid selection but does not always limit the number of teams and allows all proposers to participate in the RFP phase even when there is a clear break in the scoring for the RFQs.
- ◆ **ATCs.** MDOT uses and encourages proposers to submit ATCs during the procurement process. This provides an opportunity for proposers to bring ideas, innovative concepts and potential solutions to the project. ATC discussions are confidential to promote trust between MDOT and industry partners.
- ◆ **One-on-One Meetings.** As part of the procurement process, MDOT holds a series of confidential one-on-one meetings with proposers to encourage open and candid discussions regarding concepts, ideas and potential issues with project requirements. These meetings are also used to answer questions to ensure all proposers interpret the project requirements consistently.
- ◆ **Stipends.** MDOT uses stipends to promote innovation by proposers. The stipends are commensurate with the use of low-bid selection. Stipends are provided to unsuccessful shortlisted proposers who provide a responsive proposal.
- ◆ **Risk Identification.** MDOT conducts an informal, high-level risk assessment as part of the project identification and selection process. Additionally, for larger, more complex projects, MDOT conducts a risk workshop to document and manage risks.
- ◆ **Risk Monitoring.** MDOT has developed a risk register for some projects.
- ◆ **Risk Management – Geotechnical.** MDOT provides geotechnical data at locations for bridge foundations, culverts to be replaced, sign structures and poor soils as part of the contract documents. MDOT also provides historical geotechnical data from previous projects as Reference Information Documents (RID).
- ◆ **Risk Management – Utilities.** MDOT generally leads the utility coordination starting with the preliminary design prepared prior to the procurement phase. MDOT identifies potential utility conflicts and develops mitigation strategies for impacted owners.
- ◆ **Design Oversight.** MDOT uses a design oversight process that is implemented on each project; however, the process is not currently documented or well-defined in the *DB Manual*.
- ◆ **Construction Oversight.** Agencies around the country are split on how they perform construction oversight. Some agencies put the responsibility on the contractor with the agency or a 3rd party auditing the results and some agencies keep that responsibility with the department similar to design-bid-build projects. MDOT's current process is to provide construction oversight similar to a DBB project.

---

## Areas Where MDOT's Program Could Be Enhanced

The research team identified the following areas that could be strengthened, compared to best practices:

- ◆ **Programmatic Documents and Guidance Manuals.** MDOT's Innovative Construction Contracting Guide, which was last updated in 2015, does not fully reflect the current program. Additionally, updates to the DB Manual and CM/GC Manual are needed to provide guidance that reflects the current program. Improvement in this area will help provide consistency in project execution and assist in clear definitions and implementation of roles and responsibilities across the Regions/TSCs and projects.
- ◆ **Standardized Templates and Forms.** MDOT's DB template documents are based on a past project and have been updated with lessons learned. Carryover language from past projects are removed, and the documents are updated as necessary with requirements for the project being procured. Improving this practice could improve efficiencies in preparing procurement documents and reduce incorrect language and unnecessary requests for clarification, addenda and change orders during contract administration.
- ◆ **Performance Metrics.** MDOT generally tracks costs and timelines for its innovative contracting projects but monitoring other delivery methods may identify trends that could benefit from proactive attention.
- ◆ **Lessons Learned.** MDOT captures lessons learned during the procurement phase of the projects and updates template language accordingly. Keeping these in a single, easily accessible location would allow MDOT to review the changes and better understand how improvements have been incorporated.
- ◆ **Organizational Structure.** MDOT's innovative contracting guides and manuals would benefit from clear descriptions of the roles and responsibilities of the MDOT team during the different phases of the project. Including this information would improve the consistency of the program processes and the administration of the contract.
- ◆ **Training and Development.** MDOT does not currently have a broad, more formal training program for Department staff. Most training takes place on a project-by-project basis and is geared solely for staff working on that project. MDOT does not provide joint training opportunities for industry partners.
- ◆ **Project Identification and Selection.** Identifying candidate projects early would increase the value that can be realized through innovative contracting methods. MDOT's Scoping Manual or Call for Projects process could have a formal process to evaluate delivery methods.
- ◆ **Procurement Method Selection.** Implement best-value selection to better align project goals with selection criteria and to promote selection of the most qualified bidder.

- ◆ **Shortlisting.** MDOT should limit bidders to 3 or a maximum of 4 to ensure an efficient and competitive procurement process.
- ◆ **Best-Value Versus Low-Bid.** Most states use best-value selection with a scored technical proposal for awarding DB and P3 projects. Many peer agencies indicate that best-value selection promotes greater innovation, higher project quality, fewer change orders and claims and improves relationships with industry partners.
- ◆ **ATCs.** Allowing DB teams to submit ATCs for pavement design may reveal innovations from industry that could provide equal or better solutions. Additionally, being more receptive to specifications, materials, or processes from states with similar climate could drive additional innovations. Maintain a database of ATCs submitted by bidders along with their disposition (approved or rejected) to help streamline the review and approval process.
- ◆ **One-on-One Meetings.** Provide more time between one-on-one meetings to allow bidders time to evaluate responses to questions or to further develop ATCs based on MDOT comments.
- ◆ **Stipends.** MDOT's process for determining the value of a stipend does not consider the complexity of projects. Additionally, if best-value selection is used, stipends tend to be larger because of the additional work required during the proposal phase by bidders. For low-bid selection, minimize the number of shortlisted bidders and increase the stipend to promote additional innovation and project efficiencies.
- ◆ **Risk Identification.** MDOT conducts a high-level risk assessment as part of the project identification and selection process but does not have a standard, formalized risk management process. A formal process would make it easier to understand actual project costs associated with that risk, predict future probability of that risk occurring on projects, and determine if the mitigation strategy was effective.
- ◆ **Risk Monitoring.** MDOT does not consistently develop risk registers for projects and does not regularly evaluate and update risks and mitigations during the life of the project. A consistent approach could help identify effective strategies to help make informed decisions for managing similar risks on future projects. Tracking risks can also help build a collaborative relationship with the contractor by regularly discussing risk response strategies and their effectiveness on the project.
- ◆ **Risk Management – Geotechnical.** Include a more specific description of what conditions MDOT would consider as a "differing site condition" change order and/or better define thresholds for which a change order would be considered in the contract documents.
- ◆ **Risk Management – Utilities.** MDOT does not typically obtain agreements with utility owners to commit to specific review timeframes and/or relocation timeframes to be included in the contract documents. Improving this practice could reduce construction costs and delays.

- ◆ **Design Oversight.** MDOT staff performs design oversight with the assistance from GEC staff, as needed. The current manuals do not address design oversight except for a brief discussion regarding the use of the GEC consultant to provide Design Assistance During Construction. MDOT’s post-award training session discusses design reviews and how to provide comments to contractors. However, each GEC uses a different project website through which all design documents must be submitted and a different format for providing comments to contractors. A standardized, documented process could increase consistency in design reviews across project teams, limit misunderstandings between MDOT and the contractor regarding the processes, and reduce delays and inefficiencies in providing design comments to the contractors. Document the design review process in the Design-Build Guidelines.
- ◆ **Construction Oversight.** MDOT’s current practice is to perform construction oversight by either using in-house or an owner-hired consultant. This can lead to risks being shifted back to MDOT if those performing the construction oversight are unfamiliar with innovative contracting methods or do not completely understand their role on the project. Providing guidance in the manuals could increase oversight consistency across projects, make the allocation of resources more efficient and reduce misunderstandings between MDOT and the contractor. Additionally, consider transitioning the QC responsibilities to the design-builder with MDOT acting in a QA role.

---

## Recommendations and Strategies to Implement

To successfully implement the recommendations resulting from the research, a carefully planned, phased approach that takes into account both immediate and future needs should be developed.

Each recommendation above is identified and characterized based on the following considerations:

- ◆ The implementation timing when the recommendation should be adopted (i.e., updates to the guidance documents should occur before rolling out training on the use of the new documents);
- ◆ The difficulty associated with implementation (i.e., changing language in a document is easier than making policy changes)
- ◆ The benefits resulting from the recommendation, including:
 

<ul style="list-style-type: none"> <li>A. Reduced errors.</li> <li>B. Improved program consistency.</li> <li>C. Increased and retained staff competency.</li> <li>D. Saved project cost.</li> <li>E. Reduced change orders/cost growth.</li> </ul>	<ul style="list-style-type: none"> <li>F. Increased opportunities for innovation.</li> <li>G. Improved quality.</li> <li>H. Improved communication and collaboration.</li> <li>I. Increased competition.</li> </ul>
--	---
- ◆ Most of the recommendations are decisions that fall under the ICU’s responsibility.

# Contents



<b>1.0</b>	<b>Introduction</b>	<b>2</b>
1.1	Problem Statement and Background	2
1.2	Research Objectives	3
1.3	Research Plan and Process	4
<b>2.0</b>	<b>Literature Review</b>	<b>8</b>
2.1	Introduction	8
2.2	Data Analysis	11
<b>3.0</b>	<b>Owner Outreach</b>	<b>28</b>
3.1	Introduction	28
3.2	Data Analysis	28
3.2.1	Themes	28
3.2.2	Recommendations	29
<b>4.0</b>	<b>Industry Outreach</b>	<b>32</b>
4.1	Introduction	32
4.2	Data Analysis	33
<b>5.0</b>	<b>Peer Exchange</b>	<b>38</b>
5.1	Introduction	38
5.2	Participants	38
5.3	Summary of Key Takeaways	40
5.3.1	Delivery Models (CM/GC, DB, P3) and Delivery Method Selection	40
5.3.2	Best-Value Versus Low-Bid Selection	41
5.3.3	Risk Management	41
5.3.4	ATCs/One-on-One Meetings	41
5.3.5	Alternative Delivery Infrastructure	41
5.3.6	Training	42
5.3.7	Use of General Engineering Consultant/Owner's Representative	42
5.3.8	Quality Assurance/Quality Control	42
5.3.9	Program/Project Metrics	42

# Contents



<b>6.0</b>	<b>Evaluation of MDOT's Innovative Contracting Program</b>	<b>44</b>
6.1	Programmatic Documents Management	44
6.1.1	Best Practices	44
6.1.2	Observations of MDOT's Program	44
6.1.3	Gap Analysis: Programmatic Documents Management	45
6.1.4	Recommendations: Programmatic Documents Management	48
6.2	Organizational Structure and Training	49
6.2.1	Best Practices	49
6.2.2	Observations of MDOT's Program	50
6.2.3	Gap Analysis: Organizational Structure and Training	51
6.2.4	Recommendations: Organizational Structure and Training	53
6.3	Project Identification and Delivery Method Selection	54
6.3.1	Best Practices	54
6.3.2	Observations of MDOT's Program	54
6.3.3	Gap Analysis: Project Identification and Delivery Method Selection	55
6.3.4	Recommendations: Project Identification and Delivery Method Selection	56
6.4	Procurement Method Selection and Shortlisting	56
6.4.1	Best Practices	56
6.4.2	Observations of MDOT's Program	57
6.4.3	Gap Analysis: Procurement Method Selection and Shortlisting	58
6.4.4	Recommendations: Procurement Method Selection and Shortlisting	61
6.5	ATCs, One-on-One Meetings, Stipends	61
6.5.1	Best Practices	61
6.5.2	Observations of MDOT's Program	62
6.5.3	Gap Analysis: ATCs, One-On-One Meetings and Stipends	63
6.5.4	Recommendations: ATCs, One-On-One Meetings and Stipends	66
6.6	Risk Identification and Monitoring	67
6.6.1	Best Practices	67
6.6.2	Observations of MDOT's Program	67
6.6.3	Gap Analysis: Risk Identification and Monitoring	68
6.6.4	Recommendations: Risk Identification and Monitoring	69



# Contents



6.7	Risk Management: Geotechnical and Utilities	70
6.7.1	Best Practices	70
6.7.2	Observations of MDOT's Program	70
6.7.3	Gap Analysis: Risk Management: Geotechnical and Utilities	71
6.7.4	Recommendations: Risk Management: Geotechnical and Utilities	72
6.8	Design and Construction Oversight	73
6.8.1	Best Practices	73
6.8.2	Observations of MDOT's Program	73
6.8.3	Gap Analysis: Design and Construction Oversight	74
6.8.4	Recommendations: Design and Construction Oversight	75
<b>7.0</b>	<b>Implementation Plan</b>	<b>78</b>
7.1	Recommendations and Strategies to Implement:	78
<b>8.0</b>	<b>Bibliography</b>	<b>97</b>
	<b>Appendix A: List of Acronyms and Abbreviations</b>	<b>99</b>
	<b>Appendix B: Literature Review Report</b>	<b>101</b>
	<b>Appendix C: Owner Outreach Report</b>	<b>165</b>
	<b>Appendix D: Industry Outreach Report</b>	<b>239</b>
	<b>Appendix E: Peer Exchange Report</b>	<b>285</b>

# Contents



## List of Tables

Table 1	
Literature Reviewed	8
Table 2	
DBIA Publications	9
Table 3	
Peer Exchange Participants	39
Table 4	
Gap Analysis: Programmatic Documents Management	45
Table 5	
Gap Analysis: Organizational Structure and Training	51
Table 6	
Gap Analysis: Project Identification and Delivery Method Selection	55
Table 7	
Gap Analysis: Procurement Method Selection and Shortlisting	58
Table 8	
Gap Analysis: ATCs, One-on-One Meetings and Stipends	63
Table 9	
Gap Analysis: Risk Identification and Monitoring	68
Table 10	
Gap Analysis: Risk Management: Geotechnical and Utilities	71
Table 11	
Gap Analysis: Design and Construction Oversight	74
Table 12	
Recommendations and Strategies to Implement	79

## List of Figures

Figure 1	
Six Key Activities Support the Research Project	4
Figure 2	
Engineering Firm Size - Number of Employees	32

Innovative Contracting  
Best Practices Research

# Chapter One

## Introduction



## 1.0 Introduction

---

### 1.1 Problem Statement and Background

Like many other transportation agencies, MDOT strives to deliver projects in an efficient and expeditious manner while working with limited resources. To meet demands, MDOT uses various forms of innovative contracting methods to deliver projects. These methods allow MDOT to leverage the combined experience of the engineering and contracting industries to bring innovation, efficiency and cost savings to project delivery. While its current program has shown to save time and expenses, MDOT wants to identify and consider approaches that will further the value of innovative contracting methods and increase innovation.

MDOT selected a team led by WSP Michigan, Inc. to investigate innovative contracting best practices used throughout the country. The WSP team worked closely with the MDOT project manager and the RAP to complete the research project. The RAP provided feedback, input and insight on the work products submitted by the consultant team. The recommendations in this report are solely those of the consultant team based on the analysis of the research materials and results. The consultant team provided regular updates to the RAP as the work progressed; the work was completed over an 18-month period from February 2020 through August 2021.

---

## 1.2 Research Objectives

The primary purpose of the research was to identify areas within MDOT's current innovative contracting program that could be enhanced with industry best practices and to determine potential changes to policies, procedures, practices, organizational structure and other aspects of the program to allow MDOT to optimize innovative contracting methods and maximize the benefits associated with DB, CM/GC, P3 and other delivery methods. The following key tasks were completed as part of the evaluation:

- ◆ Identified national innovative contracting best practices by (1) conducting an outreach survey of owners across the United States; (2) reviewing the literature related to innovative contracting delivery practices and methods identified within academic research and documents and position statements from the DBIA; and (3) coordinating and conducting a peer exchange event to discuss policies and procedures used by peer agencies as part of their innovative contracting delivery methodologies.
- ◆ Gathered feedback on MDOT's current program by hosting an outreach effort with industry partners who have participated in MDOT's program either during the pursuit phase or as the successful proposer on a project.
- ◆ Reviewed existing MDOT guidance documents and manuals to determine whether they reflect MDOT's current program. Developed updates to meet current practices and incorporated recommendations based on the findings from the research.
- ◆ Examined a cross-section of procurement documents from past MDOT DB projects to evaluate consistency of the procurement process.
- ◆ Compared MDOT's program with identified best practices to identify (1) MDOT's alignment with the identified best practices; (2) what MDOT is currently doing well; and (3) gaps that exist within MDOT's program that could be improved by becoming more closely aligned with best practices.
- ◆ Provided recommendations to maximize the benefits of using innovative contracting methods.
- ◆ Proposed implementation recommendations to effectively incorporate the findings into MDOT's program.
- ◆ Updated the MDOT *ICCG*, the *DB Manual* and *CM/GC Manual*.

## 1.3 Research Plan and Process

**Figure 1**  
Six Key Activities Support the  
Research Project

- 
**Review**  
Best Practices from  
Organizations around the US
- 
**Examine**  
MDOTs Program and Conduct  
Industry Outreach
- 
**Conduct**  
Peer Exchange with  
other States
- 
**Perform**  
Gap Analysis for  
Michigan's Program
- 
**Develop**  
Research Report with  
Recommended Improvements
- 
**Update**  
Statewide Guidance  
Document

The objectives of the research project were accomplished through six key activities as shown in **Figure 1**.

The consultant team conducted the following research tasks over a seven-month period beginning in February 2020 and culminating in the peer exchange in late August 2020:

**Literature Review** – The consultant team conducted a cursory review of more than 60 publications related to innovative contracting. From this initial review, the team identified 19 publications from academia and other published research and nine DBIA publications to evaluate further. The reviewed publications were published between 2000 and 2019 and focused on industry best practices. The full report is provided in Appendix B.

**Owner Outreach** – A 42-question survey was sent to 27 owners across the country that use innovative contracting. The survey was sent to 22 state departments of transportation (DOTs) and five owners of other public facilities. Questions generally centered on published best practices. The survey included 37 multiple-choice questions while the remaining questions asked for open feedback on topics such as use of ATCs, unique program features and lessons learned. Responses to the open-ended questions allowed the research team to compare best practices used and evaluate lessons learned. Twenty-two responses were received and the team made several follow up phone calls to clarify answers provided. The full report is provided in Appendix C.

**Industry Outreach** – The research team conducted an outreach effort to industry partners who have participated in MDOT's innovative contracting process. Twelve contractors and 12 consultants were contacted to solicit feedback on the procurement and execution processes employed to date. The full report is provided in Appendix D.

**Peer Exchange** - Requests to participate in a peer exchange were extended to 12 agencies. Because of travel restrictions associated with the COVID-19 pandemic, the meeting was held virtually, with 10 of the 12 invited agencies in attendance. During the meeting, each participant was given the opportunity to express their history and thoughts on each of the following nine topics:

- ◆ Delivery models (CM/GC, DB, P3) and delivery method selection
- ◆ Best-value versus low-bid selection
- ◆ Risk management
- ◆ ATCs/one-on-one meetings
- ◆ Alternative delivery infrastructure
- ◆ Training
- ◆ Use of GECs and owner's representatives
- ◆ Quality assurance/quality control (QA/QC)
- ◆ Program/project metrics

The summary report is provided in Appendix E.

After completing the tasks described above and reviewing MDOT's current practices, the consultant team conducted a gap analysis to determine where MDOT's program stands in comparison to best practices. The gap analysis evaluated 19 different areas of MDOT's program ranging from programmatic decisions to project-level processes. Recommendations and strategies to help bring these areas of the program into closer alignment with best practices are provided in Chapter 7.

The recommendations in this report are solely those of the WSP consultant team based on the analysis of the research materials and results.





Innovative Contracting  
Best Practices Research

# Chapter Two

## Literature Review



## 2.0 Literature Review

### 2.1 Introduction

The research team conducted a literature review of strategic program delivery documents to identify and outline additional measures and program applications that MDOT could implement to enhance its innovative contracting program. While the literature review was focused on innovative contracting delivery methods, these methods are not standardized across states and departments. The research team noted that identifying practices that build value into the innovative contracting process with less emphasis on identifying new methods was a common theme in the literature reviewed.

The literature review identified innovative contracting practices and methods discussed within published academic research and DBIA documents. Much of the literature around alternative delivery is focused on the delivery selection process to encourage more agencies to incorporate innovative contracting into their project options. Project outcomes and results with each method have also been researched, allowing the research team to compare methods across key criteria such as schedule, cost and risk.

The research team conducted a cursory review of more than 60 publications related to innovative contracting and identified 19 publications from academia and nine DBIA publications to evaluate further.

**Table 1** identifies the documents used in this research project. Full citations can be found in Appendix B.

**Table 1**  
Literature Reviewed

Article Title	Author	Type
<i>Guide for Design Management on Design-Build and Construction Manager/General Contractor Projects</i>	Minchin et al., 2014	National Cooperative Highway Research Program (NCHRP) academic research
<i>NCHRP Synthesis 504: Strategic Program Delivery Methods</i>	Tran et al., 2018	NCHRP academic research
<i>Utility Coordination Best Practices for Design-Build and Alternative Contracting Projects</i>	Gransberg, et al., 2017a	NCHRP academic research
<i>Framework for Objectively Determining Best Practices for Alternative Contracting Methods</i>	Gransberg, et al., 2017b	Transportation Research Record Academic Research
<i>A Project Delivery Selection Matrix for Highway Design and Construction</i>	Tran et al., 2013	Transportation Research Record Academic Research
<i>Alternative Contracting Research: Final Report</i>	Minchin Jr. et al., 2016	Research Prepared for Florida DOT Research Center
<i>Time and Cost Performance of Design-Build Projects</i>	Chen et al., 2016	American Society of Civil Engineers (ASCE) academic research
<i>Geotechnical Information Practices in Design-Build Projects</i>	Gransberg and Loulakis, 2012	National Academy of Sciences Academic Research

Article Title	Author	Type
<i>Percent Base Design and Initial Award Performance in Design-Build Highway Projects</i>	Papajohn and El Asmar, 2020	ASCE Academic Research
<i>Key Issues and Differences in Practical Components of Quality Management in Design-Build Highway Projects</i>	Lee, et al., 2020	ASCE Academic Research
<i>Proven Practices in Design-Build and Fast-Track</i>	Elvin, 2003	ASCE Academic Research
<i>Design-Builder Selection for Small Highway Projects</i>	Molenaar and Gransberg, 2001	Article in <i>Journal of Management Engineering</i>
<i>Contractual Approaches to Address Geotechnical Uncertainty in Design-Build Public Transportation Projects</i>	del Puerto et al., 2017	Article in <i>Journal of Management Engineering</i>
<i>Recommended Guide for Next Generation of Transportation Design-Build Procurement and Contracting in the State of Georgia</i>	Ashuri and Kashani, 2012	Research Prepared for Georgia DOT Research Center
<i>How to Guide Alternative Contracting Projects</i>	Molenaar, 2020	Transportation Research Board Presentation
<i>Appropriate Risk Allocation in Design-Build Requests for Proposals</i>	Molenaar, 2000	ASCE Academic Research
<i>Impact of Risk on Design-Build Selection for Highway Design and Construction Projects</i>	Tran and Molenaar, 2014	ASCE Academic Research
<i>Realized Economic Efficiency of Road Project Delivery Systems</i>	Koppinen and Lahdenperä, 2007	Academic Research in <i>ASCE Journal of Infrastructure Systems</i>
<i>Innovative Contracting Manual: Contracting Methods Manual Selection Criteria</i>	McCullouch, 2009	White Paper Produced by Indiana DOT

**Table 2** identifies the DBIA publications evaluated.

**Table 2**  
DBIA Publications

Publication	Author
<i>Design-Build Done Right: Universally Applicable Best Practices</i>	America, 2014
<i>Transportation Sector: Design-Build Done Right</i>	DBIA, 2016
<i>Key Factors to Address When Considering Alternative Project Delivery in Transportation</i>	DBIA, 2018
<i>DBIA Position Statement: Sustainability</i>	DBIA, 2015b
<i>DBIA Position Statement: Stipends</i>	DBIA, 2010b
<i>Alternative Contracting Research: Final Report</i>	Minchin Jr. et al., 2016
<i>DBIA Position Statement: Integrated Project Delivery</i>	DBIA, 2010a
<i>DBIA Excellence Position</i>	DBIA, 2014a
<i>DBIA Position Statement: Principles of Best Value Selection</i>	DBIA

Additionally, the research team reviewed MDOT's existing *ICCG* (2015), a consolidated resource describing MDOT's existing innovative contracting options. The *ICCG* includes an overview of fundamental information, definitions, an outline of acceleration techniques and delivery methods, contracting selection criteria and a description of the procurement process. The *ICCG* also includes a substantial appendix of MDOT guidelines for individual delivery methods, including: DB, CM/GC, fixed-price-variable-scope and DBB projects.

MDOT's existing processes include many of the key features identified in the literature search, including:

1. Use of ATC process.
2. Use of DB best-value and low-bid practices.
3. Assignment of a champion to alternative contracting.
4. Use of DB to enhance schedule.
5. Issuance of stipends to unsuccessful proposers.
6. Risk management.
7. Project goals establishment.
8. Use of standardized procurement documents.
9. Use of well-defined guidance documents.

## 2.2 Data Analysis

The research team evaluated the literature used for this project to pull out the salient points and determine their application to the various components of MDOT's program. These best practices were compared to MDOT's current policies and procedures to develop recommendations for enhancement. Each article and corresponding recommendation was summarized in a report that can be found in Appendix B.

The salient points from each article and their application to MDOT are summarized below. Overall recommendations resulting from the evaluation of the articles are included with those identified in Chapter 6.

### 2.2.1 *Guide for Design Management on Design-Build and Construction Manager/General Contractor Projects (Minchin et al., 2014)*

#### Salient Points:

- ◆ Use an adequate number of external staffing to address the design in a timely manner during the project review process.
- ◆ Engage project personnel who are enthusiastic participants, open to innovation, trained, knowledgeable and work well under pressure. This may require the use of outside consultants.
- ◆ Provide proper level of design for the RFP, a percent complete is not a specific target, but it should convey project scope without hindering innovation.
- ◆ Develop an in-house champion for an agency's innovative contracting program.
- ◆ CM/GC success requires complete upper management support.
- ◆ Implement specification boundaries using a clear QA/QC approach.

#### Application to MDOT:

- ◆ MDOT has a project delivery toolbox for DB and CM/GC projects.
- ◆ MDOT contracts with a GEC to staff the DB program. The GEC staff assign personnel to prepare the performance specifications and review designs for the design-builder. MDOT assigns a small number of in-house personnel for each project with support from ICU personnel. MDOT reviews GEC-prepared documents and design submittals.
- ◆ MDOT generally assigns staff who are supportive of DB or CM/GC to innovative contracting projects.
- ◆ MDOT generally progresses design to between 20 and 30 percent for procurement, consistent with industry best practices.
- ◆ MDOT employs a champion by assigning an Innovative Contracting program manager.
- ◆ MDOT's current QA/QC definition is in Book 2, Section 2. This section outlines general needs and requirements of the QA/QC program but could be more robust.

## 2.2.2 NCHRP 504: Strategic Program Delivery Methods (Tran et al., 2018)

### Salient Points:

- ◆ Factors determining use of an alternative contracting method program delivery decision, in order of frequency:
  - a. Project size (dollars)
  - b. Technical complexity
  - c. Third-party issues
  - d. Schedule
  - e. Construction type
  - f. Risk management
  - g. Environmental issues
  - h. Budget
  - i. Streamlining and innovation
  - j. Public impact
  - k. Facility type
  - l. Savings
  - m. Staff availability
  - n. Performance
  - o. Staff experience
  - p. Agency image
  - q. Location
  - r. Nontraditional funding
  - s. Revenue-generating
- ◆ Implement a dashboard for performance metrics that tracks schedule, budget, environmental compliance and overall project benefits.
- ◆ Change from a culture of best engineering solution to a culture of best business solution.
- ◆ Use private-sector capabilities to manage transportation programs and project functions.
- ◆ Be transparent for effective communication and ability to reach project goals.
- ◆ Use a team-based approach for best program delivery.
- ◆ Select delivery method on a case-by-case basis.

### Application to MDOT:

- MDOT makes decisions about using alternative delivery on projects based on schedule, risk management and budget (price). The primary driving force appears to be price (item 8 in the above list) when the approach of shortlisting and selecting the winning design-builder based on price is used in step two of the selection process.
- ◆ MDOT does not currently track metrics on programmed and completed projects to determine the value DB or CM/GC offers.
  - ◆ The flexibility in the RFP for the ATC process allows contractor innovation that MDOT then uses to focus on price for “best business decision.”
  - ◆ MDOT uses a GEC to assist in developing and managing innovative contracting projects. GECs play a lesser role on CM/GC projects.
  - ◆ A best-value selection process for DB may offer more transparency, collaboration and a more formal framework for team-building.
  - ◆ MDOT currently does not have a selection tool for project delivery type.

### 2.2.3 Utility Coordination Best Practices for Design-Build and Alternative Contracting Projects (Gransberg et al., 2017a)

#### Salient Points:

- ◆ CM/GC provides the most flexibility with utility coordination because pricing is established after more data regarding design and utility conflict conditions are known.
- ◆ Utility coordination and locations should be considered as part of preliminary design to minimize impact and relocation activities.
- ◆ ATCs reduce utility risk with DB and allow relationships between contractors and utility companies to expedite projects. Encouraging ATCs for utilities incentivizes a DB to improve overall long-term relationships.
- ◆ Utility coordination can be shared; some utilities are better handled by the DOT, while others can be given to the DB team.
- ◆ A conceptual utility management plan can be required during procurement to be considered responsive, allowing the selection team to review concepts.
- ◆ P3 allows financial benefit through utility agreements to cover costs.

#### Application to MDOT:

MDOT has implemented several of the researched best practices.

- ◆ MDOT uses a CM/GC delivery method.
- ◆ MDOT uses utility coordination and relocation as criteria when selecting a delivery type. MDOT reviews existing utilities during procurement design and evaluates the potential final condition (protect-in-place or relocate) during procurement design.
- ◆ MDOT uses the ATC process in DB delivery.
- ◆ MDOT does not require DB teams to include a conceptual utility management plan or an approach to utility coordination design in its procurements.
- ◆ MDOT has procured two P3 projects, and Michigan has legislation for this delivery method.

## 2.2.4 Framework for Objectively Determining Best Practices for Alternative Contracting Methods (Gransberg et al., 2017b)

### Salient Points:

- ◆ Appoint a champion for alternative contracting practices who will ultimately formalize the decision process.
- ◆ Use two-step best-value award procedures.
- ◆ Offer stipends to responsive but unsuccessful proposers. Stipends can be based on level of complexity and/or project size to prevent large but simple projects from receiving unnecessarily large stipends.

### Application to MDOT:

- ◆ MDOT regularly implements each of these best practices at some level in its program.
- ◆ MDOT's two-step process is a low-bid approach as opposed to best value. Best value incorporates a technical portion for the second step.
- ◆ MDOT offers stipends on a graduated scale where smaller-dollar value projects have a stipend range of 0.4 to 0.5 percent (for projects less than \$5 million), and larger projects over \$100 million have a stipend range from 0.1 to 0.12 percent of construction value.

## 2.2.5 Project Delivery Selection Matrix for Highway Design and Construction (Tran et al., 2013)

### Salient Points:

- ◆ Primary selection factors are schedule, complexity/innovation, current design level and risk.
- ◆ Secondary selection factors are cost, agency experience, oversight/control and contractor experience.

### Application to MDOT:

- ◆ MDOT does not employ a tool to determine the project delivery approach.
- ◆ MDOT establishes goals for each project and uses review criteria to determine if goals are addressed during procurement.



## 2.2.6 Alternative Contracting Research: Final Report (Minchin Jr. et al., 2016)

### Salient Points:

- ◆ Of the metrics reviewed (e.g., A+B, lump-sum, no-excuse bonus, incentive/disincentive and DB), each provides schedule/time savings, but only DB and lump sum could be identified to offer cost savings.
- ◆ A+B reduces contract time, motivates contractors to work faster and provides efficient project management.
- ◆ Lump-sum induces large-bid contingencies (except for low-risk and low potential for change projects) but saves the owner time in tracking quantities.
- ◆ DB and lump-sum have the highest cost savings but lowest time savings, although DB is intended to improve time compared to DBB. No obvious solution was apparent regarding which method is superior.
- ◆ Project requirements dictate quality standard adherence, not contracting methods. Most responses indicated that project quality was independent of contracting methods (DBB, DB, lump-sum and incentive/disincentive).

### Application to MDOT:

- ◆ MDOT has used A+B bidding, lane/bridge rentals and calendar-day incentives and disincentives. MDOT uses a lump-sum contracting method in most of its DB projects. In CM/GC, MDOT uses a guaranteed maximum price contracting method.
- ◆ MDOT also uses shared-risk items productively in its program. This method helps reduce some of the large contingencies observed in this paper for lump sum contracting.

## 2.2.7 Time and Cost Performance of Design-Build Projects (Chen et al., 2016)

---

### Salient Points:

---

- ◆ Of 418 projects DB projects reviewed, 75 percent met on-time/early delivery but 50 percent of DB projects are over budget; procurement should consider if a time savings would justify a project overrun.
- ◆ Quality-based projects are timelier than cost-based projects.
- ◆ Best-value procurement typically provides 35 percent design scoping, which improves performance.
- ◆ Guaranteed maximum price has fewer cost overruns than lump-sum, most likely because lump-sum prices are developed with generally less than 30 percent design whereas guaranteed maximum prices are developed at 6 percent or more design.
- ◆ Best-value is the dominant procurement method with lump-sum as the more frequently used method.

---

### Application to MDOT:

---

- ◆ Because 75 percent of the DB projects surveyed were completed on schedule, MDOT should be able to rely on schedules proposed by design-builders. When MDOT gives a completion date and allows DB teams to shorten the schedule (A+B) bidding, the proposed schedule should be reliable.
- ◆ MDOT generally provides 30 percent design-in-procurement documents.
- ◆ MDOT predominately uses lump-sum contracting. MDOT has awarded one fixed-price project where design-builders bid the number of locations that could be completed for a fixed price.
- ◆ MDOT predominately uses low-bid selection in lieu of best-value section.

## 2.2.8 Geotechnical Information Practices in Design-Build Projects (Gransberg and Loulakis, 2012)

---

### Salient Points:

- ◆ Large geotechnical data gaps result in large risk contingencies. Geotechnical uncertainty is high until the post-award site investigation and geotechnical design can be completed.
- ◆ Large geotechnical data gaps can cause risk-averse contractors to drop out of competition.
- ◆ Manage risk by retaining quality management roles for geotechnical work.
- ◆ Use explicit, differing site conditions clauses to expeditiously resolve discrepancies in geotechnical conditions.
- ◆ Define a risk-sharing threshold that quantifies the contractor's maximum threshold, after which DOT assumes cost.
- ◆ Permit release of geotechnical design packages before the rest of design.

---

### Application to MDOT:

- ◆ MDOT guidelines indicate "the procurement process chosen (e.g., best-value versus low-bid) may also impact the amount of information MDOT will want to provide to the Design-Builder."
- ◆ MDOT generally performs significant geotechnical investigations, including all bridge locations, ends of culverts and known locations of bad soils (e.g., peat).
- ◆ MDOT generally allows shared-risk items for bad soils (e.g., peat) but does not generally allow shared risk for deep foundations.
- ◆ MDOT uses a differing site condition clause in Book 1, Section 13

## 2.2.9 *Percent Base Design and Initial Award Performance in Design-Build Highway Projects* (Papajohn and El Asmar, 2020)

---

### **Salient Points:**

---

- ◆ Agencies progress design anywhere from 10 percent to 95 percent with the most common progression being 30 percent. Setting the percent base design is a balancing act between reducing risk and providing opportunities for innovation.
- ◆ ATCs are generally cost-driven, adding value to reduce cost, or improve schedule, safety, and maintenance of traffic.
- ◆ ATCs can be considered efficiencies rather than innovations; many ATCs are not new, having been implemented previously.

---

### **Application to MDOT:**

---

- ◆ Savings for initial design costs can be achieved by providing RFP concepts that are not progressed too far through design (less duplicative design effort between owner versus design-builder). Innovations from the contractor do not appear to be higher or lower based on the level of design provided; however, the likelihood that the design-builder will put less effort into design if it is progressed further by the owner is higher). The concern for MDOT would be providing enough design to adequately assess environmental needs and identify right-of-way requirements.

## 2.2.10 Key Issues and Differences in Practical Components of Quality Management in Design-Build Highway Projects (Lee et al., 2020)

### Salient Points:

- ◆ Roles and responsibilities for QA differ for each agency/DB relationship as do the cost mechanisms to fund it.
- ◆ QA manuals are either provided by the agency or are contractor-furnished, but the article does not distinguish one as better than the other.
- ◆ Pay-adjustment factors can help improve the construction process if they are used as a bonus for achieving a higher level of the quality criteria. They can also be used as a disincentive (by reducing payment) if the design-builder fails to achieve the criteria.
- ◆ QA typically follows one of the three following approaches:
  - Traditional (DBB approach). Agency does all sampling and testing (four states).
  - Mixed. A third-party firm does sampling, and the agency validates (nine states).
  - Supervisory. A third-party does the sampling and testing with minimal owner oversight; this approach is typically used on very large projects (two states).

### Application to MDOT:

- ◆ MDOT does a good job of defining responsibilities in the QA process. However, more supporting material would help in developing the roles.
- ◆ The authors' paper is focused on construction quality and does not address design quality. It also does not describe the pros and cons of each QA approach. Currently MDOT requires the design-builder to provide design QC and MDOT or MDOT's consultants perform design reviews.
- ◆ MDOT requires the design-builder to prepare a design quality plan (Section 2, Book 2).
- ◆ MDOT currently performs construction inspection acceptance and testing acceptance in-house or through hired consultants, whereas most states push construction quality onto the design-builder with four states indicating they do all the testing for acceptance.

## 2.2.11 Proven Practices in Design-Build and Fast Track (Elvin, 2003)

---

### Salient Points:

---

- ◆ Build shared language for project success (acronyms and terms).
- ◆ Plan for design iterations and feedback (review cycles).
- ◆ Use end-user input to improve design with early downstream information. Having meetings with those who will construct the project can help the designer find innovation; end-user input helps builder look at the project from a different angle.
- ◆ Team-building leads to project success (constant communication and collaboration).
- ◆ Encourage flexible project organization. Blur the lines between roles and accept help from any level.
- ◆ Co-locate when possible. Co-location increases opportunity for direct communication and quickly breaks down communications barriers. Although difficult discussions and arguments have also been reported, communication has been constructive and productive.
- ◆ Synchronize workflow planning. Design shapes construction, and construction shapes design; each requires information from the other.

---

### Application to MDOT:

---

- ◆ MDOT has a list of published acronyms and definitions to assist in a common language understanding.
- ◆ MDOT requires multiple design reviews, generally at 30 percent/60 percent and as part of the request for comments.
- ◆ MDOT generally does not have maintenance teams review designs; however, it engages maintenance crews in RFP development. MDOT encourages reviews by all parties, including design reviews by design-builder's field crew.
- ◆ MDOT does not generally conduct formal partnering sessions to foster team-building with the DB team.
- ◆ MDOT does not generally use co-location of owner and design-builder but has instituted it on recent projects.
- ◆ Project success items, such as co-location, are not mentioned or addressed in the MDOT guidelines.

## 2.2.12 Design-Builder Selection for Small Highway Projects (Molenaar and Gransberg, 2001)

### Salient Points:

- ◆ Single-step selection with low price does not consider gaps in scope between proposers. Ohio found single-step does not work well, but agencies are often enticed by the low-bid culture.
- ◆ A two-step selection shortlists firms; however, scoring is inconsistent. Price adjusts technical score, or technical score adjusts price. Standardization is required.

### Application to MDOT:

- ◆ MDOT typically uses a two-step process with final selection in the second step typically being low-bid. MDOT's practice differs from the two-step process defined in the research, which also considers a technical score of the proposal. MDOT recently completed a fixed-price, variable-scope Intelligent Transportation System DB project; however, this fixed-price project did not consider approach to the project and was awarded based on the number of sites achieved for the fixed price (indefinite delivery/indefinite quantity approach).

## 2.2.13 Contractual Approaches to Address Geotechnical Uncertainty in Design-Build Public Transportation Projects (del Puerto et al., 2017)

### Salient Points:

- ◆ Use a geotechnical baseline report where there is significant geotechnical risk.
- ◆ Use unit-price pay items (or level-of-effort approach) inside the larger lump sum to share the risk with the design-builder – balancing the lump-sum DB risk when quantities are not certain. The example used in the article showed how the owner can share risk with the design-builder and protect itself by capping the total contract.
- ◆ Nested geotechnical as a DB project to mitigate risk inside a DBB can improve schedule and closures in an emergency.
- ◆ DB can be used as a tool to mitigate risk and help find rapid solutions to issues.

### Application to MDOT:

- ◆ On projects with a heavy geotechnical component, where risk is high, the use of geotechnical baseline reports or more extensive geotechnical exploration and borings are encouraged within the MDOT innovative contracting model.
- ◆ MDOT is silent in its guidelines on sharing risk through level of effort or unit-priced elements of high risk.
- ◆ MDOT has not used a nested project whether it is a DB nested in a DBB or a DBB nested in a DB.

## 2.2.14 Recommended Guide for Next Generation of Transportation Design-Build Procurement and Contracting in the State of Georgia (Ashuri and Kashani, 2012)

---

### **Salient Points:**

- ◆ A systematic and consistent approach is important to vetting a DB project and the appropriateness of the delivery system. The paper found inconsistencies between states in their processes and developed an evaluation process for projects.
- ◆ A framework called SWOT (Strengths, Weaknesses, Opportunities and Threats) can be used to determine the suitability of the delivery system.
- ◆ New procedures, contracts and practices are required to separate DB from the DBB mentality. Constant updating is also required as the industry evolves.
- ◆ Contract documents should have at least four sections: (1) instructions for proposers (ITP); (2) scope of the project; (3) Technical requirements; and (4) standard design specifications and guidelines.
- ◆ Best-value can be divided into A+B, adjusted bid, adjusted score, weighted criteria and fixed price - best proposal, and best and final offer.

---

### **Application to MDOT:**

- ◆ MDOT does not have an established project delivery selection tool.
- ◆ MDOT has a DB-specific contract and a CM/GC-specific contract that differs from DBB.
- ◆ MDOT follows the suggestions provided in the paper regarding procurement documents with ITP, scope definition, technical requirements (performance specifications, Book 2) and standards requirements (Book 3).
- ◆ MDOT uses low-bid in a two-step approach and has awarded fixed price DB.



## 2.2.15 How to Guide Alternative Contracting Projects (Molenaar, 2020)

### Salient points:

- ◆ Do not focus the whole program on selection of the design-builder, prepare execution phase procedures. The paper provides several suggestions to ensure quality throughout all phases, including:
  - Strategies. Over-the-shoulder reviews, workshops, incentive/disincentive programs and delegation to the on-site owner's engineer can help an agency meet its quality goals..
  - Tools. Personnel (including keeping the same personnel throughout), open communication and co-locating the team members can contribute to a successful project.

### Application to MDOT:

- ◆ MDOT has a DB and CM/GC execution program policy and procedure manual that encompasses the entirety of the process from programming to project closeout.
- ◆ MDOT uses over the shoulder reviews and workshops and has used incentives and disincentives before.
- ◆ MDOT generally keeps the same personnel assigned to a DB or CM/GC project throughout its life. These include the ICC lead and project manager.

## 2.2.16 Appropriate Risk Allocation in Design-Build RFPs (Molenaar et al., 2000)

### Salient Points:

- ◆ Include as much information as possible through the project definition package and/or the RFP to reduce risk. The paper suggests including stakeholders, objectives, characteristics, scope and context in the Project Definition Package document. The more information the DB team has, the more likely the project will be a success and risk will be reduced.

### Application to MDOT:

- ◆ MDOT should make sure the project description and other available information provided is comprehensive to help the design-builder manage the risks. Guidelines for project items to include or be considered in each RFP could be created to better streamline information and process.

### 2.2.17 *Impact of Risk on Design-Build Selection for Highway Design and Construction Projects* (Tran and Molenaar, 2014)

#### Salient Points:

- ◆ Scope risk is identified as the greatest risk. This risk includes risks associated with poor project definition; poor scope definition; staff experience and availability; and conformance with regulations, guidelines and documentation.
- ◆ Design-builders and owners agree on most risks; however, DB teams are more capable of managing risks associated with construction.
- ◆ Shifting unwarranted risk to the design-builder will result in large contingencies.

#### Application to MDOT:

- ◆ MDOT should pay close attention to the scope definition in the RFP. Providing a comprehensive scope and project understanding in the RFP (including agency goals and project intent) is of utmost importance.
- ◆ MDOT shares risk with the design-builder.

### 2.2.18 *Realized Economic Efficiency of Road Project Delivery Systems* (Koppinen and Lahdenperä, 2007)

#### Salient Points:

- ◆ More complex projects result in better perceived value for a DB team; DB allows for greater efficiencies and better opportunities to develop operations that create value than traditional DBB.
- ◆ Economic efficiency is highly dependent on how value is measured, based on the ratio of value generation and cost-performance ( $EE=V/C$ ); it is meant to indicate performance level, not as a true numeric representation.

#### Application to MDOT:

- ◆ MDOT includes DB in its procurement process but maintains the culture of a traditional project.
- ◆ MDOT could consider the results of this research if it were considering projects with a long-term design-build-maintain (DBM) contract. DBM is an efficient delivery method that yields cost-savings given a large-enough scope, project size and length of service maintenance post-construction.

## 2.2.19 Innovative Contracting Manual: Contracting Methods Manual Selection Criteria (McCullough, 2009)

---

### Salient Points:

---

- ◆ Balancing cost- and user-benefit for all projects was supported across the board in making the best decision for the Department.
- ◆ DB works when design is the critical path and scope is clearly defined.
- ◆ User considerations include traffic volume, detour lengths and key infrastructure (e.g., bridges).
- ◆ Overly accelerated schedules induce stress on the agency and may lower quality.
- ◆ DB encourages innovation.

---

### Application to MDOT:

---

- ◆ MDOT balances cost- and user-benefits using construction congestion cost-analysis and quantifies delay costs.
- ◆ MDOT contracts third parties when a project warrants based on MDOT resources available.
- ◆ This paper references multiple years of research by Indiana DOT. Indiana DOT uses many of these contract types, each with its own advantages and disadvantages. As a result, each project should be reviewed individually to make the best choice for the project. MDOT can consider these different contract types to include in its toolbox for delivery type.



Innovative Contracting  
Best Practices Research

# Chapter Three

## Owner Outreach



## 3.0 Owner Outreach

### 3.1 Introduction

Owner outreach consisted of a survey to solicit open feedback from owners across the country regarding their innovative contracting programs to compare best practices and lessons learned. This report incorporates the responses and recommended actions to help improve MDOT's overall innovative contracting program.

In April 2020, the research team sent a 42-question survey to 27 owners, including 23 state DOTs, two airports, the U.S. Department of Transportation and an owner from a university with a robust innovative contracting program. DOTs were selected based on states with environmental conditions similar to Michigan's, states with robust innovative contracting programs and states with relatively new innovative contracting programs to obtain a good cross-section of data points for cooperative reasons. The questions were crafted to elicit feedback, compare best practices used by MDOT and other owners, and evaluate lessons learned from the peer owner group. Twenty-two of the 27 surveys were returned with responses (over 80 percent), with 19 of those responses coming from DOTs.

The full report can be found in Appendix C.

### 3.2 Data Analysis

MDOT has a well-established innovative contracting program that successfully delivers transportation projects of various sizes and complexities. In many areas, the program aligns with the practices provided by peer-owners across the country. Survey results identified several opportunities where MDOT could benefit from approaches and lessons learned from other owners. These opportunities cover numerous aspects of project implementation and are organized around the themes presented below.

#### 3.2.1 Themes

1. Owners find tremendous value through innovative contracting within their agency, but struggle with standardization and consistency in delivery selection and risk management.
2. Best-value contracts, where technical scores are weighted on the second step, provide greater owner satisfaction.
3. Risks are shared with the design-builder, including utilities, right-of-way acquisition and geotechnical borings.
4. Training for owner personnel is essential.
5. Encouraging innovation allows the owner to best benefit from innovative contracting.

### 3.2.2 Recommendations

Although MDOT's current program incorporates many of the peer-owner approaches and common uses of innovative contracting best practices, several areas could be improved. The following recommendations are provided to help increase the effectiveness of the existing program while addressing several of the recurring comments or suggestions for improvement by the outreach participants:

1. **Develop a selection tool** that allows MDOT to evaluate projects early in the programming and decide what form of project delivery to use in a consistent manner. The selection tool should support vetting all project aspects/variables. Having a consistent tool will allow MDOT to address questions, risks and political pressures. The tool should include metrics such as:
  - A. Time constraints
  - B. Budget constraints
  - C. Complexity
  - D. Risk assignment or transfer needs
  - E. Innovation
  - F. Agency resources
2. **Formalize the risk management process** to track risks through the life cycle of the project. MDOT should consider set times to evaluate and update risk at project milestones, including "calls for projects," programming, funding, scoping, procurement, award and post-construction.
3. **Track metrics of success** within projects throughout the life of the project. Understanding and tracking how MDOT's program is functioning can identify where improvements can be made through lessons learned. This is a long-term recommendation to track projects over years. Metrics may include:
  - A. Cost of the final project versus RFP/proposal price.
  - B. Schedule of the final project versus RFP schedule.
  - C. Quality by tracking projects that exceed the quality standards of DBB.
  - D. Change orders, excluding unforeseen circumstances or owner-directed changes.
4. **Adjust evaluation criteria** to align with those that peers most commonly use in the request for qualifications (RFQ) and RFP.
  - A. Common RFQ criteria:
    - i. *Personnel and company capability and experience*
    - ii. *Experience on similar projects*
    - iii. *Experience of the team working together*

- B. Common best-value RFP criteria:
  - i. *Approach*
  - ii. *Maintenance of traffic (impacts)*
  - iii. *Price*
  - iv. *Schedule*
- 5. **Use the second step of a two-step, best-value program** to evaluate the technical approach/design of a project instead of the low bid. Encouraging the design-builder to provide design concepts with the proposal will increase innovation and owner satisfaction from a project.
  - A. Be open to ATCs that meet project goals and owner intent.
  - B. Pay a larger stipend where MDOT expects a larger technical approach.
  - C. Develop evaluation criteria and provide it in the RFP.
  - D. Shortlist a maximum of three to four bidders to encourage competition.
  - E. Progress RFP design to no more than 30 percent, allowing the contractor to take it further while understanding the intent of MDOT and the risks involved.
  - F. Involve the DB team in completing right-of-way acquisition and utility relocations.
- 6. **Establish and support** a culture for alternative delivery.
  - A. Continue education and training, especially for leadership, which is key to program success.
  - B. Dedicate a team and project champion to provide consistent results and allow the team to learn from lessons on past projects.
  - C. Dedicate an agency procurement team for alternate delivery to track lessons learned and information to include in future RFPs.
  - D. Evaluate the quality process defined in the RFP for design and construction.



Innovative Contracting  
Best Practices Research

# Chapter Four

## Industry Outreach



## 4.0 Industry Outreach

### 4.1 Introduction

The research included an industry outreach component in April and May 2020. This outreach consisted of a survey and follow-up meetings to solicit open feedback from contractors and engineers regarding MDOT's innovative contracting program. This section discusses the responses and feedback provided through this effort.

A 20-question survey was provided to 12 consultants and 12 contractors in April 2020, with follow-up conducted in May 2020 to further discuss responses and obtain additional information. Individuals were selected by evaluating past respondents to MDOT's DB and CM/GC solicitations and represented a cross-section of industry involved in large and small innovative contracting projects.

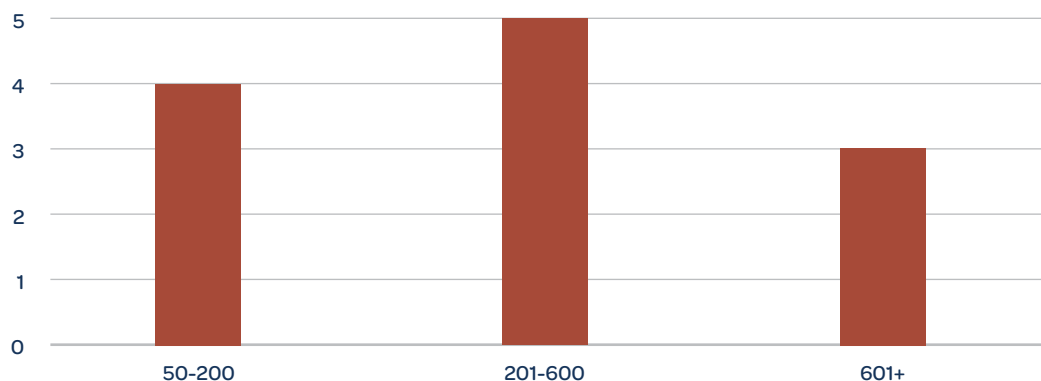
Surveys were sent to each company, and a member of the research team followed up with respondents to clarify responses and record additional feedback. Nineteen responses were received: 14 from engineers and five from contractors, representing combined experience on more than 90 innovative contracting pursuits across approximately 30 DB, CM/GC and P3 projects. One engineering firm submitted two responses, one for DB and another for CM/GC. A second engineering firm submitted two responses representing its roles as a lead engineer and as a subconsultant.

The responding engineering companies comprise local, regional and national firms of varying sizes as shown in **Figure 2** with offices primarily in southeast, central and western Michigan. The group represents a broad base of technical disciplines and shares experiences acting in a lead engineering or subconsultant role.

The responding contractors included companies ranging from smaller specialty groups for CM/GC projects to medium and large contractors with annual revenues over \$250 million.

MDOT employees were not involved in the meetings so as not to inadvertently influence feedback from participants. The names of the participants and their companies are being kept confidential. The full survey report is provided in Appendix D.

**Figure 2**  
Engineering Firm  
Size - Number of  
Employees



---

## 4.2 Data Analysis

MDOT's innovative contracting program successfully delivers transportation projects of various sizes and complexities. The program is generally accepted and supported throughout industry. Over the years, contractors, engineers and MDOT staff have developed expertise to effectively deliver DB and CM/GC projects. The comments and recommendations from the industry outreach offer insight on fine-tuning the program rather than an outright overhaul. The comments and recommendations are intended to help drive this program toward continuous improvement and collaboration with industry partners.

Three primary themes surfaced during the outreach: consistency, training and project selection.

1. Consistency throughout the process was important to both engineering and contractor staff. This includes consistency in procurement; project management and contract administration.
  - A. Engineers and contractors view procurement documents from different perspectives; however, it was clear from participant responses that while MDOT's documents have improved over the years, there are still areas that could be enhanced. Specifically, the documents could include utility, geotechnical and environmental information that bidders find important.
  - B. Respondents also identified inconsistent project management from both the ICU office and the MDOT Region/TSC project staff as an area for improvement.
    - i. *Turnover in the ICU program manager position has made it difficult for the unit to provide a consistent process during procurement. Each program manager has incorporated changes to either the process or the contract documents that introduce risk until bidders become familiar with the modifications.*
    - ii. *While the ICU staff has been knowledgeable and helpful, Region/TSC project managers could have more experience or depth to consistently manage DB and CM/GC projects.*
  - C. Design review services that routinely follow established guidelines and procedures would lead to consistent expectations for the level of design and QA for the contractor.
2. Training was suggested as a solution to the consistency issues; however, before training can occur, MDOT must determine the root cause of the issues and then modify its training programs to address these issues. Training opportunities could include:
  - A. Clarifying the roles of staff on each project (e.g., ICU staff, Region/TSC staff, MDOT technical staff and consultants) and define how each role fits into the procurement process. Apply staffing roles consistently across all projects.

- B. Providing more educational opportunities for Region/TSC staff regarding the administration phase of the project. One of the common themes from the industry participants was that each project is administered differently, which creates issues during design and construction.
  - C. Providing a consistent process for design reviews.
3. Respondents suggested that identifying the proper delivery method early on for a project is perceived to be a solution to create consistency with the program. The perception is that most innovative contracting projects start out as DBB and switch to alternative delivery later in the project life. This inherently introduces additional risks into the project delivery that should be thoroughly vetted to ensure risk is properly transferred during the process. Respondents indicated that the program would be more effective if the delivery method for projects were identified early and based on consistent criteria.

As noted above, although the current program is well-received by most participants of the outreach process, several areas could be enhanced. The following recommendations are provided to help increase the effectiveness of the existing program while addressing several of the recurring comments or suggestions from the outreach participants:

1. Provide a clear purpose statement and goals for the program and share this information throughout the Regions and the TSCs. Review the need for additional staffing based on the ICU purpose statement and goals.
2. Formalize risk-management processes and apply them consistently across projects. A standardized approach to evaluating and managing risk will assist ICU staff in more effectively delivering projects and transferring risk to the party best able to manage it through the life of the project.
3. Refine the RFP templates for the ITP, Books 1 and 2. The current template documents have carryover language from previous projects, are a mix of active and passive voice and provide limited guidance to those completing the documents. The template refinements should provide for (1) clear contract language that is consistent throughout; (2) guidance for completing the contract document, including specific examples from previous projects to aid MDOT and GEC staff; and (3) guidance for evaluating and assigning risks to the proper entity.
4. Refine the project selection tool used for screening project delivery and procurement methods to identify additional criteria that are tied to program goals and vision. This process should be based on a systematic risk-based approach to selecting alternative delivery types and should consider risks associated with scope, stakeholders, timing and budget; methods for estimating projects and assigning contingency to those projects to avoid underfunding; and guidance for risk-based progress of design.

5. Review the ATC process and refine it as needed to ensure consistency across the program and provide bidders more certainty that ATCs will be evaluated against specific criteria.
6. Establish an industry outreach committee that incorporates regularly scheduled meetings between industry groups (such as American Council for Engineering Companies [ACEC] and Michigan Infrastructure and Transportation Association [MITA]) and MDOT to discuss program issues and seek continuous feedback. These committees could provide a forum to better understand the intended risk transfer, project requirements or any other item that influences the project delivery process.



Innovative Contracting  
Best Practices Research

# Chapter Five

## Peer Exchange



## 5.0 Peer Exchange

### 5.1 Introduction

---

On August 20, 2020, MDOT's ICU, in conjunction with MDOT Research Administration, hosted an innovative contracting peer exchange event as part of its Innovative Contracting Best Practices Research project. The event was held virtually due to travel and meeting restrictions in place as a result of the COVID-19 pandemic.

The purpose of the peer exchange was to facilitate the discussion of innovative contracting delivery policies and procedures used by peer agencies. MDOT was particularly interested in nine topics related to programmatic and project delivery where potential improvements could further enhance its program. In addition, the event provided an opportunity for participants to evaluate their own innovative contracting programs against the practices of others through a collaborative panel of peers, experts and individuals. The full report can be found in Appendix E.

### 5.2 Participants

---

MDOT's ICU program manager worked with the research team to coordinate and facilitate the exchange. Coordination started in May 2020 but was suspended because meeting and travel restrictions resulting from the COVID-19 pandemic prevented in-person attendance. The group discussed various alternatives and determined that a virtual event using a collaborative meeting software program was the best option. In July 2020, the team evaluated potential participants, determined topics, developed an agenda (see appendices of Appendix E) and invited prospective participants.

Participants were determined, in part, based on the maturity of their program, the types of innovating contracting methods in use and the similarity of their state's climate conditions to Michigan's. Of the 12 states invited, 10 accepted. Table 3 provides a summary of the agencies (including MDOT) that attended and participated in the peer exchange.



Agency	Representative	Title	Program Age
Indiana Department of Transportation	Kevin Jasinski	Director of Major Project Delivery	15 years
Florida Department of Transportation	Larry Ritchie	State Contract Administration Specialist	32 Years
Maryland Department of Transportation	Sean Campion	Innovative Contracting Division Chief	21 Years
Michigan Department of Transportation	Ryan Mitchell	Innovative Contracting Manager	20 Years
Minnesota Department of Transportation	Peter Davich	Design-Build Program Manager	23 Years
Missouri Department of Transportation	David Simmons	Design-Build Coordinator for State	15 Years
North Carolina Department of Transportation	Teresa Bruton	Design-Build Manager	20 Years
Ohio Department of Transportation	Eric Kahlig	Alternative Project Delivery Administrator	25 Years
	Chase Wells	LPA Construction Contract & Partnering Manager	
Texas Department of Transportation	Matt McCarter	Alternative Delivery Project Manager	13 Years
Utah Department of Transportation	Matt Zundel	Innovative Contracting Engineer	20 Years
Virginia Department of Transportation	Shailendra Patel	State Engineer APD	19 Years

*Table 3  
Peer Exchange  
Participants*

MDOT identified the following nine topics of interest within its program for discussion:

- ◆ Delivery models (CM/GC, DB, P3) and delivery method selection
- ◆ Best-value versus low-bid selection
- ◆ Risk-management
- ◆ ATCs/one-on-one meetings
- ◆ Alternative delivery infrastructure
- ◆ Training
- ◆ Use of GECs and owner's representatives
- ◆ QA/QC
- ◆ Program/project metrics

Michael Loulakis, a member of the research team, moderated the peer exchange and facilitated the discussions between panel members for each topic. Ryan Mitchell, MDOT's ICU program manager, introduced each topic by providing an overview of MDOT's related practices, policies and procedures to offer background for the discussions. An open discussion format allowed each participant the opportunity to describe how their program operates with respect to that topic, including best practices and lessons learned.

---

## 5.3 Summary of Key Takeaways

A summary of each topic discussed during the peer exchange is included below. More details regarding each topic can be found in the full report in Appendix E.

### 5.3.1 *Delivery Models (CM/GC, DB, P3) and Delivery Method Selection*

The agencies reported using a variety of innovative delivery methods, with DB being the most common. Other methods used include CM/GC, P3 and progressive DB.

Most agencies use some sort of selection process or tool as a guide to stress the importance of evaluating each project based on risks and other project-specific criteria. Additionally, they use experience and judgment to determine the best delivery method for each project. Participants agreed that the selection tool should drive open discussions that lead the agency to select the most appropriate delivery method.

### 5.3.2 *Best-Value Versus Low-Bid Selection*

Best-value was the most common delivery method used by the agencies participating in the peer exchange. Some agencies use low-bid for non-complex projects, but this method does not make up a large percentage of their program. Participants indicated that based on their experience, using a best-value selection drives greater innovation and quality with their innovative contracting projects.

### 5.3.3 *Risk Management*

All participants agreed that project risks must be evaluated early on to determine which party is best able to handle that risk. Participating agencies described various alternatives for handling risk such as including shared risk items for work that is difficult to quantify, transferring utility coordination and relocation efforts to the contractor, allowing contractors to request additional boring-related information during procurement and allowing a scope validation phase for contractors to fully evaluate the scope of work and the criteria after award. Additionally, common items that appear to cause the most risk on projects include utilities, geotechnical data, right-of-way and environmental components.

### 5.3.4 *ATCs/One-on-One Meetings*

All participating agencies use some form of an ATC process during procurement, although some agencies limit the number and/or scope of what is open to an ATC for a particular project. One-on-one meetings are an important part of the procurement process, and the agencies indicated that all discussions are held in confidence by the departments to build trust in the program. Stipends generally range from approximately 0.15 percent to 0.5 percent depending on the project's size and complexity. Departments that provide a larger stipend feel that the proposers provide greater innovation to their programs.

### 5.3.5 *Alternative Delivery Infrastructure*

Each participant indicated that their agency either has existing guidance documents or is developing guidance documents that describe the policies, practices and procedures related to their innovative contracting programs. Best-practice also includes the use of standardized templates for the procurement and contract documents. Engaging the local industry on a regular basis to discuss issues related to the program helps build a trust between parties that ultimately aids in the delivery of projects.

### 5.3.6 *Training*

Training programs across the agencies vary in their scope and frequency. Some agencies are providing training on a project-by-project basis, while others have more formal training sessions. Regardless of the training method, participants indicated that providing training to the staff involved in delivery of innovative contracting projects as early as possible is very beneficial.

### 5.3.7 *Use of General Engineering Consultant/Owner's Representative*

Agencies are split on the use of consultants to assist with delivering their program. Some agencies use a GEC that is selected to assist with all projects for a given duration (three to five years), others use consultants on a project-by-project basis while others only use in-house staff.

### 5.3.8 *Quality Assurance/Quality Control*

Agencies are using a mix of models to perform QA/QC services during construction. Some agencies put the responsibility on the contractor with the agency or a third party auditing the results while some agencies keep the QA/QC responsibility with the department similar to DBB projects.

### 5.3.9 *Program/Project Metrics*

None of the participants indicated that their agency uses a formal process for tracking program/project metrics. Most appear to track cost and schedule to determine the effectiveness of their programs.

Innovative Contracting  
Best Practices Research

## Chapter Six

# Evaluation of MDOT's Innovative Contracting Program



## 6.0 Evaluation of MDOT's Innovative Contracting Program

### 6.1 Programmatic Documents Management

#### 6.1.1 *Best Practices*

To facilitate consistency within their programs, many agencies have developed programmatic documents and guidance manuals that outline their innovative contracting process and procedures. These documents provide the structure of the program and are used by agency staff to ensure the mission and goals of the program and projects are achieved while evaluating risks associated with the various delivery types.

Best practices observed through the literature research, owner outreach and peer exchange include:

- ◆ Programmatic documents that will allow for the consistent application of innovative contracting methods to realize the defined goals of the program; incorporate protocols for communication, training and maintenance of the documents (i.e., update based on lessons learned or revisions to process and procedures); define the roles and responsibilities of staff for each delivery method; and assist with maintaining institutional knowledge.
- ◆ Standardized procurement documents (i.e., template documents) to ensure consistency in the procurement of projects and promote familiarity with the processes by stakeholders.
- ◆ Program- and project-level performance metrics by which to measure the success of the program and projects.
- ◆ Senior management support to promote the effective use of innovative contracting within the agency.
- ◆ Owner promotion of continuous improvement of the program through industry feedback, incorporating lessons learned and regularly evaluating best practices within the industry.

#### 6.1.2 *Observations of MDOT's Program*

The research team presents the following observations with respect to the best practices identified above:

1. MDOT's *ICCG* was last updated in 2015. The guide provides an overall discussion of the differences between the various innovative contracting delivery methods and includes detailed process and procedures for the DB and CM/GS program. However, the documents could be updated again to reflect the current program.
2. MDOT has DB template documents that are based on a past project and have been updated with lessons learned.

3. MDOT captures lessons learned through the procurement phase and updates the template documents but it would be good practice to regularly capture lessons learned through the implementation and close-out of the projects.
4. MDOT does not have a formalized process for tracking performance metrics, but like most states, it tracks cost and schedule for projects.

*Table 4  
Gap Analysis:  
Programmatic  
Documents  
Management*

### 6.1.3 Gap Analysis: Programmatic Documents Management

BP1—PROGRAMMATIC DOCUMENTS AND GUIDANCE MANUALS				
Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Innovative contracting processes are standardized in a set of guidance documents (manuals, templates, etc) that are:</p> <ul style="list-style-type: none"> <li>◆ Used consistently across the organization.</li> <li>◆ Supported by senior management who compel their consistent use.</li> <li>◆ Used to evaluate the effectiveness of processes and procedures and facilitate continuous improvement.</li> <li>◆ Known to industry.</li> </ul>	<p><b>Partial Alignment</b></p> <p>MDOT has an Innovative Construction Contracting Guide that was last updated in 2015 but does not reflect its current program, impacting consistency in application. Updates to the <i>DB Manual</i> and <i>CM/GC Manual</i> are needed to provide more guidance with respect to the current processes and procedures.</p> <p><i>The peer agencies interviewed have created an infrastructure that includes guidance manuals, template documents and different delivery selection tool options.</i></p>	<p>MDOT updated its guidance documents and manuals to better reflect current practices and established a Research Advisory Panel to support the updates. Additionally, MDOT is developing a <i>P3 Manual</i> to facilitate the consistent application of this delivery model.</p> <p>MDOT's ICU has a strong group of Project Managers and support staff centralized in Lansing who have experience across all delivery models. This group is supported by local staff in the Region and/or TSC offices to deliver projects.</p>	<p>Updated guidelines and manuals may lead to:</p> <p><b>Gap 1A:</b> Consistency in project execution across the program and projects/project teams, potentially reducing extra costs in bidding or risk associated with contract administration.</p> <p><b>Gap 1B:</b> Less confusion regarding roles and responsibilities of team members, both internal and external.</p> <p><b>Gap 1C:</b> More efficient use of resources.</p> <p><b>Gap 1D:</b> Fewer difficulties in preserving and transferring knowledge regarding innovative delivery methods to Department staff.</p> <p><b>Gap 1E:</b> Continuous improvement.</p> <p><b>Gap 1F:</b> Opportunities to maintain efficiencies, and cost and time savings in project delivery.</p>	<p><b>Rec 1A:</b> Continue to update the existing innovative contracting guidance documents and manuals.</p> <p><b>Rec 1B:</b> Develop training to roll out updates to revised guidance documents and manuals to in-house staff and industry partners.</p> <p><b>Rec 1C:</b> Refine existing procurement template documents.</p> <p><b>Rec 1D:</b> Develop a template for design and construction quality management plans.</p> <p><b>Rec 1E:</b> Work with industry to continually improve the manuals, templates, processes and procedures of the program.</p>

**BP2—STANDARDIZED TEMPLATES AND FORMS**

Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Standardized template documents and forms are utilized to procure and administer contracts to achieve consistency within the program.</p>	<p><b>Partial Alignment</b></p> <p>MDOT's DB template documents are based on a past project that has been updated with lessons learned. Carryover language from the past project is removed and the document is updated as necessary with requirements for the project being procured.</p> <p>Additionally, turnover in the ICU Program Manager position has resulted in changes to the template documents. These documents require industry evaluation to become familiar with new terms and conditions.</p> <p><i>The peer agencies interviewed are using or are in the process of developing standard template documents.</i></p>	<p>MDOT recognizes the value in working with industry and is looking to formalize a working group to have regular discussions regarding the program including solicitation processes, contract template documents (Instructions to Proposers, Book 1, Book 2, etc.), and contract execution and administration.</p>	<p><b>Gap 2A:</b> Standardized templates would reduce inefficiencies during the procurement phase and unnecessary change orders during contract administration due to carryover language from previous projects not being removed. Changing this practice would require less time to remove this language and develop the project-specific requirements, and would not require proposers to familiarize themselves with new terms and conditions and updated language resulting from addenda.</p> <p><b>Gap 2B:</b> Lessons learned in procurement could be tracked and identified long-term, potentially reducing repeat lessons with program personnel turnover.</p>	<p><b>Rec 2A:</b> Refine procurement templates to remove any carryover requirements from previous projects and only contain standard boilerplate language that does not change from project to project.</p> <p><b>Rec 2B:</b> Work with industry to continually improve the manuals, templates, processes and procedures of the program.</p> <p><b>Rec 2C:</b> Continue to refine the training programs for staff on the use and implementation of the standardized templates and forms.</p> <p><b>Rec 2D:</b> Track all template changes, Proposer Q&amp;A, ATC responses, issues and risks, change orders and claims in a lessons-learned database.</p>



**BP3—PERFORMANCE METRICS**

Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Program and project-level metrics are developed and used to monitor effectiveness and promote continuous improvement activities.</p>	<p><b>Partial Alignment</b></p> <p>MDOT generally tracks cost and schedule for projects but does not closely track against other delivery methods to determine the effectiveness of the chosen delivery method.</p> <p>MDOT has a single champion to gather performance metrics.</p> <p>No standard reporting process has been defined in any of the innovative contracting manuals or guides.</p> <p><i>The peer agencies interviewed use various metrics for evaluating their programs. The most consistent variables appear to be cost and schedule.</i></p>	<p>MDOT tracks cost and schedule for alternative delivery projects, and also applies lessons learned from previous projects to improve its template documents.</p>	<p><b>Gap 3A:</b> By tracking more data on program performance, MDOT could have more opportunities to proactively identify trends that require attention.</p> <p><b>Gap 3B:</b> Additionally, more data also increases the opportunity to communicate the benefits of using innovative contracting methods to internal staff and to industry partners.</p>	<p><b>Rec 3A:</b> Develop a more standardized system to track key project metrics to evaluate the effectiveness and value of the various delivery methods.</p> <p><b>Rec 3B:</b> Create a database to track metrics and include other items such as number of ATCs submitted/accepted, cost growth, number of addenda for RFQ/RFP, change orders, etc.</p> <p><b>Rec 3C:</b> Standardize information-gathering protocol, presentation format (for various audiences) and reporting frequency.</p>

BP4—LESSONS LEARNED				
Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Lessons learned are formally documented for each project and used for continuous improvement of the program.</p>	<p><b>Partial Alignment</b></p> <p>MDOT captures lessons learned during the procurement phase and updates its template documents on a fairly regular basis.</p> <p>Lessons learned during the administration of the project are not as closely tracked or compiled for use on future projects.</p> <p><i>The peer agencies interviewed typically used lessons-learned processes to improve their programs.</i></p>	<p>MDOT captures lessons learned during the project procurement phase and updates language in template documents. However, lessons learned are not kept in a single, easily accessible location. Maintaining easy access allows for a quick review of history, allowing for a better understanding of whether improvements have already been implemented or considered on a particular element. It also allows a simple review to reference history prior to implementing improvements.</p>	<p><b>Gap 4A:</b> Capturing lessons learned during the administration phase leads to more opportunities to modify, enhance, or supplement areas of the contract documents that are unclear, ambiguous, or incorrect. This reduces the need for clarification or change orders during design and construction that can lead to higher costs.</p>	<p><b>Rec 4A:</b> Formalize a process and format for capturing lessons learned at the end of procurement and at project closeout.</p> <p><b>Rec 4B:</b> Regularly update program documents including guides, manuals and templates to reflect changes in processes, procedures or language.</p> <p><b>Rec 4C:</b> Track each project against specific goals stated in the RFP to determine the effectiveness of the delivery method.</p> <p><b>Rec 4D:</b> Expand training to include a peer-to-peer exchange of lessons learned and best practices between experienced ICU PMs and potential PMs within Regions/TSCs.</p>

### 6.1.4 Recommendations: Programmatic Documents Management

The following recommendations and implementation strategies are suggested:

1. Update the *ICCG*, *DB Manual* and *CM/GC Manual* to reflect the program’s current policies, processes and procedures. Make the manuals more user-friendly to promote the use of the documents by a wider audience, both internally and externally. Develop a process to regularly update programmatic documents to reflect any changes in policies, processes, procedures or language.

2. Refine the procurement templates to remove any carryover requirements from previous projects and update the template to only contain boilerplate language that does not change from project to project. As part of this process, incorporate project manager prompts where project-specific requirements are needed or where project risks should be evaluated.
3. Formalize a process and format to capture lessons learned at various stages of the life of the project, close to major milestones while they are fresh in team members' minds. Routinely conduct a lessons-learned session after the project is awarded and after project closeout. Develop a database that is sortable by various categories that allows staff to easily search for lessons learned to use on future projects.
4. Develop program-level and project-level performance metrics that can be used to monitor the effectiveness of the program and projects and to promote continuous improvement activities. Create a database to track metrics and include items such as number of ATCs submitted/accepted, cost growth, number of addenda for RFQ/RFP, change orders, or other items deemed important to the continued success of the program. Develop a standardized data collection protocol and presentation format that can be used to provide reports to various audiences within and outside MDOT.

---

## 6.2 Organizational Structure and Training

### 6.2.1 *Best Practices*

Innovative contracting delivery warrants different processes, skill sets and coordination efforts than the traditional DBB method and often requires a group of staff fully dedicated to alternative delivery. Practices developed by owners with successful programs include:

1. Creating a dedicated group responsible for developing and administering innovative contracting projects. Alternative delivery requires different skills and management efforts to successfully deliver projects. Each member of this group should have defined roles and responsibilities to help foster the consistency and continuous improvement of the program.
2. Ensuring a member from the group takes an active role in each innovative contracting project and remains a part of the MDOT delivery team through the life of the project. This continuity helps to ensure consistent communication with the ICU, promotes the transfer of information between development and delivery staff and can help foster the resolution of any disputes with contracting teams.
3. Promoting career development paths that include education, training and professional development to help retain staff and reinforce institutional knowledge. Attendance at professional organization conferences also allows MDOT staff to stay current on best practices and changes within the industry.

4. Developing a training program that reaches a wider audience within the organization in addition to those staff delivering the projects to help dispel any misconceptions regarding the program and help promote its wider use within the organization for delivering projects.

### **6.2.2 Observations of MDOT's Program**

Observations with respect to the best practices identified above, include:

1. MDOT's ICU is staffed with a program manager, five project managers and various support staff who are well-versed in the innovative contracting methods used by the Department. This group is supplemented with GECs for the development, procurement and administration of DB and P3 projects.
2. For each innovative contracting project, MDOT assigns an ICU project manager who works in conjunction with a project manager from MDOT's Region or local TSC office. The ICU project manager generally leads the project through the procurement phase but remains an active part of the core team through administration and closeout.
3. MDOT conducts DB training on a project-by-project basis. This training includes a session with project staff prior to the procurement phase and a second session prior to the contract administration phase. Each session describes the processes and procedures involved with each phase and describes the roles and responsibilities of the staff.

### 6.2.3 Gap Analysis: Organizational Structure and Training

Table 5  
Gap Analysis:  
Organizational  
Structure and  
Training

BP5—ORGANIZATIONAL STRUCTURE				
Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Have a committed group of staff with experience using innovative contracting methods who are dedicated to the successful delivery of projects.</p>	<p><b>In Alignment</b></p> <p>MDOT's ICU is staffed with a Program Manager, five Project Managers and various support staff who are well versed in the innovative contracting methods utilized by the Department. This group is supplemented by the use of General Engineering Consultants for the development, procurement and administration of DB and P3 projects.</p> <p><i>The peer agencies interviewed have varied organizational structures. Some have a dedicated program manager with support staff while others have program managers who balance delivering innovative contracting projects with other duties not related to innovative contracting.</i></p>	<p>MDOT's ICU is staffed with experienced personnel who have worked within the various delivery models utilized by the Department.</p>	<p>Additional staff experienced with innovative contracting methods at the MDOT Region and TSC level could increase:</p> <p><b>Gap 5A:</b> Clarity regarding roles and responsibilities; especially with DB projects.</p> <p><b>Gap 5B:</b> Consistencies with administration and project oversight lead, avoiding cost and/or schedule growth and a positive impact to MDOT's reputation.</p> <p><b>Gap 5C:</b> Fewer decision-making delays.</p> <p><b>Gap 5D:</b> A better experience for MDOT staff, increasing the likelihood of utilizing innovative contracting on future projects.</p>	<p><b>Rec 5A:</b> Develop a training program that is conducted on a regular basis to familiarize staff throughout the organization with innovative contracting methods and the differences from DBB. Also continue to highlight program updates at industry conferences.</p> <p><b>Rec 5B:</b> Identify clear roles and responsibilities for all parties, lines of authority, decision timelines, etc. in program manuals to improve consistency.</p>

## BP6—TRAINING AND DEVELOPMENT

Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Formal training and career development paths for staff are established to retain key personnel with institutional knowledge and experience within the department.</p>	<p><b>Partial Alignment</b></p> <p>MDOT conducts DB training on a project-by-project basis. This includes a training session prior to the procurement stage and a second training session prior to the contract administration phase.</p> <p>MDOT is committed to training personnel for innovative project delivery inside and outside the Department.</p>	<p>MDOT recognizes the need to train staff to understand the roles and responsibilities, processes and procedures when working with innovative delivery.</p>	<p><b>Gap 6A:</b> Historically, high turnover in the ICU Program Manager role has led to considerable loss of institutional knowledge in the ICU.</p> <p><b>Gap 6B:</b> Proper training and staff development for the ICU staff could increase experience and core competencies to deliver projects using innovative contracting methods.</p> <p><b>Gap 6C:</b> A formal training program, held on a routine basis for staff who do not regularly work with innovative contracting methods (such as Region/TSC staff), could reduce issues during the contract administration and oversight phase of projects.</p> <p><b>Gap 6D:</b> A broad, formal training program would help MDOT reach a wider audience within the Department.</p>	<p><b>Rec 6A:</b> Formalize and expand the existing training programs for the various delivery methods to include more advanced guidance for project development, procurement and contract administration. Develop materials that include exercises to better understand the delivery models and that can also be used for future reference.</p> <p><b>Rec 6B:</b> Establish a working group with local professional and industry organizations (such as MITA and ACEC) that meets on a regular basis to discuss trends with innovative contracting as well as lessons learned and best practices. Partner with industry experts on training sessions.</p> <p><b>Rec 6C:</b> Consider outside resources to provide the training. Often, training by in-house personnel is less impactful.</p> <p><b>Rec 6D:</b> Establish a career development process to attract and retain staff with the experience to deliver innovative contracting projects.</p> <p><b>Rec 6E:</b> Establish a working group with peer agencies that meet on a regular basis to discuss trends with innovative contracting within their states, as well as lessons learned and best practices.</p>

## 6.2.4 Recommendations: Organizational Structure and Training

The following recommendations and implementation strategies are suggested:

1. Expand the existing training programs to include more advanced guidance for project development, procurement and contract administration. Develop materials that include exercises to better understand the delivery models and can also be used for future reference. Evaluate lessons learned from past projects to determine whether there are areas where training should be enhanced to provide more clarity for roles, responsibilities, processes or procedures.
2. Develop a training program that can be provided to a wider audience of Department staff to provide education about the differences between innovative contracting methods and when they should be applied. Provide training on a regular basis to increase the visibility of the ICU within the Department and the likelihood of staff using the various methods to deliver projects.
3. Update the programmatic manuals to clearly define roles and responsibilities for all parties, lines of communication and authority, decision timelines and similar project-related data to assist staff in understanding their role's importance within the entire process and during each phase of a project's life.
4. Establish a working group with partners from the construction and consulting industries in the state. Use industry groups such as ACEC and MITA to facilitate the development of this group to meet regularly and discuss issues, lessons learned and trends with MDOT's innovative contracting program. Consider developing joint educational training opportunities with MDOT staff and industry partners to foster an atmosphere of transparency with the program.
5. Establish a working group with peer agencies in surrounding states to meet on a regular basis to discuss trends within their programs and share lessons learned and best practices to assist each agency with continuous improvement. Discuss similarities and differences within each program to develop synergy between states to bring consistency to portions of their programs, which could eventually lead to a larger pool of qualified contractors willing to participate in each state's program.

---

## 6.3 Project Identification and Delivery Method Selection

### 6.3.1 *Best Practices*

Most agencies attempt to identify the delivery method as early in the planning phase as possible. This allows the agency to explore the various delivery types (DBB, DB, CM/GC) and evaluate any unique aspects or project risks that might lead to a specific delivery model. Most peer states indicated that they have a formal project identification and selection process to determine candidate projects. In addition, peer states noted that experience and judgment also play a part in selecting the most appropriate delivery method. The process should be used to help drive discussions regarding potential risks and other factors associated with the project to help determine the delivery method. Having a standard process helps ensure consistent decision-making and assists in documenting the reason a particular method was chosen.

### 6.3.2 *Observations of MDOT's Program*

MDOT recognizes that not all projects are a good fit for delivery using innovative contracting methods; each project must be evaluated on an individual basis. MDOT uses a three-step process that includes staff from the local Region or TSC office, the Innovative Contracting Committee and the Engineering Operations Committee to evaluate projects. Candidate projects are submitted to the ICC using a standardized project selection form. This document includes information regarding the project, including a high-level evaluation of complexity, unique aspects of the project and potential risks among other items. The ICC reviews the application, which can be returned to the submitter to provide additional information, to make a recommendation for approval. Once the ICC approves the application, it is provided to the Engineering Operations Committee for final approval and recommendation for the innovative delivery method.

While some projects are identified early in the planning process, most candidate projects are not identified until much later in the project's life and are often related to delivery acceleration. Changing this practice would allow the project to be completely evaluated to determine the best delivery method and realize the full benefits of the methodology selected.



### 6.3.3 Gap Analysis: Project Identification and Delivery Method Selection

*Table 6  
Gap Analysis:  
Project  
Identification and  
Delivery Method  
Selection*

BP7—PROJECT IDENTIFICATION AND SELECTION				
Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>A formal project identification and selection process is used to determine candidate projects and identify the innovative contracting method (DB, CM/GC, P3, etc.) most appropriate. This helps ensure there is consistent decision-making and documents the details of why a particular method was chosen.</p>	<p><b>In Alignment</b></p> <p>MDOT utilizes a form that is completed by the MDOT Region or TSC staff that is submitted to the ICC. The ICC will evaluate the project based on criteria such as schedule, risk and other elements to determine if it is a candidate for innovative contracting. If approved, the ICC will recommend approval to the EOC, which must provide approval for a project to be delivered by any means other than DBB.</p> <p><i>Almost all of the peer state agencies used some criteria for determining use of alternative delivery. Evaluation criteria ranged from risk, complexity, size and more. The exercises used by the peer states range from formal processes with checklists and equations to less-formal discussions regarding the benefits of each option.</i></p>	<p>MDOT recognizes that not all projects are a fit for innovative contracting methods and must be evaluated on a project-by-project basis. MDOT uses a three-step process that includes staff from the local Region or TSC office, the ICC and the EOC to evaluate the projects. Once the project is approved by the ICC, it is moved to the EOC for final approval and recommendation.</p>	<p><b>Gap 7A:</b> While some projects are identified early in the Call for Projects process, most candidate projects are identified later in the project's life.</p>	<p><b>Rec 7A:</b> Consider expanding the content of the project selection form to include additional criteria that align with the program goals and mission statement.</p> <p><b>Rec 7B:</b> Include information in the guidance documents and/or manuals that discusses the project delivery selection process.</p> <p><b>Rec 7C:</b> Review the project goals to ensure they are project-specific and not just repeating from the previous project.</p> <p>Review the project goals defined in the RFP to ensure they are project-specific and align with the goals and mission statement of the innovative contracting program.</p>

### 6.3.4 Recommendations: Project Identification and Delivery Method Selection

The following recommendations and implementation strategies are suggested:

1. Update the *ICCG* to discuss or show the delivery selection process. Describe the process, roles and responsibilities for those associated with the process; required approvals; and expected timeframes. Define characteristics of projects that are well-suited to different delivery types, such as:
  - A. Large risk that is hard to control – CM/GC
  - B. Scope that is not defined well – CM/GC
  - C. Schedule constraints – DB
  - D. Desired innovation – DB
  - E. Simple, direct projects – DBB
2. Coordinate with the MDOT planning group to review and update the MDOT Scoping Manual to include evaluation criteria for the use of innovative contracting methods during the Call for Projects or other early stages of project development. This recommendation should be implemented in conjunction with recommendation 2 in Section 6.2.4 to provide Department staffs with a better understanding of the benefits of each delivery method.
3. Evaluate the innovative contracting project selection application to ensure it reflects the goals and mission of the program as stated in the *ICCG*. Include the project goals and other criteria or metrics that represent the program on the project selection application to be used as part of the evaluation criteria for each project so that there is consistency in the use of innovative contracting methods.

---

## 6.4 Procurement Method Selection and Shortlisting

### 6.4.1 Best Practices

Agencies that successfully use innovative contracting delivery methods have a well-defined procurement process that is consistently applied from project to project. This process helps foster industry's familiarity with the program and aids in building transparency and trust. The procurement process is defined in guidance documents that can be easily accessed by the owner's staff and industry partners for reference.

Best-value selection is used to realize more overall value for the project by promoting innovation, quality and greater partnership between the owner and contractor. Most agencies use a two-step, best-value selection process as their primary delivery method with low-bid selection used for a small percentage of their programs for smaller, non-complex projects. Project-specific evaluation criteria are developed for each project

that aligns with project goals and risks, with owners promoting objective scoring using qualitative or adjectival scoring methods.

Agencies limit the number of proposers who are invited to submit proposals to the RFP in a two-step selection process. Best practice is to limit the shortlisting to three to five of the most highly qualified submitters, especially if there is a clear break in scoring between teams.

### 6.4.2 *Observations of MDOT's Program*

MDOT's processes are defined in the *ICCG* but could be made easier to locate within the document. The processes are consistently applied across the program and from project to project. MDOT generally uses a two-step, low-bid selection process for DB and P3 projects. Some projects incorporate a schedule component through A+B contracting, lane/bridge rentals, or calendar days of contract time that are quantified and used as part of the low-bid calculation.

Contractors are generally hesitant to move to a best-value selection because they believe scoring criteria can be too subjective. However, by incorporating best-value selection, MDOT may benefit from:

- ◆ Potential innovations that could be further developed during the procurement phase.
- ◆ Improved project quality, by including a scored element such as approach to environmental compliance or geometric improvements.
- ◆ Opportunities to evaluate the contractor's approach to the project to ensure the contractors understand the project issues and risks and have an approach to address them.
- ◆ The opportunity to score key staff from each team, thereby reducing the risk of not having the most qualified staff for project delivery.

Owners who use best-value selection state that it allows them to align project goals with selection criteria and has provided them with improved overall value through more robust ATCs (innovation), higher quality and a partnering atmosphere. The genesis of partnering is that the teams understand that being selected on the next DB project could be directly related to the manner in which they produce quality, timely and collaborative solutions on today's project.

MDOT shortlists proposers but does not always limit the number and allows all proposers to submit a proposal, even when there is a clear break in the RFQ scoring between proposers. Changing this practice may reduce the number of qualified teams that drop out because of a reduced chance of winning the project compared to the expense of preparing and submitting the bid.

Table 7  
Gap Analysis:  
Procurement  
Method Selection  
and Shortlisting

### 6.4.3 Gap Analysis: Procurement Method Selection and Shortlisting

BP8—PROCUREMENT METHOD SELECTION				
Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Have a well-defined procurement process that evaluates available methods (one-step versus two-step, low-bid versus best-value) for each project that align with project goals to make informed procurement decisions.</p> <p>Evaluate the qualifications of the proposer, including evidence of successful collaboration with teaming partners on previous projects.</p> <p>Develop project-specific evaluation criteria that align with project goals and risks.</p> <p>Use best-value selection to garner overall value for the project through innovation and partnering.</p>	<p><b>Partial Alignment</b></p> <p>MDOT generally uses a two-step, low-bid selection process for DB projects. As part of the RFQ evaluation, MDOT reviews the proposer's qualifications but experience on past projects with teaming partners is not officially included in evaluation criteria.</p> <p>Some projects incorporate a schedule component through A+B contracting, lane/bridge rentals, or calendar days of contract time.</p> <p><i>Almost all of the peer agencies interviewed use a two-step, best-value selection process as their primary method. Low-bid selection is used for a small percentage of these programs and is used for smaller or non-complex projects.</i></p>	<p>MDOT's processes are defined in the Innovative Construction Contracting guide.</p> <p>MDOT utilizes a two-step process to shortlist the most qualified proposers to participate in the RFP phase.</p>	<p><b>Gap 8A:</b> MDOT does not incorporate best-value into the selection process. MDOT does not define evaluation criteria that represents value from technical, quality, project management approach or other items that could be important to the project.</p> <p><b>Gap 8B:</b> MDOT generally shortlists all proposers.</p> <p><b>Gap 8C:</b> MDOT awards based on low cost and technical proficiency. Changing this practice to best-value could:</p> <p><b>Gap 8C1:</b> Provide owners with improved overall value of the project through more robust ATCs (innovation) and a partnering atmosphere. The genesis of partnering atmosphere is that the DB teams understand that their selection on the next DB project is directly related to their performance on today's project.</p> <p><b>Gap 8C2:</b> Allow owners to align project goals with selection criteria.</p>	<p><b>Rec 8A:</b> Review goals on a project-by-project basis to ensure they align with the goals and mission statement of the innovative contracting program and consider project risks.</p> <p><b>Rec 8B:</b> Minimize the number of shortlisted teams to encourage higher qualified teams to continue through the procurement process.</p> <p><b>Rec 8C:</b> Use a two-step, best-value selection on all but small, simple projects to drive innovation, quality and partnering.</p> <p><b>Rec 8D:</b> When using best-value selection, develop evaluation criteria that align with project goals defined in the RFP and utilize adjectival or qualitative scoring.</p>

BP9—SHORTLISTING				
Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Limit the number of proposers who are invited to submit proposals to the RFP in a two-step process.</p>	<p><b>Partial Alignment</b></p> <p>MDOT shortlists proposers but at times does not limit the number and allows all proposers to submit a proposal even when there is a clear break in the RFQ scoring between proposers.</p>	<p>MDOT utilizes the two-step process to shortlist the most qualified bidders.</p>	<p><b>Gap 9A:</b> Shortlisting fewer proposers could reduce the number of qualified teams that drop out of the RFP process due to a reduced chance of winning the project.</p> <p><b>Gap 9B:</b> By changing the two-step process and not shortlisting teams for smaller, non-complex projects MDOT could increase competition and opportunities for new contractors.</p>	<p><b>Rec 9A:</b> Limit the number of shortlisted proposers, especially when there is a clear break in scoring between teams.</p> <p><b>Rec 9B:</b> Limit the number of shortlisted proposers on all projects, except for those that are non-complex. For non-complex projects consider the goals of the project to determine the shortlisting goal.</p> <p><b>Rec 9C:</b> For smaller, non-complex projects consider using a single-step process to allow more firms to obtain experience.</p>

**BP10—BEST VALUE VERSUS LOW BID**

Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Use of best-value selection drives greater innovation and quality on projects.</p>	<p><b>No Alignment</b></p> <p>MDOT does not currently utilize best-value selection with a scored technical proposal.</p> <p><i>Almost all of the peer agencies interviewed use best-value as their primary selection model. Low-bid is utilized for small, non-complex projects.</i></p>	<p>Although MDOT is not utilizing best-value in the true sense, it does include items such as lane/bridge rentals, A+B contracting and Calendar Days of Construction time for proposers to compete on construction duration.</p> <p>MDOT is promoting innovation through the use of a stipend.</p>	<p><b>Gap 10A:</b> By utilizing best-value selection, MDOT could:</p> <p><b>Gap 10A1:</b> Discover potential innovations that could be further developed during the procurement phase.</p> <p><b>Gap 10A2:</b> Realize improved project quality as a result of including a scored element such as approach to environmental compliance or geometric improvements.</p> <p><b>Gap 10A3:</b> Create opportunities to evaluate the contractor's approach to the project, thereby ensuring they understand the project issues and risks.</p> <p><b>Gap 10A4:</b> Score key players from each team, reducing the risk of not have the most qualified staff during project delivery.</p> <p><b>Gap 10B:</b> The amount of stipend that MDOT offers (0.05 percent to .12 percent) tends to lag industry, which generally sets the low end of stipends around 0.1 percent and the high end around 0.5 percent of construction value.</p>	<p><b>Rec 10A:</b> Consider utilizing best-value to spur greater innovation and quality with projects.</p> <p><b>Rec 10B:</b> Include guidance in the <i>DB Manual</i> to address best-value processes and procedures including developing evaluation criteria.</p> <p><b>Rec 10C:</b> Train staff on the importance of impartial scoring during selection.</p> <p><b>Rec 10D:</b> Evaluate stipend criteria to ensure a proper stipend is assigned to best-value selections.</p>

#### 6.4.4 *Recommendations: Procurement Method Selection and Shortlisting*

The following recommendations and implementation strategies are suggested:

1. Provide guidance in manuals to more effectively determine the number of shortlisted teams based on the complexity of the project. Large best-value or P3 projects should consider shortlisting no more than three top-qualified teams to ensure the best teams continue to compete. Less-complex or smaller projects may consider shortlisting three to five proposers and smaller, simple low-bid projects should consider shortlisting more. MDOT should establish a maximum even for small, simple projects to continue to drive innovation through good competition. Having too few teams can increase project costs, while having too many teams can cause teams to drop out.
2. Use best-value selection to spur greater innovation and quality with projects. Provide guidance in the DB and P3 manuals to address best-value selection, including developing scoring criteria and impartially evaluating submittals.
3. Develop evaluation criteria when using best-value selection that align with project goals defined in the RFP and use adjectival or qualitative scoring.
4. Evaluate the stipend determination criteria to ensure a proper stipend is assigned to best-value selections to promote innovation by contracting teams.
5. Update the training modules that are provided to MDOT staff prior to the procurement phase with information regarding the best-value scoring process and the importance of impartial scoring during selection.

---

### 6.5 ATCs, One-on-One Meetings, Stipends

#### 6.5.1 *Best Practices*

ATCs allow proposers to submit ideas to the owner that are “equal to or better” than the requirements in the original base design. Peer agencies stated that the use of the ATC process has been key to spurring innovation, saving costs and improving quality, especially with larger, complex projects. While the evaluation of ATCs can require significant effort from the agencies, some have adopted strategies to help manage the workload such as restricting ATCs for certain project elements or specifying a maximum number of ATCs a proposer may submit. For example, MDOT generally does not allow ATCs for pavement design.

One-on-one meetings with proposing teams are another best practice to promote open and candid conversations regarding ideas and concepts that a proposing team is considering. To be most effective, the one-on-one meetings must be confidential between the agency staff and proposers. Keeping the conversations confidential

will build trust between the parties, a benefit that often carries over into the implementation phase and contributes to the success of the project. These meetings are also important to the ATC process because concepts are often discussed with the owner to gauge their interest for implementation on the project.

Stipends are another way to encourage industry innovation and are awarded to unsuccessful proposers who are deemed responsive to the RFP requirements. Peer agencies interviewed for this research project provide stipends on the low end of 0.1 percent but generally in the range of 0.15 percent to 0.5 percent of the estimated construction cost. Owners providing a larger stipend feel the proposers provide greater innovation and improved quality to their program, which offsets the higher stipend amount.

### **6.5.2 Observations of MDOT's Program**

MDOT's ATC process is defined in its *ICCG* and encourages proposers to develop and submit their ATCs as part of the procurement process. The program does not generally limit the number of ATCs that can be submitted by proposers but does exclude pavement type and the pavement thickness from the ATC process. MDOT evaluates ATCs based on providing an "equal-or-better" solution without considering cost as a factor. MDOT is working to create more structure around its ATC process and is updating its template documents accordingly. Using best-value selection would help MDOT promote more innovation than using low-bid selection.

MDOT uses confidential one-on-one meetings as part of its procurement process. Items discussed as part of the meetings are not discussed with anyone outside those who attended the meeting unless an issue is raised that requires a change to the RFP documents. Most projects allow two or three one-on-one meetings between MDOT and the proposers. Prior to each meeting, MDOT requires the proposers to provide an agenda and list of questions to make the meetings as effective and efficient as possible and to ensure that the appropriate MDOT technical staff are included in the meeting to provide information.

MDOT provides stipends in the range of 0.05 to 0.12 percent of the estimated construction cost. The stipend that MDOT provides is generally commensurate with low-bid selection but does not always consider the complexity of the project. There are times when a complex project and non-complex project have relatively the same construction value, which results in a similar stipend amount.



### 6.5.3 Gap Analysis: ATCs, One-On-One Meetings and Stipends

*Table 8  
Gap Analysis:  
ATCs, One-on-  
One Meetings and  
Stipends*

BP11—ALTERNATIVE TECHNICAL CONCEPTS (ATC)				
Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Allow proposers to submit ATCs as part of the procurement process to drive innovation, efficiencies and cost benefits.</p> <p>Evaluate the ATC with respect to providing "equal or better" value without consideration of cost.</p>	<p><b>Partial Alignment</b></p> <p>MDOT encourages proposers to submit ATCs as part of the procurement process.</p> <p>MDOT evaluates ATCs based on obtaining "equal or better" value without considering costs.</p> <p>However, low-bid selection does not promote as much innovation through the ATC process as best-value does.</p>	<p>MDOT allows proposers to submit ATCs and, generally, does not limit the number of ATCs that can be submitted.</p> <p>MDOT is working to create more structure around its ATC process and is updating its template documents accordingly.</p>	<p><b>Gap 11A:</b> MDOT generally does not allow ATCs for pavement type or the pavement thickness, similar to the practices of many other owners. By excluding these items from the ATC process, MDOT may be missing out on potential innovations from industry that could provide equal or better solutions.</p> <p><b>Gap 11B:</b> MDOT does not maintain a database of ATCs that have been submitted and approved (or rejected) to help streamline the approval process and provide consistency with the evaluation of ATCs. Additionally, maintaining a database may also help with identifying commonly submitted items that may require a change in template language or to relax design standards or specifications requirements.</p>	<p><b>Rec 11A:</b> Consider opening the ATC process to include pavement type and thickness.</p> <p><b>Rec 11B:</b> Develop and maintain a database of ATCs and their disposition for each project.</p> <p><b>Rec 11C:</b> Use best-value selection to increase contractor innovation through the ATC process.</p> <p><b>Rec 11D:</b> If best-value is used, increase the amount of the stipend to further drive innovation.</p>

## BP12—ONE-ON-ONE MEETINGS

Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
Utilize one-on-one meetings with proposers to facilitate discussions regarding ideas, concepts and concerns.	<p><b>In Alignment</b></p> <p>MDOT utilizes one-on-one meetings as part of its procurement process. Most projects allow two or three one-on-one meetings during the procurement process. All discussions are confidential unless it requires a change to the RFP documents.</p>	MDOT is in alignment with the best practice.	No gaps exist.	<p><b>Rec 12A:</b> Consider providing more time between one-on-one meetings to provide proposers time to evaluate responses to questions or to further develop ATCs based on MDOT comments at the previous one-on-one meeting.</p> <p><b>Rec 12B:</b> Allow an additional one-on-one meeting after the last addendum is provided to proposers to clarify information in the addendum.</p>

**BP13—STIPENDS**

Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Provide a stipend to unsuccessful proposers to encourage innovation and when the response to the RFP requires a significant effort.</p>	<p><b>Partial Alignment</b></p> <p>MDOT offers a stipend in the range of 0.05 percent to 0.12 percent of the estimated construction cost.</p> <p><i>Peer agencies interviewed provide stipends on the low end of 0.1 percent but generally in the range of 0.15 percent to 0.5 percent of the estimated construction cost using best-value selection. Departments providing a larger stipend feel the proposers provide greater innovation and improved quality to their program</i></p>	<p>MDOT provides a stipend that is commensurate with a low-bid selection process.</p> <p>The stipend does promote some ATCs.</p>	<p><b>Gap 13A:</b> The lack of a sufficient stipend reduces interest and level of effort from potential proposers. Additionally, MDOT may not receive quality proposals or obtain the expected innovations that comes with innovative contracting methods, which may lead MDOT to undervalue innovative contracting.</p>	<p><b>Rec 13A:</b> Evaluate the existing guidance for determining the appropriate stipend to ensure it takes into account the complexity of the project. Consider creating a framework for stipend payment calculation (what MDOT will offer for a responsive bid) and valuation (the estimated value of a bidder's proposal for MDOT's project and future use).</p> <p><b>Rec 13B:</b> Evaluate the value paid versus the value derived by MDOT from stipend payment. Determine how MDOT may optimize current ATC and technical proposal requirements to achieve more value.</p> <p><b>Rec 13C:</b> Develop guidance to determine the stipend for a best-value selection which requires greater proposal effort since more technical detail is often required.</p> <p><b>Rec 13D:</b> Consider following, at a minimum, FHWA guidance of covering one-third to one-half of the estimated cost of proposal development (See VDOT IIM-APD 5_8/1/19).</p>

### 6.5.4 Recommendations: ATCs, One-On-One Meetings and Stipends

The following recommendations and implementation strategies are suggested:

1. Open the ATC process to the pavement design component. Provide a minimum pavement structure requirement and include performance requirements in the contract documents and allow the proposers to develop the pavement structures for the project. This can lead to greater innovation by industry and potential cost-savings for MDOT.
2. Develop a database to track ATC responses for each project that can be sorted by topic (i.e., geotechnical, geometry, maintenance of traffic or materials) to allow project managers to evaluate previous responses and the applicability to their project to assist with maintaining consistency within the program.
3. Evaluate the stipend determination criteria to ensure a proper stipend is assigned to best-value selections to promote innovation by contracting teams.
4. Space the one-on-one meetings to allow proposers additional time to evaluate MDOT responses to inquiries/clarifications and to develop initial ATCs. Additionally, allow the opportunity for an additional one-on-one meeting after the last addendum is posted to answer proposers' questions specifically related to the last addendum. No other questions or requests for clarification should be allowed if not in reference to the final addendum.
5. Review the process for establishing stipends for DB projects and consider the complexity of the project, opportunities for innovation and the amount of design required to properly estimate the project. Move away from establishing the stipend solely based on construction cost.
6. Establish metrics that allow MDOT to quantify the cost savings of accepted ATCs, the perceived or estimated cost savings from mitigation of risk (from progressing design that was paid for with the stipend) and overall cost reduction from time saved during execution (based on the amount of design performed during the RFP process).
7. Review the process for establishing stipends for DB and P3 projects and incorporate best-value selection. Review Federal Highway Administration (FHWA) policies for innovative contracting to determine if additional federal funding can be secured to offset the increased stipend amount.

---

## 6.6 Risk Identification and Monitoring

### 6.6.1 *Best Practices*

Implementing a standardized risk management process promotes the early identification of project risks to evaluate how they can be mitigated, and which party (owner or contractor) is best able to manage them during the life of the project. A comprehensive, defined program will allow the owner and the contractor to better manage impacts to the project's cost and schedule through active management. The defined risks are tracked in a format that allows for regular reviews and updates/refinements as the project progresses. Maintaining the risk register through project closeout allows owners to evaluate the mitigation strategies for effectiveness and supports the continuous improvement of the program.

Peer agencies interviewed for this research project indicated they have a formal risk management process that is used on every project and conduct two or more cycles of risk management analysis during the project life. Lessons learned are captured and reviewed at project closeout to measure effectiveness.

### 6.6.2 *Observations of MDOT's Program*

While MDOT does not have a formalized, documented risk management process, it does conduct a high-level risk assessment as part of the project identification and selection process. MDOT does not consistently develop a risk register for projects or regularly update risk during the life of the project. For larger, more complex projects MDOT conducts risk workshops to document and manage risks.

Based on the risks identified, MDOT progresses preliminary design to a level sufficient to better understand and/or mitigate risks and assigns risk to the party most capable of managing it during design and construction without affecting the contractor's ability to innovate.

Table 9  
Gap Analysis: Risk  
Identification and  
Monitoring

### 6.6.3 Gap Analysis: Risk Identification and Monitoring

BP14—RISK IDENTIFICATION				
Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>A standardized risk management process is used to identify and assess project risks, allocate these to the party best able to manage risk during design and construction, and actively monitor identified risks throughout the life of the project.</p>	<p><b>Partial Alignment</b></p> <p>While MDOT does not have a formalized risk management process, it does conduct an informal, high-level risk assessment as part of the project identification and selection process. Additionally, for larger, more complex projects MDOT conducts a risk workshop to document and manage risks.</p> <p><i>Peer agencies interviewed indicated they used a formal risk management process. Multiple agencies stated they have two or more cycles of risk management analysis during the project life.</i></p> <p><i>Several agencies indicated they use CM/GC and DB as platforms to manage risk.</i></p>	<p>MDOT evaluates risk as part of the project identification and selection process.</p> <p>MDOT progresses design to a risk-identification level and assigns the design to the party most capable of managing risks during design and construction without impacting the contractor's ability to bring innovation.</p>	<p><b>Gap 14A:</b> A formal process would make it easier to properly track risks through the life of the project. Tracking risks throughout their life allows:</p> <p><b>Gap 14A1:</b> A better understanding of actual final costs associated with the risk.</p> <p><b>Gap 14A2:</b> The ability to better predict the probability of risks occurring.</p> <p><b>Gap 14A3:</b> The release of project contingency to the program earlier than at the end of the project.</p> <p><b>Gap 14B:</b> Tracking mitigation measures could help determine the effectiveness of the strategy.</p>	<p><b>Rec 14A:</b> Develop a formalized risk management process that can be applied to each project and consider documenting in the guidance documents.</p> <p><b>Rec 14B:</b> At project closeout evaluate the effectiveness of the mitigation strategies and document for future information. Also, evaluate the probabilities originally considered for each risk to determine if there can be updates to evaluating the risk in the future, or contractual language to better describe the risk.</p>

**BP15—RISK MONITORING**

Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Use a project risk register to monitor and manage risks throughout the life of the project.</p>	<p><b>Partial Alignment</b></p> <p>MDOT has, but does not consistently develop, a risk register for projects or regularly update during the life of the project.</p> <p><i>Peer agencies interviewed indicated that risk management was a big concern, however few had fully defined processes for monitoring risk through the project life.</i></p>	<p>MDOT evaluates risk as part of the project identification and selection process.</p> <p>MDOT progresses design to a risk-identification level to identify risks and assigns the design to the party most capable of managing risks during design and construction.</p>	<p><b>Gap 15A:</b> Consistently developing or updating a risk register can result in opportunities to:</p> <p><b>Gap 15A1:</b> Build a collaborative relationship with the contractor by regularly discussing risk response strategies and their effectiveness for the project.</p> <p><b>Gap 15A2:</b> Document risks and effective strategies to help make informed decisions for managing similar risks on future projects.</p>	<p><b>Rec 15A:</b> Develop a method for monitoring risk register entries for each project that is regularly updated during the life of the project.</p> <p><b>Rec 15B:</b> Document effective strategies for mitigating risk to consider for use on future projects.</p>

**6.6.4 Recommendations: Risk Identification and Monitoring**

The following recommendations and implementation strategies are suggested:

1. Formalize a risk management process and provide guidance in the manuals for the process to perform a risk analysis and then use the results to assist with project development (e.g., level of design, encouragement of ATCs), procurement and administration.
2. Include an evaluation of the risk register as part of project closeout to evaluate the effectiveness of the mitigation strategies, identify risks that may have arisen during design and construction and document how they were handled and evaluate why previously identified risks may not have materialized.
3. Develop a risk register for each project and use it throughout the life of the project to regularly monitor, manage, add and close out risks. Require the risk register to be reviewed and updated at defined intervals through procurement and administration.
4. Create a database that includes the strategies that were effective in mitigating a particular risk as a reference for future projects.

---

## 6.7 Risk Management: Geotechnical and Utilities

### 6.7.1 *Best Practices*

Owners have developed different strategies to manage geotechnical and utility risks based on statutes, project-specific conditions and/or regulatory authority. States that participated in the peer exchange described various alternatives for handling risk that they have used successfully, such as including shared risk items for work that is difficult to quantify, transferring utility coordination and relocation efforts to the contractor and allowing contractors to request additional boring-related information during procurement.

### 6.7.2 *Observations of MDOT's Program*

MDOT provides geotechnical data at locations for bridge foundations, culverts to be replaced, sign structures and poor soils as part of its contract documents. Contractors can rely on MDOT-provided geotechnical information provided for the project. MDOT also provides historical geotechnical data from previous projects as RID.

MDOT generally leads the utility coordination but encourages some level of coordination between the contractor and the utility owner. MDOT typically performs enough utility coordination during the preliminary design phase to identify potential conflicts and develop mitigation strategies for affected owners. MDOT provides the locations of utilities as indicated by the owners with the RFP and a comprehensive list of contacts for the utilities within the project limits. Utility owners with specific requirements related to their facilities are asked to provide that information for inclusion in the contract documents.



### 6.7.3 Gap Analysis: Risk Management: Geotechnical and Utilities

*Table 10  
Gap Analysis: Risk  
Management:  
Geotechnical and  
Utilities*

BP16—RISK MANAGEMENT - GEOTECHNICAL				
Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Provide geotechnical data that is commensurate with the complexity of the project. This information should be reliable for the contractor to minimize risk.</p>	<p><b>In Alignment</b></p> <p>MDOT provides geotechnical data at locations for bridge foundations, culverts to be replaced, sign structures and poor soils as part of the contract documents. MDOT also provides historical geotechnical data from previous projects as RID.</p> <p><i>Peer agencies interviewed used various approaches for geotechnical risk management. Most use a thorough geotechnical program with data included in the RFP. All but one agency supplies 50 percent or more of the required borings.</i></p> <p><i>Techniques such as scope validation are also used to reduce geotechnical risk.</i></p>	<p>MDOT evaluates geotechnical needs for each project and obtains data to help minimize contractor risks.</p> <p>MDOT includes shared risk items for poor soils.</p> <p>MDOT allows the contractor to rely on the geotechnical data obtained specifically for the project.</p>	<p>No gaps exist.</p>	<p><b>Rec 16A:</b> Include a more specific description of what conditions MDOT would consider to be a "differing site condition" change order and/or better define thresholds for which a change order would be considered in Book 1, Section 13.</p> <p><b>Rec 16B:</b> If requested by proposers, obtain more geotechnical data (either by MDOT or contractor) to reduce risks for the contractors.</p>

**BP17—RISK MANAGEMENT-UTILITIES**

Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
Utility coordination occurs directly between the contractor and the utility owner.	<p><b>Partial Alignment</b></p> <p>MDOT generally leads the utility coordination but does encourage some level of coordination between the contractor and the utility owner.</p>	<p>MDOT generally performs enough utility coordination during the preliminary design phase to identify potential conflicts and develop mitigation strategies for impacted owners.</p> <p>MDOT provides the locations of utilities as indicated by the owners with the RFP.</p> <p>MDOT provides a comprehensive list of contacts for the utilities within the project limits.</p>	<p><b>Gap 17A:</b> By leading the coordination between contractors and utility owners, these parties rely on MDOT to coordinate and assist with solving issues. Changing this practice could reduce delay claims by the contractor.</p> <p><b>Gap 17B:</b> Obtaining agreements with utility owners to commit to specific review timeframes and/or relocation timeframes could reduce the risk placed upon the contractor and could result in either lower bid prices or fewer delay claims.</p>	<p><b>Rec 17A:</b> Consider obtaining agreements with utility owners to commit to specific review timeframes and/or relocation timeframes to include in the contract documents or tie to a performance specification/ non-conformance reporting .</p> <p><b>Rec 17B:</b> Provide more specific requirement with respect to the expectations of the contractor to coordinate with utility owners. Consider incentivizing interaction between them by including a utility reserve component to the contract.</p>

#### 6.7.4 Recommendations: Risk Management: Geotechnical and Utilities

The following recommendations and implementation strategies are suggested:

1. Include a more specific description of what conditions MDOT would consider to be a "differing site condition" change order and/or better define thresholds for which a change order would be considered in the contract documents. Review language from other states regarding the use of available geotechnical information and the requirements to trigger a differing site condition.
2. If requested by proposers, obtain more geotechnical data (either by MDOT or the contractor) to reduce risks for the contractors. Define a process in the manuals that would allow proposers to request additional geotechnical information. Identify the options for data gathering (i.e., who owns and has access to the information when the proposer secures it versus when MDOT secures it).

3. Obtain agreements with utility owners to commit to specific review timeframes and/or relocation timeframes to include in the contract documents. Work with utility owners to develop specific review timeframes to include in the contract documents to mitigate schedule risks to proposers. Additionally, if facilities are not moved prior to contract award, include a timeframe for relocation in the contract documents.
4. Push the utility coordination process to the contractors during design and construction. Provide more specific requirements with respect to the expectations of the contractor to coordinate with utility owners. Consider incentivizing interaction between the parties by including a utility reserve component to the contract or tie to performance specifications/non-conformance reporting.

---

## 6.8 Design and Construction Oversight

### 6.8.1 *Best Practices*

Design and construction oversight processes are well-defined, standardized and consistently applied from project to project. The roles and responsibilities of the owner's staff and contractor's staff are defined and understood along with their authority to stop work on the project. Design and construction oversight can be provided by qualified personnel of the owner, an owner-hired consultant or an independent quality firm hired by the contractor. The contractor provides quality control during design and construction.

Nearly 80 percent of peer agencies interviewed for this research project indicated that those performing design oversight reviews are owners, owner-consultants, or a third party hired by the owner. For construction, peer agencies indicated various processes were used, with some owners providing the oversight and others pushing the responsibility to the contractor's team. In cases where the contractor is responsible, the owner uses an Independent Quality Firm (IQF) to audit the contractor's records to ensure they are meeting contractual requirements and following the defined quality program.

### 6.8.2 *Observations of MDOT's Program*

MDOT's current manuals do not address design oversight except for a brief discussion on the use of a GEC to provide design services during construction. The GEC manages all of the design submittals and each consultant uses its own project website and forms to provide review comments to contractor teams. The construction oversight process is similar to the process used for DBB projects.

MDOT primarily uses MDOT staff to perform design oversight, supplemented by the GEC. MDOT works with the GEC to ensure all design submittals are reviewed and recommendations are made to the MDOT project manager regarding acceptance or rejection of the submittal. Generally, all submittals are reviewed within the timelines that are identified in the contract documents

**Table 11**  
Gap Analysis:  
Design and  
Construction  
Oversight

MDOT uses experienced, in-house, owner-hired consultants and contractor-hired construction engineers to provide oversight on its projects.

### 6.8.3 Gap Analysis: Design and Construction Oversight

BP18—DESIGN OVERSIGHT				
Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Design oversight processes are documented, standardized and consistently applied from project to project.</p> <p>Design oversight is provided by either qualified personnel of the owner, an owner-hired consultant, or IQF hired by the contractor.</p> <p>Quality Control for design is provided by the contractor.</p>	<p><b>Partial Alignment</b></p> <p>MDOT's current manuals do not address design oversight except for a brief discussion on the use of a GEC to provide Design Services During Construction (DSDC) services. Each GEC utilizes its own project website and forms to provide review comments to contractor teams.</p> <p>MDOT primarily uses MDOT staff to perform design oversight and is supplemented by the GEC.</p> <p><i>Nearly 80 percent of peer agencies interviewed indicated that those performing design oversight reviews are owners, owner consultants or a third party hired by the owner. Twenty percent place the responsibility on the contractor or an independent party hired by the contractor.</i></p>	<p>MDOT works with the GEC to ensure all design submittals are reviewed and recommendations are made to the MDOT PM regarding acceptance or rejection of the submittal. Generally, all submittals are reviewed within contractual timelines.</p>	<p><b>Gap 18A:</b> MDOT is assisted by multiple GECs, has a decentralized nature and does not have a standardized, documented process. Changing this practice could leads to:</p> <p><b>Gap 18A1:</b> Consistency in design reviews across internal project teams.</p> <p><b>Gap 18A2:</b> Fewer misunderstandings between MDOT and the contractor regarding process.</p> <p><b>Gap 18A3:</b> Fewer delays and inefficiencies in the design review process.</p>	<p><b>Rec 18A:</b> Include guidance for the design review process in the <i>DB Manual</i>.</p> <p><b>Rec 18B:</b> Take greater advantage of the use of over-the-shoulder design reviews to help expedite design submittals.</p> <p><b>Rec 18C:</b> Shift the design oversight responsibilities to the DB or P3 teams with MDOT acting in an auditing role.</p> <p><b>Rec 18D:</b> Standardize the process by which design review comments are provided to the contractor and are closed out including providing forms, etc.</p> <p><b>Rec 18E:</b> Gather lessons learned to identify areas that could be improved with the process.</p> <p><b>Rec 18F:</b> Co-location of the DB/P3 team with MDOT's administration and oversight staff promotes coordination, collaboration and communication that can help expedite design reviews.</p>

**BP19—CONSTRUCTION OVERSIGHT**

Best Practice	MDOT Alignment with Best Practice	What is MDOT Doing Well?	What are the gaps with MDOT's current practice?	Recommendations
<p>Construction oversight processes are documented, standardized and consistently applied from project to project.</p> <p>Construction oversight is provided by either qualified personnel of the Owner, an owner-hired consultant, or by an IQF hired by the contractor.</p> <p>Quality control for construction is provided by the contractor.</p>	<p><b>Partial Alignment</b></p> <p>MDOT's current manuals indicate the construction oversight process is similar to a design-bid-build project.</p> <p><i>Peer agencies interviewed utilized various processes, with some owners providing the oversight and others pushing that responsibility to the contractor's team. In cases where the contractor is responsible, the owner uses an IQF to audit the contractor's records to ensure they are meeting contractual requirements.</i></p>	<p>MDOT utilizes experienced, in-house, owner-hired consultant and contractor-hired construction engineers on their projects.</p>	<p><b>Gap 19A:</b> Guidance regarding effective practices could lead to:</p> <p><b>Gap 19A1:</b> Consistency in oversight across project teams.</p> <p><b>Gap 19A2:</b> Clarity between MDOT and the contractor regarding process.</p> <p><b>Gap 19A3:</b> Efficient allocation of resources.</p> <p><b>Gap 19B:</b> Formalized training for construction staff can lead to fewer risks being shifted back to the owner by staff not completely understanding their role on the project.</p>	<p><b>Rec 19A:</b> Include guidance for the construction oversight process in the <i>DB Manual</i>.</p> <p><b>Rec 19B:</b> Include construction quality requirements in Book 2, Section 2 or develop a construction quality management template that defines what is acceptable to MDOT.</p> <p><b>Rec 19C:</b> Develop a more formal training program for construction staff to address the oversight function.</p> <p><b>Rec 19D:</b> Gather lessons learned to identify areas that could be improved with the process.</p>

**6.8.4 Recommendations: Design and Construction Oversight**

The following recommendations and implementation strategies are suggested:

1. Standardize the process by which design review comments are provided to the contractor and are closed out. Update the guidance documents to include the design review process and flowcharts or other means to clearly describe the process and expectations. Use Bluebeam or similar software to include details related to performing reviews electronically.
2. Shift the design oversight responsibilities to DB or P3 teams with MDOT acting in an auditing role. Require DB and P3 teams to provide a detailed quality management plan for MDOT to use to audit its design quality and review process.

3. Co-locate MDOT and contractor staff on large, complex projects. Co-location of the DB/P3 team with MDOT's administration and oversight staff promotes coordination, collaboration and communication that can help expedite design reviews.
4. Include guidance for the construction oversight process in the guidance manuals. Provide additional guidance describing the roles and responsibilities of the construction oversight staff for the various delivery methods. Include descriptions regarding oversight items that deviate from a standard DBB project such as describing the relationship between pay items, schedule of values and milestones.
5. Include requirements to develop a construction quality manual similar to the Design Quality Manual requirements in the contract documents or develop a construction quality management template that defines what is acceptable to MDOT and include it as an exhibit. Upon MDOT's approval, use the manual or template as the basis for auditing construction activities.
6. Develop a more formal training program for construction staff to address the oversight function. Expand the existing training modules to include more discussion of roles and responsibilities during construction as well as the differences in processes that deviate from DBB projects. Provide real-life examples from past projects to reinforce the concepts.

Innovative Contracting  
Best Practices Research

# Chapter Seven

## Implementation Plan



## 7.0 Implementation Plan

To successfully implement the recommendations resulting from the research, a carefully planned, phased approach that considers immediate and future needs should be developed.

Each recommendation above is identified below and prioritized based on the following considerations:

- ◆ The time frames in which the recommendation should be adopted (i.e., updates to the guidance documents should occur before rolling out training on the use of the new documents).
- ◆ The difficulty associated with implementation (i.e., changing language in a document is easier than making policy changes).
- ◆ The benefits resulting from the recommendation.

MDOT will need to evaluate implementation costs and determine which items may require additional funding and which can be implemented with existing funding. Other challenges could include gaining the acceptance of internal MDOT staff or industry partners and timing. There may be instances that depend upon a separate recommendation to be implemented prior to its incorporation into the program. The recommended improvements to the program must be weighed against the cost and difficulty of implementation.

---

### 7.1 Recommendations and Strategies to Implement:

Table 12 lists recommendations and strategies to implement. The far-right column includes one or more implementation benefits, coded as follows:

- 1** = Reduce errors
- 2** = Improve program consistency
- 3** = Increase and retain staff competency
- 4** = Save project cost
- 5** = Reduce change orders/cost growth
- 6** = Increase opportunities for innovation
- 7** = Improve quality
- 8** = Improve communication and collaboration
- 9** = Increase competition



**Table 12**  
**Recommendations and Strategies to Implement**

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency; **4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation; **7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

<b>1. PROGRAMMATIC DOCUMENTS AND GUIDANCE MANUALS</b>				
<b>Recommendation</b>	<b>Strategy to Implement</b>	<b>Implementation Timing</b>	<b>Implementation Difficulty</b>	<b>Implementation Benefits</b>
<b>Rec 1A:</b> Continue to update the existing innovative contracting guidance documents and manuals.	Update the <i>ICCG, DB Manual</i> and <i>CM/GC Manual</i> to reflect current practices, policies and procedures. Additional improvements resulting from the research project will be incorporated as required.  Assign ongoing maintenance of the documents to ICU staff or the GEC to ensure the documents continue to reflect the current program as policies and procedures are refined.	3 - 6 months	Low	1, 2, 3, 4, 7, 8
<b>Rec 1B:</b> Develop training to roll out the updates to the revised guidance documents and manuals to in-house staff and industry partners.	Develop a deployment plan to educate MDOT staff and industry partners on the revised layouts and updates to the policies, practices and procedures outlined in the documents. Host a series of workshop sessions facilitated through MITA and ACEC to reinforce the goals of the innovative contracting program and detail how the updated programmatic documents tie into those goals.	6 - 9 months	Low	2, 3, 8
<b>Rec 1C:</b> Refine existing procurement template documents.	See Rec 2A below.	12 - 24 months	Moderate	1, 2, 4, 5, 7
<b>Rec 1D:</b> Develop a template document for design and construction quality management plans.	Develop and include design and construction quality management plan templates that can be included as exhibits in the contract documents outlining the minimum requirements for quality assurance and quality control. Upon MDOT approval, use the documents as the basis for auditing during design and construction.	6 - 18 months	Moderate	7, 8
<b>Rec 1E:</b> Work with industry to continually improve the manuals, templates, processes, and procedures of the program.	Establish a working group with industry partners from organizations like MITA and ACEC that meet on a regular basis to share experiences with MDOT's program, including lessons learned. Continuous improvement feedback from industry is vital to MDOT's long-term success. This collaborative relationship can be used to build trust within the industry as MDOT continues to refine its innovative contracting program.	12 - 18 months	Moderate	8

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency; **4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation; **7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

2. STANDARDIZED TEMPLATES AND FORMS				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 2A:</b> Refine procurement templates to remove any carryover requirements from previous projects and only contain standard boilerplate language that does not change from project to project.	<p>Assign ICU staff or use the GEC to scrub the existing templates or create new template documents that only contain boilerplate language that rarely changes from project to project. Include a series of question prompts in each document to aid the project managers/GEC in completing the documents with the project specific requirements.</p> <p>Store these template documents on ProjectWise to ensure the PMs and GEC are always using the most up-to-date templates.</p>	18 - 24 months	Moderate	1, 2, 4, 5, 7
<b>Rec 2B:</b> Work with industry to continually improve the manuals, templates, processes and procedures of the program.	See Rec 1E above.	12 - 18 months	Moderate	2, 8
<b>Rec 2C:</b> Continue to refine the training programs for staff on the use and implementation of the standardized templates and forms.	Introduce new template documents internally through training as described for Rec 6A (below). Use training sessions through industry functions hosted by ACEC and MITA to broadcast the revisions to a large portion of industry. See Rec 1B above.	6 - 12 months	Moderate	1, 2, 3, 8
<b>Rec 2D:</b> Track all template changes, proposer questions and answers, ATC responses, issues and risks, change orders and claims in a lessons-learned database.	<p>Develop a database(s) to track the various items allowing MDOT to provide consistency between projects and achieve continuous improvement of the program. Use ICU staff or the GEC to periodically evaluate trends and determine if refinements to the program policies or documents are required.</p> <p>Track questions submitted by proposers and MDOT's responses. Structure the database to be sorted by topic (i.e., geotechnical, geometry, maintenance of traffic or materials) to allow project managers to evaluate previous responses and the applicability to their project.</p> <p>Track ATC responses for each project in a database that can be sorted by topic (i.e., geotechnical, geometry, maintenance of traffic or materials) allowing project managers to evaluate previous responses and the applicability to their project.</p> <p>Track change orders and claims to determine if there is a pattern that can be addressed with changes to template language. At a minimum, include a description of the issue with a PM prompt in the template document so others can benefit from lessons learned.</p>	6 - 12 months	Low	1, 2, 5, 7

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency;  
**4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation;  
**7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

3. PERFORMANCE METRICS				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 3A:</b> Develop a more standardized system to track key metrics of projects to evaluate the effectiveness and value of the various delivery methods.	Determine the goals of the program and identify the criteria to be used to measure the effectiveness of the delivery models and program. Align the criteria with the program goals and evaluate them on a regular basis to ensure the longevity and continuous improvement of the program. Develop a plan that indicates which metrics will be tracked and how and when those metrics will be collected and evaluated.	6 - 12 months	Low	2, 8
<b>Rec 3B:</b> Create a database to track metrics and include other items such as number of ATCs submitted/accepted, cost growth, number of addenda for RFQ/RFP and change orders.	Combine this effort with Rec 2D to streamline information-gathering efforts when evaluating performance.	6 - 12 months	Low	2, 8
<b>Rec 3C:</b> Standardize information-gathering protocol, presentation format (for various audiences) and reporting frequency.	Develop a dashboard to help aggregate data and extract information required for reporting to various stakeholders. Incorporate program-level metrics such as capital spending, performance against schedule, performance against budget, and other measures to provide a snapshot of performance of the program in real time.	6 - 12 months	Low	2, 8

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency; **4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation; **7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

4. LESSONS LEARNED				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 4A:</b> Formalize a process and format for capturing lessons learned at the end of procurement and at project closeout.	Include a debrief or require a lessons-learned memo as part of the project closeout to capture information from team members that can be used to improve the program. Capture these data near the end of the project or soon after closeout while the experiences are still fresh in the minds of staff.	6 - 12 months	Moderate	2, 4, 7, 8
<b>Rec 4B:</b> Regularly update program documents, including guides, manuals and templates to reflect changes in processes, procedures or language.	Track lessons learned in conjunction with Rec 2D.	6 - 12 months	Moderate	1, 2, 5, 7
<b>Rec 4C:</b> Track each project against specific goals stated in the RFP to determine the effectiveness of the delivery method.	Include a debrief to evaluate the project against the RFP stated goals (not to be confused with metrics) at the end of procurement and at project closeout to capture information from team members and use this to improve the program. Capture this information near the end of each phase while experiences are still fresh in the minds of staff (e.g., evaluation team, administration team).	6 - 12 months	Low	2, 7
<b>Rec 4D:</b> Expand training to include a peer exchange of lessons learned and best practices between experienced ICU PMs and potential PMs within Regions/ TSCs.	See Rec 5A below.	12 - 18 months	Low	3, 7, 8

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency;  
**4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation;  
**7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

5. ORGANIZATIONAL STRUCTURE				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 5A:</b> Develop and conduct a training program on a regular basis to familiarize staff throughout the organization with innovative contracting methods and the differences from DBB. Continue to highlight program updates at industry conferences.	<p>Develop a more robust training program that can be provided to a wider audience within MDOT on a regular basis. Include an overview of the various delivery types to broaden the understanding within the department, which could lead to expanded use across the state and more successful results with projects.</p> <p>Conduct peer exchanges between experienced innovative contracting PMs and potential PMs within the Regions/TSCs to share lessons learned and best practices. (These exchanges can include “lunch-and-learn” type trainings or be included as part of the existing project specific training.)</p> <p>Continue to coordinate with ACEC and MITA to provide program updates at industry conferences.</p>	12 - 18 months	Low	2, 3, 7, 8
<b>Rec 5B:</b> Identify clear roles and responsibilities for all parties, lines of authority and decision timelines in program manuals to improve consistency.	Include information in the guidance manuals that details the roles and responsibilities of project team members, including a generic organizational chart that depicts the reporting structure on a typical project. Provide decision authority descriptions by position and timelines for decision-making.	3 - 6 months	Low	2, 3, 7, 8

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency; **4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation; **7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

6. TRAINING AND DEVELOPMENT				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 6A:</b> Develop a more formal statewide training program that provides the basic information about the various delivery methods and more advanced sessions for project development, procurement, and contract administration.	See Rec 5A above.  Evaluate lessons-learned from past projects to determine if there are areas where training should be enhanced to provide more clarity for roles, responsibilities, processes or procedures during the project-specific trainings.	6 - 12 months	Moderate	2, 3, 8
<b>Rec 6B:</b> Establish a working group with local professional and industry organizations (MITA and ACEC) that meets on a regular basis to discuss trends in innovative contracting, lessons learned and best practices. Partner with industry experts on training sessions.	Work with MITA and ACEC to establish a working group(s) that meets regularly with MDOT to discuss innovative contracting issues and concerns. Use these meetings to build trust and respect and encourage open dialogue regarding the program.  Address concerns, as needed, to improve the program and the experience of the contracting industry.	12 - 18 months	Moderate	8
<b>Rec 6C:</b> Consider outside resources to provide training.	Sponsor training from organizations or firms that provide formal innovative contracting training (e.g., DBIA, CURT or Lean Construction Institute).	18 - 24 months	Moderate	3
<b>Rec 6D:</b> Establish a career-development process to attract and retain staff with the experience to deliver innovative contracting projects.	Find training opportunities for ICU staff to grow their expertise with innovative contracting methods through industry events, conferences or other means to retain and grow institutional knowledge and understand trends within the industry.	18 - 24 months	Moderate	3
<b>Rec 6E:</b> Establish a working group with peer agencies that meet on a regular basis to discuss trends with innovative contracting within their states, lessons learned and best practices.	Develop a working group with peer agencies with similar programs to share experiences and evaluate best practices being used by other owners.	12 - 18 months	Low	3, 6, 8

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency;  
**4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation;  
**7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

7. PROJECT IDENTIFICATION AND SELECTION				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 7A:</b> Consider expanding the content of the project selection form to include additional criteria that align with the program goals and mission statement.	Evaluate the innovative contracting project selection application to ensure it reflects the goals and mission of the program as stated in the <i>ICCG</i> . Update with criteria or metrics that represent the program as part of the selection process to identify candidate projects.	6 - 12 months	Low	2, 8
<b>Rec 7B:</b> Include information in the guidance documents and/or manuals that discusses the project delivery selection process.	<p>Update the <i>ICCG</i> to discuss or show the delivery-selection process. Describe the process, roles and responsibilities for those associated with the process, required approvals and expected timeframes. Define characteristics of projects that are well-suited for different delivery types such as:</p> <ul style="list-style-type: none"> <li>◆ Large risk that is hard to control – CM/GC</li> <li>◆ Scope that is not well-defined – CM/GC</li> <li>◆ Schedule constraints – DB</li> <li>◆ Desired innovation – DB</li> <li>◆ Simple direct projects DBB</li> </ul> <p>Review and update the MDOT Project Scoping Manual to include an evaluation of the use of innovative contracting methods during the Call for Projects or other early stages of project development.</p>	3 - 6 months	Low	2, 8
<b>Rec 7C:</b> Review the project-goals defined in the RFP to ensure they are project specific and to ensure they align with the goals and mission statement of the innovative contracting program.	Include project goals as part of the evaluation criteria for each project to ensure that projects are consistent with the goals and mission of the innovative contracting program.	12 - 18 months	Low	2

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency; **4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation; **7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

8. PROCUREMENT METHOD SELECTION				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 8A:</b> Review goals on a project-by-project basis to ensure they align with the goals and mission statement of the innovative contracting program and consider project risks.	Include project goals as part of the evaluation criteria, allowing each project to be awarded to the team that best addresses project goals. Develop processes to evaluate scoring breakdown of goals and to break goals into scored subgoals.	12 - 18 months	Low	2
<b>Rec 8B:</b> Use a two-step, best-value selection on all but small, simple projects to drive innovation, quality and partnering.	Introduce best-value selection to spur greater innovation and quality with projects. Provide guidance in the <i>DB</i> and <i>P3</i> manuals to address best-value selection, including developing scoring criteria and impartially evaluating submittals. Evaluate MDOT's stipend criteria to accommodate best-value selection.  Update training modules to include a discussion of best-value selection, determination of scored elements, development of scoring criteria, and how to objectively evaluate technical proposals.  Develop template scoring documents to be used by the selection panel.	18 - 24 months	High	4, 5, 6, 7, 8, 9
<b>Rec 8C:</b> When using best-value selection, develop evaluation criteria that align with project goals defined in the RFP and use adjectival or qualitative scoring.	Update training modules to include a discussion of best-value selection, determining scored elements, developing scoring criteria and objectively evaluating technical proposals.	18 - 24 months	Moderate	6, 7



**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency;  
**4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation;  
**7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

9. SHORTLISTING				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 9A:</b> Limit the number of shortlisted proposers, especially when there is a clear break in scoring between teams.	Provide guidance in the <i>DB Manual</i> to determine the number of shortlisted teams. Base the shortlisting goal on the complexity of the project. Consider shortlisting the three top qualified teams on large best-value or P3 projects to ensure the best teams continue to compete. Consider three to four teams for less complex or smaller complex projects; consider shortlisting more on smaller, simple, low-bid projects. Establish a maximum number of bids even for small, simple projects to drive innovation with good competition.	12 - 18 months	Low	2, 9
<b>Rec 9B:</b> Limit the number of shortlisted proposers on all projects except for those that are non-complex. For non-complex projects consider the goals of the project to determine the shortlisting goal.	See Rec 9A above.	12 - 18 months	Moderate	2, 7, 9
<b>Rec 9C:</b> For smaller, non-complex projects consider using a single-step process to allow more firms to obtain experience.	See Rec 9A above.	18 - 24 months	Moderate	6, 7, 9

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency; **4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation; **7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

## 10. BEST-VALUE VS LOW-BID

Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 10A:</b> Consider using best-value to spur greater innovation and quality with projects.	See Rec 8B above.	18 - 24 months	High	4, 5, 6, 7, 8, 9
<b>Rec 10B:</b> Include guidance in the <i>DB Manual</i> to address best-value processes and procedures including developing evaluation criteria.	See Rec 8B above.	3 - 6 months	Low	2,3
<b>Rec 10C:</b> Train staff on the importance of impartial scoring during selection.	See Rec 8B above.	18 - 24 months	Moderate	2,3
<b>Rec 10D:</b> Evaluate stipend criteria to ensure a proper stipend is assigned to best-value selections	See Rec 8B above and 13A below.	12 - 18 months	Moderate	9

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency;  
**4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation;  
**7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

11. ALTERNATIVE TECHNICAL CONCEPTS				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 11A:</b> Consider opening the ATC process to include pavement type and thickness.	Provide performance requirements in the contract documents and allow the proposers to develop the pavement structures for the project.	12 - 18 months	Moderate	4, 6
<b>Rec 11B:</b> Develop and maintain a database of ATCs and their disposition for each project.	See Rec 2D above.	6 - 12 months	Moderate	2, 3, 6, 8
<b>Rec 11C:</b> Use best-value selection to increase contractor innovation through the ATC process.	See Rec 8B above.	18 - 24 months	High	4, 5, 6, 7, 8, 9
<b>Rec 11D:</b> If best-value is used, increase the amount of the stipend to further drive innovation	See Recs 8B above and 13A below.	12 - 18 months	Moderate	9

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency; **4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation; **7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

12. ONE-ON-ONE MEETINGS				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 12A:</b> Consider providing more time between one-on-one meetings to provide proposers time to evaluate responses to questions or to further develop ATCs based on MDOT comments at the previous one-on-one meeting.	When determining procurement schedules, space the one-on-one meetings to allow proposers additional time to evaluate MDOT responses to inquiries/clarifications and to develop initial ATCs.	6 - 12 months	Low	6, 8
<b>Rec 12B:</b> Allow an additional one-on-one meeting after the last addendum is provided to proposers to clarify information in the addendum.	When determining procurement schedules, allow the opportunity for an additional one-on-one meeting after the last addendum is posted to answer proposers' questions specifically related to the last addendum. Prohibit other questions or requests for clarification if not in reference to the final addendum.	6 - 12 months	Low	6, 8

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency;  
**4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation;  
**7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

13. STIPENDS				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 13A:</b> Evaluate the existing guidance for determining the appropriate stipend to ensure it considers the complexity of the project. Consider creating a framework for stipend payment calculation that is not based strictly on a percentage of the construction estimate.	Review the process for establishing stipends for DB projects and consider the complexity of the project, the opportunities for innovation and the amount of design required to properly estimate the project.	6 - 12 months	Moderate	2, 9
<b>Rec 13B:</b> Evaluate the value paid versus the value derived by MDOT from stipend payments. Determine how MDOT could optimize current ATC and technical proposal requirements to realize more value.	Establish metrics that allow MDOT to quantify (1) cost savings of accepted ATCs and (2) perceived or estimated cost-savings from mitigation of risk (from progressing design that was paid for with the stipend) and overall cost reduction from time saved during execution (based on the amount of design performed during the RFP process).	12 - 18 months	Moderate	6, 9
<b>Rec 13C:</b> Develop guidance to determine the stipend for a best-value selection that requires a greater proposal effort when more technical detail is required.	Review the process for establishing stipends for DB and P3 projects and incorporate best-value selection. Review FHWA policies for innovative contracting to determine if additional federal funding can be secured to offset the increased stipend amount.	18 - 24 months	High	6, 9
<b>Rec 13D:</b> Consider following, at a minimum, FHWA guidance of covering a third to half of the cost of proposal development.	Review the current process for establishing stipends for projects to determine if they are consistent with FHWA guidance or should be updated to account for best-value selection.	12 - 18 months	High	2, 9

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency; **4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation; **7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

14. RISK IDENTIFICATION				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 14A:</b> Develop a formalized risk management process that can be applied to each project and consider documenting the process in the guidance documents.	Include guidance in the manuals regarding how to perform a risk analysis and use the results to assist with project development (i.e., level of design, encouragement of ATCs), procurement, and administration.	18 - 24 months	High	2, 3, 7, 8
<b>Rec 14B:</b> At project closeout, evaluate the effectiveness of the mitigation strategies and document for future information. Evaluate the probabilities originally considered for each risk to determine if updates are needed to evaluate future risk, or if contractual language can be improved to better describe the risk.	<p>Include an evaluation of the risk register as part of project closeout to evaluate the effectiveness of the mitigation measures, identify risks that may have arisen and how they were handled, and evaluate why previously identified risks may not have materialized.</p> <p>Include this information in a risk database as a reference for future projects.</p>	6 - 12 months	Low	2, 4, 5, 7

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency;  
**4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation;  
**7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

15. RISK MONITORING				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 15A:</b> Develop a method for monitoring risk register entries for each project; update the entries regularly during the life of the project.	Develop a risk register for each project and use it throughout the life of the project to regularly monitor, manage, add and close out. Require the risk register to be reviewed and updated at defined intervals through procurement and administration.	6 - 12 months	Low	1, 2, 3, 7, 8
<b>Rec 15B:</b> Document effective strategies for mitigating risk to consider for use on future projects.	Create a database that includes the strategies that were effective in mitigating a particular risk as a reference for future projects.	18 - 24 months	Moderate	1, 2, 3, 4, 7, 8

16. RISK MANAGEMENT – GEOTECHNICAL				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 16A:</b> Include a more specific description of what conditions MDOT would consider as a "differing site condition" change order and/or better define thresholds for which a change order would be considered in Book 1, Section 13.	Review language provided by other states regarding the use of available geotechnical information and the trigger for what could be considered a differing site condition.	6 - 12 months	Low	2, 4, 5
<b>Rec 16B:</b> If requested by proposers, obtain more geotechnical data (either by MDOT or contractor) to reduce risks for the contractors.	Develop and implement a process (detailed in the manuals) to allow proposers to request additional geotechnical information. Identify the process that would be followed regarding securing/gathering additional information (e.g., if the proposer secures the information, the information remains proprietary for their proposal; if MDOT obtains the information, the data become available to all proposers).	18 - 24 months	Moderate	5

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency; **4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation; **7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

17. RISK MANAGEMENT – UTILITIES				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 17A:</b> Consider obtaining agreements with utility owners to commit to specific review timeframes and/or relocation timeframes to include in the contract documents.	Work with utility owners to develop specific review timeframes to include in the contract documents to mitigate schedule risks to proposers. Additionally, if facilities are not moved prior to contract award, include a timeframe for relocation in the contract documents.	18 - 24 months	Moderate	5
<b>Rec 17B:</b> Provide more specific requirements with respect to the expectations of the contractor to coordinate with utility owners. Consider incentivizing interaction between the parties by including a utility reserve component to the contract or tie to a performance specification/non-conformance reporting.	Transfer the utility coordination component completely to the contractor. Incentivize the work by including a utility reserve budget within the contract. Pay for coordination activities using this budget. Pay any remaining budget in the utility reserve to the contractor at the end of the project based on coordination efforts during administration.	6 - 12 months	Low	2, 4, 5



**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency;  
**4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation;  
**7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

18. DESIGN OVERSIGHT				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 18A:</b> Include guidance for the design review process in the <i>DB Manual</i> .	Update the guidance documents to include a flowchart that describes the process for Bluebeam users. Develop a standard review comment and resolution form for non-Bluebeam users to be used on each project by the GECs.	3 - 6 months	Low	2, 7, 8
<b>Rec 18B:</b> Leverage over-the-shoulder design reviews to help expedite design submittals.	Require over-the-shoulder reviews between at least one interval of design progress (30 percent and 70 percent is preferable, or 70 percent to Released for Construction). Document the number of comments at the next stage of design to evaluate the effectiveness of the over-the-shoulder process.	6 - 12 months	Low	2, 7, 8
<b>Rec 18C:</b> Shift the design oversight responsibilities to the DB or P3 teams with MDOT acting in an auditing role.	Require the DB and P3 teams to provide a detailed quality management plan for MDOT to use during its audit of design quality and during the review process.	24 - 36 months	High	5, 7
<b>Rec 18D:</b> Standardize the process by which design review comments are provided to the contractor and are closed out (e.g., provide forms).	See Rec 18A above.	6 - 12 months	Low	1, 2, 4, 8
<b>Rec 18E:</b> Gather lessons learned to identify areas for process improvement.	See Rec 4A above.	12 - 18 months	Moderate	1, 2, 8
<b>Rec 18F:</b> Co-locate the DB/P3 team with MDOT's administration and oversight staff to promote coordination, collaboration, and communication that can help expedite design reviews.	Consider co-locating MDOT staff and the contractor team for larger, complex projects.	18 - 24 months	Moderate	7, 8

**Key to Benefits:** **1** = Reduce errors; **2** = Improve program consistency; **3** = Increase and retain staff competency; **4** = Save project cost; **5** = Reduce change orders/cost growth; **6** = Increase opportunities for innovation; **7** = Improve quality; **8** = Improve communication and collaboration; **9** = Increase competition

19. CONSTRUCTION OVERSIGHT				
Recommendation	Strategy to Implement	Implementation Timing	Implementation Difficulty	Implementation Benefits
<b>Rec 19A:</b> Include guidance for the construction oversight process in the <i>DB Manual</i> .	<p>Provide additional guidance in the manuals that describes the roles and responsibilities of the construction oversight staff for the various delivery methods. Include descriptions regarding items that deviate from a standard DBB project (e.g., the relationship between pay items, schedule of values and milestones) to help alleviate confusion regarding the differences in the roles between methods.</p> <p>Establish an audit process that documents roles and responsibilities are performed properly.</p>	3 - 6 months	Low	2, 7, 8
<b>Rec 19B:</b> Include requirements to develop a construction quality manual in Book 2, Section 2, or develop a construction quality management template that defines what is acceptable to MDOT.	<p>Require the contractor to develop a construction quality manual by providing requirements in the contract documents similar to the Design Quality Manual. Upon MDOT's approval it becomes the basis for auditing construction.</p> <p>Additionally, see Rec 1D above.</p>	6 - 12 months	Low	2, 7, 8
<b>Rec 19C:</b> Develop a more formal training program for construction staff to address the oversight function.	Expand the existing training modules to include more discussion of roles and responsibilities during construction and the differences in processes that deviate from DBB projects. Provide real life examples from past projects to reinforce the concepts.	12 - 18 months	Moderate	2, 3, 8
<b>Rec 19D:</b> Gather lessons learned to identify areas for process improvement.	See Rec 4A above.	12 - 18 months	Low	1, 2, 8

## 8.0 Bibliography

- America, DBIA, 2014, Design-Build Done Right - Universally Applicable Best Design Build Practices.
- Ashuri, B., and H. Kashani, 2012, Recommended guide for next generation of transportation design build procurement and contracting in the state of Georgia, Georgia. Dept. of Transportation.
- Chen, Q., Z. Jin, B. Xia, P. Wu, and M. Skitmore, 2016, Time and cost performance of design-build projects: *Journal of Construction Engineering and Management*, v. 142, p. 04015074.
- DBIA, DBIA Position Statement: Principles of Best Value Selection, Design Build Institute of America.
- DBIA, 2010a, DBIA Position Statement: Integrated Project Delivery, Design Build Institute of America.
- DBIA, 2010b, DBIA Position Statement: Stipends, Design Build Institute of America.
- DBIA, 2014a, DBIA Design Excellence Position, Design Build Institute of America.
- DBIA, 2014b, What is Design-Build?, Design Build Institute of America.
- DBIA, 2015a, Choosing a Project Delivery Method, Design Build Institute of America.
- DBIA, 2015b, DBIA Position Statement: Sustainability, Design Build Institute of America.
- DBIA, 2016, Transportation Sector, Design Build Institute of America.
- DBIA, 2018, Key Factors to Address When Considering Alternative Project Delivery in Transportation, Design-Build Institute of America.
- del Puerto, C. L., D. D. Gransberg, and M. C. Loulakis, 2017, Contractual approaches to address geotechnical uncertainty in design-build public transportation projects: *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, v. 9, p. 04516010.
- Gransberg, D., and M. C. Loulakis, 2012, Geotechnical information practices in design-build projects.
- Gransberg, D., D. Pittenger, and G. Chambers, 2017a, Utility Coordination Using Alternative Contracting Methods: NCHRP 20-07/Task 373.
- Gransberg, D. D., E. Scheepbouwer, and C. Lopez del Puerto, 2017b, Framework for Objectively Determining Best Practices for Alternative Contracting Methods: *Transportation Research Record*, v. 2630, p. 51-58.
- Koppinen, T., and P. Lahdenperä, 2007, Realized economic efficiency of road project delivery systems: *Journal of Infrastructure Systems*, v. 13, p. 321-329.
- Lee, J. H., Y. Jallan, and B. Ashuri, 2020, Key Issues and Differences in Practical Components of Quality Management in Design-Build Highway Projects: *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, v. 12, p. 04519029.
- McCullouch, B., 2009, *Innovative Contracting Manual*.
- MDOT, 2015, *Innovative Construction Contracting Guide*, Lansing, MI: Michigan Department of Transportation
- MDOT, 2019, *Project Scoping Manual*, Lansing, MI: Michigan Department of Transportation

Minchin, E., L. Ptschelinzew, G. C. Migliaccio, U. Gatti, K. Atkins, T. Warne, G. Hostetler, and S. Asiamah, 2014, Guide for design management on design-build and construction manager/general contractor projects.

Minchin Jr, R. E., A. R. Chini, L. Ptschelinzew, D. Shah, Y. Zhang, and M. Rinker Sr, 2016, Alternative contracting research.

Molenaar, K., 2020, How to Guide Alternative Contracting Projects.

Molenaar, K., J. A. Vanegas, and H. Martinez, 2000, Appropriate risk allocation in design-build RFPs: Construction Congress VI: Building Together for a Better Tomorrow in an Increasingly Complex World, p. 1083-1092.

Molenaar, K. R., and D. D. Gransberg, 2001, Design-builder selection for small highway projects: Journal of Management in Engineering, v. 17, p. 214-223.

Papajohn, D., and M. El Asmar, 2020, Percent base design and initial award performance in design-build highway projects: Journal of Management in Engineering, v. 36, p. 04020008.

Tran, D., C. Harper, and E. Minchin, 2018, NCHRP Synthesis 504: Strategic Program Delivery Methods: TR News.

Tran, D. Q., C. M. Harper, K. R. Molenaar, N. F. Haddad, and M. M. Scholfield, 2013, Project delivery selection matrix for highway design and construction: Transportation research record, v. 2347, p. 3-10.

Tran, D. Q., and K. R. Molenaar, 2014, Impact of risk on design-build selection for highway design and construction projects: Journal of Management in Engineering, v. 30, p. 153-162.

Innovative Contracting  
Best Practices Research

# Appendix A

## Best Practices Literature Review



## Executive Summary

<b>ACEC</b>	American Council for Engineering Companies
<b>ASCE</b>	American Society of Civil Engineers
<b>ATC</b>	Alternative technical concept
<b>CM/GC</b>	Construction Manager/General Contractor
<b>DB</b>	Design-Build
<b>DBB</b>	Design-Bid-Build
<b>DBM</b>	Design-Build-Maintain
<b>DBIA</b>	Design-Build Institute of America
<b>DOT</b>	Department of Transportation
<b>EOC</b>	Engineering Operations Committee
<b>FHWA</b>	Federal Highway Administration
<b>GEC</b>	General Engineering Consultant
<b>IQF</b>	Independent Quality Firm
<b>ICC</b>	Innovative Contracting Committee
<b>ICCG</b>	Innovative Construction Contracting Guide
<b>ICU</b>	Innovative Contracting Unit
<b>ITP</b>	Instructions for Proposers
<b>MDOT</b>	Michigan Department of Transportation
<b>MITA</b>	Michigan Infrastructure and Transportation Association
<b>NCHRP</b>	National Cooperative Highway Research Program
<b>P3</b>	Public-Private Partnership
<b>QA/QC</b>	Quality assurance/Quality control
<b>RFP</b>	Request for Proposal
<b>RFQ</b>	Request for Qualifications
<b>TSC</b>	Transportation Service Center

Innovative Contracting  
Best Practices Research

# Appendix B

## Literature Review Report



## Executive Summary

This literature review identifies alternative delivery practices and methods identified within published academic research as well as white-paper publications from Design-Build Institute of America (DBIA). Much of the literature around alternative delivery focuses on the delivery selection process to encourage more agencies to incorporate alternative delivery into their project options. Project outcome and results with each method have also been researched, allowing comparison between methods for key criteria such as schedule, cost, and risk. A common theme among the literature is identifying practices that build value in the alternative delivery processes and quantifying those benefits.

A key to project success is providing a clear scope and identifying and managing risks. Contractors can gain a full understanding of what to build by giving as much information as possible, which allows them to vet and mitigate risks such as geotechnical, environmental, utilities, and traffic control. Being flexible, communicating, and collaboration are frequently cited as components to successful projects.

Evaluation procedures should be standardized for selecting the delivery process of all projects and for selecting a winning proposal. Evaluating all projects allows for more opportunities of alternative delivery, resulting in greater time and cost savings. Procedures should have very clear and concise scoring systems and evaluation criteria that can be consistently implemented by each agency, however systems vary from agency to agency to meet local conditions. A clear evaluation process standardizes the many ways to evaluate projects and proposals and eliminates bias on the selection committee. Expectations and agency priorities are already set, making it consistent for alternative delivery teams to know what to expect from project to project, resulting in better bids, fewer risks, and greater delivery success. Consistent evaluation expectations and selection will create a strong Contractor pool for better and more competitive proposals. MDOT has procurement and contracting procedures outlined in their contracting guides which should be regularly checked against other industry practices.

Risk is a major consideration in alternative delivery. When risk is high, contractors apply larger contingencies into their price, resulting in greater disparities in cost and proposals. Mitigating risk should be a high priority for alternative delivery projects, which improve project success measurements such as cost and schedule. Risk can be addressed through all stages of procurement and project delivery. Systematic consideration should be given to manage, address, and transfer known risk categories such as geotechnical and utility. Alternative Technical Concepts (ATCs) allow for greatest innovation and reduction in risk to both the contractor and the owner.

MDOT can continue to grow and improve the alternative delivery practices by applying the best identified method to the project, short list only the most adequate proposers, provide adequate stipends to proposers, and simplify and encourage the ATC process.



## Literature Review

The research team of WSP and CRS Engineers conducted a literature review of strategic program delivery documents with the main objective to identify and outline additional measures and program applications that MDOT could implement. MDOT wants to improve their alternative delivery practices and is actively searching for innovative practices to implement. This literature review looks at research focusing on alternative delivery, however due to the nature of alternative delivery, the methods are not standardized across states and departments. A common theme among the literature reviewed is identifying practices that build value in the alternative delivery process, with less emphasis on identifying new methods.

This literature review begins with an understanding of practices implemented by MDOT as outlined in the Innovative Construction Contracting Guide (March 5, 2015) and then compares those practices with identified industry methods and techniques.

## MDOT Publications

### *MDOT Innovative Construction Contracting Guide, and Guidelines for the Procurement of Design-Build Contract:* MDOT

The MDOT Innovative Construction Contracting Guide (ICCG) is a conglomerate resource for each of the alternative delivery options utilized by MDOT. The guide includes an overview of fundamental information, definitions, outline of acceleration techniques and delivery methods, contracting selection criteria, and the procurement process. The guide also includes a substantial appendix of MDOT guidelines for individual delivery methods, including: design-Build, CMGC, Fixed-Price-Variable-Scope, and Design-Bid-Build projects.

Incentives and disincentives are significant motivators in alternative delivery. MDOT's initial 1990 guideline for incentives, named "Guidelines for the Use of Incentive/Disincentive and Special Liquidated Damage Clauses" has been updated with several iterations, adding different items to MDOT's approach.

Innovative construction contracting have three objectives: accelerate construction to minimize user delay, improve procurement and payments, manage risk, and improve project development and delivery time. MDOT uses a variety of techniques in each of the three objectives and provides definitions for implementation as part of their contracting guide.

Several incentives are identified in the ICCG with descriptions, advantages/disadvantages, and project recommendation types. Standard incentives are limited to a maximum of 5% of the estimated construction costs. Adding a range of possible incentives and examples of circumstances will allow the program managers to determine what

value to place on incentives, as well as provide consistency to contractors looking to capitalize on incentives.

Quality management requirements are outlined and assigned to the Design-Builder to develop.

Key features of MDOT's processes outlined in the literature research include:

1. ATC process
2. Use of DB best value and low bid
3. Champion assigned to alternative contracting
4. Use of design-build to enhance schedule
5. Issuance of stipends to unsuccessful proposers
6. Manage risks
7. Establish goals for projects

## Non-DBIA Publications

### 1. *Guide for Design Management on Design-Build and Construction Manager/General Contractor Projects* (Minchin et al., 2014) - NCHRP Academic Research

The research contacted all 50 states along with Puerto Rico, DC, and 13 non-DOT public transportation agencies. With each response they were categorized if the state does/ does not use alternative practices, and if they do use them they were asked to participate in a questionnaire, and some states went on to participate in a case study. Many of the delivery methods were used across several municipalities, with some differences in QA responsibilities, however only two main concepts were deeply considered: Design-Build (DB), and Construction Manager/General Contractor (CM/GC). The three biggest advantages of using CM/GC are freedom to innovate design and construction practices, flexibility to allocate risk throughout the project, and cost savings potential through innovation and risk allocation. Implementing DB for the first time is often constrained by a low-bid culture. Much of the guide focuses on preparing for and implementing these two main concepts, the research conclusions focused mainly on how to get agencies on board with the delivery methods, rather than identifying additional benefits.

### Salient Points:

---

- ◆ Utilize an adequate number of external staffing to timely address the design during the project review process.
- ◆ Project personnel should be enthusiastic participants open to innovation, trained, knowledgeable, and work under pressure, which may require outside consultants.
- ◆ Provide proper level of design for the RFP, a percent complete is not a specific target, but it should convey project scope without hindering innovation.
- ◆ Develop an in-house champion for an agency's innovative contracting program.
- ◆ CM/GC success requires complete upper management support.
- ◆ Implement specification boundaries using a clear QA and QC approach.

### Application to MDOT:

---

MDOT has a project delivery toolbox for design-build and CMGC projects.

MDOT does contract with a general engineering consultant (GEC) to staff the design-build program. The GEC staff does assign personnel to prepare the performance specifications and review designs for the design-builder. MDOT does assign a small number of in-house personnel for each project with support from the ICU personnel. MDOT does review documents prepared by the GEC and reviews design submittals. Reviewers should make effort to provide complete and solid feedback in the early review cycles (30%) and guide the GEC early rather than engaging too late in the design.

- ◆ MDOT generally assigns staff that are accepting of design-build or CMGC to innovative contracting projects.
- ◆ MDOT generally progresses design to between 20 and 30 percent for procurement. This does coincide industry best practices.
- ◆ MDOT also has a champion by assigning an Innovative Contracting Program Manager.
- ◆ MDOT's current QA/QC definition is in Book 2, Section 2. This section outlines general needs and requirements of the QA/QC program but is not very robust.

### Recommendations:

---

- ◆ MDOT should continue to emphasize to in-house personnel that review design documents to fully engage at the earliest level of design submittals. A common concern of design-builders nationally is when owner personnel review designs but engage later in the design process, thus providing additional comments late in the process that would have been beneficial to have at earlier design review stages. The GEC should continue to be instructed to assure MDOT discipline leads are engaged in areas where design may be unique, leading technology or in areas where it is known MDOT has in-house preferences or needs for certain results.

- ◆ MDOT may consider reviewing where other agencies have accepted ATC's that deviate from/modify set standards and protocols. Reviewing these examples will educate MDOT and discipline leads that may be averse to innovation or "new" ways that other agencies have changed their standard approach based on ATCs submitted in a design-build procurement.
- ◆ MDOT may want to experiment with a project to progress design less and focus more on risk assignment and major risk retirement. Avoid defining specific elements in the environmental document but focus on function and need has been a means to perform less design prior to procurement.
- ◆ MDOT may want to consider assigning a champion at a higher level in the organization that supports and drives the program to new heights.
- ◆ MDOT may consider developing a template for design and construction quality management plans. Care should be taken to avoid developing and dictating the program to the design-builder to maintain full responsibility for QA/QC with the design-build. The template would be used to define the minimal items to be addressed and covered in the specific quality plans.

---

## 2. NCHRP 504: Strategic Program Delivery Methods

(Tran et al., 2018) - NCHRP Academic Research

The NCHRP 504 synthesis paper provides results from a survey sent to each state DOT regarding the use of **alternative contracting methods** (ACMs). A total of 41 state DOTs responded to their survey, with 38 of them indicating the authority to use alternative contractive methods (ACMs). 26 of the 38 authorized states have exercised the authority to enact ACMs in the past 10 years (2008 or later); 10 states have used ACMs fewer than five times (as of the time of the survey) with only 11 states using ACMs more than 10 times. Responses for program delivery approaches included DBB, DB, CM/GC, P3, Single Combined Contract, and other. For program selection, states indicated if they used unit price, lump sum, cost reimbursable, single combined contract, or other forms for payments (contracting method). Project delivery selection was identified in the responses of the survey. The most to least frequent reasons for using ACM include: size (dollars), technical complexity, third party issues, schedule, construction type, risk management, environmental issues, budget control, streamlining and innovation, public impact, facility type, savings, staff availability, performance, staff experience, agency image, location, nontraditional funding, revenue generating, and other. Motivational factors for ACMs were mostly the same items but numbered in a different order based on frequency and percent mentioned.

### Salient Points:

---

- ◆ Factors determining use of ACM program delivery decision, in order of frequency:
  1. project size (dollars)
  2. technical complexity
  3. third party issues
  4. schedule
  5. construction type
  6. risk management
  7. environmental issues
  8. budget
  9. streamlining and innovation
  10. public impact
  11. facility type
  12. savings
  13. staff availability
  14. performance
  15. staff experience
  16. agency image
  17. location
  18. nontraditional funding
  19. revenue generating
- ◆ Implement a dashboard for performance metrics tracking such as schedule, budget, environmental compliance, and overall project benefits.
- ◆ Change from a culture of best engineering solution to a culture of best business solution.
- ◆ Utilize private sector capabilities to manage transportation programs and project functions.
- ◆ Transparency is needed for effective communication and ability to reach project goals.
- ◆ A team-based approach is best for program delivery.
- ◆ Select delivery method on case-by-case method.

### Application to MDOT:

---

The reasons MDOT use alternative delivery on projects appear to be schedule, risk management and budget (price). It appears the primary driving force may be price (number 8 in the above list), when the approach of shortlisting and selecting the winning design-builder based on price is used in step two of the selection process.

- ◆ MDOT does not currently track metrics on programmed and completed projects to determine the value design-build or CMGC is offering.
- ◆ MDOT currently applies a “best business decision” to low price on its two-step low price selection process. The flexibility in the RFP for the ATC process allows contractor innovation which MDOT then uses to focus on price for a price “best business decision”.

- ◆ MDOT uses a GEC to assist in developing and manage innovative contracting projects. On CMGC projects the GEC has a lesser role.
- ◆ Two-step low bid approach for design-build likely results in design-builders not offering as much transparency as compared to a best value selection process.
- ◆ The MDOT two-step low bid design-build approach will inhibit collaboration and team building. Low bid processes generally provide for a less formal framework for team building.
- ◆ MDOT currently does not have a selection tool for project delivery type.

---

### Recommendations:

---

MDOT should evaluate various metrics for the use of ACM and determine the reasoning for selecting different types of delivery methods. Implementing a dashboard that summarizes reasons for selecting the delivery methods and tracks these metrics will allow MDOT to track metric to determine if the reasons are being realized in practice.

The interesting application of finding the best business solution versus the best engineering solution would be to find the value for the owner. Often value is judged by low dollar at bid time. However, value can be added:

- ◆ Before bidding in CMGC and design-build by retiring risk that ultimately would have been a change order or claim on a low bid project.
- ◆ By capitalizing on user costs of reduced schedules owners can show value gain from the use of innovative contracting.
- ◆ By identifying improved commerce after the project, owners can capitalize on the reduced schedule.

MDOT should consider having the GEC more active in CMGC projects to help drive collaboration. On CMGC projects outside of MDOT, because the owner holds both the builder and designer contracts, personalities may revert to design and review not collaboration during design. Collaboration during design can result in better innovation, less costs associated with iterative designs and reworking designs to accommodate constructability reviews.

Implementing a two-step best-value approach will help MDOT take advantage of a partnering and transparent atmosphere in lieu of protect your position and non-transparent atmosphere.

Developing a project delivery selection tool will provide consistency to the overall capital improvement program. This tool should be used at the “call for projects” stage and revisited as more is known of the project. There are multiple recommendations throughout the reporting regarding a Selection tool. The tool should consider all types of project delivery, including DBB, CMGC, DB, IDIQ and others that MDOT is interested in. The tool should accurately evaluate the project against the advantages and disadvantages of each

delivery method. Inside the delivery method the tool could provide additional insight into the contracting method to use for the delivery type such as inside design-build using lump sum, guaranteed maximum price, or operate and maintain (DBOM), maintain (DBM), and or whether to use progressive design-build. Some other metrics the tool could consider include experience level of available owner staff, project complexity, need for innovation, risks, cost, level of design, stakeholder needs, and schedule.

---

### ***3. Utility Coordination Best Practices for Design-Build and Alternative Contracting Projects*** (Gransberg et al., 2017a) -NCHRP Academic Research

This paper outlines the issues considered for utility coordination based on the delivery method. Each delivery method strategy has a set of tools to be implemented that are designed to help the project reduce risks associated with utility coordination and relocation. ACMs are often used to accelerate the project delivery schedule, which means utilities need to happen early. Generally, the consensus is the ACM Contractor is responsible for the agreements, but the agency must allow the design build team to work directly with the third party. The ACM Contractor will write the agreements on behalf of the agency.

CMGC offers the greatest flexibility with utility coordination due to the construction price being established after the CMGC Contractor is selected. It allows the owner and designer to understand the cost/schedule consequences of utility design alternatives and make the best decision for the project, but often the risk still falls on the Contractor once a cost and schedule are established. It allows the Contractor to utilize their relationships with third parties to mitigate risks and reduce costs or improve schedule. Many states include test hole explorations as an early package.

Design Build (DB) is known to have a large utility risk, often resulting in large contingencies for utility conflicts that have not been identified during the proposal process. Alternative Technical Concepts (ATC's) can reduce the contingency by introducing innovations that had not been considered. One-on-one proprietary meetings between the owner and proposing Design Builders can discuss the utility strategy they will use for the project. Best practice assigns the DB contractor the responsibility for utility coordination, but that requires the agency relinquishing control over the design details..

Public private partnership (P3) has advantages over CMGC and DB methods because of the funding sources. Municipal agencies are bound by statute and not able to have flexibility to offer incentives to third parties, whereas private financing can offer incentives. The agency must develop the financial arrangements with third parties during the procurement stage so the P3 team knows what risks it is taking on, but once arrangements are made, the agency must allow the team to handle the design and technical details.

ATC's offer variation that can be used to add enhancements to the project through any of the alternative contracting methods. They allow Contractors to remove the forced nature of an even playing field and gives a competitive advantage for Contractors with innovative ideas. An ATC can highlight issues by asking for those innovations in the approach but can also help clarify intentions when there is ambiguity.

### **Salient Points:**

---

- ◆ CMGC has greatest flexibility with utility coordination because pricing is established after more data is known regarding design and utility conflict conditions.
- ◆ Consider utility coordination and locations as part of preliminary design to minimize impact and relocation activities.
- ◆ ATCs reduce utility risk with DB and allow relationships between contractors and utility companies to expedite projects. Encouraging ATCs for utilities incentivizes a DB to improve overall relationships long term as not all relationships between a design-builder and utility company are positive.
- ◆ Utility coordination can be shared, where some utilities are better handled by the DOT, while others given to the DB team.
- ◆ A conceptual utility management plan can be required during procurement to be considered responsive, allowing the selection team to review concepts.
- ◆ P3 allows financial benefit through utility agreements to cover costs.

### **Application to MDOT:**

---

MDOT utilizes several of the researched best practices and has implemented them.

- ◆ MDOT does use CMGC delivery method.
- ◆ Continue using utility coordination and relocation as a criteria when selecting delivery type. MDOT does review existing utilities during procurement design and does evaluate the potential final condition (protect in place or relocate) during procurement design.
- ◆ MDOT uses the ATC process in design-build delivery.
- ◆ MDOT does not require the design-build teams to include a conceptual utility management plan or an approach to utility coordination design in its procurements.
- ◆ MDOT has procured two PPP projects and does have legislation for this delivery method.



## Recommendations:

---

- ◆ When using CMGC and design-build, MDOT should compare successes and lessons learned to establish flow within the delivery tool with respect to proven success of delivery type and utility coordination.
- ◆ MDOT should move towards DB teams expecting and leading coordination with utility companies. This includes outlining expectations with 3<sup>rd</sup> party utilities to work directly with ACM, which may break traditional rolls of working with MDOT.
- ◆ Greater consideration and ease of accepting ATCs will lead to greater project benefits.
- ◆ Moving to a two-step best value procurement, where the second step values technical approach, will allow MDOT to request at a minimum an approach write up for utility coordination and management but could include preliminary plans. Other valuable deliverables during the proposal can include a utility matrix detailing the expected outcome of a utility with the design-builders approach (protect in place, relocate etc.) Also, a detailed schedule can be reviewed to determine the risk of utility relocations with respect to the overall project schedule.
- ◆ Sharing risk with the design-builder may be an approach when utilities are not defined or there is potential for innovation to greatly affect relocation and protecting utilities in place. The nature of DB is working together. It may be necessary to outline the amount of risk that is expected by the DB team for utilities. Accepting more risk to MDOT can reduce utility budget project wide, with some utilities costing more than expected while others costing less, but the design-builder will feel more confident in their reduced risk and effectively lower the bid. Also providing incentives to the utility companies for collaborating and working with design-build teams can be an effective way to maintain utility engagement. MDOT may consider tying reimbursement percentage to the level the utility company engages and participates.
- ◆ Developing formal agreements with utility owners that include construction windows, review times, direction to interface directly with Design Builders, etc. can help reduce design-builder contingency.

---

#### 4. *Framework for Objectively Determining Best Practices for Alternative Contracting Methods* (Gransberg et al., 2017b) - Transportation Research Record TRR Academic Research

The research determines best practices by evaluating and ranking 24 alternative contracting methods (ACMs). The ranking was done by analyzing 6 NCHRP Synthesis reports and determining the frequency each practice was mentioned in the literature and the number of DOT's using the practice, ultimately producing the "Importance Index." From there, they identify how many literature citations for each practice are used (Research Index) and combined with the Importance Index gives the "Verification Index." These indices are ranked and separated into a category of Organizational practices, Project Delivery Method selection, and Contracting Methods. Of the 24 practices, 4 were considered Nationwide Best practices, these include:

1. Appoint a champion for alternative contracting practices – this allows for lessons learned to be filtered through one person.
2. Formalize the ACM decision process (selecting a delivery type, DB, DBB, CMGC, P3, etc.) and institutionalize it as a standard operating procedure within the agency project development process documents.
3. Use two-step best-value award procedures.
4. Offer stipends to responsive but unsuccessful proposers.

The other 20 practices were labeled effective, but not considered "best practice" defined as, "A method or technique that has consistently shown results superior to those achieved with other means, and that is used as a benchmark." The two 'runner-ups' after the top 4 listed above were to utilize consultants or other supplemental staff on the program management team and offer confidential one on ones before the design builder submits their proposal.

### Salient Points:

---

- ◆ Appoint a champion for alternative contracting practices, a champion will ultimately formalize the decision process.
- ◆ Use two-step best-value award procedures.
- ◆ Offer stipends to responsive but unsuccessful proposers. Stipends can be based on level of complexity and/or project size to prevent large but simple projects from receiving unnecessarily large stipends.

### Application to MDOT:

---

- ◆ MDOT implements each of these best practices at some level regularly in its program.
- ◆ MDOT's two-step process is a low bid approach, as opposed to best value. Best value incorporates a technical portion for the second step.
- ◆ MDOT does offer stipends on a graduated scale where smaller dollar value projects have a stipend range of 0.4 to 0.5 percent ( for projects less than \$5 million), and larger projects over \$100 million have a stipend range from 0.1 to 0.12 percent of construction value.

### Recommendations:

---

- ◆ By assigning a champion, MDOT should make sure to take advantage of capturing lessons learned to be realized between projects, instead of different project teams struggling with the same lessons. The Champion should be the keeper of lessons learned and should ensure that each project provides lessons learned feedback midway through the project and at project completion.
- ◆ MDOT's two-step process is currently a low-bid selection. Encourage the use of the second step to include technical approach.
- ◆ The graduated scale that MDOT currently employs for stipends is a good process. Increasing the stipend on more complex projects would spark more innovation and MDOT could end up saving more than the stipend payout in project savings from ATC's.

---

## 5. *Project Delivery Selection Matrix for Highway Design and Construction* (Tran et al., 2013) - Transportation Research Record TRR Academic Research

This paper helps agencies decide on appropriate delivery methods which improve the probability of meeting project goals as no single delivery method is perfect for all projects. Four primary and four secondary selection factors are considered when deciding a project delivery method.

The primary selection factors are:

- ◆ delivery schedule
- ◆ complexity and innovation
- ◆ level of design (30% or less ideally)
- ◆ initial project risk assessment

The secondary selection factors are:

- ◆ cost
- ◆ staff experience and availability
- ◆ level of oversight and control
- ◆ competition and contractor experience

When a project is evaluated for project delivery method the most important step is to identify clear project goals and constraints. Complex projects should include greater clarification of goals and constraints. The framework for evaluation suggested is conducting a workshop and following prescribed steps until there is a clear winner:

1. Set Project Goals, focusing on constraints to meet those goals, and determine project conditions.
2. Evaluate Primary Factors influencing project delivery method selection.
3. Conducting a Pass-Fail Analysis on the secondary factors and Performing a Complete Selection matrix.

The workshop provides a documented approach for project selection that is easily justified/upheld, and similar selection processes could be developed to select the procurement procedures and payment provisions. The process however often leads to the conclusion of performing a complete selection matrix analysis which provides less guidance in selection.

**Salient Points:**

---

- ◆ Primary selection factors are schedule, complexity/innovation, current design level, and risk.
- ◆ Secondary selection factors: cost, agency experience, oversight/control, contractor experience.

**Application to MDOT:**

---

- ◆ MDOT does not currently employ a tool to determine the project delivery approach.
- ◆ MDOT does establish goals for each project and establishes review criteria in determining if goals are addressed during the procurement.

**Recommendations:**

---

- ◆ MDOT should consider including relevant criteria for deciding on the delivery method into their guidelines. If developing a delivery method selection tool, MDOT should establish the points most important to the agency. However, consideration should be given to the best practices identified in this paper. Being consistent in determining a delivery method will allow MDOT better reflection on the metrics and if the results are representative of what tool predicted.
- ◆ MDOT should review the approach to identifying and selecting project goals to assure they are project specific and not repeating for each project.

## 6 *Alternative Contracting Research: Final Report* (Minchin Jr et al., 2016) -Research prepared for Florida DOT Research Center

FDOT reviewed their alternative contracting program and methods: A+B Bidding, Lump Sum, No Excuse Bonus, Incentive/Disincentive, and Design Build. The research includes industry interviews as well as data points from past projects with regards to cost, quality, and schedule. The analysis covered projects over \$1 million due to the greatest probability of savings. The paper reviewed the statistical reasoning and equations used to analyze the data. Survey results showed all the methods can provide schedule/time savings, but only design-build and lump sum offer cost savings.

Data shows that A+B reduces contract time, thus reducing project overhead, reducing user delays, and motivates the contractors to work faster and have efficient project management. It is best suited for projects that impact traffic with lengthy detours. It is commonly used with Incentives/Disincentives (I/D). I/D are typically set for completing on time or early and best suited for large projects with high volume of traffic. It is good for emergency situations, where safety is a concern for road users or construction workers or areas that have a severe impact to the economy. When combined, these two methods are more effective and provides a greater time savings, although it does not provide a higher quality project.

Lump Sum causes contractors to add large contingencies to their bid, but reduces the time spent measuring quantities by the owner. It is best for projects that have well defined risks, and low possibility for change. No Excuse Bonus (NEB) can also increase cost to cover risks, but results in a faster completion, often requiring additional resources. It is best suited for high visibility projects or emergency situations. Quality may be sacrificed because of the expedited construction. Design Build projects have lower cost growth and faster construction but is sensitive to schedule delays. It promotes design and contractor flexibility while optimizing the design and construction methods. It reduces agency control of design and not ideal for projects with a large amount of utilities and right of way.

Design build and lump sum had the highest cost savings but lowest time savings. Quality has had no effect across the board. It was also noted that more experience is helping the industry understand lessons learned. No method was clearly superior to another, but FDOT has been combining contracting methods (such as A+B and I/D) which seems to balance the benefits.

**Salient Points:**

---

- ◆ Of the metrics reviewed (A+B, LS, No excuse bonus, I/D and DB), each provides schedule/time savings, but only design-build and lump sum could be identified that offer cost savings
- ◆ A+B reduces contract time, motivates the contractors to work faster and has efficient project management.
- ◆ Lump sum induces large bid contingencies (except for low risk and low potential for change projects), but saves time from the owner in tracking quantities.
- ◆ Design build and lump sum had the highest cost savings but lowest time savings, although DB is intended to improve time as compared to DBB. No obvious solution was apparent to which method is superior.
  - Project requirements dictate quality standard adherence, and not contracting methods. The majority of responses expressed that project quality was independent of contracting methods (DBB, DB, lump sum, and incentive/disincentive).

**Application to MDOT:**

---

- ◆ MDOT has used A+B bidding, Lane/bridge rentals and calendar day incentives and disincentives (I/D's). MDOT does use the lump sum contracting method in the majority of its design-build projects. In CMGC MDOT uses guaranteed maximum price contracting method.
- ◆ MDOT also uses shared risk items productively in its program. This method helps reduce some of the large contingencies observed in this paper for lump sum contracting.

**Recommendations:**

---

- ◆ MDOT should review project effectiveness to identify modifications for future projects. For example, MDOT can consider modifying I/D's in their program to reward behavior of design-build or CMGC teams.
- ◆ MDOT could consider additional share risk items to help with contingency being bid into a lump sum contract.

---

## 7. Time and Cost Performance of Design–Build Projects

(Chen et al., 2016) -ASCE Academic Research

Design build is becoming more popular due to expected time and cost savings for the agency. This research explores factors for time and cost savings by studying 418 projects from the DBIA database. Design build projects were 75% on time or early, but 50% of the projects were over bid budget. Quality based procurements have less time overruns than cost based, the reasons for which are unknown and not yet explored. It gives a chart of percent overruns for different project characteristics.

Guaranteed maximum price (GMP) where the price cannot be exceeded was found to have less cost overruns than that of lump sum contracts, but again the reasons for that were not explored. However, it was suggested GMP projects have owners setting more realistic targets corresponding to better understanding of design. Design build projects can have advantages with time and cost if the right procurement process is chosen based on agency goals.

### Salient Points:

---

- ◆ Of 418 projects DB projects, 75% met on-time/early delivery but 50% of DB projects are over budget; procurement should consider if a time savings would justify a project overrun.
- ◆ Quality Based projects are timelier than cost based.
- ◆ Best-value procurement typically provides 35% design scoping, improving the performance.
- ◆ Guaranteed maximum price (GMP) has less cost overrun than lump sum, most likely because lump sum prices are developed with generally less than 30% design where GMP's are developed at 6% or more design.
- ◆ Best value is the dominant procurement method with lump sum as the more frequently used method.



### Application to MDOT:

---

- ◆ Because 75% of the design-build projects surveyed were completed on schedule, MDOT should be able to rely upon schedules proposed by design-builders. When MDOT gives a completion date and allows design-build teams to shorten the schedule (A+B) bidding, the proposed schedule should be reliable.
- ◆ MDOT generally provides on the order of 30% design in procurement documents.
- ◆ MDOT predominately uses lump sum contracting. MDOT has awarded 1 fixed price project where design-builders bid the number of locations that could be completed for a fixed price.
- ◆ MDOT predominately uses low bid selection in lieu of best value selection.

### Recommendations:

---

- ◆ MDOT should continue to allow design-build teams to provide a completion date.
- ◆ MDOTs use of shared risk items does help reduce overall contingency bid into the project. With less contingency in the bid, there may be a higher probability of change order requests because the bid cannot absorb as much risk realization.
- ◆ MDOT should continue to provide 30% or less design completion with procurement documents.
- ◆ If MDOT encounters a project with a lot of risk and established budget, consideration should be given to a GMP approach to contracting. This allows MDOT to obtain a final not to exceed price with the design-builder later in the design, allowing MDOT more cost certainty at the time of pricing. Another approach for cost certainty is to reduce the shared risk items and use lump sum contracting, this method will give cost certainty earlier in the process.
- ◆ MDOT should consider the use of a two-step best value procurement approach. This approach has proven beneficial in driving innovation, allowing better evaluation of utility management, incorporation of better partnering and transparency into the process.

---

## 8. *Geotechnical Information Practices in Design-Build Projects*

(Gransberg and Loulakis, 2012)

-National Academy of Sciences Academic Research

This synthesis research identifies current practices for mitigating geotechnical risks in design build projects. Project specifications were determined and created on a case by case basis for DB projects. Some examples of project specifications and risk mitigation include one-on-one meetings, ATC's, design builder performing own tests, and tests performed during the RFP process. If geotechnical information gaps are too large, the design builder will either add a large contingency to cover the risk or drop out of the proposal chase altogether. Appropriately weighting the qualifications of the Geotech team as well as past performance in the evaluation criteria is a key factor to success.

There is no one-size-fits-all solution to how much geotechnical information to provide in the RFP, it is up to the agency and should be based on the type and location of the project. Over the shoulder design reviews and partnering is extremely important in identifying information needs and adding value, aiding to the success of the project. The quality management process is similar to that of tradition DBB projects and the QA plan set up in the beginning of the project is perceived as the most important aspect of the quality management planning process.

### **Salient Points:**

---

- ◆ Large geotechnical data gaps result in large risk contingencies. Geotechnical uncertainty is high until the post-award site investigation and geotechnical design can be completed.
- ◆ Large geotechnical data gaps can lead to risk adverse contractors dropping out of competition.
- ◆ Manage risk by retaining quality management roles for geotechnical work.
- ◆ Have explicit differing site conditions clauses to expeditiously resolve discrepancies in geotechnical conditions.
- ◆ Define a risk sharing threshold quantifying the contractor's maximum threshold, after which DOT assumes cost.
- ◆ Permit release of Geotech design packages before the rest of design.

### Application to MDOT:

---

- ◆ MDOT guidelines indicate “The procurement process chosen (e.g., best value vs. low bid) may also impact the amount of information MDOT will want to provide to the Design-Builder.”
- ◆ MDOT generally performs significant geotechnical investigations including all bridge locations, ends of culverts, and known locations of bad soils (peat, etc.).
- ◆ MDOT generally allows shared risk items for bad soils (peat etc.) MDOT does not generally allow shared risk for deep foundations.
- ◆ MDOT does have a differing site condition clause in Book 1 Section 13.

### Recommendations:

---

- ◆ MDOT should continue to provide as much geotechnical information as possible in the RFP, regardless of delivery type. Providing this information for the design-builder to be able to rely upon will reduce contingency in bids (contractual versus information only).
- ◆ Book 1 Section 13 could provide better specifics regarding what conditions MDOT would consider as a differing site condition change order and/or define better the thresholds for which a change would be considered.
- ◆ One unusual use of design-build for risk mitigation by an owner was embedding a geotechnical slope stability project within an overall DBB project. MDOT could consider unique situations like this and evaluate unique delivery and contracting methods to best mitigate overall risk. (see literature review number 13 below)

---

## 9. *Percent Base Design and Initial Award Performance in Design–Build Highway Projects* (Papajohn and El Asmar, 2020) -ASCE Academic Research

This research looks at how the percent of base design provided during procurement relates to innovation expected and overall savings to the agency. This paper looks at benefits the Contractor can provide instead of front-end planning. The benefit was defined as “Initial award performance” (IAP), where:

$$\text{IAP} = \frac{\text{Contract proposal price} - \text{agency estimate}}{\text{Agency Estimate}} \times 100$$

Different agencies have standards for ‘complete design’ submitted during procurement, anywhere from 10% to 95%, with most averaging near 30%. The research hypothesis indicated that providing more design during procurement is less risk to the Contractor, but this also inhibits innovation from the Contractor.

The research shows, however, that less upfront design does not equate to more innovation or better IAP. In a separate hypothesis, the research considered if the number of ATC’s influences initial award performance, but this was disproven. ATC’s are generally cost driven and can provide a cost-effective response to project goals, so they are seen as a value to the project. The number of years of experience the agency has in alternative design does make a difference in that they are more open to innovation.

**Salient Points:**

---

- ◆ Agencies progress design anywhere from 10% to 95% with the most common progression being 30%. Setting the percent base design is a balancing act between reducing risk and providing opportunity for innovation.
- ◆ ATCs are generally cost driven, adding value to reduce cost, or improve schedule, safety, and maintenance of traffic.
- ◆ ATCs can be considered efficiencies rather than innovations, as many ATCs are not new, having been implemented previously.

**Application to MDOT:**

---

- ◆ Savings for initial design costs can be achieved by providing RFP concepts that are not progressed too far through design (less duplicative design effort owner versus design-builder). Innovations from the Contractor do not appear to be higher or lower based on the level of design provided, however there is a higher likelihood the design-builder will put less effort in design if it is progressed further by the owner). The concern for MDOT would be providing enough design to adequately assess environmental needs and identify ROW requirements.

**Recommendations:**

---

- ◆ MDOT should continue to avoid progressing procurement level design beyond 30%. Progressing beyond 30% could stifle innovation (while this paper suggested it may not, other publications indicate it does), place more risk on the owner for the design and result in overall more design costs due to duplicative design services.

---

## 10. Key Issues and Differences in Practical Components of Quality Management in Design-Build Highway Projects

(Lee et al., 2020)-ASCE Academic Research

Quality is one of the most important criteria to a successful project, which places heavy responsibility on quality management. Roles and responsibilities are different for each agency/DB relationship. Some agencies have QA manuals that the design-builder must follow, while other states require the Contractor to provide their own QA manual. The QA approach has three schools of thought: Traditional, Mixed, and Supervisory. Traditional is a typical design-bid-build where the agency conducts all sampling and testing to accept materials and the design builder performs quality control. The mixed approach involves a separate firm to do the testing hired by the design builder, but the agency has yet another independent company to validate the test results and the agency maintains ultimate veto authority. The supervisory approach requires minimal owner oversight and allows the design builder to oversee the acceptance activities.

Pay factors are a component in the construction process that create incentives/disincentives to improve quality and performance. Adjustments are recommended for all ACM types, as well as traditional design-bid-build projects, and should have the same incentive/disincentive for all project types.

Different states implement a variety of quality management approaches, but most do not favor one way over another. The most important idea is that quality is met for each project and clear expectations for quality management are set in the RFP.

### Salient Points:

---

- ◆ Roles and responsibilities for QA differ for each agency/DB relationship as do the cost mechanisms to fund it.
- ◆ QA manuals are either provided by the agency or are contractor furnished but does not distinguish one as better than the other.
- ◆ Pay adjustment factors can help improve the construction process if they are used as a bonus for achieving a higher level of the quality criteria. It is also used a disincentive if the DB'r fails to achieve the criteria, payment is reduced.
- ◆ QA approach is 1 of the following 3 options:
  - ◆ Traditional (DBB approach): agency does all sampling and testing (4 states).
  - ◆ Mixed: 3<sup>rd</sup> party firm does sampling, agency does validation (9 states).
  - ◆ Supervisory: 3<sup>rd</sup> party sampling and testing, minimal owner oversight, typically used in very large projects (2 states).
- ◆ The paper describes the three approaches and identifies which state performs which approach. Those that perform the mixed approach, find the traditional is a duplication of work.

### Application to MDOT:

---

- ◆ MDOT does a good job of defining who is responsible for what role in quality. However, there is little material assisting in developing the roles. Section 2 of Book 2 dedicates approximately 3 pages to quality role definition and requirements and specifically only discusses design quality.
- ◆ This paper focused on construction quality and did not address design quality. This paper doesn't give pros and cons to each QA approach. Currently MDOT requires the design-builder to provide design QC with MDOT or MDOT's consultants performing design reviews.
- ◆ MDOT requires the design-builder per Section 2 of Book 2 to prepare a design quality plan.
- ◆ MDOT currently performs construction inspection acceptance and testing acceptance in-house or hired consultant personnel. The majority of states push construction quality for the most part onto the design-builder with 4 states indicating they do all the testing for acceptance. MDOT does not align with the majority of states responding in the paper.

### Recommendations:

---

- ◆ MDOT should maintain consistency in the quality management and acceptance.
- ◆ MDOT should provide more detail in Book 2 Section 2 or provide templates for requirements of roles and responsibilities as well as what an acceptable quality management plan for design and construction is. Examples that show more detailed quality plans will help the design-builder understand the expectation of delivery.
- ◆ Consider moving away from a traditional approach of construction quality and requiring the design-builder to show proof of quality through their own inspections and testing. This allows MDOT a more hands-off acceptance approach and one of owner oversight and validation.
- ◆ Consider evaluating quality approach or quality management as part of the selection criteria.
- ◆ Adding incentives for achieving higher quality the specified criteria is also a tool that can benefit MDOT, but it must be appropriately budgeted for.

---

## 11. *Proven Practices in Design-Build and Fast Track* (Elvin, 2003) -ASCE Academic Research

**Building a shared language is key in project success.** All team members need to be able to speak the same language through in person meetings or technology. Communication creates transparency in projects, so everyone has the same understanding. Technological communication has issues with security, user interface and difficult of modeling information.

**Plan for iterations and feedback.** Sometimes design should wait until a certain amount of construction has occurred. A window in a building wall may be better positioned once the wall was in place; raising the window may create a better view or improve the lighting. On the fly design is possible.

**Early Downstream Information from User Input.** Designers need to learn a new way of doing things and what questions to ask to improve design. The team needs to rely on the experts, whether that's tradesman, engineers or contractors. Sometimes several iterations and meetings are required to understand the most cost-effective design.

**Team Building.** The leading contributor to project success is project team motivation and cooperation. When the designer and contractor are on the same team, they are more likely to work out their differences instead of making the owner the middleman. Communication, trust, common goal definition, rewards and responsibilities enable teamwork.

**Flexible Project Organization.** Success on projects can often be realized when contractors help in design and designers help in construction. Traditional project organizations prohibit this but allowing for flexibility to fill in the gaps can help keep a project on schedule and within cost.

**Team Co-location.** When a team is in the same location, a more complete sharing of ideas is possible. The large quantities of information including how, and why do not need to be discarded. Having the designer onsite during construction can allow for field adjustments as the project evolves. Return on investment for collocation reported between 10:1 and 15:1.

**Planning.** The key is to have design and construction working together early to create a plan that works for all parties involved.

**Flexible Project Definition.** Features that can be adjusted by mutual consent between the designer and builder can be effective in design build as well as setting the performance specifications, but not committing to intricate design details too early.

**Synchronized Workflow Planning.** Real world scenarios when schedule is the driver means many tasks are not sequential. Many interdependent tasks are occurring at the same time. Intense communication and adjustments may be needed, so both designers and contractors should be understanding of the needs of each discipline.

With these, design build can be more teams working together for a successful project.



### Salient Points:

---

- ◆ Build shared language for project success (acronyms and terms).
- ◆ Plan for design iterations and feedback (review cycles).
- ◆ End user input can improve design with early downstream information – having meetings with those that will construct the project can help the designer find innovation. Those building it will look at the project from a different angle.
- ◆ Team building leads to project success – constant communication and collaboration.
- ◆ Flexible project organization – Blur the lines between roles, and accept all help from any level.
- ◆ Co-locate when possible – increases opportunity for direct communication. Collocation breaks down communications barriers quickly. Although difficult discussions and arguments have also been reported, communication has been constructive and productive.
- ◆ Synchronize workflow planning – design shapes construction, and construction shapes design; each requires information from the other.

### Application to MDOT:

---

- ◆ MDOT does not have published acronyms and definitions to assist in a common language understanding.
- ◆ MDOT does require multiple design reviews, generally 30%/60% and RFC.
- ◆ MDOT generally does not have maintenance teams review designs, however MDOT does engage maintenance crews in RFP development. MDOT encourages reviews by all parties, including design reviews by the field crew of the design-builder.
- ◆ MDOT does not generally have formal partnering sessions to foster team building with the design-build team.
- ◆ MDOT does not generally use co-location of owner and design-builder, but have instituted it on recent projects.
- ◆ Project success items, such as co-location, are not mentioned or addressed in the MDOT guidelines.

### Recommendations:

---

- ◆ MDOT should remain flexible in their projects to garner the greatest opportunity for project success.

Adding project success items such as the following will help benefit the MDOT program:

- ◆ Engaging construction crews and maintenance crews as well as requiring constructability reviews by construction personnel of the design-builder will improve designs, reduce rework and improve construction schedules.
- ◆ Co-location and formalized partnering. MDOT template procurement documents could add suggestions/recommendations or PM prompts to serve as reminders in the procurement development process for instituting these into the appropriate projects. Creating a threshold for co-locating can be a good base line to maintain consistency. Encourage partnering between the agency and the design-build team. Changing the mentality to “one team” is critical for design-build success. Formalizing the partnering process can also streamline future projects involving complicated risk allocation where dispute/contract modification is likely.
- ◆ Co-location can assist in blurring the lines between roles. Regularly reminding people at team meetings this is a collaborative project and we want to “do” what is best for the project can assist in blurring these lines also. Co-location also encourages team building, communication and can help streamline the lengthy design and review process. Co-location assists in establishing a path for escalating issues.

## 12. *Design-Builder Selection for Small Highway Projects*

(Molenaar and Gransberg, 2001)

-Article in Journal of Management in Engineering

This research compares 6 design-build projects between \$2 and \$30 million and their evaluation methods. The four design-builder selection procedures include fixed price (low bid), one step, two step method and sole source selection (qualification only). The one and two step methods are often referred to as best value, but there is no standard for how each state gets to best value.

Fixed price does not consider qualifications during selection and only the price or quantity of completion is assessed. Some states have requirements to only select low bid proposals. In the one step process, proposers submit a technical proposal with the cost proposal and the agency evaluates it. One evaluation method is to assess all the technical proposals first, accepting all proposals above a certain minimal score, and then select the low bid. Another evaluation method considers the lowest cost proposal and decides if it was considered 'responsive'. If not, selection moves on to the next lowest proposal. A concern about one-step proposals is they do not allow design-builders to fully respond to identified gaps in the scope, where a cheaper proposal may have failed to identify the scope and be given a change order later.

Two step procedures involve prequalification or short-listing firms through an RFQ process, but again with no consistent way to do this process. One state submits the future RFP with the RFQ so the design-builder fully understands the scope and how to respond to the RFQ. Once they created a short list, the design-builder submits a technical and price proposal. Technical scores are divided by the lump sum price to receive a best value score. Another state assigns a quality credit based on a proposer's technical score to lower the cost of the price proposal. They see a better technical score as cost savings.

More research is needed to understand how each procedure affects performance. More research is also needed on the effects of the best value weighting criteria is needed. There is no standard available and what one state values, another state does not. The design-build world will continue to expand with more smaller projects, so it makes sense to utilize lessons learned between agencies and create a standardized method.

### Salient Points:

- ◆ Single step selection with low price does not consider gaps in scope between proposers – Ohio found single step does not work well but agencies are often impacted by the low bid culture.
- ◆ Two step selection short-lists firms, but scoring is inconsistent; price adjusts technical score, or technical score adjusts price. Standardization is called for.

### **Application to MDOT:**

---

- ◆ MDOT typically uses a two-step process with final selection in the second step typically being low bid. Differing from the two-step process defined in the research that considers a technical score of the proposal also. MDOT has recently completed a fixed price variable scope ITS DB project, however this fixed price project did not consider approach to the project, but awarded based on the number of sites achieved for the fixed price (ID/IQ approach).

### **Recommendations:**

---

- ◆ MDOT should evaluate the purpose of using design-build, if it is for innovation and time savings including technical score on approach. Also, MDOT should consider that innovation through the use of ATC's often result in a lower cost and a high technical score, thus offsetting the initial low bid approach.
- ◆ MDOT should consider more use of fixed price to measure the effectiveness and improvements for additional projects with fixed price delivery method. Fixed price with approach and variable scope considerations can provide tremendous value to an owner. The owner can realize additional scope and/or value when approach is included in the fixed price contracting method.

---

### 13. *Contractual Approaches to Address Geotechnical Uncertainty in Design-Build Public Transportation Projects* (del Puerto et al., 2017) -Article in Journal of Management in Engineering

Geotechnical risk is a major issue in any project, even when extensive investigation is done during design. Evaluation of three approaches to mitigate risk with Geotech uncertainty were studied:

1. *Use a geotechnical baseline report.* On one project, Hawaii provided a GBR with the RFP from preliminary information the agency collected. They took a boring every 1000 feet throughout the alignment. The consultant who performed the borings was heavily involved with the DB process and throughout construction. The project saw a 15% savings and better construction prices.
2. *Use unit price pay items inside the larger lump sum to share the risk with the design-builder.* Montana had a best and final offer clause for the entire budget and wanted to complete the maximum amount of work for that price. ATC's were encouraged. Lump sum projects require the Contractor to take on the full risk if the item is uncertain. For this project, Montana assigned unit prices to the uncertain geotechnical items so the contractor would be entitled to payment without risk. This process allowed the agency to take on part of the risk for the unit price items while the design-builder took on the risk for the remainder of the project which was lump sum. The owner removed risk to themselves by creating a funding cap on the geotechnical work, so when the cap was hit, the work was halted.
3. *Nested DB* - the project was traditional DBB, but Missouri DOT nested a portion of the work (landslide repairs) as design-build into the DBB contract. This was done through a preapproved subcontractor that was on board for as much or little as might be needed. They report the landslide design took 5 days and the time 't' between the landslide and construction completion was almost cut in half.

All the approaches were effective in mitigating the risks. The GBR can help mitigate large contingencies that might otherwise be realized. The unit price example meant the risk for unknown quantities was removed. The nested solution means a reduced response time to Geotech issues that might occur unexpectedly. Unfortunately, these cannot be applied generally to the design-build world but can give agencies ideas as to what has worked and why.

### Salient Points:

---

- ◆ Use a geotechnical baseline report where there is significant geotechnical risk.
- ◆ Use unit price pay items (or level of effort approach) inside the larger lump sum to share the risk with the design-builder – balancing the lump sum DB risk when quantities are not certain. The example showed how the Owner can share risk with the design-builder, but also protect itself by capping the total contract.
- ◆ Nested geotechnical as a DB project to mitigate risk inside a DBB can improve schedule and closures in an emergency.
- ◆ Design-build can be used as a tool to mitigate risk and help find rapid solutions of issues.

### Application to MDOT:

---

- ◆ On projects with a heavy geotechnical component, where risk is high, the use of GBR or more extensive geotechnical exploration and borings are encouraged within the MDOT innovative contracting model.
- ◆ MDOT is silent in its guidelines on sharing risk through level of effort or unit priced elements of high risk.
- ◆ MDOT has not used a nested project whether it is a DB nested in a DBB or a DBB nested in a DB.

### Recommendations:

---

- ◆ Continue the practice of providing a geotechnical baseline report as the project dictates. Often preservation type projects may not require this, however sufficient borings identifying “bad soils” is still warranted. Establishing the need for a GBR in the project delivery selection tool or another flow chart would help MDOT stay consistent for industry regarding the level of data provided at procurement.
- ◆ Through this paper, MDOT can see that every design-build project can be unique and therefore the procurement, contract and delivery unique. Consider risks and look for risk management, not necessarily risk transfer. Consider the use of Monte-Carlo analysis for risk management and budgeting.
- ◆ Nested DB projects within a larger DBB project is worth considering and expanding application. Nested DB projects allow components of DB (such as Geotech, MOT or SUE) that can provide benefit, without warranting the entire project to go DB.

## **14. Recommended Guide for Next Generation of Transportation Design-Build Procurement and Contracting in the State of Georgia**

(Ashuri and Kashani, 2012)  
-Research Prepared for Georgia DOT Research Center

This paper is to develop an approach for choosing innovative contracting and evaluating what projects could benefit from innovative delivery systems. It is important that contract documents should have at least 4 sections: 1. Instructions for proposers, 2. Scope of the Project, 3. Technical Requirements, and 4. Standard design specifications and guidelines. Streamlining the procurement process through templates and understanding the strategic goals of the Department can expedite this process. Specifying project goals, outlining deal-breaker issues, and performing a SWOT (Strengths, weaknesses, opportunities, and threats) Analysis are good general templates to understand the project.

Colorado DOT has a selection method and questionnaire to vet projects for appropriateness. Most projects use the two step best value procurement method. The DOT evaluates the SOQ for each team against their evaluation criteria including qualifications, personnel and technical approach. This could be a 60-day process with board member approval. The RFP is typically set no later than 90 days after the RFQ. Award should be within 180 days after the deadline for submitting proposals. Preproposal conference, industry review meetings one-on-one meetings and preproposal submittals are all part of the CDOT process. They do pay stipends on some projects. CDOT has full ownership of their ROW. For environmental, they offer a conceptual design and contract that allows for some variation/innovation on the design-builders part. The risk of implementing and documenting the permit requirements must be defined in the RFP. Utility agreements should be completed before the final RFP by the owner.

Florida uses the two step best value method to select a design-build team and offers stipends to the teams not selected. They use an adjusted score to determine the price proposal as it relates to their technical score. Prequalification is a required step in FDOTs process. They require a letter of intent from design-build teams and must receive 3 in order to progress to the RFP stage. From those that submit the LOI, a short list is created by a selection committee. The short list teams will all receive a stipend for their efforts on the proposal based on a table they have developed with 'a factor\*estimate' based on the contract value. Proposals are evaluated through several methods they have designed, one of which is to have technical experts rate only those areas of their own expertise. The owner has approximately a month to review the proposals. FDOT also has a low bid design-build, design-build hybrid and design build with options that its talks about but are not widely used. FDOT coordinates with utility companies upfront, but then shifts the burden to the design build team to finalize. They will determine which utilities need to be paid for and which are available for reimbursement. ROW will be initially determined by the owner at the front end, but if additional ROW is

required, it will state who is responsible for what in the RFP. This includes if additional ROW is required because of the design build teams innovation. The owner will typically begin the environmental process and if changes are required, that is done during the design phase by the design-build team.

Virginia DOT has been split down the middle between low bid and best value. For low bid, they have only used a single-phase procurement. When doing the two-phase best value, there is a stipend offered to the unsuccessful bidders. VDOT retains the right to use technical solutions, design concepts and other information if stipends are given. Even on two phase though, the weight is given 30/70 technical/price. The price proposal is lump sum and the contractor will be paid on a schedule of values or work packages. They are still working out much of their design-build criteria and evaluation as they have had some lawsuits causing adjustments to policy. VDOT acquires the NEPA document before the design-build process but shifts the responsibility of ROW to the design-build team.

Clarifying the risk allocation is critical for the success of design-build projects. If one state wants to do right of way acquisition but put the risk of utilities on the design-builder, it needs to be very clearly expressed. Developing risk matrices to identify who takes on the risk and what it means for the project is crucial. This paper includes several spreadsheets that can be used as templates to identify what they are and where the risk lies. Analyzing, evaluating and treating/mitigating the risks should be a part of every project and deciding whether design-build is the appropriate delivery method.

The final section of the paper runs through evaluation criteria for agencies to use in the proposal process. Best value can be divided into A+B, Adjusted bid, Adjusted score, Weighted criteria, Fixed price – best proposal, and Best and Final Offer. Explanations of each are included and how to score them based on each.

Through the risk and SWOT analysis, the agency can understand the project and decide if design-build is the best delivery method to choose. From there, they can use a systematic approach to evaluate the proposal and streamline the length of procurement time and help design-build projects move along.

### Salient Points:

---

- ◆ A systematic and consistent approach is important to vetting a DB project and the appropriateness of the delivery system – the paper found inconsistencies between states in their processes and so developed an evaluation process for projects.
- ◆ Paper offers a framework called SWOT (Strengths, Weaknesses, Opportunities, and Threats) that can be used to determine the suitability of the delivery system.
- ◆ New procedures, contracts and practices are required to separate Design-build from the design bid build mentality. Constant updating is also required as the industry evolves.



- ◆ Contract documents should have at least 4 sections: 1. Instructions for proposers (ITP), 2. Scope of the Project, 3. Technical Requirements, and 4. Standard design specifications and guidelines.
- ◆ Best value can be divided into A+B, Adjusted bid, Adjusted score, Weighted criteria, Fixed price – best proposal, and Best and Final Offer.

### Application to MDOT:

---

- ◆ MDOT does not have a project delivery selection tool established.
- ◆ MDOT does has a design-build specific contract and a CMGC specific contract that differs from DBB.
- ◆ MDOT does follow the paper suggested section in procurement documents with an ITP, scope definition, technical requirements (performance specifications, Book 2) and Standards requirements (Book 3).
- ◆ MDOT uses low bid in a two-step approach and has awarded fixed price design-build.

### Recommendations:

---

- ◆ MDOT should establish a selection tool for project delivery. The tool will provide consistency to the overall capital improvement program. The tool should be used at the “call for projects” stage and revisited as more is known of the project. The tool should establish a framework for SWOT for each delivery method. The tool should consider all types of project delivery, including DBB, CMGC, DB, IDIQ and others that MDOT is interested in. The tool should accurately evaluate the project against the advantages and disadvantages of each delivery method. Inside the delivery method the tool could provide additional insight into the contracting method to use for the delivery type such as inside design-build using lump sum, guaranteed maximum price, or operate and maintain (DBOM), maintain (DBM) and/or whether to use progressive design-build. Some other metrics the tool could consider include, experience level of available owner staff, complexity of the project, need for innovation, risks associated with the project, cost, current level of design, stakeholder needs, and schedule.
- ◆ MDOT should continue to use the approach to procurement with an ITP, Book 1, 2 and 3, as this does meet industry practices.
- ◆ Projects more heavily based on quality and technical approach are more likely to succeed, as compared to price and delivery method standards. A two-step best value is encouraged in the industry and recognized as a solid approach.
  - MDOT should consider scoring the second step of the best value procurement, encouraging more innovation during proposals. Moving away from low bid approach and towards innovation in the technical design and approach is found to have the most success.

---

## 15. *How to Guide Alternative Contracting Projects* (Molenaar, 2020) -Transportation Research Board Presentation

A webinar presentation that addresses challenges and strategies of contract administration for alternative contracting. Many manuals focus on pre-award phases, but more guidance is needed on post-award administration. Project phases include pre-award, aligning the team to establish integration, design, preconstruction services (where the contractor to provide input on CMGC contracts), construction, and closeout. Each phase has key activities and goals, for example the preconstruction phase allows the Contractor to provide input on the design to enhance constructability and innovation. Project administration has overarching strategies for DB and CMGC that help create a quality project and improve efficiency.

For DB project administration, the strategies are alignment, scope, design quality, construction quality, and construction efficiency. The overarching strategies for CMGC project administration are alignment, scope, preconstruction services quality, construction quality, and construction efficiency. The strategies are implemented using delivery method tools such as co-location and design workshops. Each agency should develop their own guidebook for phasing, strategies, and administering each alternative delivery method they use.

Continuity of team members, Co-location of key personnel, In-Progress design workshops, Independent cost estimator, Opinion probable construction cost process, and cost savings matrix, are tools to be used in project administration.

### **Salient points:**

---

- ◆ Do not focus the whole program on selection of the design-builder, prepare execution phase procedures – The paper gives a number of strategies and ideas to ensure quality throughout all phases. These include:
  - Over the shoulder reviews (OTS), workshops, I/D programs, and delegation to the on-site owners engineer are all ways the agency can support meeting the project goals regarding quality.
  - Personnel, including keeping the same personnel throughout, open communication and co-locating the team members are key tools in a successful project.

### Application to MDOT:

---

- ◆ MDOT has a DB and CMGC execution program policy and procedure manual that encompasses the entirety of the process from programming to project closeout.
- ◆ MDOT does use OTS reviews and workshops and has used incentives and disincentives before.
- ◆ MDOT generally keeps the same personnel assigned to a DB or CMGC project throughout its life. These include the ICC lead and PM.

### Recommendations:

---

MDOT should evaluate their existing project execution manuals for use of best practices defined in this research. The following ideas should all be included:

- ◆ Describe roles and responsibilities with a table, including agency personnel and other agencies (FHWA, etc.) and their actions.
- ◆ Key personnel required in a co-location. MDOT encourages active participation. Co-location encourages this further.
- ◆ Staff required to stay on the project throughout the entirety of the project.
- ◆ Over the shoulder reviews.
- ◆ Expand the incentive/disincentive program to include materials for superior quality and allow Contractor controlled QC testing.
- ◆ Delegating authority and allowing the engineer managing the project to make decisions will increase efficiency during construction.

Establish a form to track innovations, possibly through a cost savings matrix developed by the project team to track the value added (scope, schedule, and budget) of innovations that are being implemented. It assigns actions throughout the life of the project. These innovations can then be evaluated at set and regular intervals to track the final product vs the initial intent.

---

## 16. *Appropriate Risk Allocation in Design-Build RFPs* (Molenaar et al., 2000) -ASCE Academic Research

This paper is a framework to assist owners with their RFP to reduce risk. It is important to include as much information as possible whether through the Project Definition package (PDP) or the RFP. Submitting a comprehensive PDP within the RFP, including information on project stakeholders, objectives, characteristics, scope and context can help reduce risk as it helps the team to understand the full context of the job. The paper offers a matrix of performance parameters within the PDP that can help define the project and make the design-builder aware of different aspects of the project.

Uncontrollable risks include weather, unforeseen conditions and material costs. Controllable risks include variations in performance, low productivity, and design errors. Risks that are assigned to the owner include environmental permitting, political climate and/or litigation against the owner to stop the project, obtaining funding, right of way, utilities, and other delays. Risks allocated to the design-builder include design errors, construction defects, and differences between preliminary and final design. The owner will accept the risks of delays caused by the owner, obtaining access or permits to the site, funding and political climate towards the project.

---

### Salient Points:

- ◆ Include as much information as possible through the Project Definition package and/or the RFP to reduce risk. The paper suggested what to include in the PDP document, including the following: stakeholders, objectives, characteristics, scope, and context. The more information the design-build team has, the more likely for success and subdued risk.

---

### Application to MDOT:

- ◆ MDOT should make sure the project description and other available information provided is comprehensive to help the design-builder manage the risks. Guidelines for project items to include or be considered in each RFP could be created to better streamline information and process.

---

### Recommendations:

- ◆ MDOT should evaluate what information is provided with the RFP as contractual and as information only. Providing information as contractual, such as geotechnical borings, survey and SUE data can reduce contingencies as opposed to including the same information, only as informational. Providing as-builts and old pavement core data, etc. as information only versus not providing it in the RFP can reduce risk and contingency price by design-build teams.

## 17. *Impact of Risk on DB Selection* (Tran and Molenaar, 2014) -ASCE Academic Research

This paper considers how risk impacts the DB delivery selection. The research posed a questionnaire to 52 agencies with 450 respondents, including the TRB Project delivery committee, AASHTO committees, DOT innovative contracting committees, etc. to get as wide of perspective as possible on how different risk factors applied to DB projects. They asked to rate on a scale of 1-5 how impactful 39 different risks were. 152 valid responses were received and analyzed, and they found that 23 of the 39 risk factors impacted delivery selection. The 23 could be grouped into 7 categories.

1. **Scope Risk** – this includes project definition, scope definition, staff experience and availability and conformance with regulations, guidelines and documentation.
2. **Third Party and Complexity Risk** – Includes delays in utility agreements, obtaining agency approvals, project complexity (ROW, traffic control, structures, utilities, etc.), hazardous waste and legal challenges.
3. **Construction Risk** – includes geotechnical investigation, work zones, environmental impact, QC/QA
4. **Utility and ROW Risk** – includes unexpected utilities or delays in the ROW process
5. **Level of Design and Contract Risk** – includes design completion, single or multiple contracts or unclear contracts
6. **Management Risk** – Project and program management issues and insurance
7. **Regulation and Railroad Risk** – intergovernmental agreements/regulations and railroad agreements

Risks are often shifted to the design-builder when unknown. Contractors will often add large contingencies to the project to cover unknowns. Two hypotheses were compared:

1. There is no significant difference in risk preference between public owners and design-builders regarding delivery selection.
2. There is a significant difference in the risk preference between public owners and design-builders regarding delivery selection risk factors in the DB delivery method decision.

Scope risk is identified as the greatest risk. The design-builders and owners for the most part agree on the risks except for construction risk, where the design-build teams favored more heavily.

### Salient Points:

---

- ◆ Scope risk is identified as the greatest risk. This risk includes risks associated with poor project definition, poor scope definition, staff experience and availability, as well as conformance with regulations, guidelines and documentation.
- ◆ Design-builders and owners agree on most risks, except that the design-build teams are more capable of managing risks associated with construction.
- ◆ Shifting unwarranted risk to the design-builder will result in large contingencies.

### Application to MDOT:

---

- ◆ MDOT should pay close attention to the scope definition in the RFP. It is of utmost importance to give a comprehensive scope and project understanding in the RFP including agency goals and project intent.
- ◆ MDOT does share risk with the design-builder.

### Recommendations:

---

- ◆ MDOT should establish a standard process for identifying risk and a protocol on who to assign risk to. Protocols can be based on a myriad of variables such as overall risk profile of a specific risk the project as a whole, the ability to manage the risk, the available information to understand the risk, the ability to define the risk among others.
- ◆ Provide as much information as can be given to help the design-builder understand what their roles and responsibilities will be (reviews, QC, regulations, etc.). This can help minimize the contingencies that the design-builder may add to cover the unknowns.
- ◆ Thoroughly evaluate risks and verify that the risk is assigned to the party most capable of managing it. Be clear in the RFP who is responsible, management and expectations of each risk.
- ◆ Consider sharing risk with the design-builder and make it clear how the risks will be shared. Formalize the tracking process in risk analysis throughout the life of the project.

## 18. *Realized Economic Efficiency of Road Project Delivery Systems*

(Koppinen and Lahdenperä, 2007)

-Academic Research Journal of Infrastructure Systems

The research compares operating principles and performance of DBB, construction management, DB, and DBM. DBM changes the project from delivering an asset, to delivering a service, ranging between 10 to 50 years of service. Three summary factors were evaluated:

1. cost performance
2. value generation
3. economic efficiency

This research considered the impressions of interviewees regarding the performance of difference delivery methods. Methods where the contractor is responsible for design (DB and DBM) were perceived with greater value. The broader and more complex a project, the better the perceived value generated, allowing for greater efficiencies and better opportunities to develop operations.

Economic efficiency is better for DB and CM over DBB, with DBM being the most efficient. DB and DBM can meet the needs and wants of clients better than traditional or CM project delivery. The paper considers economic efficiency as the ratio of value generation and cost performance or  $EE=V/C$ . This looks like the higher value and lower cost results in a greater economic efficiency or low value and higher cost results in the opposite. Values are determined on a scale from 0-5 through an agency assessment on the following factors: Public inconvenience, cost certainty, time certainty, short cycle times, good quality, safety & environment, flexibility and smooth delivery.

### **Salient Points:**

- ◆ More complex projects result in better perceived value for a DB team, allowing for greater efficiencies and better opportunities to develop operations that create value than that of traditional DBB.
- ◆ Economic efficiency is highly dependent on how value is measured, based on the ratio above; it is meant to indicate performance level, not as a true numeric representation.

### **Application to MDOT:**

---

- ◆ MDOT includes design-build in its procurement process but maintains the culture of a traditional project.
- ◆ MDOT could consider the results of this research if they were considering projects with a long term DBM contract. DBM is an efficient delivery method that yields cost savings given a large enough scope, project size, and length of service maintenance post construction.

### **Recommendations:**

---

- ◆ MDOT should develop a protocol to take advantage of creating value as the program grows and incorporates maintenance and/or operations in a design-build delivery.
- ◆ MDOT should develop a selection tool that determines which project delivery method is appropriate given the project characteristics and constraints.
- ◆ Include formal training for agency staff to help create a culture shift and understanding the intricacies of an innovative contract.



---

## 19. *Innovative Contracting Manual: Contracting Methods Manual Selection Criteria* (McCullough, 2009) -White Paper Produced by Indiana DOT

This paper is INDOT's procurement manual for describing how they decide which delivery method to implement. A+B is the first option they recommend, and the manual gives specific recommendations for the types of projects that A+B is intended for, including reconstruction, rehabilitation in urban settings and on major roadways/bridges and interchanges. Traffic control phasing and lane closures are defined and structured. It is important for the contract to define the start and completion of the time component in the work and what is expected of the Contractor. For example, time components for pre-activities of submittals and fabrication, and post-activities of landscaping and sidewalks. Drawbacks to A+B method include a sacrifice of quality to meet faster schedule or higher bid prices beyond potential time savings to users.

A+B/I/D is a new approach that combines A+B bidding and Incentives/Disincentives together. I/D minimizes the time that a facility may be affected. The agency determines the maximum duration and the contractor bids the cost to complete within the given time frame. They balance the cost of the project and the cost of the time to get the project bid price. It has several applications, including projects with lengthy detours, high traffic disruptions, or strategic bridge replacements. Advantages and disadvantages are like A+B contracting although it can put higher stress on the agency to meet the aggressive time component and not cause the contractor any delays. The agency may struggle to identify what an appropriate time component is that causes a contractor to work aggressively to get the job done ahead of time and benefit users but yet not distract from quality. Agencies have reported that disincentive payments are difficult to recover.

Design-build is selected by INDOT typically when design is part of the critical path, when the scope has been clearly defined and the agency believes the high-risk items can be handled within budget and schedule. It is also a good method when the agency desires innovation or when the agency does not have the capacity or expertise to complete the project. Some advantages include having a single point responsibility for both design and construction. This can advance the design and minimize the schedule, but the agency loses control over final design. DB may cause higher procurement and construction costs due to reduced competition.

Hyperfix was a project that INDOT implemented that shut down their main freeway I-65/70 for 55 days. This allowed a very accelerated time schedule with no restrictions to the contractor because of traffic. It is imperative that an alternate route be available for the traveling public. The accelerated work could result in higher costs with additional resources and additional strain to the agency to monitor activities or make decisions when problems arise. Quality may suffer.

Incentive/Disincentive is when the agency specifies the time to complete a project and offers an incentive for early completion and disincentive for late completion. This

project type is recommended for projects that require traffic restrictions, have long detours, are relatively free of third-party concerns, and have a favorable cost/benefit ratio to the public. As stated in the A+B+I/D, there are significant reductions to project construction time. It may cause higher costs and could compromise quality. The agency also bears the risk to accurately estimate the I/D time and not delay the I/D date. Disincentive payments are also difficult to recover.

Warranties can guarantee the installation and product for a defined amount of time, but not design. It reports that MDOT has reported that contractors appear to pay more attention to quality issues and that small and medium size contractors don't bid on those projects. Warranties make sense for pavement projects where outside factors won't affect the pavement over time because external factors, such as preexisting conditions that affect the quality in a large way. Contractors have expressed concerns that it would reduce their future bonding capacity.

Workday with no excuse completion date contracts sets the number of days for the contractor. It is best on small to medium size projects where a definite number of days can be determined.

### Salient Points:

---

- ◆ Balance cost and user benefit for all projects – this was across the board in making the best decision for the department.
- ◆ DB works when design is the critical path and when scope is clearly defined.
- ◆ User considerations include traffic volume, detour lengths, and key infrastructure like bridges.
- ◆ Overly accelerated schedules induce stress on the agency, and may lower quality.
- ◆ DB encourages innovation.

### Application to MDOT:

---

- ◆ MDOT balances cost and user benefits using C03 analysis and quantifies delay costs.
- ◆ MDOT contracts third parties when a project becomes overwhelming to the agency.
- ◆ This paper references multiple years of research by INDOT. They utilize many of these contract types. Each has their advantages and disadvantages, so each project needs to be reviewed individually with these in mind to make the best choice for the project. MDOT can consider each of these to include in their toolbox for delivery type.

### Recommendations:

---

- ◆ Develop a protocol in MDOT's project delivery selection tool that evaluates the use of A+B, I+B+I/D and I/D as well as evaluates the project characteristics, schedule, including critical path and scope.

## DBIA Publications

### Synopsis of Application of DBIA documents to MDOT:

Overall MDOT has a good basis for successful design-build based on best and common practices across the country as defined in the DBIA publications. The most important keys to success that were observed include:

1. Being clear in the RFP with project scope and identifying all known risks are key to success. Describing very clearly the intent and expectations MDOT has for the project will allow the design-builder to understand what innovations are best suited for the project.
2. Providing as much information as possible, especially in areas that could cause additional risk to the Contractor for project specific items (i.e. Environmental, traffic control, geotechnical).
3. Developing a clear decision-making process for deciding the appropriate alternate delivery method.
4. Provide a clear and concise scoring system for the proposals.
5. Encourage innovation through a streamlined ATC process.

---

### *Design-Build Done Right: Universally Applicable Best Practices* (America, 2014)

This paper outlines practices available to use on any design-build project no matter the funding source, type, etc. to help increase the probability of a successful project.

The owner should review the project characteristics in the context of their own agency to determine if design-build is an appropriate delivery method. The review should include identifying limitations, risks, stakeholders, and senior leadership that is committed to the success of the project. When design-build is identified as the correct method, the owner must implement a procurement plan. Quality based proposals with realistic budgets can enhance project success. It is also important to consider the amount of effort required by the proposers in creating deliverables, and restrictions placed on them minimizing their ability to be innovative.

Clearly outline how price and technical concepts will be used in proposal evaluation. The owner should perform preliminary geotechnical, utility investigation and environmental evaluation to aid in the understanding of risk as well as offer confidential meetings, and stipends to unsuccessful bidders.

Contracts should be fair, balanced and clear, using language that is easy to understand as well as encourage communication with stakeholders. It should address specific standards of care that are unique to the design-build process including performance

guarantees, the owners role, and project milestones. Contracts should address the owner/design-builder relationship as well as the design-build/team members relationship.

Team members should be educated, trained and understand the design-build process. When the project is underway, co-location should be evaluated based on the complexity and volume of design submittals. The project team should establish communication protocols for meetings, with stakeholders, decision making, and if issues should arise. Realistic delivery schedules, documenting decisions, and tracking changes are techniques to help manage the design process so that there is alignment with the entire team.

### **Salient Points:**

---

- ◆ Be objective and proactive in choosing the design-build method, considering risks, stakeholders, project constraints and limitations.
- ◆ Develop a procurement plan that is in harmony with the Owners vision.
- ◆ Clearly outline scoring criteria, including price.
- ◆ The owner should develop preliminary geotechnical, utility investigation and environmental evaluation for use in proposal preparation.
- ◆ Produce fair, clear and balanced contracts.
- ◆ Personnel should be well trained and support the project delivery.

**Application to MDOT:**

---

- ◆ MDOT follows many of the best practices.
- ◆ MDOT does not have a selection method in place to decide the delivery method.
- ◆ The project goals are explained in the RFP and are mostly schedule driven.
- ◆ MDOT describes the scoring criteria in the RFQ. However, the RFP does not evaluate a technical approach only price, as the second step is low bid.
- ◆ MDOT does not overly evaluate geotechnical, utility and environmental in the proposal.
- ◆ MDOT does not have formal training for its staff on innovative contracting and the differences between that and traditional DBB.

**Recommendations:**

---

- ◆ Develop a selection tool for the delivery method that is objective and realistic to the project constraints.
- ◆ Describe the owners vision in the RFP. Include the intent, expectations and schedule.
- ◆ Develop a scoring criteria for the proposal that include the technical approach that includes geotechnical, utility and environmental.
- ◆ Review the contracts to be fair, clear and balanced.
- ◆ Generate a formal training for innovative contracting that can help shift the culture to understand the differences between that and traditional DBB.

---

## *Transportation Sector: Design-Build Done Right* (DBIA, 2016)

Transportation projects can be different than other projects in that they are directly affected by state and federal laws and regulations. Projects are scrutinized, particularly during the NEPA process. The projects are within public right of way which affect public safety and could cross many jurisdictions all of whom may have different availability and education with regards to the design-build process.

Owners should give an objective assessment of the project to determine if the project is a good candidate for Design-build. Understanding the benefits and limitations is critical. Once design-build is chosen, a plan needs to be in place that enhances the project goals and Owners expectations and vision for the project. If price and technical are being scored, the selection process must be clear, fair and value both pieces of the project.

Contract methodology differences from the universal best practices include evaluating the right of way and utility impacts and identifying the parties involved. Providing as much information as possible to the teams with regards to expected acquisition or agreement dates, ROW boundaries, utility conflicts, and expectations of the design-builder so that they can effectively understand the responsibilities and risks associated with utilities and ROW. It is best practice for the owner to hold responsibility for ROW costs and relocations.

Railroad and environmental concerns should be identified early, and strategies discussed to help mitigate risks.

ATC guidelines should be developed clearly so that as they are reviewed, they can have the best and most positive results towards innovation. Owners may need to allow flexibility in their design processes but should clearly define what those are either in the contract documents or through ATC's. ATC's should not compromise the project intent but give new ideas that may not be included in the contract documents.

Contracts should always be fair and clear including stakeholder coordination, risk allocation, submittal requirements, utility plans and conflict matrix, subsurface validation, restrictions on third party facilities, and any other risks that the design-build team may need to understand. Risks with Environmental, MOT and traffic control should be included where necessary, especially if the restrictions will be high. Environmental permits and governmental approvals should be identified as to who will have the responsibility for NEPA reevaluations.

In executing the contract on transportation projects, the key personnel should be well educated in design-build and know the intricacies of the process. They should remain consistent through the contract period. This could be especially true for the environmental personnel familiar with the NEPA process and requirements. Environmental team members should attend project coordination meetings during all phases to verify compliance with requirements. The design-builder should identify early action items such as identifying the ROW issues, long lead items with Geotech or utility investigations and how the communication will occur with such stakeholders.

### Salient Points:

---

- ◆ Owners should make an objective decision to use Design-build, understanding the benefits and limitations.
- ◆ Design-build project and plans should enhance the Owners vision through innovation and creativity.
- ◆ Personnel should be well trained and educated.
- ◆ Owners should incorporate the use of ATCs to encourage innovation.
- ◆ Owners should consider risks associated with environmental compliance, MOT, utilities, rail roads.

### Application to MDOT:

---

- ◆ MDOT does not have a selection method in place to decide the delivery method.
- ◆ The project goals are explained in the RFP and are mostly schedule driven.
- ◆ MDOT does not have formal training for its staff on innovative contracting and the differences between that and traditional DBB.
- ◆ MDOT uses ATC's in their innovative contracts.
- ◆ MDOT does not overly evaluate geotechnical, utility and environmental in the proposal.

### Recommendations:

---

- ◆ Develop a selection tool for the delivery method that is objective and realistic to the project constraints.
- ◆ Describe the owners vision in the RFP. Include the intent, expectations and schedule. This can enhance collaboration, innovation and creativity.
- ◆ Generate a formal training for innovative contracting that can help shift the culture to understand the differences between that and traditional DBB. The training should be expanded to include stakeholder workshops and education.
- ◆ Be open to ATC's that create innovation for the agency. This is one major reason to include a complete Owners vision, as it helps the design-build team understand the intent of the project and if the ATC is aligned with owner vision.
- ◆ Develop a scoring criteria for risk management that includes geotechnical, utility and environmental.

---

## *Key Factors to Address When Considering Alternative Project Delivery in Transportation* (DBIA, 2018)

Develop ATC guidelines that define how they are reviewed, evaluated and accepted. They should not compromise quality or owner intent of the project and should not limit them to cost benefits. Teams should clearly set criteria that should be expected in an ATC, including criteria for acceptance and what conditional approval allows. This process must remain confidential even if stakeholder coordination is required. If an ATC is accepted the design-build team wants to use it, it must be described in the proposal.

Right of way has with it its own unique challenges. The acquisition process can be successful with either the owner or the design-build team. The following are considerations when determining who the responsible party should be: State statutes, funding source, permitting, land use, relocations, schedule, owner resources, level of design, utilities and acquisition costs. No matter who the acquisition is performed by, it should be clearly defined in the RFP. Defining the responsibilities, and rules of engagement with stakeholders are of key importance. Including the acquisition process for the design-build team, should the owner shift the responsibility is also very important. Incentives to reduce the ROW need can also be considered. Post award, keeping a tracking software up to date with right of way status should be discussed at project meetings. The paper suggests assigning a ROW manager in the oversight team to verify how the project design may affect costs and how design changes affects schedule. The project team should be able to make design changes that minimize ROW impacts even if it requires design exceptions.

In a design-build scenario, the owner should perform upfront utility investigation, including SUE, and give as much information to the design-build teams as possible. This will reduce project risks. Before procurement the owner should meet with third parties and have very open conversations about scope, impacts, receive as-builts, their internal schedules and understand betterments. The contract should specify the owner's role, define the communication strategy with stakeholders and address risk when unexpected conditions arise. A tracking spreadsheet should be developed by the Owner, or if not, it should be specified clearly in the RFP the timeline for submitting their conflict evaluation. Communication should be allowed directly between the design-build team and the stakeholder. The DB team should have a utility coordinator throughout design and construction and should schedule a meeting with third parties. All reasonable efforts should be made to minimize impacts

MOT is generally the responsibility of the design-build team. The RFP should describe limitations by the owner due to level of service, lane closures, public involvement etc. It should be as clear as possible, including as many situations as possible for snow removal, tow trucks, tolls. Documents need to include lane rental requirements, review times and expectations with communication. The owner should agree upon review time expectations and allow the DB team to be innovative.



Design-build must complete all NEPA activities including identifying and coordinating with the agencies, the NEPA process, and acquiring the permits. The owner should perform the initial review to identify the permits and initial assessments required for the NEPA process. Risks must be identified but they may be lowered if the owner acquires the permit, at least the permit that carries the highest risk. Coordination with the governing agencies early and often can help reduce the likelihood of litigation and help the owner understand the full requirements that they will need to explain in the RFP. It can also help the agencies that are unfamiliar with the DB process to understand the process and be open to design changes that lessen the impacts. It is important the design-build team is familiar with the entire environmental process, permitting and compliance as well as owners goals. Changing the NEPA document can be very difficult so the use of flexible language when describing impacts can reduce the risk as well.

### Salient Points:

---

- ◆ ATC's provide innovative solutions; Owner to develop ATC guidelines that define how they are reviewed, evaluated, and accepted.
- ◆ Define ROW acquisition and utility impacts clearly in RFP.
- ◆ Define limitations of MOT and NEPA requirements in RFP.

### Application to MDOT

---

- ◆ MDOT has guidelines and processes for ATC acceptance.
- ◆ ROW and utilities are defined in the RFP. MDOT attempts to acquire all ROW by the RFP.
- ◆ MOT and NEPA requirements are defined well in the RFP.

### Recommendations

---

- ◆ Be open to ATCs that provide innovation and creativity to MDOT.
- ◆ Consider allowing the design-build team to assist or complete the ROW acquisition process. This may allow more flexibility in construction.

---

## ***DBIA Position Statement: Sustainability*** (DBIA, 2015b)

DBIA considers sustainability goals very important as material and energy resources are limited. Owners need to clearly state the goals for the project, why they are important and which ones are most important for the project. Rating systems can be implemented, but the owner should state expectations and how much money can be allocated towards the goals. Building sustainability is a character of design excellence.

### **Salient Points:**

---

- ◆ Clearly state project goals, why they are important and which ones are most important.
- ◆ Be mindful of natural resources when making choices in the use of materials in design and construction and all aspects of the project.

### **Application to MDOT:**

---

- ◆ MDOT states project goals, but not necessarily with regards to natural resources (context sensitive solutions).

### **Recommendations:**

---

- ◆ Consider a response to natural resources to be included in the RFP and where the agency intent is with regards to materials.

---

## *DBIA Position Statement: Stipends* (DBIA, 2010b)

Proposals for design-builders can be a very great load, particularly when there are a number of deliverables. DBIA's position endorses the use of stipends, which signal the intent that the owner is serious and encourages proposers to spend time and effort on innovation. The amount will almost never be enough to cover the full costs but could be the difference between a design-build team being able to propose and not. Between 0.01% to 0.25% of the project budget to each proposer is an appropriate stipend amount. DBIA does not endorse the idea that owners own the rights to the proposal documents.

### **Salient Points:**

---

- ◆ Stipends indicate owner intent and encourages proposers to spend time and develop innovations.
- ◆ Stipends should not signify that the owner owns the rights to proposal documents.

### **Application to MDOT:**

---

- ◆ MDOT provides stipends to design-build teams.

### **Recommendations:**

---

- ◆ The graduated scale that MDOT currently employs for stipends is a good process. Increasing the stipend on more complex projects would spark more innovation and MDOT could end up saving more than the stipend payout in project savings from ATC's.

---

## ***DBIA Position Statement: Integrated Project Delivery*** (DBIA, 2010a)

Integrated Project Delivery (IPD) is a multi-party contract system between the designers, contractor, and owner. Each participant shares some of the risks and rewards and can help limit liability among the parties. It is governed, not by the owner, but by a committee that is to find win-win solutions for the entire team; although the owner has the ultimate decision-making capability. Currently it is not practiced or allowed in the public sector, but DBIA encourages its use as a collaborative effort that allows all parties to be a part of the success of a project and encourages open communication by the team.

### **Salient Points:**

---

- ◆ IPD shares risks and rewards among all participants.
- ◆ Projects are governed by a committee to determine win-win solutions for the team.
- ◆ DBIA supports integration and open communication along with active collaboration on design-build projects.

### **Application to MDOT:**

---

- ◆ IPD is not currently used at MDOT.
- ◆ MDOT supports open communication in their projects.

### **Recommendations:**

---

- ◆ Collaboration at all levels is crucial to the success of design-build projects. IPD is not necessary to benefit from a lot of IPD processes. Implementing a more consistent use of Co-location, regular over the shoulder reviews, risk management cycles, etc. are all good practices in open communication with the design-build teams.

---

## *DBIA Design Excellence Position* (DBIA, 2014a)

Design excellence is important to all projects and the responsibility resides with the owner. Every entity will define it differently. It fosters a team environment with open communication and respect for one another. The design-build system is set up to allow for design excellence as the owner works directly with the design-build team in achieving design solutions that exceed an owner's vision, build state of the art structures that are high performance and sustainable and create holistic awareness the considers context site and environment.

### **Salient Points:**

---

- ◆ Define design excellence clearly to reach project goals and owner vision.

### **Application to MDOT:**

---

- ◆ MDOT defines the project goals in the RFP.

### **Recommendations:**

---

- ◆ Continue to define the project goals, and expand on the Owners vision with the project. This could include intent and expectations with regards to risks or quality. This will help MDOT create a scale for which to measure design excellence.

---

## *DBIA Position Statement: Principles of Best Value Selection (DBIA)*

DBIA strongly recommends the basis for evaluating design-build proposals be clearly described in the RFP. Teams need to understand the owner's intent in order to accurately propose on the project and maximize the benefits. Projects with non-cost evaluation or those with greater technical design aspects will provide owner satisfaction in the end. A recommended method is the fixed-price competitive design, where the design-build team is given the contract price, and the contractor bids on the project they can build for that price. Another recommended method is Integrated Assessment and Trade-off (Federal Model), where the owner ranks the non-price factors in the order of importance. Price can be reviewed, but not as a ranked criterion.

The most important factor is that the selection is well understood, both by the owner and the design-build teams. Transparency in the evaluation system creates a relationship of trust and provides a higher likelihood of owner satisfaction. Owner must stay free from bias and perception of such. Deliverables should be minimized to the proposers and owner should offer stipends to encourage participation and reduce the burden placed on the teams.

---

### **Salient Points:**

- ◆ Selection (evaluation) criteria needs to be well defined and upheld to build a Contractor relationship.
- ◆ Selections based on qualifications and technical design are more likely to provide owner satisfaction.
- ◆ Staying impartial in the selection process has a direct correlation to overall satisfaction on the project.

---

### **Application to MDOT:**

- ◆ MDOT does not have a selection criteria for the second step in best value.
- ◆ MDOT currently ranks based on low bid.
- ◆ MDOT remains impartial in the selection process.

---

### **Recommendations:**

- ◆ Include and score the technical approach in the second step of the RFP. Qualification and approach driven projects are shown to have more owner satisfaction.
- ◆ Continue transparency and objectivity in the selection process.

---

## Choosing a Project Delivery Method (DBIA, 2015a)

Choosing the delivery method is one of the most important decisions an owner makes. The decision is based on 3 areas: The project delivery system (DB, DBB, CMGC...), the procurement method (Low bid, best value, QBS...), and the contract format (cost plus, lump sum, GMP...). The document suggests some advantages and disadvantages to each method and outlines the considerations the owner will need to decide on to help them decide on the best method for their project. The methods defined are Construction Management at Risk (CMR), Design Bid Build (DBB), Design-build (DB), and Multi-Prime (MP).

### Salient Points:

---

- ◆ Delivery method selection is based on the project delivery system, the procurement method, and the contract format.
- ◆ Does not weigh one method above another, but each has its different definitions and considerations to grasp when deciding.

### Application to MDOT:

---

- ◆ MDOT does not have a defined delivery method selection tool.

### Recommendations:

---

- ◆ Create a delivery selection method that runs through the pros/cons of each delivery system, procurement method and contract format.

## *What is Design-Build?* (DBIA, 2014b)

It is a specific project delivery system used in the public and private sector to complete a project. It “is where one entity, the design-builder, enters into a single contract with the owner to provide both design and construction services”. This helps unite the designer and contractor to optimize quality and minimize cost. Many times, with separate contracts, the owner ends up the middleman between the designer and contractor disputes. This process puts them on the same team and can help optimize the design instead of creating a liability gap if issues arise on the job site. Design-build is also the attitude of the team. It is intended to be “highly collaborative, fully integrated process that is built on trust, mutual respect, teamwork, innovation and creative problem solving”.

### **Salient Points:**

---

- ◆ Design-Build construction puts contractors and owners on the same team, optimizing the design instead of creating a liability gap.
- ◆ Requires a different mindset from a traditional project. It requires all to think as one team.

### **Application to MDOT:**

---

- ◆ MDOT uses design-build contracts on many of its larger transportation projects.

### **Recommendations:**

---

- ◆ Continue to shift the culture of traditional DBB projects to that of innovative contracting. It requires the agency and design-build team to be one entity in a single contract. Each work together in a highly collaborative manner to resolve issues that may arise. MDOT is no longer the middleman between design and construction.



## References

- America, DBIA, 2014, *Design-Build Done Right - Universally Applicable Best Design Build Practices*.
- Ashuri, B., and H. Kashani, 2012, *Recommended guide for next generation of transportation design build procurement and contracting in the state of Georgia*, Georgia. Dept. of Transportation.
- Chen, Q., Z. Jin, B. Xia, P. Wu, and M. Skitmore, 2016, *Time and cost performance of design-build projects: Journal of Construction Engineering and Management*, v. 142, p. 04015074.
- DBIA, *DBIA Position Statement: Principles of Best Value Selection*, Design Build Institute of America.
- DBIA, 2010a, *DBIA Position Statement: Integrated Project Delivery*, Design Build Institute of America.
- DBIA, 2010b, *DBIA Position Statement: Stipends*, Design Build Institute of America.
- DBIA, 2014a, *DBIA Design Excellence Position*, Design Build Institute of America.
- DBIA, 2014b, *What is Design-Build?*, Design Build Institute of America.
- DBIA, 2015a, *Choosing a Project Delivery Method*, Design Build Institute of America.
- DBIA, 2015b, *DBIA Position Statement: Sustainability*, Design Build Institute of America.
- DBIA, 2016, *Transportation Sector*, Design Build Institute of America.
- DBIA, 2018, *Key Factors to Address When Considering Alternative Project Delivery in Transportation*, Design-Build Institute of America.
- del Puerto, C. L., D. D. Gransberg, and M. C. Loulakis, 2017, Contractual approaches to address geotechnical uncertainty in design-build public transportation projects: *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, v. 9, p. 04516010.
- Gransberg, D., and M. C. Loulakis, 2012, *Geotechnical information practices in design-build projects*.
- Gransberg, D., D. Pittenger, and G. Chambers, 2017a, *Utility Coordination Using Alternative Contracting Methods: NCHRP 20-07/Task 373*.
- Gransberg, D. D., E. Scheepbouwer, and C. Lopez del Puerto, 2017b, *Framework for Objectively Determining Best Practices for Alternative Contracting Methods: Transportation Research Record*, v. 2630, p. 51-58.
- Koppinen, T., and P. Lahdenperä, 2007, Realized economic efficiency of road project delivery systems: *Journal of Infrastructure Systems*, v. 13, p. 321-329.
- Lee, J. H., Y. Jallan, and B. Ashuri, 2020, Key Issues and Differences in Practical Components of Quality Management in Design-Build Highway Projects: *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, v. 12, p. 04519029.

McCullough, B., 2009, *Innovative Contracting Manual*.

Minchin, E., L. Ptschelinzew, G. C. Migliaccio, U. Gatti, K. Atkins, T. Warne, G. Hostetler, and S. Asiamah, 2014, *Guide for design management on design-build and construction manager/general contractor projects*.

Minchin Jr, R. E., A. R. Chini, L. Ptschelinzew, D. Shah, Y. Zhang, and M. Rinker Sr, 2016, *Alternative contracting research*.

Molenaar, K., 2020, *How to Guide Alternative Contracting Projects*.

Molenaar, K., J. A. Vanegas, and H. Martinez, 2000, *Appropriate risk allocation in design-build RFPs: Construction Congress VI: Building Together for a Better Tomorrow in an Increasingly Complex World*, p. 1083-1092.

Molenaar, K. R., and D. D. Gransberg, 2001, Design-builder selection for small highway projects: *Journal of Management in Engineering*, v. 17, p. 214-223.

Papajohn, D., and M. El Asmar, 2020, Percent base design and initial award performance in design-build highway projects: *Journal of Management in Engineering*, v. 36, p. 04020008.

Tran, D., C. Harper, and E. Minchin, 2018, *NCHRP Synthesis 504: Strategic Program Delivery Methods: TR News*.

Tran, D. Q., C. M. Harper, K. R. Molenaar, N. F. Haddad, and M. M. Scholfield, 2013, *Project delivery selection matrix for highway design and construction: Transportation research record*, v. 2347, p. 3-10.

Tran, D. Q., and K. R. Molenaar, 2014, Impact of risk on design-build selection for highway design and construction projects: *Journal of Management in Engineering*, v. 30, p. 153-162.

**Appendix A-1****List of Documents Reviewed**

1. Guide for Design Management on Design-Build and Construction Manager/General Contractor Projects – 2014
2. NCHRP Synthesis 504: Strategic Program Delivery Methods – 2017
3. Utility Coordination Best Practices for Design-Build and Alternative Contracting Projects – 2017
4. Framework for Objectively Determining Best Practices for Alternative Contracting Methods – 2017
5. A Project Delivery Selection Matrix for Highway Design and Construction – 2016
6. Alternative Contracting Research: Final Report – 2016
7. Time and Cost Performance of Design-Build Projects -2016
8. Geotechnical Information Practices in Design-Build Projects – 2012
9. Percent Base Design and Initial Award Performance in Design-Build Highway Projects – 2020
10. Key Issues and Differences in Practical Components of Quality Management in Design-Build Highway Projects – 2019
11. Proven Practices in Design-Build and Fast-Track – 2003
12. Design-Builder Selection for Small Highway Projects – 2001
13. Contractual Approaches to Address Geotechnical Uncertainty in Design-Build Public Transportation Projects
14. Recommended guide for next generation of transportation design-build procurement and contracting in the state of Georgia
15. Presentation By Keith Molenaar
16. Appropriate Risk Allocation in Design-Build RFPs – 2000
17. Impact of Risk on Design-Build Selection for Highway Design and Construction Projects – 2014
18. Realized Economic Efficiency of Road Project Delivery Systems – 2007
19. Innovative Contracting Manual: Contracting Methods Manual Selection Criteria – 2009

## Appendix A-2

### List of Documents Identified but not Reviewed

---

1. 2019 A Guidebook for Post-Award Contract Administration for Highway Projects Delivered Using Alternative Contracting Methods
2. 2018 NCHRP Synthesis 518: Staffing for Alternative Contracting Methods
3. 2010 NCHRP Report 662: Accelerating Transportation Project and Program Delivery: Conception to Completion
4. 2010 NCHRP Synthesis 402: Construction Manager-at-Risk Project Delivery for Highway Programs
5. 2006 NCHRP Report 561: Best Value Procurement Methods for Highway Construction Projects
6. 2004 NCHRP Synthesis 326: Strategic Planning and Decision-Making in State Department of Transportation
7. 2019 Critical Comparison of Progressive Design-Build and Construction Manager/General Contractor Project Delivery Methods
8. 2018 Timing of Cost Certainty in Highway Construction Project Delivery: Perceptions versus Empirical Results
9. 2018 Alternative Contracting Method Performance in U.S. Highway Construction
10. 2018 Transportation Project Delivery: Alternative Contracting Methods Research
11. 2018 Industry Attitudes toward Alternative Contracting for Highway Construction in Florida
12. 2017 Dispute Prevention and Resolution Methods Used On Public Highway Projects Employing Different Project Delivery Methods
13. 2017 Efficient and effective implementation of alternative project delivery methods
14. 2016 Strategies for Improving Transportation Project Delivery Performance
15. 2016 Comparing Construction Manager-General Contractor and Federal Early Contractor Involvement Project Delivery Methods
16. 2016 Analysis, comparison, and contrast of two primary maintenance contracting techniques used by the Florida Department of Transportation [summary].
17. 2015 Investigation of an Innovative Maintenance Contracting Strategy: The Performance-Based Maintenance Contract (PBMC)
18. 2015 Risk-based Project Delivery Selection Model for Highway Design and Construction
19. 2014 Innovative project delivery using alternative financing mechanisms : assessment of benefits, costs, and risks

20. 2014 Project Delivery Acceleration Toolbox
21. 2013 Decision-Support Framework for Quantifying the Most Economical Incentive/Disincentive Dollar Amounts for Critical Highway Pavement Rehabilitation Projects
22. 2013 How can innovative project delivery systems improve the overall efficiency of GDOT in transportation project delivery?
23. 2012 Innovative Contracting Methods and Construction Traffic Congestion
24. 2012 Recommended Guide for Next Generation of Transportation Design Build Procurement and Contracting in the State of Georgia
25. 2012 NCHRP Project 20-24 (83): Alternative DOT Organizational Models for Delivering Service
26. 2012 Comparison of Public-Private Partner in North American Highway Construction Partnerships and Traditional Procurement Methods
27. 2012 Schedule Effectiveness of Alternative Contracting Strategies for Transportation Infrastructure Improvement Projects
28. 2011 Innovative Contracting Strategies for Combating Climate change
29. 2010 Synthesis of Innovative Contracting Strategies Used for Routine and Preventive Maintenance Contracts
30. 2019 A Guidebook for Post-Award Contract Administration for Highway Projects Delivered Using Alternative Contracting Methods
31. 2010 NCHRP Synthesis 402: Construction Manager-at-Risk Project Delivery for Highway Programs
32. 2019 Critical Comparison of Progressive Design-Build and Construction Manager/General Contractor Project Delivery Methods
33. 2017 Dispute Prevention and Resolution Methods Used On Public Highway Projects Employing Different Project Delivery Methods
34. 2015 Risk-based Project Delivery Selection Model for Highway Design and Construction
35. 2018 DBIA Selecting and Using an Owner Advisor in Design-Build
36. 2017 DBIA Progressive Design-Build: Design-Build Procured with a Progressive Design & Price
37. 2012 DBIA Position Statement: Qualification Based Selection
38. 2010 DBIA Position Statement: Organization of the Design-Build Entity
39. 2014 DBIA Position Statement: Federal, State and Municipal "Lowest Price Technically Acceptable" Procurement



Innovative Contracting  
Best Practices Research

# Appendix C

## Owner Outreach Report



## Executive Summary

---

### Purpose:

Michigan Department of Transportation (MDOT) has utilized Innovative Contracting methods to deliver projects for over 20 years. As part of the Innovative Contracting Best Practices research project (OR20-002), the MDOT included an Owner Outreach component that was conducted in April and May 2020. This outreach circulated a questionnaire to solicit open feedback from owners across the country regarding their Innovative Contracting program in order to obtain comparisons of best practices used and lessons learned. This report presents the results of the questionnaire responses provided through this effort. This report further provides information that is incorporated into recommended actions as part of the Innovative Contracting Industry Outreach portion of the project to help improve MDOT's overall Innovative Contracting Program.

---

### Timeline:

A 42-question survey was provided in April 2020 to 27 Owners, including 23 state departments of transportation (DOT), two airports, the USDOT, and an Owner from a University with a robust innovative contracting program. DOTs were selected based on states with similar environmental conditions as Michigan, states with robust innovative contracting programs, and states with relatively new innovative contracting programs in order to obtain a good cross section of data points for cooperative reasons. A total of 22 of the 27 questionnaires were returned with responses (over 80 percent), with 19 DOTs responding.

---

### Findings (based on the results of the questionnaires):

#### General

MDOT has a well-established Innovative Contracting program which successfully delivers transportation projects of various sizes and complexities. The program in many areas aligns with the answers provided by peer Owners across the country. Survey results highlight several opportunities MDOT could benefit from approaches and lessons learned from other Owners. Opportunities in this report cover numerous aspects of project implementation.

#### Themes

1. Owners find tremendous value through innovative contracting within their agency, but standardization and consistency in delivery selection and risk management is a struggle throughout the industry.
2. Best Value contracts where technical scores are weighted on the second step provide greater owner satisfaction.



3. Risks are shared with the design-builder including utilities, right of way acquisition and geotechnical borings.
4. Training for owner personnel is essential.
5. Encouraging innovation allows the owner to best benefit from innovative contracting.

## **Recommendations**

Although MDOT's current program incorporates many of the peer Owner approaches and common uses of innovative contracting best practices, there are areas that lend themselves for improvement. The following recommendations are provided to help increase the effectiveness of the existing program while addressing several of the recurring comments or suggestions for improvement by the outreach participants:

1. Develop a selection tool that allows MDOT to evaluate projects early in the programming and decide what form of project delivery to use in a consistent manner. The selection tool should support vetting all project aspects/variables. Having a consistent tool will allow MDOT to address questions, risks and political pressures. The tool should include metrics such as:
  - A. Time constraints
  - B. Budget constraints
  - C. Complexity
  - D. Risk assignment or transfer needs
  - E. Innovation
  - F. Agency resources
2. Formalize the Risk management process to track results of risks through the life cycle of the project. MDOT should consider set times to evaluate and update risk at project milestones including: "calls for projects", programming, funding, scoping, procurement, award, and post construction.
3. Track metrics of success within projects throughout the life of the project. Understanding and tracking how MDOTs program is functioning can identify where improvements can be made through lessons learned. This is a long-term recommendation to track projects over years. Metrics may include:
  - A. Cost of the final project vs RFP/Proposal.
  - B. Schedule of the final project vs RFP.
  - C. Quality – tracking projects that exceed the quality standards of Design-bid-build.
  - D. Change Orders – not including unforeseen circumstances or owner-directed changes.

4. Adjust evaluation criteria to align with those that peers most commonly use in the RFQ and RFP.
  - A. Common RFQ criteria:
    - i. *Personnel and company capability and experience*
    - ii. *Experience on similar projects*
    - iii. *Experience of the team working together*
  - B. Common RFP criteria:
    - i. *Approach*
    - ii. *Maintenance of Traffic (impacts)*
    - iii. *Price*
    - iv. *Schedule*
5. Use the second step of a Best Value two-step program to evaluate the technical approach/design of a project instead of low bid. Encouraging the design-builder to provide design concepts with the proposal will increase innovation and owner satisfaction from a project.
  - A. Be open to ATC's that meet project goals and owner intent.
  - B. Pay a larger stipend where MDOT expects a larger technical approach.
  - C. Develop evaluation criteria, and provide it in the RFP.
  - D. Short list a maximum of 3-4 bidders to encourage competition.
  - E. Progress RFP design to no more than 30%, allowing the Contractor to take it further, while understanding the intent of MDOT and the risks involved.
  - F. Involve the design-build team in completing ROW acquisition and utility relocations.
6. Establish and support a culture for alternative delivery.
  - A. Continued education and training, especially for leadership, is key to program success.
  - B. Dedicating a team and project champion will provide consistent results and allow the team to learn from lessons on past projects.
  - C. Dedicate an agency procurement team for alternate delivery that tracks lessons learned and information to include in future RFP's.
  - D. Evaluate the quality process defined in the RFP for design and construction.

---

## Introduction:

To provide for improvement to the existing innovative contracting program, MDOT conducted a Peer Owner Outreach program in the spring of 2020. The program consisted of a questionnaire distributed to participants.

The questions were crafted to elicit feedback and allow comparison of best practices used by MDOT and other owners as well as evaluate lessons learned from the peer owner group.

Participants were selected to obtain a good cross section of data points based on states with similar environmental conditions as Michigan, states with robust innovative contracting programs, and several states with relatively new innovative contracting programs.

---

## Purpose:

The questionnaire obtained non-restricted comments and feedback from peer owners. The goal was to analyze the feedback and establish areas within the MDOT innovative contracting delivery program that can be improved.

---

## Timeline:

Questionnaires were distributed in April 2020 with follow up meetings conducted in May 2020.

### Results:

The results of the owner outreach are presented in this report and appendix. The results are organized by question in sequential number through the report. Each question presents a summary of the responses, in:

- ◆ Graphical form if the response is yes, no or numerical
- ◆ Categorical form if the responses offered “other information” as detailed explanations to a question

In the latter, responses are categorized into common answers and/or themes of responses.

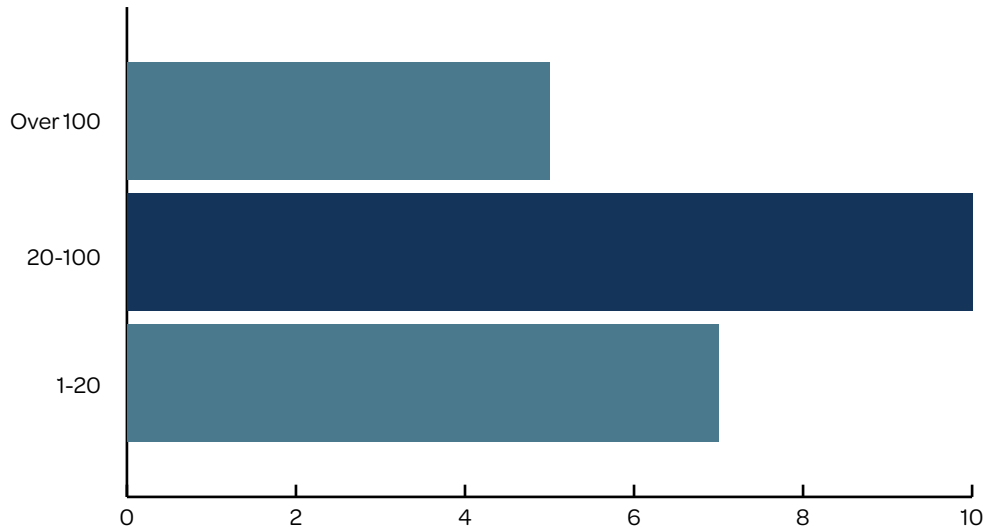
The graphical representation and categorical presentation of each question is followed by a conclusion section that presents the body of the responses.

A recommendations section follows, as applicable, providing general recommendations based on the feedback from each question.

Due to the interrelationship of many questions, the executive summary captures and organizes the recommendations into a format that is conducive for developing an action plan.

**Question 1:**

*How many projects has your department delivered through innovative contracting means?*

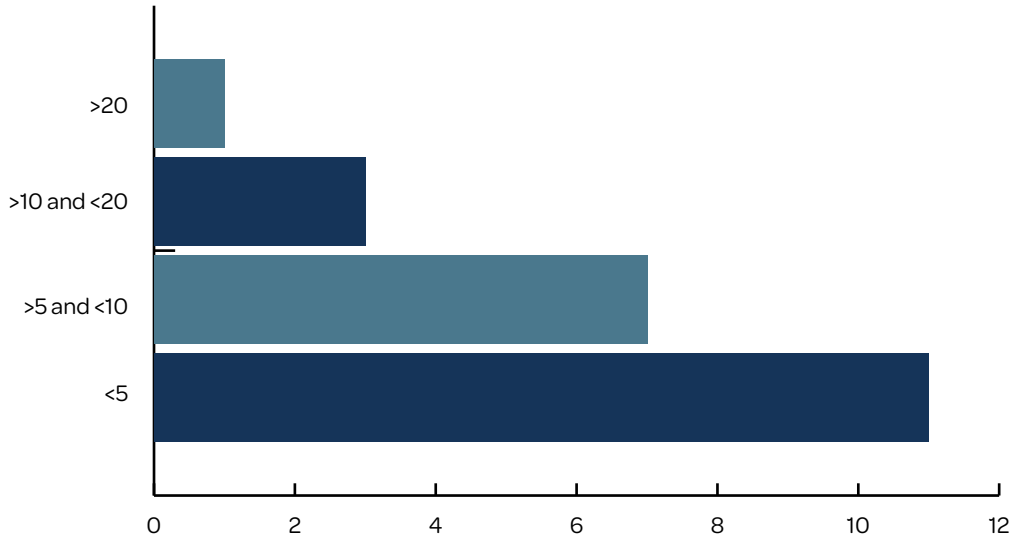


**Conclusions:**

Design-build has been around since the 1990's in transportation. As momentum picked up with DB, a number of other innovative contracting methods have been developed to enhance project delivery for the industry. Approximately half of the responding states (10 of 22) have delivered between 20-100 projects using these innovative methods.

**Question 2:**

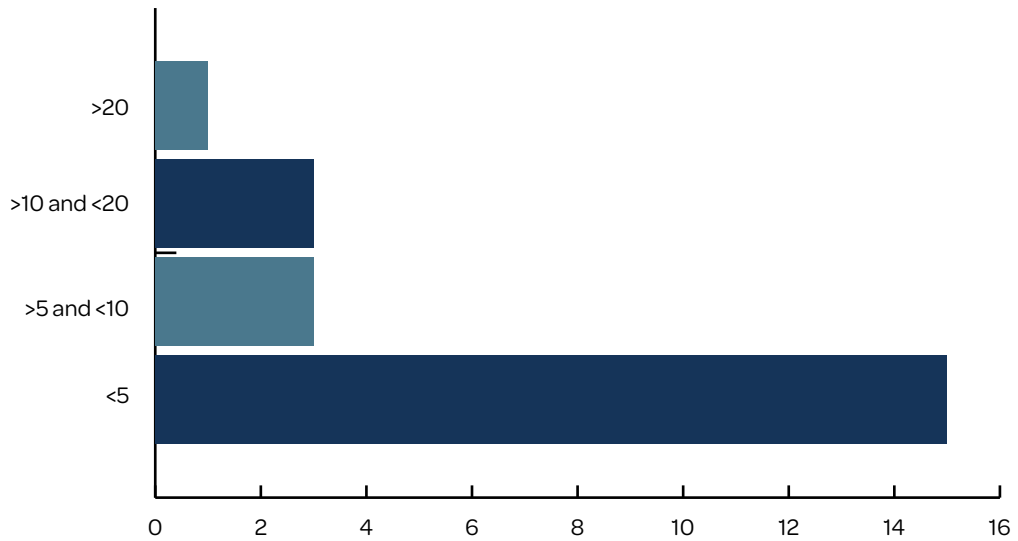
*How many projects do you deliver annually with innovative contracting?*

**Conclusions:**

Like question one, we wanted to understand how many projects the agencies consistently deliver in a given year through all innovative delivery techniques. Half of those fell into the less than five projects per year. Ohio was the only agency that delivers over 20 projects per year.

### Question 3

*How many projects do you deliver through design-build annually?*

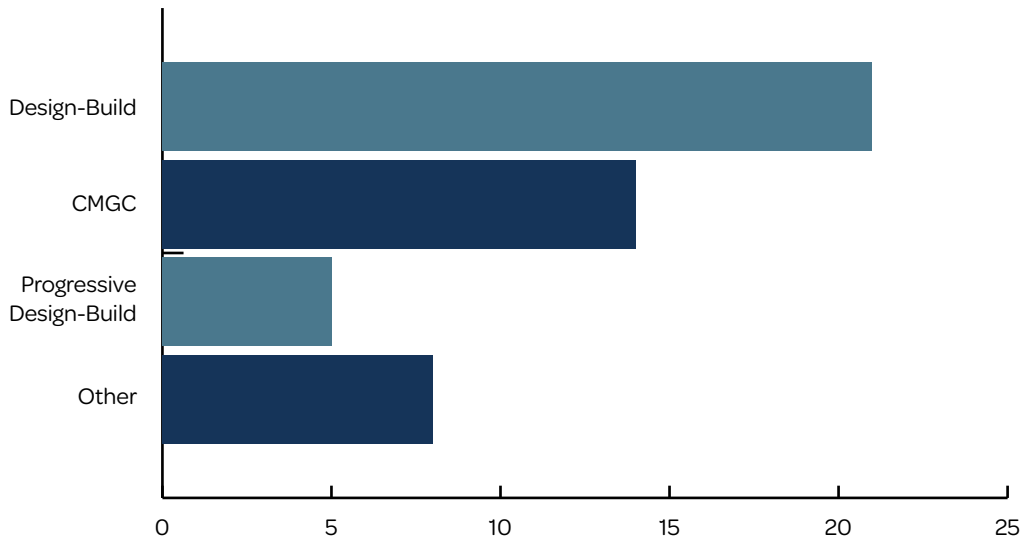


#### Conclusions:

Overall, design-build is the most common innovative contracting method within any agency. Consistent with question two, agencies deliver less than five design-build projects annually with almost 70% of respondents. Ohio was again the only agency with over 20 projects per year.

#### Question 4

Which of the following innovative delivery methods do you use?



#### Other (All Comments):

Nevada allows for Public-Private-Partnerships (PPP) such as Design-Build-Finance (DBF), Design-Build-Maintain (DBM), Design-Build-Finance-Operate -Maintain (DB-FOM) but haven't used them to date. Connecticut uses Construction Manager at Risk (CMAR). Oregon uses P+T, Price+ Quals+ Contractor Approach methods. Texas has P3 concession. Missouri uses Design-Bid-Build (DBB) with ATC's, Variable scope with fixed price. Georgia uses Design-Build-Finance (DBF) and Design-Build-Finance-Maintain (DBFM). NCDOT uses an Express Design-build, which is a two-stage process reserved for bridge replacement and other small projects; selection is made based on the lowest bid. SCDOT responded that CMGC and Progressive Design-Build (PDB) legislation has been drafted and in the process of seeking legislative approval. PDB "progresses" design by the Owner and a previous selected Design-Builder to an established design level. Once a sufficient design level has been reached, a guaranteed maximum price (GMP) for completion of design and construction is negotiated.

#### Conclusions:

Respondents were asked to choose all that apply. Design-build was chosen by all respondents except UCSF (they only use progressive design-build) and 60% selected CMGC. Those that responded 'Other' are shown above and what their state uses for innovative contracting.

### **Recommendations:**

Having numerous tools in MDOT's project delivery toolbox will assist in selecting the "right" delivery method for each project. There are three primary delivery types to select from:

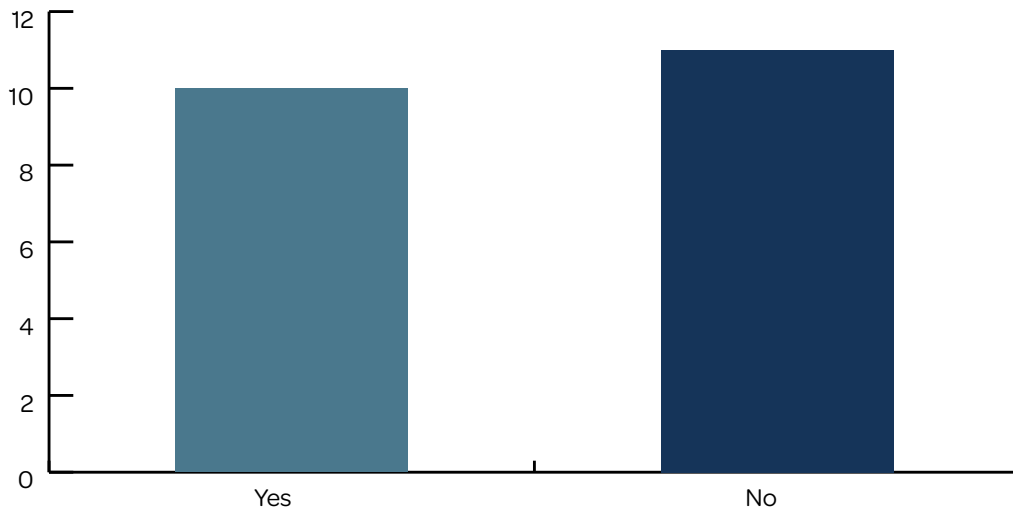
- ◆ Design-Build – best-value, progressive design-build, low bid, DBF, DBOM, DBFOM,
- ◆ CMGC – Lump sum, unit rate, GMP are all options of contracting
- ◆ Design-bid-build – can use ATC's to drive innovation, IDIQ to optimize budgets.
- ◆ MDOT should continue using each delivery type and not consider one as preferred approach. MDOT should establish a selection tool that will help identify the right delivery method for each project early in the project life.

As seen in the "other" comments above, there are numerous approaches to design-build, MDOT should evaluate each of these for incorporation into the program.



**Question 5**

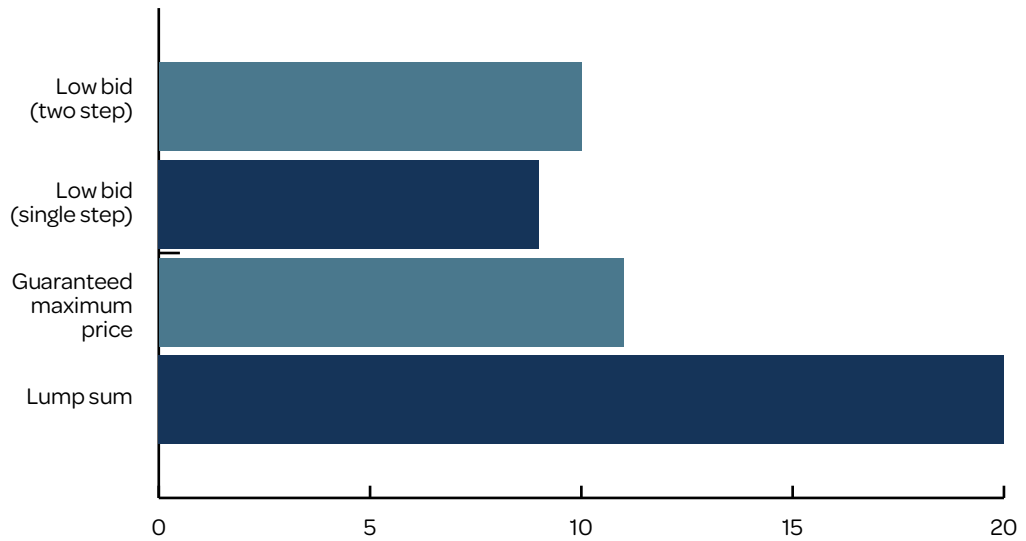
Do you allow Design-Build-Maintain (DBM), or DBFOM projects?

**Conclusions:**

Answers were split evenly, illustrating that design-build processes are still expanding.

### Question 6

Do you use any of the following contracting methods?

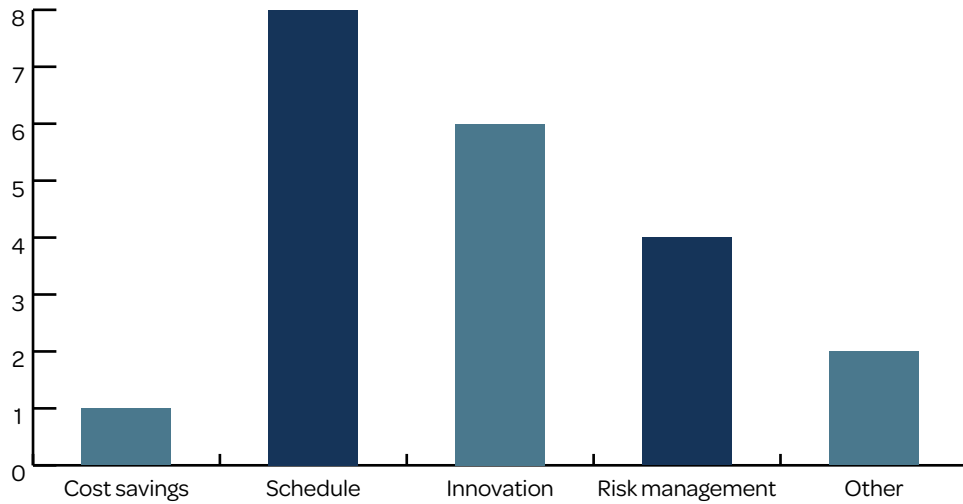


#### Conclusions:

Only two respondents did not include Lump Sum as a response. The first was Oregon, who instead chose Guaranteed maximum price. Ohio chose both Low Bid options.

### Question 7

What is the primary reason you use innovative contracting?



#### Other (All Comments):

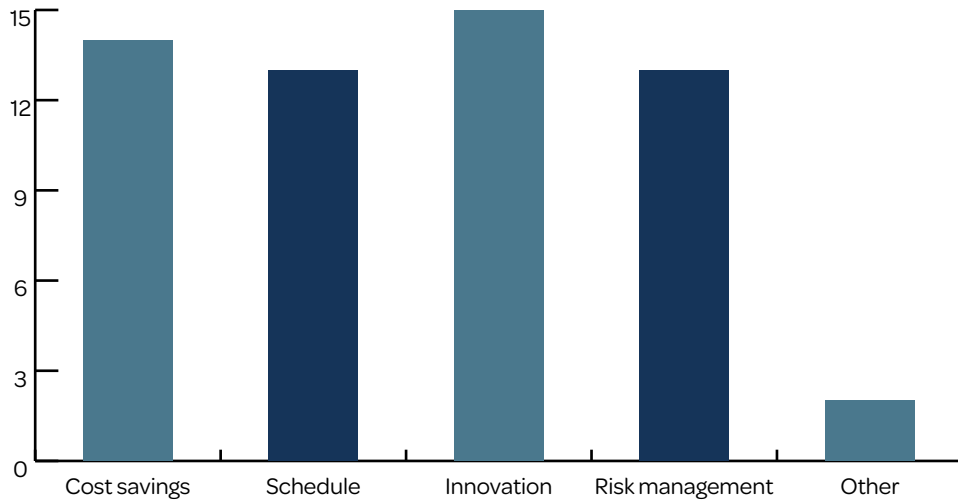
Connecticut responded with all of the above. Oregon indicated schedule and resourcing strategy. USDOT said that it depends - Schedule for Design-build and Risk Management for CMGC.

#### Conclusions:

The top two answers, schedule and innovation account for 64% of the answers. Caltrans was the only respondent that answered their primary reason for innovative contracting was Cost savings.

**Question 8**

*What other reasons do you use innovative contracting?*



**Other (Theme):**

Complexities were another major reason for innovative contracting.

**Other (All Comments):**

Nevada responded with complexities in Design and construction. Missouri responded with complexity and resources. Georgia said to achieve strategic goals. NCDOT said emergency and complex constructability issues.

**Conclusions:**

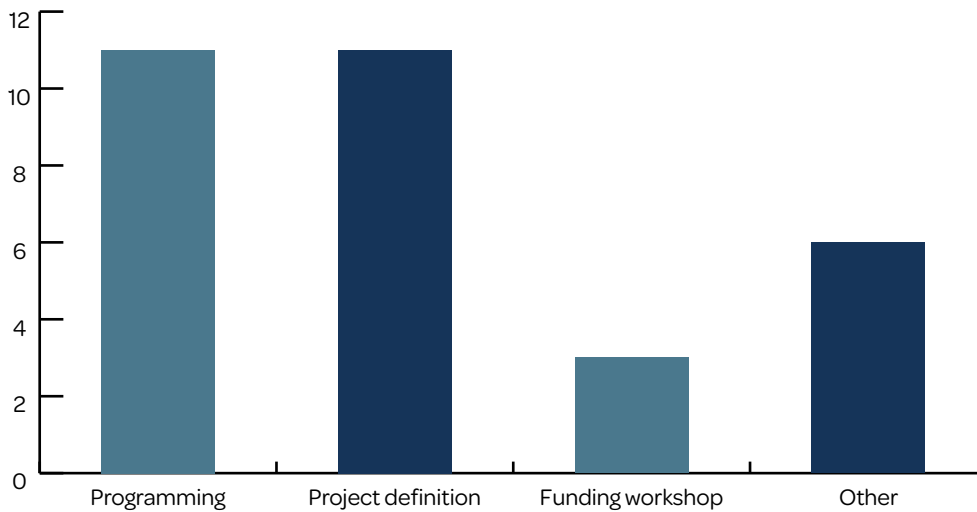
Answers are informative and fairly equal across the board. Those responding ‘Other’ have been included above. Although only one Owner listed cost savings as a primary driver to using innovative contracting another 13 listed it as an overall reason.

**Recommendations:**

There are numerous reasons to use innovative contracting. Developing a selection tool that allows MDOT to properly capitalize on innovative contracting methods will enhance the overall program. The tool should involve a logical workflow that considers project specific metrics such as risk, innovation, schedule, complexity, cost savings, resources, etc. and benefits of innovative contracting. This will give MDOT the ability to capitalize on the benefits for the project. As delivery type is vetted, these benefits versus drawbacks can be considered.

## Question 9

*At what stage do you identify to use alternative contracting?*



### Other (All Comments):

Nevada responded that it depends on the project but often times it falls somewhere in the timeline between NEPA completion and preliminary design. As soon as project scope and risks have been defined enough to understand which delivery method would provide the greatest benefit to the project. Connecticut said upon project establishment (concept phase). USDOT said it depends, the USDOT has observed different DOTs making alternative contracting delivery decisions at various stages of project development and design (ranging from NEPA development to design development). Georgia said that whenever it is the right time, but part of normal thought process, (no defined timing). With some exceptions, Georgia does not start with notion that a project will be delivered in a certain way. The project goes through a standard process to get scope, and environmental. The first review determines challenges, goals, and a realistic budget. Programming funds then tend to lean the project towards a delivery method. However, at any time during design if another delivery method appears more appropriate, they will switch. NCDOT said anywhere from the programming stage to right of way phase. ScDOT responded prior to entering our Statewide Transportation Improvement program (STIP).

### Other (Theme):

Approximately half of the responses determine delivery method during the earliest stage of the process.

### **Conclusions:**

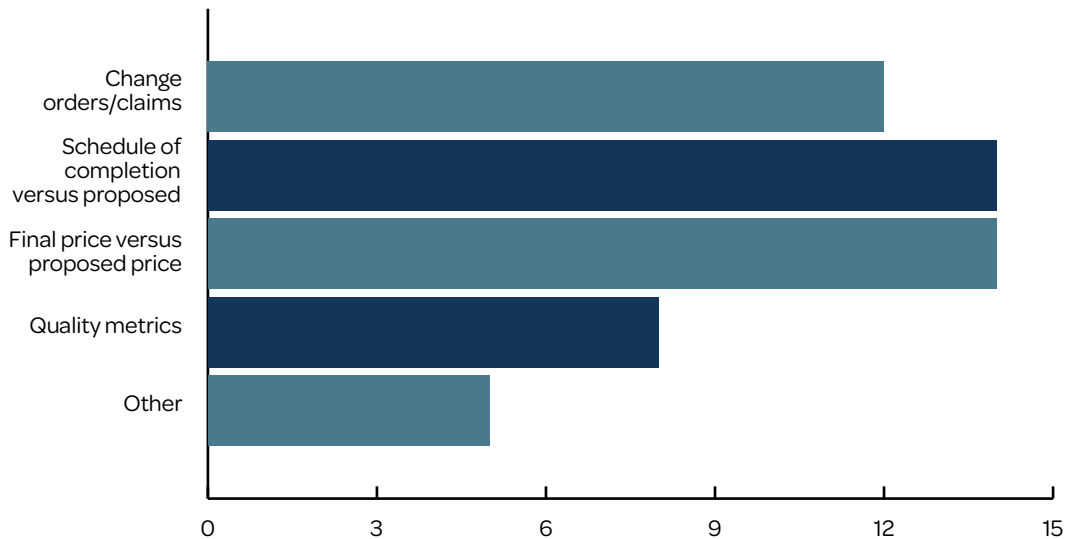
There is no standard for when the innovative contracting decision is made. Answers were across the board, but generally early in the process before much conceptual design. However, several responses indicated selection was late in the process including after the NEPA process and during ROW definition. This may indicate that owners maintain flexibility regarding the timeline for selecting or changing the delivery method for when more is known about the project.

### **Recommendations:**

MDOT should determine timing for deciding on a delivery type and maintain consistency. This will allow MDOT to gain benefits of consistency and understanding by staff and industry. Flexibility may benefit MDOT at times but maintaining a standardized approach to selecting the delivery type is preferred. A standardized approach can accommodate when changes are realized in project goals, political winds etc.

## Question 10

What metrics do you track for your innovative contracts?



### Other (All Comments):

Arkansas is beginning their first DB project but has not begun construction in order to track. Nebraska has not completed their first project. Missouri responded they track the value of projects – preliminary estimate/Added value. NCDOT said quality score ranking and stipends. Stipends are tracked and compared to level of effort required for each pursuit. They are tracking to see if level of effort increases over time. Stipend may be changed during the pursuit if the level effort appears to be excessive as compared to historic information. ScDOT research project is currently being completed by Keith Molenaar at the University of Colorado to formalize this metric process.

### Conclusions:

Respondents could choose more than one answer, and more than half chose schedule and final price vs proposed price. Quality only accounted for a third, but it is possible that it is a harder metric to track. It was interesting that those who chose quality, have typically completed 20-100 projects.

### **Recommendations:**

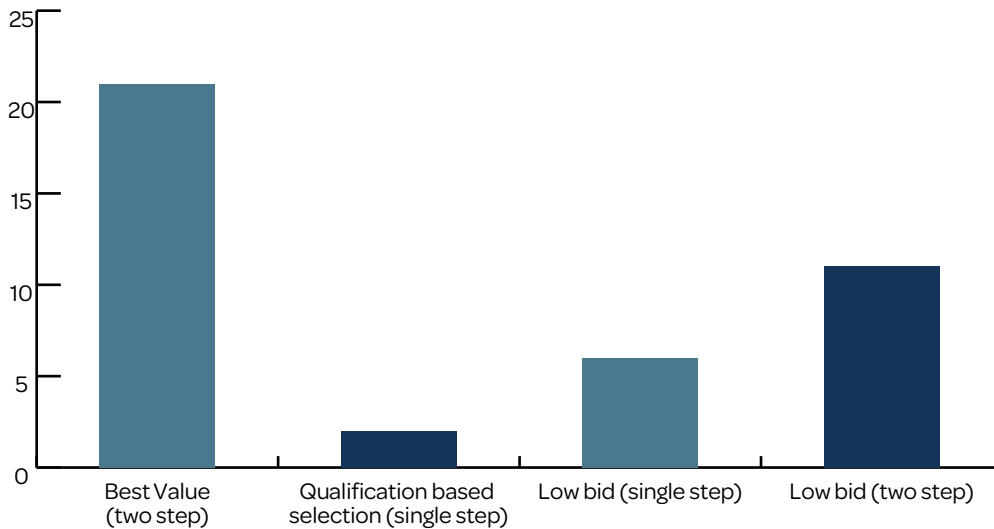
MDOT should develop and track metrics in addition to cost and schedule adding more confidence in determining the success of innovative contracting projects. Multiple metrics are commonly tracked by other agencies and understanding these metrics will allow MDOT to evaluate the effectiveness of their program to add value to project delivery. Tracking metrics will help MDOT identify and make modifications to capitalize on good metrics and improve upon negative trending metrics through enhancements to RFP language or programmatic policies. For instance:

- ◆ If metrics reveal that design-build improves delivery time by 3 months, MDOT can assign user cost value for those months versus other delivery types.
- ◆ Verifying quality that exceeds DBB projects, can reduce overall maintenance costs (for instance long term settlement is reduced 10% at bridges) which means less mill and overlay to reduce or eliminate the “bump at the bridge”.
- ◆ Less change orders (excluding unforeseen conditions and owner directed) e.g. due to design error versus RFP error or omission.
- ◆ Stipend payments should match level of effort. Greater innovation on the side of the Design-Builder will result in more accepted ATC's, which drives costs down.



### Question 11

Please indicate which of the following you use in design-build delivery.



### Conclusions:

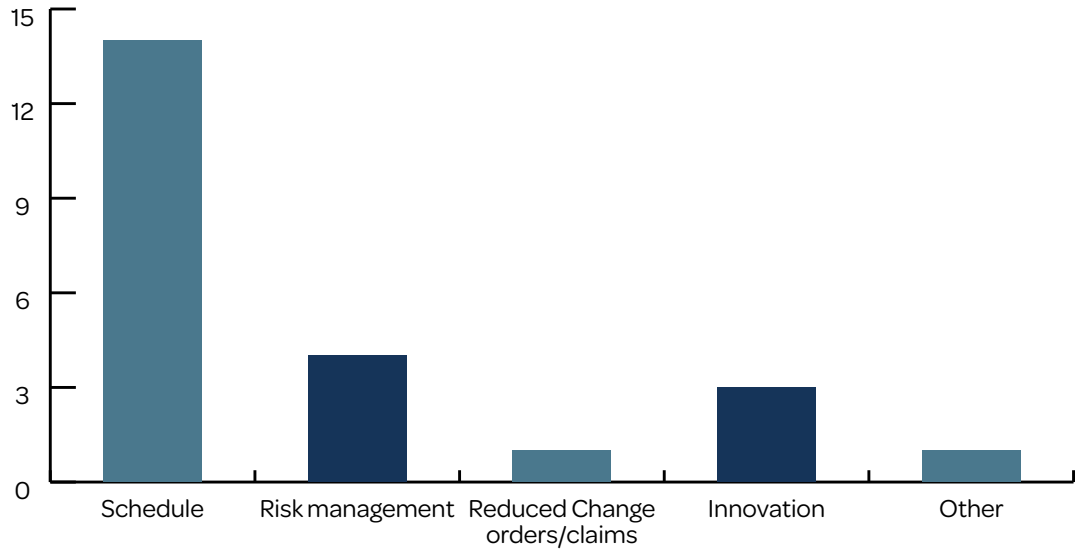
Universally, peer states are using a best value two-step process. Low bid is still being used by half, and UCSF and Jacksonville Air Authority answered they can award using qualifications. It appears that some states are still learning the benefits of Design-build and using low bid may allow them a transition between DBB and DB.

### Recommendations:

Often legislation in many states prevent a qualifications-based selection. Design-build is best utilized when quality and technical approaches are weighted heavily during the second step of selection (RFP process). To be better aligned with peer states, MDOT should consider incorporating best value (two step) method, where the second step gives the technical score a significant weight. DBIA best practices state non-cost/price evaluation should govern the selection process to select a design-builder.

**Question 12**

*What is the primary reason you use design-build?*



**Other (All Comments):**

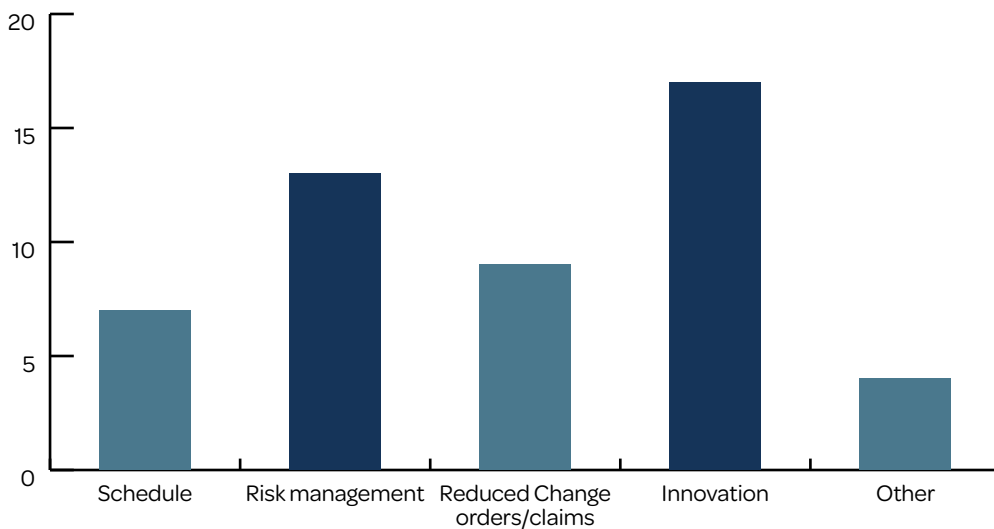
Georgia responded the best method to deliver based on the goals.

**Conclusions:**

Overwhelmingly, respondents use schedule as the primary reason to use design-build.

### Question 13

What other reasons led to using design-build?



#### Other:

Georgia responded the design-build was the most customizable to achieve results. NCDOT said emergency and complex constructability issues. Nevada said complexities in design and construction phasing. Connecticut said all of the above.

#### Conclusions:

Allowing the respondents to pick all that apply opened a range of other options with innovation being at the top of the list after schedule which was the primary reason in question 12. Risk management is also a main reason respondents use design-build.

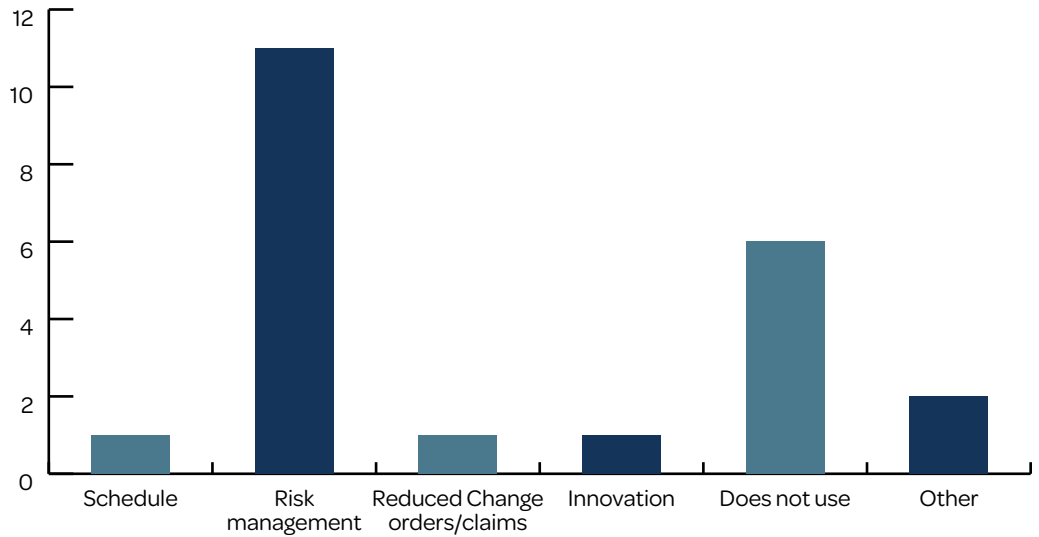
#### Recommendations:

MDOT does use alternative delivery to take advantage of schedule and incorporates the use of ATC's to drive innovation. MDOT could to better advantage of secondary benefits.

- ◆ Paying higher stipends will encourage design-build teams to invest more time in the proposals. The result is an increase in innovative ideas and ATCs.
- ◆ Not progressing design too far in RFP documents to encourage innovation.
- ◆ Assigning risk to those best suited to manage it.

### Question 14

What is the primary reason you use CMGC?



#### Other:

Connecticut responded all of the above based on project goals/risks. Utah responded wanting contractor input, early release packages and long lead item procurement.

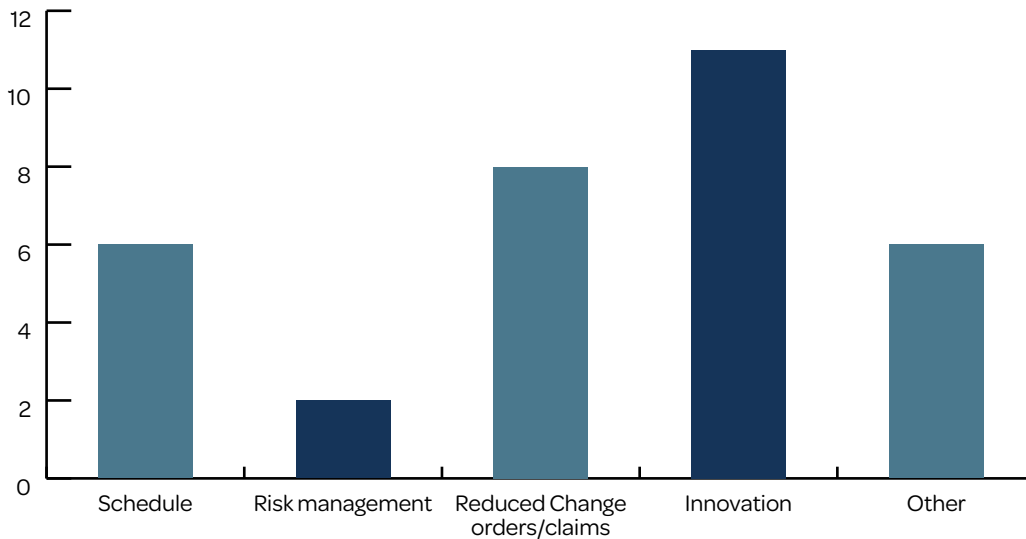
States that do not use CMGC: Texas, WSDOT, Missouri, Georgia, Florida and Virginia.

#### Conclusions:

Many states are not legally able to use CMGC methods. Those that can use it, do so for risk management.

### Question 15

What other reasons led to using CMGC?



#### Other (All Comments):

Same as previously stated on Question 14.

#### Conclusions:

Most states chose risk management for the primary reason for CMGC, and innovation rose to the top of additional reasons. Again, six indicated their state does not allow for CMGC contracting. As with design-build most owners do see multiple advantages to using CMGC.

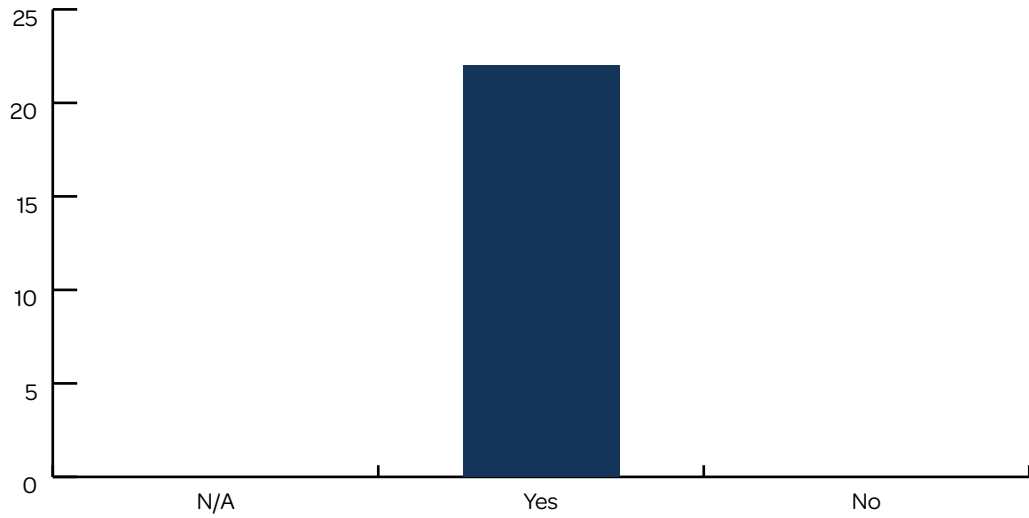
#### Recommendations:

It is recommended that MDOT develop a delivery method selection tool that allows for the team to accurately measure and predict the metrics that are beneficial for both design-build and CMGC as well as other delivery types to assure the right delivery method is selected. Each delivery method has its benefits and drawbacks depending on the project goals and characteristics. CMGC is generally considered by many owners as a good choice when the project is complex (innovation desired) and/or has a higher degree of risk.

---

**Question 16**

*Do you short list when using a two-step selection process?*

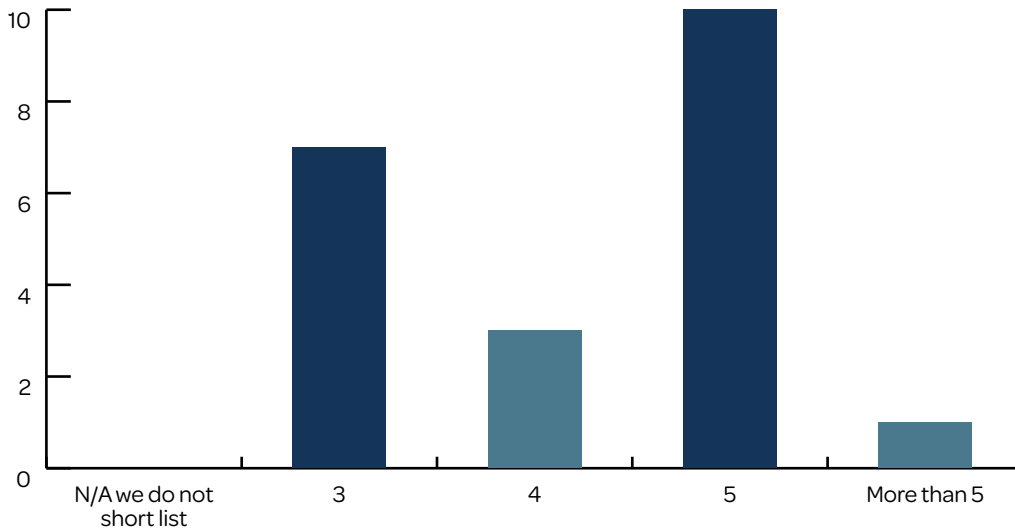


**Conclusions:**

All respondents use short listing in a two-step process.

### Question 17

*When you short list, what is the maximum number of participants that can move forward to the second step?*



#### Other:

Utah indicated they shortlist no less than 3, but no more than 4 based on the natural break in scores.

#### Conclusions:

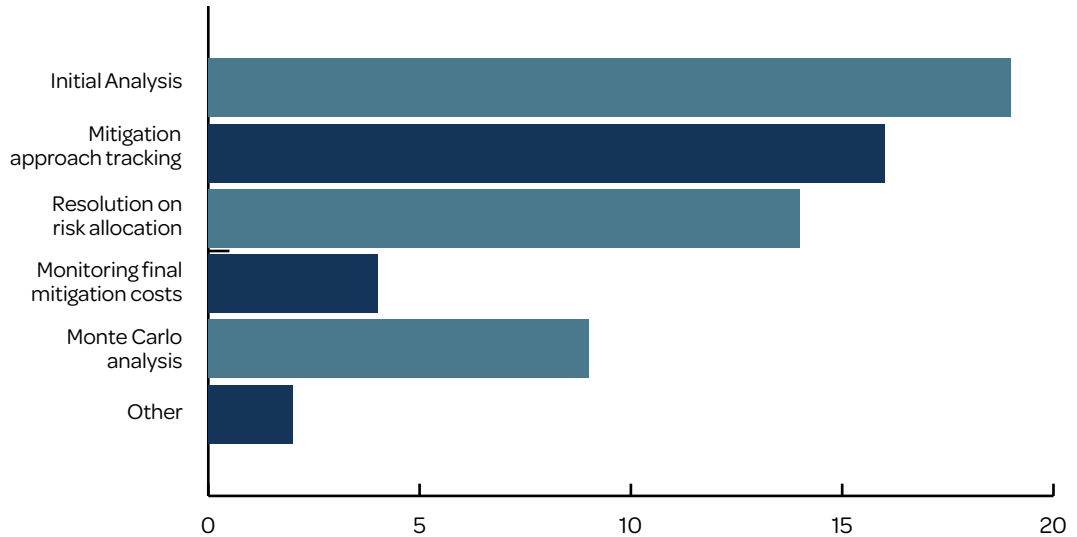
Most states are still allowing a maximum of 5 proposers to move on in the two-step phase. It is unclear if five is the most often used number, or if it is the maximum allowable, but rarely used. It is clear that half the respondents short list no more than 4 with 7 shortlisting no more than 3.

#### Recommendations:

MDOT should consider standardizing the number of teams to shortlist on innovative delivery projects. DBIA recommends short listing 3 teams. MDOT should consider the level of competition if there are concerns that if one team drops leaving only 2 competitors. Trends show where projects shortlist 4 or more teams, those projects more commonly will see competitors dropping out. More qualified design-build teams will self-select out when too many teams are short listed.

**Question 18**

*What steps do you follow in Risk Management?*



**Other:**

Minnesota typically performs just the initial analysis but sometimes uses other tools depending on the project. Georgia responded they use a system called the 5 dimensions of complex project management, this includes: 1. Cost, 2. Schedule, 3. Technical, 4. Context, and 5. Financing. Each dimension is assigned a score and graphed on a ‘map’ GDOT has developed. Their manual states that it helps their leaders assign team members, develop procurement plans and advocate for project needs from political bodies.

**Conclusions:**

It is apparent that most Owners perform risk analysis early in the process with additional and further analysis tapering off as the life cycle of procurement and project delivery progresses.

**Recommendations:**

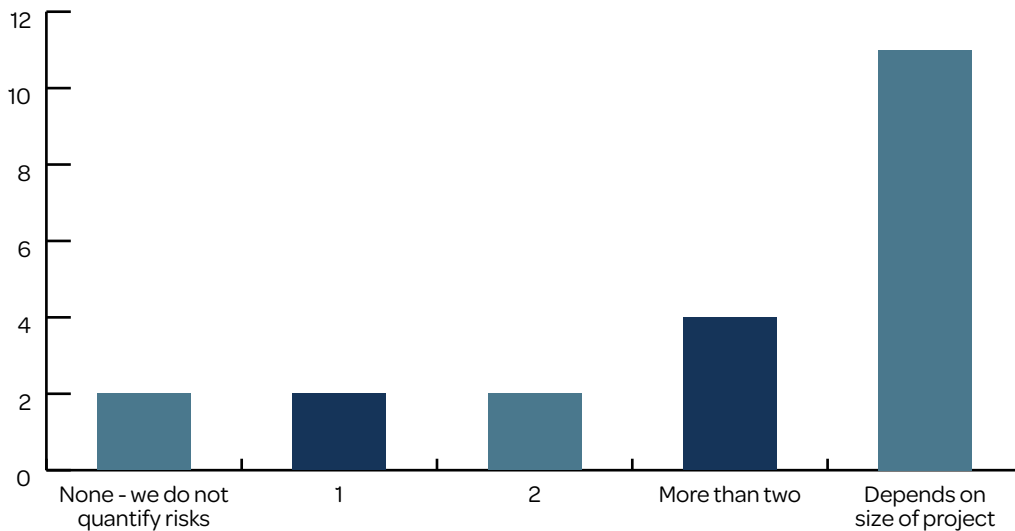
It is recommended that MDOT create a tool to track risks throughout the project life. Tracking the risks and how they affect the project can help create lessons learned to be used in the future.

Monte Carlo analysis has been proven to give management a stronger understanding and range of project costs. This analysis provides project personnel better tools at identifying and releasing contingency. MDOT should identify a minimum level of probability (percent) for which project funding is established.



### Question 19

How many cycles of analysis do you use in a typical risk management process?



#### Conclusions:

There does not seem to be a typical number of cycles that states analyze their risk. It appears that the riskier projects may require more cycles. Data indicates that as projects expand, risk is analyzed more often in the project life cycle.

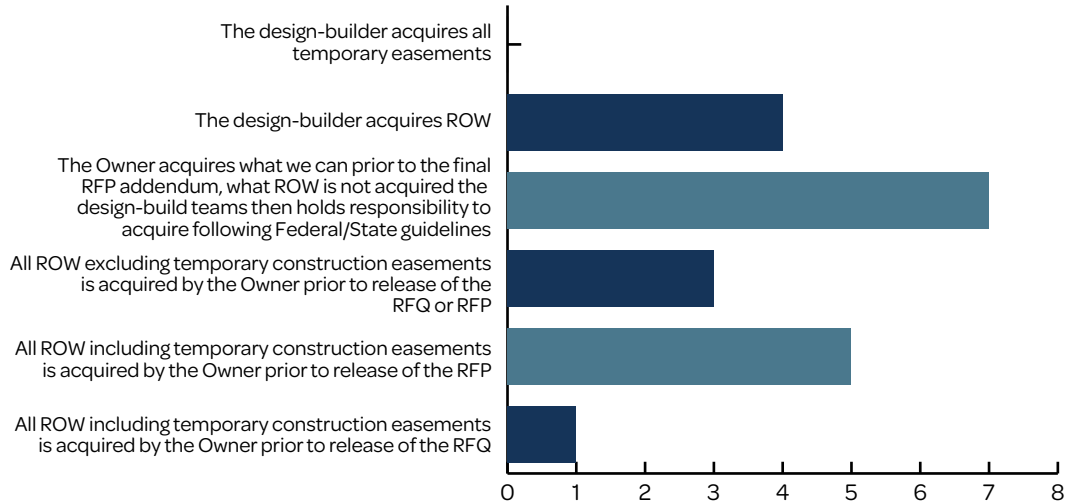
#### Recommendations:

As risk is analyzed more through the life cycle of a project, MDOT will develop better data for use in identifying project contingency and overall funding needs.

MDOT should consider set times to evaluate and update risk at project milestones including: "Calls for projects", programming, funding, scoping, procurement, award, and post construction.

**Question 20**

*What best defines the timeline of right of way (ROW) acquisition on your innovative contracting projects?*



**Other:**

Utah responded the owner acquires ROW with the goal to complete the acquisitions before RFP release. They generally advertise the RFP with limitations (construction restrictions) for ROW parcels not acquired before selection.

**Conclusions:**

Generally, the right of way acquisition seems to be a balance between the owner and the design-builder. The Owner takes on most of the right of way acquisition responsibility, understanding the difficulty and complexity of the process. Eleven respondents did indicate the design-builder has all or some of the responsibility for acquiring ROW, where nine indicated the owner acquires all ROW before procurement is complete.

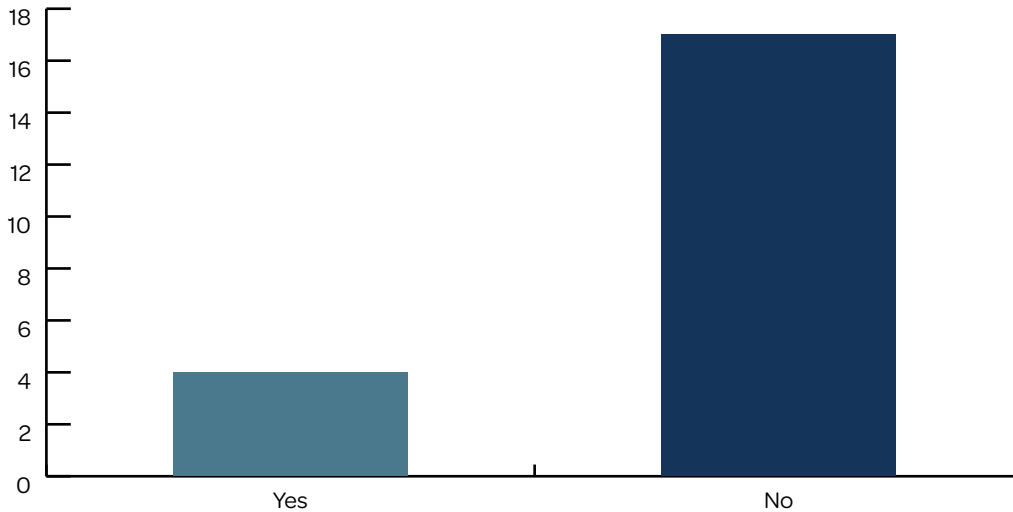
**Recommendations:**

See question 21.

---

**Question 21**

*Do you purchase all rights-of-way before issuing notice to proceed on an innovative contract?*

**Conclusions:**

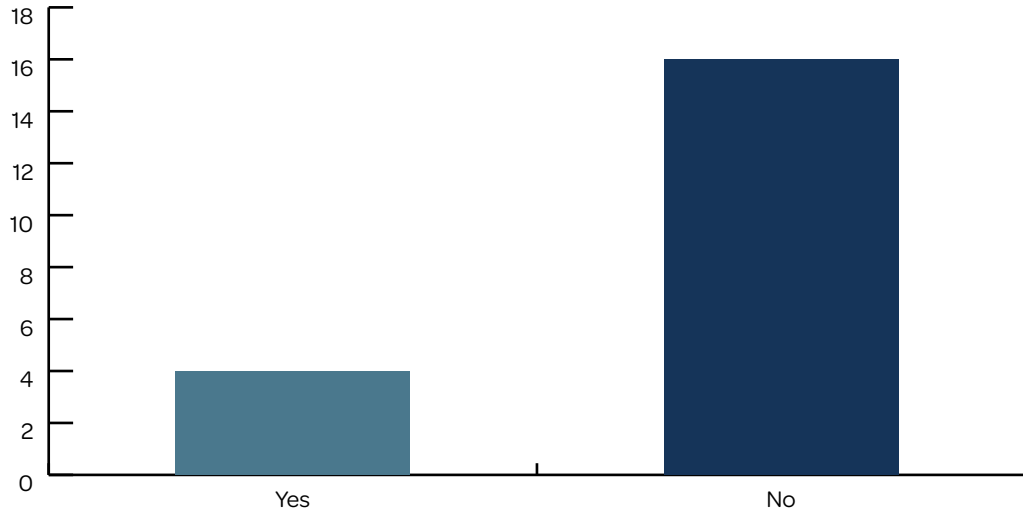
Answers are informative. It is interesting that 17 respondents indicate that all ROW is not acquired before NTP to the design-build team, however in question 20, nine respondents indicated all ROW is acquired before the procurement process is complete.

**Recommendations:**

MDOT can develop a method to allow design-builder to begin work prior to when ROW acquisition is complete or to be part of the ROW acquisition process. This could be beneficial for time critical projects for capacity or rehabilitation/safety. Allowing the design-builder to be a part of ROW acquisition process encourages the use of ATC's and allows them to work around and within the limitations. Design-builders can have ownership of the project and offer greater innovation to reduce required right of way needs.

**Question 22**

*Do you stipulate a utility relocation dollar amount for a project (shared risk)?*



**Conclusions:**

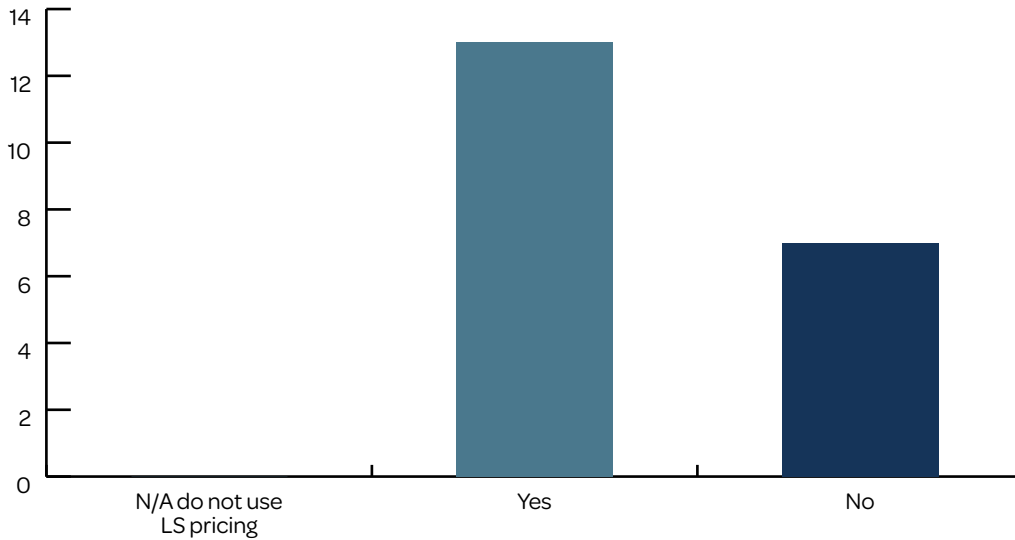
The majority of respondents do not stipulate a utility relocation dollar amount.

**Recommendations:**

There were four respondents that indicate they provide a stipulated utility relocation amount. If MDOT wants to consider this approach, it is recommended that the stipulated amount be based on the preliminary design provided with procurement documents using estimated relocation costs from utility owners or those knowable of similar utility work. This process results in less risk being included in the bids and allows for the owner to accept or share costs or savings. Providing an incentive/disincentive can be valuable. For instance, if MDOT determines utility work would be \$4 million dollars, allowing the design-builder to keep half of the money saved below that will incentivize them to provide innovation to avoid relocation of utilities. Similar methods can be used for overages, thus preventing large contingencies in bids.

**Question 23**

*Do you require the design-builder to include all utility work in the lump sum pricing?*

**Conclusions:**

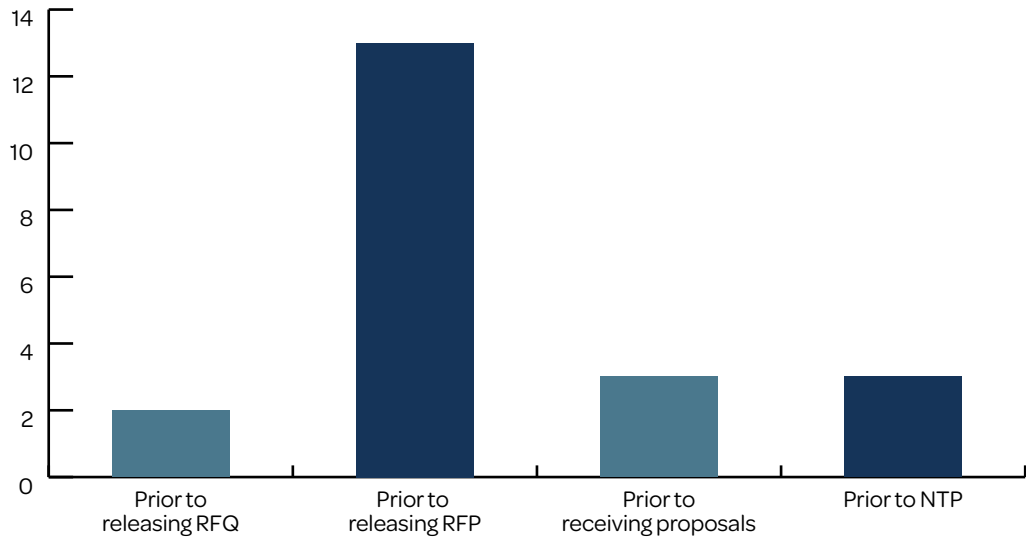
Two thirds of the respondents include utility work in the lump sum pricing.

**Recommendations:**

Requiring utility relocation to be included in the lump sum pricing encourages innovation on the part of the design-builder. By not stipulating a dollar amount for utilities, the design-builder may work to avoid relocation and minimize impacts versus a stipulated amount with no incentives. The design-builder has relationships with utility companies that they can leverage to improve design and they have personal incentives to maintain those working relationships. Utility companies can be incentivized to interact with the design-builder using incentives tied to the amount and type of reimbursements for the utility relocation.

### Question 24

*At what stage do you require the final decision on the environmental NEPA document?*



#### Conclusions:

The NEPA process can be a long and drawn out process for which the Owner has the responsibility. Two thirds of respondents indicated they complete the NEPA document prior to releasing the RFP. This could signal owners feel the proposers need the final decision made before they can calculate their bids and know what risks to include or could indicate owners are not willing to take the risk of project delays due to the environmental document impacting final bid prices.

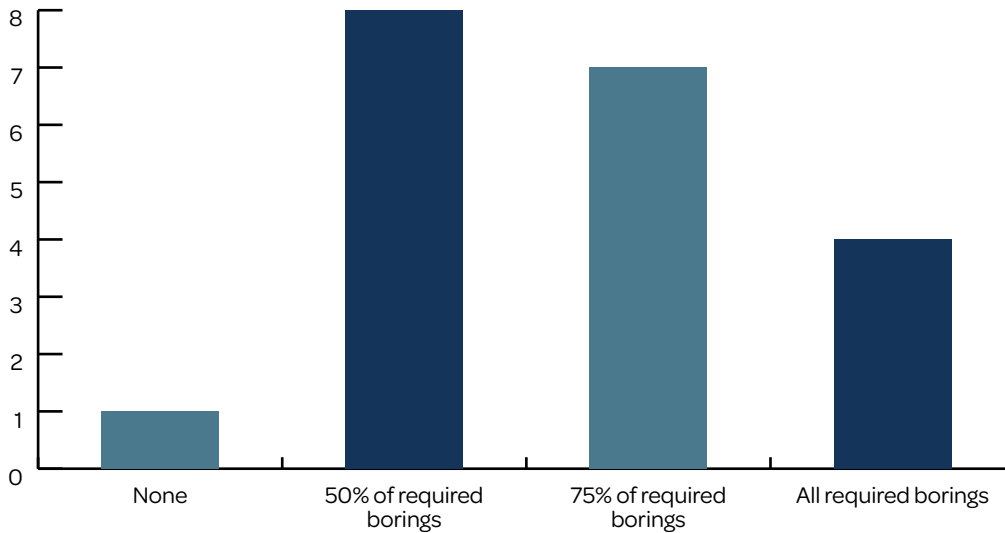
#### Recommendations:

MDOT should consider the following:

- ◆ Waiting too long to acquire the NEPA approval could result in delays in construction.
- ◆ Due to the lengthy NEPA process (especially final decision authority), many projects will benefit from completing the NEPA approval prior to the RFP.
- ◆ Allowing the design-builder to have a full understanding of the environmental requirements can reduce risk to the project and owner.
- ◆ Moving forward with procurement during the final stages of the NEPA process could allow for time savings if schedule is critical.

## Question 25

How much preliminary work for Geotech do you perform?



### Conclusions:

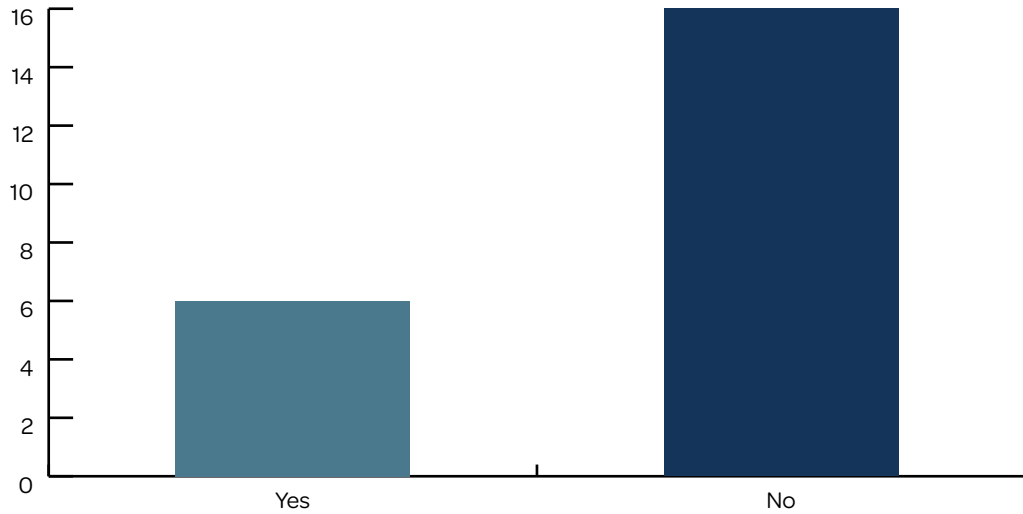
Most owners will perform half to three-quarters of the geotechnical borings suggesting the opportunity for the design-builder to identify the remaining locations based on innovative design. Oftentimes the Contractor will see a need for borings in different locations than designers and by not completing all borings reduces the probability of duplicative investigation.

### Recommendations:

MDOT acquires borings where necessary locations are known. Generally, if more are required, it is due to a design-builders innovative design. This is an accepted industry practice. If MDOT sees a high likelihood of innovative ideas such as moving bridges or roadway alignment, MDOT should consider how to approach the number and location of borings.

**Question 26**

*Do you allow projects with partial alternative delivery, such as DB, for Geotech work?*



**Conclusions:**

Most respondents do not allow alternative delivery, specifically for geotechnical work.

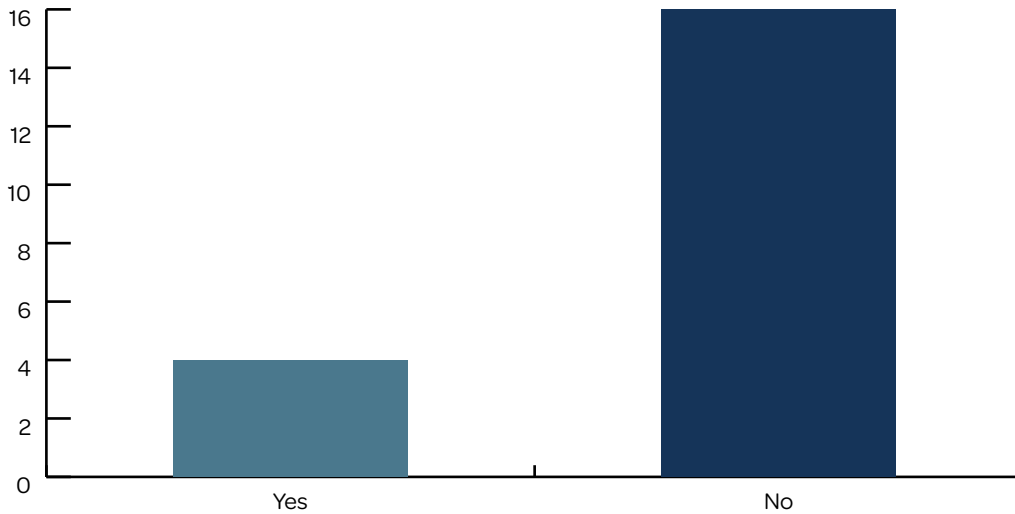
**Recommendations:**

MDOT can benefit from alternative delivery being embedded within a traditional DBB project. This could be a metric within a selection tool that allows MDOT to take advantage of benefits from innovative delivery even within a traditional project. By allowing Contractor innovation on high risk disciplines MDOT could see project value. MDOT would need to clarify options and what parts of projects could be considered for alternative delivery.



**Question 27**

*Do you use an alternate bid approach allowing for pricing PCCP and HMA?*

**Conclusions:**

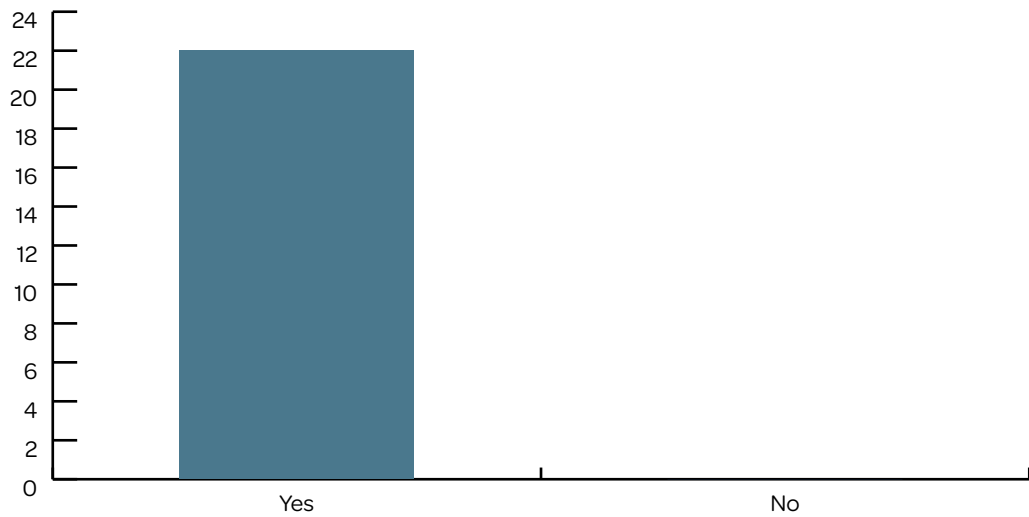
Most respondents define the type of pavement prior to involving Contractors.

**Recommendations:**

Allowing for innovation in all aspects of a project can help owner satisfaction. For example, MDOT has an APB process that is established with paving industry partners. The design-builder can find ways to improve schedule and costs of the project when there is opportunity to improve the design or accomplish it in a different way. When an owner allows an alt bid approach, the owner can take advantage of active markets for materials. Providing an equivalent pavement section in PCCP and HMA gives an additional opportunity to take advantage of market conditions prevalent at bid time.

### Question 28

*Do you use an Alternative Technical Concept process?*



#### **Conclusions:**

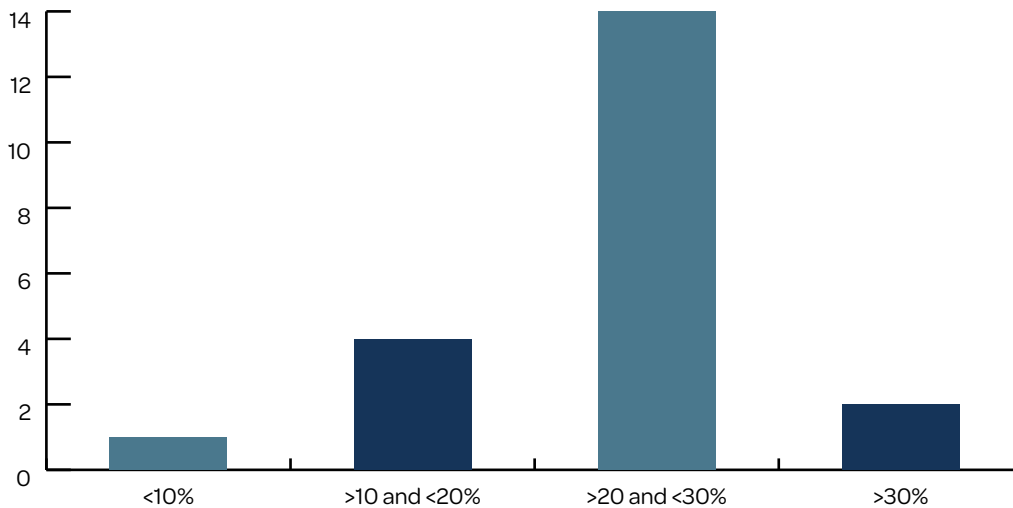
Overwhelmingly respondents use ATC's in their RFP process.

#### **Recommendations:**

All respondents answered they follow an ATC process. MDOT is no exception to that. MDOT may consider reviewing other agencies where ATC's have been accepted that deviate from set standards and preferences that resulted in the agency modifying its own protocols. Identifying these will allow MDOT to educate discipline leads within MDOT that may be averse to innovation or "new" ways that other agencies have changed their standard approach based on ATCs submitted in a design-build procurement .

### Question 29

When developing design for procurement, approximately what level of design is advertised with the RFP?



### Conclusions:

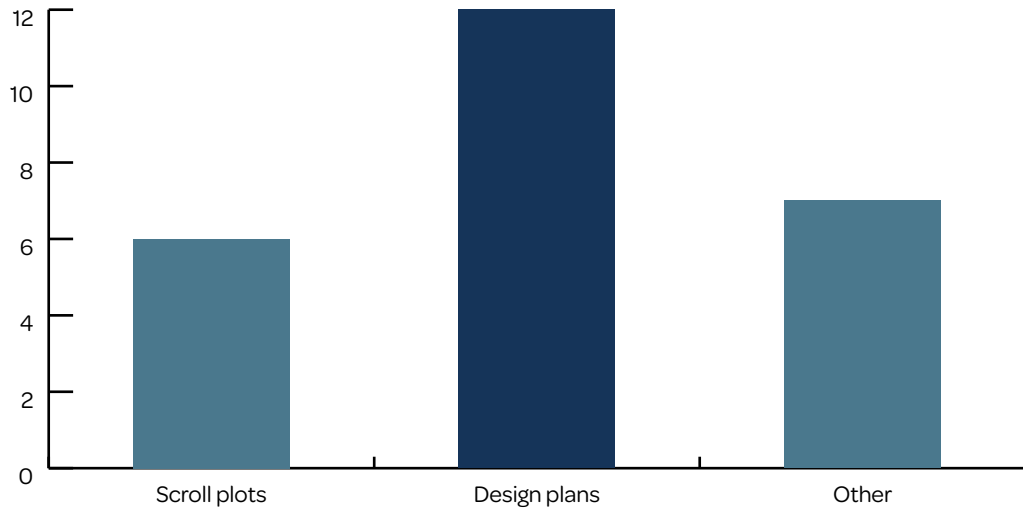
Overwhelmingly, the respondents prefer to have 20-30% of the design complete. Only UCSF responded that they complete less than 10% of the design. One could conclude UCSF wants to find innovations before adding too many restrictions in the design and release more responsibility to the design-builder as to how it will be completed. Florida and Nebraska require more than 30% complete.

### Recommendations:

It is recommended to balance the need to mitigate risk without limiting the ability of the design-builder to bring innovation to their design solution. It is reported that MDOT provides between 20-30% which is industry standard. We recommend maintaining that level of design or less and allowing the design-builder to develop a design that will have the most impact towards meeting the project goals. The higher the level of design, the less options there are for changes that don't impact scope.

**Question 30**

*What form of design do you require to be submitted with the proposal?*



**Other (Theme):**

Answers trended toward both design plans or scroll plots as being allowable and it is up to the design-builder. Electronic files are also options in two states.

**Other (All Comments):**

Connecticut said a schematic design. UCSF responded that it varies, sometimes none. Caltrans, Missouri, and Florida allow both scroll plots and design plans. Minnesota responded either, at the teams’ option. Electronic plans are sometimes allowed on simple projects. Maryland said that it depends on the project, sometimes none at all – but maximum a scroll plot. Georgia said that it varies with complexity and size. NCDOT responded a technical proposal on 11x17 sheets. UDOT uses both, as well as electronic files.

**Conclusions:**

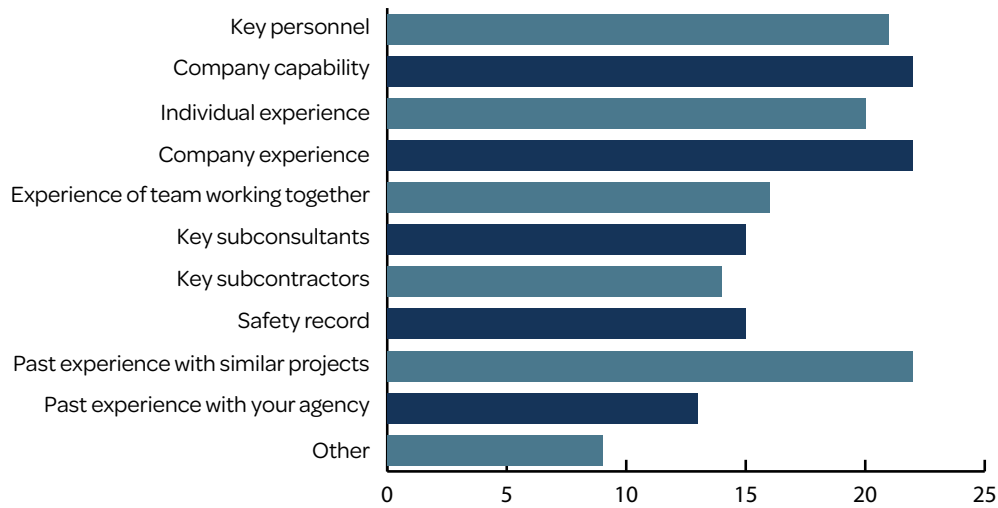
Answers vary but are consistent between scroll plots or design plans. Some states dictate what is required, others stated it depends on the project, and some leave the option open to the design-builder.

**Recommendations:**

Design plans are used most often to submit the technical approach to the agency but is not the only option. Based on the percent of design complete in the RFP will decide which submission is most appropriate, as well as agency preference. It does not seem to benefit the project what the delivery form is but maintaining a consistent requirement will assist the industry to understand MDOT expectations.

### Question 31

When using an RFQ, what do you evaluate?



#### Other (Theme):

Disadvantaged Business Enterprise (DBE) and Project understanding/approach were the two main answers.

#### Other (All Comments):

Arkansas evaluates DBE. UCSF evaluates labor compliance record. Missouri said DBE and workforce diversity performance on previous projects. Minnesota evaluates a project understanding/approach sometimes. Maryland looks at project understanding. Georgia said reference checks on nominated and disclosed projects. NCDOT evaluates project understanding and approach as well as a quality program. Virginia reviews the top three risks. SCDOT responded design-build team performance evaluation scores on design-build projects, 50-100 references. They also look at proposed mitigation for SCDOT perceived risks.

#### Conclusions:

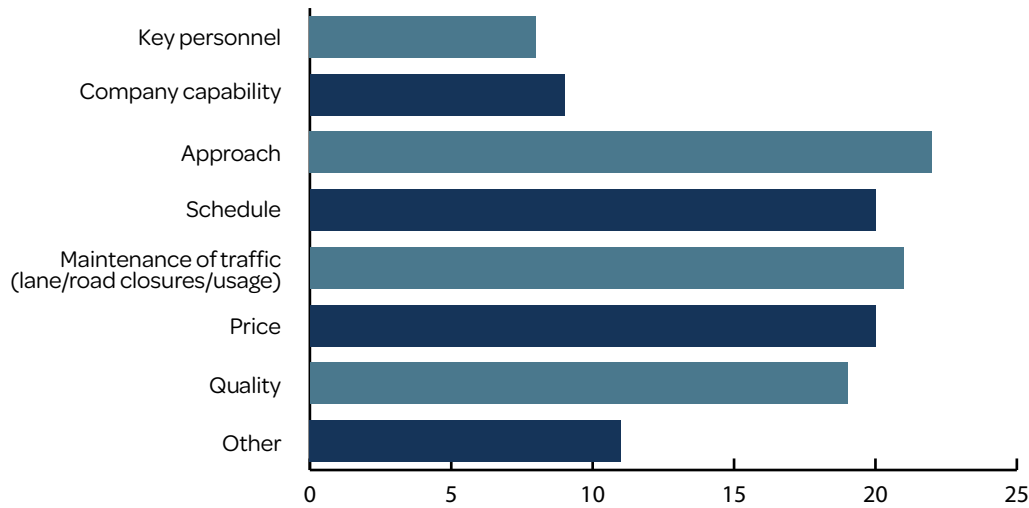
Experience is critical evaluation criteria. Experience with the agency, on similar projects, within the company and the individuals on the team, knowing and understanding design-build projects is critical for the respondents. Key subcontractors and subconsultants, and their experience working together are less critical, but still important to most.

### **Recommendations:**

There is a vast number of criteria that can be evaluated in the RFQ. Reviewing the company's past experience on projects, their capability, key personnel/individual experience that will be working on the project and past experience working on similar projects will help MDOT evaluate which contractors are most qualified. Consistency in the evaluation criteria is critical, however changing for some projects is not uncommon, for instance tunneling will often incorporate safety records or key subcontractors. Recommend not evaluating experience with the agency as it will encourage more competition from firms that are not native to MDOT but want to bring business and expertise to the state. Narrowing the field with the RFQ process will help incentivize the design-builders to put in the effort to the technical approach in the next step.

### Question 32

What do you evaluate for the RFP?



#### Other (Theme):

Although no central theme, Project goals was mentioned three times.

#### Other (All Comments):

Nevada evaluates lead personnel and team org charts as well as price. Connecticut reviews other aspects of proposal based on project goals. Arkansas looks at DBE. Texas said that schedule is only evaluated if it's part of scoring. WSDOT reviews proposal submittals against the project goals. WSDOT typically selects 3-5 goals for each project, such as minimizing public impact, environmental concerns, and schedule. WSDOT will place a dollar factor for each risk factor and goal. A percent credit in value is given or awarded for the project, lowering their effective bid. The technical evaluation is evaluated with that credit for each project goal. UCSF said all the RFQ follow through including labor compliance. For labor compliance they will review infractions documented by state governing authorities. Missouri looks at best value. SCDOT said impact to ROW and wetlands/streams. Georgia said DBE utilization and key criteria related to project goals – varies. NCDOT said responsiveness to RFP, innovation and long-term maintenance.

#### Conclusions:

Approach and impacts to traffic were answered by nearly every respondent as well as price, quality and schedule. The team's capability and personnel on the project were identified in the RFQ, so it seems fitting the RFP be centralized around the proposal and approach to the project.

**Recommendations:**

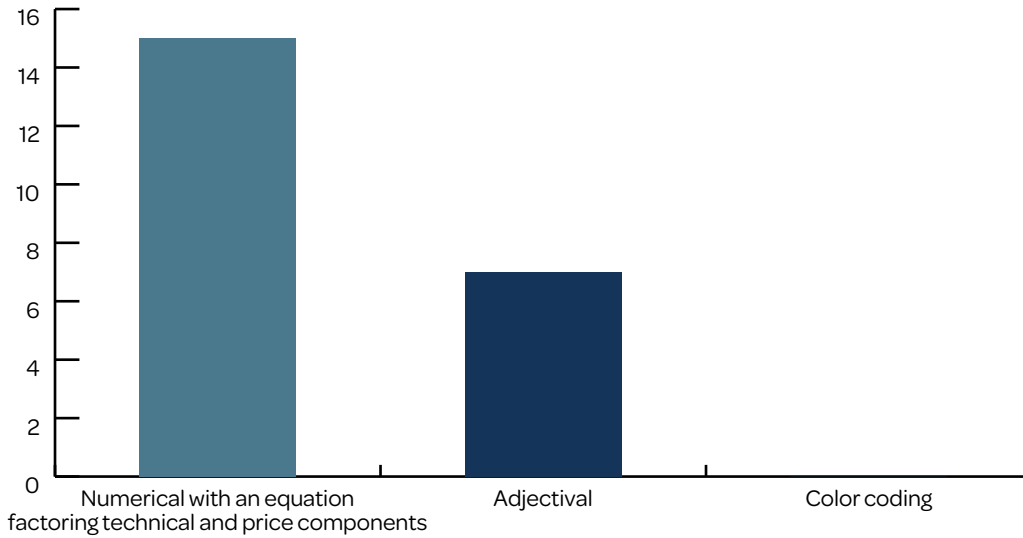
Currently MDOT generally looks at price for the RFP and pass/ fail criteria. It is recommended that the design-builders approach to the project be weighted more heavily in the RFP process. Quality, technical approach, including the MOT plan is critical to the success of the project. Understanding how the design-builder is going to approach the project is a key indicator to understanding if they will meet the agency goals and ultimately define success. To analyze the approach against project goals it is also recommended that MDOT clearly define the project goals in the RFP. The value part of best-value implies qualitative metrics be included.

Creating a consistent scoring system that is shown to the design-build teams in the RFP will help them know what MDOT will be reviewing and create a clear and concise measuring tool for the selection process.



**Question 33**

*What scoring method do you use for responses to Requests for Qualifications (RFQ's) and Requests for Proposals (RFP's)?*

**Conclusions:**

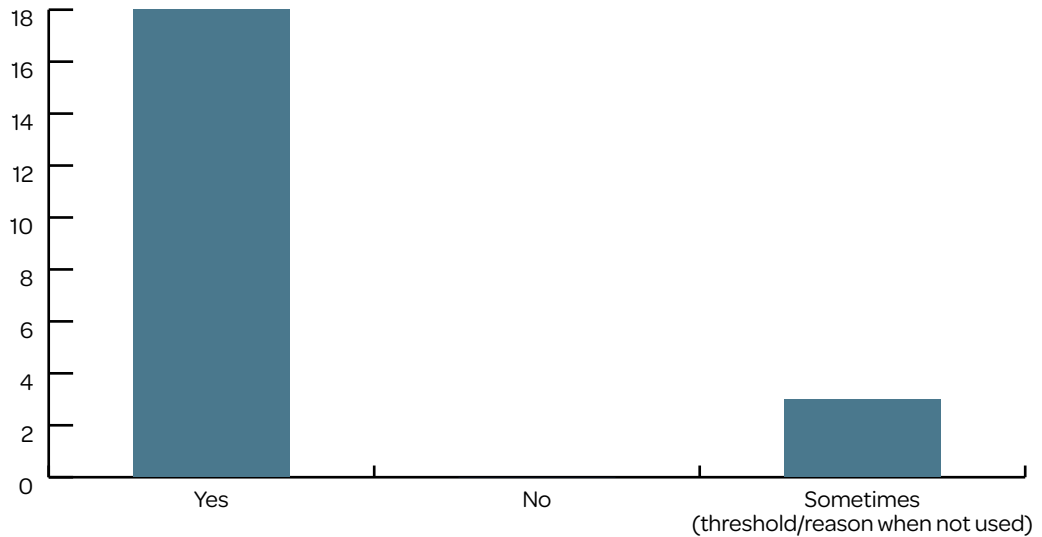
The majority of respondents answered a numerical scoring method with an equation factoring technical and price components.

**Recommendations:**

Although the majority use a numerical scoring system, MDOT should not discount benefits of adjectival scoring in best-value. Adjectival scoring allows the owner more latitude in scoring than numerical based equations. The process can be transparent and disciplined.

**Question 34**

*Do you use stipends/honorarium?*



**Threshold:**

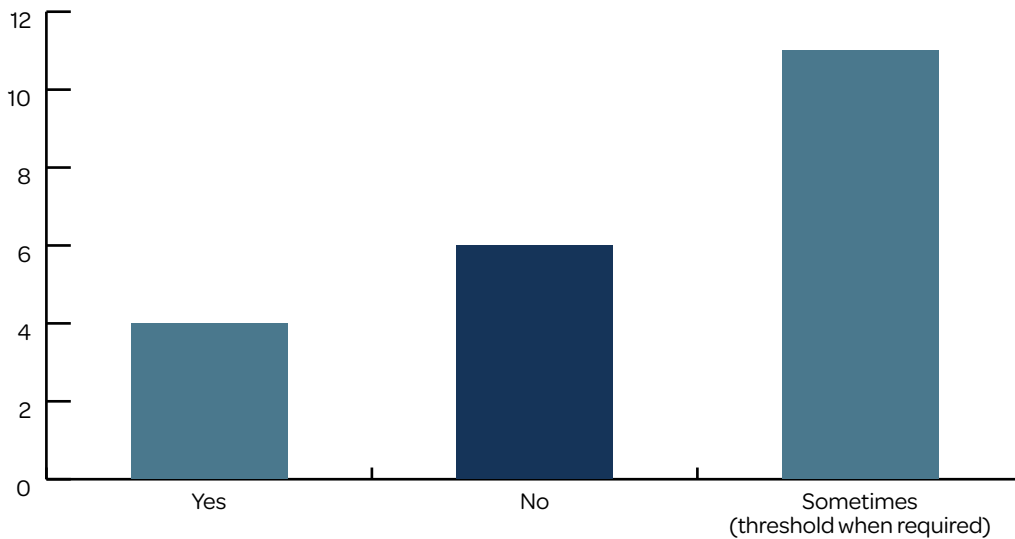
Georgia responded on a sliding scale, when conditions warrant, not called stipend – called stipulated fee or payment for work product. Ohio uses them when an ATC or technical proposal is required, and Oregon uses them only on DB projects.

**Conclusions:**

Respondents use stipends for design-build projects to encourage the design-build team to put effort into the technical approach and explore innovations that may help improve the overall success.

**Recommendations**

Stipends are best practice in the design-build process. DBIA recommends that stipends are not tied to the ownership rights of the proposal documents, but amounts should be based on the complexity and needs of the project. MDOT does provide stipends to teams, but as the complexity of the technical approach increases, the stipends should increase as well. Stipends encourage well qualified design-build teams to propose on your projects and help offset the financial burden that design-build proposals require.

**Question 35***Do you require co-location of designers, constructors and owner personnel?***Threshold (All Comments):**

Connecticut has not defined this requirement. Oregon, WSDOT and Nebraska responded if it's a fit for the project. Minnesota, Missouri and Caltrans gave dollar amounts varying between \$20M and \$100M. Virginia and Georgia responded on major/ mega projects.

**Conclusions:**

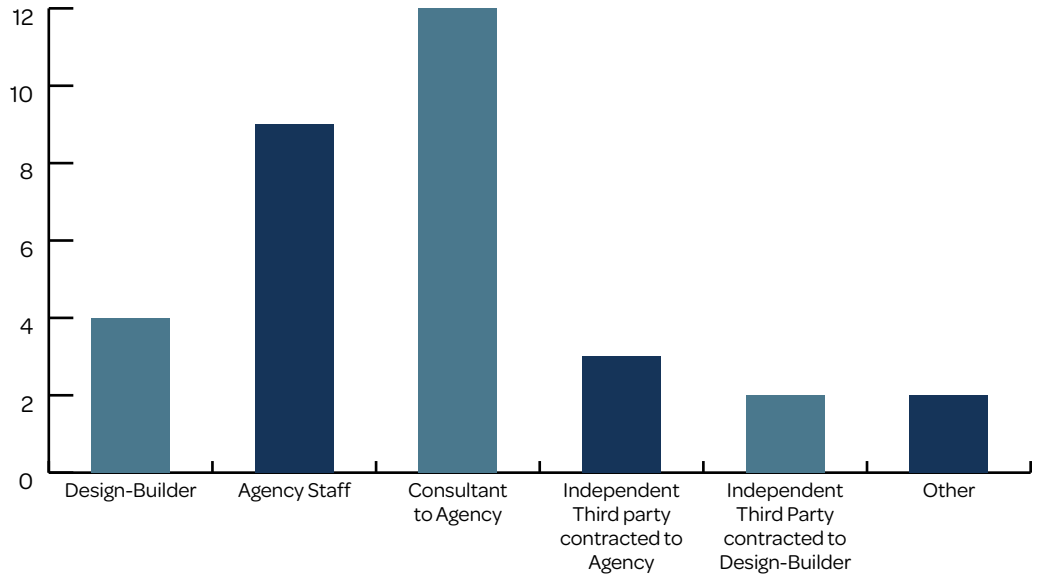
Overall, most states are open to co-locating the project team if it makes sense for the project given the size and complexity.

**Recommendations:**

Create a clear approach/threshold for co-locating on projects. Co-locating encourages team building, communication and can help streamline the lengthy design and review process. This is especially important on larger and more complex projects.

**Question 36**

*Who performs review of design?*



**Other (All Comments):**

Connecticut said that on facilities projects they use design-builder, 3rd party agency (cursory). On highways they use design-builder, agency, and applicable 3rd parties. Maryland uses and Independent design quality manager (IDQM) contracted to the design-build team, but also do an audit review by the owner/agencies. NCDOT indicated the work load and particular discipline expertise of staff influences the decision on using in house or consultant staff. WSDOT indicated that in-house staff will review as part of a mixed team that includes consultants. They also base hiring a consultant on staff work load and project needs.

**Conclusions:**

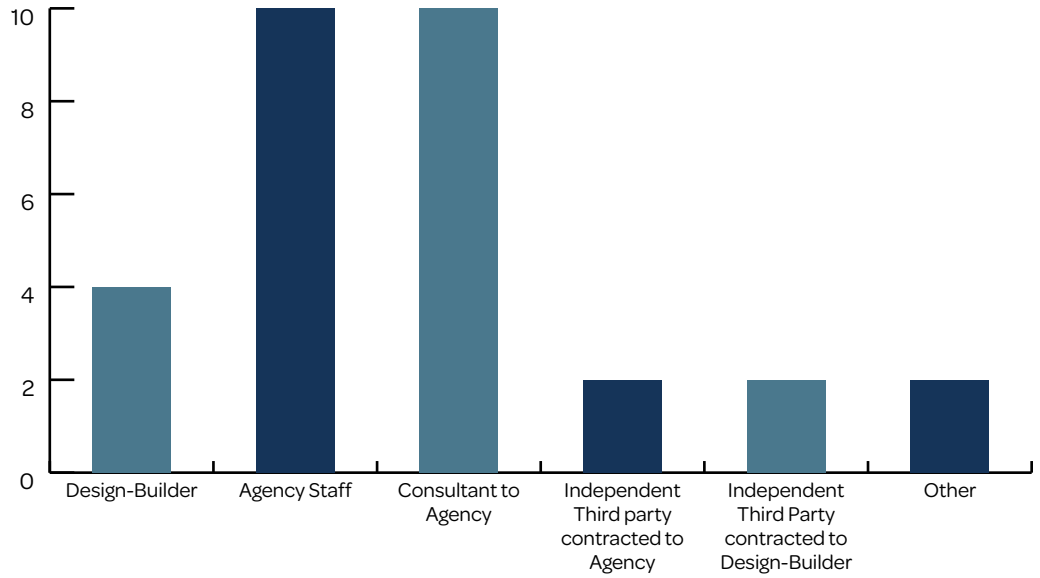
Most respondents answered either the agency staff or a consultant to the agency acting as its representative. This would indicate the owner still retains control of the design and how it is being performed. However, it is important to note that there were nine (9) responses indicating the design-builder or an independent third party held that responsibility

**Recommendations:**

Recommend consultant reviews as projects get larger and more complex. Design-build projects have a history of being very draining to the agency staff. Hiring the design review to a consultant who is familiar with MDOT's processes can be beneficial to allowing MDOT resources to spend time on other important tasks within the department. It also allows MDOT to stay involved and retain control of the overall process. When using consultants to review design, MDOT should assure that if MDOT staff are going to provide reviews also the MDOT staff engage at the earliest stages of design too. Often with a dual consultant /owner reviewer role, the owner reviewer may not fully engage until later in the process. This leads to comments that should have been raised and addressed at earlier design levels being addressed later in the design process, often causing rework.

**Question 37**

*Who performs construction acceptance testing and inspection?*



**Other (All Comments):**

Missouri responded the design-builder has responsibility for QC and QA. MoDOT performs quality verification. Georgia indicated that on smaller projects GDOT hires its own Construction Engineering Inspection (CEI). On larger or complex projects, GDOT uses Contractor QA with owner verification.

**Conclusions:**

Similar to the design, the agency retains the control over construction acceptance either through agency staff or consultant to the agency. However, it is important to note that there were nine (9) responses indicating the design-builder or an independent third party held that responsibility.

MDOT uses in-house staff and third parties to complete the construction inspection on alternate delivery, however those parties are contracted to MDOT. Hiring the construction QA to a consultant who is familiar with MDOT's processes can be beneficial to allowing MDOT resources to spend time on other important tasks within the department. It also allows MDOT to stay involved and retain some control of the quality of the final product.

**Recommendations:**

MDOT should consider moving away from a traditional approach of construction quality and requiring the design-builder to show proof of quality through their own inspections and testing. This allows MDOT a more hands-off acceptance approach and one of owner oversight and validation but still provides ample control of quality for the final product. MDOT does not accept the final product until proof of quality is provided.

## Open Ended Question Response Review:

The last five questions were open ended and invited the agencies to write down what was important to them. Overall the following is a summary of open-ended questions and the similar themes that were found throughout:

- ◆ Innovation is one of the biggest opportunities in design-build, allowing the DB team to come up with new ideas that benefit the project, agency, schedule, and budget. Finding the balance between being too prescriptive in the RFP can be a challenge. Leaving an open-ended RFP encourages innovation but costs may rise but or elements may be used that do not meet the owners core requirements, conversely, being too restrictive in the RFP can mitigate risk but could lack quality in the project. Providing a transparent and comprehensive scope and project understanding in the RFP is ideal. This can help mitigate some risk while still allowing for innovation.
- ◆ Benefits to the agencies program from using alternative delivery methods were most highly noted as innovation and flexibility in the process.
- ◆ Having leadership that understood the process and could deliver a consistent message throughout their program while helping to shift the mentality of the rest of the department helps create an environment of success.
- ◆ Risk was noted as one of the largest concerns for agencies Scope validation periods and risk management programs were mentioned as efforts to assist in properly addressing project risk.
- ◆ Quality based approaches and RFPs have been found by many agencies to be more successful. Legislation and agency mentality have held others back. Legislation has also held many agencies back from implementing CMGC and other delivery methods.
- ◆ Design-build requires a different way of thinking and often a shift in department mentality. Many departments have developed manuals to assist in this gap. It is important to have a central group of leadership that oversees all the alternative delivery projects. This provides consistency and oversight. Training your staff, choosing the right people and allowing them to shift their mentality can help a project be successful. Being as consistent as possible throughout the process and throughout all projects can help remove risks the design-build team carries. Using lessons learned within the agency and from other agency projects can be critical in training staff. Educate internally and externally regarding lessons learned rather than relying on a few core staff.
- ◆ ATC's create opportunities for innovation that may or may not be outside of the standards and specifications of the agency. Agencies have final acceptance, which gives the agency the ability to implement the idea or decline the ATC based on project specifics and current MDOT positions. Expectations for ATCs allow better reviews and higher likelihood of acceptance. The reviewing agency should meet one-on-one with the proposers to fully understand the ATCs and to determine if the ATC has eliminated scope from the project, which should be reason to decline the ATC. ATC's may also on occasion be insightful to determine if scope was omitted from the RFP that is required to be functional for the project.



---

### **Question 38**

*What is the ATC approval process in your proposals?*

#### **Conclusions:**

Generally, responses can be categorized into the following:

1. After review of ATC's, responses are usually one of the following:
  - A. Approved/acceptable to be included in proposal
  - B. Not approved /not acceptable to use
  - C. Conditionally approved – with conditions stipulated
2. Use of an ATC review committee is common to assure a consistent ATC process.
3. One on one meetings are open forums to discuss potential concepts for ATC's, get more information or understanding, and discuss conditional approvals for the ATC's.
4. Be specific as to what items ATC's cannot be submitted for, however care should be taken because DB teams often bring forward a method Owners had not considered.

#### **Recommendations:**

Recommend continuing the use of ATC's in the proposal process. MDOT is in line with industry standard when it comes to ATC process. Recommend being open to more innovation and changes to what MDOT expects to see from the Contractor. Mentality shifts from Design-bid-build can be a struggle for agencies and releasing some of the control in the design and construction process. Continue to try new and innovative designs on projects.

MDOT may consider reviewing other agencies where ATC's have been accepted that deviate from set standards and preferences that resulted in the agency modifying its own protocols. Identifying these will allow MDOT to educate discipline leads within MDOT that may be averse to innovation or "new" ways that other agencies have changed their standard approach based on ATCs submitted in a design-build procurement

#### **Question Specific Responses:**

##### **Texas:**

1. Proposers submit ATCs to Owner innovative ideas which may conflict/deviate from the requirements of design, construction, or maintenance of the Project that are within bounds of the RFP and within statutes.
2. ATC Technical Subcommittee(s) reviews, reaches consensus, and recommends approval/disapproval to ATC Executive Committee.
3. ATC Executive Committee responses limited to:
  - A. The ATC is not acceptable for inclusion in the Proposal;

- B. The ATC is acceptable for inclusion in the Proposal;
- C. The ATC is not acceptable in its present form, but may be acceptable upon the satisfaction, in Owner's discretion, of certain identified conditions which must be met or clarifications or modifications that must be made;
- D. The submittal is not eligible as an ATC but may be included in the Proposer's Proposal because it appears to be within the requirements of the RFP; or
- E. The submittal is not eligible as an ATC and may not be included in the Proposer's Proposal.

### **WSDOT:**

In general: 1:1 meetings discuss potential concepts that might become ATCs. Design-builder submits ATC, containing certain required elements, to WSDOT for review. WSDOT reviews ATC, responding with:

- ◆ Approved
- ◆ Not Approved
- ◆ Not Approved in present form, but may be reconsidered if certain conditions are met
- ◆ Submittal does not qualify as an ATC

If approved, the ATC may be included in the Proposal at the discretion of the design-builder. Each ATC submittal package shall be submitted via email in a single PDF file, shall include line numbers on all narrative pages, and shall address all the following elements:

1. Brief description: A few words identifying the ATC, for future reference.
2. Detailed description: A detailed description and schematic drawings of the configuration of the ATC or other appropriate descriptive information including, if appropriate, product details, and specifications.
3. Usage: A description of where and how the ATC would be used on the Project.
4. Subsurface Investigation: Present a geotechnical investigation related to the ATC including all supporting documentation. Said investigation shall include the Proposer's geotechnical basis of design.

### **Caltrans:**

Discuss potential ATCs at one-on-one meetings. Proposer submits ATCs to Department. Department reviews and approves, approves with conditions or rejects ATCs. Department meets with Proposers independently to discuss a condition on ATC approvals. Department revises conditions (if necessary) based on discussion.

### **USDOT:**

Consult with Caltrans' response for details.

**Maryland:**

1. The ATC is accepted for inclusion in the Proposal.
2. The ATC is not accepted for inclusion in the Proposal.
3. The ATC is conditionally accepted in its present form and may be included in the Proposal upon satisfaction in the Administration's sole discretion, of identified conditions, clarifications or modifications.
4. The ATC is not accepted in its present form, but may be accepted upon satisfaction in the Administration's sole discretion, or certain identified conditions (such as additional information and/or a one on one meeting) which must be met of clarifications or modifications that must be made through a submittal of a revised ATC.
5. The submittal does not qualify as an ATC but may be included in the Proposal because it appears to be within the requirements of the RFP.
6. The Administration requires additional time to further review the ATC and expects to provide a response to the Design-builder on (date).

**Minnesota:**

Following the 1 on 1 meetings and ATC submittal, the MnDOT project PM assigns reviewers and they then they collaborate on a response. The DB Program Manager reviews that response and edits/makes sure the decision is consistent with elsewhere in the state/makes sure no important technical groups were forgotten/checks for FHWA suitability. If the ATC is unusual/important (in the DBPM's opinion) it undergoes a further level of management (or even FHWA) review. The goal is to complete process in 7-10 days.

**Tennessee:**

A panel will be selected to review each ATC, which may or may not include members of the Design-Build Review Committee. The Design-Builder shall make no direct contact with any member of the review panel, except as may be permitted by the Department Alternative Contracting Assistant Director. Unapproved contact with any member of the review panel will result in a disqualification of that ATC. The Department may request additional information regarding a proposed ATC at any time. The Department will return responses to, or request additional information from, the within ten (10) business days of the original submittal. If additional information is requested, the Department will provide a response within ten (10) business days of receipt of all requested information.

**Florida:**

Potential ATC's are presented to the Technical Review Committee and subject area experts. If favorable a formal written ATC is submitted for review by the same group. The District Design Engineer formally accepts or denies the ATC. Additional information may be requested, and a re-submittal required for consideration of acceptance.

**Connecticut:**

Committee with chief engineer approval of design exceptions.

**UDOT:**

Team Reviews ATC and submits to ATC committee for review and acceptance.

**Nevada:**

Generally speaking, ATCs are allowed in the RFP process during the design-build procurement. There are number items that will qualify an idea as an ATC, but generally, the ATC must provide equal or better value, and cannot reduce scope to the overall project. We typically allow for concept ATCs and then regular ATCs. Both are process are given a specific time-frame for the DB teams to submit during the RFP. IF approved, or conditionally approved, the DB team can choose to include those into their proposals.

**Jacksonville:**

ATC approvals required prior to price proposal submittal.

**Nebraska:**

Limit the number of submittals and state which items are off the table. Review the submittals and then notify if either allowed or not.

**Ohio:**

Approval of Scope deviation only and only at locations identified.

**Georgia:**

Prescribed in DB Manual. Through select SME reviews, rigid timelines, and confidential deliberation, up through and including the Chief Engineer.

**NCDOT:**

See attached special provision.

**Virginia:**

The detail process can be found on the website link: [http://www.virginiadot.org/business/resources/APD\\_Docs/APD\\_Office\\_Page/ATC\\_Process.pdf](http://www.virginiadot.org/business/resources/APD_Docs/APD_Office_Page/ATC_Process.pdf).

**ScDOT:**

See Sections 3.7 and 3.8 in the following, <https://www.scdot.org/business/pdf/US1-I20/RFP-Final-with-Addendum7.pdf>.

**Missouri:**

We don't necessarily "approve" different designs. We are wide open to different solutions to the concept we have in the RFP. We do allow for a review and approval process for "Additional Applicable Standards" which can be any standard or specification from another state/city/etc.

**Oregon:**

We are currently revising our process at this time.

**UCSF:**

Discouraged and differs.

### **Question 39**

*Are there any practices you consider unique to your program?*

#### **Theme:**

Generally, each state had different unique practices to their program. The most common theme talked about their selection process and ATC's. Legislation was discussed by several agencies to showcase their flexibility or the restrictions they face. Nevada had an interesting practice which was that of a risk reserve. A separate account for items realized during construction that were identified in the risk register.

#### **Conclusions:**

Areas that are unique to certain owners include:

1. Legislation
2. Program and Escrow documents
3. Construction Management At-Risk (CMAR) approach
4. Scope validation periods
5. Specific evaluation formulas and ATC processes
6. Risk Reserve (contingency fund)

#### **Recommendations:**

MDOT should fully understand the current legislation and continue to try to improve it to provide flexibility in project delivery. This requires industry engagement, which MDOT is currently pursuing.

Lessons learned throughout the responding agencies can improve the state of processes. Consistency in the program documents (RFP) and selection formulas help the industry understand MDOTs intent.

Recommend implementing evaluation formulas for design-builder selection as well as a project delivery selection tool for choosing alternate delivery as a delivery method.

## Question Specific Responses:

### Missouri:

I've found not many other DOTs are as wide open in Design-Build as we are. We have amazing leadership support to push the limits on innovation and allow the industry to push every angle possible to maximize value in our DB Contracts. The industry delivers time and time again. We have also enjoyed a great working relationship with our industry which allows for this type of approach. Low number of claims in the last 10 years overall.

### Georgia:

GDOT has two legislative authority statutes: one for DB and one for P3. We have flexibility to select the method of award to span from single phase low bid, two phase low bid no short list, two phase low bid Short List, two phase Best Value, and variations of best value to include Max Price/Variable Scope.

### Oregon:

We have an exemption from competitive bidding process that we are required to go through in our state statute. It also requires our Agency to hold a public hearing every time we select an alternative contracting method.

### Texas:

1. Developed programmatic documents that serve as a baseline for all procurements to implement consistency across the state. Certain elements of the documents cannot be changed without administration approval, while technical elements of the documents can be modified to meet District/local preferences.
2. Our review of the escrow documents also provides a level of confidence in the unit prices used to develop the winning bid.

### NCDOT:

The NCDOT Technical Review Committee determines a consensus score in each of the major evaluation categories outlined in the RFP. For each Design-Build Team, the sum of the consensus score in each of the major evaluation categories represents the Technical Review Committee's consensus Technical Score that is used to determine the Quality Adjusted Price.

### SCDOT:

1. Use of weighted criteria formula in RFP along with bringing SOQ scores forward into Phase 2 scoring.
2. Use of NEPA box on DB projects with CEs, promotes innovation.
3. Use of Fixed Price with variable scope.
4. Have all shortlisted teams pursue IMRs, when require, during procurement.

**Tennessee:**

The Department will utilize a Meets Technical Criteria (A+B) selection process in this procurement to award a Contract to the responsible Design-Builder that demonstrates it meets the technical criteria and can deliver the best combination of price and time (A+B) in the design and construction of the Project.

**WSDOT:**

Payment of stipends to all responsive Proposers, including the successful proposer. Interviews are not part of the Proposer evaluation process. Use of upset amount.

**Nevada:**

Through our CMAR process, we use a "Risk Reserve" or a contingency fund that is developed through the risk management process in the pre- construction phases to identify risks during construction. The funds in the Risk Reserve can only be used if identified risks are realized during construction. This helps to share the impact of the risks by the contractor and owner and helps to eliminate costs of risk the contractors overall GMP bid.

**Minnesota:**

We rarely use something called a Pre-Approved Element. It is used for locations where a required design is known to be risky and contingent on MnDOT Approval. In rare cases, we may ask the teams to submit a design through a PAE to eliminate the risk associated with bidding that element. It's kind of like a required ATC on a particular topic, although MnDOT has a bit more latitude to work with the teams to arrive at an acceptable design.

**Florida:**

The ATC process in Florida. Consistency helps to build positive working relationships. In District 2 we have had the same subject area experts for a number of years and the DB Teams know what to expect when pursuing an ATC.

**Jacksonville:**

Have utilized Design-Build to specified fixed budget.

**Ohio:**

Utilizing a Technically Responsive approach with a prior acceptance before receiving the price.

**Virginia:**

VDOT's Scope Validation Process is unique to DB/P3 program.



**UCSF:**

Lean is important.

**Caltrans:**

I think most of our practices are used by our peers in other states.

**Maryland:**

No.

**Question 40*****What are the top three items you believe benefit your program?***

Theme: Innovation rose to the top as the item that benefits the most programs. Many states talked about relationships with the Community and industry as a whole as well as schedule and cost. Overall agencies are very proud of their systems and how they operate. The leadership and staff help make that happen.

**Conclusions:**

The top responses provided are:

1. Innovation
2. Experience
3. Schedule
4. Leadership
5. Costs

**Recommendations:**

Recommend continuing to be open to the industry and learning from peer agencies to get lessons learned from their programs. Education and experience within the agency are also key. Recommend creating positions within MDOT that allow growth and allow MDOT to keep trained personnel at the project level through the long run. Lessons learned from within MDOT is extremely valuable as the alternate delivery program continues to evolve.

**Question Specific Responses:****Nevada:**

1. Overall better management of project risks, issues, and complexities through innovative contracting. Better allocation of risk.
2. Faster delivery time and schedule on larger projects. Federal CFRs pertaining to Innovative Delivery allow more overlap during the preconstruction phases (ROW, NEPA, Design, etc.). Allows more flexibility in funding obligation time frames.
3. In general, more innovations, particularly with constructability and MOT.

**Missouri:**

1. People - Our Design-Build process has been instrumental in finding leadership within our organization and preparing them for leadership roles.
2. Openness to Innovation - We are able to “refresh” our standards and specifications with our AAS process and use DB as an incubator for innovation.
3. Partnerships - Our partnerships with FHWA, industry, DBE Community, and others has benefited not only our DB program, but our DBB program also.

**UDOT:**

1. Experience
2. Leadership support
3. Great relationship with contracting community
4. Culture of innovation and progress

**Caltrans:**

1. Centralized procurement to maintain consistency and quick implementation of lessons learned.
2. Document templates to make procurements more efficient.
3. Good relationship with industry to ensure programs meet the needs of both industry and the Department.

**USDOT:**

Open collaboration with Caltrans.

**WSDOT:**

1. Dedicated headquarters staff
2. Template documents/Design-build manual creation and
3. Staff training

**Georgia:**

1. The flexibility in the legislation that allows to customize the award process, contract, and engagement of the industry to achieve tangible goals reliably.
2. A focused high performing group of people to centrally manage the project development, procurement design and execution, project management, construction management from idea to project closeout.

### **NCDOT:**

1. A designated Design-Build Unit that develops, implements and delivers Design-Build Projects.
2. A Joint Design-Build Sub-Committee that consists of NCDOT, AGC and ACEC representatives that meets quarterly to discuss issues, concerns, potential process modifications, etc.
3. Consistency and transparency.

### **ScDOT:**

1. Implementation of a 13 person, solely dedicated Preconstruction Design-Build Group that oversees all statewide design-build projects.
2. Development of a Design-Build procurement Manual and associated procurement document templates that creates consistency.
3. Strong collaboration with the DB industry through our SCDOT/ACEC/AGC Design-Build Subcommittee that meets every other month.

### **Tennessee:**

1. The selection process is based on the total Contract (A+B) cost to determine the apparent design-builder.
2. Providing a stipend.
3. Utilizing ATCs.

### **Texas:**

1. Programmatic approach (base document template) for statewide consistency.
2. Approach to calculating the stipend amount.
3. The use of statewide resources to review RFQ, ATCs, and RFP.

### **Florida:**

1. Innovation is the number one benefit.
2. Constructability and MOT have proven beneficial.
3. Opportunity to save time in delivery of the final project.

### **Minnesota:**

1. Schedule improvements
2. Innovative designs/implementation of new technology
3. Cost growth reduction

**Jacksonville:**

1. Risk management
2. Cost effectiveness
3. Schedule adherence

**Oregon:**

1. Objective Delivery Method Selection Tool.
2. Risk Assessments during the evaluation of use of an alternative method.
3. Our experienced staff.

**Ohio:**

1. Open discussions during ATC process.
2. Tech proposal pass/fail evaluation.
3. Open debrief of scoring of RFQ/Tech Proposal after award.

**Virginia:**

1. Sustainable program/funding
2. Qualified design-builder pool
3. Innovations

## **Question 41**

### *What are your top three concerns when using innovative contracting?*

#### **Theme:**

The most major concerns from the agencies include

1. Personnel training and the overwhelming needs of staff during aggressive schedules.
2. Risk allocation and management was another major concern by many agencies.
3. Procurement, whether it's the documents, keeping consistency, specifications, a well-defined scope or security of the process. In the authors opinion, it seems as though the states want to find consistency in their processes.

Although each state has a different program, similarities ring throughout.

#### **Conclusions:**

Although concerns may be over a range of areas, there is a very much a common theme as defined above. Other keys points MDOT should consider as the program develops are avoiding resource constraints (education and training will assist, providing career paths in innovative contracting), improve consistency and assuring the projects have an accurate construction estimate.

#### **Recommendations:**

Training programs for staff, agency wide, are recommended to bridge the gap in mentality between design-bid-build and design-build. Education is key for the agency to make good decisions that are in line with alternative delivery and having leadership that understands the unique characteristics is vital to the success of the project. Knowing what lessons work and what doesn't will help escape pitfalls that might easily be avoided. Beyond that, being able to retain staff and progress them within the agency will help keep MDOT's lessons learned within the program.

Following a risk protocol, either by a risk register or dollar reserve pool can help mitigate some of the larger risks in a project. Reviewing them at regular and set intervals can help the agency track the progression and understand how they directly impact the team and how the agency can share the risks with the design-builder.

- ◆ Moving to a two-step best value procurement will help with risk mitigation associated with utilities.
- ◆ The use of a GMP may help MDOT mitigate risk on complex projects.
- ◆ Continue to review and use the shared risk process MDOT employs.
- ◆ Continue to provide geotechnical information as contractual and information only.

**Question Specific Responses:****WSDOT:**

1. Experience level of owner staff.
2. Experience level of Design-builders' staff.
3. Contract enforcement.

**Connecticut:**

1. Using Agency staff requires a steep learning curve and considerable guidance.

**USDOT:**

1. Personnel/CM/Design-builder understanding of processes, requirements as well as roles and responsibilities.
2. Use of DB as the solution for any project/problem.
3. Managing it as a DBB project.

**UCSF:**

1. Education of staff and contractors.
2. Design consultants mostly get it.

**Ohio:**

1. Personnel needs within the department (decision makers must be engaged).
2. Potential challenges to award.
3. Proper risk assignment.

**Texas:**

1. Appropriate risk allocation / risk transfer to industry to keep both parties (owner and contractor) in a position for success.
2. Preparation of diligent engineer estimates accounting for all project elements and project risks to ensure adequate project funding in place ahead of procurements.
3. The potential that a stipend payment may not be given to a proposer.

**Georgia:**

1. Risk allocation and alignment with procurement approach & contract.
2. Effective/Efficient procurement and its credibility with stakeholders and industry.
3. Estimating accurately and ensuring funds are available.

**UDOT:**

1. Risk management.
2. Security/privacy issues.
3. Accurate estimating. Currently an issue on DB but has been ongoing for CMGC.

**Nebraska:**

1. Cost
2. Risk allocation
3. Developing the contract documents

**Missouri:**

1. Consistency - We're a decentralized organization, so each project team has a different level of DB experience every-time. Nationally, I feel State's need better constancy on how to Staff DB from State to State. Innovative Contracting is not Construction or Design, its different.
2. Understanding Risk - Limited experience = limited understanding of Risk.
3. Maintaining talented workforce due to pay challenges.

**Maryland:**

1. That the risks are identified and assigned responsibly to the entity that can best mitigate them.
2. Innovation an ability to accept (other admin. Offices).
3. Confidentiality.

**Florida:**

1. It is challenging to write the RFP to ensure the scope of work is well defined, but innovation is still possible.
2. Procurement and implementation of a DB contract is challenging the first time an employee is involved. It is important to have seasoned staff involved and available. Whenever working through a project challenge, you always have to go back to "What does the contract say?" DB is slightly different from DBB contracts.



**Nevada:**

1. It can be challenging to balance performance-based specifications, and prescriptive specifications on a Design-build. If too prescriptive, it can drive the cost of the project way up. If too performance based, we have seen a lack of quality or getting what we want out of the project.
2. CMAR/CMGC it can be difficult to compare production-based estimating or the contractor to engineer's historical based estimates.

**Caltrans:**

1. Competition (we see the same contractors in most of our procurements).
2. Putting the correct staff on our projects.
3. Many of the Department's processes are developed to delivery design-bid-build projects. They often don't work on innovative contracts.

**ScDOT:**

1. Lack of integration between the Precon DB Group and our contract administrators; our DB contracts are administered by RCEs in each of our 7 districts.
2. Shifting the mentality from focusing on low bid to Best Value.
3. Risk Allocation.

**NCDOT:**

1. Third-parties outside the control of the NCDOT or the DB Team (e.g. utilities, railroads, etc.) that have the potential to impact the project schedule.
2. Providing an ATC response that does not accurately reflect the need for an approved ATC (e.g. approving an ATC when one is not required or indicating an approved ATC is not required when it is), resulting in two Technical Proposals with the same concept, but one with an approved ATC and one without.

**Virginia:**

1. Quality work product
2. Limited resources
3. Market condition

**Oregon:**

1. Resourcing
2. Uncertainty
3. Market conditions

**Jacksonville:**

1. Control over design details.
2. Change orders due to design/construction changes.
3. Quality.

**Tennessee:**

1. ROW
2. Utility
3. Permits

---

**Question 42**

*What are your top one to three biggest lessons learned from your program?*

**Theme:**

The common theme throughout the responses was balance. For some it's the balance between innovation and design, sometimes it's the culture of the department or relationships within the community. Some states want to find balance in accepting risk between the Contractor and the agency. Training of staff and personnel is also key to a successful design-build program and learning from the lessons of past projects. Training and lessons learned work hand in hand as those that have previous knowledge of projects it can help in the future.

**Conclusions:**

Responses, as can be expected were broad. Although a theme of balance can be seen, there are also lessons learned that can be summarized.

1. Creating a culture that is conducive to innovative contracting.
2. Allow innovation, as one respondent said prescription is the killer of innovation.
3. Make sure the project team has the right skill sets.
4. Check your design manuals to assure they align with the DB concept.
5. Education and training are essential.
6. Risk management.
7. Use lessons learned from others – to prevent reliving the pain.

**Recommendations:**

Similar to the previous question, formal education and training can help the staff within MDOT create a culture of innovative contracting where the agency is open to new ideas. Alternative contracting is a different mentality and as such requires a different skill set.

Recommend MDOT selects a team based on performance-based selection instead of low bid. Allowing the design-builder to take ownership of the project, produce a technical approach and plans, accept risk and explore new and innovative ideas can meet the owners project goals.

## Question Specific Responses:

### Nevada:

In general, innovative delivery is culture change from traditional delivery. Partnering with the contractor is key! It can be difficult for Agency staff and engineering consultant at times, to except the DB team or CMAR contractor as part the team. For Design-builds, its key to mitigate or provide as much information as possible to project risks upfront in the RFP so that the DB can provide better costs in their proposals. The more uncertainty, the higher the prices will be in the proposal. Additionally, it also important that if any addendums are processed during the RFP phase, that the overall cost ranges established it the ITP are updated and communicated with DB contractor.

### Missouri:

1. Prescription is the killer of innovation. Finding the right balance between needs and wants is so important. Our teams fight hard to avoid prescription and stay performance based. We are constantly challenged by this internally as every Division has a want, and the Project Team have Goals they are trying to achieve.
2. People - At the end of the day, it doesn't matter how great (or terrible) the process is, it comes down to people. Key skillsets include: Leadership, Ability to identify and analyze risk, team building, understanding of procurements, commitment to success, accountability, trust, and an innovative problem-solving approach.
3. Success of Design-Build is built on a foundation of trust and integrity.

### UDOT:

Establish good relationships with your contractors and consultants. Have a dedicated procurement oversight team with institutional knowledge to support each project through the process. Balance consistency with flexibility. It is a constantly evolving process that if well thought out can help establish consistent project results while allowing for beneficial change. The process must be allowed to evolve. There is no end goal, just refining change while keeping an eye open for innovation.

### Texas:

1. Consider obtaining a programmatic approach to innovative contracting methods for industry to understand high-dollar risk allocations prior to the procurement (RFQ/RFP) process. This allows for the project procurements (i) have consistency statewide, and (ii) to potentially have fewer high-level risk allocation conversations and more in-depth project-specific discussions allowing for more time to discuss innovation on the project.
2. Consider implementing a process or forum for industry to provide comments outside of procurement (RFQ/RFP) process on programmatic approach.
3. Allow electronic submittals of RFQ, ATCs, and Proposals.

**Tennessee:**

Long procurement duration - at least 10 weeks. Well defined RFP. Avoid projects with the third-party involvements such as utility, RR.

**Ohio:**

Open communication of RFQ and Tech proposal scoring and implementing recommended and agreed approach changes with industry have gained the trust of the industry.

**ScDOT:**

Appropriately share risk, especially for those items that are the most risky riskiest to a project, i.e. ROW, RR, Utilities, Env., Geotech, etc. Our agency has historically been very risk averse, but have spent the last five years more appropriately mitigating and allocating risk. Incentives are a powerful tool. We struggle to finish all projects on schedule, DBB and DB. Even though DB projects are still finishing significantly earlier, when compared to DBB projects, we will continue to look at using more Incentives on our DB projects. It is absolutely essential that the agency personnel that develops the DB project, including the drafting of the RFP, is integrated with the agency personnel that is administering the contract.

**Caltrans:**

1. You have to assign the correct staff to innovative projects. Not everyone is able to make the mind shift necessary to be successful on these projects.
2. Use the correct delivery method for the right project.

**Georgia:**

1. Alternative Delivery allows the Department to powerfully use a different approach to better align for delivery outcomes.
2. Should not be used for everything, but only on what is strategically important and that has project suitability favoring alt. delivery.
3. Focus on outcomes, not as much on how we have always done things before.

**Nebraska:**

Selecting the right projects and for the right reasons.

**NCDOT:**

Many design manuals are written to allow flexibility and engineering judgment, using words such as "should" and "consider". Unfortunately, when it is the Department's Policy to require the items associated with these words, the Design-Build Team can interpret those items as not being required. Thus, the requirement must be included in the RFP as a "shall" condition to become contractual. Similarly, the Department's design practices and requirements are often implemented or changed via Memos. These Memos must also be referenced in the RFP as a "shall" condition to become contractual.

### **Jacksonville:**

Prepare quality RFP package providing design and construction requirements. Agency PM and design-build team to be selected carefully and diligently. Maintain professionalism and aim for win-win resolutions.

### **Florida:**

Biggest lesson learned is know when to say NO to an ATC. Not every ATC is good for the DB Firm or the Owner. It is important to keep an open mind and consider the possibilities. It is amazing what ideas can be developed when there are fewer perceived restrictions and no years of experience with the project background. A clean slate with defined parameters can provide innovative opportunities.

### **Connecticut:**

Not to use % of design for reference to the BTC Development. ATCs are valuable even when the Agency staff believes there is not room for innovation

### **Minnesota:**

For CMGC, lack of competitive bidding/cost (otherwise it's great). For DB, teams that try to stretch the rules too far...or the risk of an inadequate contract that doesn't capture the risks/desires well.

### **Virginia:**

1. In order to deliver successful program, the organization must invest in education and training of internal and external stakeholders.
2. Coordination and buy-in of the Industry is critical.
3. Continue to learn and apply the lessons learned from each project to improve policies and procedures.

### **USDOT:**

Training of staff is essential. Continuous and early communication is key.

### **UCSF:**

Education of agency staff and contractor on the CONTRACT and the intent. When things get tough GCs return to their hammer throwing conflict rich environment.

1. Be sure they understand the contract BEFORE bidding.
2. Understand the contract after bidding.
3. Don't let team members change without the new member thoroughly understanding the contract.

**WSDOT:**

Industry (AGC, ACEC) outreach is beneficial. Inclusion requirements change frequently. Project closeout planning must start soon after NTP.

**Oregon:**

Leveraging other DOTs for lessons learned to help with the development of the alternative contracting methods for our program. Contract development and understanding is just as important as understanding the contracting method. Recognizing that culture shifts take a lot longer for folks to accept and it is an ongoing reminder to help others through this process.





Innovative Contracting  
Best Practices Research

# Appendix D

## Industry Outreach Report



## Table of Contents

Executive Summary .....	244
Purpose: .....	244
Timeline: .....	244
Findings (based on the results of the questionnaires and interviews): .....	245
General .....	245
Themes .....	245
Recommendations .....	247
Introduction: .....	248
Purpose: .....	248
Timeline: .....	248
Results: .....	248
Legend: .....	249
Question 1a: How many Innovative Contracting pursuits in Michigan have you participated in? .....	250
Question 1b: How many Innovative Contracting pursuits in Michigan have you participated in? .....	251
What went well with your experience? .....	252
Conclusions: .....	252
Recommendations: .....	252
What recommendations would you make for improvement? .....	253
Conclusions: .....	253
Recommendations: .....	254
Question 2: During the procurement process have you found the Request for Proposal documents to be consistent? .....	255
Conclusions: .....	255
Recommendations: .....	255
Question 3: During the procurement process have you found Request for Proposal documents clear? .....	256
Conclusions: .....	256
Recommendations: .....	257
Question 4: Have you found the RFP documents to properly transfer risk to the party best able to handle it? .....	258
Conclusions: .....	258
Recommendations: .....	259

Question 5: Have you found the RFP documents contain sufficient geotechnical information? .....	260
Conclusions: .....	260
Recommendations: .....	260
Question 6: Have you found the MDOT ICU to be informative and helpful? .....	261
Conclusions: .....	261
Recommendations: .....	261
Question 7: Have you found the MDOT ICU to be consistent in the administration of the procurement process? .....	262
Conclusions: .....	262
Recommendations: .....	262
Question 8: During procurement, are one-on-one meetings helpful? .....	263
Conclusions: .....	263
Recommendations: .....	264
Question 9: Are responses from MDOT for clarification and questions received in timely manner and clear/concise? .....	265
Conclusions: .....	265
Recommendations: .....	265
Question 10: Would you make any recommendations to improve the addenda process? .....	266
Conclusions: .....	266
Recommendations: .....	266
Question 11a: During procurement, have you submitted Alternative Technical Concepts? .....	267
Question 11b: Were you successful in getting ATCs approved? .....	267
Conclusions: .....	268
Recommendations: .....	268
Question 11c: What recommendations would you make for improvement? .....	269
Conclusions: .....	269
Recommendations: .....	269
Question 12a: During contract execution, have you found the design review process to be consistent? .....	270
Conclusions: .....	270
Recommendations: .....	271

Question 12b: Have reviews been conducted in a timely manner? .....	272
Conclusions:.....	272
Recommendations: .....	272
12c: What recommendations would you make for improvement? .....	273
Conclusions:.....	273
Recommendations:.....	273
Question 13a: During construction, have you found construction oversight to be consistent? .....	274
Recommendations:.....	274
Question 13b: What recommendations would you make for improvement? .....	274
Question 14: What type of innovative contracting would you like to see used by MDOT? .....	275
Conclusions:.....	275
Recommendations:.....	275
Question 15a: Do you find the value of time is valuable in the selection process (i.e. calendar days, lane rental, A+B)? .....	276
Conclusions: .....	276
Recommendations:.....	276
Question 15b: Would you prefer an alternative such as Best-Value? ...	277
Conclusions: .....	277
Recommendations: .....	277
Question 16: Where do you find your biggest risk that impacts your bid when evaluating project requirements? .....	278
Conclusions:.....	278
Recommendations:.....	278
Question 17: What could be done to minimize those risks? .....	279
Conclusions: .....	279
Recommendations: .....	279
Question 18: What training could MDOT provide to help industry partners?.....	280
Conclusions: .....	280
Recommendations:.....	280

---

Question 19a: Would you find industry forums or pre-bid type meetings prior to RFQ/RFP helpful? .....	281
Conclusions: .....	281
Recommendations: .....	281
Question 19b: If yes, what information would you want to receive? .....	282
Conclusions: .....	282
Recommendations: .....	282
Question 20: Please provide any additional comments regarding ICU's communication with industry, the website, guidance documents, procurement, and contract administration procedures? .....	283
Conclusions: .....	283
Recommendations: .....	283

## Executive Summary

---

### Purpose:

As part of the Innovative Contracting Best Practices research project (OR20-002), the Michigan Department of Transportation (MDOT) included an Industry Outreach component that was conducted in April and May 2020. This outreach consisted of circulating a questionnaire and holding follow up meetings with industry to solicit open feedback from contractors and engineers regarding MDOT's Innovative Contracting program. This report presents the results of the questionnaire responses and feedback provided through this effort. This report further provides information that is incorporated into recommended actions as part of the Innovative Contracting Best Practices research report to help improve the overall Program.

---

### Timeline:

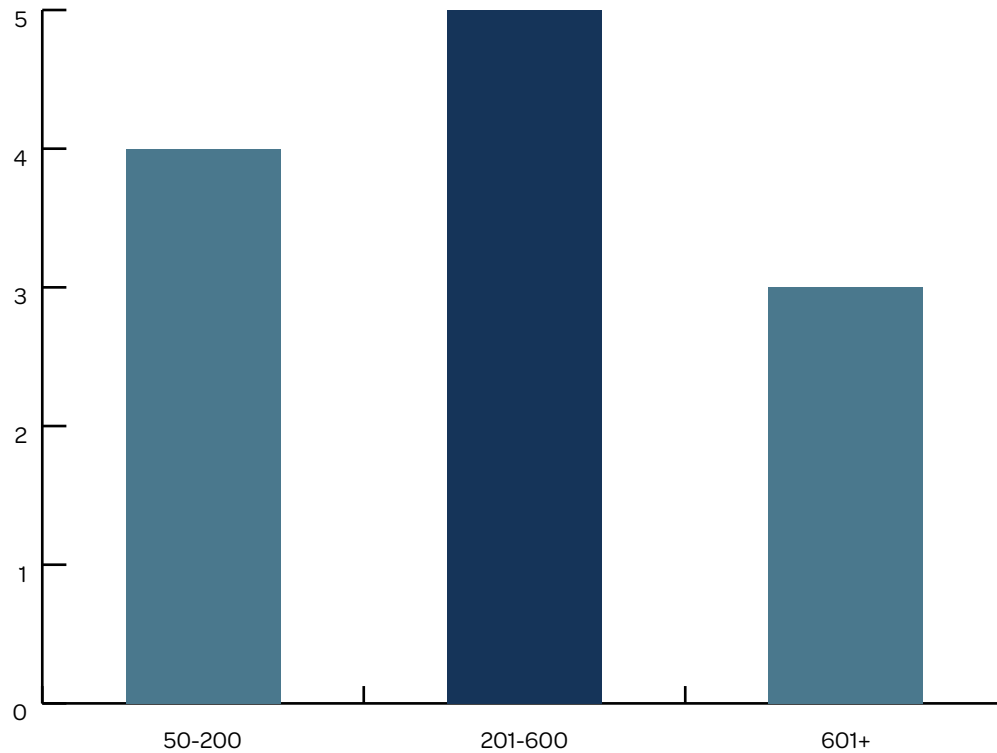
A twenty question survey was provided to twelve consultants and twelve contractors in April 2020 with follow up conducted in May 2020 to further discuss responses and obtain additional information regarding their experiences. Individuals were selected by evaluating past respondents to MDOT's DB and CMGC solicitations and represented a cross section of industry involved in large and small innovative contracting projects.

Surveys were sent to each company and Jeff Chenault followed up with respondents to clarify responses and record additional feedback. A total of nineteen responses were received with fourteen from engineers and five from contractors which represent their combined experience on over 90 innovative contracting pursuits across approximately 30 design-build, CMGC, and P3 projects. One engineering firm submitted two responses; one for design-build and another for CMGC. A second engineering firm submitted two responses representing their roles as a lead engineer and a subconsultant.

The responding engineering companies were made up of local, regional, and national firms of varying sizes as shown in Figure 1 with offices primarily in southeast, central and west Michigan. The group represents a broad base of technical disciplines and shares experiences acting in a lead engineering or subconsultant role.

The responding contractors included companies ranging from smaller specialty groups for CMGC projects to medium and large contractors with revenues over \$250M per year.

No other MDOT or WSP employee was involved in the meetings. Names of the participants are being kept confidential.



*Figure 1*  
*Engineering*  
*Firm Size*

## Findings (based on the results of the questionnaires and interviews):

### *General*

MDOT has a well-established Innovative Contracting program which successfully delivers transportation projects of various sizes and complexities. The program is generally accepted and supported throughout industry. Over the years, contractors, engineers and MDOT have developed expertise to effectively deliver DB and CMGC projects. The comments and recommendations represent a fine tuning of the program rather than an outright overhaul. The comments and recommendations are genuinely intended to help drive this Program toward continuous improvement and collaboration with industry partners.

### *Themes*

Three primary themes surfaced during the outreach: Consistency, Training, and Project Selection.

1. Consistency throughout the process was important to both engineering and contractor individuals. This includes procurement; project management and contract administration.

- A. Procurement documents are viewed from different perspectives between the engineers and contractors; however, it was clear the documents have been improved over the years but there are still areas that require improvement. The documents are perceived to consistently lack utility, geotechnical, and environmental information that bidders find important.
  - B. Inconsistent Project Management for both the ICU office and the MDOT Region/TSC project staff.
    - i. - *Turnover in the ICU Program Manager position has made it difficult for the office to provide a consistent process during procurement. Each Program Manager has incorporated changes to either the process or the contract documents that introduces risk until bidders become familiar with the modifications.*
    - ii. - *Furthermore, the perception is that while the ICU staff has been knowledgeable and helpful, Region/TSC Project Managers do not have the experience or depth to consistently manage DB and CMGC projects.*
  - C. Design review services are not viewed to regularly follow established guidelines and procedures. This leads to varied expectations for the level of design and quality assurance for the contractor.
2. Training was suggested as a solution to the consistency theme but MDOT should determine the root cause of the issues and modify their training programs to address. Training opportunities would include:
    - A. Clarify the roles of staff on each project and define how their role fits into the procurement process. As an example, the role of ICU, Region/TSC staff, MDOT technical staff, and Consultants. Apply consistently across all projects.
    - B. Provide educational opportunities for Region/TSC staff regarding the administration phase of the project. One of the common themes from industry is that each project is administered differently and creates issues during design and construction.
    - C. Provide consistent process for design reviews.
  3. Identifying the proper delivery method early on for a project is perceived to be a solution to create consistency with the program. The perception of industry is that most innovative contracting projects start out as design-bid-build and switch to alternative delivery later in the project life. This inherently introduces additional risks into the project delivery that should be thoroughly vetted to ensure risk is properly transferred during the process. The program would be more effective if the delivery method for projects was identified early and based on consistent criteria.



## Recommendations

Although the current Program is well received by most participants of the outreach process, there are areas that lend themselves for improvement. The following recommendations are provided to help increase the effectiveness of the existing program while addressing several of the recurring comments or suggestions for improvement by the outreach participants:

1. Provide a clear purpose statement and goals for the program and share through the Regions and the TSCs. Review the need for additional staffing based on the ICU purpose statement and goals.
2. Formalize risk management process and apply consistently across projects. A standardized approach to evaluating and managing risk will assist ICU staff to more effectively deliver projects and transfer risk to the party best able to manage through the life of the project.
3. Refine the RFP templates for the Instructions to Proposers (ITP), Book 1, and Book 2. The current template documents have carryover language from previous projects, are a mix of active and passive voice, and provide limited guidance to those completing the documents. The template refinements should provide for the following:
  - A. Clear contract language that is consistent throughout;
  - B. Guidance for completing the contract document including specific examples from previous projects to aid MDOT and GEC staff;
  - C. Guidance for evaluating and assigning risks to the proper entity.
4. Develop a project selection tool that will be used for screening project delivery and procurement methods. This process should be based on a systematic risk based approach to selecting alternative delivery types. The risk analysis should consider:
  - A. Risks associated with scope, stakeholders, timing, and budget
  - B. Methods for estimating projects and assigning contingency to the project to avoid under funding
  - C. Guidance for risk based progress of design
5. Review the ATC process for consistencies and inconsistencies to provide insight on whether claims of inconsistency or lack of willingness to accept innovation is a viable concern. Refine the process to provide consistency across the program giving bidders more certainty in the process that ATCs will be evaluated against specific criteria.
6. Establish an industry (ACEC/MITA) outreach committee that incorporates regularly scheduled meetings for industry and MDOT to discuss program issues and seek continuous improvement. These groups could be used as a forum to discuss areas that routinely cause issues due to not having a clear understanding of the intended risk transfer, unclear or ambiguous project requirements, or any other item that influences the project delivery process.

## Introduction:

In an effort to provide for improvement to the existing innovative contracting program, MDOT conducted an Industry Outreach program in the spring of 2020. The program consisted of both a questionnaire and follow-up meetings with participants.

The questions were crafted so as not to lead industry to respond in a predictable manner. The questions included open ended phrasing to encourage detailed feedback. Twenty questions were drafted ranging in topics from; clarity and consistency of RFP documents, feedback on the Alternative Technical Concepts (ATC) process, consistency of project managers, ICU and Region/TSC staff, usefulness of RID information, effectiveness of the design review process to questions requesting feedback on risk and overall feedback on the likes and dislikes of various delivery types.

Participants were selected by evaluating past respondents to MDOT's design-build DB and construction manager/general contractor solicitations and represent a cross section of industry involved in large and small innovative contracting projects. Additionally, the individuals and firms selected represented small to large contractors and engineering firms who worked in both lead and subcontractor roles.

The participants and responses have been kept confidential in order to promote candid responses.

---

## Purpose:

The questionnaire and follow up meetings have allowed MDOT to obtain, non-restricted comments and feedback from industry (open forums are sometimes less conducive to non-restricted comments and feedback). The purpose was to analyze the feedback and establish areas within the innovative contracting delivery program that can be improved.

---

## Timeline:

The questionnaires were distributed in April 2020 with follow up meetings conducted in May 2020.

---

## Results:

The results of the outreach are presented in this report and appendix. The results are organized by question in sequential number through the report. Each question presents a summary of the responses, in:

- ◆ Graphical form if the response is yes, no or numerical
- ◆ Categorical form if the responses were detailed explanations to a question

In the latter, responses are categorized starting with A and continuing alphabetically for the number of categories in which responses could be segregated. Generally, the number of categories is on the order of 4 to 6 (A through F) but have as few as 2 categories and as many as 11 categories (K). The alphabetical lettering has no relationship to the response or importance thereof, they are simply an organizational tool. Each category is a brief paraphrasing of the main topic the responses represented. The exception is, the responses were edited to eliminate direct references to individuals or companies, and as deemed necessary to eliminate the inference of an individual or company.

The graphical representation and categorical presentation of each question is followed by a conclusion section that presents the conclusions of the body of the responses.

A recommendations section follows, as applicable, providing general recommendations based on the feedback from each question.

Due to the interrelationship of many questions, the executive summary captures and organizes the recommendations into format that is conducive for developing an action plan.

---

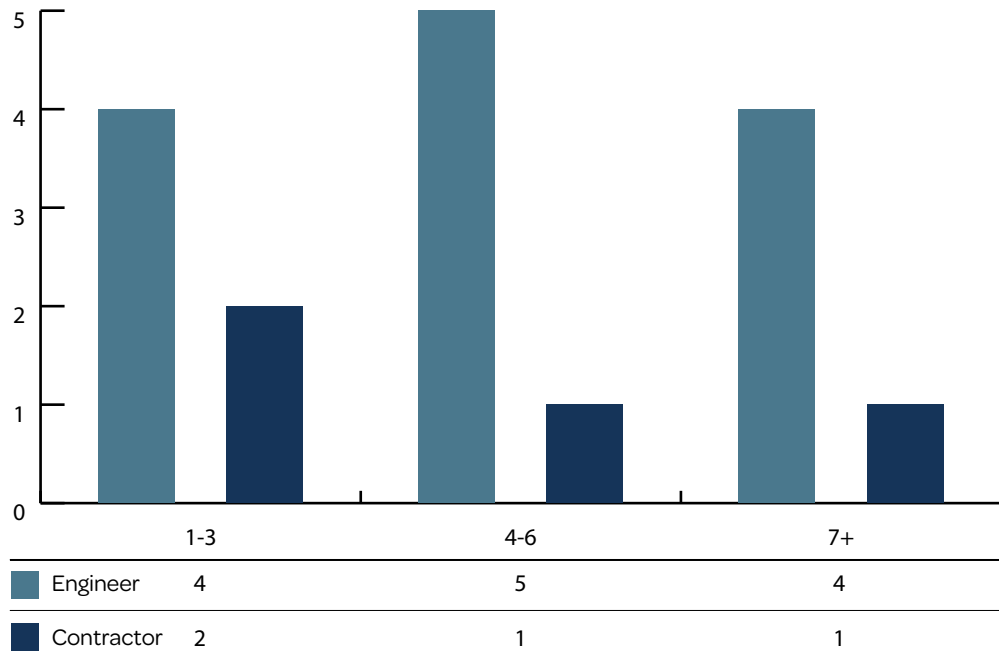
## Legend:

The following provide guidance for interpreting data presented in the tables presented in the body of the report:

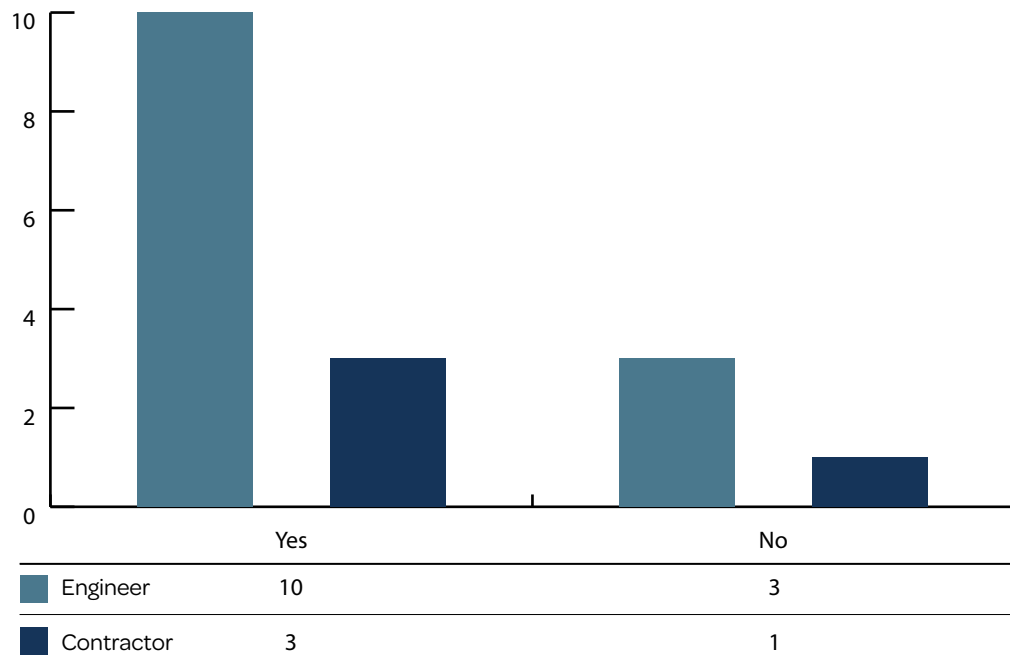
- ◆ Numbers presented in the graphs represent the number of responses for a particular answer for that question
- ◆ Code, A, B, C, etc represent a categorical segregation of responses
- ◆ C – Contractor response
- ◆ E – Engineering Firm response
- ◆ Total – represents the summation of response for that category for contractors and engineer

## Question 1a: How many Innovative Contracting pursuits in Michigan have you participated in?

*Design-Build*

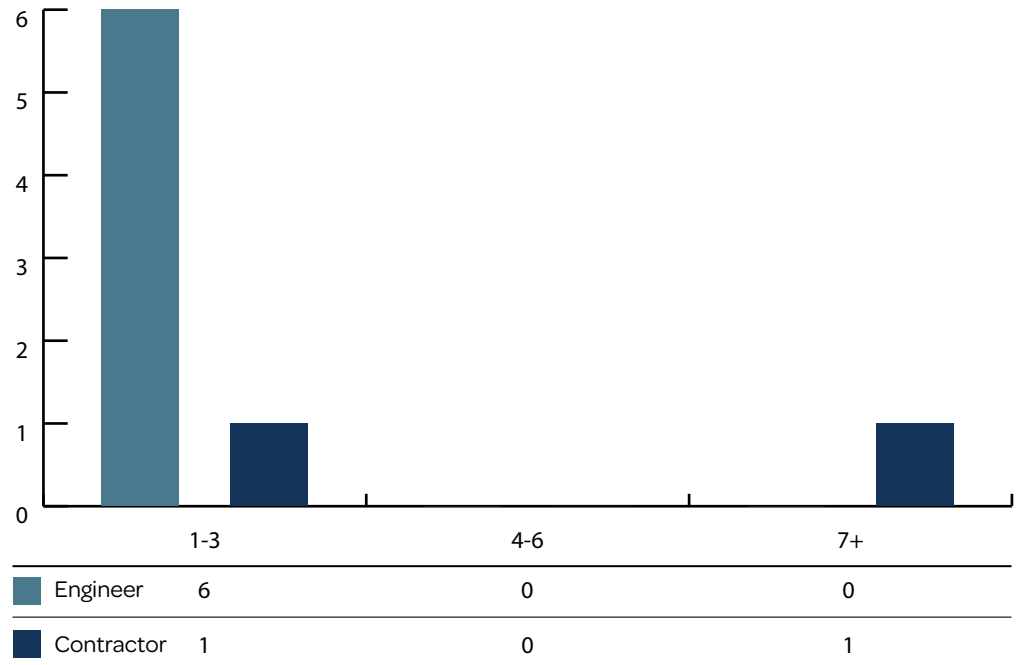


*Have you been on a successful design-build team?*

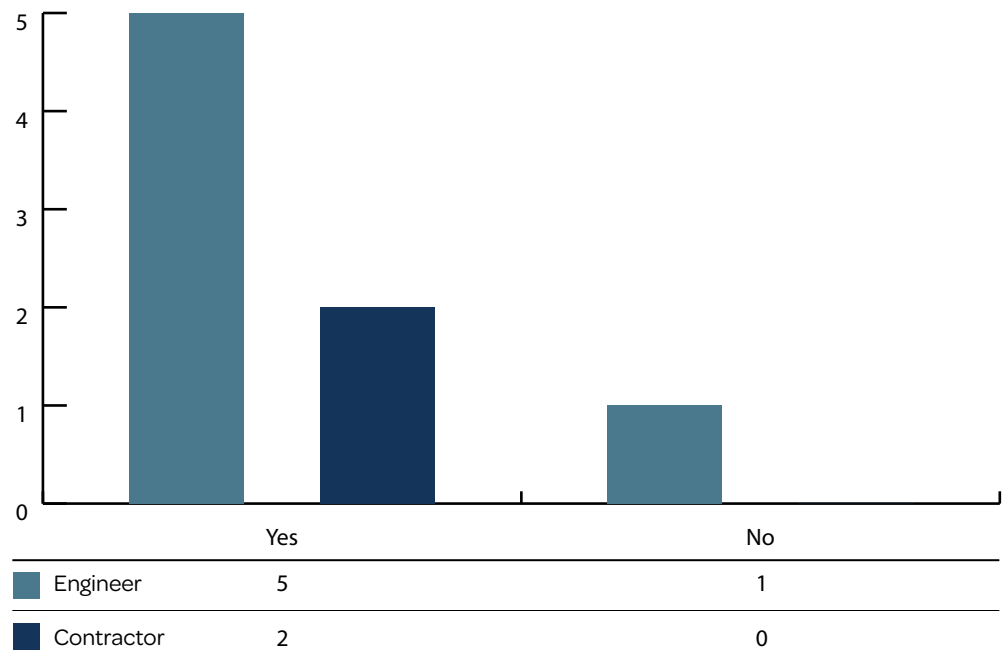


## Question 1b: How many Innovative Contracting pursuits in Michigan have you participated in?

Construction  
Manager/General  
Contractor (CMGC)



Have you been on  
a successful CMGC  
team?



## What went well with your experience?

Code	Theme	E	C	Total
A	The ATC process/ability to provide innovative solutions	6	2	8
B	Partnering/Teamwork	6	4	10
C	Able to deliver project faster	5	1	6
D	Quality of product delivered	3	0	3
E	Having an experienced PM from MDOT	2	1	3

### *Conclusions:*

The responses for both design-build and construction manager/general contractor were combined since the answers all fell in to the same categories. Respondents most commonly indicated the partnering and teamwork between team members as what went well on the project. This was followed by the ability to provide innovation and gain approval on ATCs that benefitted the project. Additional areas included, respondents felt they were able to deliver the project faster and enjoyed working with experienced MDOT project managers.

### *Recommendations:*

Continue to structure RFP's to promote innovation and partnering and consider co-location of contractor and MDOT staff on larger projects to facilitate a team atmosphere. Innovation was a major indicator of what made it a good experience.

## What recommendations would you make for improvement?

Code	Theme	E	C	Total
A	Properly allocate risk	9	4	13
B	Allow the ability to skip 30% plan submittal	6	1	7
C	Increase the stipend to be more commensurate with level of effort	4	2	6
D	Better evaluation of information included in RID documents (too much/too little)	6	1	7
E	Limit the number of teams shortlisted/ Don't shortlist all respondents	4	2	6
F	Quicker turnaround to answer questions/ providing clarification during bidding	4	3	7
G	More consistency and/or flexibility to the ATC process for more innovation	5	2	7
H	Ensure qualified owner staff from PM to technical reviewers	1	2	3
I	Quicker design reviews/Fewer preference comments	4	1	5
J	Better/earlier cost sharing (CMGC)	3	0	3
K	Earlier involvement of engineer (CMGC)	1	1	2

### Conclusions:

There was a wide array of suggestions for improving the overall design-build and CMGC process from industry partners. Many of the responses were issues that MDOT has previously heard from industry partners and continue to surface today. Responses for design-build and CMGC were separated since they seemed to fall into different categories.

- ◆ Design-Build: seven responses to provide quicker responses to questions during the bidding phase, six responses to increase the stipend, six responses to provide more consistency in the ATC process to drive more innovation, five responses to more properly transfer risk, five responses to improve the consistency of the design review process, and five responses indicating MDOT should not shortlist all teams who submitted a response to the RFQ.
- ◆ Construction Manager/General Contractor: three responses to provide better/earlier cost sharing, two responses included involving the engineer earlier in the process to help with scope development, and one response indicating that the construction manager can restrict more economic solutions that do not fall within their expertise. Additionally, one respondent who has worked on numerous CMGC projects indicated they did not think many of the projects should have been deliv-

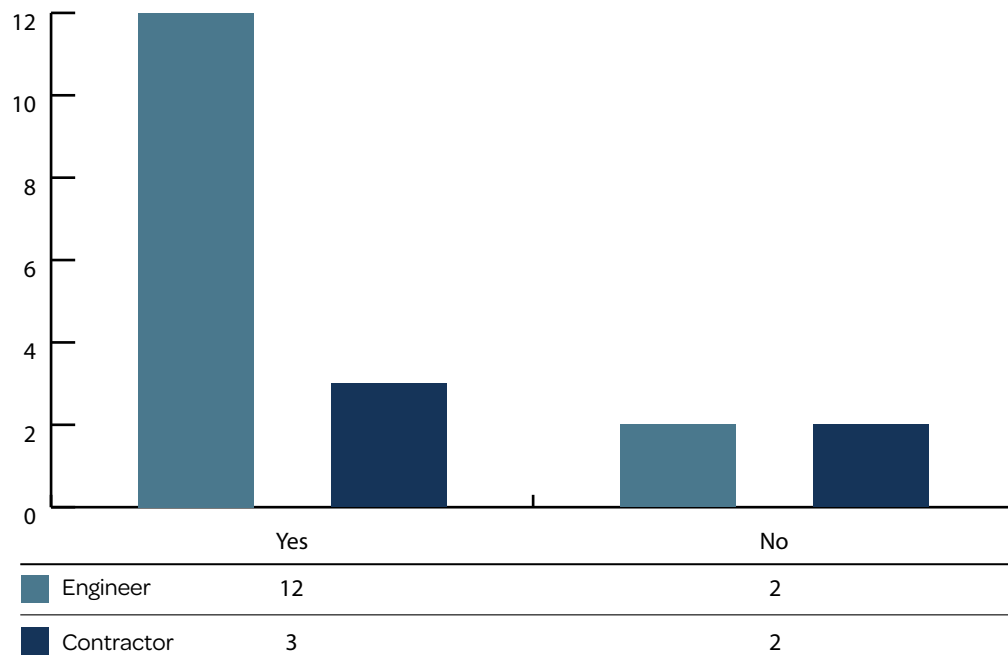
ered using the CMGC process and that more cost effective solutions could have been obtained using traditional design-bid-build methods.

### *Recommendations:*

1. Review the ATC process for consistencies and inconsistencies to provide insight on whether claims of inconsistency or lack of willingness to accept innovation is a viable concern. Refine the process to provide consistency across the program giving bidders more certainty in the process that ATCs will be evaluated against specific criteria. Additionally, evaluate the process to identify areas that can be streamlined to provide responses to bidders earlier in the procurement schedule.
2. Evaluate the design review process to ensure consistency in the application of comments and that comments are directly related to the contract documents. Common themes from respondents include receiving preferential comments from specialty groups within MDOT (i.e. hydraulics, geometrics) that do not comply with contract documents and receiving additional comments on items after being accepted in the previous submittal. Both of these items have a direct impact on the contractor's ability to meet their proposed schedule.
3. Ensure that only the most highly qualified teams are shortlisted for design-build projects. Respondents indicated that when more than three bidders are shortlisted, they need to make a determination on whether they should continue in the process. Design-build pursuits typically cost the engineers more than the value of the stipend but also takes their time away from pursuing traditional design-bid-build projects. With MDOT expecting to see an increase in funding through the bonding program over the next three to five years, many respondents stated that they expect to see an increase in the number of design-bid-build projects and would likely focus their efforts on those projects in lieu of other types of projects. This could lead to a limited market of contractors and engineers pursuing innovative contracting projects which could lead to a drop in quality and an increase in costs.
4. Develop a project selection tool that will be used to evaluate project delivery and procurement methods. The vetting process should establish a systematic risk based approach to selecting the most appropriate innovative contracting option.
5. Formalize the risk assessment process for projects to ensure risks are properly vetted and tracked throughout the project.



## Question 2: During the procurement process have you found the Request for Proposal documents to be consistent?



Code	Theme	E	C	Total
A	Are consistent or getting better	8	2	10
B	Inconsistencies between Books/Sections	5	1	6
C	RID information varies	6	1	7
D	Repeating errors	2	0	2

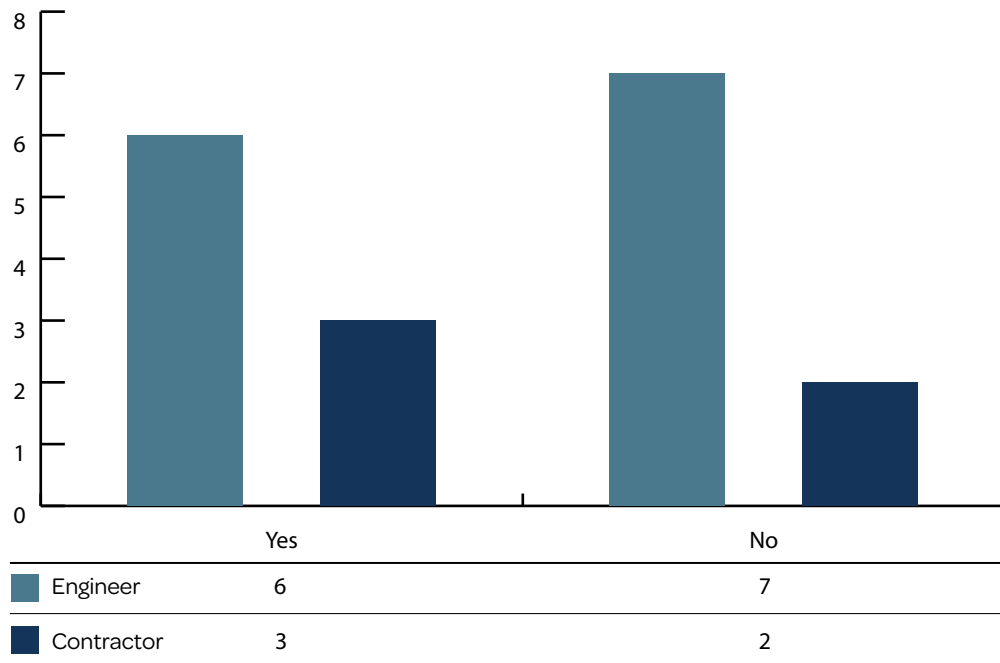
### Conclusions:

Respondents generally find that the Innovative Contracting Unit provides consistent of the RFP documents. When they indicated they were inconsistent, areas indicated as being inconsistent included shared risk items , RID not matching the RFP requirements , inconsistent specifications, and carry over language from previous projects.

### Recommendations:

MDOT continues to refine their template documents to reduce potential for carry over language and incorporates lessons learned from previous projects. If not already doing so, consider assigning a champion to manage the template documents through whom all revisions and updates take place. Continue to evaluate the reference information documents that are provided with each project and determine the relevance of the information and try to remove data that does not apply or conflicts with contract requirements.

### Question 3: During the procurement process have you found Request for Proposal documents clear?



Code	Theme	E	C	Total
A	Clear or covered well with clarifications	5	1	6
B	Not clear, inconsistent language being presented in more than one location or carryover	4	0	4
C	Scope clarity issues/vague language	4	2	6
D	Not clear due to volume of material to review	3	1	4
E	Late addendums cause issues	3	2	5

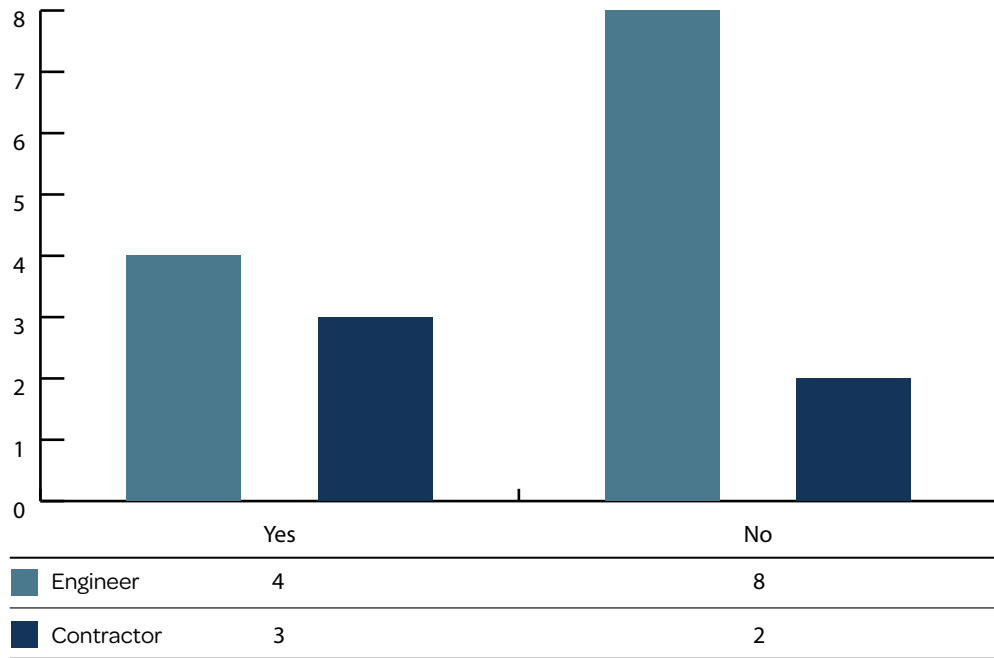
### Conclusions:

Overall, respondents were more likely to state that the documents were not clear but indicated issues are usually resolved through the clarification and addendum process. When asked if there are specific areas that are consistently unclear, answers included the RID material conflicting with the RFP requirements, technical requirements written in a vague fashion, and not including important material until late in the process via addendum. Additionally, two respondents added that there was confusion with the Aesthetics section of Book 2 on recent projects.

### *Recommendations:*

Continue to evaluate the reference information documents that are provided with each project and determine the relevance of the information and try to remove data that does not apply or conflicts with contract requirements. Additionally, formalize a risk assessment process to be used on each project that identifies critical items to ensure they are properly addressed in the RFP documents and any ancillary information required is included with the material and provided as early as possible.

## Question 4: Have you found the RFP documents to properly transfer risk to the party best able to handle it?



Code	Theme	E	C	Total
A	Insufficient information in RFP documents to properly evaluate risk	10	4	14
B	Unclear scope/vague language	4	1	5
C	Inexperienced MDOT staff introduces risk	3	2	5

### Conclusions:

Generally, there is an opinion that risk is not properly assigned to the party best able to manage. The most common items that were cited by respondents include lack of utility, geotechnical, or environmental information, inconsistent design review process that impacts schedule, and lack of design-build experience by the MDOT project managers. It was also stated that the shared risk items do not always adequately cover the bidders risks. Almost all indicated that the quantities and unit prices for the shared risk items are never sufficient. Making bidders hold the risk for managing the disposal of invasive species without providing locations within the project limits was also identified as a risk item that cannot be quantified. Bidders also indicated that lack of information regarding utility relocation or review timeframes does not allow them to accurately develop a critical path method schedule.

## *Recommendations:*

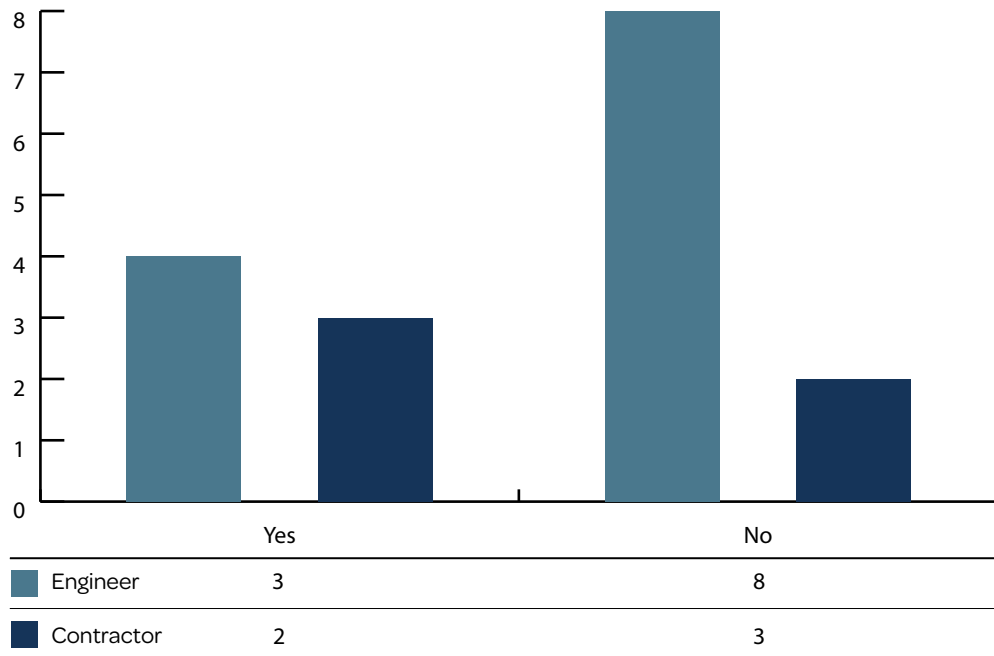
Overall, the concerns relate to inadequate utility, geotechnical, and environmental information being provided at the time of the RFP release. Providing the information later in the procurement process causes the bidders to price the risk since all of the information cannot be thoroughly evaluated against their proposed design. During the risk assessment process, identify these critical items to ensure they are properly addressed in the RFP documents and any ancillary information required is included at the RFP release date.

When utility conflicts are identified during the preliminary engineering phase, work with the utility owners to develop a memorandum of understanding (MOU agreements) that will commit the utility to a specific review or relocation timeframe that can be included in the RFP documents. This can provide more schedule certainty to the bidders and mitigate risk concerns.

With respect to shared risk items, it is important to educate the industry that quantity creep is a risk inherent in design-build as one is bidding a project with incomplete data and design. Bidders must be educated that this is their risk.

Evaluate the design review process to ensure consistency in the application of comments and that comments are directly related to the contract documents.

## Question 5: Have you found the RFP documents contain sufficient geotechnical information?



Code	Theme	E	C	Total
A	Lacking data initially	10	3	13
B	Insufficient/inadequate data	4	3	7

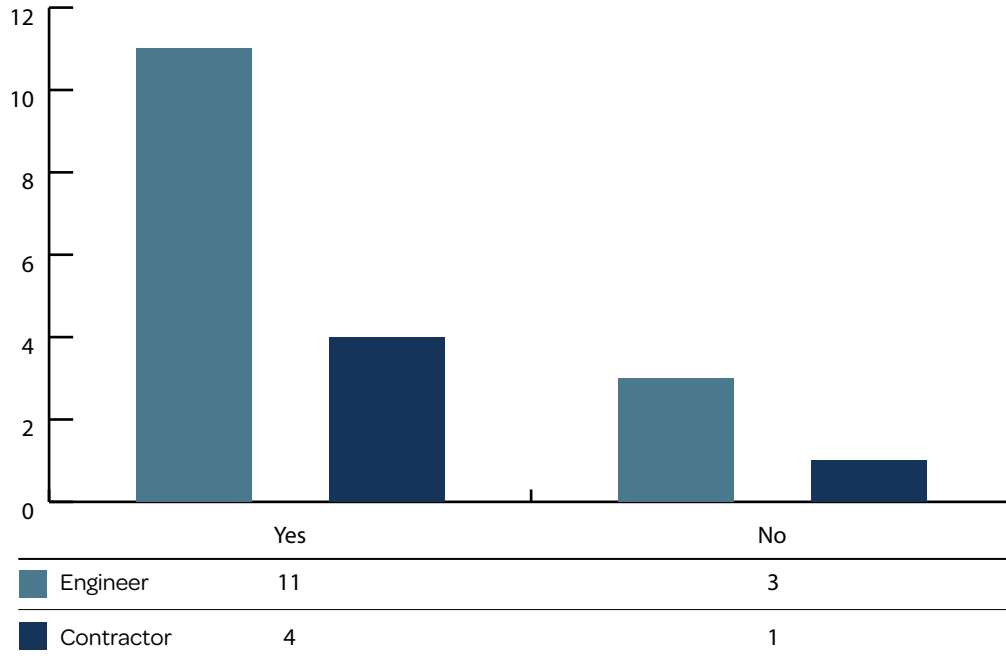
### Conclusions:

The overwhelming consensus from industry is that MDOT does not provide enough geotechnical data with the RFP or the information is provided later during procurement with limited time to properly evaluate. Two areas specifically called out are the need for early geotechnical information to determine foundation types for bridges and better information regarding poor soils. Respondents stated that they cannot fully evaluate bridge options without having the geotechnical information so it's important to have that as early as possible. They further stated that limited information regarding poor soils is one of the biggest risks they encounter on certain projects.

### Recommendations:

Ensure there is adequate time during the pre-advertisement phase to obtain the necessary geotechnical information to provide to bidders at the RFP release or as close to that date as possible.

## Question 6: Have you found the MDOT ICU to be informative and helpful?



Code	Theme	E	C	Total
A	ICU personnel are knowledgeable	9	1	10
B	ICU has performed well	4	2	6
C	ICU should step in more	5	3	8

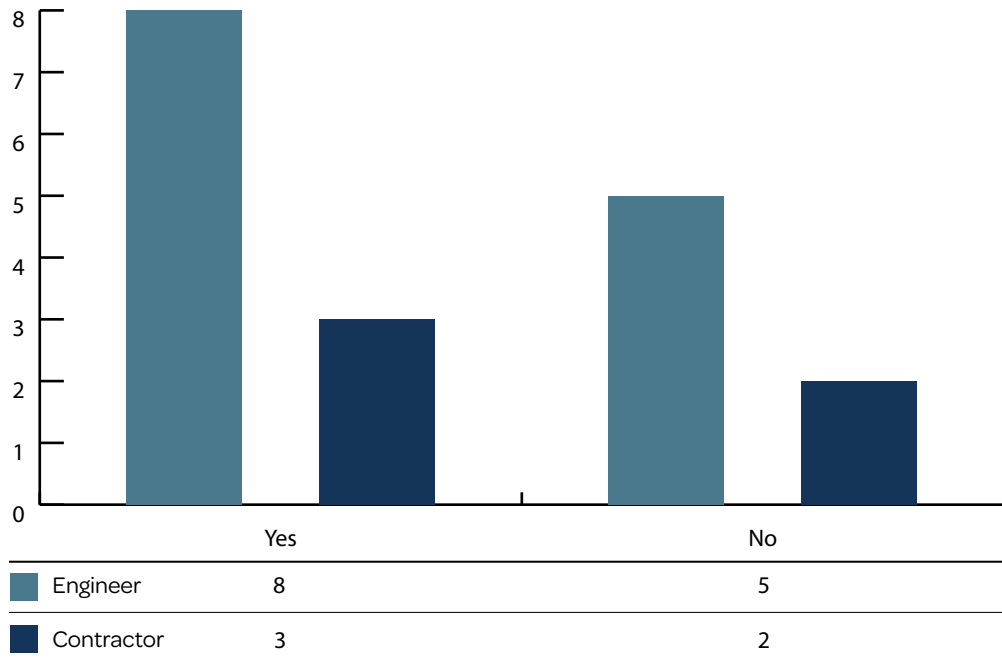
### *Conclusions:*

Overall consensus is that ICU group has been helpful and informative on projects during procurement. Most of the negative comments were with respect to the project management by Region/TSC staff after award. Most respondents feel the ICU group should take the lead throughout the duration of the project or ensure that MDOT transitions to a project manager who has sufficient experience with innovative contracting projects.

### *Recommendations:*

Continue to provide regular training to MDOT staff to increase the knowledge base of project managers and construction staff with respect to innovative contracting methodologies. MDOT is also in the process of updating their Innovative Construction Contracting Guidance manual which is an opportunity to provide clear direction on processes and procedures with respect to contract administration.

## Question 7: Have you found the MDOT ICU to be consistent in the administration of the procurement process?



Code	Theme	E	C	Total
A	Change over in ICU personnel has been an issue	5	1	6
B	TSC/Region staff inconsistent	8	2	10
C	ICU staff are inconsistent	3	1	4

### Conclusions:

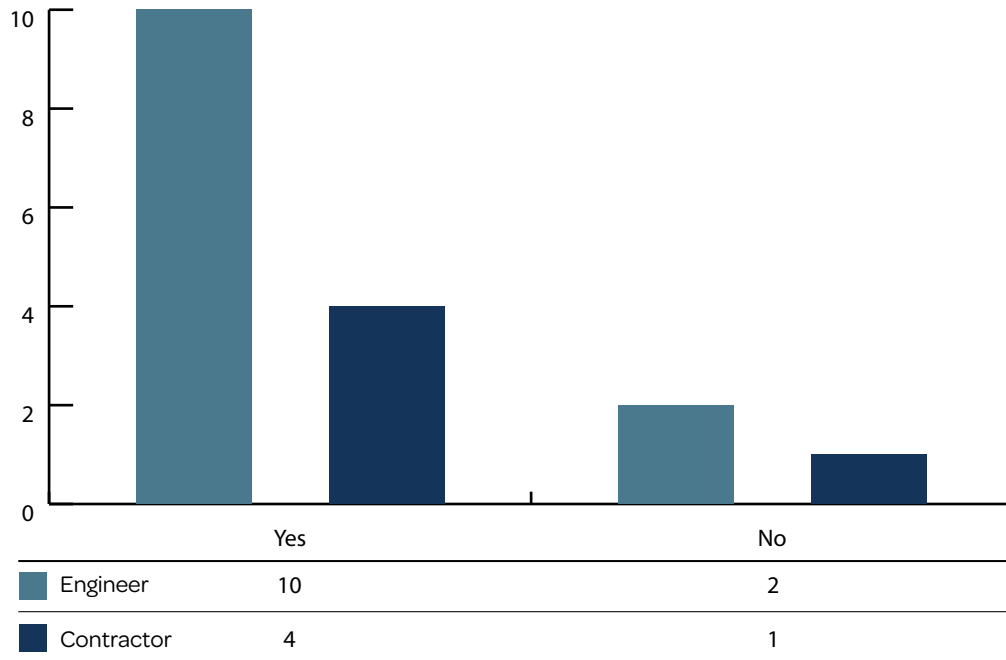
General consensus is that OCIC is consistent in the administration of the procurement process. Several respondents indicated that turnover in the Program Manager position within the ICU has been some cause for concern in that each person has had a somewhat different process or interpretation of the contract documents. There was much more concern with the administration by the Region/TSC staff on each project than with the ICU staff. As has been stated in the responses to other questions, respondents feel the Region/TSC staff do not have the innovative contracting experience required to manage the projects.

### Recommendations:

Provide a means that ICU staff are afforded career growth opportunities within ICU to maintain a consistent staff. Continue to provide training to the Region/TSC staff to provide a more consistent management approach during the design and construction phases of the projects.



## Question 8: During procurement, are one-on-one meetings helpful?



Code	Theme	E	C	Total
A	Quicker response to questions	4	2	6
B	Clear response to questions	5	1	6
C	Should have more one-on-one meetings/allow after last addendum	4	2	6
D	Ensure proper staff are at the meetings	6	2	8
E	Need more time before first meeting to understand RFP requirements	3	0	3

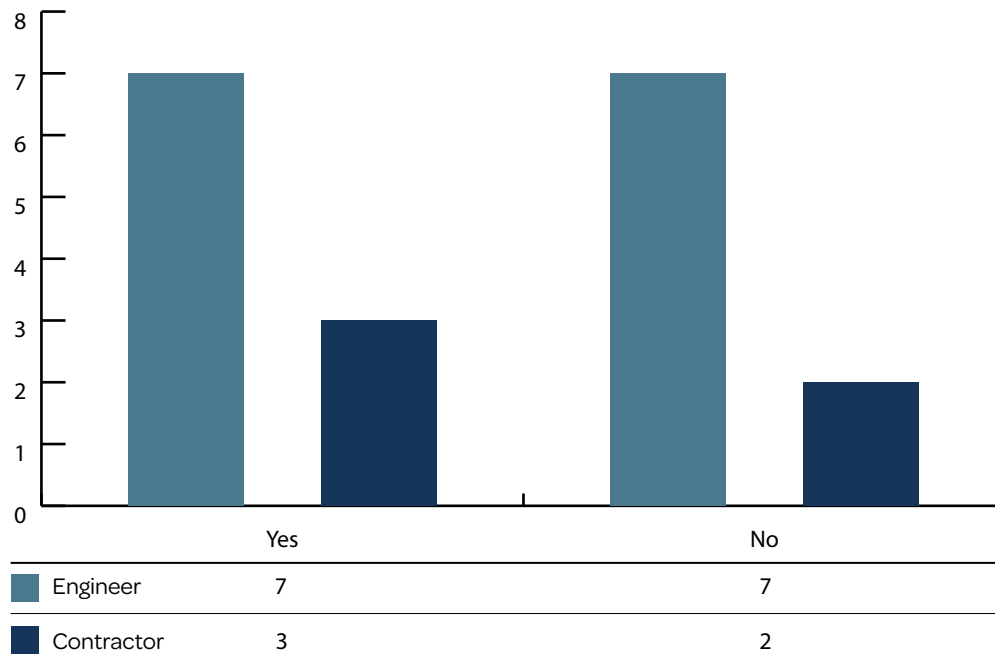
### Conclusions:

The consensus is that the one-on-one meetings are helpful and provide value to the process. When pressed to provide feedback on what could be improved the most common response was to make sure MDOT has the appropriate staff at these meetings followed by MDOT providing quicker responses to questions submitted. There is some opinion that there should be more time between the RFP release date and the first one-on-one meeting to fully understand what is in the contract documents and that bidders should be allowed one additional meeting after the last addendum is provided by MDOT to ask any final questions regarding the revised RFP content.

### *Recommendations:*

ICU has made some recent updates to the procurement process which includes bidders providing a list of questions and an agenda to MDOT prior to each one-on-one meeting. This improvement should help to ensure the relevant MDOT staff are present.

### Question 9: Are responses from MDOT for clarification and questions received in a timely manner and clear/concise?



Code	Theme	E	C	Total
A	Quicker responses/clarification	9	2	11
B	Responses inconsistent/unclear	5	2	7

#### *Conclusions:*

Both contractors and engineers are split on their opinion of MDOT providing timely and clear/concise answers to questions. The area most often cited in need improvement is to provide responses to questions faster. There were three engineers who stated that even though they answered yes to this question, MDOT could be timelier. Respondents indicated that oftentimes the answers directly impact their ability to proceed with portions of the preliminary design to develop their bid price. Another frequent comment was that MDOT should provide a clear response and not just refer to the Book/Section of the RFP that does not answer the question.

#### *Recommendations:*

Evaluate the response process to find areas where it can be streamlined. During one-on-one meetings confirm the priority of questions from bidders and focus on providing answers to the most important questions as quickly as possible. Ensure the appropriate MDOT technical staff are available during procurement to quickly answer questions or provide information for addenda.

## Question 10: Would you make any recommendations to improve the addenda process?

Code	Theme	E	C	Total
A	Quicker to provide addenda	8	2	10
B	Allow time extension if there are big impacts to design	4	1	5
C	Allow additional one-on-one after last addendum	3	3	6
D	Allow more time between last addendum and price proposal due date	2	2	4

### *Conclusions:*

While most respondents generally think the addenda process is adequate in addressing issues with the content of the RFP, they believe the process is too slow. Several commented that there are times questions are answered and MDOT indicates the RFP will be corrected via addendum but the addendum does not come until much later. This has a significant impact on their ability to progress their design concept without the risk of rework. Respondents also indicated it would be of benefit to allow another one-on-one meeting after the final addendum is issued to ask any final questions regarding the revised content.

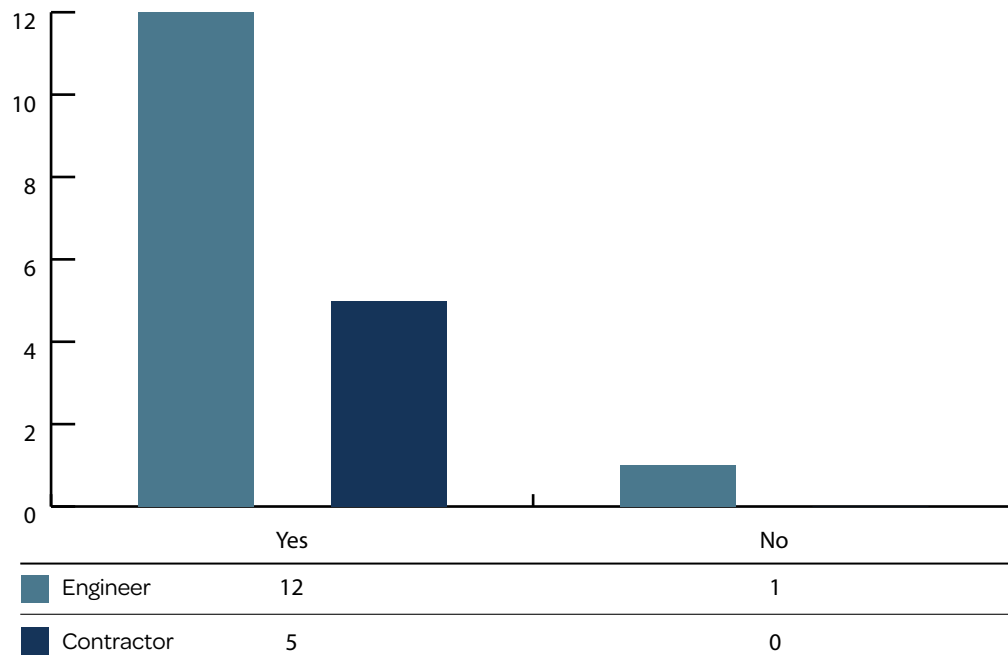
### *Recommendations:*

Review the addenda process to determine areas that can be streamlined to be more responsive to bidders' needs. This could include prioritizing items and preparing bi-weekly addendums to get available information into the hands of the bidders as quickly as possible.

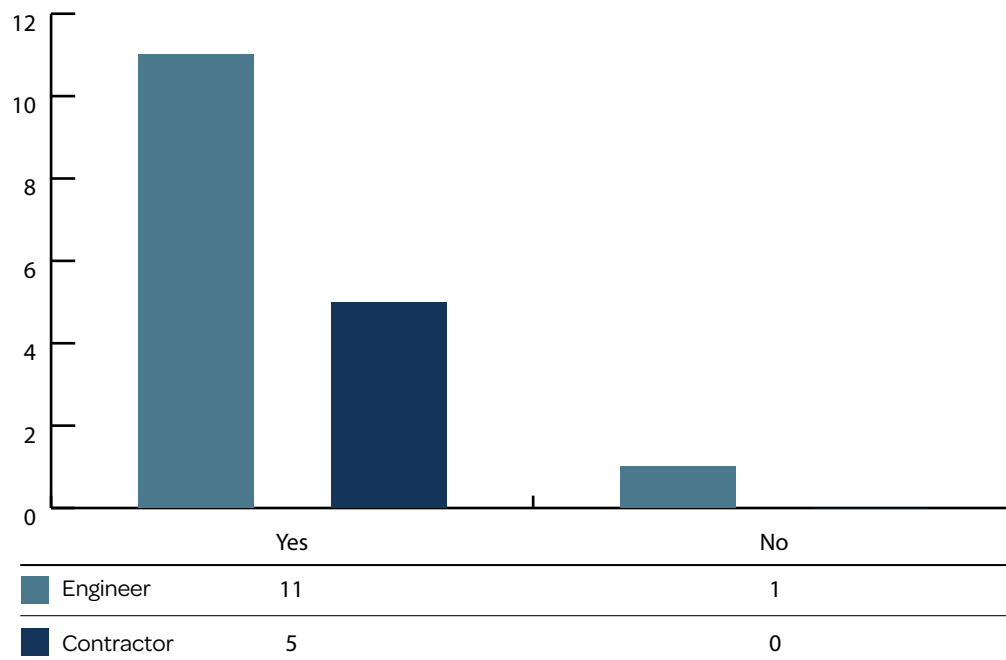
MDOT has recently incorporated modifications to the procurement schedule in the Instructions to Proposers (ITP) to provide more certainty in the process. Improvements include providing more time between the last date to issue an addendum and the technical proposal due date and providing more time between the last date to provide answers to bidder questions and the technical proposal due date. The process also provides specific dates by which MDOT must provide responses to items. MDOT should continue to evaluate the effectiveness of these changes and revise as necessary.

Based on the revised timeframes, consider allowing an additional one-on-one meeting for each bidder no later than two weeks prior to the technical proposal due date.

### Question 11a: During procurement, have you submitted Alternative Technical Concepts?



### Question 11b: Were you successful in getting ATCs approved?



### *Conclusions:*

From the results, it can be concluded that industry partners are using the ATC process to try and drive innovation for MDOT's program. All but one respondent indicated they have submitted and were successful in using the ATC process.

### *Recommendations:*

None.

## Question 11c: What recommendations would you make for improvement?

Code	Theme	E	C	Total
A	Be more consistent in approving or denying	7	3	10
B	Be quicker with evaluation process	5	2	7
C	Be more open to ATCs	9	4	13
D	Reduce the number of conditional approvals	3	0	3
E	Increase stipends to get better ATCs	4	2	6

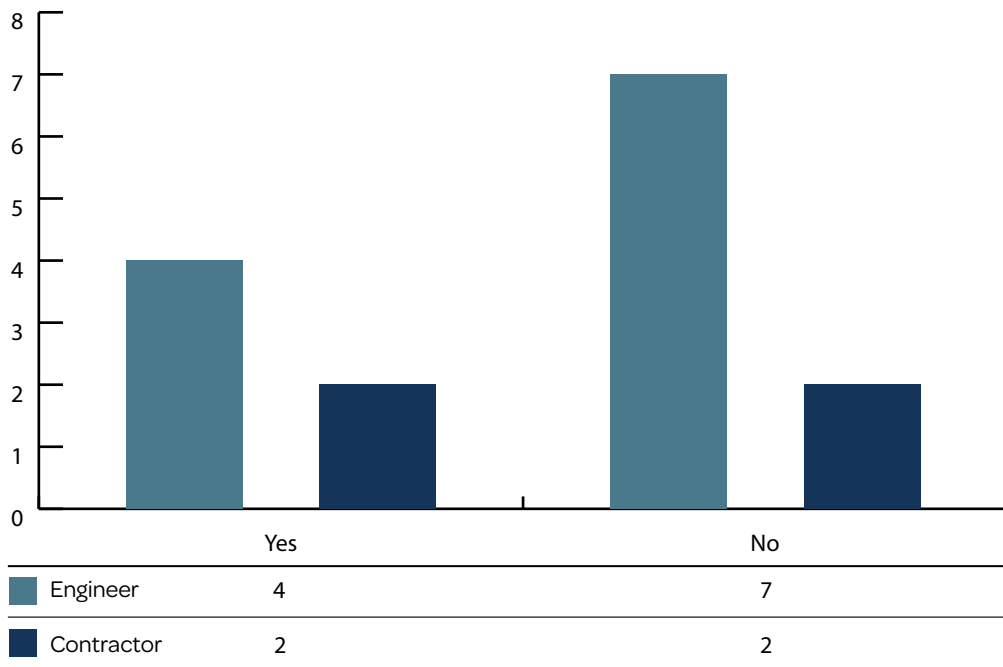
### *Conclusions:*

The most common theme between engineers and contractors for improving the ATC process was to be more open to innovative ideas that will still meet the project goals. Respondents also suggest that certain specialty groups within MDOT are too rigid and stifle any ATC that deviates from MDOT standards. Other areas of recommended improvement include being consistent in the evaluation of ATC and provide a specific reason for rejection.

### *Recommendations:*

Review the ATC process to determine whether claims of inconsistency or reluctance to accept innovation by MDOT groups is an issue. Create a database of ATCs submitted for each project to track what has been accepted and rejected. If it is not accepted include the reason for rejection to help provide consistency with future projects.

## Question 12a: During contract execution, have you found the design review process to be consistent?



Code	Theme	E	C	Total
A	Too many preferential comments	12	2	14
B	Reviewers comment on items during subsequent submittals	7	1	8
C	Use standardized review process (i.e. Bluebeam)	5	0	5
D	Rejection of submittal for minor issues	7	2	9

### Conclusions:

Contractors and engineers both strongly believe the design review process is inconsistent from project to project and from reviewer to reviewer. Areas of design reviews stated as inconsistent included reviewers making too many preferential comments, reviewers commenting on items that were accepted as part of previous submittals, rejection of submittals for minor issues instead of “accepting as noted”, and not using a standardized process for providing comments to teams. Another comment that came up several times was allowing teams to skip a submittal milestone (i.e. 30% or 70% plans) if the plans could be developed to the needed level.

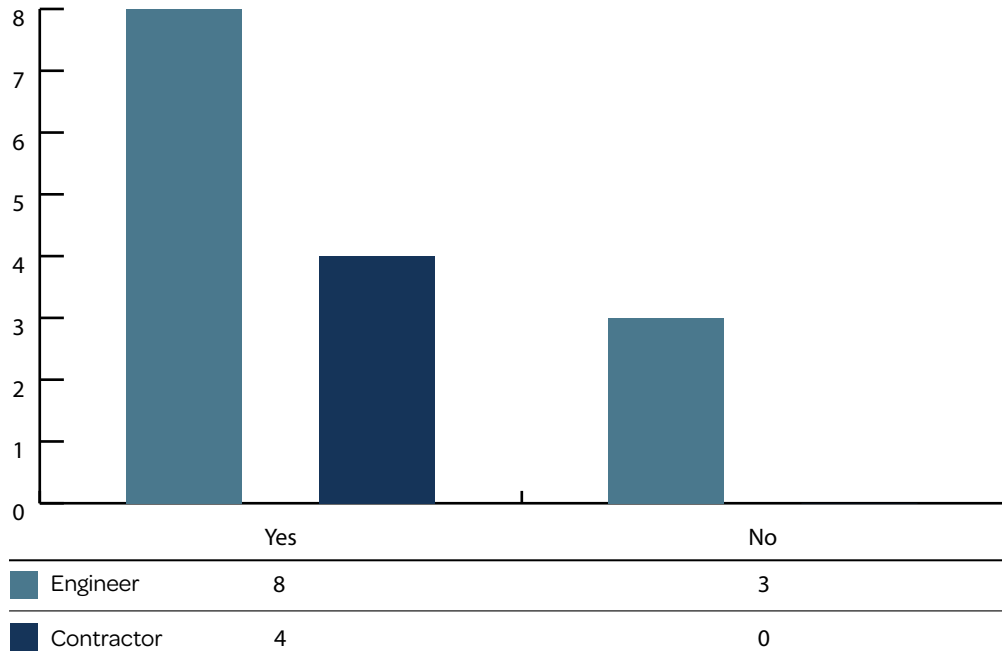


## *Recommendations:*

Continue to provide training to staff performing the design reviews that their comments must be tied to specific language in the contract documents. Preferential design requirements should be incorporated into the contract documents during the RFP preparation phase.

Develop a standardized process for providing comments to the teams. With MDOT utilizing multiple consultants in a General Engineering Consultant (GEC) role to assist in the development and administration of projects, a singular process should be developed to provide consistency to industry partners.

## Question 12b: Have reviews been conducted in a timely manner?



### *Conclusions:*

Contractors and engineers both strongly believe the design reviews occur in a timely manner. Comments from those that did not believe they were completed in a timely manner include that MDOT appears to take the entire time stated in the contract to perform the reviews no matter how small the submittal is and that it appears too many people are reviewing design submittals which slows the process.

### *Recommendations:*

Continue to encourage the MDOT project managers to perform the reviews as quickly as possible but should not sacrifice the quality of the review in the process.

## 12c: What recommendations would you make for improvement?

Code	Theme	E	C	Total
A	Eliminate preferential comments	10	3	13
B	Create a uniform design review process	5	0	5
C	Tie all comments to contract language	5	2	7
D	Do not provide comments on items already accepted	6	3	9

### *Conclusions:*

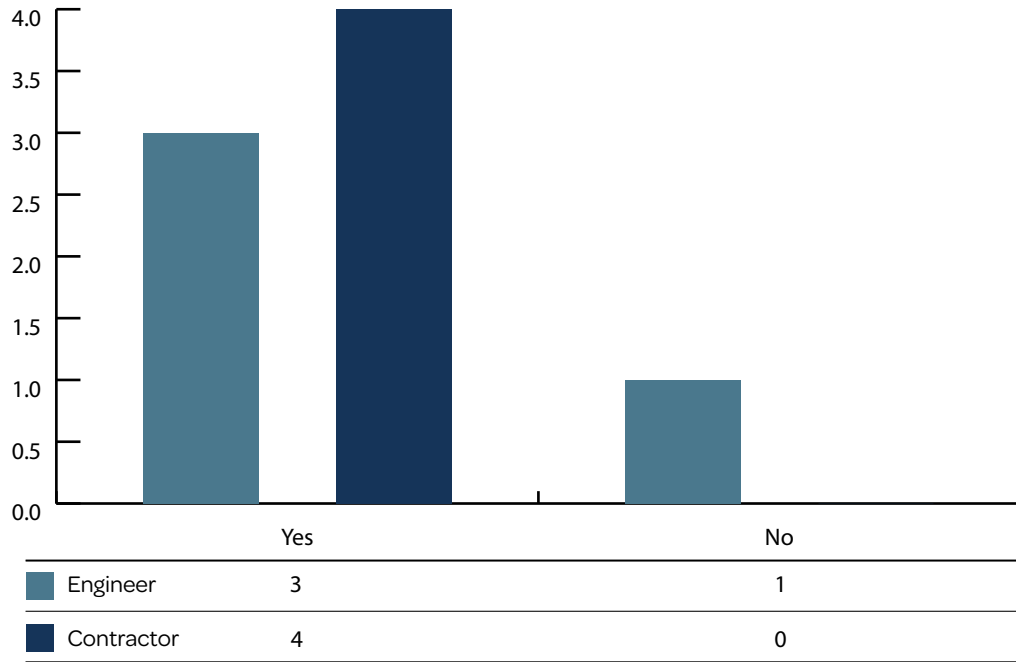
Overwhelmingly both engineers and contractors believe the best way to improve the design review process is to eliminate preferential comments followed by not commenting on items in subsequent reviews that were previously accepted. Both of these issues were identified as the biggest risk to the design schedule because the result in rework that was not expected or, in their opinion, in accordance with the contract documents.

### *Recommendations:*

Continue to provide training to staff performing the design reviews that their comments must be tied to specific language in the contract documents. Preferential design requirements should be incorporated into the contract documents during the RFP preparation phase.

Develop a standardized process for providing comments to the teams. With MDOT utilizing multiple consultants in a General Engineering Consultant (GEC) role to assist in the development and administration of projects, a singular process should be developed to provide consistency to industry partners.

### Question 13a: During construction, have you found construction oversight to be consistent?



#### Conclusions:

Both engineers and contractors believe construction oversight activities have been consistent. The only respondent who indicated it was not, stated it was not always clear what MDOT inspectors were responsible for and what the contractor’s team was responsible for.

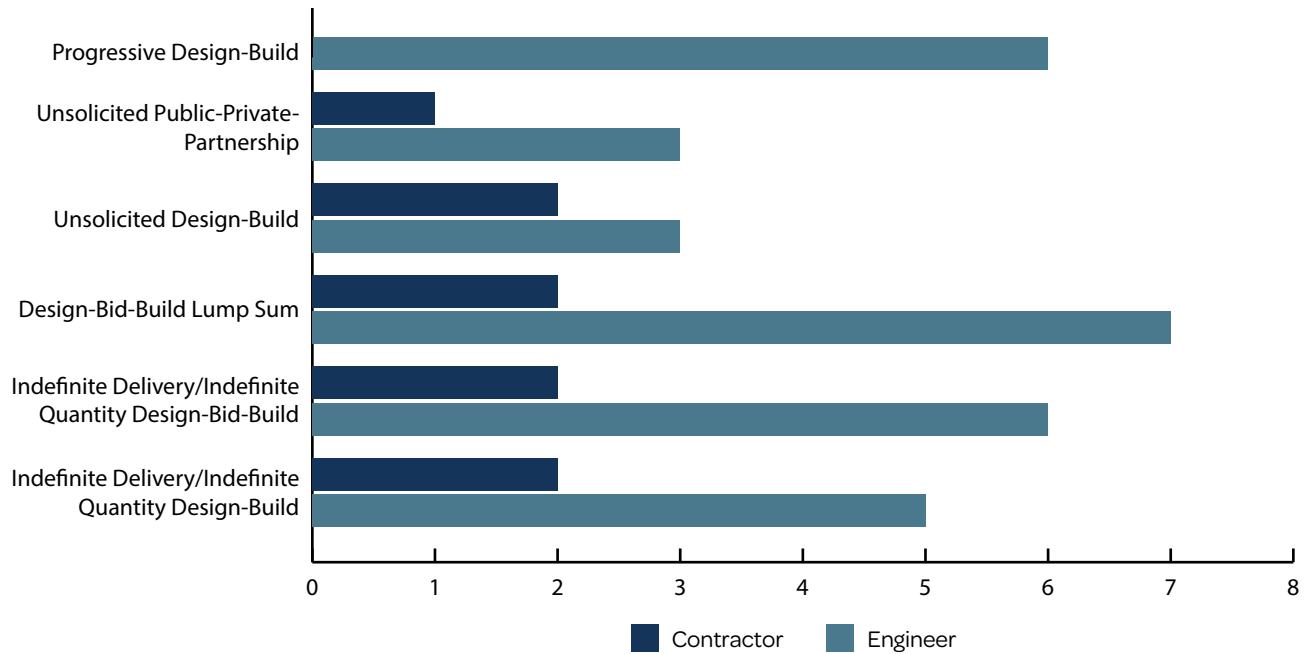
#### Recommendations:

None.

### Question 13b: What recommendations would you make for improvement?

Code	Theme	E	C	Total
A	Clearer division between QA testing responsibility between MDOT and Contractor	0	1	1

## Question 14: What type of innovative contracting would you like to see used by MDOT?



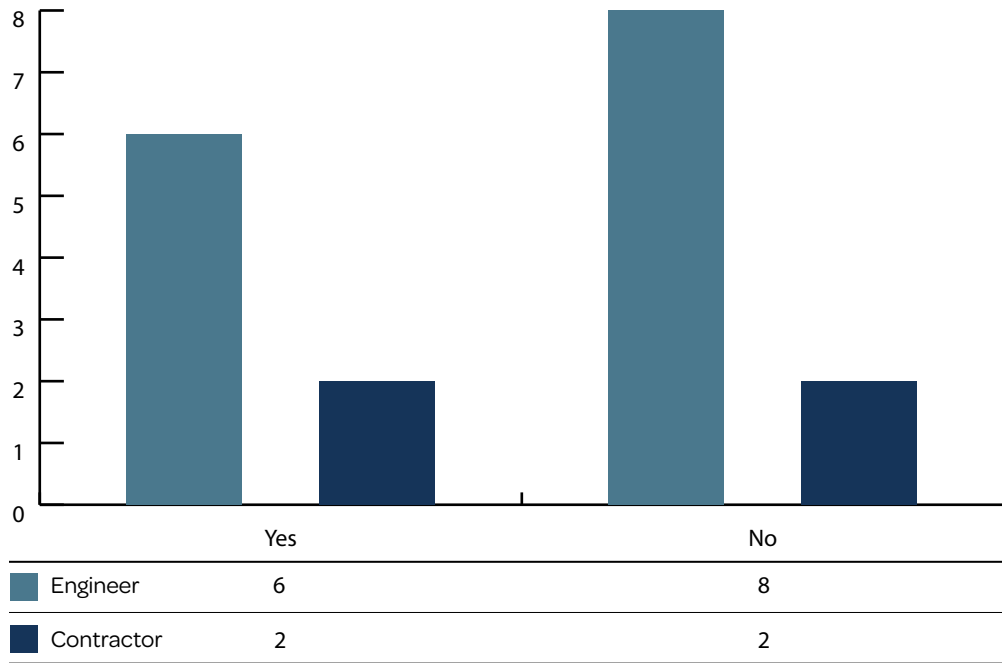
### *Conclusions:*

Engineers were found to be more favorable to try other innovative contracting methods than the contractors. Some of the reasons stated are that they are unfamiliar with the various other methodologies and they are familiar with a low bid selection process.

### *Recommendations:*

Evaluate the various contracting methodologies and provide training to industry partners if MDOT determines a new method would benefit their program.

**Question 15a: Do you find the value of time is valuable in the selection process (i.e. calendar days, lane rental, A+B)?**



Code	Theme	E	C	Total
A	Unfairly benefits larger contractors	5	2	7
B	Incentivizes expedited schedule	1	2	3
C	Difficult to administer	4	3	7

**Conclusions:**

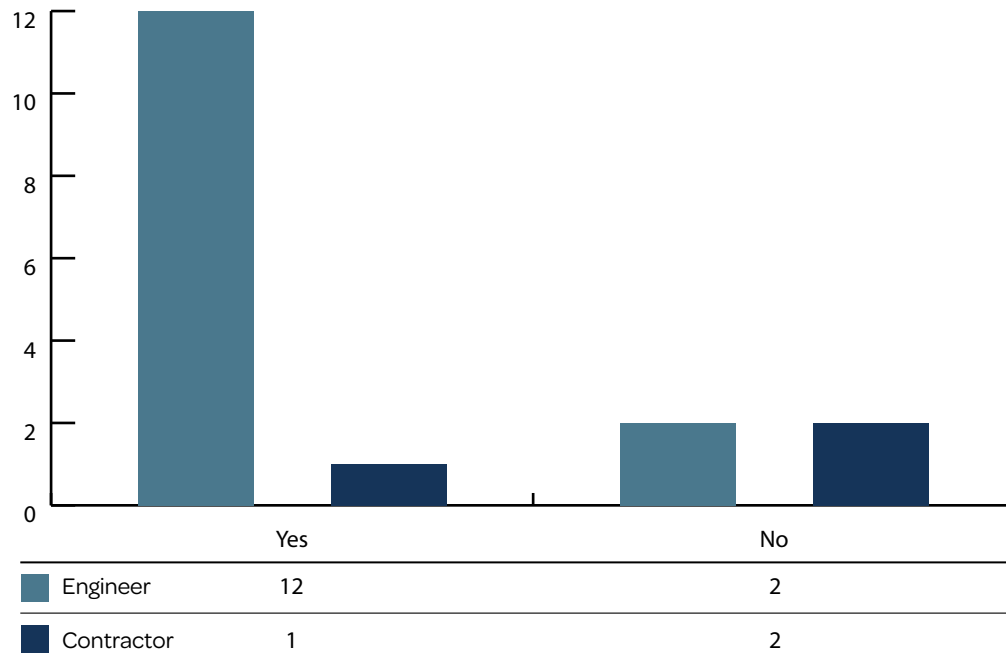
The contractors who responded to this questionnaire indicated that incentivizing the project schedule can unfairly benefit larger contractors in the industry. They further stated that they prefer to have the contract indicate the final completion date and let all bidders base their price on that schedule.

Engineers seemed to agree with contractors and prefer not to incentivize the project schedule. The most common response was that it puts pressure on them to meet unrealistic design schedules.

**Recommendations:**

Continue to evaluate the option to incentivize the schedule on a project by project basis without providing an advantage to one group of contractors over the others.

## Question 15b: Would you prefer an alternative such as Best-Value?



### *Conclusions:*

Engineers overwhelmingly prefer to utilize a best-value approach that includes a scored technical component. Common responses include MDOT would more likely achieve their project goals, design quality would improve, and engineers would not have to compete to be the low cost provider of services.

Conversely, contractors do not want to utilize best-value as they feel that scoring criteria can be subjective and up to individual judgement. However, one Contractor responded that best value would better allow the contractor to implement innovative ideas into their bid.

### *Recommendations:*

Provide educational material to industry highlighting the benefits of best-value selection with a scored technical component and look to incorporate into MDOT's toolbox.

## Question 16: Where do you find your biggest risk that impacts your bid when evaluating project requirements?

Code	Theme	E	C	Total
A	Unknown/Unquantifiable work items	9	2	11
B	Vague/unclear requirements	7	2	9
C	Lack of data/information	10	2	12
D	Schedule	6	2	8
E	Too many teams shortlisted	4	2	6

### *Conclusions:*

Many of the responses provided to this question have been stated previously in other areas. Lack of data/information for geotechnical, utility, environmental and other items is the area that creates the most risk for bidders. This creates a strain on the ability to fully develop a design scheme on which the bid can be based. The next most common response is vague or unclear requirements in the RFP documents followed by schedule. For engineers the schedule is not necessarily referring to the final completion date, but more the time between notice to proceed to the date by which they need to have the 30% design completed. Oftentimes, the schedule becomes very aggressive once they receive notice to proceed.

### *Recommendations:*

Providing geotechnical, utility, environmental and other information later in the procurement process causes the bidders to price the risk since all of the information cannot be thoroughly evaluated against their proposed design. During the risk assessment process, identify these critical items to ensure they are properly addressed in the RFP documents and any ancillary information required is included at the RFP release date.

Ensure that only the most highly qualified teams are shortlisted for design-build projects.

Evaluate the shared risk items for each project to determine if there are unknown or unquantifiable elements that should be included to help reduce bidder risk. Invasive species disposal was one item that was mentioned by respondents. Additionally, they indicated that using language such as "as approved by MDOT" does not allow them to properly address that design element during the bidding phase since it is unknown what MDOT will approve.



## Question 17: What could be done to minimize those risks?

Code	Theme	E	C	Total
A	Shared risk or other allowance for unknown/un-quantifiable items	7	2	9
B	Thoroughly vet RID information	6	1	7
C	Longer procurement schedule	5	1	6
D	Increase stipend	8	2	10
E	Shortlist fewer teams	4	2	6
F	Better utility/geotechnical/environmental information earlier in process	9	2	11

### *Conclusions:*

Each of these items have been stated in previous questions and reaffirm those responses.

### *Recommendations:*

Evaluate the shared risk items for each project to determine if there are unknown or unquantifiable elements that should be included to help reduce bidder risk. Invasive species disposal was one item that was mentioned by respondents. Additionally, they indicated that using language such as “as approved by MDOT” does not allow them to properly address that design element during the bidding phase since it is unknown what MDOT will approve.

Continue to evaluate the reference information documents that are provided with each project and determine the relevance of the information and try to remove data that does not apply or conflicts with contract requirements.

For larger or complex projects, consider extending the procurement timeline to allow bidders to thoroughly evaluate the project requirements and develop their bid. A number of respondents indicated they cannot adequately evaluate all data prior to the first one-on-one meeting and that allowing an additional meeting after the last addendum is released to ask final questions.

Ensure only the most highly qualified teams are shortlisted for each project.

## Question 18: What training could MDOT provide to help industry partners?

Code	Theme	E	C	Total
A	Partnering sessions at ACEC/MITA conferences	7	1	8
B	More Design-Build training for industry	4	0	4
C	More Design-Build training for MDOT staff	5	1	6
D	Workshops explaining various delivery methods	8	0	8
E	Industry forums with open discussion	6	0	6
F	None	4	3	7

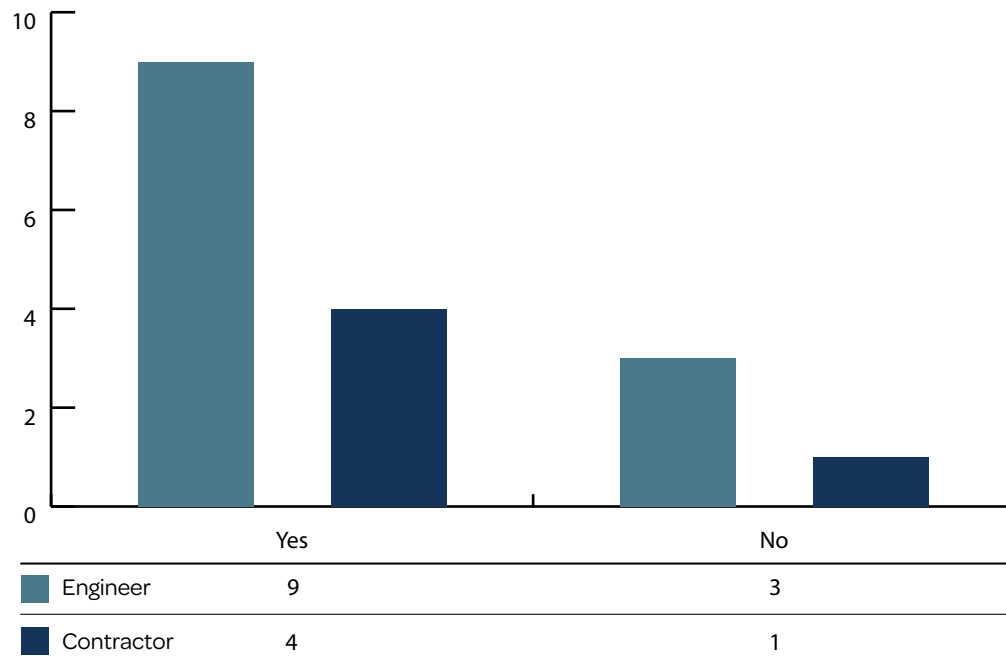
### *Conclusions:*

Engineers are more interested than contractors to receive additional training or attend workshops to learn more about MDOT's innovative contracting program. Respondents indicated that the partnering sessions at the ACEC conference are beneficial but want to hear more about upcoming projects. Engineers also indicated they would be open to more design-build training but also thought more MDOT staff could use training on the administration of design-build projects. Contractors most often responded that they did not need additional training.

### *Recommendations:*

Continue participating in the ACEC/MITA conferences to provide updates on MDOT's program. Work with ACEC and MITA to create an innovative contracting subcommittee within each organization to foster discussion between industry partners and MDOT aimed at continuous improvement of the program.

## Question 19a: Would you find industry forums or pre-bid type meetings prior to RFQ/RFP helpful?



### *Conclusions:*

Engineers and contractors have both indicated an industry forum or pre-bid meeting prior to the release of the RFQ/RFP would be helpful.

### *Recommendations:*

For large or complex projects MDOT should host an industry forum or pre-bid meeting to discuss the project goals, unique aspects of the project, and answer questions from potential bidders.

## Question 19b: If yes, what information would you want to receive?

Code	Theme	E	C	Total
A	Allow time for questions and answers	9	1	10
B	Project goal/details including important issues	12	3	15
C	MDOT's risk items	6	3	9
D	Procurement schedule	8	2	10

### *Conclusions:*

The most important item to industry would be MDOT's discussion of project goals and providing details of important issues on the project. This information will provide context to the RFQ/RFP and will allow bidders to better understand what MDOT is looking to accomplish with the project. Allowing time for questions and answers is also important but it was recommended that MDOT provide information ahead of the meetings such as expected prequalification categories, schedule, and project goals and risks.

### *Recommendations:*

For large or complex projects MDOT should host an industry forum or pre-bid meeting to discuss the project goals, unique aspects of the project that might introduce risk, and answer questions from potential bidders.

**Question 20:** Please provide any additional comments regarding ICU's communication with industry, the website, guidance documents, procurement, and contract administration procedures?

Code	Theme	E	C	Total
A	Current design-build program is very prescriptive	2	1	3
B	Never used/seldom use IC Guidance manual	10	2	12
C	Need to get more experienced staff or additional staff	6	2	8
D	Provide more training to Region/TSC	5	2	7
E	More properly allocate risk	7	2	9
F	Better communication of the program and up-coming projects	4	2	6
G	Better understanding of how delivery method is selected	4	1	5
H	Engage more contractors to bid	4	0	4

### *Conclusions:*

Responses to this question covered some of the same areas as discussed throughout this document but also included new responses. One of the most surprising comments was that industry generally does not use (some didn't even know it existed) the Innovative Construction Contracting Guidance manual. Two engineers stated they have used it in the past but it was difficult to find what they were looking for but it appeared to be written for MDOT staff. Additional comments included trying to find ways to encourage more contractors to bid on projects instead of the pool of three or four contractors that currently participate. Industry partners were also interested to understand how MDOT selects the delivery method for each project.

### *Recommendations:*

Overall recommendations have been provided with the previous questions. The additional feedback provided with question 20 confirmed many of the earlier recommendations provided. Such as:

- ◆ Providing more training to Region/TSC staff
- ◆ More properly assign risk
- ◆ Continue outreach with MITA/ACEC
- ◆ Develop a project delivery selection tool

One additional recommendations based on the responses is:

- ◆ Evaluate how new/more contractors can become engaged in the innovative contracting program

Innovative Contracting  
Best Practices Research

# Appendix E

## Peer Exchange Report



# Table of Contents

Introduction and Purpose.....288

Peer Exchange Participants .....288

Key Takeaways ..... 290

Conclusion .....299

Appendix E-1: Agenda ..... 300

Appendix E-2: Participant Contact List .....303





## Introduction and Purpose

The Michigan Department of Transportation's (MDOT) Innovative Contracting Unit, in conjunction with the Research Administration of the Michigan Department of Transportation, conducted an innovative contracting peer exchange event as part of their Innovative Contracting Best Practices Research project. The event was held on August 24, 2020, utilizing a virtual meeting due to travel and meeting restrictions in place due to the Covid-19 pandemic.

The purpose of the peer exchange was to facilitate the discussion of policies and procedures being utilized by peer agencies with respect to their innovative contracting delivery methodologies. MDOT was particularly interested in nine topics related to programmatic and project delivery where potential improvements could further enhance their program. In addition, it provided an opportunity for the participants to evaluate their own programs against the practices of others through a collaborative panel of peers, experts, and individuals involved in project delivery using innovative contracting methods.

## Peer Exchange Participants

MDOT's Innovative Contracting Program Manager worked with the consultant conducting the research project to coordinate and facilitate the exchange. Coordination started in May 2020 but was suspended due to meeting and travel restrictions resulting from the Covid-19 pandemic that prevented in-person attendance. The group discussed various alternatives and determined that a virtual event using a collaborative meeting software program was the best option. In July 2020, the team evaluated potential participants, determined topics, developed an agenda (see Appendix A), and sent invites to prospective participants.

Participants were determined, in part, by the maturity of their program, types of innovating contracting methods utilized, and having similar types of climate conditions as Michigan. Invitations were sent to 12 states and MDOT received positive responses from 10 of them. Below is a summary of the states that attended and participated in peer exchange.

Agency	Representative	Title	Program Age
Indiana Department of Transportation	Kevin Jasinski	Director of Major Project Delivery	15 years
Florida Department of Transportation	Larry Ritchie	State Contract Administration Specialist	32 Years
Maryland Department of Transportation	Sean Champion	Innovative Contracting Division Chief	21 Years
Michigan Department of Transportation	Ryan Mitchell	Innovative Contracting Program Manager	20 Years

Agency	Representative	Title	Program Age
Minnesota Department of Transportation	Peter Davich	Design-Build Program Manager	23 Years
Missouri Department of Transportation	David Simmons	Design-Build Coordinator for State	15 Years
North Carolina Department of Transportation	Teresa Bruton	Design-Build Manager	20 Years
Ohio Department of Transportation	Eric Kahlig	Alternative Project Delivery Administrator	25 Years
	Chase Wells	Alternative Project Delivery Engineer	
Texas Department of Transportation	Matt McCarter	Strategic Contracts Division	13 Years
Utah Department of Transportation	Matt Zundel	Innovative Contracting Engineer	20 Years
Virginia Department of Transportation	Shailendra Patel	Innovative Contracting Program Manager	19 Years

Those that could not attend included Jolena Missildine from the Washington State Department of Transportation and Jesse Gutierrez from the Arizona Department of Transportation.

Other participants included:

Agency	Representative	Title
Michigan Department of Transportation	James Ranger	Innovative Contracting Program Manager
Michigan Department of Transportation	Jon Stratz	Innovative Contracting Program Manager
Michigan Department of Transportation	Dharmesh Valsadia	Innovative Contracting Program Manager
Michigan Department of Transportation	Corey Hackworth	Cost and Scheduling Engineer
WSP	Jeff Chenault	Principal Investigator
CRS Engineers	John Bale	Lead Investigator
Michael Loulakis	Capital Project Strategies	Peer Exchange Moderator

MDOT identified nine topics of interest within their program for discussion with their counterparts at the peer exchange event. These topics included:

- ◆ Delivery Models (CM/GC, DB, P3) and Delivery Method Selection
- ◆ Best-Value versus Low-Bid Selection
- ◆ Risk Management
- ◆ Alternative Technical Concepts/ One on One Meetings

- ◆ Alternative Delivery Infrastructure
- ◆ Training
- ◆ Use of GEC and Owner's Representative
- ◆ Quality Assurance/Quality Control
- ◆ Program/Project Metrics

The peer exchange was moderated by Michael Loulakis who facilitated the discussions between panel members for each topic. Each topic was introduced by having Ryan Mitchell provide an overview of MDOT's current practices, policies, and procedures with respect to that item to offer background for the discussions. An open discussion format was used to allow each participant the opportunity to describe how their program operates with respect to that topic including best practices and lessons learned.

## Key Takeaways

### Delivery Models (CM/GC, DB, P3) and Delivery Method Selection

- ◆ **MDOT** utilizes Construction Manager/General Contractor (CM/GC), Design-Build (DB), and Public-Private-Partnerships (P3) contracting methods. Additionally, MDOT uses Fixed Price Variable Scope (FPVS), Alternative Pavement Bid (APB), and Alternative Technical Concepts (ATCs) for Maintenance of Traffic on design-bid-build projects. To select the delivery method, MDOT utilizes a form that is completed by the MDOT Region or Transportation Service Center staff that is submitted to the Innovative Contracting Committee (ICC). The ICC will evaluate the project based on criteria such as schedule, risk, and other elements to determine if it is a candidate for alternative delivery. If approved, the ICC will recommend approval to the Engineering Operations Committee who must provide their approval for a project to be delivered by any means other than design-bid-build.
- ◆ **Utah** chooses the delivery method based on their experience with similar types of projects and what has works best, based on the risk profile. They use CMGC based on risk evaluation, if limited experience exists within the Department, and for projects with long lead time items where contractor can order early (i.e. steel bridge beams). They typically use design-build for projects greater than \$50M and where they are looking for innovation and/or insight from contractors. Progressive Design Build is used when you can benefit from the Contractor's experience very early on in the design process.
- ◆ **Florida** mostly uses design-build but there has been some interest in utilizing CM/GC recently. The delivery type is selected by the district offices but generally always design-build.

- ◆ **Ohio** does not have authority to use CM/GC so they use various versions of design-build (i.e. DB, DBFOM, etc). They typically turn to design-build when the schedule is driving the project.
- ◆ **Virginia** uses design-build, progressive design-build (PDB), and P3. They do not currently have authority to use CM/GC. Virginia does not have a delivery selection tool but rather uses their past experience to determine delivery methods. PDB is used when risks cannot be completely quantified for contractors. P3 is only used where revenue generation is available and the department does not have funds to construct the project.
- ◆ **Maryland** uses design-build, CM/GC, P3, and PDB. They have their own developed selection tool. It is a selection matrix spreadsheet that takes into account risks, cost, schedule, and project details.
- ◆ **Texas** mostly utilizes design-build. They can use P3 but each project requires legislative approval. They do not have authority to use CM/GC. The number of projects is restricted for each year. Texas has their own selection tool called Alternative Delivery Support (ADS) that has selection criteria that assigns costs to items that results in a heat map related to various delivery types.
- ◆ **Indiana** uses design-build
- ◆ **North Carolina** utilizes design-build, PDB, CM/GC (restricted to 10 jobs per year up to \$100M), and P3.
- ◆ **Missouri** uses the Colorado selection tool with MoDOT tweaks to evaluate delivery methods. In Missouri, funding is the biggest issue for moving into other delivery methods.
- ◆ **Minnesota** uses the Colorado selection tool but uses it to facilitate discussions regarding risks and other criteria. Minnesota has a design-build program manager who will work with their CMGC Program Manager to develop delivery recommendations that are sent to leadership for approval. Projects with extensive 3rd party coordination (such as railroads) typically leans toward using CMGC.

In summary, most agencies use some sort of selection process or tool as a guide to stress it is important to evaluate each project based on risks and other project specific criteria and use past experience and judgement to determine the best delivery method. The selection tool should drive open discussions that lead the agency to the select the most appropriate delivery method.

---

## Best-Value versus Low-Bid Selection

- ◆ **Michigan** currently awards design-build and P3 projects based on a technical sufficiency, low bid basis.
- ◆ **Indiana** typically uses best value with a 70/30 split of cost versus technical proposal score.

- ◆ **Maryland** uses best value selection but does not use a percentage split of cost versus technical score. Adjectival scoring (acceptable, good, exceptional) is used to evaluate the technical proposals. The price proposal is opened later and then evaluated using a “cost trade-off” assessment between the higher costs and the technical components. For example, if a proposal price is \$5M higher than the low proposal price but has a higher technical score, Maryland will evaluate the higher technical score to determine if it provides at least \$5M of additional value.
- ◆ **Virginia** uses mostly best-value but will use low-bid on a small percentage of their program for projects with simple scope or where there is limited opportunity for innovation. When using best-value, a 70/30 split of cost versus technical score is used.
- ◆ **Texas** uses best-value typically with at 80/20 split of cost versus technical score but will sometimes go to 70/30. Price cannot be less than 70% based on legislative authorization. Texas also evaluates the net present value of the price proposal as part of their consideration to determine if contractors are front loading costs.
- ◆ **North Carolina** uses both best-value and low-bid (they refer to low-bid as express design-build). Express design-build is used for culvert and bridge replacement projects where bidders are shortlisted and then selected based on low-bid. Their best-value selection includes quality credits as part of the technical evaluation.
- ◆ **Missouri** uses best-value with a 10/90 split of cost versus technical score. It is generally awarded to the proposer who can provide the most scope.
- ◆ **Florida** uses best-value and low-bid. To use low-bid, there is specific criteria that must be met and it requires approval by the Chief Engineer. Low-bid is used on non-complex projects generally less than \$10M or with projects related to traffic operations. Best-value is selected with an adjusted value evaluation (price divided by technical score). The score for the Letters of Interest (LOI) are carried forward to final scoring. The LOI makes up 20 points with the proposal phase being worth 80.
- ◆ **Ohio** uses best-value typically with a 70/30 split of cost versus technical score but will go as low as 60/40. The technical score is usually based on “soft” items such as public outreach, aesthetics, or DBE/Regionally Targeted Groups, among others.
- ◆ **Minnesota** mostly uses best-value. The scored elements are based on the project goals and which of those goals contractors can impact with specific commitments. Points are balanced by how much MnDOT values the goal and how much they would be willing to pay to achieve it. The price to score ratio is adjusted accordingly.
- ◆ **Utah** uses best-value with the price to score ratio determined by an equation that Utah has developed. The general range is from 80/20 to 90/10.

In summary, all agencies that participated in the peer exchange use best-value as the most commonly used selection method. Low-bid is used by some agencies for non-complex projects but it does not make up a large percentage of their program. It was indicated by each that in their experience using a best-value selection drives greater innovation and quality with their innovative contracting projects.

---

## Risk Management

- ◆ **MDOT** will evaluate risks and prepare preliminary design up to about 30%. MDOT provides shared risk items for work elements that are difficult to quantify.
- ◆ **Utah** evaluates risks early on to determine which party can best handle the risk. Risk is managed throughout the project and not just through procurement. Using PDB and CM/GC Utah is able to involve contractors much earlier than with design-build.
- ◆ **Virginia** conducts a risk workshop to determine risks and how they can impact the project. Virginia typically sees the most risk in Geotech, utilities, right of way, and survey. Utilities, right of way, and survey usually gets transferred to the contractor. Virginia's program also includes a scope validation phase which allows the contractor to evaluate the scope of work and the criteria for the first 90 to 120 days after award of the project. The contractor can ask the department for changes/adjustments to the contract for items they were not fully able to validate during the procurement phase. The department can either agree or disagree but this puts an emphasis on the contractor to address issues up front. VDOT has realized a drop in change orders using this process.
- ◆ **North Carolina** provides lump sum prices (shared risk) if they cannot be easily quantified by contractors. NCDOT provides some geotechnical information but pushes more of the risk to the contractor. Teams can request additional borings but any borings requested are shared with all bidders. For right-of-way, the department will pay for the actual land cost but other work associated with appraisal, acquisition, and negotiations is a pass through cost for the contractor. NCDOT typically works with utility owners to develop municipal agreements for utility work.
- ◆ **Minnesota** conducts a risk workshop to define risks at a high level. For items that are difficult to quantify, MnDOT will cap the item of risk. For example: hazardous material over XX cubic yards will fall back to MnDOT to be paid for as a change order. For utilities, MnDOT works to obtain and provide good location data to contractors and will try to relocate the major utilities prior to construction. MnDOT provides some geotechnical data that can be relied upon by the contractor. MnDOT draws a line between known and unknown contamination to help minimize contractor risk.
- ◆ **Indiana** is starting to share more risk with contractors. For geotechnical items, if the contractor modifies anything in the reference information documents (RID) then the design-builder owns the risk. If they do not, InDOT owns the risk.
- ◆ **Missouri** usually tries to develop plans to 30% to evaluate risks even though contractors will likely not follow the design. Missouri usually sees largest risk with right of way, utilities, public involvement, and environmental permitting. For utilities, an approach MoDOT has used is to set aside funds in a utility reserve for all utility coordination, design, and relocation work. If the contractor can perform that work under the utility reserve amount, they get to keep the remaining funds. MoDOT uses shared risk for utilities, railroad, environmental permitting, and flooding.

In summary, all agencies agreed that project risks must be evaluated early on to determine which party is best able to handle that risk. Participating states indicated various alternatives for handling risk such as including shared risk items for work that is difficult to quantify, transferring utility coordination and relocation efforts to the contractor, allowing contractors to request additional boring information during procurement, and allowing a scope validation phase for contractors to fully evaluate the scope of work and the criteria after award. Additionally, common items that appear to cause the most risk include utilities, geotechnical data, right-of-way, and environmental components.

---

## Alternative Technical Concepts/ One on One Meetings/Stipends

- ◆ **MDOT** allows ATCs as part of the procurement process and are working on creating a more formalized process. MDOT does not limit the number of ATCs but the pavement design prescribed by MDOT is not eligible for an ATC. MDOT utilizes one-on-one meetings where all discussions are confidential unless it requires a clarification or addendum to the RFP documents.
- ◆ **Missouri** does not use the ATC process. Missouri prepares a conceptual alternative and are generally open to whatever the contractor proposes as long as it is in line with the Project goals and within the environmentally cleared footprint. MoDOT allows Additional Applicable Standards (AAS) which are standards or specifications from other agencies the contractor would like to incorporate. MoDOT stipends range from 0.2% to 0.5% of the construction cost to encourage innovation. One-on-One meetings are essential to the process for providing feedback on concepts. All conversations with the contractor are confidential to build trust.
- ◆ **Ohio** is open to ATCs as part of their procurement process but takes caution so as not to lead a contractor into a solution. As part of the ATC, Ohio requires the contractor to provide the actual changes to language in the RFP as part of their ATC submittal. ODOT includes staff who will be evaluating the technical proposals in the one-on-one meetings and the ATC evaluation process. Ohio does not consider cost in evaluating ATCs and looks for solutions that are equal to or better than the requirements in the RFP. Ohio provides stipends in the range of .025% to 0.1% depending on complexity.
- ◆ **Maryland** is open to the ATC process and has no limit on the number of ATCs a contractor can submit. Staff try to avoid discussions regarding ATCs at one-on-one meetings to avoid any confusion regarding comments made by DOT staff. Only comments in the official response should be considered by the contractor. Maryland tries for a minimum of three one-on-one meetings. Any question asked in the one-on-one meetings are deemed confidential. Any questions submitted in writing are shared with all proposers. Maryland provides stipends in the range of 0.2% to 0.5% depending on complexity and ability to drive innovation.



- ◆ **Florida** is open to ATCs as part of their process but provides a list of items where the ATC will trigger an addendum and provides a second list of items that will not trigger an addendum. ATC meetings are considered private meetings and not subject to Florida's Sunshine Law. All questions must be submitted through Florida's bid system and the department has obligated timeframes in which to respond. Florida provides a stipend to all shortlisted teams based on a formula. Stipends over \$1M require legislative approval.
- ◆ **Minnesota** is open to ATCs as part of their process but limits the number of ATCs. MnDOT will place conditions on ATC approval as they see fit but otherwise follows the same process as Michigan. Teams cannot ask clarification questions during the one-on-one meetings unless they directly relate to an ATC concept. Stipends are 0.2% at a minimum by statute but can go higher based on complexity.
- ◆ **Virginia** is open to ATCs as part of their process and has a written policy on how stipends are set (Policy Number: IIM-APD-5).
- ◆ **North Carolina** is open to ATCs as part of their process and limits the number of ATCs that can be submitted. Contractor's submit a preliminary ATC to get a "go/no go" response from NCDOT. If two bidders provide an ATC for the same item, the DOT has the right to change the RFP requirements via addendum. North Carolina will have one on one meetings with utility owners, railroads, or with other 3rd parties as needed.
- ◆ **Texas** is open to ATCs as part of their process but include a list of items that are not eligible for ATCS. They also allow draft ATC's during the draft RFP stage.
- ◆ **Indiana** is open to ATCs as part of their process. Indiana utilizes one-on-one meetings where ATCs can be discussed. Indiana is careful about not leading contractors into a solution. They provide stipends ranging from 0.2% to 0.5% depending on project complexity.
- ◆ **Utah** is open to ATCs as part of their process. UDOT allows unlimited ATCs up to a specific date in the procurement process. After that date, they limit the contractors to 10 ATCs for UDOT to review. They provide stipends ranging from 0.15% to 0.3% based on project size and complexity. Dr. Keith Molenaar presented a paper to TRB discussing stipends that is useful.

In summary, all participating agencies use some form of an ATC process during procurement. Some agencies limit the number and/or scope of what is open to an ATC for a particular project. One-on-one meetings are an important part of the procurement process with all discussions being held confidential by the departments to build trust in the program. Stipends generally range from approximately 0.15% to 0.5% depending on the project's size and complexity. Departments that provide a larger stipend feel the proposers provide greater innovation in their programs.

---

## Alternative Delivery Infrastructure

- ◆ **MDOT** has a centralized Innovative Contracting Unit within the Bureau of Development and support local design and construction staff in Regions and Transportation Service Centers (TSC) during implementation. Level of support to local staff is dependent on the complexity of the project and needs of local staff. MDOT utilizes General Engineering Consultants (GEC) to assist with their program and also uses Owners Representative Consultants (ORC) for mega projects. MDOT does have an Innovative Construction Contracting Guidance manual but it has not been updated since 2015 and does not currently reflect where the program is. MDOT is also currently developing a risk management guidance document and is in the process of updating the Innovative Construction Contracting Guidance manual.
- ◆ **Indiana** does have guidance documents but it is in poor shape and does not reflect their current program. InDOT is working on engaging industry more often to make improvements to their procurement process and opportunities to provide project information earlier in the process.
- ◆ **Texas** does have guidance documents that are posted on their website. Texas has a close relationship with the Association of General Contractors (AGC) and are very involved in the development and updating of programmatic documents.
- ◆ **Ohio** is currently developing a design-build manual that will be public soon.
- ◆ **Minnesota** has a design-build manual and templates that are updated on a regular basis. Minnesota also has a CM/GC manual and a contract administration manual.
- ◆ **North Carolina** is currently updating their alternative delivery guidance documents and are discussing creating a design-build manual.
- ◆ **Maryland** is currently updating their guidance documents and will include their selection process.

---

## Training

- ◆ **Michigan** provides design-build training on a project by project basis.
- ◆ **Texas** provides a “DB 101” training program for TxDOT staff and the successful bidders on every project. Texas is working on involving local staff earlier in the life of the project to make sure they understand the contract documents after the project is awarded.
- ◆ **Missouri** provides a 1.5 day training session for all DOT staff interested in alternative delivery. Training includes the history of alternative delivery in the state, do’s and don’ts, procurement process, contract administration and other items.
- ◆ **Minnesota** has a 2-3 hour training program where they visit each district once per year to deliver the training program to their staff and also try to reach major PMs.

- ◆ **North Carolina** does not currently have a training program.
- ◆ **Virginia** provides a two-day Alternative Project Delivery (APD) training program each year for select design and construction staff who are part of the execution of the alternative delivery projects. One aspect of the training they find most useful is the use of a roundtable type forum for topics to allow staff to exchange lessons learned.

In summary, training programs across the agencies vary in their scope and frequency. Some agencies are providing training on a project-by-project basis while others have more formal training sessions. Whatever the methods are for training, most agencies indicate that providing it to staff involved in delivery of projects as early as possible is most beneficial.

---

## Use of GEC and Owner's Representative

- ◆ **Michigan** utilizes General Engineering Consultants (GEC) to assist with the development of procurement documents for design-build projects and continue with assistance through the design and construction phases.
- ◆ **Minnesota** utilizes a General Engineering Consultant to assist with the development of procurement documents for design-build projects. MnDOT will use a separate consultant for design assistance after award.

---

## Quality Assurance/Quality Control

- ◆ **Michigan** uses a QA/QC program that is similar to their design-bid-build process with MDOT or a 3rd party contracted to MDOT providing these services.
- ◆ **Virginia** places the QA/QC responsibility on the design-builder. VDOT staff or a 3rd party act in an auditing role to ensure design-builder is meeting the quality requirements. VDOT also has a QA/QC manual for their program.
- ◆ **Maryland** is moving toward the VDOT model with the design-builder taking responsibility for QA/QC.
- ◆ **Missouri** follows the VDOT model with the design-builder taking responsibility for QA/QC. MoDOT indicated that partnering with the contractor is important if using this model.
- ◆ **Minnesota's** QA/QC process is similar to the process utilized for design-bid-build projects.
- ◆ **North Carolina** uses NCDOT staff or a 3rd party contracted to NCDOT to perform the QA/QC services. Their program originally put the responsibility on the design-build team but they moved away from that model.

- ◆ In **Utah**, they have IQF and non-IQF projects. For IQF projects, the contractor performs the QA/QC services with an IQA auditing 10% to 15% of the results to ensure the contractor is meeting quality requirements. For non-IQF projects, UDOT performs the QA/QC services.

In summary, there is a mix of models that agencies are using to perform the QA/QC services during construction. Some agencies put the responsibility on the contractor with the agency or a 3rd party auditing the results and some agencies keep that responsibility with the department similar to design-bid-build projects.

---

## Program/Project Metrics

- ◆ **Michigan** does not have formal process for tracking metrics but does track cost and schedule.
- ◆ **Missouri** tracks the number of innovative contracting projects per year with a goal of 2 per year. They also track the percentage of the total program delivered using innovative contracting methods with a goal of 10% by dollar amount per year. Over the past 10 years the program has saved over \$290M and 74 months in construction time by using innovative contracting methods.
- ◆ **Minnesota's** metrics include cost impacts from ATCs (currently have saved between \$50M and \$100M), cost growth, number of clarification questions, number of addenda during procurement, and meeting letting dates.
- ◆ **Virginia** tracks time savings for each project. VDOT creates two schedules for design-build projects; one assumes design-build and one assumes design-bid-build. The department then tracks the schedule to determine the time savings.
- ◆ **North Carolina** tracks the cost above/below the engineer's estimate, the quality ranking for the team awarded the project, and design submittal response time by the department based on a 10 day turnaround.
- ◆ **Ohio** tracks the cost above/below the engineer's estimate and ODOT employee time on projects.
- ◆ **Utah** tracks the percentage of ATCs that are accepted.

In summary, none of the agencies indicated they had a formal process for tracking program/project metrics. Most appear to track cost and schedule to determine the effectiveness of their programs.

## Conclusion

The peer exchange, while not conducted as a typical in-person event, met MDOT's objectives to learn what other agencies are doing and sharing best practices and lessons learned from other programs. The Key Takeaways included above will be instrumental in helping MDOT either confirm they are generally aligned with other agencies across the country or if processes and procedures modifications in specific areas could drive further benefits on innovative contracting projects. The diverse backgrounds and varied maturity of the other programs provided a broad perspective during discussions. Additionally, based on feedback from participants at the conclusion of the meeting, all attendees acknowledged they came away with at least one concept that they would further evaluate for incorporation into their program. Lastly, networking contacts were made with attending representatives to continue sharing information and lessons learned about their programs to enhance the efficiency and effectiveness of all programs.

## Appendix C-1: Agenda

### Peer Exchange Meeting Agenda

#### Statewide Planning and Research, Part II

#### Innovative Contracting Best Practices

#### OR20-002

#### Microsoft Teams Meeting

**August 24, 2020 10:00am–4:00pm ET**

**Facilitator:** Michael Loulakis, Capital Project Strategies

#### Invitees:

Ryan Mitchell, MDOT	Sean Campion, Maryland
Michael Townley, MDOT	Kevin Jasinski, Indiana
James Ranger, MDOT	Larry Ritchie, Florida
Mark Dubay, MDOT	Teresa Bruton, North Carolina
Jon Stratz, MDOT	Matthew Zundel, Utah
Adam Wayne, MDOT	Jesse Gutierrez, Arizona
Corey Hackworth, MDOT	David Simmons, Missouri
Keith Simons, MDOT	Eric, Kahlig, Ohio
Matt Chynoweth, MDOT	Peter Davich, Minnesota
Jeff Chenault, WSP	Jolena Missildine, Washington
John Bale, CRS	Matt McCarter, Texas
Scott Shea, CRS	Shailendra Patel, Virginia

**Purpose:** Discuss best practices utilized for innovative contracting project delivery

#### AGENDA TOPICS

1. Welcome and Opening remarks (10:00am to 10:10am) – Michael Loulakis
2. Research Team and Peer State Introductions (10:10am to 10:25am)
3. Peer Exchange Purpose (10:25am to 10:30am) – Michael Loulakis
4. Overview of MDOT’s Innovative Contracting Program (10:30am to 11:00am) – Ryan Mitchell

## 5. Topics for Discussion (11:00am to 3:45pm) – Michael Loulakis

- 5.1 Delivery Systems Generally (11:00am to 11:30am)
  - 5.1.1 Process for deciding on use of an alternative delivery system
  - 5.1.2 Factors influencing your choice among CMGC, traditional design-build or progressive design-build
- 5.2 Best Value vs. Low Bid Design-Build (11:30am to 12:15pm)
  - 5.2.1 Factors influencing your choice
  - 5.2.2 Benefits that you have experienced in using Best Value
  - 5.2.3 Use of single-step or two-step procurement for Low Bid and benefits/challenges with each
  - 5.2.4 Key evaluation factors for Best Value
  - 5.2.5 Lessons learned on using pass/fail for Low Bid

### **BREAK (12:15pm to 12:30pm)**

- 5.3 Alternative Technical Concepts (12:30pm to 1:15pm)
  - 5.3.1 General experiences in using ATCs
  - 5.3.2 Limitations on number and type of ATCs
  - 5.3.3 Agency appetite for true innovation and considering “outside the box” thinking
  - 5.3.4 Process for capturing value in ATC process
  - 5.3.5 Deciding how to assess ATCs that simply reduce scope vs. offer truly different idea
  - 5.3.6 Challenges with keeping information confidential
  - 5.3.7 Stipends and ability/willingness to use ATCs of unsuccessful proposers
- 5.4 One-one-One Meetings (1:15pm to 1:30pm)
  - 5.4.1 General experiences in conducting these meetings
  - 5.4.2 Process, including number of meetings, typical agenda, and attendees
  - 5.4.3 Minutes being taken and by whom
  - 5.4.4 Lessons learned

- 5.5 Risk Management (1:30pm to 2:00pm)
  - 5.5.1 Use of standardized processes
  - 5.5.2 Utility relocation approach
  - 5.5.3 Right of way approach
  - 5.5.4 Lessons learned

**BREAK (2:00pm to 2:15pm)**

- 5.6 Alternative Delivery Infrastructure (2:15pm to 2:30pm)
  - 5.6.1 Templates
  - 5.6.2 Training
  - 5.6.3 Formal compilation of lessons learned
- 5.7 Use of GEC and Owner's Representatives (2:30pm to 2:45pm)
  - 5.7.1 General approach
  - 5.7.2 Lessons learned
- 5.8 Quality Assurance/Quality Control (2:45pm to 3:15pm)
  - 5.8.1 Use of Quality Assurance Managers
  - 5.8.2 Delegation to design-builder
- 5.9 Program Metrics (3:15pm to 3:45pm)
  - 5.9.1 Tracking of project and program performance metrics
  - 5.9.2 Basis for showing relative benefits from using alternative delivery
  - 5.9.3 Lessons learned
- 5.10 Closing Remarks (3:45pm to 4:00pm) – Michael Loulakis, Ryan Mitchell



## Appendix C-2: Participant Contact List

### **Ryan Mitchell, Program Manager**

Innovative Contracting Unit  
 Michigan Department of Transportation  
 420 W Ottawa Street  
 Lansing, MI 48933  
 Phone: 517-335-2488  
 Email: MitchellR13@Michigan.gov

### **Kevin Jasinski, Director**

Major Project Delivery  
 Indiana Department of Transportation  
 100 N Senate Avenue  
 Indianapolis, IN 46204  
 Phone: 317-233-8510  
 Email: Kjasinski@Indot.gov

### **Larry Ritchie, Contract Administration Specialist**

Construction Office  
 Florida Department of Transportation  
 605 Suwannee Street  
 Tallahassee, FL 32399  
 Phone: 850-414-4168  
 Email: Larry.Ritchie@dot.state.fl.us

### **Sean Campion, Division Chief**

Innovative Contracting  
 Maryland Department of Transportation  
 707 N Calvert Street  
 Mail Stop C-102  
 Baltimore, MD 21202-3601  
 Phone: 410-545-8863  
 Email: SCampion@mdot.maryland.gov

### **Peter A. Davich, Program Manager**

Design-Build  
 Minnesota Department of Transportation  
 395 John Ireland Blvd  
 St. Paul, MN 55155  
 Phone: 651-366-4233  
 Email: Peter.A.Davich@state.mn.us

### **David Simmons, Design-Build Coordinator**

Missouri Department of Transportation  
 1590 Woodlake Drive  
 Chesterfield, MO 63017  
 Phone: 314-453-1878  
 Email: david.simmons2@modot.mo.gov

### **Teresa Bruton, Manager**

Design-Build  
 1020 Birch Ridge Drive  
 Room #16  
 Raleigh, NC 27610  
 Phone: 919-707-6610  
 Email: tbruton@ncdot.gov

### **Erik Kahlig, Administrator**

Alternative Project Delivery  
 1620 W Broad Street  
 Columbus, OH 43222  
 Phone: 614-387-2406  
 Email: Erik.Kahlig@dot.ohio.gov

**Matt McCarter, Alternative Delivery  
Program Manager**

Strategic Contracts Division

125 East 11th Street

Austin, TX 78701

Phone: 737-255-4630

Email: Matt.McCarter@txdot.gov

**Shailendra Patel, Program Manager**

Alternative Project Delivery Division

1401 East Broad Street

Richmond, VA 23219

Phone: 804-692-0476

Email: Shailendra.Patel@VDOT.Virginia.gov

**Matt Zundel, Engineer**

Innovative Contracting

2010 South 2760 West

Salt Lake City, UT 84104

Phone: 801-887-3421

Email: mzundel@utah.gov