



# AASHTO PARTNERING HANDBOOK 2018

Publ. Code: APH-2

ISBN: 978-1-56051-709-2

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# Foreword

The American Association of State Highway and Transportation Officials (AASHTO) Technical Subcommittee on Contract Administration is made up of members from various state Departments of Transportation (DOTs) and the Federal Highway Administration (FHWA). It was given the mission to review and update the 2005 *AASHTO Partnering Handbook*. The advent of alternative contracting methods like design–build, construction manager/general contractor, and public–private partnerships has fundamentally changed the way projects are being delivered across the nation. The handbook’s first edition was written against a context of traditional design–bid–build project delivery where highway projects were awarded to the lowest responsive bidder. That contracting environment was one that could be vulnerable to adversarial relationships and litigation. Partnering was developed to address the negative consequences of the low-bid system.

Research on partnering clearly demonstrates that it provides a practical mechanism to positively resolve project issues, averting litigation.

A number of structural changes have taken place in the way highway projects are being delivered, most of which involve increasing the level of integration and collaboration between the DOT and its partners in the design and construction industries. The most prominent change is the increase in early contractor involvement in the design process. The second edition of this handbook was commissioned to capture the national experience with increasing collaboration during the design phase found in the alternative contracting practices and integrate it into the partnering process.

The second edition includes an organizational partnering maturity model that permits DOTs to assess themselves and determine those areas where additional guidance is needed to institutionalize the fundamental principles of partnering. This new handbook also defines three levels of partnering intensity that provide a means to tailor the partnering process to the agency’s particular requirements based on their assessed level of maturity. The overarching goal of this handbook is:

*To encourage public agencies to strive to create a project delivery environment where the principles of partnering have been institutionalized into routine business practices.*

The contents of the revised handbook have been rigorously vetted in the field and found to add value to existing partnering programs. This handbook will help educate key customers and partners on the benefits and methods of adopting partnering principles. The subcommittee members have spent a great number of hours to make this handbook a reality. No matter what business you are in, this handbook can help make partnering a way of life in everyday activities. Following the guidelines set forth in this handbook will help your company become a more valuable stakeholder in whatever business endeavor may be encountered.

*AASHTO Technical Subcommittee on Contract Administration*

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# Chapter 1. Partnering: What Is It?

## 1.0 Partnering—Good Project Management

It is undeniable that partnering is a critical component to every transportation project. Partnering, at its core, is really about having a strong project management process in place. Establishing open lines of communication, making commitments to solve problems, treating all members of the team with respect, and focusing on the ultimate project purpose and associated goals are all key elements of what successful project managers do. Monitoring and managing project schedules, scopes, costs, and budgets with a focus on safety, environmental responsibility, and quality all are key tasks of effective project management.

Partnering has historically been viewed as a highly formalized process that encourages cooperation, joint problem solving, and focusing as a team on the objectives of a project. Key elements of the partnering process have included partnering charters, escalation ladders, periodic workshops and meetings, and performance tracking, among other things.

part•ner (part-ner) n. One that is united or associated with another or others in an activity or a sphere of common interest:

v. part-nered, part-ner-ing, part-ners

v. tr. To make a partner of. To bring together as partners. To be the partner of.

v. intr. To work or perform as a partner or partners.

*Oxford Dictionary 2017*

Since its implementation on state department of transportation (DOT) highway projects in the 1980s, formalized partnering—and an emphasis on partnering, in general—has experienced an ebb and flow of use. As project personnel gained experience by participating in formal partnering workshops on several projects, the rituals of the formal, facilitated process—the workshops, charters, and related physical elements—are perceived to have become redundant. DOTs have focused on “institutionalizing” partnering so that, at some point, the formalized elements gradually diminish and the philosophies remain within the public and private entities that work on these projects. Beyond the physical elements of the project, the concept of partnering with all participating agencies remains a critical component to effective project management.

## 1.1 Purpose of Partnering

Public agencies must address, at a minimum, the following three areas of concern during project development and delivery:

- Maximizing project cost/time certainty while minimizing disruptions due to disputes
- Ensuring proactive project quality management
- Creating a safe environment for workers and the traveling public.

The move from traditional low-bid contracts to the increased use of alternative contracting methods (ACM) such as construction manager/general contractor (CMGC), design–build (DB), and public private partnerships (P3) created project management challenges for DOTs. Not only do ACM projects allow concurrent design and construction, they also move at a faster pace, demanding a much higher degree of both integra-

tion and active collaboration to meet the demands of an aggressive schedule. To foster enhanced collaboration, partnering has been found to be an effective tool for creating the necessary atmosphere for open, information-rich communication between the owner and its design consultants and construction contractors.

Therefore, the purpose of this handbook is to provide guidelines for applying the principles of partnering to projects delivered by all ACMs, as well as to traditional low-bid projects. It will also expand partnering in the DOT context to include program-level initiatives designed to avoid project-level disputes, and to swiftly resolve them when they do arise. The guidelines in this handbook recognize that to be effective, partnering must extend beyond facilitated workshops and nonbinding charters to embody a set of business practices that are institutionalized in an agency's policy documentation, contract administration manuals, and project development guidance. Agency personnel must be trained to properly execute those practices. It is also strongly recommended that any partnering program's performance should be measured. The results of the measurements should be evaluated, and feedback provided to achieve continuous improvement. Lastly, the program should have a partnering maintenance program to train new employees and industry partners, and debrief those that are leaving the agency.

The term “partnering” connotes different things to public agencies and members of the transportation industry. For private-sector projects, partnering is a long-term relationship created for a construction program which consists of multiple projects. Establishing strategic partnerships helps align each party's commercial interests,

allowing its members to better understand each other's motivations, reliability, and credibility. Oftentimes, strategic partnerships are made binding through memoranda of understanding/agreement or as a contract.

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A successful partnering program is like a ***living organism that grows and adapts*** as the agency's program of work changes.

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Since the private sector is not as heavily regulated as the public sector, its strategic partnerships are easier to form and the alignment of commercial interests is not as cumbersome. Public agencies are responsible for meeting the needs of political leaders, officials, and the taxpayers. Hence, their ability to engage in binding strategic partnerships with private entities is extremely limited or prohibited by statute. As a result, the public sector practices a nonbinding form of partnering designed to improve the adversarial atmosphere in which some public projects were delivered under low-bid, design-bid-build (DBB) procurement.

A successful partnering program is like a living organism that grows and adapts as the agency's program of work changes. Since the delivery of DOT projects can be technically and financially complex, the partnering program cannot be a one-size-fits-all initiative. In order to make a compelling business case for investing the resources necessary to maintain an effective partnering program, the program itself must be flexible enough to vary across a spectrum of possible forms. This handbook will call that variation “partnering intensity,” which ranges from very informal to highly structured based on the requirements of a given project or program.

## 1.2 Dispelling the Myths and Misconceptions: What Partnering Is and Is Not

Before getting into the details of how to implement a successful partnering programs, it is important to first address the myths and misconceptions that have challenged DOT partnering programs for the past two decades.

### 1.2.1 The Partnering “Stigma”

When the U.S. Army Corps of Engineers (USACE) first experimented with partnering in the 1980s, its implementation was met with skepticism within its own ranks, as well as among the ranks of its construction contractors. The same reaction was found when partnering was introduced to the highway construction industry by the Arizona DOT in the early 1990s. By that time, the American Road and Transportation Builders Association (ARTBA) and the Associated General Contractors of America (AGC) had embraced the concept and actively promoted its implementation throughout the nation. Like most new business approaches, partnering was initially met with skepticism.

In the late 1990s, partnering research showed that partnering did have a positive impact on project success, as measured by the number of disputes that evolved into claims and litigation. Nevertheless, there is continued hesitation to accept new partnering practices. Additionally, there is often a misperception that partnering allows the terms and conditions of the contract to be altered “in the spirit of partnering” without going through proper contract modifications, as specifically detailed in the contract documents. Therefore an understanding of what is and is not partnering is essential to its successful implementation.

### 1.2.2 What Is Partnering and What It Is Not?

Partnering is:

- A process of building relationships that include positive communications, cooperation, goodwill, honesty, and trust.
- A process that helps all team members learn and respect the perspectives of the other team members.
- A structure to ensure task assignments and accountability are clear.
- A process that keeps the team focused on the big picture and jointly solving problems large and small to ensure project goals are met.
- A commitment by all parties to work within the parameters and guidelines established.
- A process to ensure a commitment by all parties to project performance measures including safety, quality, environmental responsibility, schedule, and budget.

Partnering is not:

- A process which allows the contract to be altered or contract provisions to be modified without specific written contract amendments.
- A process where the transportation agency can assume that the contractor will complete tasks without compensation, or where the contractor can expect the transportation agency to ignore contractual requirements.

Initially, partnering was a formal process, beginning with a partnering workshop, which includes all partners’ input, and with tangible deliverables, including:

- Partners’ communication and roles matrix,
- A charter (mission, goals, and guidelines),
- An issue resolution process,
- Action plans,

- A partnering evaluation program,
- Meeting follow-up strategies, and
- A report that includes all partnership agreements.

Many of these elements are simply effective project management practices. What has set partnering apart from traditional project management is the project charter, the partnering workshop, the outside facilitator, follow-up meetings, the partnering survey, and a project partnering report.

### 1.2.3 Partnering Is About Shared Responsibility

The Maryland State Highway Administration (MSHA) describes partnering as “A process based on trust and an open, honest attitude in which all participants in a project recognize both common and individual objectives and work to achieve those objectives through improved communication and cooperation.”<sup>1</sup> The ultimate purpose of partnering is to create a multi-participant team in which all key participants are committed to a common purpose, goals, and work approach for which they hold themselves mutually accountable.

Shared responsibility means fulfilling commitments to the team and ensuring, as much as possible, the successes of all members of the team. The approach must allow for the fact that, while the members of the team share many common interests, they will have differing authorities, interests, and objectives that must be accommodated.

When formalized partnering was first used, there was a hope that the philosophies of partnering would become “just a way of doing business” and the need for formal workshops would be reduced or eliminated. The evolution of partnering shows this to be true—at least in part. For those transportation agencies that have truly institutionalized partnering—with periodic training, project performance monitoring, escalation processes, etc.—this does appear to be the case. However, the world is changing dramatically at transportation agencies across the country. Downsizing, decentralization, retirements, and the increased use of consultants to manage and deliver projects all create a continuing need to reinforce the philosophies of partnering.

While partnering is typically considered an agency-implemented process, the construction and consulting engineering industries (collectively called the “Industry”) are key participants in this process. The needs, desires, changing demographics, and many other elements that agencies need to consider also exist on the private side. Partnering's formal application remains an extremely valuable process for complex projects that include key risk elements, critical agency objectives or goals (such as opening a project before a specific event occurs), new processes for the agency and/or industry (i.e., ACMs), and/or other unique elements.

## 1.3 The Evolution of Partnering

Partnering on highway construction contracts was a revolutionary change that sought to improve upon the sometimes adversarial relationship between project sponsors and industry participants to one that recognized that both owners and contractors share the same three objectives in all projects: to complete the project on time, on budget, and to the level of quality set forth in the contract. Partnering aligned each party's business objectives by utilizing team-building tools and fostering an early understanding of the specific challenges of the project. After two decades of use, the results of partnering have generally been positive. Thus, the fundamental question is no longer whether or not formal partnering works, but rather whether

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<sup>1</sup> MSHA 2015.

"Partnering is not a new concept. It has been around informally for a long time. In 1929, New York businessmen developed a team and decided to build the tallest building in the world. In 18 months, the Empire State Building was completed, sometimes developing at a rate of four and a half stories a week.

It was the team's continuous cooperation, spirit of trust, open communication, and coordination that caused the construction process to be a success for all stakeholders."

*Ohio DOT Partnering Handbook 2005*

there is sufficient return on investment for the time and resources expended in using it.

In answer to this question, agencies need to evaluate their fundamental business practices to adapt to partnering's principles, and assess if their members have embraced the values associated with partnering. In an ideal project delivery environment, both the owner and the contractor would make decisions based on "best-for-project" basis rather than a "best-for-me" approach. This goal has yet to be fully achieved and as such, both agencies and industry understand that fully implementing partnering does come with a cost.

Hence, in the resource-constrained environment in which the nation's transportation

infrastructure must be built, DOTs have evolved their partnering program's content to match the available resources. For example, the Utah DOT (UDOT) has developed three levels of partnering: informal, semi-formal, and formal (see Section 3.1 for details). UDOT has also developed a formal decision tool to determine which level is most appropriate for a given project. The research conducted for this handbook also found a number of DOTs that use informal partnering for projects where they believe that the cost of a formal, facilitated workshop is not justified. The varying levels of partnering efforts will be called "partnering intensity" in this handbook.

Research also led to defining program-level efforts to employ the principles of partnering as "Institutionalized Partnering." Institutionalizing the principles of partnering involves their formal adoption and publication as standard operating procedures and processes. For the purposes of this handbook, a practice is said to be institutionalized if the DOT has included it in some form of contract administration document, like a general provision, construction administration manual, or local regulation. An example is a standing dispute escalation process that is followed on all projects regardless of the presence of a partnering arrangement.

The act of codifying partnering-related business practices is part of determining an agency's organizational project management maturity, which is detailed in Section 3.2. Appendix C provides an organizational partnering maturity modeling tool, which is intended to assist DOTs in identifying those aspects of their partnering programs that lack formal documentation and as a result cannot be considered to be institutionalized. As an organization's partnering maturity increases, the amount of standardized procedures for implementing partnering also increases. The aim is to determine a given agency's required level of project management maturity rather than to pursue the goal of documenting everything. This documentation of institutional values and business practices is critical to maintain consistency in construction contract administration procedures, as staff turnover over time is inevitable. As a result, the question becomes which practices should be documented to meet the preferences and constraints of the agency's business culture.

### 1.4 Principles of Partnering

The Arizona DOT defines partnering as following these seven principles:

- **Trust** is knowing that a partner will look out for the other partner's best interests.
- **Commitment** is keeping agreements.
- **Communication** means sharing information in an open and honest way.
- **Cooperation, Teamwork, and Relationships** relate to how partners work together toward common goals.
- **Issue Resolution** is having agreements and/or a process in place so that issues are prevented, if possible, or identified and resolved before they harm the partnership or the project, if not.
- **Measurement and Feedback** evaluates the progress of the partnership towards its goals.
- **Continuous Improvement** uses feedback to determine and implement the changes necessary to sustain the partnership.

### 1.5 Making the Business Case for Partnering

Implementing an agency-wide partnering program is not cost-free. Since all public entities must operate in a resource-constrained environment that is subject to the ebb and flow of political preferences, every expense must be justified by demonstrating value for money. A study conducted by Bresnan in 2007 summarizes the issue as follows:

*“Partnering in the construction industry context (and perhaps elsewhere too) might be seen as, in many ways, a fragile phenomenon, often dependent on the convergence of a number of key commercial and organizational supporting conditions. As such and, in the continuing absence of systematic research that unambiguously points to its benefits, it still constitutes something of a leap of faith. To base such a faith on slim philosophical and empirical foundations is to court the possibility of that faith being undermined when problems are encountered and the complex reality of partnering is confronted.”<sup>2</sup> (italics added).*

The research developed for this handbook is intended to fill that gap in the body of knowledge. A summary of the results of the study to quantify the costs and benefits of partnering is contained in Appendix D.

The business case for partnering includes both tangible and intangible benefits. It is highly dependent on a given agency's organizational partnering maturity. A less mature DOT will need to depend more on the tangible benefits found in other states to make the value-for-money case because its upper management and their overseers will be less inclined to make the “leap of faith” described by Bresnan above as they will be less familiar with the value of the intangible benefits of enhanced business relationships. Additionally, DOTs that have not adopted some or all available alternative contracting methods will find that it is “difficult to rapidly change a corporate culture that has been operating the same way for decades.”<sup>3</sup> The irony is that the evidence of high organizational maturity includes establishing systems to measure project performance and feeding that output back into the process to maintain continuous process improvement.

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<sup>2</sup> Bresnan 2007.

<sup>3</sup> Mollaoglu et al. 2015.

### 1.5.1 Summary of Tangible Benefits

The research developed four categories of metrics. Table 1-1 summarizes the overall findings of the research with regard to each category. Partnering has continually provided a medium to enhance project performance through active, information-rich communications aimed at identifying and resolving issues before they lead to disputes that could negatively impact project performance.

**Table 1-1. Summary of Partnering's Tangible Benefits by Metric Category**

| Metric Category               | Definition                                                                                                                                                              | Summarized Research Findings for Category                                                                                                                                                                                                                                                                                                                    |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Cost–Time</b>              | These are classic project performance metrics with regard to changes in budget and schedule.                                                                            | Partnering's primary benefit on all types of project delivery is to increase both cost and schedule certainty. Its impact on both cost and schedule growth is trivial on DBB. It appears to have a somewhat more positive impact on CMGC and DB projects.                                                                                                    |
| <b>Legal–Regulatory*</b>      | These are metrics associated with the cost and time to resolve disputes and claims. This category also includes violations of environmental and other applicable codes. | The primary benefit in this category is related to enhanced cost and schedule certainty as the probability of disputes that lead to litigation is reduced. Claims are much less prevalent on CMGC, DB, and P3 projects, partly due to the contractual structure that tacitly encourages partnering through legal integration of the parties to the contract. |
| <b>Safety–Quality</b>         | These metrics measure the performance of project safety and quality management plans and programs.                                                                      | Partnering is perceived as having a strong positive impact in this category based on the survey research. Again, the use of ACMs appears to promote improvements in this category.                                                                                                                                                                           |
| <b>Project Communications</b> | These metrics attempt to quantify the level and quality of the communications that are developed within a project delivery team.                                        | The survey found that partnering was considered a way to enhance both timely and meaningful communication within project delivery teams.                                                                                                                                                                                                                     |

\* There is one caveat that must be noted with regard to the Legal-Regulatory category. A review of current construction case law found a trend where some courts appeared to interpret the contents of “nonbinding” partnering charters as evidence of a breach on the implied covenant of “good faith and fair dealing” (GFFD).<sup>4</sup> In laymen’s terms, this concept protects a plaintiff that relied on a promise to its detriment from damage. Two of the 20 cases reviewed asserted a breach of GFFD and referred to the project’s partnering charter as evidence that the promise was made. In both cases, the general contractor (GC) asserting the claim prevailed over the owner. In both cases, the claimant made reference to the contents of the partnering agreement as evidence to prove that the owner made a promise in writing in the partnering charter, and the GC had the right to rely on that promise when damages were incurred, comprising the GFFD claim, albeit secondary to the primary basis found in the project’s contract. While the finding is not legally authoritative, it does warrant a word of caution with regard to whether or not promises made in a partnering charter are indeed nonbinding.

### 1.5.2 Summary of Intangible Benefits

While much more difficult to measure than the tangible benefits, two categories of intangible benefits were established: perceptual benefits and relational benefits. Perceptual benefits are those that are accrued based on project performance and are probably most strongly related to an agency’s reputation for delivering perceived value for money. Relational benefits are those that are accrued internally by the project delivery team and are largely a function of the team’s ability to communicate in an open and timely manner about issues and potential problems.

The research found that the greatest perceptual benefit was “legacy skill development.” In other words, the partnering “spirit” created an impression that the DOT and its industry partners worked as a cohesive

<sup>4</sup> MacMahon 2014.

team, and the result was the individual members of each entity developed trust and respect to help them arrive at a mutually agreeable resolution to issues as they arose. Hence, the “legacy” was realized on subsequent projects as individuals, who had personally “institutionalized” the principles and values of partnering based on past positive experiences, focused on the alignment of business objectives between the partner organizations.

The primary relational benefits are similarly connected to legacy skill development. The research found that partnering, regardless of its intensity, promoted increased communication and cooperation. It also appeared to positively stimulate trust and teamwork. In fact, 12 DOTs had institutionalized these principles by including them in DOT contract administration documents.

### 1.6 How to Use This Handbook

The guidance contained in this handbook is intended to assist DOTs in developing project-level partnering plans for all types of construction projects delivered by both traditional and alternative methods. The term “partnering” has come to cover a wide range of project management relationships, including internal partnering and partnering with third-party stakeholders. This handbook is focused on project-level partnering. It also encourages its users to institutionalize those partnering principles that they find valuable in their contract administration documents and manuals, to develop a consistent approach to project delivery and a predictable business culture that emphasizes the sharing of risk.

This handbook contains 14 chapters divided into four general categories. The first group, Chapters 1–3, provides the information necessary for the user new to partnering to understand its principles and the AASHTO philosophy for implementing a project-level partnering program. The second grouping, Chapters 4 through 7, provides information on how to apply partnering to projects delivered using alternative methods, specifically, CMGC, DB, and P3 project delivery. Chapters 8 through 10 furnish information on promulgating partnering at the programmatic level and using partnering as a risk management tool. The final four chapters (11 through 14) cover how to plan a workshop for each level of intensity and how to measure partnered project performance with continuous improvement feedback.

The process for utilizing the information contained in this handbook is shown in Figure 1-1.

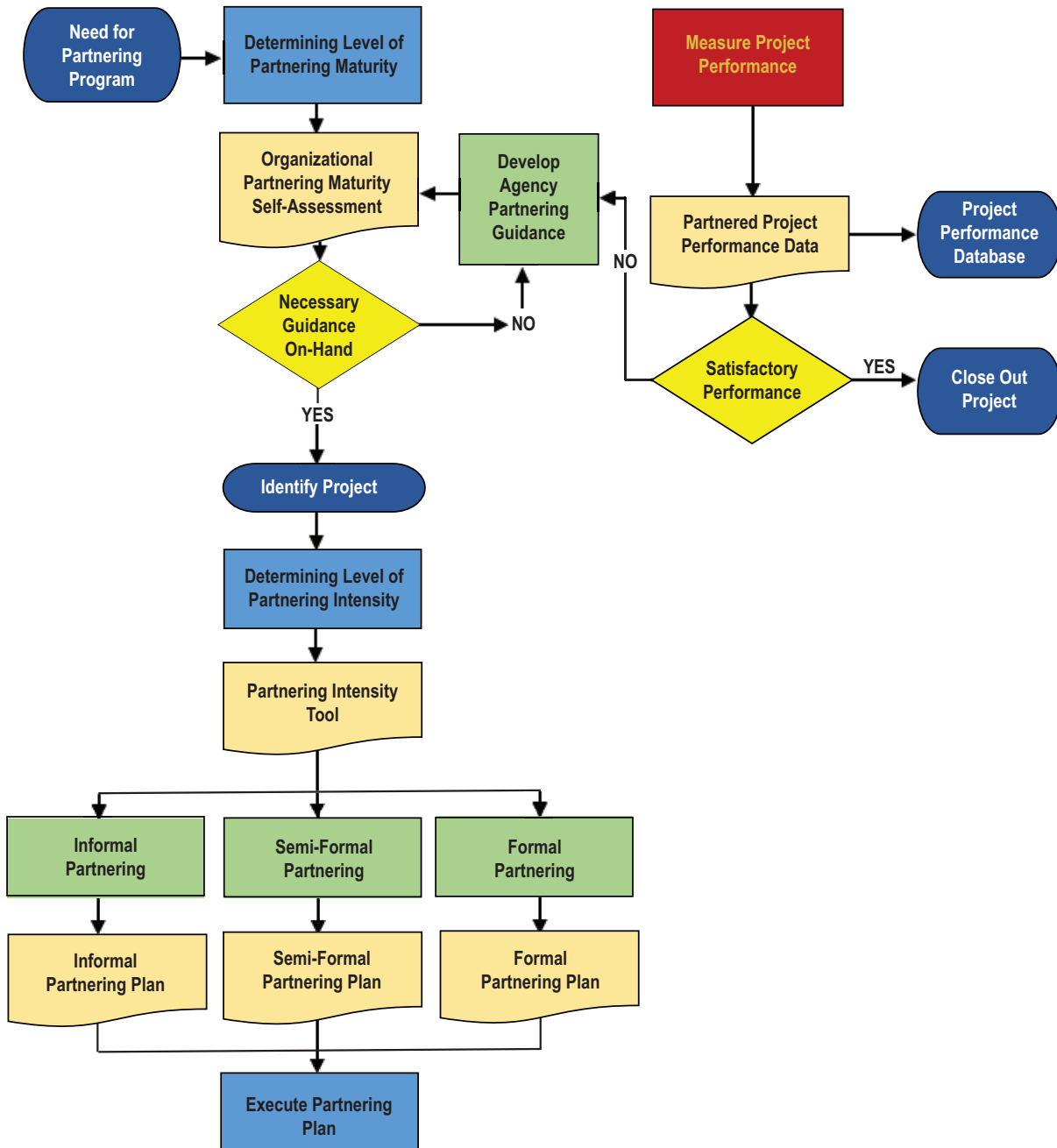


Figure 1-1. Partnering Process Chart



## Chapter 2. Why Partnering Is Important

### 2.0 Why Use a Partnering Process?

Partnering remains highly relevant and presumably always will because it quite simply is good project management. In its simplest form, partnering is what any good project manager, public or private sector, should be striving to attain on every project: completion on time, on budget, with a perfect safety record, high quality, no environmental issues, and no disputes or claims.

This project management process is based on the relationships of the individuals involved. Problem solving, open-mindedness, common goals, and appreciation of others' positions and constraints are all elements that cannot be written in contracts. They are human characteristics that make a project successful, or not. That does not diminish the importance of contracts, design details, policies, and/or procedures. However, they do not work without the human interaction that makes a project successful.

### 2.1 Partnering

Setting a project up for success is critically important. Well-prepared contract structure, environmental planning, public involvement, right-of-way acquisition, utility relocations, etc. all go into ensuring that a project is set to run smoothly. Partnering in and of itself will not make a project successful. Too many examples exist of transportation projects that did not meet the project delivery goals because they were not well planned or designed properly, and/or the contracts lacked appropriate structure. However, if a project is appropriately set up for success, partnering can go a long way to ensure that a project ultimately meets its goals.

There are many reasons why agencies should use partnering. These include:

- Solving problems collaboratively
- Building and strengthening relationships
- Increasing work efficiency
- Implementing innovative products or processes
- Improving project development and delivery processes
- Providing services that exceed customer expectations
- Enhancing work processes, plans, and functions
- Managing project risks collaboratively

"Being successful on such an important project would not have been possible without a core team of skilled and experienced professionals that put aside their attitudes and egos in the beginning and agreed to "partner" together for the overall good of the three-year project."

*Jason Peterson, NCTA Project Manager*

### 2.2 Project Examples

Three examples from the research conducted for this handbook are provided to demonstrate the importance of partnering in achieving success in a complex project. The first comes from North Carolina, where the project partnering plan was developed before the award of the DB project and was considered integral to the project's successful early completion. The second example comes from Louisiana, where partnering was instituted after the project had been started and was used to “rescue” a project that was starting to falter. Finally, the third example comes from Missouri and Illinois where partnering was implemented in a complex project that involved two different DOTs. This handbook recommends that partnering be part of the initial project development and that the partnering plan, for which this handbook provides a template, be in place before the contract is awarded. However, the Louisiana project provides an excellent and much less common example of how partnering can be applied as a remedy after the project commenced.

#### 2.2.1 NCTA Triangle Expressway

The Triangle Expressway, developed by the North Carolina Turnpike Authority (NCTA) in 2001, is North Carolina's first modern-era toll road. The Triangle Expressway implementation consisted of two major design-build contracts as well as separate corridor-wide contracts for toll integration and ITS components. The toll revenue-based financing of the corridor, as well as the scheduling challenges, dictated the need for special emphasis on ensuring the corridor was completed on or before the scheduled completion date and on or under budget.

The funding and scheduling challenges were exacerbated by the fact that advance funding did not exist to perform required utility relocations (over 175 with 15 utility providers) or to acquire the corridor right-of-way (approximately 250 parcels). These critical path activities could not begin until the toll revenue and other bonds were sold and a TIFIA loan was closed—which provided all of the funds available for the corridor. Therefore, the critical path activities carefully intertwined the corridor design and construction works and the separate contracts for toll integration and ITS elements.

There were many elements to the partnering process on this corridor that can be seen as keys to its success:



**Figure 2-1. Construction Phase—Triangle Expressway (NCTA).** Photo courtesy of the North Carolina DOT.

- Appreciation for the partnering process by all key participants. The project planning, scheduling, and risk review processes were highly integrated.
- Leadership on all sides was largely hand-picked to work on this project.
- Stakeholder engagement was ensured wherever and whenever it was appropriate.

“In addition to the innovative ideas which resulted from this project, the most positive facet of this job would have to be the successful integration of partnering into the project team. By combining the design–build process with one of the most progressive partnering approaches in the industry, this project was able to achieve unbelievable success in the face of many significant challenges. This was truly one project that no one wanted to see come to an end. The partnering experience has raised the level of practice and benefit to a level I have never experienced before on the projects I dealt with during my 33-year tenure at NCDOT—the end result has been that there are no unresolved issues after almost three years of intense construction activity.”

*George Gibson, Quality Assurance Manager,  
Mulkey Engineers*

### **2.2.2 LaDOTD MacArthur Interchange Project**

The MacArthur Interchange Phase 1B project is a design–bid–build project on the West Bank of New Orleans, Louisiana that included the demolition of existing ramps, construction of new ramps and bridges, and supplementary work such as reconfiguring the Harvey Tunnel entrance to accommodate pier construction. The project was completed in 2016 is located along a one and one-half mile stretch of the Westbank Expressway (U.S. Hwy 90) near Louisiana State Highway 3017 (Peters Road) and MacArthur Avenue (Figure 2 2). In an effort to expedite the construction, the Louisiana Department of Transportation and Development (LaDOTD) divided the project into two phases, Phase 1 (westbound lanes) and Phase 2 (eastbound lanes).

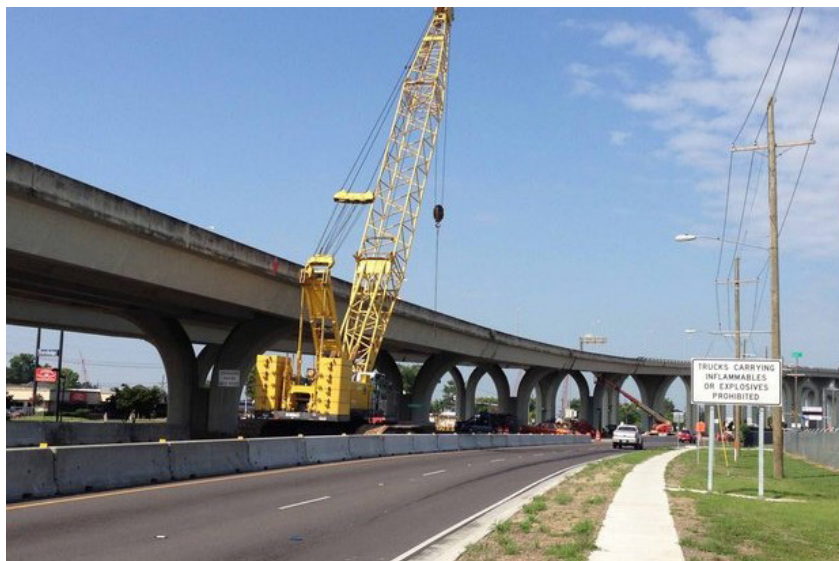


**Figure 2-2. Construction Work for the MacArthur Interchange Phase 1B Project**

Furthermore, LaDOTD divided the first phase into Phases 1A and 1B. Phase 1A addressed the westbound at-grade roads and utilities portion of the project, which then allowed for LaDOTD to limit the lane closures needed during Phase 1B. Then, Phase 1B addressed the westbound bridges and ramps portion of the project. The following information discusses the Phase 1B project.

Partnering for the MacArthur Interchange Phase 1B project did not occur until about six months into the project. Prior to that time, this project experienced major issues between the on-site personnel for LaDOTD and the general contractor. Some of the major problems included lane-closure restrictions and that the project's quality performance was not meeting LaDOTD's quality control procedures and expectations. At this point, the project was already behind schedule based on a change order submitted by the contractor for additional time.

In an effort to correct the problems and issues, and to get the project back on schedule and budget, LaDOTD implemented formal partnering for the remainder of the construction phase for the Phase 1B project. A third-party facilitator was hired and an initial partnering workshop was then set.

This partnering process resulted in a successful project due to:

- Partnering meetings held on a quarterly basis with key project team leaders to voice all concerns and work together to solve problems.
- Development of new project goals by the team once partnering was implemented.
- Utilized an informal joint decision-making process.
- Opened channels of communication that allowed stakeholders to discuss project issues openly with one another.
- Helped LaDOTD and contractor personnel to gain a better understanding on partnering and how to build an efficient project team that can overcome conflicts and focus their attention on the project at hand.

### **2.2.3 The Stan Musial Veterans Memorial Bridge**

The new Mississippi River Bridge (MRB) project, named the Stan Musial Veterans Memorial Bridge (Figure 2 3), connects St. Louis, Missouri to East St. Louis, Illinois. The project consisted of designing and constructing a new, four-lane, long-span, cable-stayed bridge across the Mississippi River one mile north of the existing Martin Luther King Bridge. Additionally, the project included a new North I-70 interchange roadway connection between the current I-70 highway and the new bridge, with further links to the local St. Louis street system at Cass Avenue. On the Illinois side, the project included a new I-70 roadway connection between the existing I-55/I-64/I-70 tri-level interchange and the main span, along with significant improvements at the I-55/I-64/I-70 tri-level interchange in East St. Louis that connects to the new I-70 connection leading to the 1,500-ft main span. The initial design for this project was a sleek cable-stayed bridge for the main span as well as other associated highway projects on both the Missouri and Illinois sides, which stakeholders estimated at between \$1.8 billion and \$2.2 billion. With Federal funding of only \$280 million, this initial design proved to be much too costly.

Therefore, the Missouri Department of Transportation (MoDOT) and Illinois Department of Transportation (IDOT) proposed a smaller-sized bridge design and implemented the use of alternative technical concepts (ATC) in the bidding process under a design-bid-build project delivery method, allowing prequalified

contractors to develop and submit confidential and innovative ATCs to deliver a high-quality project with realized cost savings.



**Figure 2-3. Stan Musial Veterans Memorial Bridge. Photo courtesy of the Illinois DOT.**

The partnering process resulted in a successful project due to:

- Early involvement of key stakeholders,
- Facilitated partnering meetings, bringing together the major stakeholders,
- Open communication and sharing of information,
- Implementation of a dispute resolution escalation ladder, and
- An extensive public outreach program based on issues raised in the partnering meetings.

Overall, MoDOT considered the MRB project a success. In total, the project won 15 different awards and was a finalist for the 2014 America's Transportation Awards competition in the categories of best use of innovation, under budget, and quality of life/community development. Achieving this level of success was a result of utilizing formal partnering of the key project stakeholders.



## Chapter 3. The Partnering Spectrum

### 3.0 Introduction

The mechanics of partnering have evolved since it was first introduced to the highway construction industry in the early 1990s. Early implementers advocated holding formal partnering workshops<sup>5</sup> led by paid external facilitators. They publicized partnering's benefits and espoused that the investment of the time and resources to garner better working relationships among state personnel and construction contractors prior to starting the complex process of constructing a highway project added value in the long term. Research on those early efforts uniformly confirmed that partnering reduced construction claims among other benefits. The result was a movement by AASHTO members to experiment with the approach, which met varying degrees of success across the nation.

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"Some of the perceptions found in the AASHTO survey for choosing to not use formal partnering are: lack of familiarity with the process, limited resources to commit to a formal partnering program, and the difficulty in measuring tangible results from partnering."

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*Pinto-Nunez and Gransberg, 2016*

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Surveys conducted by the AASHTO Subcommittee on Construction in 2012 and 2015 found that a number of states that had tried partnering had stopped, citing an inability to make a compelling business case for expending the time and resources involved in conducting formal partnering workshops. Some of the reasons cited are as follows:

- Repetitive workshops involving the same DOT and contractor personnel.
- Longstanding business relationships that predate the advent of partnering that showed little, if any, improvement due to the workshop experience.
- No discernable improvement in project claims experience.
- Difficulty justifying taking the time and expense to formally partner routine types of projects such as overlays, etc.
- A sense by DOT personnel that construction contractors may leverage the workshop-developed charter to provide allowances outside of the project contract and by construction contractors that the state employees would not live up to promises made in the charter; i.e. neither side was prepared to trust the other.

### 3.1 The Spectrum of Partnering Intensity

The research conducted for this edition of the *AASHTO Partnering Handbook* found that the result was actually a tacit acceptance by both DOT and construction industry employees that the principles of partnering were indeed valuable and that practicing them did improve overall project performance, but the improvement was one that was difficult to quantify in terms of a classic benefit/cost ratio. Therefore, recognizing that all the reasons listed above were valid, a number of DOTs, led by Texas DOT (TxDOT), chose to

<sup>5</sup> The term "formal partnering" is used throughout this handbook to denote the externally facilitated partnering workshop described above.

employ the principle of partnering without the benefit of an externally facilitated workshop. This practice became known as “informal partnering.” A 1998 TxDOT study<sup>6</sup> of over \$2.0 billion worth of partnered and non-partnered projects recommended that three elements of the formal partnering process be included in TxDOT preconstruction conferences for those projects where formal partnering was deemed to be unnecessary:

1. Issue identification,
2. Issue resolution, and
3. Dispute escalation ladder.

The evolution of partnering practice eventually led to what is termed “semi-formal partnering” by the Utah DOT. This involves training state employees to facilitate partnering workshops and utilizing them for projects in which they have no personal involvement. At the same time, with the encouragement of the construction industry, DOT upper management began formally including partnering principles in policy documents, standard operating procedures, construction administration manuals, and state-level partnering handbooks. Additionally, enterprise-level initiatives that employed fundamental partnering principles were instituted to resolve systemic issues that had led to or could lead to disputes. Typical examples are state-level joint specifications review committees, regular periodic industry outreach activities, and joint partnering steering groups. This type of activity is termed “institutional partnering” and involves adopting partnering principles as routine agency business practices and codifying them in a manner such that all DOT employees are required to administer construction contracts in the same way. In other words, partnering becomes the way the agency does business regardless of whether or not specific partnering events are applied to a given project.

### 3.1.1 Partnering Intensity

Figure 3-1 illustrates the concept of increasing project-level partnering intensity as the complexity and cost of a given project increases. The intent of the figure is not to say that formal partnering should not be used on all types of projects, but rather to indicate that as the stakes assigned to project success rise, the partnering intensity should also increase. It also strongly advocates institutional partnering as a mechanism for codifying partnering principles as routine business practices.

### 3.1.2 Partnering Intensity Definitions

The following are definitions for the varying levels of partnering intensity:

- **Informal Partnering:** A sequence of processes initiated at the start of the project that is based on mutual objectives and applies specific tools and techniques, as well as project characteristics, to achieve the agreed-upon performance metrics of the project. Informal partnering applies institutional construction manuals and dispute escalation ladders without the presence of an outside facilitator. Informal partnering is usually conducted by the DOT engineer in charge of construction (hereafter referred to as the resident engineer).

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<sup>6</sup> Gransberg et al. 1998.

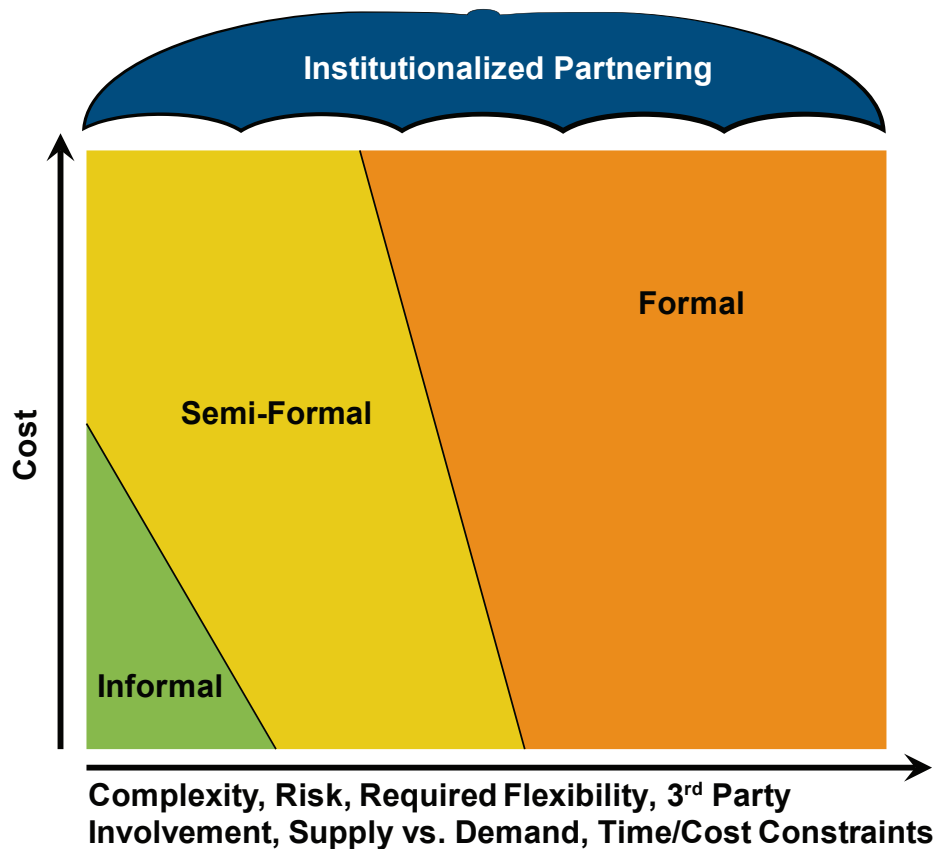


Figure 3-1. The Partnering Intensity Spectrum

- **Semi-Formal Partnering:** A sequence of processes initiated at the start of the project that is based on mutual objectives and applies specific tools and techniques, as well as project characteristics, in order to achieve the agreed-upon performance metrics for the project. Semi-formal partnering is conducted by a trained internal facilitator whose duties are not related to the project.
- **Formal Partnering:** A structured sequence of steps initiated at the start of the project that is based on mutual objectives and applies specific tools and techniques, as well as project characteristics. Formal partnering utilizes an outside facilitator, workshops, charter, and conflict resolution techniques in order to achieve the agreed performance metrics for the project.
- **Institutional Partnering:** The incorporation of the principles and values of partnering into organizational documentation that prescribes the manner in which construction contracts will be administered, transforming the construction administration “process into a cycle of fundamental activities linked by co-operative decision-making activities.”<sup>7</sup>

### 3.2 Organizational Partnering Maturity Modeling

The concept of organizational maturity modeling has been successfully implemented as a tool in the SHRP2 R10: *Project Management Strategies for Complex Projects* guidebook. The process strives to measure the depth to which a specific business practice like partnering has been institutionalized by inclusion in organi-

<sup>7</sup> Bennett and Jayes, 1998.

zational policy, procedure, and process documentation. The fundamental litmus test for organizational maturity is whether or not a newly hired individual is able to refer to documented practices in their job or if they must rely on the institutional knowledge of experienced members to maintain continuity of business practices. Therefore, in the case of partnering, an agency that has a formal project partnering manual has a higher level of maturity than one that merely has a policy letter requiring partnering.

“A major barrier to partnering is the traditional adversarial nature of the construction industry where win-lose situations are promoted.”

*Mollaoglu et al. 2015*

### 3.2.1 Organizational Maturity Theory

Organizational maturity is defined as follows: “The extent to which an organization has explicitly and consistently deployed processes that are documented, managed, measured, controlled, and continually improved.”<sup>8</sup>

The operating term in the above quote is “processes.” Capability maturity modeling is a method to assess organizational maturity. It assists the agency in identifying its ability to adopt and implement new business processes and acts as a yardstick for making project-level partnering intensity decisions that best fit the agency’s capability to actually execute a given procedure or process. The definition given above defines “successful” project management processes as ones that are documented, managed, measured, controlled, and improved. Put another way, the maturity model assesses to what level a given process has been institutionalized within a given organization.

The level of organizational partnering maturity increases when it moves from project-level partnering to establishing permanent features like standing dispute escalation ladders that are applicable to all projects regardless of whether some form of partnering is being applied or not. Maturity modeling is anchored in organizational behavior theory.

### 3.2.2 Applying Organizational Maturity Modeling

The research conducted for this handbook studied the claims history in two DOTs that said they partnered every project to some level of intensity and two that had stopped formally partnering projects when they were unable to identify quantifiable benefits that justified the investment in time and resources. Surprisingly, there was no statistically significant difference in the five-year claims history of the two sets of DOTs (see Appendix D for details). Initially, this might seem to imply that partnering does not work. However, further analysis showed that the two DOTs that had ceased investing in formal partnering had institutionalized the principles and values of partnering to a point where partnering had become a routine business practice and the formal partnering workshop was no longer necessary or valuable.

The organizational maturity self-assessment tool detailed in Appendix C is not an “examination” where the agency is seeking to get the highest possible score, but rather a thoughtful reflection on the organization’s strengths. The outcome is a pragmatic assessment of those areas where an agency can invest resources to improve the consistency of its construction project administration. Therefore, getting a low rating on a given factor does not indicate failure. It indicates that if that factor is important to the successful delivery of a construction project, the agency should invest time and resources to increase their maturity in that area. For

<sup>8</sup> Capability Maturity Model Institute 2013.

example, if a DOT rated itself as “Defined” because it had a partnering manual, it could institute a periodic training program to raise its rating to “Managed.”

Figure 3-2 provides the definitions for the five levels of organizational maturity along with a heat map for interpreting the results of the partnering maturity self-assessment tool, which can be found in Appendix C, along with detailed instructions on how to apply it. The self-assessment is designed to be conducted on a periodic basis and used as a yardstick against which the DOT can measure its progress toward institutionalizing its partnering program.

| Maturity Level | Description                                                                                                                                                                                                                                                                                                                                                         |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0              | No partnering program: No partnering principals are considered or applied.                                                                                                                                                                                                                                                                                          |
| 1              | Basic: There is no formal process, strategies, or designated staff to lead partnering program. Limited partnering practices depend on type of projects and previous experiences. Minimal effort in reducing risks or risk taking for short-term benefits. Ad-hoc strategies are applied by people with partnering experiences and the process is poorly controlled. |
| 2              | Defined: There is a written partnering policy and strategies defined. There is a ritual process, including previous strategies and designated staff (dedicated roles) to lead partnering program. The performance metrics and the control of the documentation depends on the project or the person who is leading the partnering program.                          |
| 3              | Managed. Organization-wide standards and strategies are deployed and being applied in multiple projects. The partnering process is established and managed using metrics and can be adapted to particular projects. There is an organizational training process and incentive program.                                                                              |
| 4              | Institutionalized: Aligned, integrated, and structured partnering strategies, documentation, and a validated system of continuous improvement to achieve business goals. The focus is on continually improving performance through change management (e.g., incremental and innovative changes). This program is a competitive asset of the agency.                 |

|   |                   |                      |          |
|---|-------------------|----------------------|----------|
| 4 | Institutionalized | Desired              | Maturity |
| 3 | Managed           |                      |          |
| 2 | Defined           |                      |          |
| 1 | Basic             |                      |          |
| 0 | No Program        |                      |          |
|   |                   | Improvement Possible | Risk     |

Figure 3-2. Interpreting Organizational Maturity Levels

A very rough example of how the various partnering maturity levels can be interpreted is as follows:

1. Initial: DOT personnel recognize the need to improve contract administrative practices and investigate partnering as a possible solution.
2. Managed: Industry outreach efforts are made on projects that are perceived to be complex or which might devolve into disputes.
3. Defined: Formal partnering is authorized for the DOT. Each operational office develops its own system and pool of facilitators on an as-needed basis.
4. Integrated: The DOT has developed a formal partnering document or manual and has implemented it on a program-wide basis.
5. Optimized: The DOT measures project performance and has put in place program-wide mechanisms to apply the principles of partnering to all projects regardless of intensity level. Feedback is sought and acted upon when required.

### 3.3 Partnering as a Risk Management Tool

Figure 3-2 graphically illustrates the relationship between risk and organizational partnering maturity. It shows that as the principles of partnering are increasingly embedded in the DOT's routine business practices, that overall project relational risks decrease. Relational risks are those that are associated with the interactions between the people who are delivering the project. Relational risk decreases as mutual trust between parties to the project's contract increases. Corporate culture greatly influences the willingness of project managers to trust each other because trust implies giving up some of the historical controls upon which the corporate culture was built.

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"For partnering to be a success, inter-organizational project teams consisting of owners, designers, contractors, and subcontractors must share common goals and objectives illuminating an environment of trust and commitment to the partnership."

*Mollaoglu et al. 2015*

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Research has shown that for partnering to be effective it must first have strong support from each organization's upper management. In other words, project personnel on all sides must have permission to deviate from the corporate culture to which they are accustomed. This ideal harkens back to the fundamentals of risk management. If each party trusts that the other parties will make decisions that are "best for project" rather than "best for self," then the risk that project relationships will sour and negatively impact project outcomes is reduced. Thus, DOTs that employ partnering are tinkering with their corporate culture, and DOTs that institutionalize partnering principles as routine business practices are actually changing their corporate culture. Chapter 10 will delve more deeply into the use of partnering to both manage and mitigate common project risks.

### **3.4 The Partnering Spectrum Summary**

The following are important aspects in regard to partnering intensity, organizational partnering maturity, and partnering risk:

- Over the past two decades, DOT partnering programs have evolved from a simple workshop whose purpose was to address potential disputes before they happened to one that employs varying levels of intensity based on project-specific characteristics and requirements.
- Each DOT has its own level of organizational partnering maturity, which matches its corporate culture, as well as the market in which it does business. There is no “ideal” level of maturity and the “right” level is a function of both the individual agency’s construction program and the maturity of its industry partners.
- Organizational maturity can be measured and improved if the agency desires to fully institutionalize its partnering program. Achieving institutionalized partnering does not mean that formal partnering is no longer necessary. It means that the DOT’s business practices have reached a point where lower levels of partnering intensity will suffice to achieve project performance objectives across the construction program.
- Partnering’s principles are centered on increasing the level of trust between the owner and the contractor.

This handbook also contains several appendices, which include detailed research information, instructions for conducting partnering maturity self-assessment, and templates to assist in the planning and execution of varying levels of partnering.



## Chapter 4. Alternative Delivery and the Role of Partnering

### 4.0 Brief Introduction to Alternative Delivery

Alternative delivery methods are widely used by transportation agencies today. These methods have largely evolved from the desire by agencies to accelerate the delivery of key projects. The implementation of these methods in transportation began in the mid-1980s with the introduction of “innovative contracting” concepts like A+B bidding and incentive/disincentive specifications. Many of the projects that these methods were first used on tended to be larger, more complex projects that required “special attention” to ensure delivery within a specific timeframe. Since this early implementation, these contracting methods have evolved as shown in Figure 4-1 to include more complex contractual structures whereby industry participants have a much more active role in the overall development and delivery of certain projects. These methods include design–build, CMGC, and P3s. As the use of these methods increased, the term “innovative contracting” changed to “alternative contracting methods” (ACM).

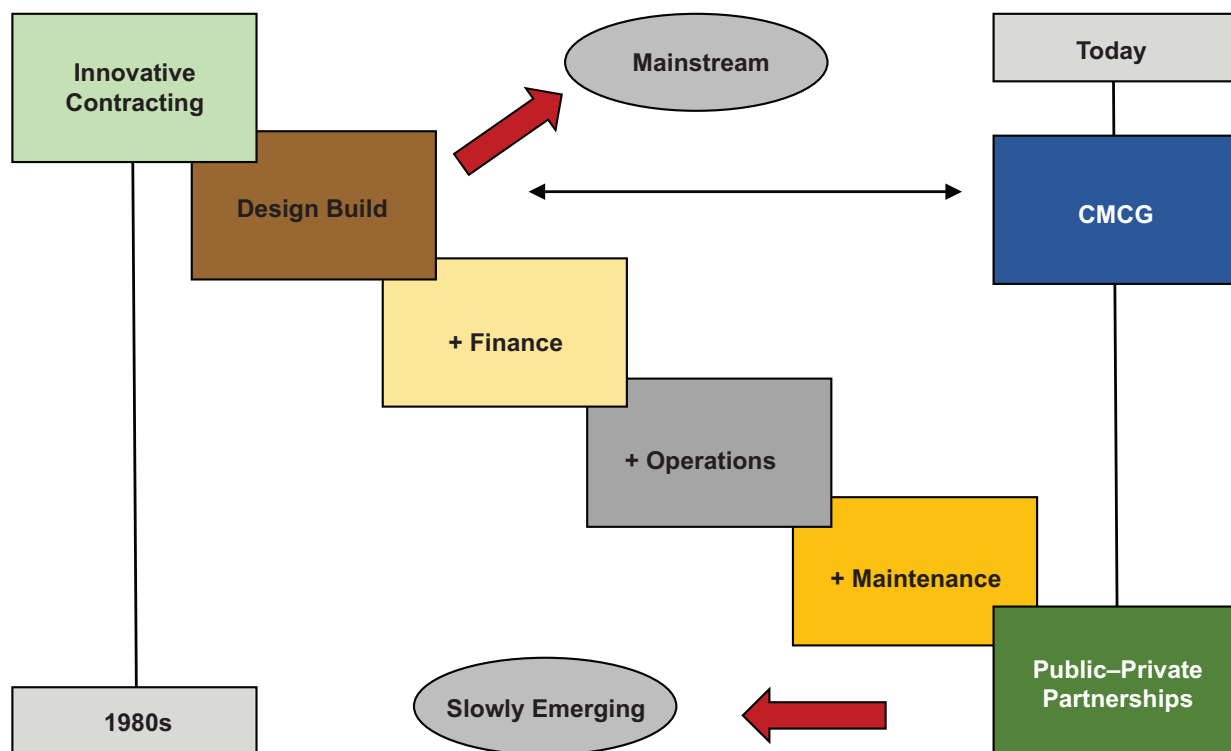


Figure 4-1. The Evolution of Alternative Contracting Methods

The ever-increasing complexity of major projects, coupled with the increasing complexity of the contracting mechanisms and the evolution of the roles of the different participants, has driven the need to evolve the overall project management process as well. Key in this is the need for the alignment of all of the participants in the goals and objectives of the project with a focus on joint problem solving, appropriate risk management, understanding the roles and responsibilities of each participant, and an appropriate “sense of urgency” on critical path activities.

### 4.1 The Drivers and Complexities of Alternative Delivery

These ACM methods require a great deal of effort within agencies, and with their private industry partners, to develop policies, procedures, contract templates, enabling legislation, alteration of business practices, and a variety of other related elements. Implementing new programs and processes can be a daunting task. Coupling these with the many challenges in project development today, it becomes even more difficult.

#### 4.1.1 The Drivers of Alternative Delivery

Regardless of the sizable cost, effort, and cultural change often accompanying the development of ACM methods, the benefits and drivers behind the use of these techniques provide the impetus to implement and expand their use. These drivers include:

- **Project Delivery Acceleration**—ACM stems from owners wanting to deliver specific projects, or programs of projects, faster than they have been able to in the past. There is great pressure on public owners today to deliver projects of all sizes and complexity with less inconvenience to the traveling public, business owners, property owners, and others.
- **Innovation**—As the pressure to accelerate projects has increased, agencies are promoting innovative ideas that often result in positive changes to the original project schedule, scope, and/or other requirements that facilitate the overall accelerated delivery of projects. For example, concepts that allow for the reduction in traffic shifts on highway reconstruction projects, optimization of vertical and horizontal alignments that reduce earthwork, and the use of prefabricated materials that can reduce construction time.
- **Risk Transfer**—Historically, transportation agencies have retained much of the risk of preconstruction evaluations (such as geotechnical data collection and analysis and utility relocations), design, and construction through means and methods type specifications. As accelerated delivery concepts have evolved, more and more risk is transferred to the private sector as these delivery methods permit a post-award allocation of risk to the entity that can best manage it. Particularly in DB and P3 applications, the private sector takes on many different elements that can carry substantial risk, but also encourage substantial innovation and potential reward for the private-sector partners.
- **Alternative Financing**—Agencies continue to struggle for ways to deliver projects given the many budgetary constraints that exist. Delivering key projects may require the use of one or more alternative financing applications, i.e., through some type of loan, such as through the Federal TIFIA or GARVEE programs; through short-term gap financing, like on a design-build finance procurement; or through more complex P3 approaches.
- **Increased Integration, Collaboration, and Communication**—The team approach of methods such as DB, CMGC, and P3s provides key benefits. The public owner working closely with designers and contractors brings a balanced and focused approach that, assuming all partners participate as they should, can result in better overall projects from a schedule, cost, and quality standpoint.

- **Efficiency**—ACMs provide a level of overall project delivery efficiency that can be difficult to achieve through traditional DBB processes. The contractual characteristics inherent in DB, CMGC, and P3s allow the concurrent performance of key activities. Figure 4-2 compares the traditional delivery timeline to that of ACM methods.

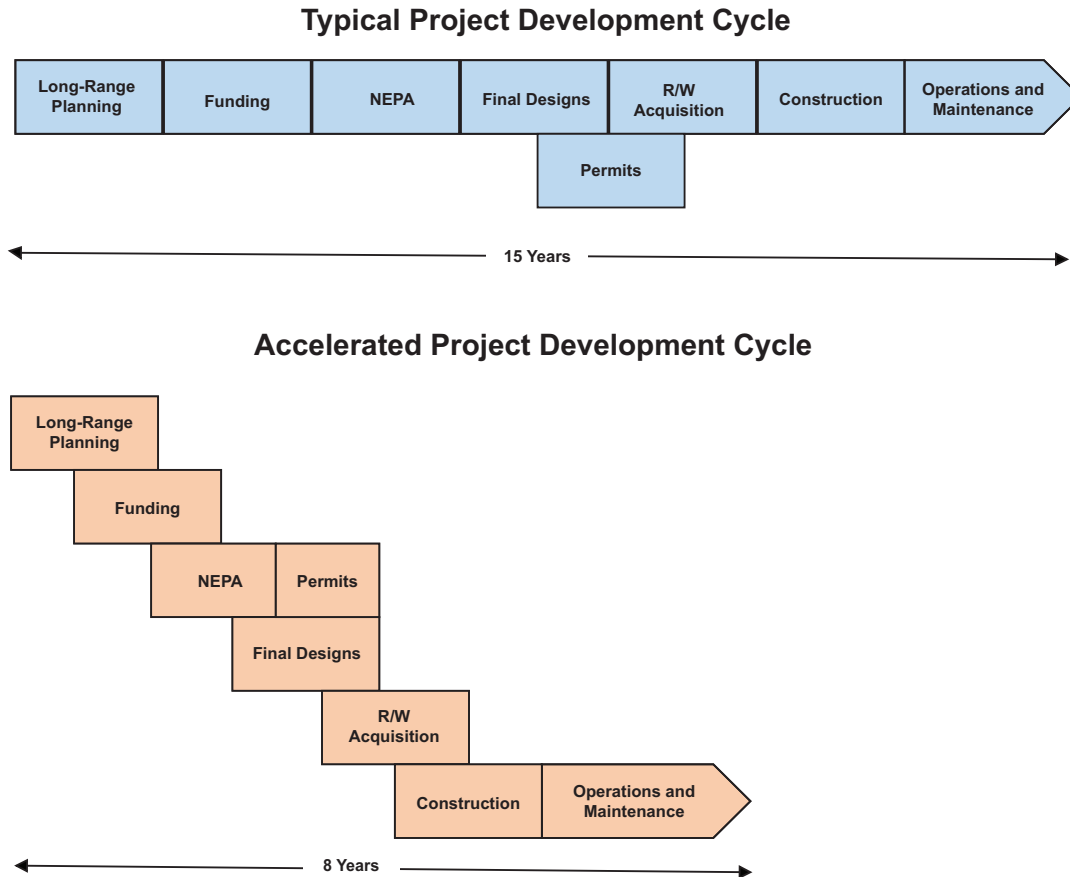


**Figure 4-2. Traditional and Accelerated Project Development Cycles evolution of Alternative Contracting Methods**

Efficiencies are also achieved due to:

- The ability to advance project elements, such as a bridge substructures, based on designs completed for those particular elements while the overall project design (e.g., the bridge including superstructure) is not yet complete.
- Design reviews by the owner for DB and P3 projects are typically performed in an expedited manner.
- Co-location of design, construction, and quality team members help to ensure efficient collaborative processes that reduce time and risk. Co-location, coupled with owner oversight can greatly improve overall project efficiency.
- Constructability considerations are facilitated through this integration of design, construction, and quality team members.
- Cost assurances are provided when DB and P3 contracts are lump sum. This, coupled with the risk transfer elements inherent in these processes, results in cost growth that is typically much

less than with traditional DBB. CMGC, where the project is jointly developed by the owner and the contractor with involvement by the designer, provides a Guaranteed Maximum Price concept that also gives this cost assurance. This is important to owners as they look to properly allocate funds to cover the costs of delivering the project. Studies show much lower cost growth with these contract structures than with DBB.

- **Design input from contractors**—The collaborative process created by coupling the design team with the construction team provides great benefits. These include:
  - General problem solving
  - Constructability reviews
  - A cost-estimating process—that can ensure that evaluations of project options are made based on actual costs, as estimated by the contractor, who has specific knowledge of their equipment costs, location of borrow and/or waste sites that they have specifically procured, material supply considerations, and other factors, rather than based on estimates created by the owner based on historical bid averages with some level of project-specific considerations, but not with contractor-specific cost information.
  - ATC development—ATCs result from the collaborative process between the designer and the contractor as they work together to optimize constructability, general project design, schedule, and many other project elements.
  - More knowledgeable project personnel—These integrated processes make designers better at what they do on all aspects of their work, as they gain direct exposure to constructability issues. Conversely, the same is true of contractors developing a higher level of knowledge on design and design requirements and how it all works together.
- **Improved quality**—A properly developed contract with consideration of key contract provisions, coupled with the collaborative processes typically used in ACM, can result in enhanced project quality. Performance-related specifications normally found in technical provisions in these contracts, coupled with the long-term obligations of a concessionaire, drive a lifecycle view and optimization that cannot be achieved through other approaches. There are many national and international examples of how quality was greatly enhanced with better value to owners in these contract structures.

### 4.1.2 The Complexities of Alternative Delivery

As we consider the complexities of alternate delivery methods, it is important to keep in mind the drivers as noted above and how the implementation of the processes necessary to achieve the results envisioned from those drivers must be put into practice. Three distinct categories are discussed below that help portray these complexities.

1. **Project Complexity**—Contemporary transportation projects can be extremely complex with a multitude of challenges that must be overcome for successful project delivery. These can include:
  - Geometric and other technical design elements necessary to meet the many goals and objectives of the project.
  - Traffic considerations on major reconstruction projects.
  - Safety, environmental, and other requirements.
  - Constructability challenges.
  - Restrictive contract requirements that can include traffic restrictions, environmental moratorium and other constraints, and a wide variety of other restrictive requirements.

- Concerns of third parties, such as utilities and railroads.
- Public concerns including general project impacts, right-of-way considerations, environmental impacts, etc.
- The size and cost of projects.
- The demand by the public to deliver quickly.

Many other issues can be added to this list. Projects will only become more and more complex as the focus continues to turn towards reconstruction and rehabilitation of the existing transportation system and away from new location projects. It is, in large part, the complexities of these projects that drive how specifications are written, procurement processes are designed, contract documents are created, risk allocation is made, and internal contract administration procedures are established.

**2. New Processes**—The policies, procedures, and implementation steps used in Alternate Delivery Methods are a relatively dramatic departure from those used historically by agencies. These elements include:

- Specific contract provisions,
- Procurement steps and documents,
- Industry evaluation processes,
- Consideration and involvement of industry prior to awarding a project,
- Risk and associated responsibility transfer,
- ATC applications,
- Legal and/or legislative considerations,
- Application of Federal provisions (if appropriate)
- Financial considerations in P3 projects,
- Performance requirements,
- Implementation, and
- Process improvement.

Regardless of the cost, effort, and cultural change often accompanying the development of ACM methods, the benefits and drivers behind the use of these techniques provide the impetus to implement and expand their use.

**3. Changes in Roles and Responsibilities**—As industry involvement continues to increase in these alternative delivery approaches, the public-sector role evolves away from traditional design- and quality-related roles into an engineering oversight role. Each of the three predominant alternative delivery methods noted in this handbook involves a change in the roles and responsibilities that historically have belonged to the public owner. The most prominent of these changes include:

- Shifting of design responsibility from the public agency to the private sector in DB and P3.
- Project financing and related efforts on design–build–finance (DBFs) and P3s dictate an engagement in project procurements by agency financial staff.
- In CMGC projects, the guaranteed maximum price (GMP) negotiation process requires an increased focus on risk and the cost of risk decisions by the public sector.
- The operations and maintenance phase of P3 projects shifts these traditional agency roles to the private sector.
- With P3 projects, in particular, outside advisors are hired by agencies to help guide processes, procurements, and project decisions.

## *4.2 The Value of Partnering in Alternative Delivery*



**Figure 4-3. I-35W St. Anthony Falls Bridge Before (a) and After (b)**

The advent of ACMs in project delivery has resulted from the need to compress the delivery schedule as much as possible in order to deliver facilities to the public in the most timely manner. Risk transfer to the private sector has been a key part of this evolution. To implement ACMs, the public agency experiences a dramatic shift in corporate business culture resulting from early involvement of construction contractors in the design process. With DB, the culture shift was dramatic because the engineer of record essentially became a subcontractor to the general contractor that furnished the project's performance bond. The phrase "the fox is guarding the henhouse" was often heard from opponents of DB. The initial concerns proved to be unwarranted and DB has become a common delivery method for public highways. As experience with DB increased, a number of design and construction firms formed strategic partnerships that extended beyond the first DB project because a level of trust had been achieved and they had learned to play to each other's strengths. The bottom line is simple. ACMs require project teams that are highly integrated as organizations and willing to be more collaborative as individuals.

Agencies which have embraced collaborative processes have developed great examples of how public and private entities can come together to accomplish some pretty extraordinary projects. The 2007 emergency replacement of the I-35W St. Anthony Falls Bridge over the Mississippi River in Minneapolis, Minnesota (Figure 4-3) using DB in 339 days is a testament to the potential that can be realized by forming and maintaining highly integrated teams. This is also an example of how partnering can play a key role in the overall project management process.

The principles of partnering are key elements of solid project management. Implementing partnering means recognizing that the personalities of the project participants can affect the success of the project. Taking proactive steps to create a working environment that reinforces the need to collaborate is a key element to ensuring that a project is successful. Partnering is a means to create a culture of trust that relies on open communications to ensure effective project management.

As mentioned previously, public owners, at times, are concerned over allowing “an outsider” to make design decisions that have historically been made by the agency. There are fears that decisions are made to enrich the contractor rather than to enhance the project. Overcoming this challenge requires the development of a sense of team trust where options can be discussed and it is recognized the best option for the project is not always the least cost alternative.

Designing and building transportation projects is a complex, time-consuming task. Imposing a time constraint on the process by accelerating the delivery schedule makes it even more challenging. Add in the shift of responsibilities from the public sector to the private sector and the challenges rise even further. Couple these challenges with that of private financing and the complications rise to an even greater level. The relationships of the project participants become more and more important as these projects and their procurements become more and more complex. So, the true value of partnering in ACMs is the focus on building integrated teams within which good business relationships form the foundation from which crises can be averted and resolved and the project can be delivered as planned.

### **4.3 International Alternative Delivery and Partnering**

The term “partnering” does not have the same meaning in the United States as it has in the international market. U.S. Federal agencies initiated partnering on DBB projects in the 1980s “as a means to avoid disputes and, consequently, reduce the ultimate cost of delivering public facilities.”<sup>9</sup> U.S. partnering charters are nonbinding; whereas, the alliance contracts used in Australia and New Zealand, for example, involve multi-party contracts in which cooperation and collaboration is a binding contract requirement, regulated by a gain and pain-sharing scheme. Partnering in the United States is a business practice that facilitates open communication between the owner and its construction contractor, with the documented output from U.S. partnering workshops being a non-binding agreement to work in a non-adversarial manner. The U.S. version of partnering “refers to an agreement whereby two parties agree to cooperate at a very high level to achieve separate but complementary objectives.”<sup>10</sup> As a result, the major difference between a “partnering contract” in the United States and a “partnering contract” elsewhere is whether the good faith agreements are binding on the parties to the agreement.

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<sup>9</sup> Gransberg et al. 1999.

<sup>10</sup> Ernzen et al. 2000.

### 4.3.1 Alliance Contracting

The alliance approach to project delivery is basically a different means of targeting outcome and sharing risk. Initially, the alliance contract model was a form that is now commonly known as the “pure” alliance. More recently other variants of the alliance model have been implemented which have some significant differences to the “pure alliance” model; and it is considered that these variants may offer a project delivery model that is suited to different situations. These variants are known as “competitive alliancing” and a new form called “collaborative alliancing”. In both these cases, the elements of the project delivery phase are very much the same, including the risk allocations and the project management structures. The key difference between them is that in a competitive alliance, multiple teams compete for the award of the project and in a collaborative alliance multiple members compete for work during the project.

“Governments across Australia support alliance contracting, which now represents one third of the total value of public sector infrastructure projects delivered in Australia”

*Duffield et al. 2014*

Figure 4-4 illustrates alliance contracting’s primary objective: performance. The contract is established based on the equation shown in Figure 4-4. When alliance members collaborate and perform well, they are all rewarded accordingly. The opposite is true if the alliance does not measure up to the “minimum conditions of satisfaction” (MCOS) agreed to in the alliance contract. MCOS are a set of pragmatic success factors that are key to achieving the overall objective of the alliance. An alliance’s mantra is: We all win or we all lose and decisions are expected to be made on a “best for project” basis, supplanting the traditional “best for me” basis.

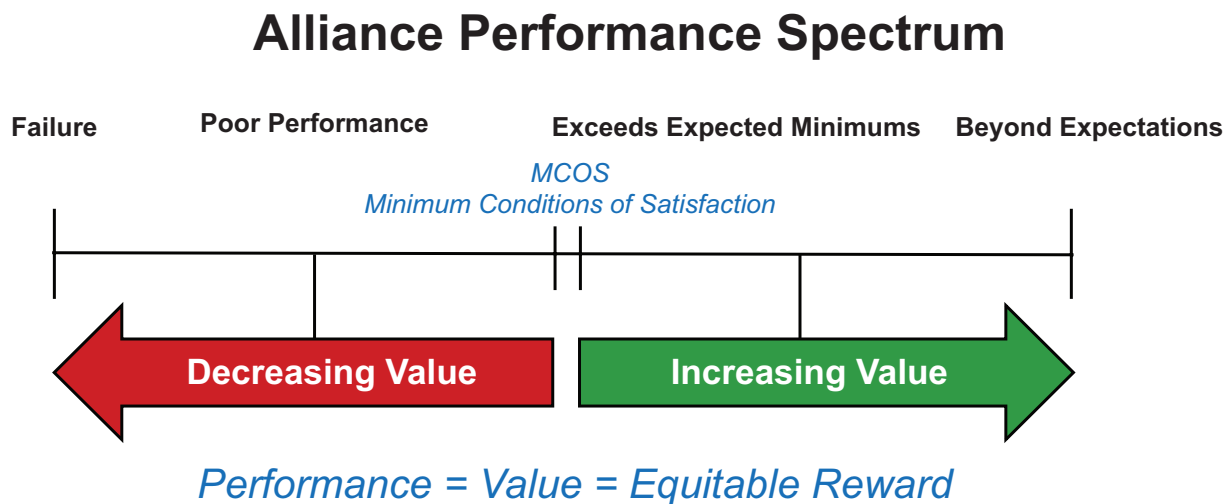


Figure 4-4. Alliance Contracting Performance Spectrum<sup>11</sup>

<sup>11</sup> Adapted from Gallagher, J. 2008

U.S. agencies have been moving toward increasingly higher levels of collaboration and integration in their project delivery processes. If one accepts the values of the U.S. partnering philosophy, it is not a large additional step for a state DOT to take it one step farther and make the mutually developed partnering charter a binding contract requirement. In fact, the Washington State DOT attempted to pilot its first alliance contract for the SR 519 Intermodal Access Project in 2012, but ended up converting it to a conventional DB project based on questions regarding the enforceability of some of the mandated collaboration clauses. The alliance performance record in Australia is impressive. Since 1996, there have been 324 alliance contracts worth over \$60.0 billion with only one failure, which was due to the willful default of one member. According to Wood and Duffield,<sup>12</sup> alliance project performance averages around a 3.5 percent cost savings and 2 to 7 percent time savings compared with other delivery methods.

### 4.3.2 Early Contractor Involvement Contracting

Another promising international contracting method that focuses on a high level of collaboration and integration is called “early contractor involvement” (ECI). This method is different from an alliance in that the construction contractor is selected during the planning and programming phase of project development. Some ECI contracts also require the design consultant to be contractually bound to the contractor, similar to the U.S. DB method whereas others keep the consultant under the owner’s contractual supervision, like the structure of a U.S. CMGC contract. Regardless of the variation in use, the primary objective of an ECI contract is to involve all project stakeholders before preliminary design is initiated, allowing them to contribute input to the right of way acquisition, environmental permitting, and budgeting processes. The goal is to optimize project cost, time, and scope as early as is practical, focusing on proactive risk management to maximize project cost and schedule certainty.

A U.S. agency with the enabling authority to use CMGC and/or DB should be able to emulate the benefits of ECI by merely moving the procurement process for selecting the industry partners to an earlier point in the process. Doing so would entail moving the partnering efforts to an appropriate time based on the early procurement plan.

## 4.4 Summary

The following are the important aspects with regard to partnering for ACM projects:

- ACMs require a shift in organizational business culture, which can create discomfort among those who must deliver the project using the ACM for the first time. Partnering activities furnish a forum in which to discuss members’ specific discomforts with the ACM process and resolve issues before they become disputes.
- Projects delivered using ACMs, to be successful, require all the members of the project delivery team to align their individual business objectives with the goals and objectives of the ACM project. Partnering provides a forum in which this alignment of goals can be achieved.
- The principles of partnering are elements of solid project management and ACM delivery inherently increases project team integration and collaboration. Therefore, partnering is a natural fit for ACM projects.

<sup>12</sup> Wood and Duffield, 2009.



## Chapter 5. Partnering on Construction Manager/General Contractor (CMGC) Projects

### 5.0 Brief Introduction to CMGC Project Delivery

CMGC<sup>13</sup> projects are characterized by a contract between an owner and a construction manager who will be at risk for the final cost and time of construction. In this agreement, the owner authorizes the construction manager to provide input during project design. The owner will either complete the design with its own design personnel or outsource the design work to a consultant. Typically, the contractor is chosen either on a best-value basis through an RFP process, or on qualifications-based selection through an RFQ process. CMGC project delivery involves either two or three contracts. The first is usually a contract with a design consultant, if the owner chooses to not use in-house design personnel. The second is with the construction contractor for preconstruction services during design. And the third contract is for the actual construction. Typically, CMGC contracts contain a provision in which the CMGC contractor stipulates a guaranteed maximum price (GMP) above which the owner is not liable for payment if the project's scope does not change after the GMP is established.<sup>14</sup> Figure 5-1 shows the contractual relationships between the three parties. As you can see, there is a contractual coordination requirement between the CMGC and the designer.

There are pros and cons for every project delivery method and the CMGC delivery method is no exception. CMGC should only be used on projects where it will offer the most benefit to all the parties involved in the project. An Oregon DOT research report asserts that “the benefits resulting from the use of CMGC can be greatest for projects that:

- are high risk,
- possess a high level of technical complexity,
- are governed by significant schedule constraints,
- require complex phasing,
- contain budget limitations requiring a construction cost guarantee during design, or
- on which value engineering will result in substantial cost savings.”<sup>15</sup>

“Higher level of professional trust is required for project success—especially in alternative project delivery. Parties to the contract must communicate accurately to establish and maintain that trust.”

Randall Park, P.E.  
Utah DOT

Research has found that the major benefits of using the CMGC delivery method are:

1. “The ability to fast-track
2. CM/GC design input

<sup>13</sup> The term CMGC has various forms depending on the state, agency, and other factors. Construction Manager/General Contractor (CMGC, CM-GC, CM/GC); Construction Manager-at-Risk (CMGC, CMAR, CM@R); General Contractor-Construction Manager (GCCM, GC-CM, GC/CM); Early Contractor Involvement (ECI).

<sup>14</sup> The term GMP also has various forms depending on the state, agency, and other factors. The proposed AASHTO *CMGC Guidelines* use the term to denote those contracts that have a shared savings below GMP clause. In the cases where there is not a GMP incentive, it uses the terms “project pricing provisions” and “negotiated construction cost.”

<sup>15</sup> Gambatese et al. 2008.

3. Early knowledge of costs
4. Ability to bid early work packages
5. Owner control of design
6. Flexibility during design and/or construction
7. Shared risk allocation.”<sup>16</sup>

Achieving these benefits requires a high degree of collaboration amongst the parties to the project’s contract. Since nontraditional relationships exist in CMGC, it is imperative that all parties understand each other’s roles and responsibilities. Additionally, those DOTs that have implemented CMGC delivery often add a fourth entity to the project called the Independent Cost Estimator (ICE), who provides an independent opinion of probable construction costs that can be compared with the engineer’s estimate and the CMGC contractor’s GMP. Therefore, it is important to consider how the ICE can be brought into the partnering process on those projects where this approach to validating construction price is used.

### 5.1 Components of the CMGC Partnering Process

It is often said that, since the CMGC contractor works closely with both the designer and the owner during the preconstruction phase, there is no need for formal partnering as the nature of the contract is one that promotes healthy relationships and collaborative business practices. While this is certainly true, those desirable outcomes do not happen automatically when the contracts are signed. In fact, that notion implies that the only relationship necessary is the one between the owner and the contractor. This demonstrates a poor understanding of the dynamics of CMGC project delivery. Past experience has shown that the one relationship that is the most important to a successful CMGC project is the one between the designer and the contractor (shown by the dotted line in Figure 5-1). Therefore, this is one aspect to the DBB partnering process that must be altered to successfully use partnering on a CMGC project.

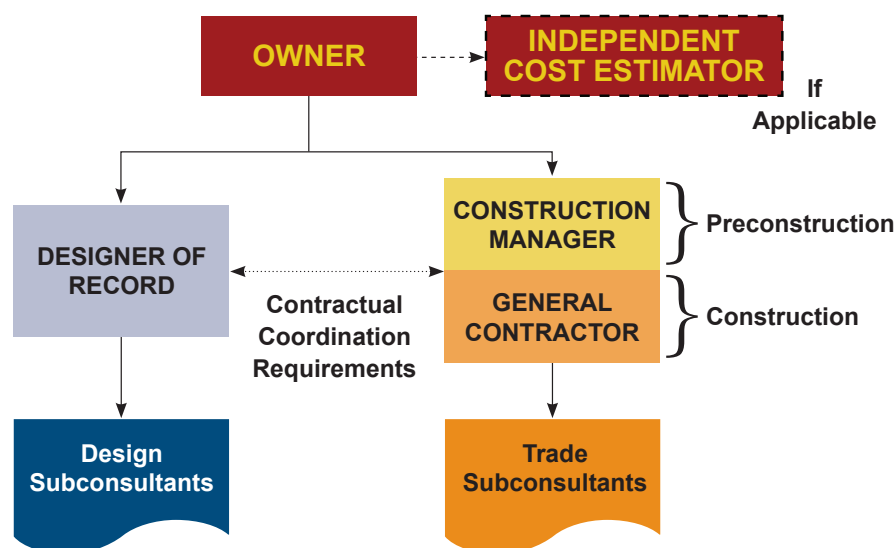


Figure 5-1. Construction Manager/General Contractor (CMGC)

<sup>16</sup> Schierholz et al. 2012.