REPORT TO CONGRESS

Feasibility of Integrated Project Delivery for Military Construction

Office of the Under Secretary of Defense for Acquisition and Sustainment

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Senate Report 117-39, page 336, accompanying S. 2792, the National Defense Authorization Act for Fiscal Year 2022

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Senate Report 117-39, page 336, accompanying S. 2792, the National Defense Authorization Act for Fiscal Year 2022, requests the Assistant Secretary of Defense for Energy, Installations, and Environment to brief the Senate Armed Services Committee on the Department of Defense's (DoD) construction contract approaches and determination if changes in project delivery methods could improve project performance. Due to the detailed response, the Department chose to respond in a report format to address the complex nature of the content. The report includes, but is not limited to:

(1) A review of best practices in the construction market from around the world with a special emphasis on delivering large or complex projects;

(2) A summary of integrated project delivery's (IPD) effectiveness in delivering large and/or complex projects;

(3) An identification of construction projects, by type, where an IPD approach would be feasible and advantageous;

(4) A review of legislative and regulatory obstacles to IPD and any associated recommendations; and

(5) A review of the training and experience of the government managers responsible for delivery of complex projects and identify shortfalls.

EXECUTIVE SUMMARY

Use of Integrated Project Delivery (IPD) constitutes a potential long-term pursuit for the Office of the Secretary of Defense. There are multiple regulatory, legal, and logistical roadblocks to implementation, predominantly driven by the multi-party contract approach, selection methodology, and increased transparency of project costs/budgeting/etc. The balanced risk profile amongst the project delivery team may also be problematic, possibly exposing the Government to additional cost liabilities unless the target price established incorporates

guaranteed maximum price (GMP) limitations. In addition to regulatory and legal roadblocks, IPD will require a fundamental shift in the acquisition community, spanning from education of existing personnel to talent acquisition.

Despite these challenges, we maintain that IPD is an Alternative Delivery Method (ADM) worth further investigation and consideration. Based on our research and understanding, IPD stands to provide the greatest value for the Government/owner in large, mission critical, and highly complex projects that require significant innovation and industry engagement to successfully achieve facility performance specifications. Further exploration of this ADM and others is one of our top priorities. We are actively looking for opportunities to employ IPD and other ADMs on future year pilot projects in the military construction (MilCon) portfolio.

(1) Review of Best Practices in the Construction Market from around the World with a Special Emphasis on Delivering Large or Complex Projects

Providing a concise narrative on global best practices in complex project delivery is challenging given the multitude of variables affecting construction. This includes things such as national laws, regulations, policies, labor conditions, and material availability. However, research clearly indicates ADMs significantly improve cost certainty and schedule reliability by using a collaborative project delivery process. It is important to note that cost certainty is not indicative of reduced total project costs. Generally, this project method can result in a higher total cost while reducing overall cost growth throughout the project lifecycle. Ultimately, ADMs are aimed at creating transparency and properly assigning risk to those that are best positioned to control the risk. Additionally, ADMs improve process efficiency and enable project teams to successfully deliver major construction projects more effectively than traditional methods.

As Congress is aware, MilCon projects have become increasingly complex due to advancement of weapons systems and technological innovations. DoD construction agents frequently rely on commonly rotating leadership and overworked and/or inexperienced personnel to administer these projects. The problem is exacerbated by constrained budgets for project oversight and highly volatile market conditions, resulting in a reduced ability to deliver projects

on time and within budget. Traditional project delivery methods, which include Design-Build-Bid (DBB) and more advanced, but sometimes ill-conceived Design-Build (DB) arrangements, can generate conflicting goals among stakeholders. This can result in diminished trust, limited opportunities for collaboration and innovation, inadequate transparency, and an unbalanced allocation of risk between the Government and the general contractor. Successful project execution through ADMs can alleviate many of these issues while balancing and assigning risk to the appropriate stakeholder.

Owners, agents, and contractors in both the public and private sectors face many of the same market challenges. However, they have been able to minimize cost and schedule growth by employing a more collaborative delivery method, often referred to as an ADM. An ADM is any standalone, end-to-end contract methodology that is not already used by the DoD for MilCon execution. For this report, we will treat DBB and DB as representative methods already in use by the DoD. Though the ADM labels may change across markets, public-works agencies and private industry generally employ the concept of early contractor involvement, in which constructors are brought into a project early in the design process to provide feedback on constructability, value engineering opportunities, and equipment and material selections. This increased integration and transparency enhances flexibility and balances some risk allocation to achieve optimal project efficiency.

Though not exhaustive, the ADMs identified to have delivered the most promising results include IPD, Construction Manager at Risk (CMAR), and Modified Design Build (MDB). Each is briefly described below:

- Integrated Project Delivery fully integrates the project delivery team to leverage each stakeholder's unique expertise and maximize the potential for successful project delivery. The core element of IPD is the contractual relationship amongst the project team: every member of the team (Owner, Architect-Engineer (A-E), Contractor) is aligned in a single contract to deliver with a "project-first" approach to completion. As a result, all members share in the potential risk and rewards associated with changes to project scope, schedule, and budget.

- Construction Manager at Risk (CMAR) is a delivery method that entails commitment by the Construction Manager (CM) to deliver a project within a Guaranteed Maximum Price (GMP). The CM is engaged early in project development, and acts as a consultant to the owner during design (often referred to as preconstruction services). In this capacity, the CM assists with developing the project scope, estimating construction costs, and identifying cost-saving opportunities and performance tradeoffs. At an agreed upon point in project development/design, the CM will submit and commit to completing the project within an acceptable GMP.

- Modified Design-Build (MDB) is a multi-phased procurement method in which a single contract is awarded to a partnered DB project delivery team. MDB is unique in that the initial contract award is solely for the amount supporting project design. To accommodate total project fulfillment, contract provisions are included to execute construction as a negotiated change order. MDB is also distinct from traditional DB in that the initial contract is awarded with only 0-5 percent design definition/development as opposed to a more typical 15 to 35 percent design maturity. Again, this allows for early contractor involvement during scope development and design.

(2) Summary of IPD's Effectiveness in Delivering Large and/ or Complex Projects

Comparatively speaking, IPD incorporates all of the traditional design, construction, and project administration techniques featured in other successful delivery methods. However, it is distinctly different in the way it "strategically realigns participant roles, underlying motivations, and sequences of activities on a project to utilize each participant's resources, talents, and abilities at the most beneficial moment. Success is project-centric under an integrated delivery approach and relies on collaboration. The focus is on collectively achieving shared goals rather than meeting individual expectations. Success is measured by the degree to which common goals are achieved."[1]

[1] American Institute of Architects. "Integrated Project Delivery: A Guide", 2007

Integration of the project team members into a single contract to increase team collaboration, cohesiveness, and promote sharing of project risk and rewards. These are the key elements of IPD which bring a value to the project cannot be overstated. IPD project team members report positive influences related to mutual respect, trust, shared focus on benefits and rewards. Additionally, IPD reinforces collaborative innovation and decision making, early involvement of key participants, a commitment to defined goals, intensified planning, open communication, and identification of appropriate and innovative technologies.

Formation of the project team into a single integrated contract, which includes the owner, ensures open, honest, and thorough discussion of risks to the project. Furthermore, inclusion of all project stakeholders ensures risks are identified and evaluated by each party based on their experience and investment in the project. By identifying issues early on and ensuring transparency, the team can often apply creative solutions that may otherwise be unavailable to a single stakeholder.

Integrated Project Delivery breaks down the traditional stovepipes that often develop in MilCon and brings the project team together with the common objective of delivering the project within set targets. Finger pointing is replaced by shared risks and collaborative problem solving. There is immense value in communication, and IPD is designed to facilitate the flow of information and focus the project team into a cohesive unit dedicated to overcoming challenges as they arise. While the cultural shift described above is largely positive, and the IPD approach does limit the ability of stakeholders, namely the project owner, to hold other partners liable. This is a major component of shared risk that can often times impact the overall effectiveness of IPD as a project delivery method.

Developing an IPD contract for use in MilCon may be difficult and will require a dedicated and creative procurement effort, namely because most federal contracts are a two-party agreement between the United States Government and a Prime Contractor. Some of the contracting actions involved in IPD are contrary to Federal Acquisition Regulation (FAR)-based procedures. Integration of the Government (owner), A-E (designer), and General Contractor (constructor) into a single contract vehicle with more than two-parties (government and

contractor) is a departure from the norm and will require non-traditional thinking within the federal contracting community. Critical trade specific subcontractors and other key stakeholders need to be brought into the process as well. Implementing IPD within the DoD is not an insurmountable task, but it will require significant effort to work through the logistics, legality, and required stakeholder.

(3) Identification of Construction Projects, by Type, where an IPD Approach would be Feasible and Advantageous

Integrated Project Delivery works best for large, complex construction projects requiring heavy multi-trade coordination. Often, large-scale, complex government projects executed with more traditional methods are prone to cost and schedule growth due to coordination and other logistical challenges. The teaming that IPD affords helps identify and eliminate some of the growth potential through communication, collaboration, and transparency. In theory this may work but requires that all government and contract team members have a high level of trust and willingness to collaborate, which is not always the case. Additionally, teams must have sufficient personnel who are responsive in addressing issues in real time. Specific MilCon projects that may be well suited for IPD include medical facilities, highly integrated multi-system/platform facilities, weapons integration/generation facilities, aircraft maintenance and testing facilities, and facilities employing technologies unique to DoD.

The following examples are recent private sector projects successfully executed using IPD:

- Hubbard Center for Children, Omaha, Nebraska. Construction of 500K SF, 10-story pediatric clinical facility which doubled the medical center's capacity. The nearly $500M project was the first IPD project executed in Nebraska and was completed in August 2021, on time and within budget despite project complexity and challenges posed by COVID-19. Since completion, the project has received multiple national level awards for Engineering Excellence.

- New Patient Pavilion, Philadelphia, Pennsylvania. Construction of a new 16-story pavilion featuring more than 500 private patient rooms and 47 operating/interventional rooms. The $1.5B project was officially completed in October 2021, however the project team was able to expedite the delivery of 120 patient rooms in the emergency department and inpatient facility (15 months ahead of schedule) to respond to increased patient demand due to COVID-19.

- Autodesk Inc. AEC Solutions Division Headquarters. Execution of a 55,000 square foot (SF), three-story interior tenant improvement project that included construction of offices, conference rooms, training facilities, a café, and a 5,000 SF customer briefing center. The project featured high sustainability goals and was committed to a "true" IPD agreement incorporating owner, designer, and contractor as well as three major subcontractors. Project finished under budget and only a few weeks behind the aggressive eight-and-a-half-month schedule.

- Walter Cronkite School of Journalism, Arizona State University (ASU). A built-to-suit venture by the City of Phoenix for ASU School of Journalism and Mass Communication. The project consisted of a six-story 230,000 SF facility with classrooms, offices, a university-operated public television station, highly technical support spaces, and ground floor retail. Legal/regulatory constraints prevented the City of Phoenix from entering a multi-party contract or sharing project risk/reward, however the project team adopted many other aspects of IPD, enabling project completion ahead of schedule and under budget.

(4) Review of Legislative and Regulatory Obstacles to IPD and Associated Recommendations

Additional time is needed to fully investigate legal and regulatory obstacles preventing the DoDs use of IPD for MilCon delivery, however initial research does indicate there are some barriers that will need to be cleared. The following list is not exhaustive, but includes some of the laws and regulations that may impact DoD's ability to use this ADM:

- Competition in Contracting Act (Title 10, United States Code (U.S.C.), §2304 and FAR Part 6)
- DB Selection Procedures (Title 10, U.S.C., §2305a and FAR Part 36.104(a))
- Anti-Deficiency Act (Title 31, U.S.C., §1341)
- Certain Contracts Limited to Appropriated Amounts (Title 41, U.S.C., §6303)
- Brooks Architect Engineer Act (Title 40, U.S.C., §1101-1104)
- Exercise of Options (FAR 17.207(f))
- Competition Requirements, Applicability (FAR 6.001(c))
- Pricing Fixed Price Construction Contracts (FAR 36.207)
- Organizational and Consultant Conflicts of Interest (FAR 9.5)

General themes from these regulations that will need to be addressed include:

- Use of contract types other than DB and DBB for construction
- Use of alternative pricing (not firm fixed price) for MilCon contracts
- Use of qualifications-based selection for other than A-E services
- Requirement for full and open competition
- Meaningful and binding price competition to ensure best value/lowest price
- Fixed and definite contract obligations, no indeterminate or contingent liabilities
- Options must be evaluated as part of initial competition
- Conflict of interest (CM consulting on scope/design)

It should be noted that none of these obstacles appear to be insurmountable at this time. While some legislative or regulatory relief may be required, there do not appear to be any specific regulations that preclude the DoD from pursuing any one of the ADMs presented.

(5) Review of Training and Experience of Government Managers responsible for Delivery of Complex Projects and Identification of Shortfalls

Utilizing IPD (or any innovative ADM) will require a culture shift in the acquisition community. As discussed throughout this document, the enabling features of IPD are increased transparency, trust, collaboration, open communication, and shared risk. None of these are considered typical characteristics of current contracting and project delivery methods. In addition to addressing regulations and policies, the DoD will need to retool acquisition training, educate the enterprise on FAR alignment with ADMs, and invest in modern training platforms, resources, and content. Distance learning/education forums like Defense Acquisition University (DAU) will be valuable tools in bringing project managers up to speed with the latest delivery methods and best practices leveraged by the private sector.

It will also be vitally important to communicate and endorse the merits of IPD (and other ADMs) to delivery agents like U.S. Army Corps of Engineers (USACE) and Naval Facilities Engineering Systems Command (NAVFAC), who are responsible for executing a majority of the DoD's major capital projects.

CONCLUSION

From the Government's perspective, there is much to be gained by adopting ADMs. Case studies have shown collaborative delivery methods improve efficiencies though cost and schedule savings, minimize waste, eliminate, or greatly reduce claims, and improve working relationships enabling future success. To achieve these gains, the Government must be willing to adapt education and training, commit to front-end collaboration, and embrace true partnership through shared risk.