

Society of American Military Engineers (SAME)
Cost Engineering Working Group

24 September 2021

SUBJECT: Recommendations from the SAME Cost Engineering Working Group.

1. BACKGROUND

- A. As part of SAME's Mission of Fostering Industry-Government Collaboration to solve problems, SAME focused its *2019 SAME Small Business Conference CEO Roundtable* on cost engineering challenges. The outcome of that roundtable was the organization of a working group to:
 - B. Improve DoD's understanding of financial risk and project costs from the perspective of the AEC industry that will independently assess that risk and costs in their products and services to DoD.
 - C. Provide advice for improving DoD's process for developing cost estimates.
 - D. The working group led a virtual *Cost Engineering Forum* on 29 May 2020 as part of the *2020 SAME Joint Engineering and Training Conference*. As a follow-up to that forum, SAME organized five separate virtual roundtables to examine the following areas of concern:
 - i. Cost of design within design-build contracts – 15 July 2020
 - ii. Risk mitigation of cost input changes – 29 July 2020
 - iii. Scope-cost tradeoffs through project lifecycle – 12 August 2020
 - iv. Pricing information recommendations – 26 August 2020
 - v. Sources of contractor risk driving costs – 9 September 2020
 - E. Each roundtable was attended by 20 to 30 active participants from government and industry. Following the roundtable, moderators are developing separate White Papers with recommendations for the Department of Defense.
 - F. During the *SAME Capital Week* on 25 March 2021, the working group participated in an *Executive Session on Cost Engineering* with AFCEC, NAVFAC OSD, and USACE. At that session, AFCEC, NAVFAC OSD, and USACE reported on their initiative and industry made additional recommendation.
 - G. Finally, on 26 August 2021, SAME conducted an additional virtual roundtable to more thoroughly examine *contractor financial risk and the associated cost of that financial risk*.
 - H. This White Paper includes the updated recommendations and additional comments from the *SAME Capital Week Executive Session* and the *26 August 2021 roundtable*.

2. RECOMMENDATIONS FOR THE DEPARTMENT OF DEFENSE

- A. Cost of design within design-build contracts:
- i. Minimize redesign of the design documents in the RFP package by the DB designer; RFP package should have just enough detail for an accurate independent Government (cost) estimate (IGE) to minimize contractor uncertainty (risk).
 - ii. Although unique DoD requirements necessitate a greater level of control over design and construction than is common in commercial construction, DoD should endeavor to use the DB methodology as intended.
- B. Risk mitigation of cost input changes:
- i. Enforce a culture of partnership between the Government and the contractor.
 - ii. Require project contingency based on risk analysis at budgeting.
 - *For new MilCon projects FY23 and beyond, the Office of the Secretary of Defense (OSD) is phasing-in a requirement to identify the project risk-neutral estimate with the budget submission.*
 - *A risk-neutral estimate has an equal probability of being higher or lower than the actual construction cost, i.e., it has a 50 percent level of confidence.*
 - *After a socialization and assessment period, the percent level of confidence of the estimate (50 percent or possibly higher) will be used to set contingencies for future project budget estimates, potentially beginning with FY25 projects.*
 - *This 50 percent estimate is used to set contingencies.*
 - iii. Use collaboration, risk analysis, and value engineering to develop and validate cost estimates.
 - iv. Government estimators need to assume how a project will be built.
 - v. Adjust specification requirements (quality control, safety, weather, etc.) based on project size, and understand the cost implications of decisions related to security, access and operations.
- C. Trade-offs between cost and scope:
- i. Execute good planning charrettes to develop fully documented and validated 1391s.
 - ii. Execute good design charrettes with all stakeholders.
 - iii. Use risk analysis to quantify project risk and develop a contingency.

- *USACE does use Cost Schedule Risk Analysis (CSRA) with Monte Carlo-based simulation to quantify project risk and develop contingency provides real benefits.*
 - *NAVFAC is implementing risk management improvements and increasing use of CSRA for projects over \$40M.*
- iv. Ensure good communications with entire design team and key stakeholders.
- v. Execute value engineering prior to the 65 percent design review; project development team makes final cost-scope trade-off decisions at the 65 percent review.
- vi. Consider moving to more performance-based specifications to provide more flexibility.
- vii. Review the cost implications of Division 01 specification requirements.
- D. Pricing information recommendations:
- i. Costs on DD1391 are often outdated. There needs to be an update to the DD1391 cost estimate prior to the project being entered into the President's Budget as a Budget Year project. Between concept development and the project going in the FYDP in year 4 or 5 to the time the project advances to Budget Year, the design progresses and the estimate needs to also be developed. The DD1391 estimate often doesn't get updated, so we're stuck with a number generated by an undeveloped design.
- ii. Share cost information across all services for similar facilities.
- *The services do share cost information through the Tri-Service Cost Engineering Steering Committee and Cost Engineering Discipline Working Group. The United Facilities Criteria (UFC) 3-701-01, Department of Defense Facilities Pricing Guide is one such product.*
 - *This data includes project costs at completion.*
- iii. DoD should share cost information with industry.
- *Cost engineering tools are shared with the design community.*
 - *Once a cost estimate evolves into the IGE, it becomes procurement sensitive and cannot be shared.*
- iv. True market research takes time and effort, and often the time is not provided within the overall project schedule.
- *Services are hosting Industry days for larger projects.*

- *NAVFAC is releasing draft RFPs to Industry in advance and soliciting feedback.*
- v. Need to ensure project is well scoped to get accurate early estimates.
- vi. Watch the bigger economic trends and factor them into estimates. The Associated General Contractors of America (AGC) has some good resources.
- *USACE and NAVFAC are tracking economic trends to improve ability to estimate the cost of future programs.*

E. Sources of contractor risk driving costs:

- i. Robust, engaged partnering that includes all key stakeholders mitigates risk.
- ii. Reduce time between completion of design and construction advertisement.
- iii. Engage regularly with industry to provide real-time updates on material and labor availability/cost.
- iv. Share draft RFP's and solicit input from industry especially for more complex projects and take industry pre-proposal inquiries seriously.
- v. Explore construction contract types that more equitably share risk. USACE is currently taking another look at Early Contractor Involvement (ECI) in situations where they engage the contractor in the preconstruction phase and convert/negotiate a firm fixed price for construction at design completion.
- vi. Require more widespread use and sharing of tools that identify and quantify risk. The services are making greater use of CSRA with Monte Carlo-based simulation to quantify project risk and develop contingency.
- vii. Develop better baseline aggregation of cost information that can be more easily checked and applied locally.
- viii. Have a greater awareness of what is happening in the private sector, other Federal agencies and non-Federal public sector and the effect on the construction industry.
- ix. Share information about potential programs and projects to help industry prepare for the workload.

Respectfully presented:



Miroslav Kurka, P.E., PMP, F.SAME

COL (Ret), USA

Mead & Hunt, Inc.