

**CAPITAL PROJECTS ADVISORY REVIEW BOARD
Integrated Project Delivery and Best Value Taskforce**

White Paper

**Optimizing Efficiency in Capital Project Delivery
Within Current
Washington State Public Works Statutes**

November 23, 2009

Executive Summary

This white paper is commissioned and approved by the Capital Projects Advisory Review Board (CPARB) to describe approaches which may be applicable to public projects in approved project delivery methods of Design-Bid-Build (DBB), General Contractor Construction Manager (GCCM), and Design-Build (DB) formats. Job Order Contracting (JOC) and the Small Works Roster procurement methods were not addressed by the Integrated Project Delivery and Best Value Taskforce (Taskforce).

This white paper is intended to provide information to Public Owners on alternative approaches which may be possible. *Public Owners are strongly encouraged to carefully and realistically evaluate risks and benefits inherent in these approaches.*

Purpose of Taskforce and White Paper

Public Owners are coming under increasing pressure to provide better value for capital dollars. In today's world, Public Owners are frequently compared to their private sector counterparts particularly on the cost and schedule performances metrics. Many times Public Owners feel, correctly or not, that current laws do not allow them to procure construction in the most efficient manner possible.

In May 2009, CPARB established the Integrated Project Delivery and Best Value Taskforce (Taskforce). The Taskforce's charter was to look at the potential use of Integrated Project Delivery (IPD) methods and Best Value (BV) selection and management methods. In a series of meetings beginning in July 2009, the Taskforce gathered information on the project delivery needs as expressed by the Public Owners in Washington State, on how the design and construction industry is changing and how it can be improved under current legislation by the judicious adoption of the underlying principles of IPD and BV procurement methods. But first, the Taskforce believed that it was important for all stakeholders to better understand what was already possible within the current statutes.

This white paper lists project delivery approaches available to Owners under current legislation, so that Public Owners may use these as platforms for further deliberations, analysis and refinement, weighed against, benefits and risks inherent in the use of any of the concepts presented here. Some potential pitfalls are identified within this white paper, based on comments by various Public Owners participating on this Taskforce.

This white paper is organized so the numbers (i.e. 4.) are what the Taskforce interprets can be done within a current statute, and the bullet statements that follow discuss some of the pros and cons of taking this approach.

The approaches listed here have conceptual concurrence of the different stakeholders represented in CPARB. The discussions leading to this concurrence were fulsome and substantive. Much of the discussion ranged around the intended audience of this paper – and

specifically the different experience levels between all Public Owners in the state, from long time institutional owners with a sophisticated array of building types to jurisdictions which usually because of size do not have a fulltime staff of dedicated capital delivery personnel. Concern was raised that the less experienced Owners do not misinterpret this white paper as a procedures manual or as carte blanche to implement these approaches verbatim.

Recommended Resources

Public Owners are advised to exercise careful and thoughtful deliberation of risks and benefits in using these tools.

Public Owners should also be aware of resources available in the state which may help them arrive at the appropriate decision. Many institutional Public Owners (General Administration, University of Washington, Washington State University, and the City of Seattle) have contract languages which are online and can be downloaded. More importantly, these agencies have staff who can serve as a resource to other public agencies, either pro-bono or in contracting services through an Inter-Agency Agreement. In addition, the design and industry associations (AIA, ACEC, AGC, MCA, DBIA, NECA, CMAA, and others) have very knowledgeable and experienced staff that can also provide information and advice to Public Owners.

Challenges Facing Public Works Projects

Several challenges arise for Public Owners and all stakeholders when considering more efficient, less expensive project delivery methods:

1. **Subcontractor Input Needed as Early as Possible** – The input of General Contractors and Subcontractors (and maybe even suppliers) during the design process is vital to allow for collaboration with the Public Owner, General Contractor, and Design Team.
2. **Early Integration of Team Members and Information is Useful** – It fosters a collaborative environment from the beginning, integrates schedules, and provides a process intensive focus on the desired outcome a Public Owner expects.
3. **Scale and Complexity of a Project Needs to Match Delivery Methods** – Project overhead costs are sometimes disproportionately high on small projects. There needs to be a correlation between the scale of the work and the size and complexity for the Public Owner so that a project can be delivered in the most efficient manner.
4. **Interest in Qualification-Based Selection By Public Owners** – Owners expressed an interest in a qualification-based selection for ALL parties (designers, contractors, subcontractors, suppliers). However, this process may preclude qualified contractors without a large portfolio and is not desired by some stakeholders.
5. **A High Quality Process and Outcome is Desired** – Need to develop a higher quality process focused on the long term and focusing on the Owner's end goal for the project.

The success or failure of an individual project is driven by many factors. While more tools are always helpful, the success of a tool is not embedded in the tool. The success of any project will be almost solely dependent on the thoughtful application of these approaches and tools, informed by a realistic assessment of business needs and risks for a particular project, for a particular Public Owner.

Design-Bid-Build

Design-Bid-Build (DBB) is the traditional method of construction procurement for public agencies. In its simplest form, the DBB procurement process has the Public Owner describing the complete scope of the project, advertising for bids and awarding to the responsible bidder submitting the lowest responsive bid for construction. Public Owners are still required to take the lowest responsible and responsive bid so this may not lead to the “best value”.

Over time, legislation and current practice have evolved from this basic model:

1. A Public Owner may use post bid Bidder Responsibility Criteria to describe the minimum experience and qualifications for the low bidder to be deemed “responsible” on a specific project.

- Implementing bidder responsibility criteria can add significant time to the schedule to define and evaluate.
- It may be difficult to develop criteria that is objective and justifiable, and requires more time post bid to evaluate for bidder responsibility if a Public Owner ends up evaluating the second or third low bidder, or more.

2. A Public Owner may require that bonds be provided by major subcontractors.

- The additional cost of implementing this should be evaluated by a Public Owner against the benefits of this type of added protection.
- Bonding of a subcontractor provides an independent third party qualification of the subcontractor to both the Contractor and the Public Owner.

3. A Public Owner may retain, directly or through their design consultant contract, contractors, to provide independent pre-construction services such as: estimating, value engineering, constructability, and other preconstruction activities.

- Public Owners electing to take this approach should be aware that those consultant(s) could be precluded from bidding on the project.
- The decision to preclude or not, is one that is specific to each Public Owner with its own statutes, policies, and ethics requirements.
- Furthermore, the Public Owner should be aware of the potential perception that the contractor providing the independent service may be viewed as having an unfair advantage over its competitors; therefore the Public Owner should take mitigating measures, especially those which make the selection process as well as the bidding process as transparent as possible.
- This may also require more time in the design schedule for procuring this consultant contract. The Public Owner may find a very small pool of contractors who are willing to perform these services if they are precluded from bidding.

4. A Public Owner may use software or information systems in both design and construction contracts.

- In such a scenario, the use of a common drawing technology should ideally begin during the design phase.
- Public Owners should explore the strengths and weaknesses of this system and fully understand the applicability of specific software protocol as the documents move from the design phase, the shop drawing phase, the construction phases, and ultimately to the operations of the facility.
- A Public Owner should define a software platform from the many that are available. This can limit competition if only certain Design Teams and Contractors during the design, the bidding, and the construction process are using that specific brand of software. This could create conversion/compatibility issues in the future if the software platforms change and/or the project has a long schedule.

5. A Public Owner may plan on a “preconstruction” period after award of contract to allow time for the Construction Team to provide equipment submittals and coordinated shop drawings.

- Ideally, the preconstruction period allows the Owner, Design Team, and Construction Team to come together as one Project Team and work out the typical construction issues such as equipment and materials submittals and order, coordination of trades and work.
- Constructability (substitutions, deviations and/or equal evaluations, phasing, coordination review, etc.) and value engineering may also occur, and in a more meaningful way. Since the project is typically fully designed within a DBB procurement process, this review may be too late, and could possibly not provide added value to the Public Owner.

6. A Public Owner may include financial incentives in the design and/or construction contract to obtain better performance in specific areas (schedule, cost savings, etc).

- In the use of incentives, Public Owners should be aware of possible unintended consequences that certain incentives to one party do not result in unreasonable transfer of risks and costs to another party.
- Financial incentives can be difficult to justify based on the true benefit in terms of cost savings to the Public Owner and what risks the Public Owner is trying to mitigate. This may lead to disputes about when the “performance” has been met or that the owner created an issue that led the Design Team and/or the Contractor to fail to meet the specified performance. This may be very narrowly used because Public Owners have to be able to define performance in specific terms.

7. A Public Owner may specify an allowance in the bid.

- A Public Owner may specify an allowance in the bid to cover specific items that may be a factor on a particular project. Doing so will ensure that each bidder has accounted for that allowance within their scope and pricing.

8. A Public Owner, in particular those with a large and/or steady portfolio of capital projects, may elect to institute a contractor post construction evaluation program.

- That Contractor evaluation method, including evaluation criteria and scoring either periodically throughout the project and/or at the project completion, should be described and included as part of the bid advertisement.
- In concert with a Contractor Evaluation Program, Public Owners may include responsibility criteria for future projects that Contractors must not receive a “deficient” score for some number of projects with that Owner in order to be considered “responsible.”
- Public Owners should realize that this only provides evaluation scores for contractors that have done work for that specific Owner. Some of the items may be subjective and the score may be argued by the Contractor as being partially due to circumstances created by the Public Owner and that the Contractor is left to deal with the evaluation. This can have legal issues, may give Contractors who have not done any work for that Public Owner an unfair advantage because they have no score and they are evaluated against Contractors who have a score. This program can take years to implement, at a significant Owner cost.

9. A Public Owner may bid out a project with the entire scope of work, or specific elements of a project defined within a performance specification.

- This may be particularly relevant for specific project types, such as elevator (or other conveying system) replacement or upgrade projects, roofing projects and other specific projects.
- For those projects, the manufacturer or vendor’s input and, in some cases design, is very valuable, and Public Owners would benefit from having that input from the specific vendor in meeting project requirements.
- Public Owners may pre-purchase major equipment but may experience issues with equipment fit-out and delivery delay.
- Owners can specify certain equipment/components/systems as sole source if there is justification. Legal questions may arise around when sole source is justified and should be addressed.

Owners may pre-purchase major equipment.

- Pre-purchase may allow the Public Owner the ability to design around that specific piece of equipment, instead of designing around one or more pieces of equipment.
- The Public Owner should make sure that they allow enough time in their schedule for the procurement process if they choose to pre-purchase.

- Owners can specify certain equipment/components/systems as sole source if there is justification. Legal questions may arise when sole source is justified and should be addressed.

General Contractor/ Construction Manager

The General Contractor/Construction Manager (GC/CM) procurement process allows several options which help Public Owners build a more integrated Design and Construction Team early.

1. Allows Public Owners to select a GC/CM using a combination of qualifications and cost as basis of selection.

- A Public Owner may outline specific pre-construction scope items within their RFQ to select a GC/CM for a project.
- The GC/CM may choose to partner with other prime contractors or subcontractors to form the GC/CM.
- A Public Owner has the experience of the GC/CM to help with preconstruction services.

2. A Public Owner, in close collaboration with the Design Team and the GC/CM may consider the use of pre-bid eligibility selection criteria for each of these subcontract packages.

- Public Owners may find that some GC/CM's are reluctant to implement a pre-bid eligibility requirement for their subcontractors unless it is specifically outlined as a requirement during the GC/CM selection process.
- Sufficient time should be included in the schedule to implement the pre-bid eligibility process.
- The Public Owner and the GCCM may include as selection criteria the ability to provide coordination drawings and design assistance.

3. A Public Owner may allow the GC/CM to bid/award major packages prior to establishing the MACC, allowing a subcontractor to be under contract during the design process.

- A Public Owner may have to issue Change Orders to reconcile the final design documents to the actual as-bid documents. The cost of this work may be higher compared to bidding a completed design..
- A Public Owner should make informed decisions about the benefits of early bidding versus the risk of increased costs due to unclear or incomplete scopes of work. In this scenario, issues which the Public Owner must consider the following:
 - a. Understand the level and detail of design documentation needed for each phase of the work.
 - b. What is required for bidding, versus what is required for permitting with local jurisdiction versus what is required for fabrication and coordination?

- c. Develop a list of deliverables from design consultant for each. This list of deliverables may be different from the traditional list of deliverables. Determine which party is responsible for what work. What is extent of liability – who is engineer of record? Who stamps the drawings, as typically required by local jurisdictions? Early involvement of select Subcontractors like M&E should not result in any transfer of design liabilities from the engineers of record to the Subcontractors through their involvement in the design and pre-construction phase, nor should the engineers of record be liable for the coordination and installation of work done by these select Subcontractors.

4. Public Owners, the Design Team, and the GC/CM can develop detailed scope and bidding information sufficient for open, competitive bidding of those packages and should participate in the development of those bid packages.

- However, the GC/CM procurement process does not allow Public Owners to select Subcontractors on a basis other than low-bid. This makes it difficult to bring the Subcontractor members of the Design and Construction Team into the design process early as part of pre-construction services.

5. GC/CM's may utilize Subcontractors as their consultants during the design and pre-construction phase to provide input and cost information on their specific scopes of work, such as: mechanical and electrical.

- There is no guarantee that any subcontractor involved during the design phase will be the successful bidder and actually participate in the construction.
- Public Owners should consider the costs related to pre-construction services.
- If a Public Owner intends to actively use the input of major Subcontractors during the design and pre-construction phase, and it should budget sufficient funds for those added pre-construction services, and establish a distinct scope of work to gain maximum value for the process.
- Costs for the use of BIM as part of pre-construction services on the part of the Design Team, the GC/CM, or Subcontractors should be considered from the standpoint of the benefits gained by doing so.
- This is especially true when it's likely that the process will be repeated as part of the construction coordination performed by subcontractors for certain shop drawings and systems coordination.
- Public Owners should consider if a corresponding decrease in the design documentation work is feasible on the part of the Design Team, but only in the aspects of the design where early bid packages have been awarded and that specific subcontractor input has been incorporated.
- It is noted that any perceived shift in liability from the Design Team to the Subcontractors or vice versa will result in higher fees, a lack of competition, or a shift to firms that are willing to take that risk.

6. In addition to some of the concepts and approaches described for DBB, Public Owners may use the GC/CM procurement process allowing early bidding of

subcontract packages to bring the Construction Team on board early while the design documentation work of the Design Team is being developed.

- The benefits include: having both GC/CM and major Subcontractor input during design documentation to maximize value and cost savings, the ability to purchase major equipment, and the design based on that specific piece of equipment. Instead of: basing the design on one or more generic pieces of equipment; increased ownership and accountability from major subcontractors; direct constructability input on major building systems; drawing coordination during the design phase coordinated with the Design Team and conducted by the installing subcontractors.

7. Public Owners should consider the use of common design and construction software.

- Building Information Modeling (BIM) is considered to be one of the leading tools for 3D Design documentation, but there are still issues in this emerging tool relative to scale accuracy, liability, and effort/benefit.
- Of more critical importance is that a common documentation method is used so effort duplication is minimized.
- The value added to the pre-construction and construction process needs to be recognized by Public Owners when establishing the fees for the design team and GC/CM's, and their subcontractors.

8. The probability of a successful outcome may be increased through a judicious, measured and realistic use of incentives for the entire Project Team (the Public Owner, the Design Team, and the GC/CM).

- Public Owners may choose to incorporate creative incentive/liquidated damages provisions in its contracts with the GC/CM and designer.
- The Public Owner could tie the GC/CM and Design Team incentives together in a single pool and have each of them and the Public Owner measure each others' performance at certain agreed upon milestones during the project.
- Earning the incentive could be based on meeting certain standards as judged by the other parties.

- In a similar way, the Design Team and the GC/CM could both be put at risk for late delivery with liquidated damages.
- While this would be easier in the Design-Build arrangement because there is only one contracting entity with the Owner, but it could work in GC/CM also although current practices in a GC/CM process is to establish liquidated damages associated with missed completion dates but no incentives are established to balance the risk and reward.

Design Build

The Design-Build (DB) procurement process allows several options which help Public Owners build a more integrated Design and Construction Team early.

1. Washington State statutes allow the use of DB in several ways.

- For projects with a value of \$10 million or more, Public Owners must obtain approval from CPARB's Project Review Committee (PRC) to use DB on an individual project, or obtain a three-year certification from the PRC.
- For projects between \$2 and \$10 million, Public Owners must obtain PRC approval for each project. There is no blanket approval for DB projects in the \$2 to \$10 million range and the statute authorizes no more than ten DB projects in this cost range.
- The statute also authorizes the PRC to approve two DB projects that include procurement of operations and maintenance of the buildings for a period longer than three years.

2. In the DB process, the contractor may select and contract with the Design Team and Subcontractors.

- It is a good practice for the DB contractor to bring certain critical Subcontractors on board at the design development phase so that the Subcontractor can participate and add value during the completion of design.

3. A DB process allows Public Owners and DB teams to do the following:

- The DB process will become successful when a team works together toward a common agreed upon outcome.
- The DB process requires a significant level of Owner involvement and requires that the Owner's staff have a high level of understanding and knowledge of the process.
- Prior to the selection of the DB contractor, the Owner will prepare a project scope with performance expectations.
- Once the DB contractor is on board, the Owner should stay engaged and actively participate throughout the design and construction of the project. In the DB process, the Owner typically selects a Design Consultant Team to develop the scope of work and a performance document.

- This selection process is qualifications-based. The selection of the DB contractor is also substantially qualifications-based. Under the DB Contractor the entire team can essentially be prequalified.
- In the DB process, the quality of the end product depends largely on the ability of the team to work cooperatively and productively within the available resources and constraints. The Owner and the DB Contractor must be able to make scope and budget decisions as the project evolves and to focus on meeting a desired, high quality outcome.
- The DB process lends itself very well to the effective use of BIM as a tool for this delivery method. The Contractor and Designer are selected as a team and are under a single contract with the Public Owner. This relationship encourages collaboration and information sharing.
- The DB process allows the Public Owner to negotiate with the highest scored DB proposer. This process may provide the Owner a lot of flexibility to possibly obtain the “Best Value.”

END OF WHITE PAPER

CAPITAL PROJECTS ADVISORY REVIEW BOARD
Integrated Project Delivery & Best Value Task Force
Roster of Participants

Name	Role	Representing	Organization	
Norman Strong	Co-Chair	CPARB	Architects	The Miller Hull Partnership
John Lynch	Co-Chair	CPARB	General Administration	General Administration
Bob Maruska		CPARB	Ports	Port of Seattle
Damon Smith		CPARB	Engineers	DCI Engineering
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