Bellevue Grand Connection: I-405 Crossing – Downtown to Eastrail

Delivery Method Evaluation Memorandum
August 2024

Submitted to
City of Bellevue – Transportation
450 110th Avenue NE
Bellevue, WA 98004

Submitted by

Ken Beehler
Senior Vice President, Advisory Services
WSP USA Inc.
1001 Fourth Avenue, Suite 3100
Seattle, WA 98154

Introduction

This document explores the opportunities and challenges to deliver the Bellevue Grand Connection: I-405 Crossing – Downtown to Eastrail (the GCC) or (the Project), as well as an in-depth evaluation of the different delivery methods under consideration.

The City of Bellevue's Grand Connection program (the Grand Connection) consists of 1.5 miles of interconnected public and pedestrian-focused spaces that traverse a diverse set of site and infrastructure conditions on publicly and privately owned land. It starts at Meydenbauer Bay Park and continues east through downtown Bellevue across Interstate 405 (I-405), connecting to the Eastrail regional trail. It will be a place where people who live, work, learn, and play in Bellevue can walk, bike, roll, relax, gather, eat, and shop. In addition to creating a great experience for people, the Grand Connection will enhance Bellevue's livability, economic development, and environmental sustainability.

A key element of the Grand Connection is the crossing over I-405, which will link downtown Bellevue to Eastrail and the Wilburton neighborhood for people traveling without a car. The GCC will support the transformation of the Wilburton study area into Bellevue's next urban mixed-use community, where improved amenities, greater livability, opportunities for healthy living, and economic vitality will serve the needs of a diverse and growing population.

GCC will start at City Hall Plaza and terminate at Eastrail, ultimately tying downtown Bellevue into over 170 miles of regional trails that connect more than half a million Eastside residents. The purpose of the GCC is to create a safe, high comfort, transformative crossing of I-405 for people walking, biking, and rolling; enhance access to the regional light rail system; and connect downtown Bellevue to the Wilburton neighborhood. This crossing will also be compatible with a future lid park over I-405, which is a long-range vision included in the city's Grand Connection Framework Plan. The GCC is assumed to be a bridge structure spanning approximately a half a mile distance from City Hall and the Sound Transit light rail station to the Eastrail.

The Project is needed to provide:

- Safety for active transportation users
- Multimodal connectivity and access in downtown Bellevue
- Community connection as envisioned in local land use plans

Project funding is anticipated to consist of a mix of state, local, and federal funds and private sources. The City of Bellevue is currently developing funding strategies to complete the project design and to construct the project. The delivery methods discussed in this report have been used on federally funded projects and are, therefore, not limited in any manner by federal funding. However, if federal funding is employed on the Project, the procurement will have to comply with federal requirements.

Delivery Method Summary

The delivery method to deliver the GCC has not yet been determined. The City of Bellevue has requested that WSP evaluate delivery methods as part of its 30 percent design scope of work so that the city can understand which methods may be beneficial given the Project's unique constraints.

In addition to the factors discussed below, the city has not previously delivered a project using the alternative delivery methods discussed in this report, which must be considered in finalizing a delivery method. The city would likely require consultant and legal support to implement any of the alternative delivery methods discussed in this report. The following section provides an overview of each of the different delivery methods under consideration for the Project.

Progressive Design-Build (PDB)

PDB adapts the principle of hiring a contractor in a preliminary arrangement under a primarily qualifications-based selection, without consideration of a construction price during procurement. The contractor is responsible for both the design and construction work, as in a traditional design-build (DB) arrangement. PDB consists of two phases: Phase 1 in which a single entity (known as the design-builder) performs design and preconstruction services and Phase 2 in which the design-builder performs final design and construction. Phase 2 is contingent on the owner and design builder agreeing to a final design and construction price.

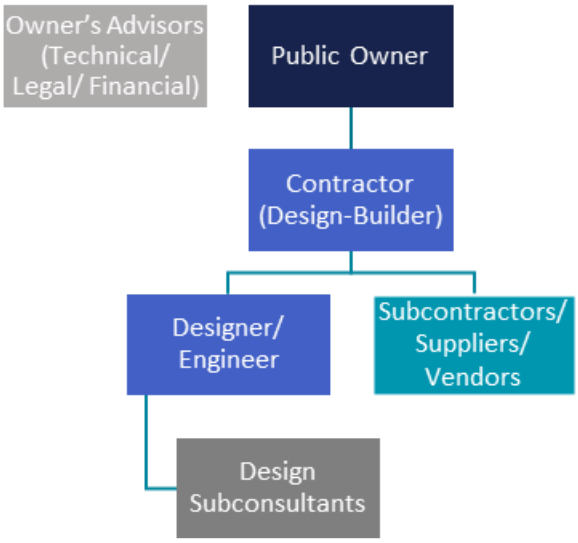


Figure 1. Progressive Design-Build Organizational Structure

During Phase 1, the design-builder will advance the design from the design provided by the owner during procurement. The level of design completed prior to procurement may vary with each project's needs, and PDB projects delivered across the United States have ranged from as little as 5 percent design to as much as 30 percent design when the design-builder starts work. On more complex projects with more third-party approval considerations, it may be optimal to have a more advanced design (i.e., 30 percent design) as a means of de-risking the project early by securing environmental clearance and third-party approvals based on an advanced concept design. While a 30 percent design ultimately provides some constraints on innovation, the trade-off achieved by securing third-party approvals can outweigh the loss of innovation. For the GCC, a 30 percent design prior to procurement would serve the project well, as a 30 percent design can shorten the delivery timeframe, provide a better understanding of project costs, and reduce risk by gaining project partner buy-in before the design-builder is under contract.

Once under a Phase 1 contract, the design-builder advances the design. When the owner and the design-builder determine that enough design has been completed and critical risks have been addressed, the design-builder will submit a proposal to complete design and construction for a price (either lump-sum price or guaranteed maximum price [GMP]) and schedule. The construction price negotiations typically occur when the design is 60 to 90 percent complete. During the negotiation process, an independent cost estimator (ICE) may separately estimate the costs for different parts of the construction to compare them to the price the design-builder submits. If the owner accepts the price, the design-builder will move to the second phase of the work (Phase 2), which consists of final design and constructing the design. The owner may solicit the project for a bid in the open market if an acceptable price cannot be negotiated.

PDB General Advantages

- Early designer/contractor collaboration in the identification and **reduction/mitigation of risks**
- Possible implementation of **early procurement and work projects** to optimize schedule
- **Open-book cost estimating** allowing for greater transparency in project costs
- Potential for greater schedule and cost certainty due to risk mitigation during Phase 1
- Option to create multiple work packages during preconstruction and construction
- **Value engineering/constructability optimization** between designers and contractors

- Owner retains design control during preconstruction phase (as opposed to traditional DB) through collaboration and feedback as the design-builder advances the design, with the opportunity to require adjustments before establishing a construction price
- Opportunity to incorporate unique or "iconic" project features into the design with early contractor feedback on those design decisions
- Could assist with project phasing options
- Deeper understanding of project costs as construction funding is pursued

PDB Risks and Limitations

- Potential for failure to agree on construction price can add time to the Project
- Project funding uncertainties could create difficulties for the construction price negotiation process
- Negotiated price with competitive bidding for subcontractors rather than purely low-bid procurement
- Requires cooperation and collaboration
- Less owner control on final design than design-bid-build (DBB)
- Challenges in preserving "iconic" elements in final design to the city's satisfaction
- Owner must provide input to obtain value from the PDB method

General Contractor/Construction Manager (GC/CM)

Also referred to as Construction Manager-at-Risk or Construction Manager/General Contractor (CM/GC), this delivery option consists of two phases. First, the owner hires a contractor to act as a consultant during the design phase (also referred to as CM) under a primarily qualifications-based selection. It is common to have a 30 percent design complete, but no further, by the time the CM is brought on. This is so that the CM can provide input when design decisions still need to be made so that the contractor can offer meaningful input into the design. If the design is advanced too far, such as to 60 percent completion or more, the contractor's ability to provide input becomes limited. The CM offers suggestions to the owner's designer (internal or hired consultant) based on industry experience with innovations, successful construction practices, constructability issues, cost projections, and project schedule. The CM does not perform design services.

Second, when the owner and the contractor determine that enough design has been completed and critical risks have been addressed, the owner works with the General Contractor (GC) to negotiate a price for the construction contract. This typically occurs when the design is 90 to 100 percent complete. During the GC/CM bid process, an ICE separately estimates the costs for different parts of the construction to compare to the bid the GC/CM submits. If the owner accepts the price, the GC/CM will move to the second phase of the work, which consists of constructing the design. The owner may solicit the project for a bid in the open market if an acceptable price cannot be established with the CM. Under GC/CM, the owner is under separate contracts with a designer and a contractor, as shown in Figure 2.

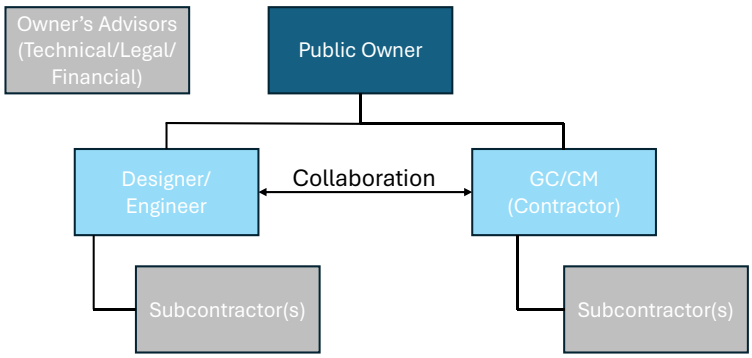


Figure 2. GC/CM Organizational Structure

Typically, GC/CM contracts contain a provision in which the contractor agrees to a GMP, above which the owner is not liable for payment. It should be noted that the GMP is subject to adjustment for change orders. In GC/CM contracts, the owner retains the responsibility for the design by keeping a separate design contract and furnishing

the contractor with a full set of plans and specifications upon which all construction subcontracts are based. The contractor directly contracts with subcontractors and takes on their performance risks for cost and schedule.

GC/CM General Advantages

- Early designer/contractor collaboration in the identification and **reduction/mitigation of risks**
- Possible implementation of **early procurement and work projects**
- **Open-book cost estimating** allowing for greater transparency in project costs
- Potential for greater schedule and cost certainty due to risk mitigation during Phase 1
- Option to create multiple work packages during preconstruction and construction
- **Value engineering/constructability optimization** between designers and contractors
- Owner retains full control over design
- Opportunity to incorporate unique or "iconic" project features into the design with early contractor feedback on those design decisions
- Could assist with project phasing options
- Supports incorporation of "iconic" elements
- Could continue with current design team

GC/CM Risks and Limitations

- Potential for failure to agree on construction price and schedule can add time to the Project
- Potential difficulties managing two separate contracts
- Negotiated price with competitive bidding for subcontractors rather than purely low-bid procurement
- Designer and the contractor must be able to work cooperatively and owner must manage the relationship between them
- Owner bears design risk and some constructability risk

Design-Build (DB)

DB involves a single contract between the owner and the design-builder who provides both design and construction services, as shown in Figure 3. Typically, DB projects are procured on a best-value basis that considers both price and technical factors to identify the preferred design-builder. A DB request for proposal (RFP) generally contains a 30 percent design and technical specifications that govern final design and construction. A DB proposal consists of a technical approach and a lump-sum price to complete the work. The technical approach shows the proposer's approach to the work and may contain innovative concepts. The price proposal is based on the 30 percent design and any additional design performed by the design-builder as part of the proposal process.

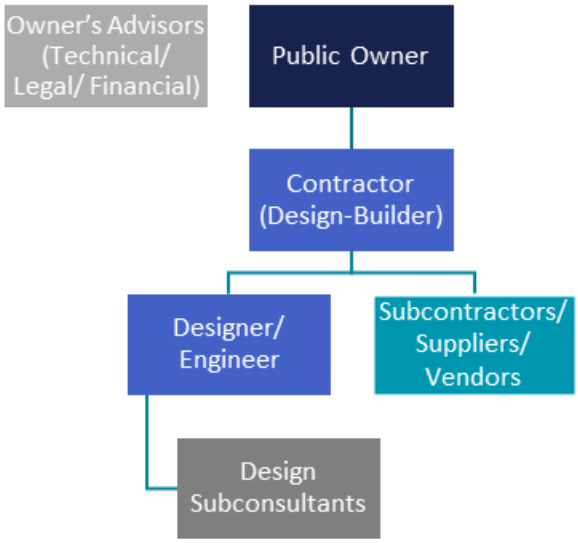


Figure 3. Design-Build Organizational Structure

DB suits the nature of complex projects that can benefit from overlap of design and construction phases and from a fixed-price lump-sum contract. In a DB project, the owner performs oversight of the design-builder by reviewing designs and construction for conformance with the technical requirements in the contract documents.

While DB allows for transfer of design risks to the contractor and facilitates overlapping design and construction phases to expedite the project schedule, a DB procurement is more complex than DBB. It requires the owner to translate the project's design requirements into performance and prescriptive specifications on which the lump-sum bid price is based. Additionally, DB projects require the owner to cede most of its control over the final design, subject only to ensuring that the design-builder complies with the contract requirements.

DB General Advantages

- Streamlines and enhances coordination through **single point of responsibility** for design and construction
- Allows for **competitive innovation**, quality, and constructability optimization between designers and contractors
- Constructability **risk associated with the final design is shifted** to the design-builder
- Allows for **accelerated delivery** by allowing construction to commence before completion of final design of the entire project
- Price competition through weighing the price as part of the best value evaluation process
- Incorporates contractor solutions to phasing challenges
- More assurance of meeting desired 2028 completion schedule with accelerated timeline

DB Risks and Limitations

- Less owner control over final design
- Higher procurement costs and stipends for proposers
- Challenges in preserving "iconic" elements in final design to the city's satisfaction
- Generally follows an accelerated schedule, meaning interruptions can have a significant impact
- City adaptation to varying adjacent delivery schedules could be costly
- Considerable time needed for RFP creation
- Third-party interference or changes can impact the critical path, resulting in costly change orders
- Generally requires obligation of entire value of design-build contract (final design and construction) when the design-build contract is executed
- Due to risk profile, some contractors are avoiding DB projects

Design-Bid-Build (DBB)

DBB has been the baseline form of project delivery for implementing relatively straightforward capital construction projects. It requires in-house design and engineering (or use of a consultant) of all project components (with all the associated design risk retained by the owner), as shown in Figure 4. Under DBB, the owner engages with different parties, such as designer/engineer, construction contractor, and potentially an operation and maintenance provider through independent contracts.

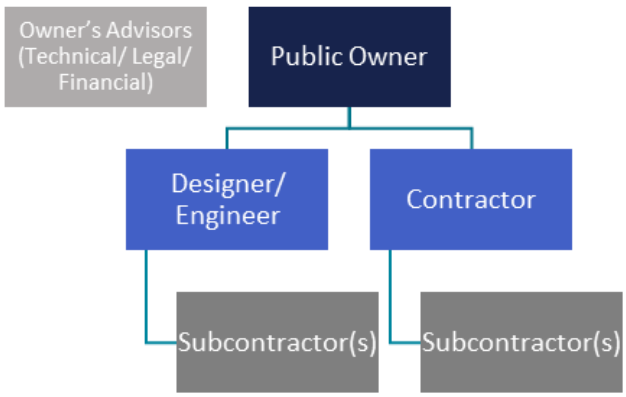


Figure 4. Design Bid-Build Organizational Structure

DBB allows for the greatest amount of owner control over the specifications and design, but also requires more in-house expertise and upfront planning, as well as longer design lead times prior to the construction bid phase. By their nature, DBB projects use separate contracts for design and construction. DBB projects are typically evaluated on a cost-only, lowest price basis, and payment is made on an actual cost, measured quantities basis; however, a best value approach that considers price and technical factors to select a contractor may also be used. This delivery option is suitable

for projects with standard design elements where the owner intends to have more control over design or where price must be the only factor in the selection of a contractor.

DBB General Advantages

- Well established and **easily understood** by all entities
- Owner retains design control
- Tends to provide the greatest amount of price competition
- **No legal barriers** in procurement
- Well-established legal precedents
- Can preserve control over the "iconic" elements of design
- Avoids timeline to seek Capital Projects Advisory Review Board (CPARB) approval and develop new standards contract documents for alternate delivery
- Easily continue on with current design team
- City is familiar with the process and can likely conduct the procurement without additional external support

DBB Risks and Limitations

- Tends to yield lowest quality
- Low level potential for innovation during design and construction due to lack of contractor input during design; construction innovation may be limited by design decisions
- Higher level inspection/testing by the agency
- Initial low bid might not result in ultimate lowest cost or final best value
- Agency bears design risk and constructability risk
- Does not account for qualifications of contractors to be considered unless a best value procurement is used

Delivery Method Evaluation

To evaluate each delivery method under consideration, the city must consider the Project's characteristics and challenges, and how each delivery method may address them or fall short. The next section will provide an overview of the following:

1. Different project partners affected by the Project and their primary considerations
2. Right-of-way (ROW) limitations
3. Challenges related to developing the Project in an urban environment
4. Staging and access limitations for construction work
5. Constructability challenges
6. Interconnectivity with other projects

Constituent Management and Engagement

One of the Project's salient challenges will be coordinating multiple constituents. The constituents involved in the Project, in addition to their wants and needs, should be a key consideration when assessing different delivery methods for the GCC. The following is a list of the GCC's primary constituents, including the owner, as well as an overview of some of the challenges and considerations facing each constituent:

Table 1. Constituent Groups – Primary Considerations

City of Bellevue	Friends of the Grand Connection	Future Project Users	Property Owners
Policy Alignment: Ensuring the bridge aligns with city policies and strategic goals.	*Community Vision:* Aligning the bridge Project with the broader vision for the Grand Connection.	*Safety:* Ensuring the Project's design provides a safe crossing for people walking, biking and rolling.	*Access and Connectivity:* Enhancing access, including pedestrian flow, to Lincoln Center and Metro facilities.
Project Delivery: On time and within budget delivery.	*Community Priority:* Maintaining broad support for the crossing investment.	*Community Priority:* Maintaining broad support for the crossing investment.	*Partnership:* Developing and maintaining partnership in coordination for best holistic outcome through design and construction.
Public Accountability: Maintaining transparency and accountability in Project planning and execution.	*Public Support:* Building and maintaining community support through engagement and outreach.	*Accessibility:* Providing accessible features for all users, including those with disabilities.	*Commercial Impact:* Addressing how the Project affects other nearby commercial properties.
Project Identity: Creating a landmark, user-centric space	Other considerations include cultural features.	Other considerations include public spaces.	*Development Synergy:* Ensuring the Project's design supports current and future development projects.

Evaluation of Each Method

The following table provides a visual representation of the different delivery methods discussed in relation to the key considerations for the Project. The table discusses how each different delivery method may be advantageous or challenging given the specific project considerations:

Table 2. Key Project Considerations in the Context of Alternative Delivery Methods

Consideration	PDB	GC/CM	DB	DBB
Third-party Coordination	Significant coordination possible during Phase 1 to address third-party risk. Greater knowledge of third-party issues identified through project partner engagement when negotiating construction price and schedule. Results in less risk in Phase 2 due to early coordination.	Significant coordination possible during Phase 1 to address third-party risk. Greater knowledge of third-party issues identified through project partner engagement when negotiating construction price and schedule. Results in less risk in Phase 2 due to early coordination.	Limited ability to coordinate during procurement before establishing construction price and schedule. High risk during construction due to tight schedule.	Limited to no ability for contractor to coordinate and de-risk before establishing construction price and schedule. Significant risk of delay claims if third-parties interfere during construction.
Room for Design and Construction Optimization	Yes. design-builder performs final design and can innovate accordingly. This will be critical for managing maintenance of traffic (MOT) and integrating urban design elements.	Yes, due to input provided by contractor on final design and preconstruction services to de-risk the work. This is important for managing MOT.	Yes, due to design-builder performing final design. Less collaborative than PDB.	Limited because design is 100% complete when contractor selected. Construction innovation possible but can be limited by design decisions.
Constructability	Offers more room for innovation and creativity to address the Project's more complex construction aspects, such as the I-405 crossing. Constructability part of Phase 1 design.	Input (including constructability reviews) from the contractor provided early in the Project's design can address the Project's more complex construction aspects such as the I-405 crossing.	Less flexibility to innovate and address constructability challenges compared to PDB and GC/CM. However, design-builder assumes constructability risk and is incentivized to address challenges.	Limited because the design is 100% complete when contractor selected. Significant risk of constructability claims in congested urban area.
Staging	Design-builder can develop design and means and methods during Phase 1 with thorough understanding of limitations. Collaboration can allow design-builder to develop strategies to manage limited space and high land use intensity.	Contractor provides input during the design phase, allowing for real time feedback on staging as the design progresses. Flexible but not as flexible as PDB.	Design-builder's access to site is limited during procurement. Design-builder must work within areas provided, which may limit flexibility. Designer and contractor can collaborate early.	Design and construction are completely separate during DBB, putting the onus of planning staging on the owner. Design performed without contractor input on staging.
Permits	Early involvement of both the design and construction teams allows for a more proactive approach to identifying and resolving permitting challenges. Design-builder commences permit process during Phase 1 and can develop construction price and schedule accordingly.	Continuous dialogue with permitting agencies, which can help in addressing regulatory concerns and obtaining necessary approvals more smoothly. Contractor commences permit process during Phase 1 and can develop construction price and schedule accordingly.	Design-builder responsible for most permits. Permit delay can impact schedule and add costs.	Not as effective as design and construction are separated, making it harder to adapt designs to the realities of the permits required for construction. Contractor does not start permitting process until construction and is constrained by the design. Permit delay can impact schedule and add costs.
ROW Limitations	Allows for early involvement of the contractor during the design phase. The collaborative nature of PDB helps in developing innovative solutions to navigate the project's ROW challenges. The design-builder can develop methods of working within available ROW, identify challenges early, and evaluate potential additional ROW.	GC/CM would be advantageous when addressing ROW challenges as the contractor could assist during preconstruction with developing methods of working within available ROW and assessing additional ROW.	DB requires that the city provide a map of available ROW before procurement so that Proposers can incorporate ROW assumptions into approach and price. Changes in ROW availability (including delay) can result in claims.	As DBB separates design and construction, this can allow for more time for thorough analysis, planning, and coordination with project partners relevant to the Project's ROW requirements. However, changes in ROW availability can result in claims.
Urban Environment	The integrated team approach helps in coordinating complex urban challenges, such as utility relocations and geotechnical issues. The contractor's early involvement allows for better planning and coordination with Sound Transit and other project partners.	The GC's early involvement facilitates better coordination with utility companies, Sound Transit, and other project partners, helping to mitigate urban challenges.	The integrated design-builder can streamline coordination with utility companies and other urban environment project partners. However, with many project partners to coordinate and limited ability to do so during procurement, delay in third-party approvals can result in claims and delay.	A clear design produced prior to start construction can provide a roadmap for navigating the Project's urban environmental challenges.
Interconnectivity with other Projects	The ongoing collaboration between design-builder, the city, and project partners ensures that future developments and interconnectivity requirements, including the potential ITS work on I-405, are continuously considered.	The CM's involvement throughout the project lifecycle helps ensure that interconnectivity requirements are considered during planning for construction.	An integrated design-builder can work effectively to holistically address interconnectivity challenges with projects near the GCC. The inability to coordinate with other projects during procurement may result in challenges during project delivery.	The comprehensive design phase can include plans for future interconnectivity, but this requires accurate and forward-looking design work. Interface risk exists and cannot be mitigated prior to the bids by a contractor.

Consideration	PDB	GC/CM	DB	DBB
City Readiness	The city's prior lack of experience with this method would likely require support from outside consultants. The city may be able to use templates from other projects in Washington.	Compared to PDB, GC/CM offers the city slightly more control of the Project design, which may lead to greater readiness for the city to use this delivery method.	The city's prior lack of experience with this method would likely require support from outside consultants. The city may be able to use templates from other projects in Washington.	As the city has used DBB to deliver projects before, the city would be the most ready to use this delivery method to deliver the Project.
Cost	Selection is based primarily on qualifications, which removes some competition from procurement. Final design and construction price are mostly negotiated rather than bid. However, self-performance limitations and subcontracting requirements introduce competition to a portion of the work. Risk mitigation during Phase 1 can lower risk price.	Selection is based primarily on qualifications, which removes some competition from procurement. Final design and construction price are mostly negotiated rather than bid. However, self-performance limitations and subcontracting requirements introduce competition to a portion of the work. Risk mitigation during Phase 1 can lower risk price.	Best value procurement process introduces competition into the proposal price. DB can result in change orders on complex projects when not properly administered.	Low-bid method introduces the greatest amount of competition at the bid phase; however, DBB on complex projects often leads to change orders that significantly increase the overall price. Additionally, because low-bid incentivizes compromising quality, overall lifecycle costs may be higher.

Progressive Design-Build (PDB)

Using PDB to deliver the Project may be viable considering the challenges related to ROW and interconnectivity with other projects. PDB's emphasis on early designer/contractor collaboration is beneficial for navigating the complex ROW issues associated with crossing the I-405 and integrating multiple urban design elements. This collaborative approach allows for more effective planning and risk management, which is critical in an urban environment where space is limited, multiple project partners with competing interests exist, and disruptions must be minimized. Early engagement with project partners can ensure that construction staging is well coordinated with ongoing and future projects, enhancing overall project efficiency and reducing conflicts with other infrastructure developments.

The key to maximizing the PDB approach is to de-risk the project during Phase 1, a significant component of which is that the design-builder has the opportunity to understand the Project's constraints before negotiating a construction price and schedule. Coordination during Phase 1 of the Project will offer the design-builder a greater understanding of items that impact constructability, sequencing, staging, timing of ROW, and the impact of the other issues discussed above. The design-builder's ability to resolve many of these issues during Phase 1 can lead to greater price certainty and schedule certainty, as well as reduce risk contingency that would be associated with these items using other delivery methods. For these reasons, the contracting industry takes a favorable view toward PDB and is actively encouraging owners to use this method for complex projects, such as the GCC.

Nevertheless, under a PDB structure, the design-builder, not the city, would be responsible for final design. The city would be able to have extensive involvement in the design process, including the ability to require changes before establishment of a construction price and schedule. For this process to operate effectively, the city will need to be involved (itself or through consultants) in the design process by reviewing designs, participating in workshops, and engaging in the collaborative process.

General Contractor/Construction Manager (GC/CM)

Similar to PDB, GC/CM can be advantageous for the Project as it grants more control of the design to the city, fosters early collaboration between the designer and contractor, and allows the contractor to mitigate risk before negotiating a construction price and schedule. Early communication between the owner, designer, and contractor will also be essential, as the Project faces unique challenges that will require extensive early collaboration. For example, the designer and contractor will need to be on the same page early regarding the Project's ROW requirements. Additionally, the contractor can perform similar preconstruction services as PDB, such as evaluating constructability, applying for permits, and coordinating with third parties. However, unlike PDB, the owner still retains ownership of the design. This may be important for the city should they believe that it is ideal for the designer to be a separate entity from the contractor, but still may benefit from early feedback and guidance from the contractor.

GC/CM may also present several challenges for the Project. The early involvement of the contractor can lead to higher initial costs, as their expertise and participation during the design phase requires the payment of fees. Managing continuous and detailed coordination among all project partners can be complex and time-consuming, requiring robust communication strategies. However, the goal of the GC/CM process is to reduce construction costs by managing risks early, which can ultimately outweigh any additional up-front costs. Similar to PDB, the contracting industry views this method favorably and is actively encouraging its use.

Design-Build (DB)

DB integrates the design and construction phases under a single contract, which can streamline project delivery, enhance coordination, and foster innovation. This integration is especially beneficial for managing some of the project's design challenges, as the unified team can develop solutions to navigate the complexities of crossing the I-405 and designing a project that both meets the needs of the project partners and is constructible within the

limited space available. Having an integrated team may also foster the innovation needed to deliver an efficient design that better addresses the constraints of limited space and regulatory requirements. Additionally, the DB method can improve project partner management by providing a single point of responsibility, which simplifies communication and decision-making processes.

However, DB presents numerous risks for this project. Initially, given the environment in which this Project will be constructed, there are many risks that the design-builder will have to consider when pricing the project. Under a DB structure, the design-builder will likely have at most a 30 percent design to use as the basis for the proposal price and will have limited opportunity to de-risk the work before proposing a price and schedule. The end result may be a price with a high-risk contingency and a construction schedule that is subject to interruption by any of the numerous risk factors that are present. DB projects often operate on tight, inflexible schedules, which are inherently at odds when there are numerous project partners that must provide approvals and where there are significant limits on constructability. To price the work, the design-builder will have to assume timeframes for approvals from third parties and if any of those timeframes are disrupted, the design-builder may submit a claim that both increases the costs and time to complete the work. Moreover, without open access to the project site during procurement, the design-builder may not be able to account for constructability challenges when developing its construction approach and schedule. Unforeseen changes may also result in delays and cost increases.

In the past five to eight years, industry has taken a less favorable view of DB due to the risk transfer, pricing at a 30 percent design level, and the risk of claims and delays. Several recent large projects, including in Washington, have had issues receiving proposals on DB projects.

Design-Bid-Build (DBB)

Using DBB for the Project could also be challenging as the Project is particularly complex, and a 100 percent design with zero contractor input will almost certainly lead to change orders due to constructability challenges and likely delays caused by project partner input. Developing an integrated corridor with multiple nodes and functions in an urban environment is particularly complex, which would benefit from having a designer and a contractor to work together from day one. DBB would not offer this level of collaboration. As DBB awards the Project to the contractor with the lowest bid, the city may not be hiring the contractor that has the experience, resources, and expertise to deliver a project of this magnitude. However, under a DBB method, the city will retain control over the design.

GCC Scoring Matrix

The following matrix provides an overview of the "fit" of each delivery method for the GCC, given key considerations mentioned previously in this report. A "1" indicates the best delivery method given a specific consideration, and a "4" represents the least desirable delivery method. Using this scoring approach, the lower the overall score represents the greatest fit:

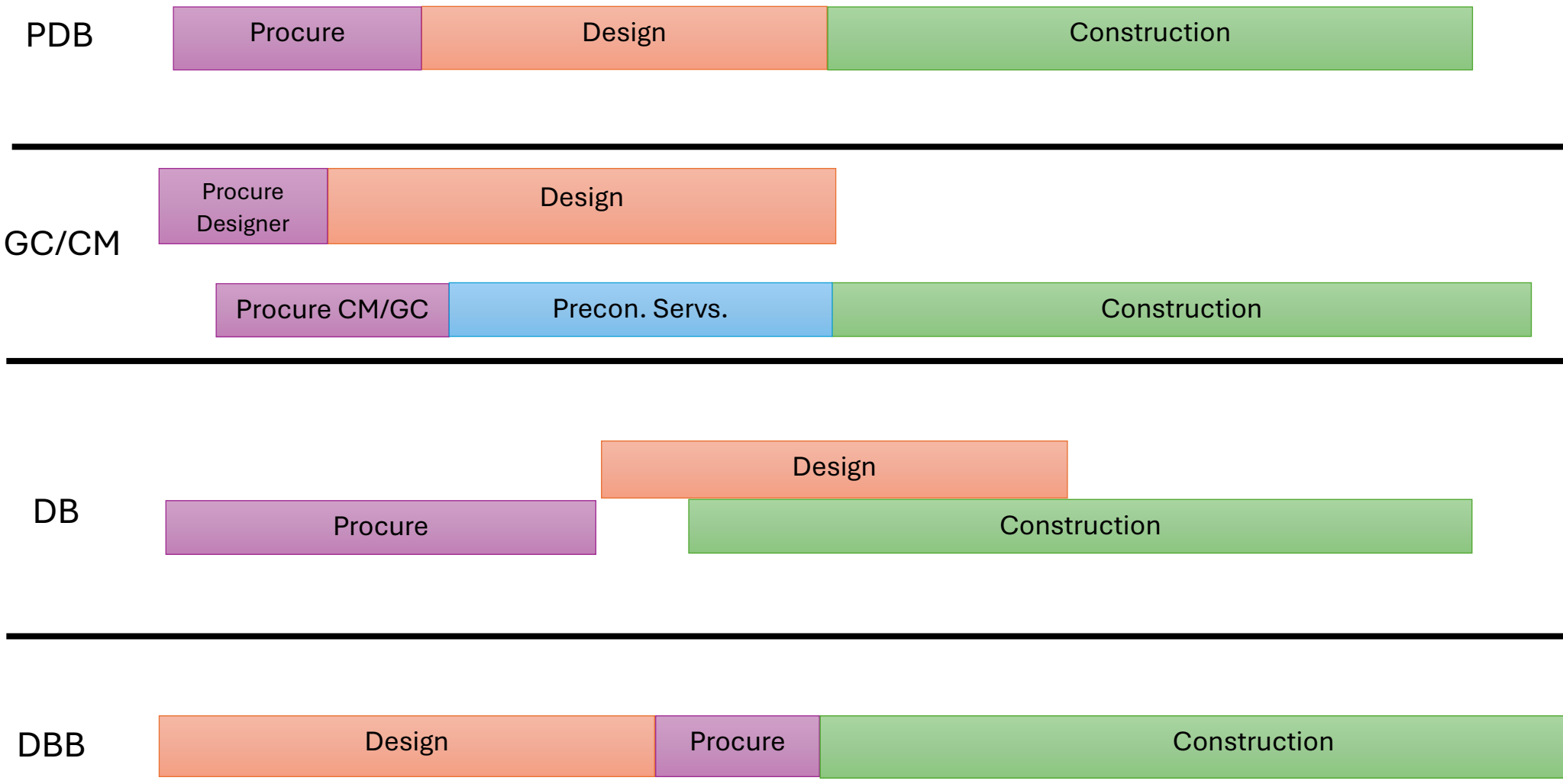
Table 3. Alternative Delivery Method Scoring Matrix

Considerations	PDB	GC/CM	DB	DBB
Design Control	(4)	(2)	(3)	(1)
Third-party Coordination	(1)	(2)	(3)	(4)
Room for Design and Construction Optimization	(2)	(1)	(3)	(4)
Constructability (Creativity and Innovation)	(2)	(1)	(3)	(4)
Staging and Access Limitations for Construction Work	(2)	(1)	(3)	(4)
Permits	(1)	(2)	(3)	(4)
ROW Limitations	(1)	(2)	(3)	(4)
Urban Environment	(2)	(1)	(3)	(4)
Interconnectivity with other Projects	(1)	(2)	(3)	(4)
Cost	(3)	(4)	(2)	(1)
City Readiness	(4)	(3)	(2)	(1)
TOTAL SCORE	**23**	**21**	**31**	**36**

Alternative Delivery Timeline

The following graphic provides a visual representation of the timelines for the different delivery methods being considered for the Project. This graphic shows how procurement, design, and construction can run in relation to each other, or how they may occur simultaneously (depending on the delivery method):

Figure 5. Alternative Delivery Method Schedule Comparison



Conclusion

As highlighted by this report, the GCC faces unique challenges, including project partner management, addressing constructability considerations, and managing the permitting/staging process. The report weighed the merits and drawbacks of each delivery method considered (Progressive Design-Build, General Contractor/Construction Manager, Design-Build, and Design-Bid-Build) against the specifics of the Project. **Based on the analysis provided of each delivery method, Progressive Design-Build and General Contractor/Construction Manager would be the ideal delivery methods given the Project's complexities. The following provides high-level summaries for why these two delivery methods are ideal for the project:**

Progressive Design-Build

- **Enhanced Collaboration and Flexibility:** PDB promotes continuous collaboration between the owner, designer, and contractor from the Project's early stages. This integrated approach allows for real-time feedback and iterative design adjustments, ensuring that the Project can adapt to unforeseen challenges such as ROW limitations and urban environment constraints. This flexibility is crucial for navigating the complex permitting processes and making timely modifications to comply with regulatory requirements.

- **Efficient Approach to Permitting:** The early and ongoing involvement of all parties in PDB helps in identifying potential permitting issues early in the design phase. The two phase PDB process also allows the design-builder to advance permit applications during Phase 1, reducing permitting risk for the Phase 2 work.

- **Optimized Staging and Constructability:** PDB allows for continuous constructability reviews and staging planning throughout the Project. The contractor's early input ensures that practical considerations are integrated into the design, leading to more efficient use of space and resources in the constrained urban environment. This helps in minimizing disruptions to traffic and local businesses and ensures better interconnectivity with other ongoing and future infrastructure projects, enhancing overall project efficiency and effectiveness.

- **Project Partner Coordination:** PDB can foster greater project partner coordination during Phase 1 of the Project. As part of the preconstruction services performed during Phase 1, the design-builder will coordinate with project partners to incorporate their considerations into the design and future construction requirements. Coordinating with project partners during the early stages of design for a project as complex as the GCC significantly derisks the Project overall by reducing the risk of project partner interruption of final design and construction.

General Contractor/Construction Manager (GC/CM)

- **Owner Control of Design:** GC/CM would provide the city with control over the Project's design, while still involving the contractor early on. This may be important if the city intends for the designer to remain separate from the contractor, but still may benefit from early feedback and guidance from the contractor.

- **Early Contractor Involvement:** GC/CM involves the contractor early in the Project's development process during the preconstruction phase. This early contractor involvement can help identify potential constructability issues, streamline design adjustments, and develop a more realistic project schedule and budget.

- **Enhanced Collaboration and Flexibility:** Similar to PDB, GC/CM offers ample opportunity for collaboration between the designer and contractor during the preconstruction phase. The key difference is that the designer is a separate entity from the contractor.

- **Flexibility in Managing Unforeseen Conditions:** GC/CM provides flexibility in managing and adapting to unforeseen conditions and challenges that are common in projects with ROW and permitting complexities. The contractor can propose solutions and make necessary adjustments during the preconstruction phase, which is prior to negotiation of the construction price and schedule. This opportunity can mitigate potential change orders during construction.