TDOT
Department of Transportation

Progressive Design Build Standard Guidance Document

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Document purpose

The purpose of the Progressive Design-Build (PDB) Standard Guidance Document is to outline the Tennessee Department of Transportation's (TDOT's) general process for procuring and administering transportation projects through the PDB project delivery method. This document communicates the key aspects of TDOT's PDB processes to TDOT staff, construction industry, and the design community.

This document describes processes and procedures that are specific to PDB projects, from initial project scoping to construction completion. In addition to referencing requirements for PDB delivery established by local and federal laws and regulations, the guideline's content is drawn from national best practice in PDB delivery as well as common TDOT practices for procurement and project delivery following TDOT's Project Delivery Network (PDN). TDOT staff are expected to follow the processes outlined in this guidance document, unless otherwise approved by TDOT's Director of Alternative Delivery.

Who will use this document?

This document is written primarily for the TDOT employees procuring and managing PDB projects/contracts. It may also be used by other TDOT personnel, consultants, and contractors to better understand the steps in delivering a PDB project.

How will the document be updated?

This document is a compilation of best practices and lessons learned gathered from PDB projects that other transportation agencies have delivered. TDOT may revise any part described herein, with or without notice. This document is a living document that evolves as TDOT's Alternative Delivery Program progresses and as TDOT further identifies agency-specific best practices.

1 Introduction

This Chapter 1 provides an overview of the Progressive Design-Build (PDB) project delivery method, including the current best practices, established laws and regulations, and a comparison of the PDB method to that of the traditional design-bid-build (DBB) delivery.

1.1 Background

The Tennessee Department of Transportation (TDOT) has a variety of project delivery methods available to deliver its construction projects. One of these is PDB, which is a newer delivery method that intends to:

- Respond with faster, more efficient project delivery;
- Provide agencies with the opportunity to select a contractor/designer team to finalize the design, construction schedule, and price to construct a project;
- Incorporate contractor input during the preliminary design/preconstruction phase to improve constructability and find more balanced ways to share and manage construction risk; and
- Offer the owner an efficient contractor/designer organizational structure that owns both the design risk and all assigned construction risk to complete the project.

PDB uses a contractor-led team (a design-build team [DBT]) to provide full design, pricing, constructability reviews, and risk analysis during the preliminary design/preconstruction phase. The contractor (as lead member of the DBT) negotiates a price for the construction, and after the owner accepts the price, the DBT finishes any outstanding design and becomes the prime contractor for the subsequent final design/construction phase. The DBT completes the project through a combination of self-performing the work and managing its subcontractors. If TDOT and the DBT are unable to reach agreement on the price for construction, TDOT has the option to terminate the preconstruction agreement, complete the project's design using the original designer or via other methods, and/or procure the project's final design/construction phase through a low-bid procurement (which is further described in Section 5.11.4).

1.2 Federal Laws, State Laws, and Regulations

This section covers federal and state laws/regulations guiding the use of PDB contracting and limitations in Tennessee.

1.2.1 Federal Authority and Requirements

There is no current federal guidance for PDB, and Tennessee Code Annotated (TCA) statute includes PDB under the Construction Manager/General Contractor (CM/GC) regulations. As such, TDOT intends to apply 23 Code of Federal Regulations (CFR) 635 (501-507) Subpart E (Dec.

2, 2016) for certain PDB procurement, price submittal and acceptance, and contracting requirements as described throughout this Guidance. TDOT also understands that the Federal Highway Administration (FHWA) is exploring the application of 23 CFR 636 (the CFR for design-build) to guide National Environmental Policy Act (NEPA) clearance and pricing evaluation criteria, in addition to final design/construction phase administration requirements. As described throughout this Guidance, TDOT has considered both CFRs when developing its process and procedures.

1.2.2 State Authority and Requirements

The authority for TDOT to use PDB as an alternative contract delivery method in Tennessee is pursuant to TCA 54-1-501 through 54-1-508. In accordance with the current state statute, if a proposed PDB contract has a total estimated contract amount exceeding $100,000,000, TDOT must specifically identify the project as a proposed PDB project in the transportation improvement program submitted annually to the general assembly in support of the Commissioner's annual funding recommendations.

Prior to executing a PDB contract, the Commissioner must send written notice to the chair of the transportation and safety committee of the senate and the chair of the transportation committee of the house of representatives.

1.3 Comparison of Progressive Design-Build (PDB) and Design-Bid-Build (DBB)

The project delivery method is a process by which a project is comprehensively designed, procured, and constructed. The steps to complete a project typically include:

- Defining the project's scope;
- Organizing designers, contractors, and various consultants;
- Sequencing design and construction operations; and
- Executing the design and construction work.

Different project delivery methods are distinguished by the way contracts

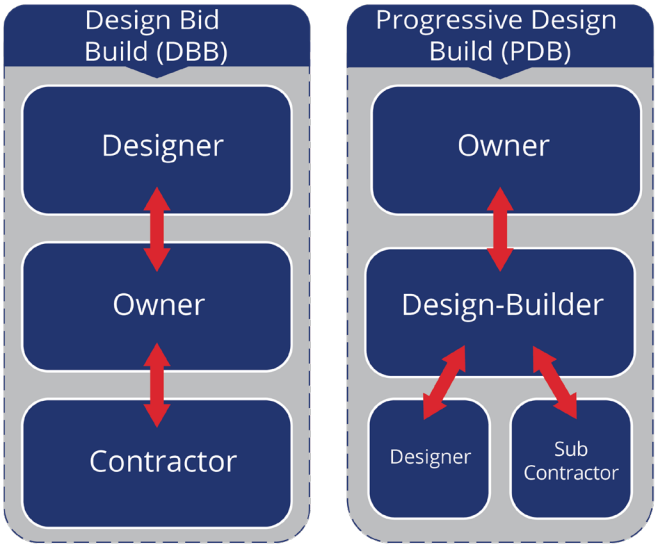


Figure 1-1. Contractual relationships for traditional DBB and PDB

among TDOT, its designers, and its contractors are formed and defined.

This section provides an overview and comparison of two delivery methods—PDB and the more traditional DBB method. The contractual relationship for these two methods is depicted on Figure 1-1.

1.3.1 Design-Bid-Build (DBB)

DBB has been, and continues to be, TDOT's most commonly used project delivery method. Most TDOT staff members are very knowledgeable of the DBB process and familiar with how it works, including the linear nature of the planning, preconstruction (i.e., design), and construction phases. In this delivery method, TDOT staff or a consultant designs a project and creates the construction plans.

When the construction plans and specifications are complete, TDOT solicits competitive bids from construction contractors. Typically, the lowest responsible bidder is awarded the contract and construction subsequently occurs under TDOT oversight. TDOT allocates most of the responsibility for risk and change management to itself when using this delivery method.

1.3.2 Progressive Design-Build (PDB)

In PDB, TDOT procures a design-builder to serve as its DBT. Under a preconstruction services agreement (defined below and in greater detail in Section 4.2.2), the DBT provides input on matters, such as constructability, risk, cost, and schedule.

Once the preliminary design/preconstruction phase reaches the agreed-to level of design for construction to begin (no earlier than the Functional Design Plans to conclude Stage 2 [Footprint Established] as described in the Project Delivery Network [PDN]), TDOT attempts to reach agreement with the DBT on the price, schedule, and terms to construct the project or portion thereof. If the parties reach agreement, the DBT is responsible for completing the design and constructing the agreed to portion of the project under a separate final design/construction contract (as compared to the preconstruction services agreement between TDOT and the DBT). Through this process, TDOT and the DBT openly discuss and assign project risks to the party best able to manage the risk, with the DBT managing the risk assigned to it during construction (see Chapter 3 for more details on risk allocation).

If TDOT and the DBT are unable to reach agreement on the price for construction, TDOT has the option to terminate the preconstruction agreement, complete the design with the DBT's designer, and/or procure the final design or construction work of the project by some other method.

PDB uses an integrated team approach made up of three entities: 1) the Owner (TDOT); 2) the independent cost estimator (ICE) (either in-house or consultant); and 3) the DBT. The PDB contract mechanisms between TDOT and the DBT consist of two separate agreements/contracts by phase:

- A preconstruction services agreement that covers the scope of work to be provided in the preliminary design/preconstruction phase and the compensation for that work.
- A final design/construction contract(s) for the DBT to complete both the outstanding design and the construction work.

Like DBB, TDOT is the primary manager of the project. But with PDB, TDOT takes on new roles as a result of managing the DBT and ICE. TDOT must act as facilitator, negotiator, decision maker, and collaborator, all as an active participant in every step of the preliminary design/preconstruction and final design/construction phases. Committed TDOT personnel, including strong Project Managers, are required for PDB to work well.

The TDOT Project Manager (TDOT PM) makes the final decisions on the project and must be able to make risk-based decisions to meet project deadlines and budget constraints. The TDOT PM must also be able to challenge the DBT's design, estimates, and construction decisions.

While TDOT can still direct certain design decisions, **the DBT typically retains the project's design risk**, and TDOT relies on the DBT's expertise in the following areas during the preliminary design/preconstruction phase:

- The skills and knowledge to estimate the quantities of materials, labor, and equipment needed to construct the project.
- The skills and knowledge to determine the tasks needed to construct the project and to estimate/finalize the costs, duration, and sequence of these tasks.
- An understanding of the availability, cost, and capacities of materials, labor, and equipment.
- The skills and knowledge to identify potential risks (including financial risks) and methods or solutions to mitigate them during the design process.
- **The skills and knowledge to manage its design team in advancing the project design alongside reviewing the design plans, overseeing the design schedule, and providing means and methods to**:
  - Improve constructability,
  - Add innovative solutions,
  - Optimize the construction schedule, and
  - Reduce project cost.

2 Project Selection Process

This Chapter 2 provides an overview of the process used to select progressive design-build (PDB) for project delivery. Determining the most appropriate delivery method starts with developing and reviewing a project's goals and risks and considering project schedule and TDOT available resources to manage the chosen method.

In general, PDB projects place a unique demand on 1) internal TDOT staff (both Alternative Delivery staff, typical design leads, and construction staff) and 2) Owner's Representative (recommended to be used on complex, high-value projects). This is especially a constraint considering the method's more involved preliminary design/preconstruction phase, which is focused on estimating, added constructability review and coordination, and risk allocation/contracting.

While TDOT Alternative Delivery staff remains engaged throughout a project's duration, TDOT's leads for environmental permitting, utility coordination, and right-of-way (ROW) acquisitions/relocations are still very much involved until their respective work is complete (i.e., permits have been received, all utilities have been put to work and completed their adjustments, ROW is fully acquired, etc.).

2.1 Guidelines for Considering Progressive Design-Build (PDB)

Not all projects can and should be delivered using the PDB delivery method. There are pros (advantages) and cons (disadvantages) to this delivery method, considering a variety of factors:

2.1.1 Cost

When considering cost, PDB delivery may yield the following **advantages**:

- TDOT may benefit from cost certainty at the award of construction (e.g., no or limited change orders) due to the design-build team's [DBT's] ownership of risk and the team's increased knowledge of project constraints (cost and schedule impacts) addressed prior to executing the final design/construction contract.
- TDOT may reduce overall project costs from avoidance, allocation, or mitigation of a project's risks in collaboration with the DBT as part of the project's preliminary design/preconstruction phase.
- TDOT may reduce overall project costs from DBT input on constructability, cost/schedule saving innovations, and value engineering.

However, PDB may lead to the following **disadvantages** regarding cost:

- TDOT pays for early contractor involvement in the preliminary design/preconstruction phase.

- PDB lacks a formal competitive bidding process like design-bid-build or design-build. Therefore, TDOT is not assured of receiving the lowest price without competitive bidding. Instead, the price validation process considers "fair market value" from the perspective of an independent cost estimator (ICE).

2.1.2 Schedule

PDB may yield the following **advantages** regarding schedule:

- There is a higher probability of completing construction on schedule because the DBT accepts the schedule risks associated with the design, quantities, constructability, etc.
- There is a potential to run parallel work paths in the schedule and start work earlier using early procurement of long-lead items, utility relocation, earthwork, etc.
- TDOT may benefit from a shortened project delivery schedule due to parallel design and construction activities.

However, PDB may lead to the following **disadvantage** regarding schedule:

- TDOT may experience an increase in schedule duration due to delay in negotiating the GMP and potentially the inability to reach an agreement for final design/construction phase pricing, requiring repackaging the plans and specifications for competitive bids.

2.1.3 Opportunity to Manage Risk

PDB may yield the following **advantages** regarding the opportunity to manage risk:

- TDOT may be able to modify the project's scope during the preliminary design/preconstruction phase with input from the DBT to address and mitigate risk.
- The project may have fewer change orders because the DBT owns the risks associated with its design, its quantities, and how it executes its work (i.e., its means and methods/constructability).
- TDOT may allocate risks best managed by the DBT because the team's design and construction approach are tailored to its abilities.
- TDOT may reduce project risks resulting in improvements to safety, quality, and public impacts because of DBT input during the development of the design.
- TDOT may reduce the risk of design rework and better understand project unknowns (e.g., reduce ROW impacts and acquisitions, identify utilities before construction, etc.) due to construction insight from the DBT. (See Section 2.1.5 for additional discussion on this topic.)
- The DBT is best positioned to understand and apply its expertise to manage project complexity and risk, potentially improving constructability, that results in more efficient execution.
- For a project that requires a high-level of public involvement or if there is public or stakeholder scrutiny around the project's intended outcomes, PDB offers a direct line of communication from TDOT and the DBT to the interested party, allowing for solutions to be definable, incorporated, and committed to in the DBT's design and construction work (considering that incorporation of change in Stage 2 may lead to rework and time lost).

- For a project that has considerable third-party constraints, such as the need to limit acquisition of ROW or relocations, a better understanding of utility relocation impacts, or if a railroad is involved, PDB offers TDOT more definitive answers for solidifying what is truly needed to implement the DBT's design concept and construction approach. PDB also allows TDOT and the DBT to coordinate and communicate directly with a property owner, a utility, or the railroad on project-specific design and constructability solutions that can be evaluated, priced, and ultimately integrated into the DBT's work. (See Section 2.1.5 for additional discussion on this topic.)

However, PDB may yield the following **disadvantages**, including:

- TDOT must more closely manage risk assigned to itself through the preconstruction process to ensure it meets or exceeds its commitments.
- Answers on the extent of ROW needed and project implications from third-party impacts (e.g., utility and railroad) may not be answered as quickly as TDOT and the DBT want to start construction, undercutting some efficiencies in PDB delivery. (See Section 2.1.5 for additional discussion on this topic, as these risks may drive TDOT to select another delivery method [e.g., CM/GC or traditional DBB].)

2.1.4 Opportunity for Innovation

For innovation, PDB may yield TDOT the following **advantages**:

- TDOT gains the benefit of DBT-derived ideas being introduced in the procurement phase for evaluation and then early in the design process for implementation.
- The project can foster innovative thinking because TDOT and the DBT can collaborate on project risks and appropriate assignments for the benefit of the project.
- The project can benefit from DBT insight to enhance delivery through the introduction of new technologies or innovative means and methods. **Note:** this can also be a disadvantage when there is not enough time or expertise to fully vet and approve an innovative idea.
- The DBT directly manages its designer to maximize the DBT's ability to innovate without losing control over design decisions during the preliminary design/preconstruction phase.
- The project may be able to take advantage of DBT-informed approaches or innovation to maintenance of traffic or construction sequencing (as an example), reducing delay to the travelling public.

PDB may yield TDOT the following **disadvantages**:

- The opportunity to fully innovate may be limited by the DBT's engagement in the preliminary design/preconstruction process because of limited preconstruction budget, assumptions that it merely needs to price the work to be "awarded" a construction contract, or a misunderstanding of PDB's intent to collaborate early on innovation to benefit the project.

- Post award, TDOT may not realize full savings from innovations because these saving usually accrue (at least in part) to the DBT via design and construction optimization or value engineering change proposals (VECPs). See Chapter 2 of TDOT's *Design-Build Standard Guidance* for more information on VECPs.

2.1.5 Additional Considerations

Expanded from Section 2.1.3, TDOT should also consider, on a project-by-project basis, implications to the following when evaluating use of PDB, much of which can be mitigated by the opportunity to price and contract work packages to start construction work that is not encumbered by the following constraints.

- **Right-of-way (ROW):** There are risk/reward considerations for defining the exact ROW limits needed for a project versus the time it takes to acquire said ROW. A DBT can help TDOT determine ROW needs based on its construction approach and design refinements. However, once design is at a level to price and the DBT is ready to start construction, the time to secure the acquisitions and/or identified easements can undercut the efficiency of PDB.
- **Railroad/Utilities:** Similar to ROW, there are risk/reward considerations for early coordination among TDOT, impacted third parties, and the DBT regarding design decision impacts on a third-party's facilities. A DBT can greatly assist in defining the "knowns" for how its design affects a third party based on the DBT's construction approach and design refinements. However, once design is at a level to price and the DBT is ready to start construction, the efficiency of PDB may be limited by having to wait for railroad concurrence or the TCA-required utility review timelines.
- **Environmental clearance:** Discussed further in Section 3.3.1 and 3.3.6, there are advantages and disadvantages to using the PDB delivery method ***before*** TDOT has obtained environmental clearance. Prior to securing clearance, collaboration from a DBT is often most effective when developing the Line and Grade Package (under Stage 1 of the Project Delivery Network [PDN]) and then refining that design with the Functional Design Plans (to conclude Stage 2 [Footprint Established] of the PDN). This is the preferred timing to onboard the DBT in line with clearing the project environmentally during Stage 2.

  However, if TDOT is required to clear an environmentally impactful, complex, or controversial project (likely under an environmental impact statement [EIS] or particularly extensive environmental assessment [EA]), it may be a good practice to secure the clearance before moving forward with procuring and onboarding a DBT. However, additional FHWA coordination will be required (including requesting a SEP-14), and there is a significant likelihood an environmental re-evaluation will be needed using the DBT's revised design and construction approach.

Additional guidance regarding what types of projects is suited (or not suited) for PDB delivery is provided in TCA §54-1-501, which states PDB includes:

…instances where the department needs feedback during the design phase due to complex components that require innovation, projects that have public involvement, projects that have third-party considerations such as acquisition of right-of-way or utility relocation issues, or situations where other factors impact the overall schedule. Types of projects not suited for PDB include, but are not limited to, routine maintenance and resurfacing projects or other construction projects that present a low level of technical complexity, a low level of risk management, and simple traffic phasing, and that do not have a compelling need for project acceleration.

In all, if the advantages outweigh the disadvantages for most of the above noted considerations, PDB may be a favorable method of delivery.

2.2 Project Goal Setting

An understanding of project goals, objectives, or desired outcomes is essential to selecting the appropriate project delivery method, and contractors, consultants, and others use these goals in both preparing their proposals and in guiding the project through the preliminary design/preconstruction and final design/construction phases.

For significant transportation projects, a best practice is to establish goals early in the project development process, prior to selecting the delivery method. Using a goal setting workshop, participation or concurrence with setting the project goals should include the TDOT Executive Team, in addition to the following representatives:

- Director of Alternative Delivery
- Regional Alternative Delivery Manager
- TDOT Project Manager (PM)
- Department Specialty Area Staff
- Key Stakeholders[1] and Funding Partners[2]

It is good practice to use a project's purpose and need established in Stage 0 of the PDN to start the dialogue on potential goals. From there, the primary goals can be divided into smaller objectives, prioritized to provide direction to the project team for making decisions.

[1] Oftentimes, transportation projects include significant stakeholder interests beyond the Department of Transportation. In these cases, it is advantageous to include interested stakeholders in goal setting.

[2] To ensure that funding is available for each work package, it is particularly vital to include funding partners in the development of the project goals.

Specific to each project, it is a best practice to have the goals remain consistent throughout the selection, preliminary design/preconstruction, and final design/construction phases. Ideally, the number of goals should be limited to three to five (optimally four), and could be based on:

- Schedule (completing the project by a specific date, completing project phases within a specified timeframe, starting construction by a specified date, minimizing the project delivery timeframe).
- Budget (completing the project on budget, maximizing project scope and improvements with the project budget, minimizing project cost).
- Quality (meeting or exceeding project requirements, selecting the most qualified organization to perform the work and to best address project complexity).
- Scope (completing the project to meet functional objectives and outcomes, maximizing the life-cycle performance of the project, providing innovative solutions, or minimizing inconvenience to the traveling public during construction).
- Risk (providing a design or construction approach that minimizes known/established project risk and enables the Department to transfer, share, and manage those risks).
- Safety (maximizing safety of workers and the traveling public during construction, providing a design to maximize safety).

2.3 Identifying and Analyzing Risk

Risk is defined as an uncertain event or condition that, if it occurs, has a negative or positive (in the case of an "opportunity") effect on a project's goals and objectives. It is a good practice to have an initial assessment of project risks prior to selecting the delivery method. If PDB is selected, continued risk analyses (i.e., assessment, allocation, and mitigation) are critical elements for both project and contract development throughout the initial PDB procurement phase and then into the preliminary design/preconstruction phase with the DBT.

The TDOT Project Manager, with support of the team, identifies and assesses potential risks and preferred risk allocation, building on any previous work completed during Stage 0 of the PDN. As the preliminary design/preconstruction phase progresses, the team (including the DBT) continues to draft and refine strategies to avoid/mitigate impacts to schedule and/or cost, in addition to maximizing opportunities that will add value to the project. Any adjustments are updated in the final design/construction contract to reflect revised risk allocation strategies for the DBT and ICE to understand and price accordingly.

2.4 Project Delivery Recommendation Process

The evolution of alternative contracting methods, such as PDB or construction manager/general contractor (CM/GC), has made it important to evaluate projects early in their development to determine the most beneficial delivery method. TDOT has developed a structured Project Recommendation Tool Worksheet (PRTW) to assess the most appropriate

delivery method. The use of a PRTW as part of the recommendation process is optional, but highly encouraged. The Director of Alternative Delivery may also choose to forego the PRTW approach and simply develop a memo summarizing the project delivery recommendation.

The PRTW is typically prepared during a formal workshop, with workshop participants being selected by the Director of Alternative Delivery. The Regional Alternative Delivery Manager, as overseen by the Director of Alternative Delivery, leads the workshop and develops the Project Delivery Recommendation. The TDOT Project Manager assigned to the project should also participate in the workshop.

The primary objectives of the PRTW are to:

- Present a structured approach to assist TDOT in making project delivery decisions,
- Assist TDOT in determining if there is a prevailing or obvious choice for project delivery, and
- Provide transparency by documenting TDOT's rationale for selecting a particular delivery method in the form of a project delivery recommendation based on the PRTW.

If a formal PRTW is not used, TDOT should base its decision to use PDB for project delivery considering guidance outlined herein and in compliance with TCA §54-1-501.

TCA §54-1-501 includes specific guidance on when PDB is not a suitable delivery method–for routine maintenance and individual resurfacing projects or for projects that present a low level of technical complexity, low level of risk management, simple traffic phasing, or lack of a compelling need for schedule acceleration.

2.5 Project Delivery Selection Approvals

2.5.1 TDOT Approval Process

After a project delivery recommendation has been completed, the Director of Alternative Delivery presents the results of the PRTW (if used) and the recommendations to TDOT's Oversight Committee. Further information about the composition of the Oversight Committee and their roles is outlined in Chapter 3.

2.5.2 Legislative Notice

In accordance with TCA §54-1-501, prior to moving forward with a project using PDB delivery, the TDOT Commissioner sends written notice to the chair of the State Senate Transportation and Safety Committee and the chair of the State House Transportation Committee. The notice must identify the project and reasons for selecting PDB's use. The Director of Alternative Delivery drafts the letter and coordinates through the Legislative Liaison.

2.5.3 Federal Highway Administration (FHWA) Approval / Concurrence

There is no current federal guidance for a state's use of PDB, and the current TCA statute includes PDB alongside TDOT's CM/GC regulations. For federally funded PDB projects, it is recommended that TDOT apply the procurement and preconstruction processes and procedures outlined in the Stewardship and Oversight Agreement for CM/GC and certain procurement and final design/construction phase administration provisions (further described in this Guidance) under 23 CFR 636.

Table 2-1 below summarizes the processes and procedures involving FHWA on federally funded PDB projects, and this Guidance document describes FHWA involvement throughout a PDB project. However, if the project is solely state funded, the user may modify or eliminate specific processes or steps where FHWA engagement is not needed or required.

Table 2-1: Overview of FHWA Involvement on PDB Projects

Guidance Section	Work Activity	TDOT Action	FHWA Action
Procurement of the DBT (Section 3)			
Contract Payment Provisions		Prepare	None
RFP Development Meetings		Invite	None
RFP		Prepare	Approve
RFP Clarifications		Prepare[1]	None
RFP Addenda		Prepare	Consult[6]
Re-issuing Procurement		Prepare	Approve
Cancelling Procurement		Notify	None
Proposal Evaluations		Invite	None
Request for Concurrence in Award		Prepare	Concur
Request for Preconstruction Services/Contract Authorization		Prepare	Authorize[3]
Debriefing		Invite	None
Preconstruction Activities (Section 4)			
At-Risk Final Design Prior to NEPA Completion		Notify	None
Federal Reimbursement for At-Risk Preconstruction Activities Performed at Risk Prior to NEPA Approval		Prepare	Approve
PDB Price Process (Section 5)			
Review of Pricing Milestone Plans		Prepare	None
Attendance at Design Review/Risk Workshop		Invite	None
GMP Variance Report		Prepare[1]	None
Price Reconciliation Meeting		Invite	None
Final Plans for GMP Proposal		Prepare	Copy
Addendum to Final Plans		Prepare	Copy
Construction Price Analysis		Prepare	Copy[4]

Guidance Section	Work Activity	TDOT Action	FHWA Action
Request for Concurrence to Authorize Final Design/Construction Contract		Prepare	Approve[4,5]
Authorization of Construction Funds		Prepare[2]	Authorize[4]
Reject GMP Proposal		Prepare	Concur[4]
Terminate PDB Contract		Notify	None
Use another procurement process		Notify	Concur[4]

[1] TDOT to provide FHWA with a courtesy copy.

[2] TDOT to submit the Request for Authorization to the FHWA, for the project or a work package, after TDOT deems the DBT's GMP proposal to be acceptable – per the PDB Price Validation process.

[3] FHWA to approve a cost or price analysis for preconstruction services prior to authorizing federally funded preconstruction services.

[4] Only construction work packages that are federally funded require FHWA action (i.e., the FHWA does not authorize construction, concur in the award of the final design/construction contract, or concur in the Price Proposal rejection for non-federally funded work packages).

[5] FHWA to review and approve TDOT's price analysis and agreed-to price for construction, or a portion of the project (including early work packages), before authorizing TDOT to proceed with the execution of a final design/construction contract. In addition, before authorizing TDOT to proceed with construction services, FHWA to approve the price estimate for construction costs for the entire project (including authorizing TDOT to proceed with an early work package).

[6] Addenda to the RFP require approval by FHWA. If the changes result in a major change, the Director of Alternative Delivery to consult with FHWA regarding the proposed addenda results in a "major change" to the RFP.

Additional Federal Requirements

- FHWA must authorize federally funded preconstruction services before the PDB RFP is advertised.
- If the construction contract is federally funded, the preconstruction services contract must include required federal provisions and be procured in a federally eligible manner (i.e., it has to be federalized).
- FHWA's contracting requirements (e.g., Buy America, lobbying restrictions, disadvantage business enterprise [DBE] requirements) apply to all the project's construction contracts if any portion (including any early work packages) of the PDB project is federally funded.

3 Procurement

This chapter outlines the processes for procuring the design-build team (DBT) and defines the various roles and responsibilities during the project's procurement phase.

3.1 Procurement Roles and Responsibilities

Although summarized in the sections below, the Progressive Design-Build's (PDB's) Request for Proposal (RFP) Evaluation and Selection Plan (E&S Plan) fully defines TDOT's procurement roles and responsibilities.

3.1.1 Oversight Committee

The Oversight Committee consists of the Department's Chief Engineer, Assistant Chief of Operations, Assistant Chief of Engineering, and Assistant Chief of Program Delivery. The Department's Chief Engineer shall serve as the Oversight Committee Chairperson.

The roles and responsibilities of the Oversight Committee are as follows:

- Meet with the Selection Committee Chairperson prior to distributing PDB proposals to explain the purpose, objectives, and goals for the project.
- Prior to the release of the RFP, approve the project goals and priority, in addition to approving the evaluation criteria/factors and scoring listed in the RFP.
- Approve the contract payment methods.

3.1.2 Director of Alternative Delivery and Regional Alternative Delivery Manager

During a project's procurement phase, the Director of Alternative Delivery and the Regional Alternative Delivery Manager (i.e., the Selection Committee Chairperson) direct the process for procuring the DBT.

As a non-scoring member and chairperson (respectively), each must focus the Selection Committee's efforts on ensuring compliance with technical and process details of the RFP and E&S Plan. They provide oversight and assist the Selection Committee during the entire evaluation process and are responsible for ensuring the timely progress of all evaluations, which may include coordinating any meeting(s) and ensuring that appropriate records of the evaluations are maintained.

The Director of Alternative Delivery is also responsible for taking appropriate steps to arrange for substitution of Selection Committee members (as approved by the Commissioner) if a member is unable to complete his/her responsibilities or if additional members are necessary to evaluate the responses more thoroughly.

3.1.3 Consultant Procurement Support

TDOT may employ the assistance of an Owner's Representative to support in the DBT procurement process and for overall project delivery. The Director of Alternative Delivery manages the programmatic aspects of the Owner's Representative contract.

The Director of Alternative Delivery works with the TDOT Project Manager (TDOT PM) to evaluate the preferred method of support for a PDB project on a case-by-case basis.

3.2 Conflicts of Interest

PDB contracting involves procurement of multiple entities to work together on the project (more than a typical design-bid-build project). As a result, PDB projects have an increased risk for organizational conflicts of interest among the various parties (DBT, Owner's Representative, independent cost estimator [ICE], and other consultants supporting the work). Protecting against conflicts of interests is critical to preserving the integrity of the PDB process.

State and federal law governs organizational conflicts of interest in TDOT procurements. When procuring the various entities, TDOT should be aware of the increased potential for organizational conflicts of interests and review the procurement process, as outlined in the PDB RFP template, to ensure that any potential conflicts are identified and addressed in accordance with TDOT, state, and federal policies.

As detailed in both state statute and the PDB RFP template, conflicts of interest may arise from prior or existing contractual obligations between a firm and a federal, state, or local agency relative to the project or TDOT's PDB program. Parties must disclose all relevant facts concerning any past, present, or currently planned interests resulting in an organizational conflict of interest.

If a perceived potential conflict of interest or unfair competitive advantage is identified, the party must submit a disclosure to TDOT, who is solely responsible for deciding if a conflict of interest is real or if a perceived unfair competitive advantage may exist and whether a party can mitigate their effects. When TDOT finds a participating entity has a conflict of interest or holds an unfair competitive advantage that cannot be mitigated, the firm is excluded from participation in the procurement and project. The PDB RFP template provides additional details and forms to describe these conflict of interest protocols.

3.3 Procuring the Design-Build Team (DBT)

TDOT selects the DBT by considering the following:

- Firm qualifications and experience,

- Proposed key personnel/individuals qualifications and experience,
- Specific approaches (e.g., preconstruction approach, construction approach) for delivering the project, and
- Price considerations (required for federally funding projects).

Using the PDB RFP template, TDOT prepares an RFP outlining the minimum and desired DBT qualifications, and interested proposers submit qualitative proposals in response. A Selection Committee evaluates each proposal according to the evaluation criteria/factors published in the RFP. As typically required, oral interviews may be included as a scoring component for the overall score as further described in the PDB RFP and E&S Plan.

Unless all proposals are rejected, the preconstruction agreement is awarded to one of the first-tier[3] proposers. Stipends are not paid to the unsuccessful proposers under PDB delivery.

3.3.1 Timing of DBT Procurement and Onboarding

Typically, the DBT should be procured early in the project development process (preferably prior to the project's NEPA clearance) to maximize team collaboration where a contractor-led design offers TDOT unique insight on risk, innovative construction means and methods, cost savings, and schedule optimization to set the appropriate project footprint prior to completing Stage 2 of the Project Delivery Network (PDN).

Procurement and Onboarding Limitations

As discussed in Section 2.1.6 and Section 3.3.6, there are limitations to onboarding a DBT before the environmental clearance is obtained, notably for an environmentally impactful or controversial project (likely to be cleared under an environmental impact statement [EIS] or extensive environmental assessment [EA]).

In those instances, TDOT may elect to clear the project before procuring a DBT. Once the Record of Decision (ROD) or Finding of No Significant Impact (FONSI) is obtained, TDOT should consider the likelihood for a re-evaluation(s) using the DBT's revised design and construction approach. TDOT must also consider additional FHWA coordination steps (including requesting a SEP-14). While considered on a project-by-project basis, the benefits of advancing a more complex project using PDB (as described in Chapter 2) may outweigh the time it takes for re-evaluating the NEPA document and obtaining a SEP-14 approval.

[3] A "first-tier" Proposer if further defined in Section 3.5.18

Recommended Timing for Procurement and Onboarding

For less complex EAs, a Tennessee Environmental Evaluation Report (TEER), or for a project under a categorical exclusions (CE), the following timing for DBT procurement and onboarding is recommended:

- After completing the project's Concept Report (see 0SD3 of the PDN);
- After completing the necessary program management activities ***prior to*** the project's kickoff meeting (see 1PM3 of the PDN);
- When the project's survey (1SY1 in the PDN) and environmental resource identification (1EN1 in the PDN) activities have mobilized, but before design begins on the Line and Grade Package (see 1RD1 in the PDN); and
- When the project is within 3 to 6 months from being cleared environmentally.

This allows TDOT to initially set a basic project configuration, establish general project details, and advance required environmental work.

3.3.2 Typical DBT Procurement Timelines

Table 3-1 lists the typical timeframes to perform each procurement task, which may vary based on project complexity and procurement type. Some items may be accelerated or developed concurrently.

Table 3.1: Typical DBT Procurement Timelines

Procurement Task	Approximate Time
Issue Notice to Contractors	0 to 6 weeks
Advertise RFP	4 to 8 weeks
Evaluate Proposals	2 to 4 weeks
Interview and Selection	2 to 4 weeks
Contract Award and Execution	4 to 6 weeks
Overall Procurement Timeline	**12 to 28 Weeks**

3.3.3 Advertising the Notice to Contractors

TDOT publicly advertises its PDB projects on the Alternative Delivery Webpage, with a Notice to Contractors advertisement alerting proposer teams to an upcoming PDB project and related procurement information. Projects may also be advertised in a newspaper of general circulation in the region of the state where the work is to be performed.

To ensure uniformity among projects, a Notice to Contractor template has been developed for use by the TDOT PM.

3.3.4 Establishing the Selection Committee

The Selection Committee reviews and approves the RFP prior to advertisement and is responsible for evaluating and scoring the proposals. To establish a common project understanding among the members, the committee should be formed as early as possible. The Regional Alternative Delivery Manager (or their designee) serves as the Selection Committee Chairperson. As chairperson, and non-scoring member, he/she must focus the Selection Committee's efforts on ensuring compliance with technical and process details of the RFP.

Per TCA §54-1-504, the committee shall be comprised of five (5) voting members, to be appointed by the Commissioner as follows:

- Three (3) Department employees, including at least one (1) employee who is a licensed professional engineer in the state; and
- Two (2) members who are not employees of the Department, each of whom must be a resident of the state. At least one (1) of those members must have a minimum of ten (10 years of construction or highway engineering design experience, and at least one (1) of the members must be a licensed professional engineer in the state.

In general, the TDOT voting members are comprised of Regional and Headquarters Discipline Leads, who are most involved and familiar with the project. The Selection Committee Chairperson coordinates with the Director of Alternative Delivery and the Commissioner on selecting the non-TDOT members for the Selection Committee from the road building and consultant industries. When practical, non-TDOT members should not be based in the same region as the project.

The TDOT PM and the Selection Committee Chairperson may discuss potential candidates based on their qualifications and their potential contributions to the project, forwarding candidates to the Oversight Committee for review and then to the Commissioner for his/her appointment.

All Selection Committee members are bound by ethical and confidentiality requirements and must sign a confidentiality agreement (the *Affidavit Regarding Prohibited Communications and Conflicts of Interest*), which is further described in the E&S Plan.

3.3.5 Setting Diversity Goals for PDB Procurements

This section provides a general overview of how to set the diversity goals for a project, notably in how the goals for disadvantage business enterprises (DBEs) for the final design/construction contract are established during the preliminary design/preconstruction phase. Of note, the DBE goal will not apply for the preliminary design/preconstruction service provided by the DBT.

However, a DBE goal will be set for any federal-aid construction contract, if awarded, and could include any work package amendment.

To establish the construction diversity goals, the TDOT PM notifies the Civil Rights Division of the scope of work, project location, and funding source within two to four weeks of the Line and Grade Package submittal (to conclude Stage 1 of the PDN). At this point, Headquarters Construction and the Civil Rights Division may request an early list of work items, high-level quantities, and other related information to better understand potential DBE scopes of work and opportunities for engagement. As the Functional Design Plans are being developed early in Stage 2, the project's design generally contains a defined enough scope of work for the Civil Rights Division and Headquarters Construction to establish the applicable diversity goals (including those for DBE, workforce diversity, and OJT). Setting the diversity goals at this point in Stage 2 also provides the DBT and ICE a clear benchmark for identifying potential subcontractor work and for estimating subcontractor involvement to meet the goals.

The TDOT PM, Headquarters Construction, and the Civil Rights Division collaborate on establishing the diversity goals prior to the DBT developing its open-ended DBE Performance Plan (OEPP), related Diversity Plan and Subcontracting Plan, and prior to TDOT drafting the project specifications used as the basis for the DBT's GMP. Through this, there is sufficient time for the DBT to create and update its Subcontracting Plan and Diversity Plan (collaborating as needed with the TDOT PM, the Civil Rights Division, and Headquarters Construction) and then to solicit subcontractor/supplier quotes (for TDOT to validate those quotes as part of the GMP Proposal).

All of this positions TDOT and the DBT to move forward with project construction (or portion thereof as an early work package) if the price and design progress are agreeable to both parties using the Functional Design Plans. (This plan set is realistically the earliest plan set that could be constructed using PDB.)

3.3.6 Accounting for Pre-NEPA/TEER Activities and Requirements

One of the foundational differences with PDB compared to other delivery methods is the **option** to procure the DBT before the environmental document is complete. For federally funded or projects requiring a NEPA clearance, this is the preferred option given 23 CFR 636 (i.e., the Design-Build contracting) requirements regarding DBT procurement prior to NEPA being completed. With PDB, TDOT has the most flexibility if the project is entirely state funded and/or falls under a TEER approval.

For projects that have federal/FHWA involvement (likely as a funding partner), this section details TDOT and the DBT's responsibilities when the NEPA document is **not** complete. Additionally, TDOT should consider the extent of potential environmental impacts and/or project controversy (likely to be cleared under an environmental impact statement [EIS] or extensive environmental assessment [EA]) before proceeding with DBT procurement and onboarding. Section 2.1.6 and Section 3.3.1 discuss considerations for these instances.

CFR Considerations to Advance Work Prior to the Environmental Clearance

For federally funded projects or projects to be cleared under NEPA, FHWA has not developed an administrative rule addressing PDB. However, it is recommended that TDOT follow the requirements of 23 CFR 636 (i.e., the federal regulation for Design-Build contracting) that clarify work allowed before environmental clearance, including:

- TDOT may only proceed with award of a PDB final design/construction contract (even for early work) once the environmental review process is complete.
- TDOT may issue a notice to proceed for the DBT to perform preconstruction (notably preliminary design) services extending through Stage 2 of the PDN, but must ensure all preliminary design work:
  - Is funded under PE-NEPA funding only,
  - Does not limit any reasonable range of alternatives or influence the environmental decision, and
  - Excludes final design activities (under PE-Final Design funding) until the environmental clearance is obtained.

Per 23 CFR 636.109, TDOT must also abide by and include the following provisions in the preconstruction services contract or statements in the RFP when proceeding prior to environmental clearance.

- A statement in the RFP that informs the proposers of the general status of the NEPA process and that no commitment will be made as to any alternative under evaluation in the NEPA process, including the no-build alternative.
- A provision in the contract preventing the DBT from proceeding with final design activities and physical construction (including for any early work package, advanced material acquisition, site work, shop drawings, or fabrication plans) prior to the completion of the NEPA process (contract hold points or another method of issuing multi-step approvals must be used).
- A provision in the contract ensuring that no commitments are made to any alternative being evaluated in the NEPA process and that the comparative merits of all alternatives presented in the NEPA document, including the no-build alternative, will be evaluated and fairly considered.

- A provision in the contract ensuring that all environmental and mitigation measures identified in the environmental documentation and committed to in the determination for the selected alternative are to be implemented by the DBT, TDOT, or other required party.
- A provision allowing termination by TDOT in the event that the no-build alternative is selected.
- A provision that the DBT must not prepare necessary environmental documentation or have any decision-making responsibility with respect to the environmental process. Because the DBT is typically requested to provide information about the project (including the design used to clear the project) and possible mitigation actions, the DBT's work product may be considered in the environmental analysis and included in the record.

3.3.7 Developing the DBT's Scope of Work

The scope of work for the DBT is published in the RFP, which becomes part of both the PDB preconstruction agreement and final design/construction contract. Potentially developed in parallel with the RFP, TDOT should consider drafting the scope prior to the RFP to help guide development and requirements. The TDOT PM consults with the Selection Committee Chairperson to initially draft the PDB's scope of work.

Minimally, the scope of work and other RFP details for any given project should include the following (as further detailed in the PDB RFP template):

- The anticipated preliminary design/preconstruction phase scope of work to include in the DBT's design, constructability, and project management work and deliverables. **Note:** Some activities performed as part of the preliminary design/preconstruction phase's scope of work may be defined as "construction activities" (e.g., site preparation, structure demolition, hazardous material removal or abatement, shop drawing preparation, early acquisition or fabrication of materials) that, per FHWA's Final Rule for CM/GC delivery, is not authorized to be advance (even at risk) until NEPA is complete. (TDOT should be cognizant of not scoping these activities if NEPA is not complete).
- Any co-location requirements as coordinated by the TDOT PM with the Director of Alternative Delivery and Regional Alternative Delivery Manager for inclusion in the RFP.
  - Since PDB relies on a high degree of collaboration, co-location of key staff from the DBT, TDOT, and even the ICE can be beneficial (given the size of the project).
  - Co-location may be more beneficial for projects with aggressive schedules or the need for a high degree of collaboration.
- A description of the tasks that TDOT expects the DBT to perform in order to submit its GMP for the project or any portion thereof.
- The anticipated final design/construction phase scope of work and a **preliminary range** of estimated construction cost.

The PDB RFP template includes the typical preconstruction (detailed) and construction (higher-level) scopes of work for the DBT.

3.3.8 Developing the PDB RFP

TDOT generally uses a one-step selection process but may, at its discretion, use a two-step process to shortlist the most qualified proposers as allowed under the TCA. In either case, DBT selection begins by advertising the RFP.

The Selection Committee Chairperson works with the TDOT PM to schedule an RFP development meeting to establish the evaluation criteria/factors (including sub-criteria/factors) and relative weighting tailored to the project's needs and goals as further described in the PDB RFP template and E&S Plan.

The development of the RFP evaluation criteria should be a systematic, thorough process that:

- Is tailored to the project goals (as noted in Chapter 2), risks, and specifics;
- Is clear, defensible, and easy for the proposers and public to understand; and
- Focuses on items that bring measurable value to the project.

RFP Template

TDOT has developed a PDB RFP template to maintain consistency between projects, with the contents of the RFP modified based on the scope of work, goals, and risks for each project.

RFP Evaluation Criteria

TCA §54-1-504 contains specific requirements that are included in the RFP or followed during the procurement process. Developed further in the PDB RFP template, the following are customizable input/evaluation criteria for PDB procurements.

- **Choose Score/Weighting to Differentiate between Proposers.** Care should be taken to include enough of a scoring range to allow TDOT to differentiate between highly qualified competitors.
- **Allow Criteria to be Weighted to Meet Project Goals.** Evaluation criteria do not need to be weighted equally. Rather, TDOT has flexibility to assign points to each individual criterion to best reflect individual project's goals and circumstances.
- **Consistent PDB RFP Evaluation Criteria.** As detailed in PDB RFP template, there are advantages of using consistent evaluation criteria. Maintaining consistency allows the industry to better understand TDOT's expectations and prepare for the procurement. Consistency also results in consistent scoring practices and expectations, resulting in more defensible procurements.
- **Do Not Ask for Past Experience using CM/GC, PDB (albeit limited in its current use) or Other Specific Delivery Methods**. Asking for experience with any specific delivery

method is expressly prohibited under current statute. This approach helps ensure a fair procurement process for industry and to not unfairly exclude qualified proposers.

- **Do Ask for Past Experience and an Approach for Delivering the Preliminary Design/Preconstruction Phase.** This includes experience in designing projects similar in size, cost, and complexity and experience with DOT or FHWA design requirements and standards. Any preconstruction approach section should allow a proposer the opportunity to provide and highlight:
  - Its plan for managing and delivering each discrete design submittal in concert with a PDB's constructability, risk, and pricing milestones.
  - How it plans to incorporate TDOT review and DBT review comments into its design development process.
  - How it intends to support TDOT in advancing necessary right-of-way, utility, and environmental activities.
  - Its approach to collaborate with TDOT, project stakeholders, and the larger DBT team, ensure quality (QC/QA) in its design process, and timely respond to all input received.
  - Its risk management strategies for identifying, costing, and mitigating/eliminating project risk or maximizing project opportunities (i.e., innovations).
- **Avoid Overemphasis on "Construction Approach" or "Construction Schedule."** As further detailed in the PDB RFP template, one of the key reasons for using PDB as a delivery method is to allow the DBT and TDOT to collaborate on the best project approach, to develop and refine the project's design to where it can be priced and constructed, and to optimize the construction schedule.

  Furthermore, the DBT is not provided with a stipend (like in design-build [DB] contracting) for its proposal and concepts/innovations. As a result, the construction approach has a high likelihood of being modified once the DBT is onboard.
- **Evaluating Safety Record.** Safety is an important part of every project. However, safety record is rarely a differentiator in PDB selection. As further detailed in the PDB RFP template, consider providing minimal acceptable safety performance ratings.
- **Include a "Cost Estimating Approach" in the Evaluation Criteria**. Including this criterion is highly recommended to evaluate the DBT's approach and commitments for pricing the work using an open and transparent process with TDOT. As further detailed in the PDB RFP template, this could include providing a transparent cost model on topics such as risk, labor/equipment rates, production rates, crews, escalation, etc.

  Potential subfactors may include: (1) the DBT's approach to providing open and transparent cost estimating/pricing; (2) the DBT's approach to ensuring that TDOT is getting a fair construction price; and (3) the DBT's subcontracting process.
- **Guidelines for Key Personnel/Individuals.** The qualifications of the DBT's key individuals should always be included as part of the evaluation criteria.

Key Individuals to include in every RFP:

- **Project Manager, Design Manager, Construction Manager, Lead Cost Estimator** as critical positions for PDB success and as differentiators.
- **Value-Added Specialists.** Allow the Contractor to propose one or two "value-added" specialists as part of the key staff, which can be a differentiator in selection.

Optional Key Individuals to include in the RFP based on the project's characteristics:

- **Maintenance of Traffic Engineering Lead/Lead Traffic Control Engineer** for a project with involved maintenance of traffic (MOT) complexities or restrictions.
- **Structures Engineering Lead** when a project has extensive or complex structural components.
- **Geotechnical Engineering Lead** for a project that has intricate or unknown geological or subsurface conditions that may require an involved preconstruction investigation/boring program or for a project that requires an in-depth knowledge of geotechnical impacts on structural and roadway decision making.
- **Environmental Compliance Lead** when a project includes unique environmental compliance issues, long-lead permits, or price-sensitive mitigation requirements.
- **Utilities Design/Construction Coordinator** as required to handle utility unknowns, management of a risk-reducing subsurface utility investigation program, or proactive coordination with utilities anticipated to be impacted from the project.
- **Project Scheduler.** For projects with long durations or complex phasing, include the Contractor's Project Scheduler as part of the key staff.
- **Quality Managers.** This position is rarely a differentiator in selection. Include only if this role is critical to achieving the project goals.

- **Evaluating price (required for federally funded projects).** TDOT evaluates (as a pass/fail criterion) the responsiveness and reasonableness of a proposer's design and preconstruction hourly/unit rates submitted with its proposal. This is subject to FHWA concurrence under 23 CFR 636.302(a)(1)(vi). The DBT is contractually obligated to use these rates when negotiating its scope of work and fee for the DBT's design and preconstruction services.

It is highly recommended that when considering the number of key personnel to include in an RFP, this list should be at least five but be no more than eight individuals.

Other Information for the RFP

- Up-to-date project and procurement information:
  - Project description and scope
  - Anticipated procurement and project schedules

- Required DBT pre-qualification requirements for both the contractor and design firm(s)
- Special design and construction requirements for DBT experience
- List of contractors, consultants, and entities with known conflicts of interest that are ineligible to participate as a proposer or team member

- Response protocols for questions regarding the RFP submitted to TDOT
- Proposal submission requirements, including mandatory format and elements (i.e., sections) the Selection Committee will evaluate
- Date and location of any Mandatory Pre-Proposal Meetings
- Criteria used to shortlist proposers (if shortlisting is used)

3.3.9 Approving and Advertising an RFP

Prior to RFP advertisement:

- The Selection Committee is to approve the proposed RFP indicating that it complies with the requirements in TCA §54-1-504(b)(2). The approval will be by majority vote in a closed meeting that is not open to the public.
- The Oversight Committee is to approve the project goals and priorities, evaluation criteria, and payment structure.
- For federally funding projects, federal authorization is required prior to advertising the RFP if the DBT's preliminary design/preconstruction services are federally funded. The Selection Committee Chairperson notifies FHWA when the RFP has been advertised.

When the final RFP has been approved, the Regional Alternative Delivery Manager or TDOT PM posts the RFP on the project-specific link under the Alternative Delivery webpage, along with any accompanying reference materials. TDOT may also send out an email notifying industry that the RFP has been posted.

3.3.10 Conducting a Mandatory Pre-Proposal Meeting

TDOT typically holds a mandatory pre-proposal meeting at a time and place listed in the RFP and Notice to Contractors. This meeting introduces all proposers to the PDB contract delivery method, provides an overall introduction to the project, and enables TDOT to answer any questions regarding the project or procurement process. Other TDOT staff, including members of the project team, may attend the pre-proposal meeting as requested by the TDOT PM or Oversight Committee.

Failure of a proposer to attend this meeting excludes its participation in the procurement process, and any proposal submitted by the proposer is rejected. TDOT may respond orally or in writing to the proposer's questions. If TDOT determines that there needs to be a formal answer to a question or changes to the RFP, specifications, or contract terms are warranted,

TDOT may answer those questions or incorporate those changes as part of the RFP release or as an addendum.

3.3.11 Responding to RFP Questions and Clarifications

After the RFP is published, TDOT responds to questions submitted pursuant to requirements in the RFP. The question and clarification process allows TDOT to respond to a proposer's questions during the RFP advertisement period. All responses should be carefully drafted to ensure consistency, fair competition, and to clarify the RFP; responses should not be used to materially change the RFP. Material changes to the RFP should be made via the addendum process described in Section 3.3.12 below.

Unless the RFP states otherwise, proposers may only request information through the formal RFP question and clarification process detailed in the RFP. Proposers may not contact TDOT staff for additional project-related information outside of this process. TDOT may disqualify any proposer that violates this restriction.

Listed below is the procedure for receiving and responding to RFP clarifications or questions:

1. The TDOT PM (or their designee such as the Owner's Representative if used) retains document control of the clarifications.
2. The TDOT PM (or designee) drafts responses to the clarification request or question using the RFP response form. Guidance includes:
    a. All responses need to be fact based (no opinions).
    b. Refer to the RFP sections, as necessary, when drafting responses.
    c. Clarifications and answers should be numbered sequentially.
    d. Do not disclose which proposer submitted the clarification request or question.
3. The TDOT PM sends a draft of the clarification response to the Selection Committee Chairperson. The Selection Committee Chairperson then reviews and approves the clarification.
4. Clarifications are posted on the project-specific link under the Alternative Delivery webpage.
5. The Selection Committee Chairperson sends a courtesy copy of all clarifications and answers to FHWA on federally funded projects.

3.3.12 Issuing RFP Addenda

RFP addenda may be generated by clarifications or questions from the proposers or by TDOT to materially change the RFP, which may have significant impacts to the proposals. If an addendum needs to be issued less than two weeks before the proposal due date, the TDOT PM and Selection Committee Chairperson should consider extending the proposal due date.

Addenda modifying the evaluation criteria are discouraged. However, if such an addendum is necessary, it should be issued early in the process before proposers begin preparing their proposals.

Addenda are posted on the project-specific link under Alternative Delivery webpage. For federally funded projects, the Selection Committee Chairperson notifies FHWA when an addendum has been posted.

3.3.13 Re-Issuing and Withdrawing Procurements

If TDOT does not receive at least two proposals or rejects all proposals, TDOT has the option to withdraw the PDB procurement, reissue the RFP, or revise and reissue the RFP. The decision depends upon the project schedule, modifications to the scope, and quality of the proposers.

If the decision is made to re-advertise the PDB procurement on federally funded projects, the Selection Committee Chairperson notifies FHWA in writing of TDOT's decision to cancel the current procurement and requests concurrence prior to moving forward with re-solicitation.

The Director of Alternative Delivery develops a procurement cancellation letter to send to all the proposers notifying each of the cancellation. The procurement cancellation letter should be signed by the Chief Engineer.

3.3.14 Evaluating the Proposals

Development of Scoring Procedures and Optional Selection Committee Training

The published RFP is to describe the process and criteria/factors to be used to evaluate the submitted proposals, which is summarized on a scoring matrix.

TDOT should develop scoring procedures that are logical and defensible to reduce or eliminate scoring subjectivity between evaluators. One way to significantly reduce scoring subjectivity is to provide training to the Selection Committee on the evaluation process and how to use the scoring matrix. This is further detailed in the Evaluation and Selection Plan (E&S Plan).

The Selection Committee Chairperson, on a project-by-project basis, should require all members of the Selection Committee to undergo this training before they receive the proposals. The training typically includes a project-specific overview that reminds the Selection Committee on the:

- Project goals, complexities, risks, schedule, and budget;
- Characteristics of the work; and
- Proposed scope of work.

The training also presents the roles and responsibilities of the various participants in the evaluation and selection process. Lastly, the training may include a run through of how to use the evaluation forms and who to ask questions of when the Selection Committee members are completing their review.

Pass/Fail Evaluation

Upon receipt, TDOT evaluates each proposal to determine whether the proposal is responsive to the RFP and is complete compared to the pass/fail requirements. The Selection Committee Chairperson (or designee) notifies the Selection Committee of potential pass/fail or responsiveness deficiency(ies) before notifying a proposer of incomplete proposal information or a request for clarification. If a proposer is found to be non-responsive, the Selection Committee Chairperson notifies the Selection Committee and obtains concurrence from the Director of Alternative Delivery before notifying the Proposer in writing of the determination. The written notification must explain why the proposal was found non-responsive and should notify the proposer if TDOT deems the deficiency capable of being remedied.

Evaluation Procedures

Each member of the Selection Committee uses the RFP's evaluation criteria (and the E&S Plan) to score responsive proposals. The Selection Committee Chairperson, Director of Alternative Delivery, and FHWA (as applicable for federal projects) oversee that the procurement is conducted in accordance with TDOT practice and TCA requirements, the project's E&S Plan, and federal regulations. Legal staff can provide advice on responsiveness issues or other questions that require their input.

For complex projects and/or technically complex issues, the Selection Committee may require clarification related to technical matters during their review. All questions and communications are to be directed through the Selection Chairperson (as the point of contact identified in the RFP), working with the appropriate team member or subject matter expert to develop responses. All responses are then directed back through the point of contact or Selection Committee Chairperson to the Selection Committee. Questions submitted by the Selection Committee should only pertain to a specific, technical issue. Discussions about specific proposers or their proposals are not allowed.

It is the responsibility of the Selection Committee to fairly and thoroughly assess each proposal submitted. Each member independently reviews and scores the responsive proposals. Members of the Selection Committee must follow the procedures below to evaluate the proposals.

- Members of the Selection Committee must read and understand the contents of the RFP, including the contents of the evaluation manual (goals, evaluation criteria, and qualitative assessment guidelines) prior to the proposal due date.
- Members of the Selection Committee are to not communicate with each other concerning their review or evaluation of the proposals.
- Prior to reviewing RFP proposals, each committee member must affirmatively complete an affidavit indicating that such member has not discussed the proposals or such member's review of the proposals with any other Selection Committee member, or with any TDOT employee other than the TDOT employee(s) specifically listed in the RFP as the appropriate point of contact, or with any of the proposers, their agents, employees or subcontractors.
- Each Selection Committee member must complete an affidavit stating that such member has no knowledge of having any conflict of interest, financial or otherwise, regarding the member's ability to fairly evaluate all proposals.
- Each memberof the Selection Committee shall independently and confidentially review and score each proposal pursuant to the evaluation criteria described, the scoring matrix detailed in the RFP, and on the forms provided in the E&S Plan.

3.3.15 Requesting Proposal Clarifications

If the Selection Committee needs a proposer to clarify an element of their submittal, a written request with a clearly stated due date will be submitted to the point of contact listed in the RFP, who will then prepare and submit the request to the proposer. The proposer's response is directed back to the point of contact, who then forwards it to the Selection Committee. The Selection Committee reviews responses to determine if it is adequate or whether additional clarification is needed. Changes or modifications to the proposal are not permitted.

3.3.16 Shortlisting Process (Optional)

Generally, the procurement process for PDB proceeds directly to the advertisement of the RFPs, without the submittal of an initial Statement of Qualifications for shortlisting purposes. If the TDOT desires to shortlist proposers, the Request for Proposals (RFP) is to provide for the Selection Committee to make an initial review and evaluation of interested proposers through a Request for Qualifications (RFQ) with more detailed proposals to be submitted by a selected list of proposers (i.e., a two-phase selection process). To utilize the two-phase selection process, TDOT first issues an RFP providing for an initial Request for Qualifications (RFQ). The members of the Selection Committee then each independently evaluate and score the submitted Statements of Qualifications based on the evaluation criteria established in the RFQ.

The number of shortlisted proposers is ultimately left to the discretion of the Oversight Committee, with the selection to be determined based on the proposers receiving the highest aggregate scores from the Selection Committee. Once the shortlist is established and approved

by the Oversight Committee, TDOT notifies the proposers of the results and posts the list of shortlisted proposers on its website. The shortlisted proposers are then asked to submit a more detailed proposal in accordance with the requirements established in the RFP.

3.3.17 Interviewing

If required by the RFP, interviews are mandatory for all Proposers that advance through the process. An interview provides an opportunity for the proposer to present its qualifications and ideas, but also allows the Selection Committee to observe how the project team works together. Confidential interviews are held separately with each proposer.

The interview is not used to fill in missing or incomplete information that was required in the written proposal, nor a chance by the proposer to revise or supplement its proposal.

TDOT established the interview evaluation criteria in the RFP, which may include:

- A short presentation by the proposer,
- A team challenge scenario(s) developed prior to the interview, and
- Two to five standard questions that are presented to all proposers.

The same pre-scripted team challenge and interview questions should be presented to each proposer for consistency and to avoid bias. However, proposer-specific questions may be asked regarding the proposer's presentation to offer clarity for the Selection Committee.

Standard interview questions can be derived from questions that arise during the proposal review process, but the Selection Committee members may also be asked to submit questions to the Selection Committee Chairperson for possible use during the interview.

For federalized projects, the TDOT PM invites FHWA to participate in the interview process, and the Director of Alternative Delivery should be consulted regarding the interview format.

All members of the Selection Committee must attend the interviews with the Selection Committee Chairperson and TDOT PM. If any member of the Selection Committee is unable to attend, TDOT reschedules the interview so that all members are present.

Following the interviews, each member of the Selection Committee independently and confidentially scores each proposer's interview based on the RFP evaluation criteria on the interview scoring form provided in the E&S Plan. The interview score is added to the qualitative score from the evaluation of proposals for each proposer.

3.3.18 Completing the Final Scoring and Selection

Following the interviews, the Selection Committee Chairperson and Director of Alternative Delivery:

- Review all evaluation findings and scores that are provided by the Selection Committee, and
- Ensure that each Selection Committee member has consistently determined the evaluation findings and scores.

Identify First-Tier Proposers: Upon completion of the scoring, the forms rank the proposals in order of the highest aggregate score to the lowest aggregate score, where the aggregate score for each proposer is computed by averaging the scores from all members of the Selection Committee. The Proposer who receives the highest aggregate score is identified as a "first-tier proposer". If another proposer (or proposers) receives an aggregate score within five percent (5%) of the proposer with the highest aggregate score, that proposer is also identified as a first-tier proposer.

Selection: The Selection Committee Chairperson submits the proposals of all first-tier proposers in alphabetical order to the Commissioner through the Director of Alternative Delivery, without an evaluation ranking. The Commissioner then selects the proposer by choosing from any of the first-tier proposers. The Commissioner may also reject all proposals and proceed with the project through another lawful procurement method.

3.3.19 Notifying Proposers

After obtaining the Commissioner's selection of a first-tier proposer, the Selection Committee Chairperson or TDOT PM sends a "notice of award" letter by email, facsimile, or mail to all proposers who participated in the RFP process, indicating who was the successful proposer (including a copy of the scores from each member of the Selection Committee).

3.3.20 Protesting

After the Notice of Award is sent, all proposers have up to seven days to review the procurement file and elect to file a protest (if applicable).

To file a protest, a proposer must either mail or hand deliver an original letter signed in ink to the Commissioner. The letter must contain the PIN, State Project Number, contract number, the reason(s) for the protest, and the signature of an attorney or protesting party indicating that the protest is well grounded and warranted. The protest letter **must also be accompanied** by a protest bond in the amount of two percent (2%) of TDOT's estimate for the total cost of the project.

In no event shall any protest be allowed more than seven days after the proposer knew or should have known about the facts that gave rise to the protest. If no protest letter, including the protest bond, is received within seven days, TDOT proceeds with the award. TCA 54-1-

505(b)(2)-(7) provides additional detail on the process for resolving the protest and appealing a protest decision.

If a protest letter and bond is received, the TDOT PM or the Selection Committee Chairperson contacts TDOT's Legal Division immediately for additional guidance.

3.3.21 Finalizing the Scope and Cost for Preliminary Design/Preconstruction Services

After notification and selection, the TDOT PM meets with the successful proposer regarding the design/preconstruction services up to the point where the GMP is submitted. The scope required and additional cost to complete the design is included in the final design/construction contract and GMP, respectively. Chapter 4 describes this process in more detail.

The scope and cost account for factors such as size, scope, and complexity of the project; extent of the concept design already completed; and any co-location requirements. The preliminary design/preconstruction costs are to be based on the actual level of effort required to advance design and prepare for the final design/construction phase. This is to maximize the benefits on DBT input and avoid the potential for the DBT to try to recover any unreimbursed costs later in its GMP submittals.

It should also be noted that when paying for the DBT's preliminary design/preconstruction services based on actual costs, the DBT is required to provide TDOT with an indirect cost rate in accordance with 2 CFR 200 subpart E. The Certificate of Final Indirect Costs, as included in the RFP, is completed by an official of the DBT, certifying that all costs are allowable in accordance with federal cost principles.

3.3.22 Executing a Contract and Issuing a Notice to Proceed

Once the parties have agreed upon the final scope of work and cost, TDOT prepares the contract for execution. The DBT executes and returns the document to TDOT alongside any other required forms, licenses, insurance certificates, and documents. This is followed by a formal notice to proceed.

3.3.23 Changing Key Individuals after Selection

The DBT may request changes in key individuals after selection. However, because the DBT was selected based on qualifications, TDOT must carefully evaluate changes, and the TDOT PM must approve, in writing, any change prior to it being official. The processes and procedures for reviewing and approving changes in key individuals is as follows.

1. The DBT submits a written request to change a key individual to the TDOT PM prior to replacing the DBT member.
2. The TDOT PM determines if the replacement is equal or better.
3. The TDOT PM provides written notice to the DBT, retaining a copy of that notice in the project file.

3.3.24 Debriefing

After the seven-day protest period has elapsed and the preconstruction agreement has been fully executed, the unsuccessful proposers may request a debriefing. These meetings are informal to provide feedback to the unsuccessful proposers. The TDOT PM and the Selection Committee Chairperson are to attend all debrief meetings. Other TDOT representatives may attend as assigned by the Selection Committee Chairperson and Director of Alternative Delivery. On federally funded projects, TDOT offers FHWA an opportunity to attend the debrief meetings.

Debrief meeting guidelines include the following.

- The debrief meeting is to focus on the strengths and weaknesses of the proposal submitted by the proposer.
- The length of the meeting should not exceed one hour.
- The meeting should remain informal in its discussions between TDOT and the unsuccessful proposer.
- The Selection Committee Chairperson and TDOT PM are to prepare a summary of the Selection Committee comments using the materials from the scoring process.
- The Selection Committee Chairperson and TDOT PM are to review the Selection Committee summary with the proposer during the debrief meeting.
- **TDOT is not to discuss the contents of another proposer or its proposal.**

3.4 Procuring the Independent Cost Estimator (ICE)

Per TCA §54-1-504, TDOT is required to prepare a detailed construction cost estimate to confirm the DBT's proposed cost for construction (i.e., the GMP). This detailed construction cost estimate may be prepared by a consultant or by in-house resources. The Commissioner may also direct the TDOT PM to have an additional cost estimate prepared by a third-party ICE.

3.4.1 Advantages to a Third-Party ICE

Hiring a third-party ICE has several advantages over relying solely on a traditional estimate prepared by a consultant or in-house staff.

- An estimate prepared by third-party ICE provides credibility to the validation process and provides TDOT with resources needed to validate the DBT's assumptions.

- In-house estimates are typically not production-based estimates, and although useful, do not provide the same organization and level of detail necessary to reconcile production-based estimates prepared by a DBT/contractor.
- A production-based estimate affords TDOT the ability to more closely identify and reconcile differences with the DBT's estimate.

Exceptions to using a third-party ICE to validate the DBT's price for construction require approval from the Director of Alternative Delivery and should be used on a limited basis. Factors that warrant using consultant or in-house staff instead of a third-party ICE may involve project size (smaller projects), less complex projects, or internal expertise estimating the type of work to be performed.

3.4.2 Procurement Responsibilities and Conflict of Interest

Procurement of the ICE is the responsibility of the Director of Alternative Delivery and is hired on a project-by-project basis similar to TDOT's process for procuring other preconstruction service providers. Since the ICE is ultimately used to help TDOT reach a fair/reasonable price for construction with the DBT, it is critical that the selected ICE is a qualified estimating firm with production-based, contractor-style estimating experience on projects of similar scope and complexity. The ICE firm should be independent from the DBT and not have any organizational conflict of interest with any other party. Section 3.2 provides more details on conflicts of interest in PDB contracting.

3.4.3 Timing for Procuring and Onboarding the ICE

Because the ICE plays a significant role in developing the GMP and the negotiation process, contracting the ICE and the DBT at or near the same time is recommended (see Section 3.3.1 for recommend timing for DBT procurement and onboarding). Engaging the ICE at a similar point in the process allows the ICE to develop an understanding of the project goals, risks, design decisions, and assumptions, and thus, more accurately prepare its independent cost estimate.

4 Preconstruction Activities

Initiating the preliminary design/preconstruction phase marks the start of the collaborative partnering process between TDOT and the design-build team (DBT) on a progressive design-build (PDB) project. The team's focus on partnership and open communication works to:

- Co-manage risk,
- Advance design (considering constructability and PDB delivery),
- Optimize the construction schedule,
- Vet innovation, and
- Maximize project scope within the budget.

4.1 PDB Preconstruction Agreement Phasing

One way that PDB differs from design-bid-build (DBB) is that the PDB contract is divided into two distinct phases: the design/preconstruction phase and the final design/construction phase.

The design/preconstruction phase begins upon execution of a preconstruction agreement, which authorizes the DBT to proceed with design and preconstruction tasks as detailed in the DBT's scope of work. Because the construction schedule and approach are collaboratively developed with the DBT as its design progresses, the project may incur additional design costs to advance project enhancements that promote value or a different idea. Construction work for the project (or portion thereof) is authorized by executing a final design/construction contract. If there are multiple work packages, TDOT authorizes a notice to proceed for the first work package, which sets the initial contract scope and price. Each subsequent work package amends the project's scope and price to reflect the added work. The TDOT PM should strive to construct the Project through as few work packages as practicable and should account for the preliminary design/preconstruction phase and final design/construction phase overlapping if there are multiple work packages being designed and constructed concurrently. Section 4.3.10 provides additional information on work packages and PDB contracting.

4.2 Preliminary Design/Preconstruction Roles and Responsibilities

4.2.1 TDOT Project Manager (TDOT PM)

In PDB, the TDOT PM leads in managing and facilitating the preliminary design/preconstruction phase, and this role will likely require more active team coordination and direct involvement than other delivery methods. The TDOT PM is responsible for guiding design oversight review (with the DBT owning the design risk), while also ensuring collaboration among TDOT, the DBT, and the DBT's designer. To do this, the TDOT PM leverages active communication and project team meetings focused on decision making and discernable actions to drive forward.

The TDOT PM also leads the price validation process, reviewing both the DBT's and independent cost estimator's (ICE's) estimates (if used). The TDOT PM may lean on other specialists to support this task, including the ICE, the owner's representative, TDOT's internal estimating resources, or another qualified consultant with this estimating expertise. The TDOT PM (or his/her designee) serves as a facilitator among the team members, and later, as the lead negotiator for TDOT during the pricing validation process (see Chapter 5 for more details).

4.2.2 Design-Build Team (DBT)

The DBT consists of a contractor and its designer acting under a single contract. The relationship of this team, in connection with the TDOT PM, TDOT design oversight team/owner's representative, and ICE is illustrated on Figure 4-1.

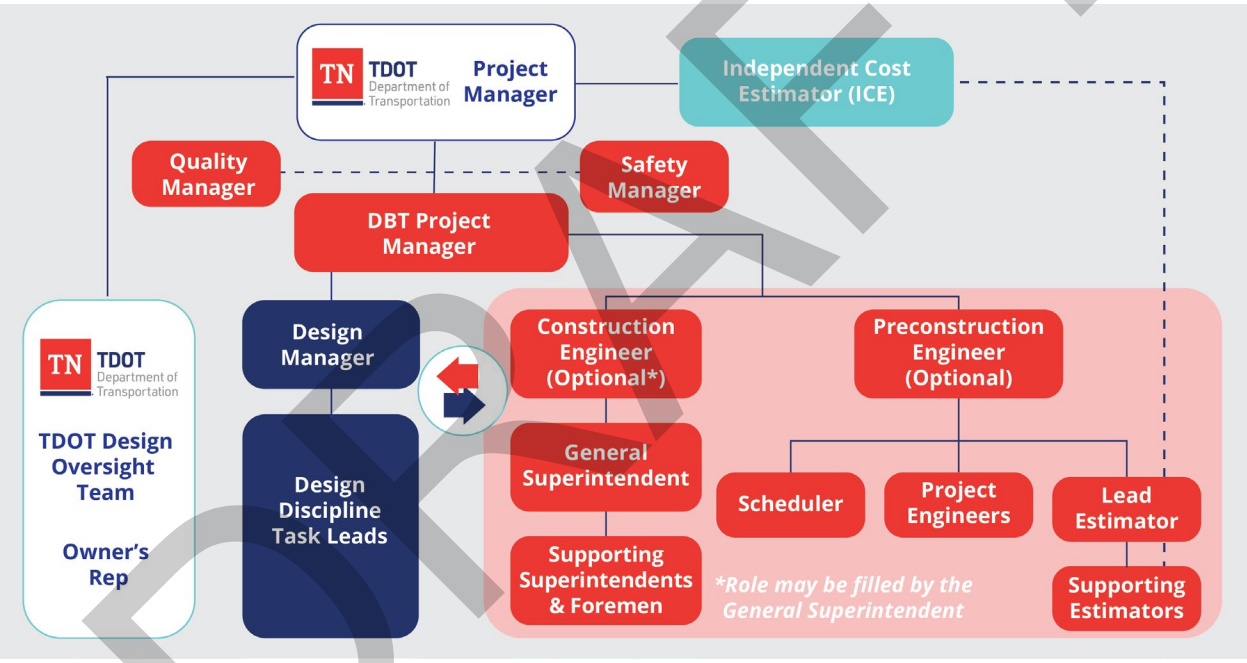


Figure 4-1. Typical PDB Design/Preconstruction Organization

Contractor

During the preliminary design/preconstruction phase, the contractor oversees its designer and provides input on constructability, schedule, phasing, cost, and material availability and other pertinent elements of project delivery. In collaboration with TDOT and the ICE, the contractor also identifies risks (via project team meetings and formal risk workshops) to inform the decision-making and design development processes.

The contractor's tasks during the preliminary design/preconstruction phase include:

- Coordinating the design development process, including the field review meetings at prescribed design/pricing milestones, and providing necessary contractor input (throughout the design process) on the items listed above.
- Identifying alternatives to improve cost and schedule.
- Identifying project risks and assisting in the development of the Risk Register.
- Evaluating design concepts by providing a comparison of cost, schedule, and risks among the various concepts.
- Developing required construction plans for contracting and diversity (e.g., the Diversity Plan), safety, quality control, and material sourcing.
- Establishing the cost model and participating in design/pricing milestone meetings.
- Obtaining subcontractor quotes and coordinating with the subcontractors.
- Identifying long-lead items that could be procured through early work packages in order to benefit the overall schedule.

DBT Designer

In PDB (like design-build [DB]), the DBT brings its own designer, providing direction and taking on risk for how it develops and progresses the project's design. The designer's main responsibilities are to manage/progress the design work and communicate/collaborate with both the DBT and TDOT.

This is particularly notable when evaluating the benefits for modifying the design to incorporate team suggestions that reduce construction costs, improve constructability, or capture innovation. This is an iterative process for the team, where it collaborates to optimize the design and ensure it is constructable for a reasonable cost/budget. The designer must keep the project team informed and involved in each design review and design and risk decision.

4.2.3 Independent Cost Estimator (ICE)

As discussed in Section 3.4.2, TDOT may procure an ICE for the project, who prepares a detailed, production-based cost estimate to validate the DBT's construction price (considering the designer and contractor's means and methods).

For each interim estimate and the GMP Proposal, TDOT compares the DBT's cost with both TDOT's internal cost and the ICE's cost (if used) during the preliminary design/preconstruction phase. Using similar methods to that of the DBT to bid a project, the ICE is responsible to question the contractor's prices, quotes, methods, and estimate to ensure that TDOT is receiving a fair and open price from the DBT.

The ICE works with the DBT to understand the competitive market regionally and nationally, and it may bring on subject matter expertise if the ICE lacks in-house knowledge of a major work item.

As discussed further in Section 5, details of the ICE's estimate are not shared among the project team or publicly disclosed to anyone except appropriate TDOT personnel.

4.3 Key Elements of a PDB's Preliminary Design/Preconstruction Phase

PDB delivery requires a collaborative partnership among TDOT, the DBT, and the ICE (if used), where all parties act as an integrated team in developing innovative design solutions that incorporate the DBT's proposed means and methods. This section describes the processes, meetings, workshops, and reports that can assist a TDOT PM in facilitating the team towards that goal.

4.3.1 Project Kickoff Workshop

The preliminary design/preconstruction phase for a PDB project begins with a Project Kickoff Workshop that includes the TDOT project team, DBT (including its designer), key stakeholders, and the ICE (if used). Typically, the TDOT PM uses the workshop to:

- Introduce the project, DBT, and project stakeholders (including team roles and responsibilities).
- Discuss project status, goals/objectives, scope, funding, and preliminary schedule.
- Detail project risks to support advancement of a project-specific Risk Register detailed in Section 4.3.8 (this may build from related risk tasks in 1PM4 of the Project Delivery Network [PDN]).
- Review of the concept report.
- Tour the project site.
- Discuss preliminary design/preconstruction phase workflow.
- Establish project communication and a document control plan.

4.3.2 Partnering

Critical to the success of a PDB project, partnering helps foster a spirit of teamwork and cooperation through:

- Shared goals,
- Defined issue resolution procedures,
- Clear action plans, and
- The monitoring of team performance to ensure that goals are achieved.

As part of the initial Project Kickoff Workshop, or shortly thereafter, the TDOT PM leads a partnering kickoff to discuss the project's partnering approach.

Formal partnering meetings are typically held throughout the preliminary design/preconstruction phase at a frequency established by the TDOT PM and the DBT's Project

Manager. TDOT may also engage an independent third-party consultant to facilitate partnering meetings.

As a part of the partnering process, the TDOT PM and DBT Project Manager are to meet regularly (monthly if possible) with management from their respective organizations one step above their level, with the Oversight Committee or other TDOT leadership engaged as necessary. This allows executives from both organizations to be informed of project progress and encourages a working relationship to drive decision making and more effective collaborate and resolution of conflict.

4.3.3 Collaborative Design Development

Design development is an iterative process under PDB delivery, where the DBT directs its designer to advance design in collaboration with TDOT internal and support staff (e.g., its owner's representative). At each agreed-to milestone (minimally in line with each of the PDN's design milestones), the DBT prepares the appropriate submittal materials. TDOT, the DBT, and the ICE (if needed) participate in design/field review meetings for each work package identified.

As identified in the RFP, the use of an online collaboration software to share comments with multiple parties is encouraged. The DBT, via its designer, collects all design review comments and questions from the various participants, providing comment forms or reports to TDOT to ensure that all comments and questions have either been incorporated/resolved or noted as unresolved or not incorporated into the project.

It is important to note that for schedule driven projects, TDOT and the DBT must evaluate (and TDOT must agree) to the benefits of incorporating a construction approach that has been tailored to the DBT's preferred means and methods, versus the risk of a delay if the design needs to be revised because the DBT is not awarded the final design/construction contract.

4.3.4 Complex Construction and Innovative Approach Development

PDB delivery is particularly suited to address complex construction projects and to evaluate and incorporate construction techniques that may be unfamiliar to TDOT. PDB provides an opportunity to incorporate innovative approaches into the design development process. The DBT should direct input on its design throughout the preliminary design/preconstruction process, but particularly at the design/field review meetings and pricing milestone workshops and meetings. For PDB to achieve its full potential, the project team should be open to all suggestions, which could include innovative methods and materials for consideration.

4.3.5 Constructability Assessment and Improvement

As part of the collaborative design process, the DBT offers extensive constructability reviews and continuous feedback to its designer regarding its areas of expertise that may include:

- The feasibility and practicality of any proposed means and methods
- What it plans to select for materials, equipment, and labor
- Availability of materials
- Phasing and staging
- Temporary and permanent site improvements
- Earthwork and foundation considerations
- Coordination of the drawings and specifications
- Temporary construction easement needs
- Verification of quantities

Through this process, the DBT should offer alternatives that lead to cost reduction, schedule savings, or limiting impacts to the public.

The DBT's designer tailors the design to the DBT's preferred means and methods, with some of the most valuable input from the DBT being its construction phasing and staging to be used during construction. By collaboratively developing the phasing plans, there is an increased likelihood that the construction schedule will be accurate and achievable. PDB also allows TDOT to evaluate design decisions regarding the construction phasing and schedule, thereby integrating solutions that provide the best value to the public during construction.

4.3.6 Value Engineering (VE)

Title 23 U.S.C. 106 I(5) and 23 CFR 627.5I exempts DB projects from value engineering (VE) requirements because the PDB method incorporates VE concepts via the progressive technical concept (PTC) process (see Section 4.3.9) and the terms/conditions of the final design/construction contract. Additionally, VE Workshops are not required under PDB because VE is intrinsically built into the PDB process, where the DBT is hired specifically to provide input on constructability, innovation, schedule optimization, risk mitigation, phasing, and cost reduction continuously throughout the preliminary design/preconstruction phase.

However, TDOT may require a VE Workshop on projects where it is deemed beneficial. The TDOT PM works with the TDOT VE Office and FHWA to determine the focus of the VE study, which may include cost and/or schedule improvements. TDOT should hold the VE Workshop, optimally, during development of the Line and Grade plans/package (Stage 1), but it must be completed prior to conclusion of Stage 2 (Footprint Established) and submittal of the Functional Design Plans.

TDOT's VE Office or a third-party engineering consultant not directly involved in the design facilitates the VE Workshop. For a PDB project, the DBT may be included in the VE Workshop if the DBT has not been involved in advancing the preliminary design (i.e., the Line and Grade plans/package). However, cost savings due to the DBT's participation in the VE Workshop are not "shared" with the DBT because the cost has not been determined yet. Cost saving concepts developed through the VE Workshop during the preliminary design/preconstruction phase may be incorporated into the project at the TDOT PM's discretion and would then be reflected in the pricing process. Additional information about TDOT's VE requirements can be found in TDOT Instructional Bulletin No. 16-01.

4.3.7 Construction Schedule

The DBT is responsible for preparing and maintaining an overall project/construction schedule with input from TDOT. The schedule should be in a critical path method (CPM) format as coordinated with the designer and agreed-upon milestone dates. The schedule must have reasonable detail to assess potential work package options. The project schedule is updated at each pricing milestone, as further explained in Chapter 5.

4.3.8 Risk Management

Throughout the preliminary design/preconstruction phase, the DBT (including its designer) and TDOT collectively collaborate to identify project risks (and opportunities), proposing mitigation and actively controlling risks.

The DBT is responsible for identifying design and construction risks and helping to develop the associated cost and schedule impacts when monitoring and controlling risk. The DBT is responsible for advancing and refining the design to minimize or eliminate identified risks. The project team also collaboratively discusses which party owns and controls the risk. Understanding which risks can or must be controlled by TDOT and which can and are best shared with or allocated to the DBT results in an efficient and effective GMP Proposal and overall lower project cost.

The risk analysis and management process generally follows the five steps shown below.

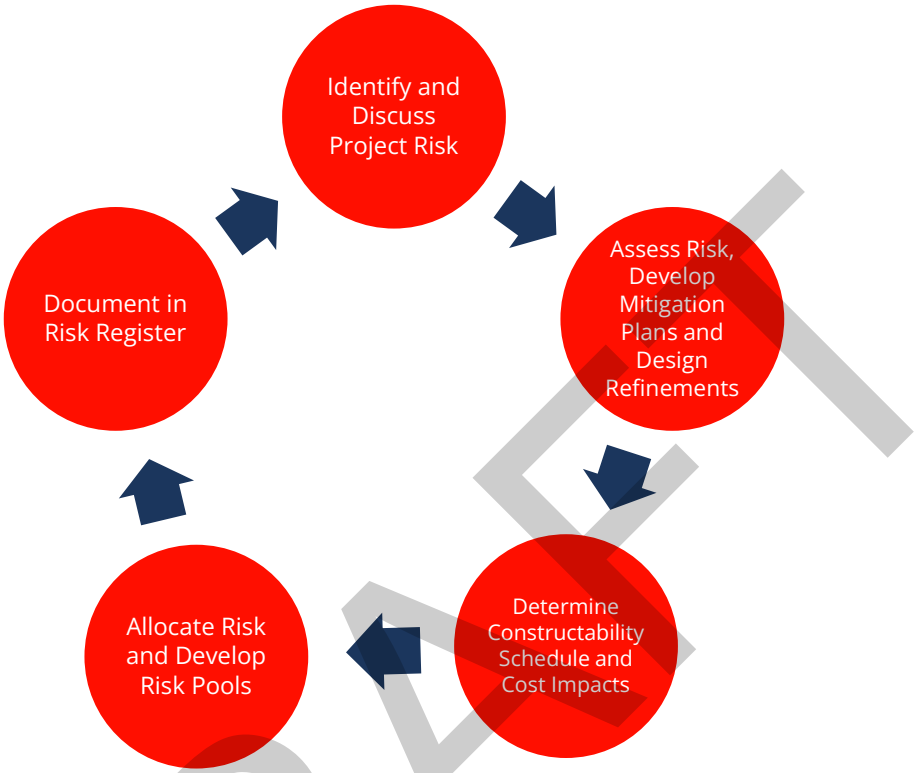


Figure 4-2. Risk Management Process

Identify the Risk

An initial list of project risks is identified early in the process as described in Chapter 2. Prior to onboarding the DBT (as part of 1PM4 of the PDN), the team likely has identified project-specific risks that would benefit from early DBT collaboration.

During the PDB procurement phase, the DBT lists and defines (in its proposal) risks it anticipates to encounter and what methods it proposes to manage and mitigate the identified risks. These initial risks become the basis for the project's Risk Register, with the project team reviewing the register to reach consensus on:

- Risks to carry forward,
- The likelihood that the risk will occur, and
- A general approach to mitigate the risk or maximize an opportunity.

Additional project risks are then identified and addressed throughout the iterative design development process.

Analyze the Risk

The project team collaboratively assesses risks through a series of workshops held at established pricing milestones (with additional meetings being beneficial for the process).

The initial risk management meetings typically focus on identifying and assessing project risks and investigating innovative design solutions. During later meetings, the focus shifts to discussions of the cost and schedule impacts, risk allocation, and ownership (as necessary).

Mitigate and Plan for the Risk

In a traditional DB, without the benefit of the DBT's collaboration, risks result in a contractor adding contingency to its bid. In PDB, there is a unique opportunity to advance and refine the design to reduce DBT-identified risk. Risks eliminated through design refinement can be either removed from the Risk Register or noted as resolved. If the risk cannot be eliminated, it remains on the Risk Register and the DBT helps TDOT prepare a management plan for each remaining risk. Management can involve further investigation, such as soil borings or potholing utilities, changing the design to avoid the risk to eliminate or reduce the impact, or transferring the risk to a different risk assignment/owner.

Additionally, some risks can be mitigated using a work package approach. This includes reviewing all materials or equipment that could benefit from early procurement. The project team should also identify construction phases that may benefit from staged construction packages. For example, an early construction package could be procured to allow for utility construction to proceed or to allow the project schedule to advance earlier, while project details are resolved for subsequent phases.

Allocate the Risk

Once a risk has been identified and quantified, it is assigned to either TDOT or the DBT. The goal is to assign the risk to the party best able to manage or control the risk. Risks can be allocated solely to the DBT or TDOT, or they can be shared.

Monitor and Control the Risk

The objectives of risk monitoring and management are to systematically track the listed risks, identify any new risks, and effectively manage the contingency reserve. Risk monitoring and updating occurs after the risk mitigation and planning processes early in the PDN process before the DBT is procured and then continues through the preliminary design/preconstruction and final design/construction phases. The list of risks and associated management/mitigation strategies are likely to change as the project matures, new risks develop, or anticipated risks are mitigated.

Periodic risk reviews repeat the tasks of identification, assessment, analysis, mitigation, planning, and allocation. Regularly scheduled risk management meetings can be used to ensure that risk is continually reviewed. If unanticipated risks emerge, or a risk's impact is greater than expected, the planned response or risk allocation may not be adequate.

Risk Register

The Risk Register is a tool used to document the risk management process. The purpose of the Risk Register is to define, document, identify cost and schedules impacts, and produce detailed mitigation plans for each listed risk. The Risk Register includes the agreement of how TDOT and the DBT define the risks, who is responsible, and how the risks are to be paid for during construction. The responsibility of preparing and maintaining the Risk Register is assigned to the TDOT PM and supported by the owner's representative (as applicable). The TDOT PM incorporates input from the DBT (including its designer), TDOT subject matter experts, and the ICE.

By the end of the preliminary design/preconstruction phase, the Risk Register describes all known project risks and includes the approach between TDOT and the DBT regarding risk management for the project. The contract documents are then conformed to capture what has been agreed to on the risk register, including the special provision(s) that outline contractually how risks are treated and the associated method of compensation.

Contingency Pricing and Risk Assignment/Ownership

Contingency is bid into every project, regardless of delivery/contract method, and reflects the risks present at the time the contract is bid. Typically, higher risk means contractors include higher amounts for contingency and lower risk means lower amounts.

One of the major benefits of PDB contracting is that it allows TDOT and the DBT to collaboratively work together during the preliminary design/preconstruction phase to best understand, manage/allocate, and reduce risk on the project, thereby lowering contingency costs.

Risk, under PDB, is assigned to one of the following:

- **DBT Owned Risks:** Risks that are generally retained by the DBT and accounted for in its GMP Proposal as part of its bid contingency, such as:
    - Labor availability,
    - Material pricing fluctuations and availability,
    - Schedule delays that are the result of the DBT's failure to perform,
    - Volatility in subcontractor pricing, and

- Subcontractor management.

TDOT and the ICE review the DBT's estimating assumptions to fully understand any contingency that the DBT has assigned to the work. If the contingency is considered high, TDOT works with the DBT to:

- Mitigate risks that are contributing to the high contingency (see Section 4.3.8 for approaches to mitigate risk),
- Manage the risk through transferring the risk to a shared or provisional risk pool, or
- Remove the risk from the DBT entirely by accepting the risk by TDOT.

For pricing transparency and to facilitate GMP negotiations, risks owned by the DBT should be clearly identified in the DBT and the ICE's open-book pricing.

- **DBT Design Contingency Risks:** Given the desire to agree to a GMP before completing final design, the DBT may request to include cost in its GMP Proposal to account for changes resulting from design advancement (including covering costs to address changes to the quantities used to price the work versus the final quantities to be constructed). The cost the DBT carries will vary depending on the pricing milestone, with this amount being zero if the plans have progressed to 100% (i.e., the final Construction Documents). TDOT may also elect to cover this cost under a provisional bid item or allowance (see the "Provisional Risk" section below for more detail). **TDOT/Department Owned Risks:** Risks that are owned by TDOT are captured as part of TDOT's risk/contingency. The TDOT PM considers ownership if TDOT has a better opportunity to manage the risk as compared to the DBT or if the risk is completely beyond the control of the DBT.

  The TDOT PM may also consider ownership if in TDOT's view the probability of the risk occurring is less than the DBT's assessed probability. For example, the DBT is including a high contingency in a bid item to cover the cost of potential weather delays that could increase the rental costs for a piece of specialty equipment. TDOT may decide to own that risk and include this price within TDOT's contingency. If the weather delay occurs, TDOT is responsible for paying the DBT. However, if the weather delay does not occur, then TDOT has saved the contingency cost without having to share the cost savings.

- **Provisional Risks:** Provisional bid items (sometimes knows as provisional sums) are a tool for managing risks that have a high amount of uncertainty, along with a high likelihood of occurring, but still have the potential for the DBT to control. If the risk is encountered during construction, the DBT is paid per the agreed-to payment specification and as outlined in the contract documents. Examples include use of dynamic message boards (by the hour), undercutting (by the cubic yard), use of uniformed traffic control officers (by the hour), or rock excavation.

  The ICE validates the basis for pricing the provisional bid items, which are typically paid on a unit cost basis, but may also be paid on via lump sum or time and materials (T&M). Of note, provisions bid items are to be paid outside of the lump sum/GMP as further described in Section 4.3.11.

Using provisional bid items allows TDOT the ability to recover the unrecognized risk and collaboratively assists with controlling the risk whenever possible. If the DBT and TDOT cannot agree to an appropriate price for the provisional bid item, the TDOT PM may decide to pay for the risk (if it occurs) on a T&M basis (see Time and Material Allowances [T&M] below) or accept the risk entirely by TDOT.

Provisional bid items may be:

- **Capped or Uncapped:** For capped provisional bid items, the DBT receives payment up to a maximum value for the bid item, beyond which the DBT owns the risk for overruns. For uncapped provisional bid items, there is no limit on the maximum value of payment/reimbursement. TDOT's default approach is to use capped provisional bid items.
- **Shared or Unshared:** When a provisional bid item is shared, any remaining dollars for that bid item is shared between TDOT and the DBT upon project completion, using an agreed upon cost sharing ratio defined in the contract documents. When a provisional bid item is unshared, any remaining cost savings at project completion accrue to TDOT.

  The contract documents are to clearly define whether the provisional bid item is shared or unshared. TDOT's preference is to use the unshared approach in most instances. The use of shared provisional bid items incentivize the DBT to actively manage the risk during construction. When considering use of a shared provisional bid item, the TDOT PM should avoid setting the initial budget for the provisional items artificially high to guarantee a savings at project completion. For these reasons, the TDOT PM is to present any recommendation to use a shared provisional bid item on a case-by-case basis with the Regional Alternative Delivery Manager and Director of Alternative Delivery (as needed).

  If there is limited or no ability for the DBT to control or mitigate the use of the provisional bid item, there is no advantage to TDOT sharing the savings.

Note that per 23 CFR 200.433, amounts for major project scope changes, unforeseen risks, or extraordinary events (e.g., force majeure events) may not be included in any risk pricing or contingency.

Risk Management as it Relates to the Pricing

Developing the Risk Register and assigning risk to an owner are integral to preparing the DBT's cost at each pricing milestone, including the DBT's GMP Proposal. The DBT and ICE are best able to prepare accurate estimates as risks are identified and mitigated. Assigning risks to the most appropriate owner allows the DBT to reduce contingencies. The open-book format allows TDOT to fully understand the contingencies within the GMP Proposal, and the risk ownership approach provides a tool to separate risk from discussions surrounding costs.

Risk Workshops

As led by the TDOT PM or Regional Alternative Delivery Manager, a Risk Workshop is typically held at each pricing milestone and includes the DBT, the ICE, and TDOT. TDOT invites FHWA if the project is federally funded. The purpose of the workshop is to:

- Review project risks,
- Discuss mitigation and associated costs,
- Identify the responsible party to manage the risk, and
- Establish risk assignment/ownership.

Chapter 5 provides additional information on the risk workshops.

4.3.9 Innovation Tracking and Implementation

Identification, tracking, and implementation of innovative ideas are critical to documenting ideas that reduce construction cost, optimize the construction schedule, and efficiently allocate risk. Related in form and function to a design-build's alternative technical concept (ATC), the PDB process uses a progressive technical concept (PTC) to capture innovation and project enhancements as the design evolves and the team refines its approach to constructing the project.

Table 4-1 provides an overview of the differences between an ATC used in a design-build application vs. a PTC used for PDB.

Table 4-1. PTC vs. ATC Breakdown

Consideration	PTC	ATC
Who can submit an idea?	Ideas may come from any team member (e.g., DBT, ICE, TDOT staff, owner's representative) at any time in the process.	Concepts are generated by individual proposers under a constrained, competitive procurement process.
Are there limitations to an idea's content?	TDOT may approve the merit of any idea to be integrated (including reduction in scope, changes in standards, reduction in quantities, etc.).	The ATC must describe an equal or better, value-focused solution that does not undercut the fairness and balance of the procurement process.
When can an idea be submitted?	Interactive discussion and open exploration of an idea's value may occur throughout the process, allowing time for ideas to incubate.	Confidential exploration of ideas are generated by individual proposers within an established timeframe, with the owner vetting and guarding response to an idea only during the procurement process.
How does collaboration assist in developing an idea?	Exploration and collaboration of ideas occur as the design progresses forward with an ability to incorporate into the project-specific information at any time in the pricing and GMP process.	Discussions and collaboration of ideas are constrained by an Owner's concern of creating an unfair procurement advantage if they were construed as coaching or leading one proposer more than another.

4.3.10 Work Packages

An advantage of PDB delivery is the flexibility to perform construction in phases with multiple work packages as each phase is identified and approved for construction. Reasons for using multiple work packages may include:

- Phasing to match funding schedules,
- Being able to construct an initial phase of work while right-of-way, utilities, or an environmental permit is being secured for future work packages, or
- Releasing a utility or clearing and grubbing package in advance of roadway construction to advance the project schedule.
- Procuring long-lead time construction materials and equipment to optimize the project schedule and avoid price escalations and volatility.

In all instances, TDOT should verify all work packages are severable and independent, such that TDOT is not obligated to have the DBT construct any other portions of the work. For this reason, a single work package for the project (in whole) may be more efficient as the pricing validation process and contracting process are only performed once. Furthermore, a single work package helps ensure that the cost of the entire project is within budget before proceeding with construction.

Per FHWA, work packages are intended for certain elements of work or stages of construction that can be accomplished after NEPA is obtained, but before final design is complete to allow TDOT and the DBT to reach price agreement for construction of the entire project. **Work packages are not to be used exclusively to piecemeal construction. Therefore, when considering a work package for a federally funded project, the TDOT PM, Regional Alternative Delivery Manager, and Director of Alternative Delivery are to consult with FHWA to verify that the work package's scope of work constitutes early work elements or stages of construction.**

When considering a work package, it is important to consider items that may benefit from remaining in place for subsequent work packages, such as a field office, temporary sheeting, erosion/sediment control, or traffic control. If the TDOT PM determines this to be a benefit, each respective package must clearly define the scope of work and basis of payment (i.e., each contract is biddable and buildable), and the work packages must remain severable.

Approval Process for Severable Work Packages

The TDOT PM must obtain approval, as early as possible, to progress the work in phases using severable work packages. In many cases, the idea to use multiple work packages occurs early in the project development process when TDOT evaluates risks and other factors to justify using

PDB. As part of this approval process, the TDOT PM must recommend to the Regional Alternative Delivery Manager that the PDB contract be separated into work packages, demonstrating that this approach is feasible and in TDOT's best interest as follows:

- Demonstrate that each proposed work package is stand-alone and severable and that the work performed will not conflict with future work under subsequent work packages. Stated another way, TDOT should proceed as if separate contractors are being hired to perform each work package. This approach ensures TDOT receives a fair/reasonable GMP Proposal for subsequent work packages, and, in the event TDOT and the DBT are unable to reach agreement on the price for a work package, TDOT may procure the construction of the remaining work packages through another procurement.
- Document how the work packages benefit the project. This may include cost savings, schedule savings, or risk mitigation. Any documented savings should account for potential cost or schedule increases that result from separating the project into work packages, such as additional time and costs needed for design.
- Document that the project funding allows for the proposed work packages and that it is feasible to obtain necessary approvals/authorizations, such as those needed from FHWA.

The Director of Alternative Delivery reviews and approves the packaging approach and may also choose to request approval from the Oversight Committee.

Requesting an Estimate/Budget Monitoring When Issuing a Work Package

If a work package is identified, a construction estimate for the entire project should be developed prior to awarding a contract for each work package. TDOT uses the estimate for the entire project to confirm that the overall construction scope can be completed within the available budget. This estimate may be developed by the DBT or others, with the TDOT PM consulting with the Regional Alternative Delivery Manager regarding the most appropriate party to document the overall cost estimate.

If the DBT prepares the estimate for the entire project, TDOT's expectation is that the DBT can construct the work for or below the estimate. However, the estimate for the overall project is only as accurate as the level of detail provided in the plans used as the basis for the estimate. Therefore, this is subject to documentable changes in pricing assumptions or the scope of work that affects future pricing.

The TDOT PM and Regional Alternative Delivery Manager evaluate the timing for requesting an estimate for the entire project on a project-by-project basis; however, it is typically requested in conjunction with the pricing to complete a work package. For federally funded projects, TDOT is required to provide FHWA with a total project cost estimate prior to FHWA's authorization of a work package.

There may be situations when there is a low-level of design available to estimate the entire project at the time a work package is needed; therefore, obtaining an accurate estimate, or one without significant contingency, is not possible. In these situations, the TDOT PM, Regional Alternative Delivery Manager, and Director of Alternative Delivery must consult with the Oversight Committee and FHWA (if federally funded) to determine whether to issue a work package without this confirming estimate.

Obtaining Clearance and Certification for a Work Package

The TDOT PM is responsible for verifying that each work package has the **necessary environmental, right-of-way, and utility clearances/certifications** (including any applicable FHWA approvals).

Of note and except for the environmental clearance, TDOT PM can elect to move forward with constructing a work package without all project clearances/certifications in place. For example, if a work package does not impact the project's permittable features (e.g., a stream or wetland) covered under a Tennessee Department of Environment and Conservation (TDEC) or US Corps of Engineer (USACE) water quality permit required to construct other portions of the project, then the work package can move forward. Or if a work package does not require or has acquired all related right-of-way, then the work package can advance while TDOT is clearing/acquiring the balance of the right-of-way needed to construct the rest of the project.

4.3.11 Contracting for Construction

As the initial work package is scoped, priced, and agreed to as a GMP, TDOT and the DBT then work to execute the project's initial construction contract, which may be amended as additional work packages are agreed to under separate GMPs.

Contract Content and Development Responsibilities

TDOT uses its standard design-build construction contract for its PDB projects, which includes:

- **Book 1: Instructions to design-builder (ITDB)**, as modified for use by a single DBT submitting a GMP Proposal. The process for customizing this book for PDB involves:
  - Eliminating all competitive procurement details and bidding procedures and instead highlighting necessary prequalification and bid submittal protocols for both the DBT and ICE's use when submitting a compliant bid into Bid Express system for analysis and award.
  - Eliminating the use of the alternative technical concept (ATC) process used for a competitive design-build procurement and replacing with documentation of progressive technical concepts (PTCs) generated by the project team during the preliminary design/preconstruction phase.

- Shifting focus on the confidentiality of the procurement process (as a whole) towards a focus on the confidentiality of the DBT's open-book pricing details submitted to support its GMP Proposal. Confidentiality of this information is further described in the ITDB template and Chapter 5.

- **Book 2: The contract** (as developed by TDOT) to include the standard terms, negotiated provisions specific to the final design/construction phase, and risk pricing, tracking, and triggering procedures.
- **Book 3: Project-specific information** (as prepared by TDOT in coordination with the DBT using previous design-build Book 3 examples from projects with similar scope) that details the final design and construction requirements not documented in the work package's plans and specifications prepared by the DBT for contract execution. Minimally, this book includes:
  - Maintenance of traffic (MOT) limitations/restrictions consistent with the collaboratively developed temporary traffic control plans and special provisions 108B (SP108B)
  - Outstanding right-of-way parcels and related availability dates
  - List of outstanding environmental permits and related availability dates
  - List of A-date and B-date packages (as coordinated with the impacted Utility Owners) and related "put to work" dates
  - Construction maintenance requirements
  - Safety, construction coordination, and construction limitation requirements
- Appendix 1: Reliable or notable reference materials prepared by TDOT or the DBT that informed the plans used to establish the GMP. This could include the following (based on project scope and GMP timing):
  - ROW acquisition tables and exhibits (reliable; prepared by the DBT)
  - Permit sketch drawings and agency applications (prepared by the DBT and TDOT, respectively)
  - Utility coordination plans (prepared by the DBT) and related utility contracts (reliable; prepared by TDOT)
  - Soils and Geology Report (reliable; prepared by the DBT)
  - Structure and Wall Foundation Reports (reliable; prepared by the DBT)
  - Survey files (reliable; prepared by the DBT)
  - Environmental technical studies' resource findings and assessments (reliable; prepared by the TDOT)
  - Environmental agency response documentation (reliable; collected by the TDOT)
  - The environmental document and related mitigation measures (reliable; prepared by the TDOT)
- Appendix 2: The DBT's plans and specifications for the executed work package/GMP.
  - Typically, a work package's Functional Design Plans are the earliest plans that can be priced and executed under a GMP.
  - However, Appendix 2 could also include the Plan-in-Hand plans, Construction Documents, or an interim plan set from what is detailed in the PDN.

- The key is that both TDOT and the DBT agree that the work package is priceable and constructable to move forward.

Contract Payment Provisions

Consistent with a Functional Design Plan level of design, not all design information is known, and the plans are not fully detailed. As such, a lump sum payment provision (consistent with design-build delivery) allows the most simplicity in payment and most representative of setting the price for an incomplete design. Figure 4-3 depicts an example breakdown of a work package GMP/lump sum amount.

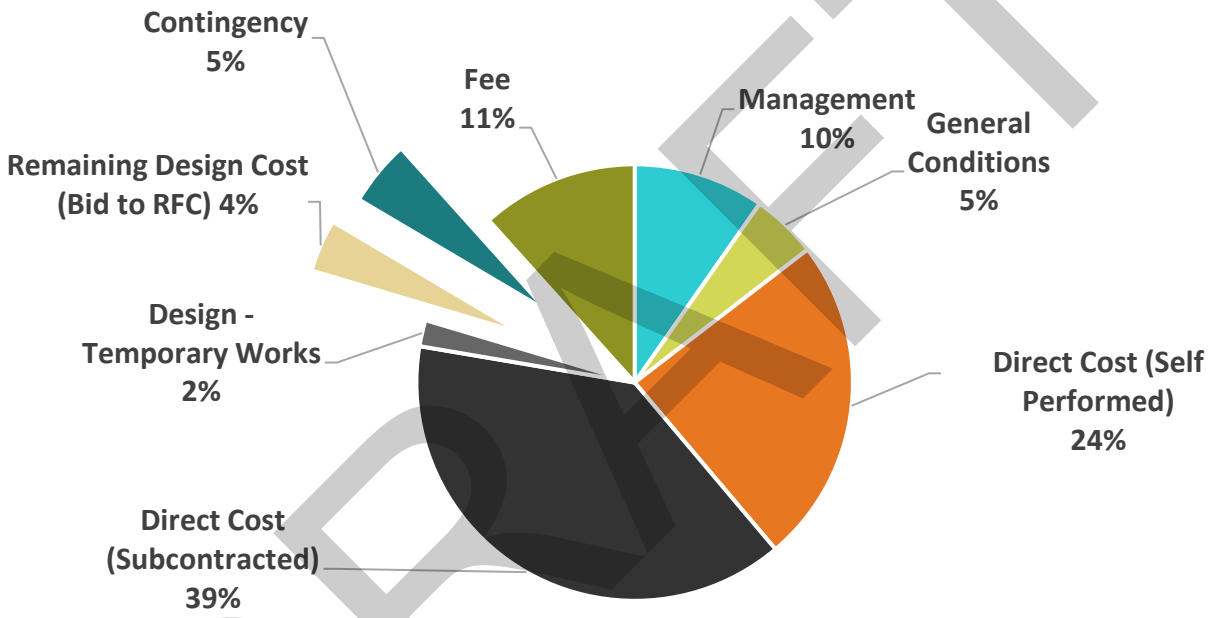


Figure 4-3. Example GMP/Lump Sum Breakdown

4.3.12 Permits, Agreements, and Right-of-Way

In PDB contracting, the TDOT PM is encouraged and the DBT is being paid to take advantage of its skills and expertise in advancing certain project development/design tasks, such as:

- Designing the necessary permit sketches,
- Providing design information for municipal or utility agreements, and
- Establishing and prioritizing the project's right-of-way footprint.

Directly engaging the DBT with the regulatory agencies, property owners, or interested stakeholders allows the parties to understand and commit to relevant construction details, such as staging or means and methods.

4.3.13 Diversity (Minority/Workforce/DBE) Plan

As noted in Section 3.3.5, the TDOT PM should coordinate with the Civil Rights Division through the Headquarters Construction Division to establish the diversity goals (minority, workforce, and DBE) for the project.

Within 30 days after the Civil Rights Division establishes the diversity goals (notably the DBE goal), the DBT prepares and submits an open-ended DBE Performance Plan (OEPP) that includes:

- A commitment to meet the project's DBE and related diversity goals;
- Details for the types of subcontracting work or services (with projected dollar amounts) that the DBT will solicit DBEs to perform; and
- An estimated time frame in which actual DBE subcontracts are to be executed.

Prior to award of a final design/construction contract, the DBT submits its final Diversity Plan that includes (for both DBE engagement and workforce diversity adherence):

- The names and addresses of the DBE firms that will participate on the project;
- A description of the work and dollar amount that each DBE firm will perform;
- Written documentation of the DBT's commitment to use each listed DBE firm to meet the contractual goal;
- Written confirmation from each listed DBE firm that it is participating in the work and for amount the DBT defined; and
- A plan to meet the OJT and other workforce goals.

If TDOT progresses the work using work packages, the project's diversity goals may be established for each package based on the individual characteristics of the work included with that package. TDOT should discuss with the DBT throughout the price development process and during each pricing milestone to confirm the DBT's ability and commitment to meet the goals.

4.4 Validating the DBT's Costs During Preliminary Design/Preconstruction

During the preliminary design/preconstruction phase, the TDOT PM reviews and approves the DBT's invoices for payment by tracking costs based on monthly progress payment requests/invoicing from the DBT. Validated by each Division (and documented accordingly) during the scoping process for the preliminary design/preconstruction phase, administration of

the preliminary design/preconstruction expenses should follow the practices and approaches used by TDOT to administer typical consultant contracts.

5 PDB Price Validation

This chapter outlines the process to validate the design-build team's (DBT's) price proposal(s), as developed during the preliminary design/preconstruction phase, to construct the project (or a portion thereof). This includes the process used to validate the DBT's costs both at early pricing milestone estimates and with formal GMP Proposal submissions.

This chapter details:

- The steps to follow for each formal pricing milestone,
- How to evaluate and approve a guaranteed maximum price (GMP), and
- The process to execute a final design/construction contract.

Of note, this chapter assumes engagement from an independent cost estimator (ICE) and TDOT's internal estimating process—both critical for validating the DBT's price submittal(s).

Definition of a GMP and a GMP Proposal

The GMP is defined as the contract price to complete the project's final design/construction phase. The GMP, as a lump sum payment, includes all:

- Direct costs, including direct construction costs and final design costs;
- Field indirect costs (general conditions, job supervision, insurance/bond, project office expenses, mobilization, quality control, etc.);
- All established DBT risk and project/shared provisional items, sums, or allowances;
- Any "pass through costs" (defined below); and
- The DBT's construction fee percentage (defined below).

The basis for the GMP is an open-book cost model that documents the basis for the DBT's GMP Proposal and all underlying assumptions, including:

- Labor rates and equipment rates,
- Benefits,
- Crew compositions and productivity factors,
- Contingencies and risks,
- Subcontractor/supplier quotes or estimated plug costs,
- Estimating factors,
- Escalation rates,
- Mobilization and general conditions,
- Overhead and profit, and
- All other items reasonably required by TDOT to understand the DBT's GMP Proposal.

It is expected that TDOT and the ICE are provided with direct access to and copies of the DBT's cost model. This model is developed during the preliminary design/preconstruction phase, as

refined through periodic (e.g., weekly) price coordination meetings and during each formal pricing milestone.

A GMP is not to be increased except for change orders or by use of the agreed-upon shared risk items or provisional sums, and the DBT assumes all risk with performance under the contract. This includes management of its subcontractors, suppliers, and any associated cost impacts over and above the GMP.

Pricing Milestone Estimates vs. Formal GMP Proposal

Early in the design development process, the DBT submits pricing milestone estimates that are used by TDOT to gain a better understanding of the DBT's early estimate of project construction costs. These pricing milestone estimates are compared to the estimate prepared by TDOT and, when used, an ICE.

Comparing the DBT's estimate with the TDOT and/or the ICE's estimate at established pricing milestones allows TDOT to review and resolve pricing disagreements throughout the process, in addition to maximizing opportunities to reduce costs through innovation and effective risk management.

Pricing milestone estimates are submitted to TDOT as non-binding estimates and represent the DBT's estimate to perform the construction work and finish the design. Although non-binding, a pricing milestone estimate is still considered a good-faith estimate of construction costs as represented by the work described in the plans submitted in support of the pricing milestone. Figure 5-1 details the steps involved in reviewing early, non-binding pricing milestone estimates.

When TDOT and the DBT mutually agree that the design and contract documents have been sufficiently developed to the point where the work can be priced with an acceptable level of certainty and risk, the DBT submits a formal, binding "GMP Proposal" to complete the project or a portion thereof (via separate work packages).

As described in Chapter 4, an advantage of PDB delivery is that a GMP Proposal may be submitted as early as the Functional Design Plans to complete Stage 2 (Footprint Established) of the Project Delivery Network (PDN), but is typically submitted prior to completing the Construction Documents as defined in 4RD1 of the PDN. Multiple GMPs may also be submitted by the DBT to facilitate various work packages, which could include early work packages or work packages for a specific project phase, as described in Section 4.3.10.

Figures 5-1 and 5-2 describe the steps involved in validating a GMP Proposal.

Figure 5-1: Pricing Milestone Process

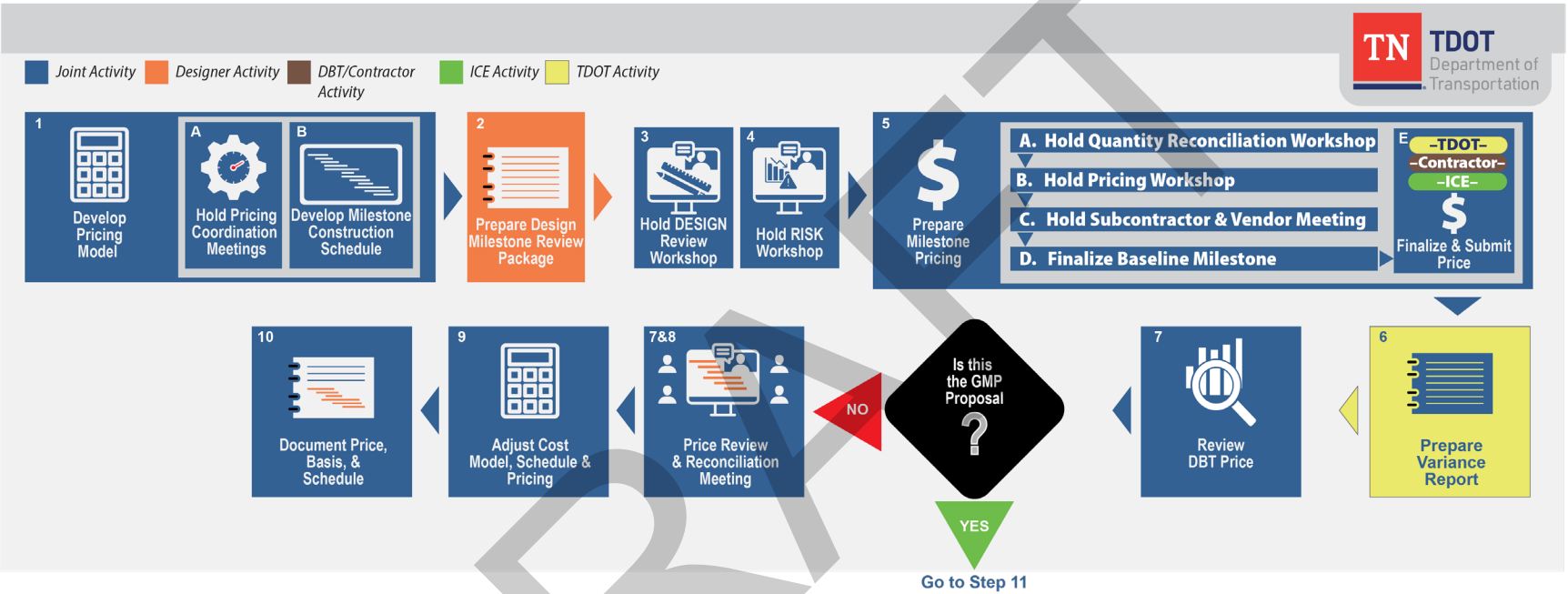
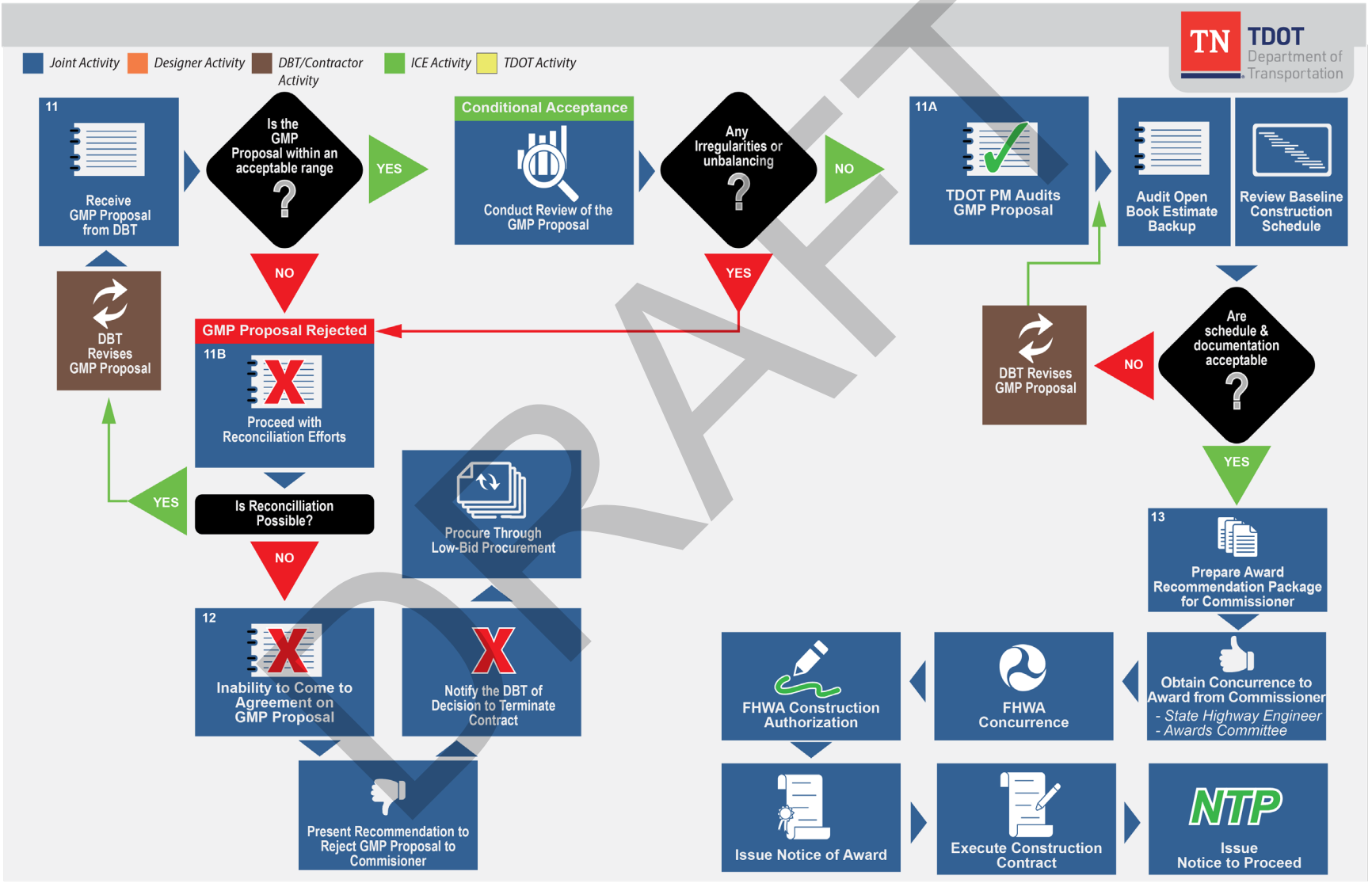


Figure 5-2: GMP Proposal Validation Process



Developing a Construction Fee for the GMP

As broken down in Appendix B of the PDB request for proposal (RFP) template, the DBT's construction fee is to consist of its profit plus the portion of home office overhead (G&A/General and Administrative costs) allocated to the project. Home office overhead (G&A) is defined as the cost necessary for the overall operation of the DBT's business operations spread across all of its ongoing projects. The DBT's construction fee is a fixed, markup percentage that is a part of the DBT's GMP.

During the preliminary design/preconstruction phase, TDOT, the ICE, and the DBT negotiate the appropriateness of the fee based on factors such as market conditions, risk, and similar project characteristics. TDOT leverages the ICE's expertise, who is familiar with market conditions and production-based estimating, to provide feedback to the DBT on its fee.

Ideally, the construction fee percentage for both the DBT and ICE should be the same (or similar), but ultimately, each party uses a fee that it believes is appropriate for the project. Any differences among TDOT, ICE, and the DBT's pricing factor into the fair market price analysis when the DBT submits its GMP.

Pass-Through Costs

TDOT may treat certain costs in the GMP as "pass-through" costs, which are paid based on actual costs, without any markup. The PDB RFP template defines what is considered a pass-through cost, which could include bonds, builder's risk, and other insurance costs.

TDOT typically pays these costs upfront shortly after executing a final design/construction contract. Any difference between the estimated and actual pass-through costs are handled by adjusting the contract value via a change order. All administrative effort associated with administering these pass-through costs should be captured in the DBT's construction fee.

Pricing Milestones Considerations

Validating a GMP Proposal under PDB involves an evaluation and acceptance of the DBT's price at defined milestones that parallel the project's design progression. The number of pricing milestones varies based on several factors, including:

- The overall level of design for the project,
- Project complexity, and/or
- The number of work packages needed to complete the project.

It is good practice to initially establish the pricing milestones in line with typical TDOT design/field review milestones for:

- Line and Grade Plans as part Stage 1 (Context/Scoping)
- Functional Design Plans to conclude Stage 2 (Footprint Established)
- Plan-in-Hand Plans to conclude Stage 3 (Plan-in-Hand)

However, TDOT, the ICE, and the DBT may also establish different (or additional) pricing milestones based on the minimum level of design needed to price a particular work package or as the project's schedule demands for starting an early final design/construction phase or work package. Notably, the TDOT Project Manager (TDOT PM) should use caution when introducing additional pricing milestones or resubmissions to reduce a DBT's attempt at "gamesmanship" in trying to narrow in on a cost that is acceptable to TDOT, thereby undercutting TDOT's leverage in negotiations of a fair market value. As such, the TDOT PM is to consult with the Regional Alternative Delivery Manager, Director of Alternative Delivery, and FHWA (if there is federal funding) when proposing additional pricing milestones.

5.1 Developing the Pricing Cost Model (Task 1)

Successful price justification in a PDB process relies on thoroughly documenting the basis used to price the work. The DBT develops and maintains detailed documentation to capture a history of how scope and risk elements evolve throughout the preliminary design/preconstruction phase. To this end, the DBT must be open and transparent about its approach to pricing and its intended means and methods. A successful PDB process relies upon an "open book" approach, where the DBT develops a transparent cost model and is responsible for documenting the basis for its model at each pricing milestone.

5.1.1 Developing an Approach to Pricing

The TDOT PM, the DBT, and the ICE create a schedule that facilitates an efficient approach to each pricing submittal. This schedule must consider the design packages, the completeness of the design, and the estimating/pricing resources expected to prepare the submission.

TDOT also fosters a cooperative GMP submittal and negotiation process with a focus on risk identification and mitigation. With the early investment of a DBT, TDOT expects the DBT to provide detailed and reasonable suggestions to minimize cost and schedule risk for both TDOT and the DBT.

5.1.2 Holding Pricing Coordination Meetings (Task 1A)

The TDOT PM (and Estimating Lead [as applicable]), the DBT, and the ICE hold regular pricing coordination meetings to plan and document relevant elements of a pricing organization and breakdown for specific scopes of work. The intent of these meetings is to have the ICE and TDOT Estimating Office concur, when possible, with the DBT's cost model and provide common

ground for later negotiations between TDOT and the DBT. Topics to discuss during these coordination meetings focus on key assumptions used to price the work and may include:

- Work breakdown structure (WBS)[4]
- Labor rates
- Crew sizes (including shifts per day, assumed weather days, and hours per shift assumptions)
- Type of equipment proposed to perform the work (including equipment rates and limitations to operations)
- Material and subcontractor costs (including any subcontractor and material plug prices[5])
- Considerations for escalation, commodities, suppliers and fabricators
- Risk identification, assumptions, mitigation, and assignments
- The final design and construction schedule
- Value engineering and constructability suggestions
- Long-lead items
- The DBT's planned "means and methods" for constructing the project.

During the pricing coordination meetings, the DBT and ICE may share certain information to facilitate reconciliation, with the TDOT PM conferring with the Regional Alternative Delivery Manager, Director of Alternative Delivery, and the Preconstruction and Estimation Office regarding what information may be shared between the parties prior to any pricing submission. While TDOT and the ICE are to respect the confidentiality of any DBT proprietary pricing information, the DBT is to provide access to and copies of its open-book backup data, which includes all estimate/GMP proposal documents, design files, specifications, quotations, takeoffs, associated pricing assumptions, and other cost estimate information. The ICE's role is to review information the DBT provides, but may elect to use its own information (for example, labor and equipment rates or subcontractor pricing) to competitively price the work.

5.1.3 Developing the Milestone Construction Schedule (Task 1B)

During the preliminary design/preconstruction phase, the DBT initially prepares (and then updates) its critical path method (CPM) schedule reflecting the final design/construction phase sequencing and staging of the work for TDOT review and concurrence during the pricing milestones. Because construction activity durations, schedules, and constraints are integral to

[4] Although the DBT may elect to develop its pricing WBS to match its production-based cost, the DBT is responsible to convert into TDOT's WBS (TDOT DB LS Pay Items) for its final submissions/GMP Proposal to support development of the TDOT engineer's estimate as required by the TCA. This is in addition to the general conditions and indirect costs being separated into individual categories within the WBS, rather than being spread into the bid items as each would in a traditional bid.

[5] Refer to Section 5.5.3 for definition of "plug pricing."

the pricing effort, the current version of the schedule is also shared with the ICE as a supporting document for review and use for discussion, input, and then as the ICE's basis for its price, including its consideration for the overall project duration.

5.1.4 Maintaining Integrity and Independence of the Independent Cost Estimate and Schedule Assumptions

To maintain the integrity and independence of the ICE, the ICE uses discretion when discussing any cost or assumptions foundational to its pricing. However, the ICE can question the DBT regarding the contents of the DBT's price and share details as needed, unless otherwise directed by the TDOT PM or Regional Alternative Delivery Manager.

Additionally, the ICE should use independent judgment when assuming productivity rates, crew compositions, etc., as it is not obligated to assume the same production assumptions.

The ICE is to also maintain independence regarding how individual work operations are priced, with the intent to discuss and resolve differences in price and schedule assumptions as part of the pricing coordination meetings and formal price milestones. This includes the reality that differences may still exist and need to be discussed as identified during the reconciliation process detailed in Section 5.8.

5.2 Preparing the Design Milestone Review Package (Task 2)

The DBT prepares the design/field review package for each pricing milestone, providing the package to the TDOT PM for distribution to the ICE and TDOT's Estimating Office.

Each design/field review package includes the:

- Plans,
- Quantity take-offs (prepared by the DBT's designer),
- Proposed pay items, and
- Any specifications commiserate with that level of design.

Each subsequent design/field review package is to include a summary report, prepared by the DBT, which outlines significant changes to the plans between milestones. Changes to specifications between milestones are identified by tracking changes within the document.

5.3 Holding a Design Review Workshop (Task 3)

Following submittal of the design/field review package, the TDOT PM schedules a design review workshop with the DBT, the ICE, TDOT technical review/oversight staff, the Owner's Representative, and other external oversight reviewers (as needed).

Prior to the workshop, each party reviews the review package (typically over a two-week period) and prepares for the workshop that:

- Allows all parties to understand the work being priced;
- Allows all parties to provide feedback on the plans;
- Discusses assumptions on means and methods and construction staging or sequencing that affects how the project is priced;
- Defines and agrees upon the scope of work in a bid item; and
- Allows all parties to identify inconsistencies, ambiguities or other items that need to be corrected in the plans.

5.4 Holding a Risk Workshop (Task 4)

In conjunction with the design review workshop (or soon thereafter), the TDOT PM schedules a formal risk workshop that includes the DBT, ICE, and TDOT technical experts (or the Owner's Representative) who have insight on the project's risks. For federal projects, the TDOT PM invites FHWA to the workshop. The TDOT PM includes other key stakeholders, third parties, and subject matter experts, as needed.

During this meeting, TDOT and the DBT agree on how risks and contingencies are quantified and assigned, noting how risk influences project cost. The ICE participates in the workshop to understand risk and contingency assignment, and TDOT, or its designee, maintains and updates the project Risk Register as an output to the workshop for each pricing milestone.

During the initial risk workshops, time is often spent identifying risks, assigning time and cost impacts for each risk, and mitigating or eliminating risk via design optimization or constructability input. During later workshops, the focus shifts to identifying any new risks encountered and then updating the Risk Register for risks that have either been retired or where the time and cost impact may have changed. The goal of the workshop is to ensure all estimators have a clear and consistent understanding of how risks are to be managed for the project and within the final design/construction contract.

At each pricing milestone, the Risk Register is updated to document the party responsible for managing and pricing the risk. As discussed in Section 4.3.7, the team is to price and manage risk as follows:

- Risks assigned to TDOT are covered as part of an owner's contingency budget.
- Risks assigned to the DBT are included in the DBT's price (e.g., its GMP Proposal).
- Risks that are shared or paid for as provisional items, sums, or allowances are to be within the GMP Proposal and final design/construction contract.

5.4.1 Ensuring Continuous Risk Management

Although the project team conducts formal risk workshops at each pricing milestone, proactive risk management is vital to successful PDB contracting, where the collaborative environment provides an opportunity for TDOT to leverage the DBT's experience and knowledge of construction risks during the preliminary design/preconstruction phase to develop mitigation strategies and agree upon an approach to manage and price the risk in a way that benefits the project. The TDOT PM is responsible for leading the project team in this effort.

Discussion on risk management, mitigation, and pricing strategies should be built into every meeting. Although the Risk Register is formally updated during pricing milestones, the TDOT PM should refer to it regularly, encouraging the team to follow up on risk mitigation strategies and confirming that the DBT's designer is incorporating feedback into the project plans and specifications.

5.5 Preparing a Milestone Price (Task 5)

The following subtasks are performed for each pricing milestone submission.

5.5.1 Holding a Quantity Reconciliation Workshop (Task 5A)

Scheduled after the design and risk workshops, but prior to submitting a milestone estimate or a GMP Proposal, the quantity reconciliation workshop is used to compare quantity take-offs between the estimators and to agree upon a common set of quantities used as the basis for the price.

The DBT and the ICE each independently compile quantities into a spreadsheet that is collectively shared. With TDOT, the DBT, and the ICE in attendance, the DBT leads the documentation of agreed-upon quantities in a master spreadsheet, distributing the documentation to the estimators following the meeting. Multiple meetings may be needed to reconcile quantities, depending on the size and complexity of the design package. Of note, TDOT's estimate is to use the DBT's quantities.

5.5.2 Holding a Pricing Workshop (Task 5B)

Scheduled after the design review, risk, and quantity reconciliation workshops, but prior to submitting a milestone estimate or the GMP Proposal, this workshop is a forum for the estimators to discuss final assumptions related to the means, methods, risks, and key assumptions used to price the work.

5.5.3 Pricing Subcontractors and Vendors

Subcontracted Work Pricing

Pricing subcontracted work is critical for verifying a "fair and reasonable" price because, in many cases, subcontracted work (which includes both subcontractors and vendors) may consist of 50 percent (or more) of the DBT's price. To determine what is fair and reasonable, TDOT should evaluate whether prices are within an acceptable range of historic bids, as adjusted for ***both*** current market conditions and the Project's risk profile and as verified through discussions with the ICE.

The verification process includes confirming the DBT has conducted adequate subcontractor and vendor outreach to obtain competitive quotes for all subcontracted work. During early pricing milestones (e.g., for the Line and Grade Plans or the first iteration of the Functional Design Plans), it is often necessary to use "plug" prices or a combination of plugs and quotes to estimate the cost for subcontracted work.[6] However, it is recommended that all plug pricing be replaced with actual quotes for the GMP Proposal.

TDOT and the ICE may elect to verify the DBT's suggested plug pricing (if the plug pricing seem unrealistic compared to current market conditions) and may ask the DBT for additional justification if either party feels the prices do not reflect a fair market value for the work. Depending on the team's target for when to contract the construction work, the DBT should begin de-plugging subcontractor and vendor pricing, at the latest, with the Plan-in-Hand pricing milestone, but de-plugging is needed earlier if the team elects to price the Functional Design Plans. In all, de-plugging should only occur when the team is prepared to submit a GMP Proposal, as de-plugging too early may confuse the subcontracting community, create subcontractor bidding fatigue, or produce inaccurate pricing due to the time between the price submittal and the actual start of the construction.

To ensure competitive pricing, the DBT is to make a good faith effort to solicit a minimum of three quotes for all subcontracted work and for all material suppliers. If obtaining three quotes is not feasible, the DBT is to document via transparent and collaborative documentation why three quotes could not be obtained. TDOT may also request that the DBT consider self-performing certain work, if possible, to help ensure competitive pricing.

[6] Plug prices are estimated costs provided by the DBT based on past experience or are preliminary estimates based on informal, non-binding discussions with subcontractors or vendors.

The DBT may use a system of its choosing to receive and collect quotes from its subcontractors and vendors. However, the DBT is to share/make available to TDOT and the ICE all quotes it receives.

Subcontractor Selection

In general, TDOT expects the DBT to select the lowest bidder to perform the item of work. However, there are justifiable exceptions, and it is the responsibility of the DBT to justify and gain concurrence on these exceptions with TDOT and the ICE. The following are some examples where a DBT may choose to select a subcontractor or vendor that is not the lowest bidder:

- Accounting for or adjusting a quote for subcontractor exclusions, where the prime must then account for the cost-to-cure of any exclusions in its price. This can modify the result of the bid analysis. For example, one subcontractor may indicate the prime is responsible for hauling off spoils where another subcontractor may include that cost in its quote.
- Mitigating subcontractor performance risk based on history of working with the subcontractor.
- Selecting a subcontractor to meet the project's disadvantage business enterprise (DBE) goal.

The ICE participates in discussions about subcontractor selection, but is not required to use the same quotes as the DBT based on its independent judgment.

Subcontracting Plan

Developed and advanced with each pricing milestone, the DBT is to prepare a Subcontracting Plan to manage its subcontractors and vendors to complete the work in accordance with the contract (all within budget and on-time). TDOT reviews and approves the DBT's Subcontracting Plan that includes:

- A description of the subcontracting process and selection criteria, including how subcontractor and vendor selection is fair for all potential bidders and provides an environment that fosters competition.
- A description of the work that the DBT intends to self-perform and what items of work will be subcontracted.
- A solicitation log demonstrating satisfactory solicitation coverage, including a summary of which subcontractors/vendors were contacted, which did/did not submit a price, and which were selected.
- Bonding approach for the subcontractors.
- Summary of the risks, exclusions, support services, and other adjustments (e.g., bond) required for the selected quote.
- Outline of how the quotes are distributed into the various bid items.
- "Best-value" documentation where the lowest bidder was not selected.

- Tracking progression of subcontractor/vendor quotes between pricing milestones and an explanation about upward or downward movement between milestone submissions when quotes are used as the basis for the GMP Proposal.

Estimating Subcontractor Contingency

Considering that the GMP Proposal is based on actual quotes, there is often a lag between the time when the DBT receives the quote (used as the basis for negotiating the GMP) and when the work is to be performed. Although some subcontractors and vendors include the risk of escalation in their quotes, most include exclusions (such as limits on escalation or only honoring the quoted prices for a limited time).

As a result, the DBT (and ICE) must discuss and account for this risk in its GMP Proposal, including adding escalation to subcontractor and vendor prices, adding contingency in the GMP Proposal, or a combination of both. The ICE and DBT should openly discuss this risk and its associated costs, but ultimately, the DBT and ICE each use its own independent assumptions in its respective price.

5.5.4 Holding a Subcontractor and Vendor Selection Meeting (Task 5C)

Prior to submitting a milestone estimate or a GMP Proposal, the DBT facilitates a subcontractor and vendor selection meeting with TDOT and the ICE. The DBT uses this meeting to:

- Discuss the quotes and explain how the quotes are distributed within the bid items,
- Clarify any support services required for each subcontractor or vendor,
- Demonstrate to TDOT that it has solicited the minimum number of quotes from the subcontractors/vendors (where feasible), and
- Review any relevant pricing exclusions from the quotes.

During the meeting, the DBT is to provide TDOT and the ICE a list of subcontractors or vendors contacted to document the solicitation outreach efforts, including any subcontractors or vendors that were unresponsive. The ICE is ***not to contact*** the subcontractors and vendors directly to try to solicit pricing on its own.

When pricing subcontracted work, the ICE is encouraged to coordinate with the DBT to agree on common assumptions. However, the ICE is not required to use the same quotes as the DBT and may elect to use its own approach to subcontracted pricing, which may include:

- **Using a Different Quote.** If the ICE uses a quote different from the DBT, it should discuss and justify its choice with TDOT and the DBT during reconciliation. Although the ICE is expected to use the lowest quote for the work, the team should have an open discussion during the subcontractor/vendor selection meeting about best-value selection, weighing factors such as risks, exclusions, DBE participation, and support services required for each individual quotes.

- **Estimate the Work as Self-Performed.** In general, the ICE does not generate independent cost estimates for the work that is competitively bid within the subcontracted scope. However, the ICE is not to be precluded from pricing the work as self-performed if it believes that a lower price for the work can be achieved by self-performance.
- **Use Independent Judgment.** The ICE may use subcontractor and vendor pricing based on its experience. However, the ICE should be prepared to discuss and justify its approach with TDOT and the DBT during reconciliation, demonstrating that its price is based on market conditions for the project area, rather than on historic values or "average bid prices."
- **Make Recommendations on Alternative Subcontractors/Vendors for Consideration.** If the ICE has concerns that the DBT's solicitation outreach effort was not satisfactory, it should discuss this openly with the DBT and TDOT prior to a GMP Proposal submittal. The DBT is under no obligation to use any recommendations provided by the ICE, and ultimately, the DBT is responsible for selecting the subcontractor or vendor to perform the work. This option should be used on a limited basis.

5.5.5 Finalizing a Milestone Baseline Schedule (Task 5D)

As part of the DBT's formal pricing milestone submission, a copy of its proposed construction schedule is submitted to TDOT, documenting the schedule's basis for the related pricing milestone estimate. Prior to submission, the DBT shares that schedule with the ICE and TDOT for review and discussion. Upon the DBT resolving comments received from TDOT or the ICE, all estimators are to use this schedule as the basis for their pricing efforts.

5.5.6 Finalizing/Submitting the GMP Proposal (or Milestone Estimate) (Task 5E)

Following the milestone pricing workshop and subcontractor/vendor selection meeting, the following is finalized:

- **DBT Price (as a Milestone Estimate or its GMP Proposal).** For each pricing milestone, the DBT prepares its "good faith" price, which represents its contractual price, or bid, to construct the work. After submission, the DBT shares its detailed estimate or GMP Proposal with TDOT.
- **TDOT Estimate.** TDOT develops an independent, unit price-based estimate for the design at each pricing milestone. This may be prepared by in-house resources or the Owner's Representative. TDOT uses this estimate to evaluate the appropriate price for construction per TCA §54-1-504(b)4), but this estimate is not provided to the DBT or ICE. Of note, TDOT's estimate is not a bottom-up estimate and follows TDOT's standard estimate format. As such, the DBT is to conform its WBS to match TDOT's standard bid items and provide quantities to be used for TDOT's estimate.

- **Independent Cost Estimate.** When used, the ICE prepares its estimate at each pricing milestone, transmitting its estimate exclusively to TDOT to be held "in the blind" to all other parties.

The ICE and the DBT each submit its price directly to the TDOT PM, with the DBT including its open-book cost model with its submittal.

5.6 Preparing a Variance Report (Task 6)

The ICE or another consultant (such as the Owner's Representative) prepares a variance report to compare the DBT's price to the ICE and TDOT's price. The TDOT PM consults with the Director of Alternative Delivery about the best party to prepare the report.

The TDOT PM shares the variance report with the DBT in advance of any reconciliation meetings. However, to preserve the integrity and independence of the ICE, the variance report does not reveal the ICE's pricing (otherwise known as a "blinded variance report"), but instead notes whether the DBT's price is "within acceptable range" or "outside acceptable range" of the ICE. An acceptable range is when the GMP Proposal is within 10 percent of the ICE's estimate.

5.7 Reviewing the Milestone Price (Task 7)

After the variance report has been finalized, TDOT reviews the DBT's price, the variance report, and the DBT's open-book cost model. TDOT involves the ICE or other specialized experts to assist in this review based on the scope of work being estimated. Early review may include discussions with the DBT regarding areas of concern or significant variance.

The TDOT PM must provide sufficient time to review the DBT's price prior to holding a reconciliation meeting (a minimum of one week for typical projects and up to two weeks for larger, more complex projects).

As noted in Section 5.1.2, as part of the open-book pricing environment, TDOT requires the DBT to "share" or review certain materials that clarify how the DBT derived its price, all in an effort to reconcile differences between the estimators. ***However, TDOT, the ICE, and any other parties with whom TDOT shares the open-book cost model and backup must hold in confidence all such materials, which may contain proprietary or confidential pricing information.*** The team should discuss and enact agreed-upon document control procedures to ensure the DBT's pricing information remains confidential at all times.

5.8 Leading a Reconciliation Meeting (Task 8)

The TDOT PM schedules and facilitates an estimate reconciliation meeting with the DBT and ICE to attempt to reconcile pricing differences noted in the variance report. The reconciliation

process gives the DBT, TDOT, and ICE an opportunity to understand each other's perspectives about pricing assumptions, risk assignment, and construction means and methods. The goal is to reconcile pricing differences so that the DBT's price is determined to be fair and reasonable.

Attendance at reconciliation meetings should be limited to key TDOT project management and estimating staff who are directly reconciling differences between the ICE and DBT's price. TDOT invites FHWA to attend for projects with federal funding.

TDOT and the DBT may not be able to resolve all differences in pricing during reconciliation meetings. If that is the case, the TDOT PM and DBT are to:

- Acknowledge differences, move forward with the design, and attempt to continue reconciling differences during a subsequent pricing milestone, or
- Agree that reconciliation is not possible and terminate the contract to allow TDOT to finalize the design and procure the construction of the project through a low-bid procurement (as outlined in Section 5.11.4).

5.9 Adjusting the Cost Model, Schedule, & Price (Task 9)

Following reconciliation, the TDOT PM and DBT may agree to modify the bidding assumptions that affect the price. If done, the DBT adjust its cost model, narrative, and schedule to reflect these changes and resubmits each to TDOT. Only one resubmittal is allowed at each non-binding pricing milestone submission, with additional resubmissions allowed if approved by the Director of Alternative Delivery. Any pricing changes are carried into the next pricing milestone or the GMP Proposal. During the reconciliation process, the ICE may also adjust its bidding assumptions and estimate.

5.10 Documenting the Price, Basis, and Schedule (Task 10)

TDOT retains a copy of the DBT and ICE's price submittals, the variance report, estimating assumptions (including the narrative), and the CPM schedule for each pricing milestone. A brief report for each pricing milestone may also be prepared to document the results of the pricing milestone.

5.11 Reviewing the Final GMP Proposal (Task 11)

5.11.1 Threshold for Accepting a GMP Proposal

The GMP Proposal must be within 10 percent of the estimate used to validate the DBT's price (ICE or TDOT's estimate) to move forward with awarding a final design/construction contract.

5.11.2 Entering the GMP Proposal into the Electronic Bid System (EBS)

When initially comparing the DBT's GMP Proposal to the estimates prepared by the ICE and TDOT, the TDOT PM uses the variance report to compare prices (see Section 5.6). When the DBT's price is within the acceptable range and TDOT is ready to move forward with presenting the GMP Proposal to the Commissioner for approval (or on the third resubmission if the GMP Proposal is not within acceptable range), the DBT formally enters its GMP Proposal into the electronic bid system (EBS) and TDOT's Estimating Office enters the ICE (or its estimate if an ICE is not used) into EBS and creates the bid tabs document.

5.11.3 GMP within an Acceptable Range (Task 11A)

When the DBT's GMP Proposal is within the acceptable range and is within TDOT's budget, the TDOT PM works with the Construction Division to review the following aspects of the GMP Proposal:

- There are no math errors or imbalances/irregularities in the bid.
- The open-book cost model backup is complete and matches the GMP Proposal.
- The DBT's baseline construction schedule matches the assumptions used to develop the GMP Proposal.
- All other applicable requirements for reviewing a DBT's bid (as described in TDOT's *HQ Construction Processes Manual*) are satisfied.

The DBT must resolve any deficiencies before TDOT presents the GMP Proposal to the Commissioner for award (see Section 5.13).

In the event that the GMP Proposal is within 10% of the ICE but not within 10% of TDOT's estimate (or vice versa), the TDOT PM consults with the Director of Alternative Delivery and assigned Construction Division representatives about whether to proceed with reconciliation efforts or forward the GMP Proposal to the Commissioner.

When TDOT is satisfied that the GMP Proposal meets the requirements for an acceptable bid, the team follows the process for finalizing and awarding a final design/construction contract as detailed in the Project Delivery Network (PDN) and Section 3 of the *HQ Construction Processes Manual*. The timing of this process should coincide with TDOT's typical letting schedule, unless otherwise approved by the Director of Alternative Delivery.

5.11.4 GMP Requires Reconciliation (Task 11B)

If the GMP Proposal exceeds the allowable range or contains irregularities, the TDOT PM proceeds with reconciliation efforts (as outlined in Section 5.8) in an attempt to negotiate a fair

and reasonable price for the work and to resolve irregularities upon the DBT's resubmittal of its GMP Proposal.

If the DBT has advanced its plans and specifications to a "Construction Document" level of design (see 4RD1 in the PDN), TDOT may allow the DBT up to three attempts to reconcile and resubmit its price, after which the TDOT may elect to contract with the DBT's designer to finalize the design and then advertise the project through its standard low-bid process. For all other plan development stages (e.g., plans for Line and Grade, Functional Design, or Plan-in-Hand), TDOT typically allows the DBT only one attempt to reconcile and resubmit its price. If agreement on the price does not occur during these early pricing milestones, TDOT, the DBT, and the ICE should continue to advance the design in an effort to resolve differences.

The Director of Alternative Delivery may allow additional attempts to reconcile on a case-by-case basis. In the event that TDOT elects to discontinue negotiations (after three attempts to reconcile), the Director of Alternative Delivery coordinates with the Commissioner to obtain concurrence to:

- Terminate the DBT's current contract;
- Execute a separate contract with either the DBT's designer or another design team to finalize the design, which may require the designer to modify the plans, specifications, and estimate into TDOT's format; and
- Then advertise the project through a low-bid process.

5.12 Rejecting the GMP Proposal (Task 12)

Per TCA §513-4-F, TDOT may not accept the DBT's GMP Proposal if it exceeds TDOT's estimate, or the ICE, by more than 10 percent. If reconciliation is not possible and TDOT is unable to successfully negotiate a GMP that does not exceed the 10 percent threshold, TDOT coordinates with the Commissioner to reject the GMP Proposal and procure the project/work package as described in Section 5.11.4. If TDOT has previously awarded a final design/construction contract to the DBT for an earlier work package, the DBT is allowed to continue work on that contract.

TDOT notifies the DBT in writing regarding its decision to terminate and reprocure the work.

5.13 Final Approval to Authorize or Reject a GMP Proposal

Formal acceptance or rejection of the DBT's GMP Proposal requires approval from the Commissioner. When the TDOT PM and assigned Construction Division representatives have prepared a final recommendation regarding acceptance or rejection and compiled the required backup materials that document the basis for the GMP Proposal (see Section 5.11.3), the Director of Alternative Delivery coordinates with the Chief Engineer and the Director of

Headquarters Construction to schedule a meeting with the Commissioner to obtain the Commissioner's authorization to accept or reject the GMP Proposal and, if accepted, proceed with executing a final design/construction contract.

The Regional Alternative Delivery Manager, in coordination with the TDOT PM and any assigned Construction Division representatives, prepares the following documentation for the meeting with the Commissioner:

- A memo recommending acceptance or rejection of the GMP Proposal (see the PDN and Section 3.9 of the *HQ Construction Processes Manual* for further details)
- Bid tabs document for EBS (prepared by Headquarters Construction)
- Copy of the variance report comparing the GMP proposal to the ICE (if used)
- GMP Proposal analysis summarizing key highlights and any irreconcilable differences

The Chief Engineer, the Director of Alternative Delivery, and any assigned Construction Division representatives attend the meeting with the Commissioner. During this meeting, the Director of Alternative Delivery:

- Presents the results of the pricing validation process.
- If recommending to contract an early work package:
  - Demonstrates that progressing the work covered by the work package is in the best interest of the project and TDOT.
  - Demonstrates that the work constructed under the work package does not affect/impact adjacent areas that do not have required clearances (e.g., environmental permits, right-of-way or utility clearances, etc.).
  - Demonstrates that the work package saves time, reduces inconvenience to the traveling public, and/or reduces construction costs.
  - Demonstrates that the work defined in the work package is stand-alone and severable.

The Commissioner may ask questions to determine whether to accept or reject the DBT's GMP Proposal. If the Commissioner concurs with the recommendation to accept the GMP Proposal, TDOT moves forward with executing a final design/construction contract. If the Commissioner rejects the GMP Proposal, the TDOT PM notifies the DBT, and TDOT is to procure the work as detailed in Section 5.11.4.

5.14 FHWA Approval/Authorization (federally funded projects only)

5.14.1 FHWA Concurrence on Price Analysis

Per 23 CFR 506(d)(4), the FHWA Division Administrator must review and approve TDOT's price analysis and the agreed-to price for construction (for the entire project or for a work package) before FHWA authorization for construction services. The Director of Program Development

and Administration prepares the materials required for FHWA concurrence on the price analysis, including a copy of the bid tabs document from EBS and the variance report comparing the DBT's price with the ICE (if used).

5.14.2 FHWA Authorization for Construction

Following FHWA's concurrence on the price analysis, the Division of Program Development and Administration submits a Request for Construction Authorization to FHWA prior to executing the final design/construction contract for the project or for a portion thereof (if authorizing a work package).

FHWA must authorize federal funds each time TDOT executes a new final design/construction contract or work package amendment. The request for authorization does not occur until after TDOT has determined the DBT's price to be acceptable. Therefore, the request for concurrence on the price analysis and construction authorization can be sent to FHWA at the same time.

5.15 Notification of Acceptance/Executing a Final Design/Construction Contract

When concurrence to accept the DBT's GMP Proposal has been obtained from the Commissioner and FHWA (for federally funded projects), TDOT and the DBT execute a final design/construction contract following the process detailed in the *HQ Construction Processes Manual.*

5.16 Notice to Proceed

Following receipt of the necessary bonds, insurance, and other materials TDOT requires prior to beginning construction (see the *HQ Construction Processes Manual*), the Regional Alternative Delivery Manager issues Notice to Proceed to authorize the DBT to proceed.

5.17 Expected Time Frame to Reach Agreement on Price

The process to reach agreement on the price to construct the project or portion thereof, from submitting the GMP Proposal to determining the acceptability of the GMP Proposal, typically takes between four to eight weeks for each GMP Proposal, depending on the extent of differences between the DBT's GMP Proposal and the ICE/TDOT estimate.

The pricing milestone submittals during the preliminary design/preconstruction phase are implemented so that the process to reach price agreement is streamlined. However, sufficient time should be allowed for all parties to become familiar with any changes to the plans since the last pricing milestone.

For the GMP Proposal submission, the TDOT PM and Director of Alternative Delivery should discuss the amount of time anticipated to reach price agreement and inform the parties associated with the pricing process so each can commit to the timeframes and meetings required. Whenever possible, it is best to be conservative regarding the timeframes needed. Too little time may ultimately undermine TDOT's ability to work through the process of resolving differences and ensuring it is receiving a fair/reasonable price for the work.

6 Final Design/Construction Phase Work

During the final design/construction phase, the design-build team (DBT) finalizes the design and constructs the project in accordance with the final design/construction contract and TDOT's *Design-Build Standard Guidance*. While TDOT administers the final design/construction phase similarly to a design-build (DB) project, there are several considerations to highlight, as detailed in this chapter.

6.1 Phases and Packages

A PDB project is divided into two project phases: the preliminary design/preconstruction phase and the final design/construction phase. However, in PDB, the preliminary design/preconstruction and final design/construction phase may overlap as TDOT and the DBT agree to early work packages or phased construction (see Chapter 4).

Similar to design-build, TDOT may allow the DBT to begin construction before design is finalized and still continue serving in the design/preconstruction role as the DBT's designer completes design for other portions of the project.

6.2 TDOT Project Manager Support during Construction

In the final design/construction phase, the TDOT PM is responsible for managing the risks that are assigned to TDOT or shared with the DBT. However, there are a number of other TDOT staff overseeing construction, including the construction engineering and inspection lead (CEI), resident engineer, and/or project engineer, building on their involvement during the preliminary design/preconstruction phase. This early engagement allows the CEI staff and/or resident engineer a better understanding of the risk allocation, project details, and the construction means and methods discussed and agreed to during this early project development process.

6.3 Change Orders

One of the major advantages of a PDB projects is that the DBT has been involved in leading the design development, which may (but not always) lead to fewer change orders during construction. Because the DBT owns the design risk, it is expected that the DBT is less likely to consider a claim for additional compensation for issues related to the design. Additionally, risk assignment accommodates known situations that would otherwise require major change orders in a design-bid-build or design-build project.

The change order processes remains similar to the process used on design-build projects. However, for PDB projects, the open-book cost model used to develop the GMP Proposal can be a useful reference to understand what the DBT assumed during estimating and to justify fair pricing for any related change orders.

6.4 Disputes and Resolutions

As with change orders, disputes and claims should be minimized under a PDB project because of the collaboration in the preliminary design/preconstruction phase. However, should disputes and claims arise, TDOT handles resolution as defined in the Section 105.16 of the TDOT Standard Specifications, similar to how TDOT handles disputes and claims on a design-bid-build or design-build project. The TDOT Project Manager should refer back to the partnering session and conflict escalation ladder defined during the preliminary design/preconstruction phase to facilitate discussions and confirm that the appropriate staff are engaged in the dispute resolution.

6.5 Monitoring Civil Rights Requirements and Labor Compliance

The DBT must adhere to all civil rights requirements and FHWA labor compliance, just as with design-build projects. TDOT monitors the subcontractor (and diversity) plans during construction and makes adjustments as needed to ensure compliance. Additionally, TDOT Headquarters Construction Division monitors the DBT's compliance with any diversity goals set for each work package and for the project as a whole. As part of the final design/construction contract, the DBT is required to meet the established diversity goals or to demonstrate that good faith efforts have been made in accordance with CFR requirements.

6.6 Measurement and Payment on PDB Projects

In general, for PDB projects, TDOT uses a lump sum payment with provisional items/sums that uses a schedule of values and related payment terms similar to payment under a design-build project. Prior to any individual provisional item, sum, or allowance exceeding the original GMP quantity, TDOT requires the DBT to submit written justification to the TDOT PM for review and written approval before TDOT makes any additional payment. Payment to the DBT for any provisional items or allowance is to not exceed the total GMP amount without an approved change order.

6.7 Payment for General Conditions and Project Overhead

As part of the open-book estimating approach and to better facilitate reconciliation, pricing milestone estimates and the GMP Proposal separate the time-related costs (including general

conditions and project overhead commonly referred to as “indirect costs”) from the direct costs of the work. TDOT pays for the indirect costs separately based on a schedule of values (similar to how project overhead payments are made for a design-build contract).

TDOT and the DBT should agree in advance on how the TDOT will pay time-related costs during construction. TDOT should base the method of payment for these costs on a defensible approach that reflects how these costs are to be incurred during construction. For example, items such as project overhead, project office, field trailers, portable toilets are often spread evenly throughout the life of the project and paid out uniformly with each progress payment. Alternatively, these costs could be paid out proportional to the percentage of direct costs paid with each progress payment.

6.8 Applying the Risk Register During Construction

The Risk Register is used in PDB as a tool to help the parties define how a risks is addressed if encountered during construction. As outlined in Section 4.3.8, the Risk Register is incorporated into the contract documents to clarify whether the risk is eligible for relief, what type of relief is allowed (time, cost, or both), and the associated method of compensation. One key difference between traditional DB and PDB is that PDB allows the option to utilize provisional bid items outside of the GMP to address specific areas of risk and uncertainty, rather than just building this contingency into the lump sum GMP. Provisional bid items are further described in Section 4.3.8.

If a risk eligible for relief is encountered during construction, the DBT should notify the TDOT PM using the process and timeline defined in the contract documents. In PDB, the TDOT PM has access to the DTB’s open-book estimate that was used as the basis to estimate the GMP to validate the requested relief. Both TDOT and the DBT continually and collaboratively monitor their respective contingency pools to ensure that adequate budget is available to complete the project.