



Design-Build Manual



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TABLE OF CONTENTS

PART I - INTRODUCTION TO DESIGN-BUILD 1

 CHAPTER 1 - OVERVIEW 2

 1-1 Purpose 2

 1-2 Similarities & Differences 2

 1-3 Use 3

 1-4 Design-Build Objectives 4

 1-5 Authority 4

 1-5.1 Federal Acquisition Regulations (FAR)..... 5

 1-5.2 SAFETEA-LU..... 5

 1-5.3 Special Experimental Project No. 14 (SEP-14) 5

 1-5.4 Special Experimental Project No. 15 (SEP-15) 6

 1-5.5 FHWA Final Rule on Design-Build Contracting 6

 1-5.6 Summary of SHA's Design-Build Process 7

 CHAPTER 2 – THE DESIGN-BUILD DECISION..... 9

 2-1 Factors To Be Considered 9

 2-1.1 Time..... 9

 2-1.2 Flexibility..... 9

 2-1.3 Innovation/Creativity 9

 2-1.4 Complexity of Maintenance of Traffic (MOT) 9

 2-1.5 Current Status of Design 10

 2-1.6 Approval Requirements 10

 2-1.7 Cost/Funding 10

 2-1.8 Miscellaneous Requirements..... 10

 2-1.9 Environmental Risks/Issues..... 10

 2-1.10 Complexity of Utility Relocations 10

 2-1.9 Geotechnical Risks 11

 2-2 Project Identification 11

 2-2.1 Project Goals 11

 2-3 Risk Identification, Assessment, and Allocation 11

 CHAPTER 3 - ROLES & RESPONSIBILITIES 16

 3-1 Project Owner Benefits..... 16

 3-2 The Project Owner Responsibilities (See Part IV also) 16

 3-3 The Design Builder's Responsibility (See Part IV also)..... 17

 3-4 Stakeholder Identification 17

PART II - SHA'S PROCUREMENT PROCESS 18

 CHAPTER 1 – DESIGN-BUILD LOW-BID CONTRACTING..... 19

 1-1 The Process 19

 1-1.1 Project Informational Meeting..... 19



- 1-1.2 Schedule..... 20
- 1-1.3 Request for Information/Addenda..... 20
- 1-1.4 Technical Evaluation Factors & Adjectival Ratings..... 20
- 1-1.5 Evaluation of Technical Proposals..... 21
- 1-1.6 Bid Opening 22
- 1-1.7 Award and Notice to Proceed 22
- 1-1.8 Stipends..... 22
- CHAPTER 2 - COMPETITIVE SEALED PROPOSALS 24
- 2-1 The Process 24
- 2-1.1 Project Informational Meeting 25
- 2-1.2 Schedule..... 25
- 2-1.3 Request for Information/Addenda..... 25
- 2-1.4 Evaluation Factors - RFQ 26
- 2-1.5 Alternative Technical Concepts (ATC)..... 26
- 2-1.6 Confidential Meetings for ATCs 26
- 2-1.7 Administration Review of ATC 26
- 2-1.8 Technical Evaluation Factors & Adjectival Ratings..... 27
- 2-1.9 Evaluation of Proposals and Selection 28
- 2-1.10 Award and Notice to Proceed 28
- 2-1.11 Stipends..... 29
- PART III - PRELIMINARY ENGINEERING..... 31
- CHAPTER 1 – DESIGN DEVELOPMENT, PLAN & ESTIMATE PREPARATION 32
- 1-1 Design Development 32
- 1-1.1 Topographic and Property Surveys 32
- 1-1.2 Utility Designating and Test Pits 32
- 1-1.3 Pavement Design and Geotechnical Engineering 32
- 1-1.4 Roadway Design..... 33
- 1-1.5 Structural Design 33
- 1-1.6 Storm Drain Design 33
- 1-1.7 Stormwater Management Design 34
- 1-1.8 Erosion and Sediment Control Design..... 34
- 1-1.9 Maintenance of Traffic Design and Construction Phasing..... 34
- 1-1.10 Traffic Design..... 35
- 1-1.11 Environmental Design..... 35
- 1-1.12 Landscaping / Aesthetics Design..... 36
- 1-1.13 Plats..... 36
- 1-1.14 Design Exceptions 36
- 1-2 Plan Preparation..... 36
- 1-2.1 Title Sheet..... 37
- 1-2.2 Index of Sheets, Abbreviations and Conventional Signs 37
- 1-2.3 Typical Section Sheets 37



- 1-2.4 Geometry Sheets..... 38
- 1-2.5 Roadway Plan Sheets 38
- 1-2.6 Roadway Profile Sheets 39
- 1-2.7 Structure Sheets 39
- 1-3 Specifications 39
 - 1-3.1 Community Relations & Public Outreach..... 40
- 1-4 Construction Cost Estimates 40
 - 1-4.1 Estimate Type..... 40
 - 1-4.2 Estimate Considerations..... 40
- CHAPTER 2 - PRE-ADVERTISEMENT REVIEW PROCESS 41
 - 2-1 Preliminary Investigation 41
 - 2-2 Utility Preliminary Investigation..... 42
 - 2-3 Right-of-Way Needs Meeting 42
 - 2-4 Semi-Final Review 42
 - 2-5 Final Review..... 43
 - 2-6 Plans, Specifications & Estimate 43
- CHAPTER 3 – PERMITS 43
 - 3-1 Environmental Permits 43
 - 3-2 DBT's Modification Requirements 44
- PART IV - PROJECT EXECUTION 45
 - CHAPTER 1 – DESIGN-BUILD TEAM COMPOSITION 46
 - 1-1 SHA's Role 46
 - 1-1.1 SHA Construction Personnel 46
 - 1-1.2 SHA Design Personnel 46
 - 1-2 Design-Builder's Role 46
 - 1-2.1 Design-Builder's Construction Personnel 47
 - 1-2.2 Design-Builder's Design Personnel 47
 - 1-3 FHWA's Role 47
 - CHAPTER 2 – DESIGN-BUILD SPECIFICATIONS 50
 - 2-1 Standard Specifications used on Design-Build Projects..... 50
 - 2-2 Special Provisions-Terms & Conditions (TC) Section 2 – Bidding Requirements and Conditions for Design-Build 50
 - 2-2.1 Value Engineering (VE) 50
 - 2-2.2 Partnering 50
 - 2-2.3 Request for Proposals and Invitation for Bids..... 50
 - 2-2.4 Project Description..... 50
 - 2-3 Special Provisions-Terms & Conditions (TC) Section 3 – Scope of Work for Design-Build..... 50
 - 2-3.1 Design-Build – Design and Construction Scope of Services 50
 - 2-3.1a General Requirements..... 50
 - 2-3.1b Design Personnel Identified in Project..... 51
 - 2-3.1c Design Quality Control Plan..... 51



- 2-3.1d Stormwater Management & Erosion Sediment Approvals..... 51
- 2-3.1e Coordinating Design Submissions..... 51
- 2-3.1f DB Construction Personnel 51
- 2-3.2 Administration Services 51
- 2-3.2a Construction Inspection 51
- 2-3.2b Meetings 52
- 2-3.3 Design Document Deliverables 52
- 2-3.3a Coordinating Design Documents 52
- 2-3.4 Performance Specifications 52
- 2-4 Special Provisions – TC Section 7 – Payment for Design-Build..... 52
- 2-4.1 Contractor’s Cost Breakdown and Schedule of Payments 52
- 2-4.2 Method of Measurement..... 52
- 2-4.3 Monthly Material Clearance 53
- 2-4.4 CPM Schedule..... 53
- CHAPTER 3 – CONTRACT ADMINISTRATION 54
- 3-1 General Overview..... 54
- 3-2 Specification Reviews 54
- 3-3 SHA Staff Authority and Relationships..... 54
- 3-4 SHA Responsibility for 100% Design Elements 54
- 3-5 Construction Inspection 54
- 3-6 Design Changes..... 55
- CHAPTER 4 – CONSTRUCTION MANAGEMENT OPERATION ISSUES 56
- 4-1 General Overview..... 56
- 4-2 Meetings..... 56
- 4-3 Management Schedule and Plans..... 56
- 4-4 Design Reviews..... 56
- 4-5 The Administration’s Role in Design Quality Assurance 57
- 4-6 Documentation Control System and Daily Record Keeping 57
- 4-6.1 Performance Monitoring 57
- 4-6.2 Monitoring Utilization of DBE’s 57
- 4-7 Monthly Estimates and Progress Payments..... 58
- 4-7.1 Establishing Pay Items 58
- 4-8 Processing Monthly Updates..... 58
- 4-9 CMP Scheduling..... 59
- 4-10 Inspection Responsibilities 59
- 4-10.1 Inspector’s Role..... 59
- 4-10.1aPlans and Specifications 59
- 4-10.1bErosion and Sediment Control Plans 60
- 4-10.2 Independent Environmental Monitor..... 60
- 4-11 Material Clearance 61
- 4-12 Utility Design and Relocations..... 61



4-13	Responding to RFI's	61
4-14	Requested Contract Changes	61
4-15	Project Issues	63
4-16	Tracking Design Submissions, Greenline Revision and As-Builts.....	63
4-17	Final Acceptance and Closeout.....	63



TABLE OF FIGURES

FIGURE I-1	DESIGN-BUILD PROJECT DEVELOPMENT	8
FIGURE I-2	RISK ANALYSIS MATRIX.....	13
FIGURE I-3	RISK IDENTIFICATION, ASSESSMENT, AND ALLOCATION WORKSHEET	14
FIGURE I-4	RISK ALLOCATION AND ALLOCATION SUMMARY.....	15

LIST OF TABLES

TABLE I-1	DESIGN-BID-BUILD & DESIGN-BUILD COMPARISON	2
TABLE I-2	RISK MATRIX	13
TABLE II-1	MILESTONE – (DBLB).....	23
TABLE II-2	MILESTONE – (CSP).....	30
TABLE III-1	PLAN SHEET DESCRIPTION.....	36
TABLE III-2	PERMITS	43
TABLE IV-1	FHWA NON-EXEMPT REVIEW PROCESS	47
TABLE IV-2	CHANGE APPROVAL MATRIX	64

APPENDICES

Appendix A.	Abbreviations and Definitions.....	66
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PART I INTRODUCTION TO DESIGN-BUILD



PART I - INTRODUCTION TO DESIGN-BUILD

CHAPTER 1 – OVERVIEW

1-1 Purpose

This Design-Build Manual (DBM) has been developed to provide the State Highway Administration (SHA) with comprehensive guidelines for managing, producing, and administering Design-Build projects. The DBM provides policies and procedures for contract document development and assembly, project management and execution.

The guidelines in this manual shall be used in conjunction with SHA's *Highway Development Process Manual* and Construction Manuals, Directives and Memorandums. The purpose of this document is to:

- Describe the preliminary engineering process, procurement, and project execution procedures to be followed on a Design-Build (DB) Project;
- Define the roles and responsibilities of the participants in the DB process; and
- Outline the format and content of DB procurement methods and contract documents.
- Guide construction management and project management staff in carrying out their responsibilities on a DB project.

1-2 Similarities and Differences

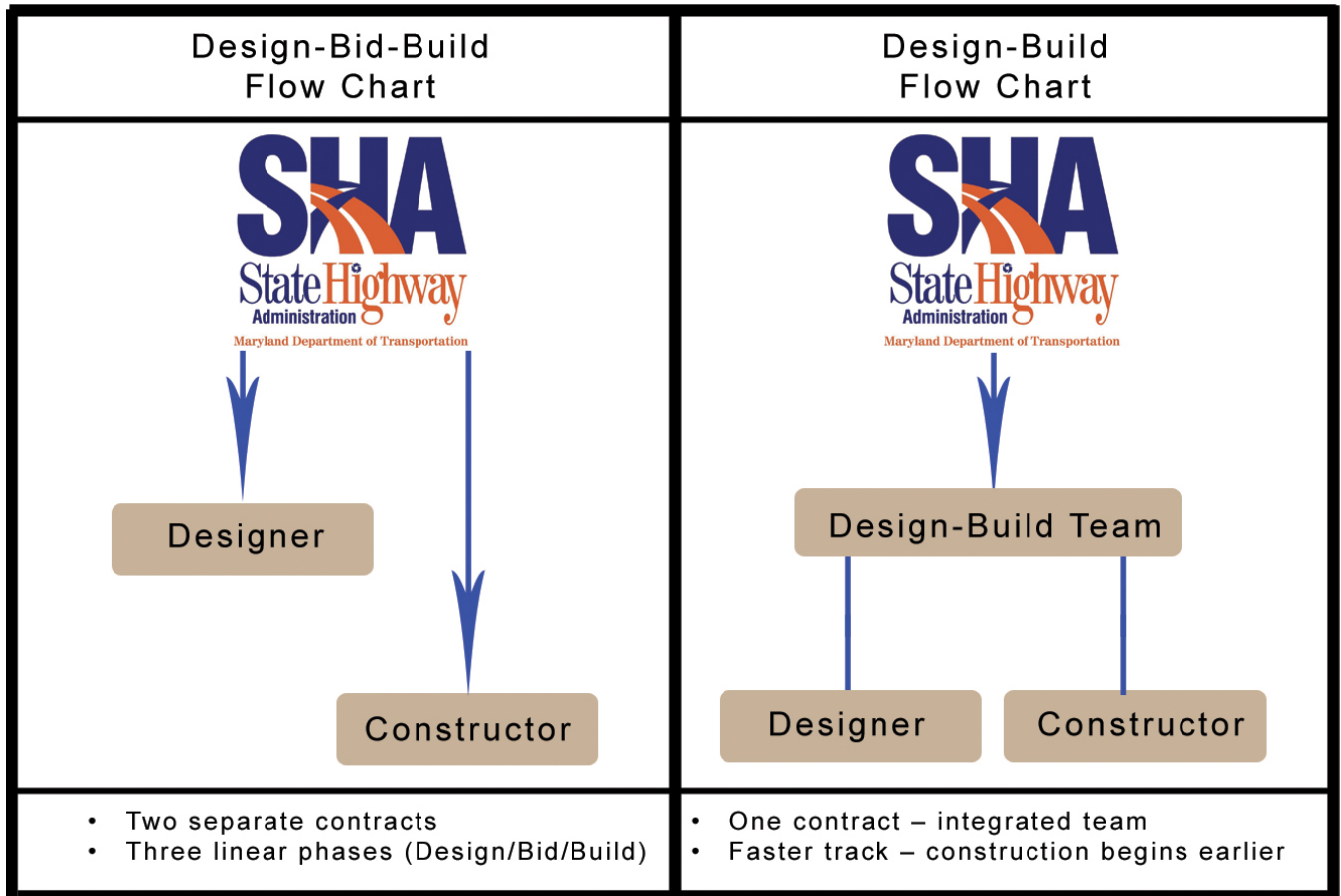
The DB contract administration process has a few fundamental differences for both the DB contractor team and the SHA when compared to the traditional delivery method. A notable difference from the SHA point of view is the plans and specifications from the DB team are deliverables to the contract, which the SHA must review for compliance with the original contract documents. The DB team has a single source role for design and construction and is responsible for the details of the design for the elements they submit. This risk shifting characteristic of the DB process places the exposure of design errors and omissions on the DB team along with the responsibility for designing to budget and schedule.

The similarities and differences in DB and traditional design-bid-build projects are best illustrated by the comparing the various elements that make up the process.

TABLE I-1 DESIGN-BID-BUILD AND DESIGN-BUILD COMPARISON

Design-Bid-Build	Design-Build
<ul style="list-style-type: none"> • SHA provides solution 	<ul style="list-style-type: none"> • SHA defines expected performance - with % design complete
<ul style="list-style-type: none"> • A/E & Contractor provide expected performance 	<ul style="list-style-type: none"> • DB Contractor develops solutions

<ul style="list-style-type: none"> • Prescriptive detailed specifications • Low bid 	<ul style="list-style-type: none"> • Performance based specifications • Quality and price based selection process
<ul style="list-style-type: none"> • QA/QC performed by SHA personnel 	<ul style="list-style-type: none"> • QA/QC performed by DB, and SHA
<ul style="list-style-type: none"> • Detailed monthly estimates 	<ul style="list-style-type: none"> • Percentage based estimates
<ul style="list-style-type: none"> • Traditional roles and responsibilities 	<ul style="list-style-type: none"> • Changed roles and responsibilities



1-3 Use

This manual is intended for use by SHA personnel and consulting engineers who are directly involved in the development and implementation of DB documents and construction administration of DB projects. This manual will also provide DB contractors and consultant engineers with an understanding of SHA’s approach to Design-Build.

The roles and responsibilities of other participants in the DB process (such as, project Stakeholders, Design-Builders, and oversight and regulatory agencies) are defined and explained. The relationship of this document to other Policy and Procedure Manuals are discussed. Electronic versions of these documents can be found on the Innovative Contracting Division (ICD) Design-Build Intranet Web page.

The processes described herein are intended to serve the following purposes:



- Allow SHA to capitalize on the strengths of DB while preserving quality;
- Identify and explain DB procedures and responsibilities;
- Coordinate DB procedures with current policies and procedures;
- Foster innovation and creativity through the DB method of project delivery; and
- Provide consistency of approach to DB while allowing Lead Design Offices to tailor contract requirements to the needs of individual projects.

1-4 Design-Build Objectives

The SHA has implemented the Design-Build method as a means to deliver projects **faster and within budget**. This method of contracting provides several benefits:

- Shifting responsibility and risks to the party best able to address them;
- Shortens project delivery time;
- Fosters innovation and creativity in design and construction techniques; and
- Reduces change orders, disputes, and claims; and
- Improves project collaboration.

Design-Build combines into a single contract, the design and construction in accordance with SHA design standards, criteria, specifications, and contract administration practices. This project delivery approach, allows the contractor to participate during the design phase to identify value engineering opportunities, to expedite construction and thus lower project cost.

The Design-Build contracting process and contract administration will follow standard SHA practices unless otherwise identified herein. The Office of Highway Development's Innovative Contracting Division (ICD) is responsible for overseeing SHA's Design-Build Program. However, the Lead Design Division or District Office is responsible for administering the Design-Build contracting process, with direct oversight from the ICD, for projects within their Divisions/Districts. All projects will be coordinated through ICD. The procurement process is led by the Procurement Management Team (PMT), consisting of the Division Chief and Assistant Chief of the Lead Design Division or District Office and coordinated through ICD with oversight from the Office of Procurement & Contracts Management (OPCM). The procurement process for all Office of Highway of Highway Development projects will be led by the ICD with oversight from OPCM. Design-Build can be easily adapted to all project types including but not limited to the following: Major Projects, Community Safety & Enhancement/Streetscape, Safety & Intersection Capacity Geometric Improvements, Bridge Replacement & Rehabilitation, Resurfacing, Drainage Improvements, Ridesharing Facilities, Sidewalks, ADA Compliance, and Pedestrian Access Improvements to Transit Stops.

1-5 Authority

Pursuant to Maryland State Finance and Procurement Code Ann. § 3-602 (g)(1), the Maryland General Assembly authorized the use of Design-Build in State capital projects. Due to the use of Federal aid in the construction and reconstruction of Maryland roads, SHA use of the Design-Build process is also governed by the regulations promulgated at 23 CFR Parts 627, *et seq.* by the United States Department of Transportation, Federal Highway Administration. Additional regulation is pursuant to State procurement provisions set forth in the relevant sections of the *Maryland State Finance and Procurement Article of the Annotated Code* and the *Code of Maryland Regulations (COMAR)*.

The specific Federal Design-Build Contracting rules are found at 23 CFR Part 636, published at 67 Fed. Reg. 75926-75934 (Dec. 10, 2002). Subpart A, §§ 636.101 – 636.119, covers general issues and concerns. Subpart B, §§ 636.201 – 636.212, regulates selection procedures and award criteria. Subpart C, §§ 636.301 – 636.305, governs the selection and use of factors for the evaluation of proposals. Subpart D, §§ 636.401 – 636.409, regulates the allowable types and uses of information and communication exchanges between the State and offering contractors. Subpart E, §§ 636.501 – 636.514, covers such issues as the use of discussions with offerors, revisions of proposals, and source selection. Specific provisions, within these contracting rules, reference and mandate the incorporation of State procurement statutes and regulations.

The use of Design-Build in the construction of major highway and bridge projects has also been influenced from various sources beyond the regulations governing Federal Aid projects. State procurement legislation, the Associated General Contractors (AGC), the American Council of Engineering Companies (ACEC), and the Design Build Institute of America (DBIA) all have contributed to its increasingly widespread use in State capital projects.

1-5.1 Federal Acquisition Regulations (FAR)

Various agencies of the Federal government have been successfully using Design-Build for a long time. However, in 1997¹ in implementing the Clinger-Cohen Act of 1996, which expanded the Federal agencies authority to use Design-Build, new regulations were issued². The procurement is a two-phase, competitively negotiated process—phase one is a narrowing (short-listing) of the offerors (to no more than five) based on qualifications, and phase two selects the successful offeror based on a combination of quality and price (best value). Regulation 36.3 offers guidance for phase one and requires that phase two be conducted as a competitive negotiation (i.e., competitive sealed proposals) under FAR Part 15. The AGC, ACEC and DBIA all coordinated on the new Design-Build regulations.

1-5.2 SAFETEA-LU

On August 10, 2005, the President signed into law the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). With guaranteed funding for highways, highway safety, and public transportation totaling \$244.1 billion, SAFETEA-LU represents the largest surface transportation investment in our Nation's history. The two landmark bills that brought surface transportation into the 21st century—the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21)—shaped the highway program to meet the Nation's changing transportation needs. SAFETEA-LU builds on this firm foundation, supplying the funds and refining the programmatic framework for investments needed to maintain and grow our vital transportation infrastructure. To encourage more projects to use DB contracting, SAFETEA-LU eliminated a previous \$50 million floor on the size of eligible contracts.

1-5.3 Special Experimental Project No. 14 (SEP-14)

Since 1990, the FHWA has allowed the State DOTs to evaluate non-traditional contracting techniques under a program titled "Special Experimental Project No. 14 - Innovative Contracting." (SEP-14) Originally, the contracting practices approved for evaluation were: cost-plus-time bidding, lane rental, Design-Build contracting, and warranty clauses. After a period of evaluation, the FHWA decided that all four practices were suitable for use as operational practices (non-experimental) and no longer require approval under the SEP-14 program. Today,

¹ 62 Federal Register 271 (January 2, 1997)

² FAR 36.3



SEP-14 remains as a functional experimental program that may be used to evaluate promising non-traditional contracting techniques.

1-5.4 Special Experimental Project No. 15 (SEP-15)

In order for FHWA to accommodate the new and beneficial activities from SEP-14, it became incumbent upon the FHWA to establish the SEP-15 program. SEP-15 allows for the use of experimental features on Federal-Aid projects that will test an innovative project delivery technique that is prohibited by a current provision of title 23 of the United States Code, FHWA regulations or policy. SEP-15 was established pursuant to the authority granted the Secretary of Transportation by United States Congress in 23 U.S.C. §502(a). SEP-15 does not replace SEP-14, which is still available to evaluate experimental contract administration methods. The creation of SEP-15 provides a process and the tools for the application of these strategies in an environment that encourages innovation while still maintaining the fundamental objectives of title 23 of the United States Code.

Approval of new alternative contracting methodologies is under the auspices of the Federal Highway Administration (FHWA). The applicability of SEP-14 or SEP-15 on federal aid projects may be discussed with the assigned FHWA Area Engineer. Current information on FHWA's SEP-14 and SEP programs may be found at <http://www.fhwa.dot.gov/programadmin/contracts/>

1-5.5 FHWA Final Rule on Design-Build Contracting

Effective September 13, 2007 and defined in 23 CFR parts 630, 635 & 636 the FHWA agreed to broaden the definition Preliminary Design and provided specific examples of types of pre-NEPA design activities that would be allowed under the regulations.

- Preliminary engineering or other activities done prior to the completion of the NEPA process "must not materially affect the objective consideration of alternatives in the NEPA review process."

FHWA also revised its regulatory definition of Final Design as "any design activities following preliminary design and expressly includes the preparation of final construction plans and detailed specifications for the performance of construction work."

Prior to the completion of the NEPA Process a Contracting agency may issue a request for qualifications (RFQ) as long as the RFQ informs proposers of the general status of NEPA review. A Contracting agency can issue a Request for Proposal (RFP) prior to the conclusion of the NEPA process as long as the RFP informs 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 Contracting agency can also proceed with the award of a design-build contract prior to the conclusion of the NEPA process; and issue a notice to proceed to a design-build contract that has been awarded prior to the completion of the NEPA process.

FHWA concurrence is required prior to issuance of the RFP, award a design-build contract, and proceed with preliminary design work under a design-build contract. This concurrence constitutes FHWA's approval that such activities comply with Federal requirements, but does not constitute project authorization or obligate Federal funds.



The Design-build contractor may not prepare NEPA documents, including environmental impact statements and environmental assessments, or NEPA decision documents, such as the record of decision or finding of no significant impact. The Design-builder may have no decision-making responsibility with respect to the NEPA process. The Design-builder is not prohibited from financing the preparation of the NEPA documents, as long as the other criteria are met. Work products produced by the design-build contractor related to the project and mitigation options may be considered in the NEPA analysis. If the NEPA process was completed prior to the issuance of an RFP, the contracting agency may allow a consultant or sub-consultant who prepared a NEPA document to submit a proposal in response to the RFP. If the NEPA process was not completed prior to issuance of the RFP, a sub-consultant to the preparer of the NEPA document may participate as an offeror or on a team submitting a proposal, but only if the contracting agency releases the sub-consultant from further responsibilities related to preparing the NEPA document.

Contracts that are awarded prior to conclusion of the NEPA process must include provisions preventing the design-builder from proceeding with final design activities and physical construction prior to the completion of the NEPA process. The contract must ensure that no commitment is made to any alternative being evaluated in the NEPA process and that the merits of all alternatives presented in the NEPA document, including the no-build alternative, will be evaluated. The contract must include provisions ensuring that all environmental and mitigation measures identified in the NEPA decision document will be implemented. The contract also must include termination provisions in the event that the no-build alternative is selected. If award occurs prior to conclusion of the NEPA process, it is not necessary to evaluate the total contract price.

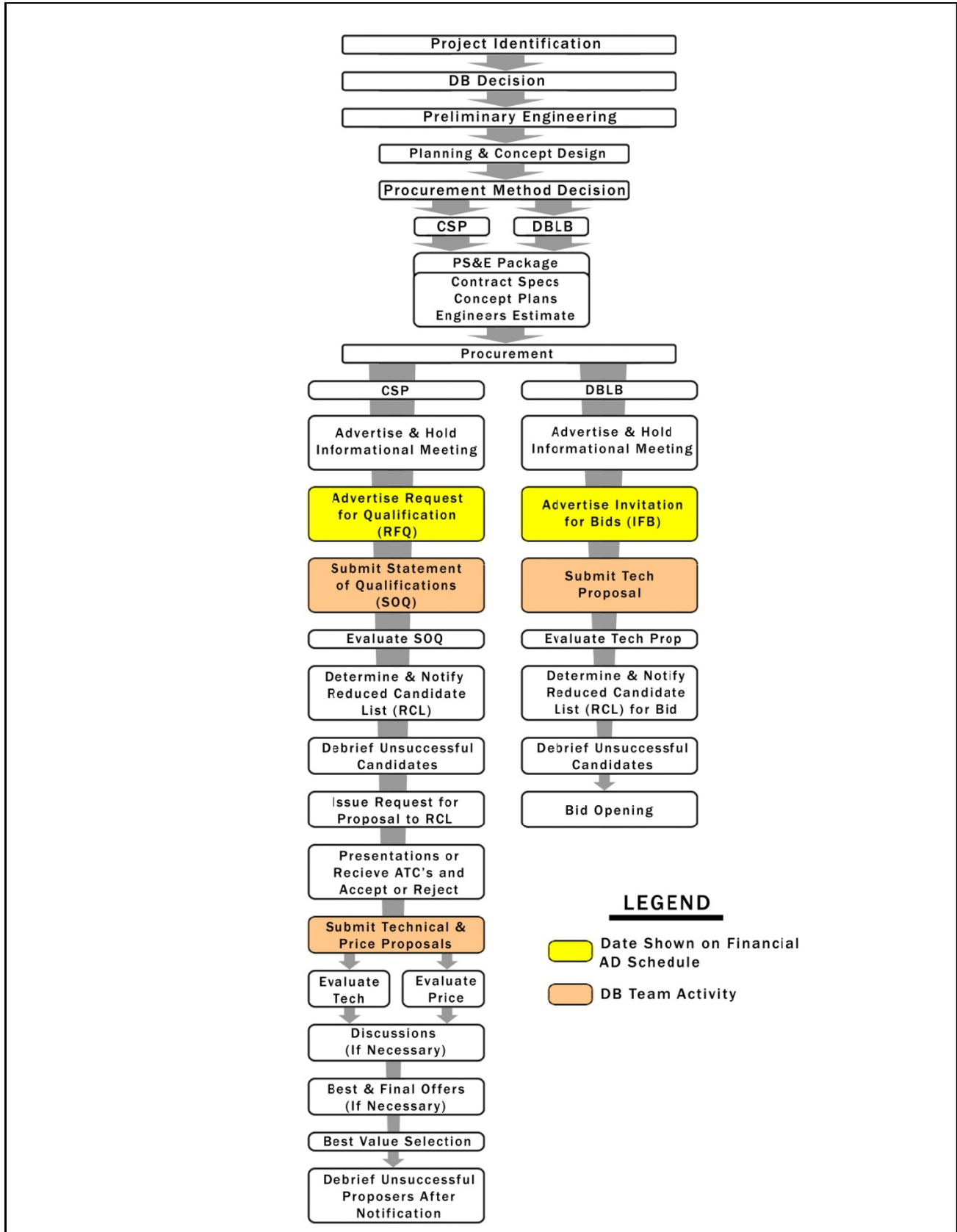
1-5.6 Summary of SHA's Design-Build Process

The SHA utilizes several approaches to Design-Build project delivery depending on the projects' size and complexity. Currently, SHA utilizes ***Design-Build Low Bid*** and ***Design-Build Competitive Sealed Proposals (Best Value) procurement strategies***. Both approaches utilize a two-step selection process. The two-step selection process may vary in structure based on size or complexity of the project. These decisions are made by the Lead Design Office with the assistance of the Innovative Contracting Division.

The following, summarizes SHA's Design-Build Process:

- Identify projects in the early stages of project development for Design-Build procurement (See PART I, Chapter 2 – The Design-Build Decision)
- Develop a Procurement Strategy that is suited for the chosen project. (See PART II – Procurement Process)
- Identify roles and responsibilities of all stakeholders. (See PART I, Chapter 3 – Roles and Responsibilities)
- Prepare Concept Plans, Specifications, Invitation for Bidders (IFB) and/or Requests for Proposals (RFP), (See PART III – Preliminary Engineering)
- Oversee the Project through design and construction. (See PART IV – Project Execution)

FIGURE I-1 DESIGN-BUILD PROJECT DEVELOPMENT



CHAPTER 2 – THE DESIGN-BUILD DECISION

2-1 Factors To Be Considered

During the project development process, the Lead Design Office must first determine if the Design-Build Method of contracting is appropriate for a particular project. The following list of factors should be considered. In some cases, one or two factors may override all others.

- Time – commitments for completion dates
- Flexibility
- Defined Scope
- Opportunities for Innovation/Creativity
- Complexity of MOT
- Current Status of Design
- Approval Requirements
- Cost/Funding
- Miscellaneous Requirements
- Environmental Risks/Issues/Constraints
- Complexity of Utility Relocations
- Geotechnical Risks

Most importantly, the Lead Design Office must have confidence that the SCOPE is accurately defined and will not change.

2-1.1 Time

The most common advantage of Design-Build is that it allows for final project delivery in a shorter period of time compared to design-bid-build (DBB) project delivery. Design-Build affords the design and construction to proceed concurrently as a collaborative effort between the designer and contractor. The projects tend to proceed more predictably through construction due to the risk to the contractor of delay.

2-1.2 Flexibility

A significant benefit gained from DB is the interaction between the engineer and the contractor in determining valued solutions to a given problem. If the Owner specifies a single solution or adopts prescriptive requirements, or construction means and methods are tightly controlled by the Owner or other Stakeholders, the Project may not be a good candidate for DB.

2-1.3 Innovation/Creativity

If the Project offers opportunities for innovation and creativity relating to engineering solutions and/or construction scheduling, phasing, or techniques, DB can be very advantageous to the Owner. This is especially the case for complex projects, where a single Design-Builder, working closely with SHA, can creatively plan for, coordinate, and control all of the Project design and construction variables.

2-1.4 Complexity of Maintenance of Traffic (MOT)

DB can be very advantageous when the scope of a project indicates a complex multiple phasing MOT is necessary, especially in an urban setting. A Contractor will strive to minimize the number of phases in a safe and efficient manner in order to reduce contract time and cost.



2-1.5 Current Status of Design

It is best to determine whether or not to use the DB method of project delivery as a project is transitioning from the Project Planning phases into the Design phase, before significant design work is done. The scope of the pre-DB contract, preliminary engineering work, can then be tailored to meet the specific needs and conditions associated with the DB project.

Once the design has progressed to the point where the significant and controlling design decisions have already been made, the benefits of designer/constructor interaction in developing solutions are reduced (or existing design may require some “de-engineering” to be compatible with use of DB).

2-1.6 Approval Requirements

Approval requirements from a third party such as, railroads and other governmental agencies may require the design to be progressed to a high level of completion before a regulatory or cooperating agency will “approve” a project. Third party approvals can be mitigated if the criteria and time required for third party approvals are covered in written agreements between SHA and such third parties, and are spelled out in the contract documents. Potential problems can be further reduced by giving the third parties the opportunity to participate in formulating project requirements and executing the Project.

2-1.7 Cost/Funding

DB results in greater “cost certainty”; the final cost will be close to the amount of the original contract price. Design-Build projects see less cost escalation during the course of the Project, because one of the primary reasons for Change Orders and claims on design-bid-build projects (design errors and omissions or design/construction interface issues), is removed from SHA’s responsibility. The major causes of cost escalation on DB projects have involved additions to the scope at the order of the owners or request of stakeholders. Historically, change orders on Design-Build projects are less than 2% of the contract cost.

2-1.8 Miscellaneous Requirements

Design-Build has proven to be particularly adaptable to project requirements such as, erosion and sediment control, public involvement, community relations, environmental mitigation, MOT, and maintenance of access. As these issues are a significant element of a project, DB can provide an opportunity for SHA to review and evaluate a number of alternative solutions during the selection process (through the Competitive Sealed Proposal process – Alternative Technical Concepts) and to benefit from all the good solutions offered by all Design-Build Teams during execution of the Project.

2-1.9 Environmental Risks/Issues

The method of project delivery (DB, DBB, and others) does not have a direct bearing on or relationship to the environmental documentation for a project. However, the environmental issues and required mitigation measures on some projects may require design to be taken to a high level of completion, thereby reducing (or possibly negating) the benefits of DB. However, environmentally sensitive projects have been delivered successfully using DB. DB can handle the “moving target” associated with such projects, provided the overall contract provides flexibility and the means to mitigate or minimize the uncertainties and risks in an equitable manner.

2-1.10 Complexity of Utility Relocations

If the project indicates there may be extensive subsurface utility relocations, such as water, sewer and gas due to impacts caused by the conceptual drainage design, it’s best to scope this effort in the DB contract. This will allow the DB Team to schedule, coordinate and

layout the drainage design to minimize utility relocations. If subsurface utility betterments are identified during the preliminary design phase, the local utility owners should be encouraged to incorporate their betterments through our DB contract for the same reasons stated above.

If the project includes extensive utility relocations that are aerial on poles or underground such as Fiber Optic Communication lines, it will be necessary to determine the amount of time the relocations will take before a decision is made to procure a DB contract. This type of utility relocation (Fiber Splicing) has never been part of our DB contracts to date due to the restrictions imposed by the various owners. Time consuming utility relocations (1 to 2 years from R/W clear) should be identified and evaluated prior to determining whether a project is DB.

2-1.11 Geotechnical Risks

Geotechnical Risks should not be a deterrent as to whether or not a project is delivered as a DB. One advantage to the DB approach is placing the risks on the entity that can best manage the risks. In a DBB scenario, a project that requires extensive undercutting due to the presence of unsuitable material, typically results in quantity overruns and extra costs. This same scenario, a DB Team in a Lump Sum context will avoid excessive undercutting by implementing proven geotechnical practices to avoid the time and materials associated with undercutting and refill.

Projects that include sinkhole remediation may not be a suitable candidate for a DB contract if the Administration places all the risk on the DB Team. This is due to the unknowns when dealing with sink holes as to actual quantities needed to remedy the sinkhole. If the risk is shared between the Administration and the DB Team, then it maybe plausible to use the DB approach.

2-2 Project Identification

Not every project is suitable for the Design-Build process. Considerations include those shown in Section 2-1; although the relative importance of factors may vary from project to project. Of equal importance is an understanding of the project goals and project risk analysis, such that risk is distributed among those parties that can best manage the risk.

2-2.1 Project Goals

The development of a list of project goals by SHA's project team is critical to the DB procurement process. The goals typically consider scope, time, quality, and cost, and guide all subsequent decisions of the IFB or RFP development. It should be noted that it is rarely possible to maximize all project goals. Constraints on funding or time may require adjustment in quality goals. Time may be a driving force that takes precedence over budget. The setting of goals may require negotiations and tradeoffs among Stakeholders. The Administration and Stakeholder staff may wish to develop an initial list of project goals using brainstorming techniques. Subsequently, the list should be refined such that the final project goals are expressed in a few statements.

2-3 Risk Identification, Assessment, and Allocation

A systematic approach to risk management can reduce the initial contract price, other SHA costs, and can help to avoid potential contract disputes. Risk analysis is a crucial part of the DB planning process, and should be one of the first steps taken in developing the procurement documents. Once risks are identified, SHA will evaluate possible measures to mitigate the risk and determine how to allocate risks among the parties. Risk should be allocated to the party that can best take steps to avoid adverse impacts or to manage the effects of the risk. SHA's project team and Stakeholders should participate in the risk identification and include other specialists for more complex projects.

There are many ways to assess and allocate risk. One method is to develop a risk matrix. The procedures outlined here are relatively straightforward, easily documented, and can be used on projects of any size or complexity. The process consists of five steps as described below. The rating process for risk probability (Step 2), severity (Step 3) and overall risk rating (Step 4) is illustrated in **Table I-1**.

Step 1: Define Risks - Identify (list) and define the risks. The list should include those risks that may affect successful implementation of the project, regardless of when such risks may occur. A typical list of risks may include the following:

- Environmental approvals;
- Geotechnical conditions;
- Utility locations;
- Design approvals
- Right-of-Way (ROW) acquisition;
- Permits;
- Differing Site Conditions; (by external agencies);
- Third party litigation.
- Railroad agreements;
- Security;
- Utility agreements and/or delays;
- Time/completion;
- Force majeure;
- Community opposition

While many projects will have similar risk categories, the risks may vary significantly from one project to another. Consistent with all projects, it is SHA's responsibility to continue to perform standard data collection activities (soil borings, utility investigations, traffic counts, etc) to the same degree that would be done on a design-bid-build project. By providing this site condition data to the Design-Builder, they are better able to understand the risks in a project and mitigate them upfront.

Step 2: Probability Rating - Assess the likelihood (probability) that a risk event of the nature listed and defined will occur over the course of the contract, including Warranty periods. The probability should be rated on a scale of 1 to 3, with 3 representing the highest probability.

Step 3: Impact Rating - Assess the degree of impact (severity) that the occurrence of an identified risk event would have on the Project. The impact should be rated on a scale of 1 to 3, with 3 representing the highest impact.

Step 4: Overall Risk Rating - Determine the overall risk rating by multiplying the probability rating by the impact rating, resulting in a range of 1 to 9 for the overall risk rating. Refer to **Figure I-1**.

Step 5: Addressing Risks - This step involves establishing the priorities for addressing the risks, determining risk mitigation measures, and allocating the risk between the parties to the contract. **The general rule is to allocate the risk to the party that can best manage or deal with it in a positive, proactive manner. It is neither reasonable nor practical to shift all the risk to the Design-Builder.**

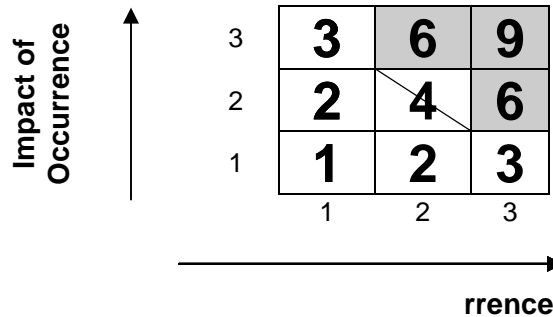
Particular attention should be given to risk factors with ratings of "6" or higher. Moderate risk factors in the "4" range should also receive appropriate attention and attempts should be made to mitigate or appropriately allocate the risks. Risk factors with ratings of "3" or less have a relatively small impact on the Project and the amount of time spent on them should be budgeted accordingly. Project owners typically use boilerplate contract provisions in allocating this category of risk, dealing with any impacts of such risks if and when they arise.

TABLE I-2 RISK MATRIX - EXAMPLE

	Step 2	Step 3	Step 4	Step 5
Risk Identification	Probability Rating (1)	Impact Rating (2)	Overall Risk Rating (1)x(2)	Addressing Risks Mitigation/Allocation
A) Environmental approvals	2	3	6	
B) Right of Way (ROW) acquisition	3	2	6	
C) Geotechnical conditions	3	3	9	
D) Permits	3	3	9	
E) Utility locations	3	3	9	
F) Differing Site Conditions	3	2	6	
G) Design approvals (by external agencies)	3	1	3	
H) Utility agreements and/or delays	3	3	9	
I) Railroad agreements	2	2	4	
J) Security	2	2	4	
L) Time/ completion	3	1	3	
N) Force majeure	2	2	4	
O) Community opposition	2	1	3	
P) Third party litigation	2	2	4	

The Risk Analysis Matrix, shown in **Figure I-2**, is used to determine the overall risk rating, by multiplying the probability rating by the impact rating.

FIGURE I-2 RISK ANALYSIS MATRIX



In some situations it may be advisable to use a more structured approach in documenting the risk analysis process. **Figures I-3** and **I-4** illustrate an alternative approach.

FIGURE I-3 RISK IDENTIFICATION, ASSESSMENT, AND ALLOCATION WORKSHEET

Risk identification and definition	
Issue(s)	
Options (SHA, Design-Builder, or Sharing)	
How can risk be shared?	
Who can best manage the risk?	
Resources	
Challenges	
Recommended allocation	
Steps for mitigation	
Other recommendations	

The results of the risk analysis process are used in preparing contract provisions and agreements with Stakeholders and other third parties, as well as used to identify the type and extent of preliminary engineering for different components of the Project.



CHAPTER 3 - ROLES & RESPONSIBILITIES

3-1 Project Owner Benefits

The greatest benefit of Design-Build is the objectives of the Administration and the Design-Build Team are more closely aligned and risk is assigned to the party most able to address. With both design and construction under one entity, there is a single point of responsibility for coordination, cost control, quality, and schedule which avoids the project owner resolving issues between the engineer and the contractor.

The Owner is no longer required to coordinate and arbitrate between separate engineering and construction contracts. While the Owner must still provide robust oversight of design and construction progress, the responsibility is much less time consuming and removes the Owner from a significant amount of risk compared to separate contracts for engineering and construction.

The roles and responsibilities of the parties for Design-Build are quite different than design-bid-build.

3-2 The Project Owner Responsibilities (See Part IV also)

In Design-Build, the Administration is responsible for:

- A. Overall program administration
- B. Identification of project goals
- C. Determination of the best procurement method
- D. Identification and allocation of project risks
- E. Preparation of the RFQ and RFP, evaluation of SOQ's and Proposals, determination of the Reduced Candidate List, and selection of a Design-Builder
- F. Furnishing site information
- G. Providing inspection and quality assurance
- H. Land acquisition for Rights-of-Way and easements
- I. Utility and railroad agreements
- J. Preliminary surveys
- K. Timely review, comment, and final acceptance of the Work
- L. Payment for Work performed
- M. Media relations supported by the Design-Builder
- N. Independent Environmental Monitoring
- O. Wetland and waterway construction permits and reforestation permits
- P. Coordination and facilitation with regulatory and resource agencies
- Q. QA/QC of the Design-Builder's design and construction
- R. Developing an efficient change order process



3-3 The Design Builder's Responsibility (See Part IV also)

The Design-Builder has the primary responsibility for controlling and managing the work, including management, design, and construction. The Design-Builder's role may also include full responsibility for QC as defined in the contract documents. The scope of quality control may be more encompassing than in a design-bid-build project and may include some activities traditionally considered quality assurance.

3-4 Stakeholder Identification

SHA's project management team should identify the Stakeholders for each project. Stakeholders are those entities having a significant financial, regulatory, approval, or jurisdictional interest in the Project. In addition to the Administration, Stakeholders may include:

- Federal agencies, such as the Federal Highway Administration (FHWA), US Army Corps of Engineers (USACE), and Environmental Protection Agency (EPA);
- State and local agencies and/or political subdivisions;
- Metropolitan Planning Organizations (MPOs); and/or
- Utility Owners and railroads.

Identifying the Stakeholders and creating a way to involve them in the Project's procurement process is vital to the Project's success. The goal is to know the Stakeholders' concerns, address those concerns in the Project requirements or specifications, and obtain buy-in on the part of each Stakeholder regarding how the Project is to be designed and constructed.

Design-Build may require Stakeholders to adjust their normal mode of operations. Early and continuous involvement in project decision-making can do much to facilitate their understanding and cooperation. Some Stakeholders may not be identified until later in the DB process, but the major players should be identified prior to proceeding with the DB process. Identified Stakeholders should be contacted and requested to assign a single point of contact for the duration of the DB project, if feasible.



PART II

SHA'S

PROCUREMENT

PROCESS



PART II - SHA'S PROCUREMENT PROCESS

The SHA utilizes two approaches to Design-Build with varying procurement processes. First is **Design-Build Low-Bid Contracting (DBLB)** consisting of a two-part selection process based on the lowest price from the reduced candidate list. Second, is **Competitive Sealed Proposals (CSP)** consisting of a two-part selection process based on a combination of quality factors and price from the reduced candidate list. Both approaches are discussed below.

CHAPTER 1 – DESIGN-BUILD LOW-BID CONTRACTING

1-1 The Process

SHA's two-step Design-Build Low-Bid (DBLB) procurement process begins with developing an IFB including preliminary plans and engineering data that would be advertised for Design-Build services. Included in the IFB is a request for technical proposals that results in developing a shortlist based on the proposers responsiveness. The second step is the development of a bid price and award based strictly on low bid from the reduced candidates list (RCL). The two-step process is described in SHA's Invitation for Bids (IFB) for each project. The procurement process is led by the Procurement Management Team (PMT), consisting of the Division Chief and Assistant Chief of the Lead Design Division or District Office and coordinated through ICD with oversight from the Office of Procurement & Contracts Management (OPCM).

SHA seeks responses to the IFB from teams of designers and builders (DB Teams) who are qualified and prepared in all respects to undertake the complete design and construction of a project. DB Teams that respond to the IFB will be evaluated by a technical evaluation team comprised of SHA employees. The purpose of the evaluation will be to determine past performance, experience, and capabilities of DB Teams to undertake the project plus their overall understanding of the project. These teams will present their evaluation to the Evaluation Committee. The evaluations are kept confidential until they are presented to the Evaluation Committee. The factors, which will be used to evaluate technical proposals, are described in the IFB and are typically listed in descending order of importance. Ratings of individual evaluation factors and the overall quality rating of a Proposal will be arrived at through consensus of the members of the Evaluation Committee.

Once the evaluations are completed, a reduced candidate list (RCL) of those DB Teams considered reasonably susceptible of award is developed. If there is sufficient interest by qualified DB Teams and the Administration is satisfied, then those DB Teams who have made the RCL are notified in writing that they have been short-listed and may submit a bid. Bids are publicly opened according to the bid opening date defined in the IFB.

The Request for Technical Proposals and Bid is provided in the IFB as one package. Any subsequent information would be provided by responses to questions and/or addendums. This approach allows interested parties to better understand the overall approach and respond more effectively.

1-1.1 Project Informational Meeting

All funded Design-Build projects require a project informational meeting held approximately one month prior to the advertisement of the project. This meeting will be



announced and advertised using the SHA standard advertisement form defining the date, time and location of the meeting. The completed form shall be posted on the SHA advertisement page in addition to disseminating through industry associations via email. Coordination with OHD's advertisement team and ICD are necessary once the form is approved for posting.

The purpose of this meeting is to provide all attendees with an overview of the project scope, goals, issues, and type of procurement process being considered. A brief Power Point presentation shall be utilized.

1-1.2 Schedule

A Design-Build post advertisement schedule is very different from a Design-Bid-Build (DBB) schedule, See Table II-1. Consider your team members, in the allocation of time. Sufficient time needs to be allocated for the review of the Technical Proposals. The entire evaluation process will take approximately two weeks, with one of those weeks solely devoted to the evaluation rating process.

1-1.3 Request for Information/Addenda

Once the project has been advertised, the DBT's will submit Requests for Information (RFI) using a project specific email address as defined in the IFB. Prior to the development of the RCL, all questions and responses shall be documented and posted on SHA's web page. Once a RCL has been determined, all questions and responses shall be documented and sent directly to the RCL using the project specific email address. Notifications are sent by the PMT only. The Administrations answers to questions are considered binding and part of the contract.

1-1.4 Technical Evaluation Factors and Adjectival Ratings

The technical evaluation factors, sub-factors, and requirements are evaluated in accordance with these guidelines. The technical evaluation factors and the overall Technical Proposal are rated by an adjectival (qualitative/descriptive) method. A few fundamental requirements of the Technical Proposal should include:

- Design-Build Team Experience and Project Management
- Environmental Approach and Past Performance

The following adjectival ratings are used in evaluation of each sub-factor, technical evaluation factor, and the overall technical rating of the Proposal:

EXCEPTIONAL: The Proposer has demonstrated an approach that is considered to significantly exceed stated objectives/requirements in a way that is beneficial to the Administration. This rating indicates a consistently outstanding level of quality, with very little or no risk that this Proposer would fail to meet the requirements of the solicitation. There are essentially no weaknesses.

GOOD: The Proposer has demonstrated an approach that is considered to exceed stated objectives/requirements. This rating indicates a generally better than acceptable quality, with little risk that this Proposer would fail to meet the requirements of the solicitation. Weaknesses, if any, are very minor.

ACCEPTABLE: The Proposer has demonstrated an approach that is considered to meet the stated objectives/requirements. This rating indicates an acceptable level of quality.



The Proposal demonstrates a reasonable probability of success. Weaknesses are minor and can be readily corrected.

UNACCEPTABLE: The Proposer has demonstrated an approach that indicates significant weaknesses/deficiencies and/or unacceptable quality. The Proposal fails to meet the stated objectives/requirements and/or lacks essential information and is conflicting and/or unproductive. There is no reasonable likelihood of success; weaknesses/deficiencies are so major and/or extensive that a major revision to the Proposal would be necessary.

In assigning ratings, the Administration may assign “+” or “-” (such as, “Exceptional -”, “Good +”, and “Acceptable +”) to the ratings to better differentiate within a rating, in order to more clearly differentiate between the technical evaluation factors and the overall Proposals.

The term “weakness,” means any flaw in the proposal that increases the risk of unsuccessful contract performance. A significant weakness in the proposal is a flaw that appreciably increases the risk of unsuccessful contract performance. The term “deficiency” means a material failure of a proposal to meet an RFP requirement or a combination of significant weaknesses in a proposal that increases the risk of unsuccessful contract performance to an unacceptable level.

Certain technical evaluation factors include sub-factors relating to the different technical disciplines (i.e., structures; highways; landscaping) or different management areas (i.e., design; construction) involved in the evaluation. Each sub-factor will be assigned a consensus rating, and all sub-factors under a technical evaluation factor will be combined through consensus, taking into account the relative importance of each sub-factor to arrive at an overall rating for each such factor. Technical evaluation factors without sub-factors will also be assigned a consensus rating. The ratings of all the technical evaluation factors will then be combined by consensus, taking into account the relative importance of the evaluation factors to arrive at the overall rating for the Technical Proposal.

Documentation is critical when defining and arriving at a rating. All strengths and weaknesses shall be noted on the evaluation forms that support the rating being assigned. This becomes a tool during the debriefings for the unsuccessful DBT’s, therefore the supporting documentation must be thorough.

1-1.5 Evaluation of Technical Proposals

Technical Evaluation teams will evaluate technical proposals submitted by the DB Teams using an adjectival (qualitative/descriptive) method as noted above, and then presented to the Evaluation Committee (EC). Based upon the ratings presented, the EC will arrive at an overall consensus rating for each Technical Proposal submitted based upon the relative importance on each factor. A reduced candidate list of DB Teams will be developed relative to established evaluation factors. The short-listed teams will be invited to submit a Price bid. All bidders will be advised of the results of the evaluation of their Technical Proposals. Debriefing meetings for teams not placed on the reduced candidate list will be held immediately after notifications have been made. The Technical Proposal of the successful Design-Build Team will become part of the contract documents and all the concepts provided to the Administration are expected to be included in the price bid and final plans. The Administration and successful low bidder may use ideas and approaches offered by the unsuccessful bidders excluding proprietary or protected information, if a stipend was offered and accepted.



1-1.6 Bid Opening

There should be a sufficient number of top rated proposals to ensure the competitive bidding process. The price bids will be publicly opened and the project will be awarded in accordance with the lowest approved bid. Within 10 days of bid opening, the apparent successful team shall submit their lump sum breakdown of their bid to the Administration to be used to evaluate bids. Subsequent to the bid opening, the Lead Design Project Manager shall provide the names of the contracting entities to the Cashier's Office in order to generate a bidders list and associated bid tabs.

1-1.7 Award and Notice to Proceed

Notice of Award and Notice to Proceed to the Design-Build Team will be given through the Office of Construction after execution of the contract has been completed. SHA recognizes that the successful Design-Build Team will need to begin design activities as soon as possible after notification as the apparent low bidder. These early start activities are in an effort to maximize the available time for construction activities. SHA also recognizes that these advance design activities should not place the DBT at risk should SHA not issue an NTP for events beyond the control of the Design-Build Team.

SHA's approach to mitigate this risk is to reimburse the Design-Build Team for actual documented design costs up to a maximum of \$50,000 or 1% of the construction bid, whichever is greater and after approval of the Bid Bond. Should an NTP not be granted for reasons beyond the control of Design-Build Team, the Design-Build Team will be required to submit design calculations, plans, surveys, boring data, update electronic files, and other materials to the Administration for its use and concurrence in the level of effort for this work.

1-1.8 Stipends

Due to the additional cost required to prepare price bids for Design-Build projects, the SHA will agree to pay the Design-Build Firms, invited by the Administration to submit bids which are not deemed the successful low bidder, a stipend. The payment of the stipend is in exchange for the supporting material necessary to develop a bid price including electronic copies and hard copy of all documents used to develop the Price Bid submitted to SHA within 30-days of bid opening. The Lead Design Project Manager shall review the supporting material to determine adequacy for a stipend payment. By accepting the stipend, the DBT agrees that all information provided becomes the property of SHA and may be used in any manner at our discretion without additional compensation. The winning Design-Build Team is not eligible to receive the stipend. SHA requires the completion of a Stipend Agreement and one original invoice along with two copies and all supporting data.

TABLE II-1 MILESTONE - (DBLB)

MILESTONE	SCHEDULED DATE
Hold Project Informational meeting (At least 1 month prior to financial ad date) coordinate date with District Construction personnel and ICD	
Advertise the IFB	
Last day for questions on Proposal (14 days after advertisement)	
Technical Proposal Submitted (1month after advertisement)	
Review Technical Proposals (Day after Proposal submittal) coordinate date with all review members (Allow approximately 3 – 5 days for review)	
Evaluation Committee (EC) convenes to determine Reduced Candidate List (RCL) (1 – 2 days after technical evaluations are completed)	
EC recommends RCL to Selection Official (1 – 2 days after EC meeting)	
Notify Short List / Invite to Bid (1 day after meeting with Selection Official)	
Hold debriefing meetings for teams not on the RCL (within one week of notification of the RCL)	
Bid Opening (4 to 5 weeks after Notify Short List/Invite to Bid)	
Notice to Proceed	

Review team: (List names) **Participants should include Lead Design Project Manager, Innovative Contracting Division, project team members with major participation, District Construction staff (Area Engineer and/or, PE and/or, ADE – Construction), and FHWA as a non-voting member for non-exempt projects.



CHAPTER 2 - COMPETITIVE SEALED PROPOSALS

In Competitive Sealed Proposal (CSP) procurement, the Request for Technical and Price Proposal (RFP) is structured to provide the best overall value for the Administration and the citizens of Maryland. The CSP concept includes certain factors in addition to price that provide tangible benefits to SHA and the public. The factors will be specified in the Technical Proposal and submitted by bidders in response to the RFP.

2-1 The Process

SHA's two-step CSP Design-Build procurement process begins with developing a Request for Qualifications (RFQ) including concept plans and engineering data for Design-Build advertisement. In response to the RFQ, a Statement of Qualifications (SOQ) is received from potential DBT's. The SOQs are rated and result in developing a reduced candidate list (RCL) based on responsiveness, then a request for technical proposals and price proposals are issued to the RCL teams only. The response to the RFQ and RFP will be evaluated on a qualitative and pass/fail process, using an adjectival rating process. Bid prices will be opened separately from technical proposals, with adjectival ratings to determine the best value for the citizens of Maryland. The two-step process is described in detail here-in and in SHA's RFQ and RFP for each project. The procurement process is led by the Procurement Management Team (PMT), consisting of the Division Chief and Assistant Chief of the Lead Design Division or District Office and coordinated through ICD with oversight from the Office of Procurement & Contracts Management (OPCM).

SHA seeks responses to the RFQ from teams of designers and builders (DB Teams) who are qualified and prepared in all respects to undertake the complete design and construction of a project. Those DB Teams that respond to the RFQ that meet, in all respects, the conditions for this request will be evaluated by the technical evaluation teams. The purpose of the evaluation will be to determine past performance, experience, and capabilities of DB Teams to undertake the project, plus their overall understanding of the project. These teams will present their evaluation to the Evaluation Committee. The factors, which will be used to evaluate the SOQ, are described in the RFQ and are listed in descending order of importance.

It is intended as part of the RFQ, a draft RFP of the subsequent procurement process, will be issued so that interested parties can better understand the overall approach and respond more effectively. Once the SOQ evaluations are completed, a reduced candidate list (RCL) of best qualified DB Teams considered reasonably susceptible of award is developed. If there is sufficient interest by qualified DB Teams and the Administration is satisfied that there will be an acceptable level of response, then a RFP shall be provided to only the RCL. Debriefing meetings for teams not placed on the RCL will be held immediately after notifications have been made.

Those DB Teams who have made the RCL are notified in writing and supplied with the RFP Package. This package includes all materials necessary for DB Teams to fully understand the project scope, legal, technical, and price requirements for the project. The SHA may also elect to conduct discussions via Technical Presentations with the RCL prior to the final evaluation of the technical proposal.

The Technical and Price proposal responses to the RFP are submitted in separate sealed packages. The proposals are not to be publicly opened, but will be opened in the presence of at least two of the Administration's employees (at least one representing the Office of Procurement and Contracts) who will compile a register of received proposals.



The technical proposal is evaluated by the technical evaluation teams and the price proposal is evaluated by the price team. These teams are independent of each other. The technical factors evaluated are listed in the RFP in descending order of importance. The evaluation of the price proposal will include a lump sum breakdown based on their lump sum bid and may also include some add/deduct items. The technical proposal will be based on a variety of criteria described in the RFP. Depending upon the project goals, price proposals may or may not be weighted higher than the technical proposal. The relevant weight (higher or lower than technical proposal) shall be stipulated in the RFP. The technical and price reviews are kept separate and confidential until they are presented to the Evaluation Committee.

Upon completion of the evaluation of the technical proposal, the technical evaluation team submits their comments and adjectival rating to the SHA Evaluation Committee which may be comprised of a Director, Deputy Director, Division Chiefs and Assistant District Engineers. Ratings of individual evaluation factors and the overall quality rating of a Proposal will be arrived at through consensus of the members of the Evaluation Committee. The SHA may or may not elect to conduct discussions with each DB Team; however, if discussions are held with one DB Team, they must be held with all the teams. The purpose of these discussions is so that the SHA fully understands what is being offered by the DB Team and secondly, so the SHA will have an opportunity to identify any critical weakness (inconsistency with SHA's expectation) in a DB Teams proposal. SHA also has the right to award the contract without entering into discussions.

Upon completion of the technical discussions, the DB Teams may be asked to submit best and final offers (BAFO). The BAFO's will be evaluated and included into the final selection that will determine which DB Team would be recommended for award. Once discussions and BAFO have been completed, the Evaluation Committee will determine through consensus which Design-Build Team's combined technical and price proposal will be the most advantageous to the State. A final recommendation will be made to the Selection Committee/Selection Officer comprised of SHA's Senior Management Team/Administrator. Debriefing meetings for the unsuccessful proposers will be held after notifications have been made.

The following considerations have been found to be key elements in successfully completing the CSP DB procurement process.

2-1.1 Project Informational Meeting

See 1-1.1 for the requirements necessary for the Project Informational Meeting.

2-1.2 Schedule

A Design-Build post advertisement schedule is very different from a Design-Bid-Build (DBB) schedule, See Table II-2. Consider your team members, in the allocation of time. Separate time needs to be allocated for the review of the SOQ's and Technical Proposals. The time allocated for the review of the SOQ's are typically about three to five days. The time allocated for the review of the Technical Proposals can be anywhere from one week to two weeks, depending on the type of project.

2-1.3 Request for Information/Addenda

Once the project has been advertised, the DBT's will submit Requests for Information (RFI) using a project specific email address as defined in the RFQ/RFP. All questions and responses shall be documented and posted on SHA's web page during the RFQ phase of the procurement. During the RFP phase of the procurement, all questions and



responses shall be documented and sent directly to the RCL using the project specific email address. Notifications are sent by either the PMT only. The Administrations answers to questions are considered binding and part of the contract.

2-1.4 Evaluation Factors – RFQ

The evaluation factors, sub-factors, and requirements during the RFQ phase of procurement are evaluated in accordance with these guidelines. The evaluation factors and the overall SOQ are rated by an adjectival (qualitative/descriptive) method using the same adjectival ratings as define in 1-1.4. A few fundamental requirements of the RFQ shall include:

- Team Experience/Qualifications and Past Performance
- Team Organization

Once the SOQ evaluations are completed, a reduced candidate list (RCL) of those DB Teams considered reasonably susceptible of award is developed. The RCL will be determined in approximately two weeks from submittal of the SOQ's. If there is sufficient interest by qualified DB Teams and SHA is satisfied that there will be an acceptable level of response, then a Request for Technical and Price Proposal (RFP) shall be made to only the RCL.

2-1.5 Alternative Technical Concepts (ATCs)

SHA may choose to allow the Design-Build Teams to incorporate innovative Alternative Technical Concepts (ATCs) into their proposals that differ from the Base Technical Concept (BTC) provided in the RFP. SHA will entertain and review proposed alternative technical concepts for pre-approval to include in the Design-Build Team's proposal if: it has been submitted to SHA by the deadline in the Procurement Schedule, and has been pre-approved by the Administration. All ATCs will remain confidential until Design-Build Contract is awarded to the successful Design-Build Team.

2-1.6 Confidential Meetings for ATCs

The SHA may elect to allow each Design-Build Team to attend a private meeting to present proposed alternative concepts if it is determined by SHA that a meeting is necessary to further clarify their ATC. Each meeting by SHA will be with the representative of only one Design-Build Team at a time. Discussions between the Administration and the specific Design-Build Team will be limited to the proposed ATC.

2-1.7 Administration Review of ATC

SHA will review each ATC and respond within (14) calendar days after receiving all related information and clarification with one of the following determinations:

- Is Approved as submitted.
- Is Approved, subject to the conditions listed under the Conditions section below.
- Is Disapproved as submitted.
- Does not qualify as an ATC, but may be included in the Proposal without an ATC.
- Does not qualify as an ATC and may not be included in the proposal.
- Decision pending request for additional information and/or one on one meeting.

Pre-approved ATCs will be considered in the Proposal evaluation process.



23 CFR Part 636 states that the ATC may supplement, but not replace the base proposal and price. In October 2012, SHA received programmatic approval from FHWA to waive this requirement.

2-1.8 Technical Evaluation Factors and Adjectival Ratings

The technical evaluation factors, sub-factors, and requirements are evaluated in accordance with these guidelines. The technical evaluation factors and the overall Technical Proposal are rated by an adjectival (qualitative/descriptive) method. A few fundamental requirements of the Technical Proposal should include:

- Project Technical Elements & Approach
- Project Schedule & Project Management
- Environmental Approach
- Legal & Financial (pass/fail rating only)

The following adjectival ratings are used in evaluation of each sub-factor, technical evaluation factor, and the overall technical rating of the Proposal, with the only difference is the inclusion of a SUSCEPTIBLE TO BECOME ACCEPTABLE rating:

EXCEPTIONAL: The Proposer has demonstrated an approach that is considered to significantly exceed stated objectives/requirements in a way that is beneficial to the Administration. This rating indicates a consistently outstanding level of quality, with very little or no risk that this Proposer would fail to meet the requirements of the solicitation. There are essentially no weaknesses.

GOOD: The Proposer has demonstrated an approach that is considered to exceed stated objectives/requirements. This rating indicates a generally better than acceptable quality, with little risk that this Proposer would fail to meet the requirements of the solicitation. Weaknesses, if any, are very minor.

ACCEPTABLE: The Proposer has demonstrated an approach that is considered to meet the stated objectives/requirements. This rating indicates an acceptable level of quality. The Proposal demonstrates a reasonable probability of success. Weaknesses are minor and can be readily corrected.

SUSCEPTIBLE TO BECOME ACCEPTABLE: The Proposer has demonstrated an approach that fails to meet the stated objectives/requirements, as there are weaknesses and/or deficiencies, but they are susceptible to correction through discussions. The response is considered marginal in terms of the basic content and/or amount of information provided for evaluation, but overall, the Proposer is capable of providing an acceptable or better Proposal.

UNACCEPTABLE: The Proposer has demonstrated an approach that indicates significant weaknesses/deficiencies and/or unacceptable quality. The Proposal fails to meet the stated objectives/requirements and/or lacks essential information and is conflicting and/or unproductive. There is no reasonable likelihood of success; weaknesses/deficiencies are so major and/or extensive that a major revision to the Proposal would be necessary.

In assigning ratings, the Administration may assign “+” or “-” (such as, “Exceptional -”, “Good +”, and “Acceptable +”) to the ratings to better differentiate within a rating, in order to more clearly differentiate between the technical evaluation factors and the overall Proposals.

The term “weakness,” means any flaw in the proposal that increases the risk of unsuccessful contract performance. A significant weakness in the proposal is a flaw that



appreciably increases the risk of unsuccessful contract performance. The term “deficiency” means a material failure of a proposal to meet an RFP requirement or a combination of significant weaknesses in a proposal that increases the risk of unsuccessful contract performance to an unacceptable level.

Certain technical evaluation factors include sub-factors relating to the different technical disciplines (i.e., structures; highways; landscaping) or different management areas (i.e., design; construction) involved in the evaluation. Each sub-factor will be assigned a consensus rating, and all sub-factors under a technical evaluation factor will be combined through consensus, taking into account the relative importance of each sub-factor to arrive at an overall rating for each such factor. Technical evaluation factors without sub-factors will also be assigned a consensus rating. The ratings of all the technical evaluation factors will then be combined by consensus, taking into account the relative importance of the evaluation factors to arrive at the overall rating for the Technical Proposal.

2-1.9 Evaluation of Proposals (Technical & Price/Legal & Financial) and Selection

Technical evaluation teams will be utilized to evaluate each technical factor and sub-factor. A separate price evaluation team will be utilized to evaluate price reasonableness and price realism. Technical Evaluation teams will evaluate technical proposals submitted by the DB Teams using an adjectival (qualitative/descriptive) method as noted above, and then present their findings to the Evaluation Committee (EC). Based upon the ratings presented, the EC will arrive at an overall consensus rating for each Technical Proposal submitted. Only at this time, will the results of the Price Team be revealed to the EC. Based upon relative importance of the technical factors and price as stipulated in the RFP, the EC will come to a consensus recommendation for a successful proposer. This recommendation will be presented to the Selection Committee/Official. The Technical Proposal of the successful Design-Build Team will become part of the contract documents and all the concepts provided to the Administration are expected to be included in the price bid and final plans. The Administration and successful bidder may use ideas and approaches offered by the unsuccessful bidders excluding proprietary or protected information, if a stipend was offered and accepted.

Subsequent to the receipt of the Price Proposal, the Lead Design Project Manager shall provide the names of the contracting entities to the Cashier’s Office in order to generate a bidders list and associated bid tabs.

2-1.10 Award and Notice to Proceed

Unless all Proposals are rejected or the procurement is canceled, the Contract shall be awarded to the responsible Proposer offering an acceptable Proposal that is the most advantageous to the State; taking into consideration the technical and price factors discussed above.

In order to initiate the Affirmative Action Plan approval keeping in mind that time is of the essence, the lead office needs to **hand deliver** to OOC’s DBE/MBE Liaison copies of the Schedule of Prices and Affirmative Action Plan (found in the Proposal Form Packages) for all the bidding teams. OOC’s MBE Liaison will generally have a week to review this information to ensure prospective bidders have met their obligation regarding DBE goals set forth in the contract.

At the time the OOC meets to review the remainder of the information above, the original Proposal Packages and Proposal Guarantees will be delivered to OOC – Contracts Awards Team.



When an apparent successful bidder is identified, OHD will send letters to the apparent successful bidder and the unsuccessful bidders notifying them of the results of the evaluations. The letter to the apparent successful bidder will be coordinated with the OOC – Contracts Award Team Leader to ensure all required forms are requested.

Once the project has been awarded, OHD will **hand deliver** to OOC-Contracts Award Team the following information:

- Six (6) copies of the RFP with a blank Proposal Form Package (as advertised w/all Addenda included)
- One (1) copy of the Technical Proposal (Successful Bidder only)
- Original Price Proposal and Proposal Guarantee
- One (1) copy of Schedule of Prices (all Bidders)

Notice to Proceed through the OOC-Contracts Award Team to the Design-Build Team will be given after execution of the contract has been completed.

2-1.11 Stipends

See 1-1.8 for the requirements for Stipends.

TABLE II-2 MILESTONE – (CSP)

MILESTONE	SCHEDULED DATE
Informational Meeting (At least 1 month prior to advertisement of RFQ) coordinate date with District Construction personnel and ICD	
Advertise RFQ along with Draft RFP	
Last day for questions on RFQ (Approx. 6 weeks after Informational meeting)	
SOQ Submitted (Approx. 1 month after advertisement of RFQ)	
Begin review of SOQ (Day after submittal) coordinate date with all review members. ¹ (allow approximately 3 days for review)	
Evaluation Committee (EC) convenes to determine RCL (1 – 2 days after SOQ evaluations have been completed)	
EC recommends RCL to Selection Official (1 – 2 days after EC meeting)	
Notify RCL (1 day after meeting with Selection Official)	
Hold debriefing meetings for teams not on the RCL (within one week of notifications of the RCL)	
Distribute Final RFP to RCL (within 7 days of notifying the RCL)	
Alternative Technical Proposals (if desired – assess duration based on project size)	
Technical and Price Proposal Submitted (Assess duration based on project size ¹ : Price proposal remains sealed until technical proposal evaluations are complete)	
Technical Proposal Evaluation ¹	
Selection (Based on best-value) ²	
Notice to Proceed	

1 Access duration based on project size.

2 **Best and Final Offers (BAFO)** (assess based upon size of project)



PART III

PRELIMINARY

ENGINEERING

PART III - PRELIMINARY ENGINEERING

Preliminary engineering and the preparation of plans for SHA's Design-Build (DB) projects differ considerably from traditional Design-Bid-Build (DBB) projects. The advertisement package prepared by SHA consists of Conceptual Plans containing basic geometric information and an Invitation for Bids (IFB) with detailed final engineering and construction requirements for the Design-Build Team (DBT).

The DBT's who enter into the bidding process (see Part II, Chapters 1 and 2 for information on the bidding process) will utilize the Conceptual Plans and the IFB to establish their bid for both construction and final engineering services. The DBT's will be responsible for the development of the final engineering details, plans, and permits that would normally be completed by SHA prior to advertisement on DBB projects.

The most critical elements of the preliminary engineering activities performed prior to advertisement are the establishment of design and construction parameters / specifications, proposed right-of-way and easements, anticipated limits of disturbance for environmental permits, and the project's budget.

CHAPTER 1 – DESIGN DEVELOPMENT, PLAN & ESTIMATE PREPARATION

1-1 Design Development

The design activities for DB projects are completed through the typical DBB Preliminary Investigation (PI), 30% complete stage. In some cases the design effort extends further to ensure the project can be completed within the established right-of-way limits and limits of disturbance (LOD), and for environmental permits. Also, some additional design detail may be necessary to adequately identify utilities requiring relocation prior to construction.

1-1.1 Topographic and Property Surveys

Topographic survey needs for the conceptual design of the project based on the existing site conditions (rural, urban, etc.) and the proposed improvements need to be identified early in preliminary engineering phase. Consideration should be given as to the need for detailed field surveys or aerial photogrammetry in providing adequate data to perform the conceptual design and to determine the project's right-of-way needs. Property (metes and bounds) surveys should be performed where right-of-way or easements are required. Where wetlands exist or may be impacted, field surveys are required for preparation of wetland impact plates.

1-1.2 Utility Designating and Test Pits

Utility designating should be requested with the project's topographic surveys and is to be shown on the conceptual plans or on a separate utility mosaic.

Obtaining test pits during the conceptual plan development process is dependent largely on the anticipated impacts to existing underground utilities created by new storm drain, retaining wall or bridge construction. Utility test pits should be taken only where it has been determined that impacts are unavoidable. Utility test pit information should be provided to the DBT as part of the Additional Information provided on ProjectWise.

1-1.3 Pavement Design and Geotechnical Engineering

The Office of Materials and Technology (OMT) will provide a pavement section necessary for the development of the engineer's estimate. Unless otherwise determined by



OMT and the Lead Design Division, the pavement details will not be included in the IFB as ultimately the pavement section will be a requirement of the DBT.

Soil borings are obtained by SHA and the boring logs and soil test results are placed on the ProjectWise. The DBT is permitted to use this information or obtain supplemental information for their design. It is the DBT's sole responsibility to ensure adequate soils information is obtained to accurately characterize the site's soil conditions/groundwater.

1-1.4 Roadway Design

Typical Sections, horizontal baselines, and vertical profiles should be developed for all mainline and intersecting roadways to establish the desired line and grade of the improvements, to set the project's limits of work, and to define right-of-way impacts. Mainline, intersection and entrance geometrics should be developed to the extent necessary to establish proposed right-of-way, easements, impacts to environmental resources, and utility relocations.

The DBT has the option to use the conceptual alignments or to set their own alignments, which are subject to review by the Lead Design Division or District Office. In the event that the DBT elects to alter the conceptual alignment, all related construction must fall within the right-of-way and easements established by SHA. Also, any utility relocations or permit modifications that result from an alignment change by the DBT will be the sole responsibility (coordination, costs, maintenance of the construction schedule) of the DBT.

Preliminary cross sections to establish grading limits, drainage patterns and maintenance of traffic concepts will be developed. The cross sections will also be used in determining right-of-way needs and earthwork quantities for the engineer's estimate.

1-1.5 Structural Design

Structural Designs is to be developed to a Pre-Type, Size & Location (TS&L) stage for all structures. The DBT will be responsible for completing the structure design, within the right-of-way provided, and for obtaining all approvals from SHA.

Any structures crossing water will require that a Hydraulic Study and Hydraulic Analysis Report be prepared and approved by MDE. Any deviations from the Hydraulic Study and Hydraulic Analysis Report and resulting additional design, coordination, or construction costs will be the sole responsibility of the DBT.

Additional requirements and DBT responsibilities for structural design are detailed in Terms and Conditions Section 3 of the IFB.

1-1.6 Storm Drain Design

Storm drain design is to be developed to establish a preliminary layout of inlets, manholes and pipes / culverts. The preliminary layout will provide a means to assess anticipated utility impacts, proposed drainage patterns, tie-ins to existing facilities (with possible investigations pertaining to the condition and capacity of existing facilities), and right-of-way needs, and environmental permits.

Detailed pipe profiles will not be developed, and pipe and inlet / manhole sizing is not necessary. These details, computations and plans will be required of the DBT.

Culverts within jurisdictional waters of the United States will require a preliminary culvert analysis report that will then be submitted to MDE for waterway construction review. The report will demonstrate that the existing 100-year headwater elevation can be maintained and will request waivers for the 150-foot maximum length criteria, where applicable. A Modification



Approval for Waterway Construction (WWC) permit will be issued by MDE based on the Administration's preliminary culvert analysis report.

The DBT will be responsible for the final design of culverts within waters of the United States and for obtaining final approval from SHA and MDE. MDE will issue a final WWC permit based on the DBT's approved final culvert design.

1-1.7 Stormwater Management Design

Concept Phase (Pre-PI) stormwater management will be developed to establish right-of-way needs and to demonstrate to MDE that all of the stormwater management needs can be met within the established right-of-way. MDE will approve the methodology in the concept stormwater management report and will issue a Letter of Intent to issue permits upon completion of the stormwater management design.

The DBT will be responsible for completing the stormwater management design, within the right-of-way provided, and for obtaining all permits and approvals from MDE and SHA. Any deviations from the concept stormwater management report and resulting additional design, coordination, or construction costs will be the sole responsibility of the DBT.

Additional requirements and DBT responsibilities for stormwater management are detailed in Terms and Conditions Section 3 of the IFB.

1-1.8 Erosion and Sediment Control Design

The Administration is not responsible for developing an erosion and sediment control concept. The concept is submitted to MDE with the preliminary SWM report for approval and to initiate the Notice of Intent (NOI) process.

The Administration is not responsible for developing phased erosion and sediment control design. However, easement/fee areas along the project to provide adequate space for the DBT to design and construct erosion and sediment control measures shall be considered. Normally a distance of 25' from the top of cut/toe of fill is used to establish the needed space for erosion and sediment control. The Administration should evaluate the space provided particularly, in urban areas where right-of-way costs are relatively high. The DBT is responsible for all erosion and sediment control design and for obtaining all approvals and permits from SHA and MDE.

1-1.9 Maintenance of Traffic Design and Construction Phasing

Maintenance of Traffic (MOT) plans will not be developed by SHA for DB projects. However, a Transportation Management Plan (TMP) shall be prepared up to the "Red Flag Summary" only (reference the TMP Guidelines, Section 2.1, page 7). As a result, conceptual maintenance of traffic / construction phasing plans should be prepared for review with the District and other appropriate divisions. The development and review of these plans serve as a basis for defining project constraints (work restrictions, lane restrictions, specific phasing requirements, right-of-way needs, etc.) that will be reflected in the IFB. Maintenance of Traffic signing, channelization device layout, or minor sub-phases, will not be detailed, but should clearly depict the major construction stages, lane assignments, work zones, and specific "trouble areas" along the project.

Some projects may include construction of temporary detour roads that require right-of-way or easements for their implementation. These temporary detour roads should be included on the Conceptual Plans for the DBT's information. The Lead Design Division or



District Office should coordinate with the local government to determine if detours onto local roads will be acceptable or not. Any restrictions shall be incorporated into the IFB.

The DBT will be responsible for developing final Traffic Control Plans and details for SHA's review, comment and approval. SHA must seek to provide the greatest degree of flexibility in site access, work hour restrictions and MOT.

1-1.10 Traffic Design

Traffic signing, pavement markings, signalization, and lighting will not be designed. The Terms and Conditions Section 3 of the IFB will detail the engineering standards and design criteria, the required materials, and the functional operation requirements of the traffic items. If local roadway improvements are included in the project, the Office of Traffic and Safety (OOTTS) is responsible for coordinating with the local jurisdictions to ensure their standards/requirements are included in the IFB.

When developing the right-of-way needs for the project, adequate space to construct the required traffic control devices must be provided.

Intersection/Interchange geometrics need to be coordinated with OOTS and District Traffic staff to ensure the proper geometrics are defined as part of the concept plans and specifications. Considerations to be included are the type/s of channelization, operational characteristics, length and number of turn lanes and any other treatment that will ensure a safe and operationally acceptable intersection or interchange. As part of this coordination, a letter shall be sent, with all applicable plans, to the Director of OOTS requesting the Director to review and sign-off on these geometrics prior to advertisement of the contract.

1-1.11 Environmental Design

All wetlands, waters of the United States, forested areas, significant / champion trees, and other natural, historic or archeological resources that may be impacted by the Project will be delineated and surveyed. The Administration will coordinate with the appropriate agencies with regard to the anticipated impacts, mitigation and special protection measures. This coordination is important in the development of specifications and requirements that will be placed on the DBT.

The wetland impact plates will be prepared based on the preliminary design and will include the impact plates in the application for the Joint 404 Permit and Water Quality Certification. The design of wetland mitigation is handled on a project-by-project basis. For example, if a site is identified as a good candidate for wetland mitigation, and the site is within the project area, SHA may specify that the DBT design the required mitigation at that site for the Project. Mitigation that is to be completed off-site or outside of the project area is typically designed and constructed under a separate contract by SHA.

The Office of Environmental Design (OED) will require an estimate of anticipated forest impacts and will coordinate the reforestation requirements with the Maryland Department of Natural Resources (DNR). The design of reforestation, like wetland mitigation, is handled on a project-by-project basis. On-site reforestation areas are typically shown on Landscape plates that are included in the IFB (see Part III, Chapter 1-1.12). Materials and planting densities required in these areas will be specified, but design of the reforestation planting plan will not be done.

Refer to Part III, Chapter 3 for a list of the typical permits and the parties (SHA or DBT) responsible for obtaining the permit.



1-1.12 Landscaping / Aesthetics Design

Landscaping plans will not be developed for design-build projects. The Landscape Architecture Division will develop conceptual plans that will be provided on ProjectWise, depicting zones for plant material types / mixes. The Terms and Conditions Section 3 of the IFB will specify the plant composition and densities that are to be provided in these zones.

Details, specifications, and proposed locations for aesthetic features (i.e. brick or stamped concrete medians / sidewalks, decorative railings / light poles / signal poles) should be included in the IFB. It is also recommended that notations be placed on the Conceptual Plan sheets to clearly depict the intended location of aesthetic features.

1-1.13 Plats

The development of Plats for DB projects follows the same process as for DBB projects. The Administration will develop right-of-way needs based on the 30% line, grade and cross sections. SHA Plats and Surveys will generate the proposed right-of-way Plats.

1-1.14 Design Exceptions

Any Design exceptions, ADA Design Waivers and Bicycle Compatibility Waivers required for the project that are identified in the development of the concept plans will be obtained by the Administration, prior to the project's advertisement, and will be outlined in the IFB and provided in the project folder on ProjectWise. Design exceptions, ADA Design Waivers and Bicycle Design Waivers necessitated by the finalization of the design by the DBT will be the responsibility of the DBT.

1-2 Plan Preparation

The preparation of plans and cost estimates for DB projects is similar to that of DBB projects through the Preliminary Investigation (PI) stage. Conceptual plans are developed to the 30% level to depict the desired improvements, to establish the right-of-way needs of the project and to generate the necessary information used in establishing the project's budget.

No hard copies of conceptual plans are provided. All conceptual plans, survey information, microstation files and all other electronic media and data required for the DB Team to finalize designs are to be included on ProjectWise. See Terms and Conditions Section 2 for a complete outline of the information to be included.

Table III-1 lists the plan sheets that are typically included in the traditional DBB projects with an indication of those sheets that are included in the Conceptual Plan package for advertisement on DB projects. A brief description of plan sheet content / information that is specific to DB projects follows.

TABLE III-1 PLAN SHEET DESCRIPTION

Plan Sheet Description	Included	Remarks
Title Sheet	Yes	-
Index of Sheets, Abbreviations and Conventional Signs Sheets	Yes	-
Typical Section Sheets	Yes	Final by DBT
Geometry Sheets	Yes	Final by DBT
Superelevation Data Sheets	No	By DBT



Plan Sheet Description	Included	Remarks
Roadway Plan Sheets	Yes	Final by DBT
Intersection Details / Grading Plans	No	By DBT
Roadway Profile Sheets	Yes	Final by DBT
Storm Drain Profiles / Schedules	No	By DBT
Storm Water Management Plans	No	By DBT
Erosion and Sediment Control Plans	No	By DBT
Structure Plans (Pre-TS&L)	Yes	Final by DBT
Traffic Signal Plans	No	By DBT
Signing & Pavement Marking Plans	No	By DBT
Lighting Plans	No	By DBT
Maintenance of Traffic Plans	No	By DBT
Landscape Plans	No	By DBT
Wetland Mitigation Plans	No	By DBT if required
Reforestation Plans	No	By DBT
Utility Relocation Plans (if necessary)	If Necessary	Utility decision
Grading Table & Earthwork Summary	No	Not needed

*Note – This list may be varied to include or exclude plans based on specific project needs.

1-2.1 Title Sheet

The standard SHA Title Sheet for Design-Build is to be used for Design-Build projects. The limits of work, survey book numbers, plat numbers, design designation data, and horizontal and vertical datum are to be provided.

SHA signature blocks **will not** be signed for the project’s advertisement. Signatures will be obtained at the time of SHA’s acceptance of the DBT’s final plans.

The following notations should be added to the Title Sheet:

- A note stating FOR INFORMATION ONLY – NOT FINAL shown above the revision block and
- DESIGN-BUILD prior to project description (center, top of sheet).

1-2.2 Index of Sheets, Abbreviations and Conventional Signs

An Index of Sheets, Abbreviations list and Conventional Signs legend is to be provided.

1-2.3 Typical Section Sheets

Typical Section Sheets are to be provided for all roadways. The basic number of lanes and their designations (i.e. through lane, turn lane) should be shown, along with typical lane, shoulder, sidewalk / pathway and median widths. Cross Slopes should be noted as “Normal or Rate of S/E”. Detailed roadway and turn lane tapers should not be dimensioned or stationed on the Typical Section Sheets.



Slope treatments (topsoil, seed, mulch, soil stabilization matting, etc.) should not be shown on the Typical Section Sheets. Information pertaining to the treatment of slopes is specified in the IFB.

The DBT will be required to provide final typical sections based on their final design of the proposed improvements.

1-2.4 Geometry Sheets

Geometry Sheets are to be provided with baseline control and curve data shown for all roadways. Traverse control data should also be shown.

Intersection Details Sheets, Pavement Edge Elevation Sheets, and Superelevation Data Sheets are not part of the advertised conceptual plans. The design of these items and development of their respective plan sheets will be required of the DBT.

1-2.5 Roadway Plan Sheets

Roadway Plan Sheets are to be provided depicting the conceptual roadway layout, drainage design pavement widths, and edge treatments (i.e. curb and gutter, open section shoulder). The anticipated areas of full depth and resurfaced pavement should be shaded on the plan sheets. Basic pavement dimensions should be provided at the match lines of each sheet and at significant changes in roadway, shoulder, or median width. Dimensions should not be provided for curb return, entrance or intersection radii, or for median curb, outside curb or island geometry.

Potential Stormwater Management Facility locations for both BMP's and ESD's should be shown. The locations should be cross hatched and labeled and shown as "broad" areas that cover the full extent of the potential SWM area, including maintenance access. For example, if right-of-way has been purchased for a SWM facility, the full limits of that right-of-way should be cross hatched. All rights-of-way, easements, wetland / buffer boundaries, significant trees or other existing features of special importance should be shown on the plan sheets.

Special protection items, such as the preservation of significant trees, should be clearly noted on the plans. The IFB should also clearly detail these items and the measures required for protection.

Commitments to adjacent property owners (fencing, special grading, entrance aprons, etc.) or local agencies that have been made during the conceptual design phase of the project should be clearly noted / depicted on the plans. Again, the IFB should also clearly detail these items.

Although maintenance of traffic plans are not prepared by the Administration, some circumstances may require the construction of a temporary roadway to detour traffic around an item of work (i.e. bridge construction / replacement, culvert installation). Plan sheets should be prepared, to the level of detail described above, showing the relocated or temporary roadway, the work area, and any easements or special considerations associated with the temporary condition.

The DBT will be required to submit final Roadway Plan Sheets for review and approval by SHA. The DBT's sheets will include items typically shown on DBB projects, including construction notes for proposed w-beam / end treatments, storm drainage, etc.



1-2.6 Roadway Profile Sheets

Roadway profile sheets are to be provided for all new roadways. The existing ground along the baseline of construction and the proposed grade line should be shown. Curve data and proposed grade elevations (at 50 foot intervals) should be provided. The DBT will be required to submit final Roadway Profile Sheets for review and approval by SHA.

1-2.7 Structure Sheets

Pre-TS&L structure plans shall be developed using the latest SHA MicroStation CADD Standards and Plan Development Checklists. All structure plans shall be prepared on the Office of Bridge Development's standard border and title block sheet. The development of views on all Structure Contract Drawings shall be in conformance with the Administration's Office of Structures (formerly Office of Bridge Development) Policy and Procedure Memorandum P-75-7(4).

1-3 Specifications

The Maryland Department of Transportation's Standard Specifications for Construction and Materials (SSCM) is primarily based on the Design-Bid-Build model. As such, Special Provisions must be provided in the IFB to modify the General Provisions (GP), Terms and Conditions (TC) and Technical Requirements (TR) in the SSCM for the Design-Build model. These Special Provisions will need to be reviewed and updated for inclusion into the IFB. Of primary importance for review and update will be TC Sections 2 and 3.

TC Section 2 covers the bidding requirements of the DB contract and describes the following:

- The DB Request for Proposals (RFP) or Invitation for Bids (IFB) process
- The data provided to perspective bidders and its contractual standing.
- The engineering and construction services that are to be provided
- Technical questions used in SHA's evaluation of the bid
- The DBT's structure and required qualifications
- Proposal submission requirements
- SHA's evaluation of the bids and awarding of the contract

TC Section 3 covers the scope of work and describes the following:

- The design and construction scope of services
- SHA's services
- Design deliverables
- Performance Specification
- Construction requirements

The Performance Specifications in TC Section 3 establish basic performance requirements for a particular item of work without specifying the means, methods or exact materials to be used, giving the DBT flexibility in pursuing innovative and cost effective solutions. The Performance Specifications are broken into the following individual sections:

- Roadway
- Pavement
- Structural



- Traffic
- Landscape
- Geotechnical
- Utility
- Maintenance of Traffic
- Drainage, Stormwater Management and Erosion & Sediment Control
- Noise Abatement
- Construction
- Environmental
- Public Outreach

Each of these sections must be reviewed and updated by the applicable division or office and provided to the Lead Design Project Manager for review and inclusion into the IFB.

Any requirements for a particular item of work which the Administration wishes to specify the means, methods or exact materials to be used must be thoroughly reviewed to make sure that requirements are clearly defined.

The IFB shall also include any applicable Special Provision Inserts and Standard or Job Specific Special Provisions that modify the TR section of the SSCM for items of work that may be performed as part of the project.

1-3.1 Community Relations and Public Outreach

The Project Engineer is responsible for coordination during the design phase with the Office of Communications (OC) and applicable District personnel to identify any special needs in regards to community relations and public outreach. This coordination shall continue into the construction phase to determine a protocol for disseminating project updates and information to be viewed by the public.

1-4 Construction Cost Estimates

Cost estimates are to be developed by the Administration to establish the construction budget for the project. Because of the limited detail prepared in preliminary design for DB projects, it is important to account for all specialty items (ex. - brick pavers, decorative lighting) that will be included in the IFB, and all items that are known or are anticipated to be required, but are not shown on the plans (ex. - w-beam, end treatments).

1-4.1 Estimate Type

A Major Quantities Estimate is to be prepared, per SHA's *Highway Construction Cost Estimating Manual*. This Major Quantities Estimate will serve as the engineer's estimate for the project through advertisement. An itemized estimate will not be prepared for DB projects.

1-4.2 Estimate Considerations

In addition to the guidance provided in SHA's *Highway Construction Cost Estimating Manual*, the conceptual design team should consider the following:

Separate preset Items to account for costs associated with incentives/disincentives such as Early Completion, Erosion Sediment Control Ratings and Wetland Impact reductions. (See your HHD liaison for E&S Ratings cost and base your Wetland Incentive reduction on a reasonable amount of reduction (1 acre? half acre?) based on 80K an acre paid in tenth of an acre increments of 8K. Additionally, if your project includes price adjustments for items such as



Diesel Fuel, Asphalt Binder, Pavement Density, HMA Mixture and Surface Profile, these preset items need to be defined.

Cost to account for a Severe Weather Event. (See your HHD liaison for this cost)

Cost associated with stipend payments. At advertisement this cost will become an Item in TRNS*PORT noted as a non-biddable item. Coordinate cost with the ICD.

If third party utility design and construction efforts are included in the design-build contract, separate LS Item/s shall be included in the schedule of prices to account for the costs associated with each type of utility; i.e. Water, Gas, Sewer, etc.

The following costs are required:

A contingency factor will be added to the neat final design / construction costs. This will cover the lack of a final engineering and an itemized engineer's estimate. Design Builder Engineering Fee must also be factored into the engineer's estimate. This will cover the engineering fees for the final engineering provided by the DBT. These factors should be coordinated with ICD.

CHAPTER 2 - PRE-ADVERTISEMENT REVIEW PROCESS

DB projects reduce time leading to advertisement. Plan and specification review, issue resolution, communication among team members is critical to the success of the project. The Administration's design lead manager must assure that the project goals are clearly established, understood by all team members, and packaged concisely in the bid documents. Unlike DBB projects, the details that are normally shown pictorially on plan sheets must be accurately presented in the IFB so that the DBT's final design and construction meets the goals and objectives established by SHA.

Therefore, many of the typical milestone and coordination meetings that are held for DBB projects are also recommended for DB projects. However, as the project gets closer to advertisement the focus of the reviews on DB projects is on the development of specifications that will be included in the IFB.

The following illustrates the milestones and purpose or emphasis of the reviews as a DB project proceeds from Conceptual Plan development to Advertisement.

2-1 Preliminary Investigation

The lead design office will conduct a Preliminary Investigation (PI) for DB projects. Depending on the size and complexity of the project, office and / or field PI's will be held to review the proposed improvements and to provide a forum for comments, questions, and issue resolution. The Lead Design Project Manager must emphasize to all reviewers that the project is slated for DB and that final right-of-way needs, construction cost estimates, and pre-advertisement environmental approvals / permits will be derived from the PI plans / meeting(s). The PI package will include the 30% complete plans that are anticipated for the project's advertisement.

The lead design office will prepare a PI report describing the project scope and comments received. As with a DBB project, approval of the PI report will constitute acceptance of the preliminary line, grade, and typical section of the improvements. **Plan development from this point forward should only take place to address comments from the PI, resolve any scope or project issues and/or to obtain required approvals and permits. Post-PI**

activities should focus on and the development the contract procurement documents and construction specifications.

2-2 Utility Preliminary Investigation

PI plans should be distributed, by the District Utility Engineer, to affected utility agencies and municipalities for review of the proposed improvements and impacts to their facilities. The distribution of conceptual plans to the agencies and municipalities should include notification that the project will be advertised as a Design-Build Contract and that the level of plan detail will not advance beyond the 30% stage until the project is awarded to the successful bidder.

A field meeting should be held to review the project and to begin the on going coordination on utility relocations. It should be made clear at this meeting that the completion of right-of-way needs / plats is dependent on when and where the utility relocations will occur. A discussion should also take place at this meeting on whether or not the utility relocation design and/or construction can be included as part of the project. Including the relocations in the project will allow the DB Team to better schedule, coordinate and layout the drainage design to minimize utility relocations.

If the utility is to be included in the project, the utility company will need to provide SHA any specifications, guidelines and additional requirements needed for the DBT to design and/or construction the relocation. For any utility relocations that are not included in the project, continued coordination is needed to establish their relocation design and construction schedule to minimize the potential of any future conflicts.

It is the DBT's responsibility to incorporate and make provisions in their design for all existing and proposed utilities, including relocations, to avoid additional impacts to utilities. The DBT shall also establish and maintain ongoing coordination with utility owners after initial contact has been made by the Administration to account for utility relocations in their schedule and sequence of construction.

2-3 Right-of-Way Needs Meeting

Right-of-way needs should be established at PI to facilitate the early development of plats and to provide the District Right-of-Way staff with a clear indication of overall project and individual property impacts. Preliminary needs should be shown on the PI plans and adjustments made based on PI comments and utility relocation requirements.

A right-of-way needs meeting should be held with the District Right-of-Way, Plats and Surveys, District Construction, and all other appropriate divisions to review the requirements of the project and to assure that adequate space is provided to the DBT in completing the improvements. This meeting should occur after the conceptual maintenance of traffic plan has been reviewed and accepted and after potential storm water management locations have been established.

2-4 Semi-Final Review

Similar to DBB, not all DB projects will require a Semi-Final Review (SFR) meeting. The lead design office will determine if a SFR is necessary for their particular DB project. If a SFR meeting is held, the focus should be on utility, right-of-way, and permit coordination, and the development of the project specifications and IFB.



2-5 Final Review

The lead design office will conduct a Final Review (FR) meeting to obtain comments on the IFB and final conceptual plans. A major quantities construction cost estimate will be prepared.

The FR package will include the 30% complete plans that have been refined based on comments from the PI meeting and a preliminary IFB including all required specifications. The lead design office will prepare FR meeting minutes describing the issues / revisions discussed and the appropriate action. A formal FR report is not necessary for DB projects. The lead design office shall submit a Final Review Report Waiver to the Director of the Office of Highway Development.

2-6 Plans, Specifications & Estimate

Following the FR meeting the Administration will prepare the final documents, including the IFB, Conceptual Plans and engineer’s estimate. A Certification of Environmental Permits, which indicates the status of permit approvals applied for by SHA and those to be applied for by the DBT.

CHAPTER 3 – PERMITS

The responsibility of securing environmental permits is dependent on the types of permits required for the project. In general, SHA will obtain permits for wetland and waters of the United States impacts. SHA will also obtain conditional permits for stormwater management, erosion and sediment control, and reforestation/roadside trees. It is the DBT’s responsibility to comply with the permits and conditions set forth by the reviewing environmental agencies and to complete the plans and computations necessary to secure final approvals.

3-1 Environmental Permits

Table III-2 presents the typical permits required for SHA’s projects and the party that has traditionally been responsible for obtaining the permit on DB projects. There may be additional permit needs, so the Project Team should establish the requirements early on in the project. Also, the Project Team should perform an evaluation of the permits for each project to determine the most appropriate assignment of permit responsibility based on the project needs.

TABLE III-2 PERMITS

Permit	SHA Obtained	Design Builder Obtained
US ACE – Section 404 Clean Water Act Permit	✓	
MDE – Section 404 Clean Water Act – Water Quality Certification	✓	
MDE – Non-tidal Wetland and Waterways Permit	✓	
MDE – Coastal Zone Management Program Federal Consistency Determination	✓	
DNR – Scenic and Wild Rivers Approval	✓	
DNR – Forest Impacts and Potential Reforestation Areas	✓	



Approval		
MD State Board of Public Works – Priority Funding Areas Law Compliance	✓	
MDE – General Mineral Mining Permit (for batch plants)		✓
MDE – Water Appropriations Permit (for withdrawals from surface or groundwater)		✓
MDE – Erosion and Sediment Control Approval		✓
MDE – Storm Water Management Approval		✓
MDE – Environmental Air Quality/Emissions permit		✓
National Pollutant Discharge Elimination System (NPDES) Notices of Intent (NOI)		✓
DNR Roadside Tree Permit		✓
DNR Fish Collection / Relocation permit		✓

3-2 DBT’s Modification Requirements

The DBT may elect to modify the Conceptual Plans prepared by SHA, and may, in effect create additional impacts on a regulated resource. However, it is the DBT’s sole responsibility to obtain, at their expense, approved permit modifications. SHA will coordinate modified permit approvals but SHA will not be responsible for delays in the project schedule for the securing of a permit modification.

DB projects that involve impacts to environmental resources will most likely result in a permit condition that requires an Independent Environmental Monitor (IEM) to be assigned to the project. An IEM may also be required by the Office of Environmental Design (OED) on project where the permit does not require an IEM to be assigned. OED shall be contacted to determine if an IEM will be required.

The role of the IEM is to act as an independent entity that monitors permit conditions, ensures additional encroachment into resources that are not permitted are avoided. The IEM will offer advice to the DBT on ways to avoid additional impacts to waterways or wetlands, can facilitate field modifications and communicate directly with the resource agencies and OED.



PART IV PROJECT EXECUTION

PART IV – PROJECT EXECUTION

Project execution for Design-Build begins upon bid opening for a Design-Build Low-Bid project and upon Notice of Award for a Competitive Sealed Proposal. This section of the manual outlines the Administration's approach to complete the project through project closeout.

CHAPTER 1 - DESIGN-BUILD TEAM COMPOSITION

This chapter defines the roles and responsibilities of FHWA, SHA and the Design-Build Team through the various stages of the construction project from Bid Opening to Project Close-Out. The most significant role change from the DBB process is that the Design-Builder is developing and submitting the design plans to SHA for review and approval and the Design-Builder is also the Design Engineer of Record. The other areas where the roles change due to Design-Build will be detailed elsewhere in this chapter.

1-1 SHA's Role

SHA's role in Design-Build does not differ significantly from the typical Design-Bid-Build project. SHA remains the Project Owner and is responsible to the citizens of Maryland to provide a high quality project at a reasonable cost. The Administration will oversee the design and construction of the Project. The Federal-Aid program section will continue to be the conduit for correspondence and final approved plans between the lead design division and FHWA.

1-1.1 SHA Construction Personnel

Upon award of the contract the District office typically takes over management of the project. SHA Office of Construction and District Construction staff including the Regional Construction Engineers, Area Engineers, Project Engineers and Project Inspectors will still operate the same, for the most part, in the overall management of the project. Their level of responsibility will generally remain unchanged as they will monitor and report on progress, attend meetings, and perform other duties as with a traditional project. The SHA District Engineer (DE) is in responsible charge of the project on behalf of the SHA. The main difference for each of these positions involves the level of authority to act on behalf of the SHA, the DB team is providing the design and therefore SHA's authority is different with a DB project. A more detailed description of changes to roles and responsibilities is covered in the Contract Administration section.

1-1.2 SHA Design Personnel

SHA Design staff will still remain involved in the project to review plans and specifications from the DB contractor team. Any changes in design made by the DB contractor team requires SHA Design staff review and approval, which may require input from the field personnel as the changes are identified and documented. SHA Construction staff still has the similar relationship and should maintain the same contact with SHA design throughout the project.

1-2 Design-Builder's Role

The Design-Build Team (DBT) refers to the entity formed by the agreement of the Design-Build Contractor and Design-Build Designer to submit the bid for the project. Although the Design-Build Team may choose to form a joint venture between the contractor and designer entity, typically the Design-Build Contractor holds the contractual agreement with SHA. The Design-Build Team has the primary responsibility for controlling and managing the work, design, and construction.



It shall be the Design-Builder’s sole responsibility to provide Design Plans, Project Specifications, and Working Plans of such a nature to develop a finished product in accordance with the Contract requirements and the Design-Builder’s Design Quality Plan. The Design-Builder shall verify pertinent dimensions in the field prior to the review of Design Plans, Project Specifications, and Working Plans. Review of the Design-Builder’s Design Plans, Project Specifications, and/or Working Plans by the Administration shall not relieve the Design-Builder of the responsibility for the satisfactory completion of the Work. Design Plans, Project Specifications and Working Plans shall be subject to the Administration’s review and approval. Design management and quality is the responsibility of the DBT.

1-2.1 Design- Build Contractor Personnel

Design Build Contractor staff will still provide and manage the forces to complete the work. The project is designed by the DB contractor team and therefore any questions that the contractor forces have on design should be directed to their designer and not through SHA inspection forces.

1-2.2 Design-Build Designer Personnel

The Design-Build team’s Designer is the Engineer of Record and is responsible for preparing and submitting the necessary designs throughout the project on behalf of the Design-Build Team. Also see Part I – Chapter 3, Roles and Responsibilities.

1-3 FHWA’s Role

The Federal Highway Administration has defined Design-Build procedures for projects identified as **Full-Oversight projects (Non-Exempt)** during the preliminary design and construction phases. The following chart defines the process, action and activity for both Design-Build Competitive Sealed Proposal and Low Bid procurements:

TABLE IV-1 FHWA NON-EXEMPT REVIEW PROCESS

PROCESS, ACTION or ACTIVITY	
Competitive Sealed Proposal	Low-Bid
<p>Issuance of Request for Proposal (RFP) package to the short-listed Design-build firms</p> <ul style="list-style-type: none"> a. FHWA approval of the RFP is required prior to authorization and the release of the RFP to short-listed Firms. b. NEPA process/document complete. If not, SHA must have FHWA approval to issue request for proposals. c. TIP/STIP/LRTP and air quality conformity. (complete before release of RFP) d. Utility Agreements 	<p>Issuance of Invitation for Bids (IFB) for advertisement</p> <ul style="list-style-type: none"> a. FHWA approval of the IFB is required prior to authorization and advertisement b. NEPA process/document complete. If not, SHA must have FHWA approval to advertise IFB. c. TIP/STIP/LRTP and air quality conformity. (complete before advertisement) d. Utility Agreements e. Railroad Agreements f. Permits



<ul style="list-style-type: none"> e. Railroad Agreements f. Permits g. Original ROW Certificate h. Sole Source Items, Utility Company Special Provisions and Standards (approved by FHWA prior to release of RFP) i. Waiver to Buy America Requirements (All Federal-aid projects. Approved by FHWA prior to release of RFP)) 	<ul style="list-style-type: none"> g. Original ROW Certificate h. Sole Source Items, Utility Company Special Provisions and Standards (approved by FHWA prior to advertisement) i. Waiver to Buy America Requirements (All Federal-aid projects. Approved by FHWA prior to advertisement))
<p>Concurrence in Award includes:</p> <ul style="list-style-type: none"> a. RFP/Addendum- Construction Authorization. b. Summary of Selection process (i.e. adjusted scores, price and days bid). c. Results/Copy of Question & Answer Session. (Short-Listed Firms) d. SHA's Selection Committee decision for award. e. Lump-Sum Breakdown f. Affirmative Action Plan g. Copy of ROW Certificate (if ROW Certificate is updated, need original) h. If NEPA process/document is not complete, SHA must have FHWA approval to proceed with award of the contract and issuing notice to proceed with preliminary design work. 	<p>Concurrence in Award includes:</p> <ul style="list-style-type: none"> a. RFP/Addendum- Construction Authorization. b. Results/Copy of Question & Answer Session. (Short-Listed Firms) c. Lump-Sum Breakdown d. Affirmative Action Plan e. Copy of ROW Certificate (if ROW Certificate is updated, need original) f. If NEPA process/document is not complete, SHA must have FHWA approval to proceed with award of the contract and issuing notice to proceed with preliminary design work.
<p>Construction Engineering and Inspection (CEI) Scope of Services:</p> <ul style="list-style-type: none"> a. SHA shall provide list of consultant companies being utilized for inspection services. b. SHA shall provide list of consultant companies providing services to the Design Builder. 	<p>Construction Engineering and Inspection (CEI) Scope of Services:</p> <ul style="list-style-type: none"> a. SHA shall provide list of consultant companies being utilized for inspection services. b. SHA shall provide list of consultant companies providing services to the Design Builder.
<p>Construction Phase Review and Approvals Required by FHWA</p> <ul style="list-style-type: none"> a. Design Submittals – SHA shall copy FHWA on all plan submittals. FHWA is limited to providing comments as they relate to conformance to the contract documents and will be provided in a manner that meet review time frames 	<p>Construction Phase Review and Approvals Required by FHWA</p> <ul style="list-style-type: none"> a. Design Submittals – SHA shall copy FHWA on all plan submittals. FHWA is limited to providing comments as they relate to conformance to the contract documents and will be provided in a manner that meet review time frames



<p>listed in the contract.</p> <ul style="list-style-type: none"> b. Changes to approved design submissions shall be evaluated based on the FHWA DELMAR Maryland Office's Major/Minor Change Policy in order to determine if prior FHWA approval is necessary. This includes changes that may not generate redlines, change orders, etc. due to the nature of design build projects. c. Changes to Contract Documents will be evaluated based on the FHWA DELMAR Maryland Office's Major/Minor Change Policy 	<p>listed in the contract.</p> <ul style="list-style-type: none"> b. Changes to approved design submissions shall be evaluated based on the FHWA DELMAR Maryland Office's Major/Minor Change Policy in order to determine if prior FHWA approval is necessary. This includes changes that may not generate redlines, change orders, etc. due to the nature of design build projects. c. Changes to Contract Documents will be evaluated based on the FHWA DELMAR Maryland Office's Major/Minor Change Policy
<p>Construction Contract Documentation that should be available/in SHA office files for FHWA review.</p> <ul style="list-style-type: none"> a. Time adjustments b. Change Orders, Additional Work Order Requests, Claims c. QC Plans d. Defective materials/Failing lab tests results. (Approval letter from OMT) e. Non-compliance components reports f. Contractor's Lump Sum Cost Breakdown g. Contractor's Payment Schedule h. Sub-contractors Agreements i. Monthly Estimates and backup documentation j. Plans with approval from SHA Design Division are on file. Construction cannot proceed on a design submittal until it is approved by SHA Design Division. k. Permits 	<p>Construction Contract Documentation that should be available/in SHA office files for FHWA review.</p> <ul style="list-style-type: none"> a. Time adjustments b. Change Orders, Additional Work Order Requests, Claims c. QC Plans d. Defective materials/Failing lab tests results. (Approval letter from OMT) e. Non-compliance components reports f. Contractor's Lump Sum Cost Breakdown g. Contractor's Payment Schedule h. Sub-contractors Agreements i. Monthly Estimates and backup documentation j. Plans with approval from SHA Design Division are on file. Construction cannot proceed on a design submittal until it is approved by SHA Design Division. k. Permits
<p>Project Final Acceptance</p> <ul style="list-style-type: none"> a. As-Built Plans signed by FHWA on full oversight projects b. SHA District Engineers Certificate of Completion c. FHWA Final Inspection Report d. SHA Material Clearance Certificate e. SHA Statement of Overruns and Underruns if applicable f. FHWA approval of all change orders 	<p>Project Final Acceptance</p> <ul style="list-style-type: none"> a. As-Built Plans signed by FHWA on full oversight projects b. SHA District Engineers Certificate of Completion c. FHWA Final Inspection Report d. SHA Material Clearance Certificate e. SHA Statement of Overruns and Underruns if applicable f. FHWA approval of all change orders

CHAPTER 2 – DESIGN-BUILD SPECIFICATIONS

This next section examines the contract specifications for a DB project to point out the various characteristics to help manage a DB project. This section should be read in conjunction with previous sections in the DBM. **Specific reference is made to Part III – Preliminary Engineering, Chapter 1 – Design Development, Plan and Estimate Preparation.** This chapter describes the level of preliminary design contained in the IFB and the responsibilities of the Design Builder to complete the various design disciplines necessary to build the project.

2-1 Standard Specifications used on Design Build Projects

The specifications used on a DB project will for the most part be similar to a traditional project in that the design and construction standards utilize the same documents. All work on the DB project will conform to the SHA's Standard Specifications for Construction and Materials, i.e., the "Grey Book". Differences arise mostly in who will be providing the detailed drawings and specifications for the set of construction plans, which are called out in the project description, bidding requirements and special provisions.

2-2 Special Provisions – Terms and Conditions (TC) Section 2 – Bidding Requirements and Conditions for Design-Build

2-2.1 Value engineering (VE)

VE is generally not included in design-build projects after award of the contract as it is inherent to the design-build process.

2-2.2 Partnering

Partnering is mandatory on a DB project and plays an important role in the success. This section is generally the same as a traditional project and the insert addresses specific requirements that are needed for the project.

2-2.3 Request for Proposals and Invitations for Bid

The Request for Proposals (RFP) and Invitation for Bid (IFB) Package specifically identifies what materials are provided by the SHA and addresses the DB contractor's responsibility for the design. The description of work lists the engineering and construction responsibilities of the DB contractor.

2-2.4 Project Description

This section contains the project description, which identifies the general narrative of the work and describes the current status of aspects of the project (surveys, geotechnical, utilities, etc.) and DB contractor's responsibility for design elements.

2-3 Special Provisions - TC Section 3 - Scope of Work for Design-Build Terms and Conditions

2-3.1 Design-Build - Design and Construction Scope of Services

2-3.1a General Requirements

The Scope of Services section describes the items of work that the Design-Build Team will provide throughout the project. Both design and construction related provisions and



responsibilities are outlined in this section. Several sections are unique to design-build projects. The following outlines some of the more important sections.

2-3.1b Design Personnel Identified in Proposal

Design personnel identified in the Technical Proposal will be those individuals assigned to the project on the design portion of the project. If changes to the design personnel occur, the Design-Build Team must submit this request to the Administration. All changes to design personnel should be submitted to SHA's Lead Design Project Manager to take appropriate action.

2-3.1c Design Quality Control Plan

The Design-Build Team shall submit a Design Quality Control Plan (DQCP) for review and approval by the Administration, before notice-to-proceed will be given to begin work. The DQCP must be a complete and clear plan to achieve a high quality design, including all related elements and lower tier subcontractors/Design-Build Teams. The Design-Build Team must adhere to the approved DQCP throughout the duration of the project. The DQCP must be available for review and discussion at the first partnering meeting.

The Design-Build Team is responsible for performing a complete, coordinated, economical, timely, fully functional quality design, including survey and geotechnical elements, all in compliance with the Contract Technical Proposal and Bid Proposal. The Design-Build Team must follow the DQCP and receive written authorization from the Administration for modification to the plan.

2-3.1d Storm Water Management and Erosion and Sediment Control Design and Approvals

The Design-Build Team is typically responsible for the final stormwater management design, erosion and sediment control design, and obtaining final approval from the Maryland Department of the Environment (MDE). The specification will describe the review and approval process for stormwater management design and erosion and sediment control design with the MDE and other agencies.

2-3.1e Coordinating Design Submissions

The design submission coordination and review process is described in the Scope of Work and outlines the process for review and approval of plans. The Lead Design Project Manager will take the lead in coordinating this process with the Design-Build Team and the SHA Construction Project Management staff. All correspondence related to review and approval of plans will come from the Lead Design Office with carbon copy to the SHA's lead Construction Project Management staff.

2-3.1f DB Construction Personnel

Construction personnel assigned to the project will be those identified in the Technical Proposal. If changes to the construction personnel occur, the Design-Build Team must submit this request to the Administration. All changes to construction personnel should be submitted to the District Construction office to take appropriate action.

2-3.2 Administration Services

Various administrative services will be provided by SHA throughout the project and these will be listed in this section of the Scope of Work.

2-3.2a Construction Inspection



SHA's Construction Project Management staff is responsible for Construction Management (CM) and Construction Inspection (CI) of the contract and is responsible for QC/QA of materials and construction. The Administration will follow its normal construction inspection policies and procedures. However, measurement of quantities will serve to verify that the plan and specification requirements are met and will not be a basis for payment.

2-3.2b Meetings

The SHA Construction Project Management staff will be responsible for conducting preconstruction conference and progress meetings during the project as with a traditional project. The required attendees and topic lists are included in this section.

2-3.3 Design Document Deliverables

2-3.3a Coordinating Design Documents

This section of the Scope of Work describes the various design deliverables and other design criteria that will be required by the Design-Build Team throughout the project. The SHA Construction Project Management staff will be part of this process because the design will be ongoing through construction.

2-3.4 Performance Specifications

This section of the Scope of Services outlines the Design-Build Team's responsibility for design and construction for each work element. Each work element performance specification stipulates the following:

- Guidelines and References
- Performance Requirements
- Design and Construction Criteria

2-4 Special Provisions - TC Section 7 - Payment for Design-Build

This section of the Special Provisions describes the various controls to be implemented to track and monitor the work. DB projects are a lump sum bid to design and construct the work and contract quantities will not necessarily be stated in the project IFB/RFP. It is the responsibility of the DB Contractor to submit the necessary documents to establish the basis of payment for the project. TC Section 7, Payment for Design Build amends the specifications to explain the method of quantity measurement, progress payments, and the cost breakdown and payment schedule.

2-4.1 Contractor's Cost Breakdown and Schedule of Payments

The DB Contractor will submit cost breakdown and schedule of payments for approval. The approved cost breakdown will be the basis of payment requisitions. This breakdown will consist of the major items that are normally used on a traditional Design Bid Build project. However, there will not be as much detail as with Design Bid Build bid tabulation. The procedure is discussed further in Section 6 Contract Management Operational Issues of this manual.

These items will be progressed on a percent complete basis, which will be based on field inspection and an estimate of the percentage completed for any given item. This procedure will be discussed in more detail during the pre construction meetings.

2-4.2 Method of Measurement

Measurement of quantities will not be the same for a DB project. Although typical design bid build contracts are paid by calculating exact quantities of work, the DB project is paid



on a lump sum basis. The Design-Build Team will submit to the Administration an itemized Progress Payment Breakdown as outlined in TC Section 7, and will be the basis for payment of the contract. A percent complete basis for each item established in the progress payment breakdown will be used to determine payment for various elements of the work.

2-4.3 Monthly Material Clearance

Materials must be cleared on a monthly basis the same as a traditional Bid Build project. Therefore, it is important for the DB contractor, Project Engineer and the OMT Area Materials Engineer to develop a process prior to the Notice to Proceed for material items to prevent problems once the project is under construction.

The DB Contractor should provide the Engineer's estimate (with prices) or a cost breakdown and schedule of payments which will generally consist of the items that are used on a Design Bid Build project.

The OMT Area Materials Engineer will breakdown the lump sum items into components of that item, but will not be able to provide quantities. Contract items should be broken down into item numbers using the category code numbers presently used (i.e. 1000, 2000, 3000, etc). This should be standard for all DB projects as project personnel, most contractors, QC/QA and materials personnel are very familiar with this numbering system.

Project Engineer should keep track of material quantities submitted by DB contractor for payment at each monthly estimate. Area Materials Engineer will report back to Project Engineer if all documentation has been received for material submitted on that monthly estimate. Unless otherwise indicated, materials submitted for source approval will be noted by Materials Engineer using the latest version of the Materials Frequency Guide.

It is important that all required documentation be received at each monthly estimate for all materials submitted for payment. The traditional method for project final materials clearance will be very difficult to use on a DB project due to unknown material quantities for lump sum items.

2-4.4 CPM Schedules

The CPM schedule should be used in conjunction with the monthly estimates to reconcile the work completed. See Special Provision Section 112 – Critical Path Method Project Schedule in the IFB/RFP.

CHAPTER 3 - CONTRACT ADMINISTRATION

3-1 General Overview

The respective District will be responsible for the administration of the project from Notice of Award. The SHA Construction Management and Project Management staff has a slightly different role in the administration of a DB project. The DB Contractor is the designer as well as the constructor, which means that they are responsible for problems, issues or changes to their design. However, the SHA Construction Project Engineer must still remain involved in tracking the submittal, approval and subsequent field changes in design made by the DB Contractor, and SHA must have knowledge of changes from the approved design drawings. The SHA Construction Project Management staff will also have the responsibility to inspect the work and ensure that it complies with the project plans and specifications with respect to quality and workmanship.

3-2 Specification Review

The specification sections discussed earlier under the Design Build Specifications section of this manual tells what is expected of the DB Contractor. The SHA Construction Project Management staff must be fully aware of these requirements. The Request for Proposals (RFP) and Invitation for Bid (IFB) Package, the Scope of Work and the Control of Work sections clearly identifies who is responsible for what during the project. Each design-build project has specific requirements that may be unique to that particular project.

3-3 SHA Staff Authority and Relationships

SHA's Construction Project Management staff is responsible for ensuring that the quality of the project is compliant with the SHA standards, which are built into the DB contractor's design because it must conform to SHA design standards. It is important to note that the SHA Construction Project Management staff does not have the responsibility or authority to make changes to the contract documents in the field, because the design belongs to the DB Contractor. Finally, the SHA District Engineer is in responsible charge for the project on behalf of the SHA, therefore no consultant personnel has the authority to take responsible charge for a DB project.

3-4 SHA Responsibility for 100% Design Elements

On occasion, the SHA has the need to provide 100% design elements in a design-build project. The SHA Construction Project Management staff will still have the same responsibility for changes and issues as with a traditional project, because the SHA is responsible for the design of these elements. Therefore, if a design or construction issue arises on elements of the project that SHA designed, then your procedure for administrating the changes will be the same as with a traditional project.

3-5 Construction Inspection

The SHA Construction Project Management staff is responsible for the inspection of the work. **Although the DB Contractor is responsible for the design and construction, the SHA Construction Project Management staff is still responsible for ensuring that the work is built in accordance with the approved plans and specifications.** In the event that construction deficiencies in the field such as not building in accordance with the approved design drawings and specifications, improper material placement or sub quality work, etc. are found, the following steps should be taken:



- Notify the DB team contractor personnel of the field construction issue and note the occurrence in the daily documentation.
- Contact the District Area Engineer immediately and brief them on the issue and identify any potential schedule impact it may have on the project. Monitor the schedule activity(s) to determine if any time was lost on the schedule and document the cause and impact.
- Maintain communication with the DB contractor management until they correct the issue prior to continuing with the work in question.
- Contact SHA's Lead Design Project Manager and/or SHA's Construction Management staff, as necessary.

3-6 Design Changes

Design changes or errors are the responsibility of the Design Build contractor and must go through the proper SHA protocol to be implemented. SHA does not have the authority to change or direct any changes in the design documents. However, in the event of a design change or construction issue, SHA staff should work with the Design-Build Team towards a quick solution to the problem. The following steps should be considered when working through a design issue:

- Acknowledge the issue with the DB team contractor personnel and explain to them that it must be forwarded to SHA design for approval.
- Note the occurrence in the daily documentation.
- Discuss the issue with the DB Contractor to determine what possible solutions they may have and communicate this with SHA design during the review and approval process.
- Communicate the DB Contractor's ideas / possible solutions with SHA design and get their feedback or response. This will help to expedite the approval process.
- Maintain communications with the DB contractor on the status of SHA design approval and remind them that no work on the issue can continue until the design has been approved and the signed drawings are delivered.
- Monitor the schedule activity(s) to determine if any time was lost on the schedule and document the impact.

Although the SHA is not responsible for the design, SHA still has the responsibility to review and approve any changes in the DB contractor's design. SHA's Construction Project Engineer's help in coordinating the process will expedite the approval by SHA.

CHAPTER 4 - CONSTRUCTION MANAGEMENT OPERATIONAL ISSUES

4-1 General Overview

SHA's Construction and Project Management staff is responsible for Construction Management (CM) and Construction Inspection (CI) of the contract and is responsible for QC/QA of materials and construction. SHA maintains the responsibility for conducting Independent Assurance (IA) testing of materials and construction.

4-2 Meetings

SHA staff will conduct a series of meetings throughout the project, including but not limited to the following:

- Pre-Construction Meeting
- Partnering Workshop (shared responsibility with D-B Team)
- MBE/DBE Compliance Meeting
- Erosion & Sediment Control Meeting
- Partnering Meetings
- Progress Meetings (Minutes recorded by the Design-Builder)
- PCC Pre-Placement Meeting
- HMA Pre-Placement Meeting
- Structural Steel Pre-Erection Meeting
- Pre-Traffic Control Shift Meeting
- Pre-Concrete Deck Placement Meeting
- Pre-Pavement Marking Meeting
- Semi-Final Inspection
- Final Inspection

4-3 Management Schedules and Plans

There are numerous written plans and schedules required in the Design-Build Contract that are to be submitted by the DB Team and reviewed and approved by the Administration. These typically include but are not limited to:

- Initial Critical Path Method Schedule
- Design Submittal Schedule
- Design Quality Control Plan
- Design Exceptions
- ADA Waivers
- Community Relations Plan
- Geotechnical / Pavement Reports
- Drainage & Storm Water Management Reports
- Maintenance of Traffic Plan, etc.

4-4 Design Reviews

The Design-Build Team must **notify the Administration's Lead Design Project Manager 14 days prior to the date** of all intended submissions. The Administration will require the use of Project Wise as means to post plans, reports etc. for review. Comments will also be posted on Project Wise. Third party reviews such as Utilities, Local Jurisdictions and Environmental Agencies will still require hard copies.

The Design-Build Team shall not proceed with the final construction of a particular portion of the project until:



- All Final Plans and Specifications comments have been addressed to the satisfaction of the Administration for that portion.
- All required permits for that portion of work have been received.
- Final Plans and Specifications approval is received in writing from the Administration for that portion.
- A title sheet is signed and sealed by the Design-Build Team's Engineer and appropriate officials of the Administration.

4-5 The Administration's Role in Design Quality Assurance

The Administration's Lead Design Division or District Office should periodically audit the Design-Build Team's, the Designer's, and the checker's work to ensure that it is being done in conformance with the Contract requirements. The Design-Build Team is required to fully cooperate with and assist the Administration in conducting audits. The Design-Build Team is also required to maintain all records and any other elements of the work in a current and readily available manner so that the Administration may audit the work.

Any quality assurance reviews or audits conducted by SHA will not remove the Design-Build Team's responsibility for designing and constructing all elements of the Work in conformance with its Design Quality Control Plan and all requirements of the Contract. SHA shall at all times have the authority to require the Design-Build Team to re-perform any work that they determine is not in conformance with any of the provisions of the Contract or with any drawings, specifications, other documents prepared by the Design-Build Team. Rework in this regard, will not serve as the basis for claims for additional compensation or time by the Design-Build Team.

4-6 Documentation Control System and Daily Record Keeping

The method of daily documentation and monthly estimates is the same with the DB project. The MCMS data is entered the same way but the estimate is based on a percent complete basis (discussed later). Inspector's Daily Report will continue to be used to document the placement of materials by the process established for a particular project.

4-6.1 Performance Monitoring

The documentation of performance remains the responsibility of SHA's Construction Project Management staff. Producing the various reports and maintaining this documentation is the same as on a traditional project. These activities may include:

- MOT reports, ratings schedules
- E&S reports and ratings
- Payroll compliance interviews
- MBE / DBE participation

4-6.2 Monitoring Utilization of Disadvantaged Business Enterprises

The DBE requirements for Federal-Aid Design-Build contracts are similar to conventional design-bid-build projects in that a stated goal is established for each contract. Monitoring compliance with utilization requirements must take into account that the goal also includes professional services, since these services are contained in the Design-Build contract.

The Design-Builder is required to make a good faith effort to achieve DBE participation in professional services for a given contract of no less than the stated percent of the total contract value. The goal will include efforts to achieve DBE participation in performance of professional services under the Contract (including design, supplemental



geotechnical investigations, surveying and other preliminary engineering; quality control as defined in the Contract; environmental compliance activities; utility coordination; permitting; and public information). The DBE professional services participation shall be attributed to the overall contract goal.

Depending on the overall goal requirements and the goal established for participation in professional services, the goal percentage for construction contractor and subcontractor may vary with each contract. Therefore, the DBE goal has two components; the overall goal and the professional services goal.

The monitoring of DBE performance will include more than one component. One component will be DBE construction contractor and/or subcontractors. The second component will be the professional services firms, which will mostly be design and consultation that will be utilized throughout the design and construction process. The Design-Build contractor's DBE utilization report will contain the required documents listed in the Special Provisions section of the contract.

4-7 Monthly Estimate and Progress Payments

Processing monthly estimates with respect to the way the data is entered into MCMS and the routing of the progress payment will basically remain the same. The main difference between the Design Build and Design Bid Build is the items for the DB estimate will be less detailed because the contract with the DB Contractor will be a lump sum agreement. The following section explains the payment process.

4-7.1 Establishing Pay Items

The method of establishing the pay items for a DB project is different than the conventional design- bid- build project in that the work items in a DB project are not as detailed and some are lump sum. The procedure for setting up the estimate is as follows:

- Refer to TC Section 7, Payment for Design Build. This Special Provision amends the specifications for guidance on the method of quantity measurement, stored materials, progress payments and the cost breakdown and payment schedule.
- The DB contractor will submit to the SHA, a Progress Payment Breakdown, which is a breakdown of the costs associated with the major work items contained in the lump sum price for the project.
- TC-7.11 explains the payment breakdown and the items that must be included.
- The Progress Payment Breakdown will be generated by a MS Excel spreadsheet
- The Progress Payment Breakdown is sent to SHA Design and the District Engineer for review and approval.
- The approved schedule will be discussed in the pre construction meeting
- The monthly estimate sheet will be based on the approved Progress Payment Breakdown and will be paid on a percentage basis of each item.
- The DB contractor will also submit to the Administration a Projected Schedule of Payments. This schedule of payments will provide the SHA with an estimate of monthly cash flow requirements by forecasting the DB teams' monthly applications for progress payments for the duration of the project.

4-8 Processing Monthly Updates

The monthly estimates are processed based on the approved Progress Payment Breakdown.

- The DB Contractor submits the monthly estimate based on a percentage applied to each item that was progressed
- The estimate is also sent to SHA Design for approval of design activities.
- Using project documentation, the accuracy of the percentage for each work item will be verified and the Area Engineer will be advised on acceptance.
- Once the estimate has been approved, the estimate shall be processed in the MCMS system.
- The Progress Payment Breakdown will establish the percentage of each lump sum item, which will establish the total percentage of lump sum for the project for that given month
- This value will be entered into the MCMS system as a percentage of the contract lump sum, which will finalize the process for generating the payment to the contractor.
- Quantities will not be entered into the MCMS system. The quantity or percentage calculations will be done outside the MCMS during the evaluation and approval of the Progress Payment Breakdown

4-9 CPM Scheduling

The requirements for submitting and monitoring the project schedule will be in accordance with the project specification, which will be a modification of the Specification Section 109 – CPM Project Schedule to meet the specifics of a design- build project. Delays to the project because of design changes must be recovered by the DB contractor and will not result in a time extension. Design phase activities will be listed in the schedule as well. Design activity progress should also be monitored to determine if delays to design drawing approvals / submittal will have the possibility of delaying construction. The SHA Construction Project Engineer should be aware of design drawings schedules and monitor this with the associated construction activities.

4-10 Inspection Responsibilities

SHA's Construction Project Management staff's role is in inspecting the work to ensure that the construction is in accordance with the drawings and specifications and SHA standards for quality. The same approach to inspection as a traditional project should be followed, as the quality standards are the same.

4-10.1 Inspector's Role

Regarding field documentation, the tracking of quantities will be established as discussed earlier with respect to the lump sum nature of the contract. It is the SHA's Construction Project Management staff's responsibility to call out any deficiencies in construction to the DB contractor that do not comply with the approved plans and specifications. Although the DB contractor is responsible for design, the SHA still approves the designs to assure that they comply with SHA standards.

4-10.1a Plans and Specifications

The use of design-build, allows for construction work to begin on one portion of the project before all of the design has been reviewed and approved for the entire project. For example, the Design-Build Team may elect to break the project into smaller separate design packages or to employ a "rolling" process of design and construction. Earthwork, for example, could begin after receipt of the MDE approval for a particular section and after all other requirements are met, but prior to final approval of the completed design for that section. Once design packages are reviewed and approved by the Administration, the DB Contractor will be notified in writing by the Lead Design Office that their plans are released for construction. The



SHA Construction Project Engineer will receive a copy of this letter along with the approved plans. This rolling design and construction process will continue until all aspects of the project have been designed and approved for construction.

The SHA Construction Project Management staff will still use the Standard Specifications for Construction and Materials in conjunction with the released for construction plans.

4-10.1b Erosion and Sediment Control Plans

One of the most important elements in any project is the soil erosion and sediment control plan and implementation. In an effort to reduce potential problems with E&S design and implementation, the SHAs Construction Project Engineer should obtain these plans as early as possible and walk the site to determine if any problems or conflict exist prior to the installation. Issues or concerns with the ESC plans should be discussed with the DB Contractor's Team. Valuable time and delays can be avoided by comparing the actual field conditions with the submitted plans early during the approval process.

Similar to design-bid-build projects, the MDE inspector may require modifications to the controls. In the event that the MDE inspector asks for more controls, the SHA Construction Project Management staff should promptly document the changes and inform the Area Engineer immediately. The DB Contractor's Team will be responsible for implementing any changes required by the MDE inspector.

4-10.2 Independent Environmental Monitor

An Independent Environmental Monitors (IEM) may be assigned to design-build projects that have significant environmental resources within or adjacent to the project limits. These resources such as tidal or non-tidal wetlands, wetland buffers, streams and floodplains are regulated by the U.S. Army Corps of Engineers (USACE) and the Maryland Department of the Environment (MDE) and subsequent permits often include requirements to provide IEM's to minimize project impacts to these sensitive ecosystems.

As such, IEM's are responsible for ensuring that SHA contractors follow the conditions in the USACE/MDE Wetland and Waterway Permits and are adhering to SHA's design and contract documents as well as all other permits. The IEM interacts with the SHA personnel, Contractor and Regulatory Agencies throughout the construction of the project in order to ensure environmental compliance.

The IEM will identify areas of concern, in advance or after-the-fact, possibly needing corrective actions by the contractor. Although the IEM is part of the SHA team; in the case of non-compliance matters, the IEM must notify MDE or the USACE of non-compliance.

The IEM monitors and reports daily work in, adjacent to or draining to these regulated resources. Reports are available on-line to SHA project personnel, SHA management, the Contractor and MDE & USACE. The IEM is NOT authorized to direct the Contractor or SHA in any activities which will affect bid quantities or project costs. The role of the IEM is outlined in detail in the *Environmental Monitor User Guide, Maryland State Highway Administration, December 2009* which is provided to the IEM, Contractor and SHA Project Engineer prior to the project's start.



4-11 Materials Clearance

SHA maintains the responsibility for conducting Independent Assurance (IA) testing of materials and construction.

Materials must be cleared on a monthly basis similar to a traditional DBB project. A process should be developed by the DB Contractor, Project Engineer, and OMT Area Materials Engineer prior to the Notice to Proceed for materials items to prevent problems in the early stages of construction. The DB Contractor will provide an Engineer's Estimate (with prices) or a cost breakdown and schedule of payments to SHA's Project Engineer. The OMT Area Materials Engineer will be responsible for a breakdown of the lump sum items using the SHA Category Code numbers (1000, 2000, 3000, etc.).

SHA's Project Engineer will keep a record of all material quantities submitted for payment at each monthly estimate by the DB Contractor. The OMT Area Materials Engineer will inform the Project Engineer if all documentation has been received for the materials submitted on the monthly estimate. Unless otherwise indicated, materials submitted for source approval will be noted by the OMT Area Materials Engineer using the latest version of the Materials Frequency Guide. It is important that all required documentation be received at each monthly estimate for materials submitted for payment. The traditional method for project final materials clearance will be very difficult to use with a DB project due to unknown material quantities for lump sum items.

4-12 Utility Design and Relocations

TC Section 3 in the Contract Documents outlines the Design-Builder's requirements as it relates to utility design and relocation activities specific to the project. In general, these responsibilities include, but are not limited to:

- A) Designating a Utilities Coordinator to be the principal contact for all utility-related Project activities.
- B) Identifying potential conflicts, verifying locations and all other necessary information about utilities, and providing monthly updates of the Progress Schedule reflecting Utility Relocations;
- C) Designing and/or constructing relocations in accordance with the Contract Documents, except where the Utility Owner is assigned such responsibility; and
- D) All coordination with utility owners required in connection with the Project or utility work

4-13 Responding to RFI's

DB contractor's RFI should be administered in the same way as a traditional project. The RFI is logged and tracked via the partnering resolution chart. However, there should be fewer RFIs on a design-build project since design issues will be solved by the DB contractor's engineer.

4-14 Requested Contract Changes

Due to the integration of the final engineering and construction on a design-build project, situations where a change order may be appropriate and necessary may be different on a design-build project than on a traditional design-bid-build project where the SHA has completed the design prior to bidding the contract. The general procedure and approval process for change orders shall remain as defined in Construction Directive 07220.100.23;



however, the District Engineer or Director of the contract administering office shall consult with and receive concurrence from the Director of the Lead Design Office in establishing the need for the additional work authorization prior to initiating the change order process. The following procedures shall be followed in determining the need for the additional work Authorization:

- 1) In the event that an issue is identified on a Design-Build project, either by the Administration or the Design-Builder, which may be considered outside the scope of the contract, the Assistant District Engineer for Construction or designee shall immediately notify the Design Project Manager for the Lead Design Office.

If the Design-Builder submits a request for a change order, the District Engineer or Director of the contract administering office shall forward any request for additional compensation to the Director of the Lead Design Office within 7 calendar days of receipt from the Design-Build contractor.

- 2) The Director of the Lead Design Office or designee shall be responsible for reviewing any issues potentially outside of the scope of the contract and for reviewing a request for additional compensation. A response shall be provided within 14 calendar days. If additional time is needed, the Director of the Lead Design Office shall notify the District Engineer or Director of the contract administering office of the date when the response will be provided.

The Director of the Lead Design Office or designee shall coordinate the review of the issue with the responsible design area or areas to determine if the issue is or is not within the scope of the Design-Build Contract. The Director of the Lead Design Office shall prepare a memorandum to the District Engineer or Director of the contract administering office providing its recommendation and/or concurrence in the request for a change order.

If additional compensation may be warranted, the memorandum must be approved by the Deputy Administrator/Chief Engineer for Operations for changes estimated to be greater than or equal to \$50,000 or a cumulative cost of 5% of the total contract bid amount. If the cost for the changes is estimated to be less than \$50,000, unless the change order total on the contract exceeds 5% of the total contract bid, approval may be provided by the Director of the Lead Design Office. As part of the memorandum, an independent man hour and cost estimate for engineering and an independent construction cost estimate, as applicable, for the additional work shall be provided. This cost estimate shall be discussed with contract administering office to determine the need for additional compensation for items including, but not limited to, time extensions, mobilization, and overhead.

Once approved, the memorandum shall be provided to the District Engineer or Director of the contract administering office.

- 3) The District Engineer or Director of the contract administering office shall provide a response to the Design-Builder and/or continue with the change order process if warranted and include the appropriate design office in any negotiations. In the event of a disagreement in the need for additional compensation, in part or total, between the District Engineer or Director of the contract administering office and the Director of the Lead Design Office, the issue shall be elevated to the Deputy



Administrator/Chief Engineer for Operations to make a final determination prior to any response to the Design-Builder.

4-15 Project Issues

When issues arise that can have an adverse effect on the project budget, schedule or completion date, a Task Force is to be formed in order to resolve project issues as quickly as possible. These types of issues typically include interpretation to the scope of the project and contract requirements that cannot be resolved through the normal Partnering meetings. This is not intended to replace the Partnering Process nor the Issue Resolution process, but is a tool to supplement the Partnering Process in order to keep the Design-Build project moving forward.

If the lead division's Project Engineer feels that a Task Force is required, they should contact their representative from the ICD to go over the issue. The representative from the ICD will brief the ICD Division Chief and determine if a Task Force is needed.

The Task Force membership will vary for each issue. The number of Task Force members should be kept to a minimum and only contain those key individuals that are critical to resolve the issue. Members may include:

- ADE Construction
- Area Engineer
- OOC Regional Construction Engineer
- SHA Project Engineer – Construction
- SHA Project Engineer – Design
- Innovative Contracting Division Liaison
- Design Liaison from office where issue resides
- Design-Build Project Manager and other design-build team members
- Third Party Representatives & Local Municipality Representatives, if needed

4-16 Tracking Design Submittals, Greenline Revisions and As-Builts

The lead division's Project Engineer is responsible to track design submittals. This should include when submittals are submitted, when comments are provided and when submittals are resubmitted and ultimately approved. Tracking the MDE submittal process should also be included and tracked separately, as well as any need for redline revisions.

The tracking of design submissions and their timeline is a tool the Design Project Engineer should use to ensure submittals are being reviewed and approved in a timely fashion and in accordance with the contract documents. This timeline will also provide documentation for the entire design submittal process to be used if disputes arise.

The Design-Build Team is responsible to provide a comprehensive set of plans at the completion of the project that includes all approved drawings, including redline revisions and any greenline "As-Builts". As-Built is a method to make minor field changes that don't require major detail in order for the contractor to construct the change, nor does it require a review by an environmental agency. Tracking As-Built changes during the construction phase is necessary to ensure that all As-Built changes are included in the final, comprehensive set of plans. The Design-Build Team will provide a cost associated with the efforts to produce As-Builts in which payment should be held in retainage until the As-Builts are submitted and the lead design office is satisfied.

4-17 Final Acceptance and Project Closeout

As the project nears completion focus should be placed on the punch list items that have been monitored during the inspection process. The construction project management staff



is still responsible for generating a punch list and following through on the completion of all items. Issuing substantial completion will be the same as a traditional design-bid-build project as the punch list and other documents that pertain to the final inspection must ensure that all work is completed in accordance with the approved plans.

Table IV-2 CHANGE APPROVAL MATRIX

APPROVAL MATRIX			
Major Change	Agency Authorized to Approve		
	Non Exempt Projects	Exempt Projects, On NHS	Exempt Projects, Non-NHS
1. Changes in geometric design Or clear zone	FHWA	SHA	SHA
2. Changes to the design of bridges, box culverts, retaining walls, or other structures which affect hydraulic or structural load capacity, streambed alignment, etc.	FHWA	SHA	SHA
3. Changes to permanent pavement structure or type	FHWA	SHA	SHA
4. Addition of new specifications and/or special provisions.	FHWA	SHA	SHA
5. Settlement of a contractor's claim.	FHWA	SHA	SHA
6. Changes to staging or the traffic control plans.	FHWA	SHA	SHA
7. Addition of patented and proprietary products.	FHWA	SHA	SHA
8. Use of foreign steel and iron not in accordance with the Buy America provisions.	FHWA	FHWA	FHWA
9. Value engineering or cost-reduction proposals.	FHWA	SHA	SHA
10. Single changes affecting contract completion by more than <u>5 days</u> or cumulative changes (including suspension of work) affecting contract completion by more than <u>30 days</u> .	FHWA	SHA	SHA
11. Change resulting in an increase or decrease in the cost of an individual contract unit price item by <u>\$50,000</u> or more.	FHWA	SHA	SHA
12. Change resulting in a total increase or decrease in cost of <u>\$100,000</u> or more when all items affected by the changes are considered.	FHWA	SHA	SHA
13. Orders for Force Account Work	FHWA	SHA	SHA
14. Changes which affect environmental	FHWA	FHWA	FHWA



mitigation or commitments.			
15. Addition of, or revisions to, warranty provisions.	FHWA	FHWA	SHA
16. Revisions to access control	FHWA	FHWA	SHA
17. Revisions to Right-of-Way limits	FHWA	FHWA	SHA
18. Changes to the scope of work or extension of the contract limits shown in the project documents approved by FHWA.	FHWA	FHWA	FHWA
19. Changes that eliminate work part of the Affirmative Action Plan.	FHWA	SHA	SHA
20. Changes to safety hardware (guardrail, bridge rails, breakaway sign supports, etc.) and/or changes to MOT items which deviate from SHA Traffic Control Manual	FHWA	SHA	SHA



APPENDIX A

Abbreviations and Definitions



Appendix A. Abbreviations and Definitions

Abbreviations

AAP	Affirmative Action Plan
ACEC	American Council of Engineering Companies
AGC	Associated General Contractors
ATC	Alternative Technical Concepts
BAFO	Best and Final Offer
BTC	Base Technical Concept
CFR	Code of Federal Regulations
CI	Construction Inspection
CM	Construction Management
CPM	Critical Path Method
CSP	Competitive Sealed Proposals
COMAR	Code of Maryland Regulations
DB	Design-Build
DBB	Design-Bid Build
DBE	Disadvantaged Business Enterprise
DBIA	Design Build Institute of America
DBLB	Design-Build Low-Build
DBM	Design-Build Manual
DBT	Design-Build Team
DNR	Department of Natural Resources
DQCP	Design Quality Control Plan
EEO	Equal Employment Opportunity
EPA	Environmental Protection Agency
FAR	Federal Acquisition Regulations
FHWA	Federal Highway Administration, US Department of Transportation
FR	Final Review
GWAP	Goal Waiver Advisory Panel
IA	Independent Assurance
ICD	Innovative Contracting Division
ICPM	Initial Critical Path Method
IFB	Invitation for Bids
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
LOD	Limits of Disturbance
MBE	Minority Business Enterprise
MOT	Maintenance of Traffic
MDE	Maryland Department of Environment



MDOT	Maryland Department of Transportation
MPO	Metropolitan Planning Organizations
MSHA	Maryland State Highway Administration
MUTCD	Manual on Uniform Traffic Control Devices
NEPA	National Environmental Policy Act
NOI	Notices of Intent
NPDES	National Pollutant Discharge Elimination System
NTP	Notice to Proceed
OHD	Office of Highway Development
OMT	Office of Materials and Technology
OOC	Office of Construction
PI	Preliminary Investigation
PM	Project Manager
PS&E	Plans, Specifications & Estimate
QA	Quality Assurance
QC	Quality Control
RCL	Reduced Candidate List
RFQ	Request for Qualifications
ROW	Right(s)-of-Way
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SEP-14	Special Experimental Project No. 14
SEP-15	Special Experimental Project No. 15
SFR	Semi-Final Review
SHA	State Highway Administration
SOQ	Statement of Qualifications
SP's	Special Provisions
SPI's	Special Provision Inserts
SSCM	Standard Specifications for Construction and Materials
SWM	Stormwater management
TEA-21	Transportation Equity Act for the 21 st Century
TC	Terms and Conditions
TRC	Technical Review Committee
WWC	Waterway Construction



Definitions

“**Addenda/Addendum**” means supplemental written additions, deletions, and modifications to the provisions of the RFQ after the Advertisement date of the RFQ.

“**Administration**” means the State Highway Administration (SHA), the PROJECT contracting agency.

“**Administration’s Project Manager**” means the engineer representing the Administration and having direct supervision of the administration and execution of the Contract under the direction of the State Highway Administrator.

“**Advertisement**” means the public announcement inviting prospective Proposers to obtain an RFQ and submit an SOQ.

“**Affiliate**” means:

- A) Any Person that directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with the Proposer or any Principal Participant; or
- B) Any Person for which 10% or more of the equity interest in such Person is held directly or indirectly, beneficially or of record, by (1) the Proposer, (2) any Principal Participant, or (3) any Affiliate under part (A) of this definition.

For purposes of this definition, the term “control” means the possession, directly or indirectly, of the power to cause the direction of the management of a Person, whether through voting securities, by contract, by family relationship, or otherwise.

“**Alternative Technical Concept (ATC)**” means any concept that is proposed as an alternative to the BTC. ATCs include any project alignment other than described in the RFP/IFB and any other modification of the project as defined in the requirements of the scope of the work.

“**Base Technical Concept (BTC)**” means the design concept and performance requirements set forth in the Scope of Work and in other parts of the RFP/IFB for roadway, structures, and interchanges (including typical sections and geometric and structural designs), having been termed the Base Technical Concept (BTC). The BTC follows the preferred alignment for the project and stays within the proposed Administration right-of-way.

“**Competitive Sealed Proposals (CSP)**” means a selection process based on a combination of value and price offered by a Design-Build Team. The process gives credit in design excellence, material and systems quality, functional efficiency, team experience, and other intangibles beyond price. CPS is also referred to as Best Value.

“**Conceptual Plans**” means preliminary plans, developed to the 30% stage of completion (PI level), that convey the basic intent and parameters of the project (i.e. number of lanes, pavement widths, pedestrian / bicycle provisions, entrance locations, intersections, etc.). The design may need to be developed by the Preliminary Design Team to a greater level (>30%) of detail to establish right-of-way needs, utility relocations and environmental impacts, but the amount of detail depicted on the advertised plans should reflect only a 30% level of design, leaving the final design details to the Design-Builder.

“**Construction Subcontractor**” means a subcontractor on the Proposer’s Team to be retained by the Design-Builder that will be involved in the actual construction of the PROJECT.



“Contract” means the written agreement between the Administration and the Design-Builder setting forth the obligations of the parties thereunder, including, but not limited to, the performance of the Work, the furnishing of labor and materials, and the basis of payment. The Contract will include the Contract Documents and any amendments, supplemental agreements, and Change Orders that are required to complete the design and construction of the Work in an acceptable manner, including authorized extensions thereof, all of which constitute one instrument.

“Contract Documents” means the documents identified as such in the RFP.

“Design-Build (D-B)” means a project delivery methodology by which the Administration contracts with a single firm that has responsibility for the design and construction of the PROJECT under a single contract with the Administration.

“Design-Builder” means the Person selected pursuant to the RFP that enters into the Contract with the Administration to design and construct the PROJECT.

“Designer” means a Principal Participant, Specialty Subcontractor, or in-house designer that leads the team furnishing or performing the design of the PROJECT.

“Disadvantaged Business Enterprise (DBE)” means a for-profit small business as defined in 49 CFR Part 26. For the purposes of this PROJECT, all DBE's must be MDOT certified.

“Final Acceptance” means written confirmation by the Administration that the PROJECT has been completed in accordance with the Contract, with the exception of latent defects and warranty obligations, if any, and has been accepted.

“Invitation for Bids (IFB)” includes the Contract Provisions; General Provisions; Terms and Conditions; Special Provisions and Special Provision Inserts; Miscellaneous Contract Details; and the Proposal Form Packet. Appendices are provided, when appropriate, to include such items as Soil, Stormwater Management and Structural Boring Logs, Traffic / Accident Data, Test Pit Logs, and other information determined to be necessary or desired to be provided to the Design Build Contractor.

“Independent Assurance (IA)” means activities that are an unbiased and independent (of the Design-Builder or Administration staff) evaluation of all the sampling and testing procedures, equipment calibration, and qualifications of personnel (Design-Builder's or Administration's) used in the Acceptance Program, including the Design-Builder's QC. The Administration, or a firm retained by the Administration, will perform IA.

“Permit” means both the executed resource agency action and its associated approval process.

“Person” means any individual, firm, corporation, company, limited liability company, joint venture, voluntary association, partnership, trust, or unincorporated organization, or combination thereof.

“Principal Participant” means any of the following entities:



- A) The Proposer;
- B) If the Proposer is a joint venture, partnership, limited liability company, or other form of association, any joint venturer, partner, or member; and/or
- C) Any Person holding (directly or indirectly) a 15% or greater interest in the Proposer.

“**PROJECT**” means the improvements to be designed and constructed by the Design-Builder and all other Work product to be provided by the Design-Builder in accordance with the Contract Documents.

“**Proposal**” means the offer (in response to an RFP) of the Proposer for the Work, when executed and submitted in the prescribed format and on the prescribed forms.

“**Proposer**” means a Person submitting a Statement of Qualifications for the PROJECT in response to this RFQ. In the context of responses to the RFP, the term means a firm on the Reduced Candidate List (RCL) that submits a Proposal, and is the same as an “Offerer” under COMAR, Title 21.

“**Quality Assurance (QA)**” means all planned and systematic actions by the Administration necessary to provide confidence that all Work complies with the Contract and that all material incorporated in the Work, all equipment and all elements of the Work will perform satisfactorily for the purpose intended. Actions include, but are not limited to: design audits, checks and reviews; oversight, including specification compliance reviews, document control and working plan review; material Verification Sampling and Testing at production sites and PROJECT site; oversight of manufacturing/processing facilities and equipment; oversight of on-site equipment, calibration of test equipment, acceptance or rejection of material based on verification and QC testing; and documentation of QA activities. Quality Assurance also includes oversight (by the Administration), IA testing, Administration’s Project Manager’s written acceptance, final inspection and Final Acceptance.

“**Quality Control (QC)**” means the total of all activities performed by the Design-Builder, Designer, subcontractors, producers, or manufacturers to ensure that a product meets Contract requirements. QC includes design reviews and checks; inspection of material handling and construction; calibration and maintenance of sampling and testing equipment; working plan review; document control; production process control; and any inspection, sampling; and testing done for these purposes. Quality Control also includes documentation of QC efforts.

“**Quality Plan**” means the Design-Builder’s plan for implementing the Design-Builder’s overall quality program and associated activities, including Design-Builder’s QC and procedures to assure and document quality of design and construction activities through reviews, inspections, testing, internal communications, and necessary interfaces with Administration.

“**Reduced Candidate List (RCL)**” means the list of those Proposers that have submitted SOQs that the Administration determines, through evaluation of the SOQs, are the most highly qualified to perform the Work.

“**Request for Proposals (RFP)**” means a written solicitation issued by the Administration seeking Proposals to be used to identify the Proposer offering the best value to the State. The RFP includes: Step One RFQ and the Step Two request for technical and price proposals. The Step Two request for technical and price proposals will be issued only to Persons who are on the Reduced Candidate List (RCL).



“Request for Qualifications (RFQ)” means the written solicitation issued by the Administration seeking SOQs to be used to identify and create a Reduced Candidate List (RCL) of the most highly qualified D-B Proposers to receive the RFP for the PROJECT.

“Stakeholder” Individuals and organizations involved in or affected by the transportation project, including federal/state/local officials and the general public.

“Statement of Qualifications (SOQ)” means the information prepared and submitted by a Proposer in response to this RFQ.

“Work” means the furnishing of all labor, material, equipment, and other incidentals necessary or convenient to the successful completion of the PROJECT and the carrying out of all the duties and obligations impose