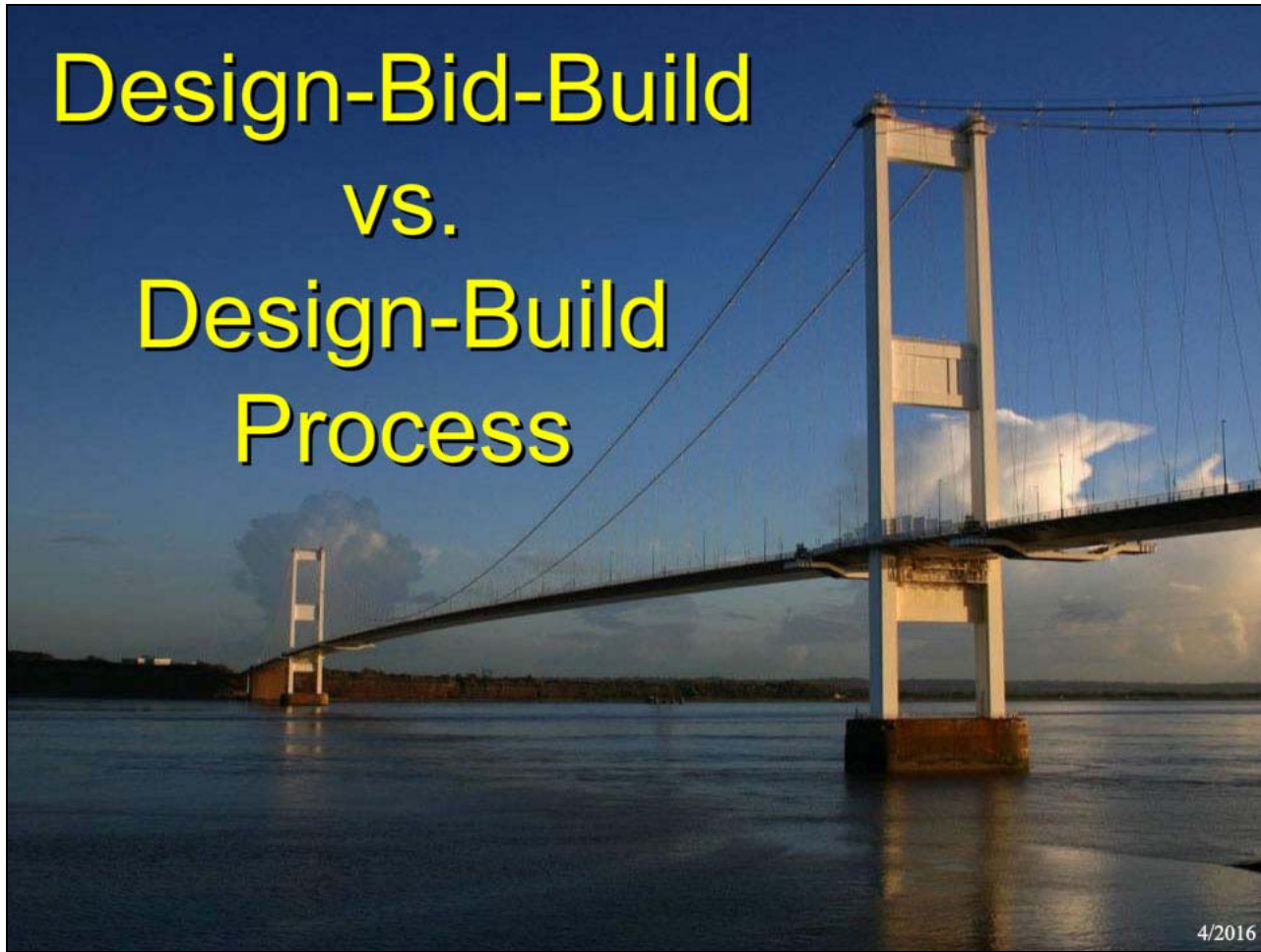


Slide 1 - Design-Bid-Build vs. Design-Build Process



**Slide notes**

This section will compare a design bid build project to a design build project. We will also illustrate how each of these methods impacts the decision process and who is responsible for initiating unforeseen changes during the construction process.

**Notes**

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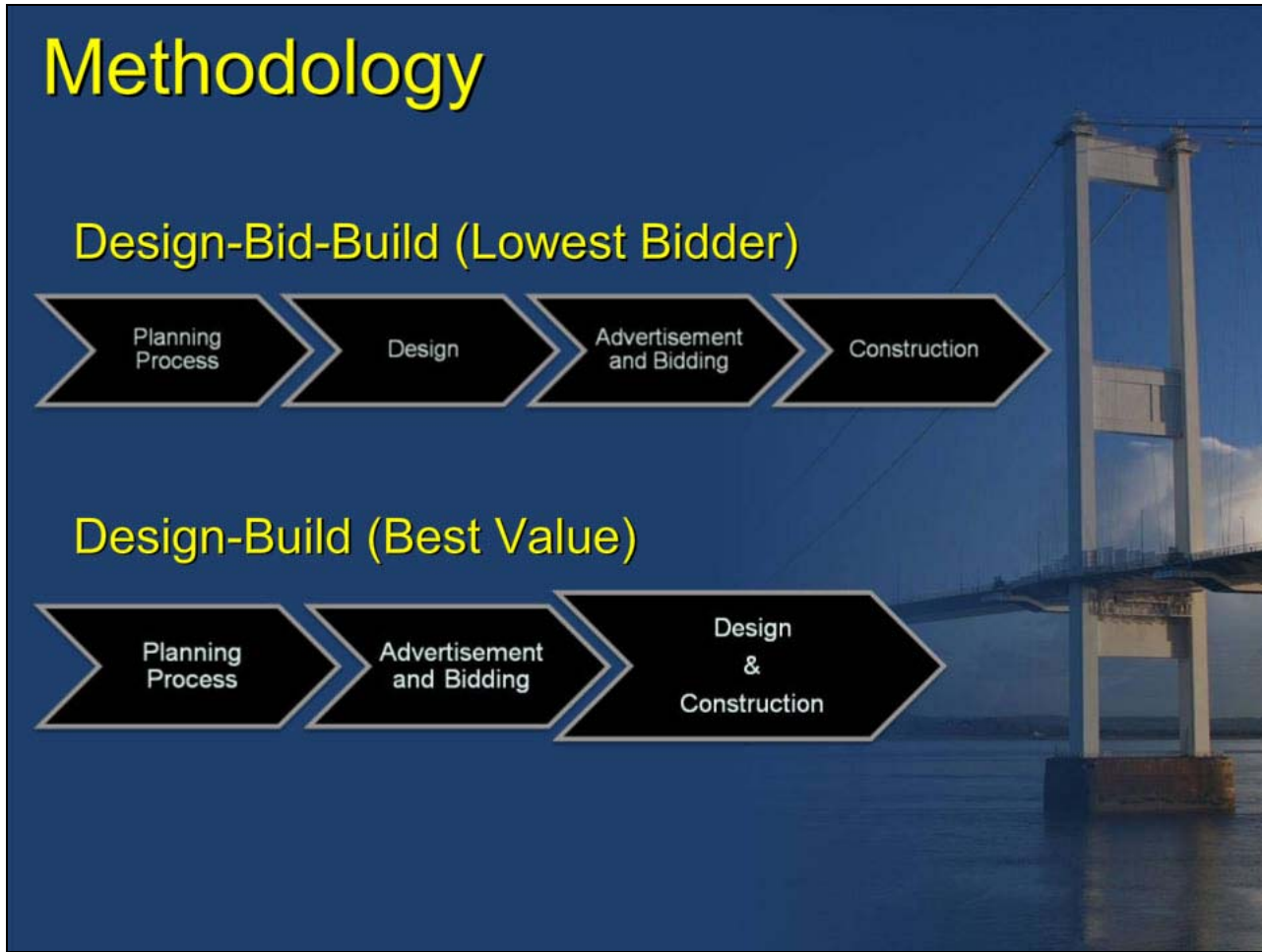
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Slide 2 - Methodology



**Slide notes**

There are two different methods that SHA currently utilizes for designing and building construction projects. The Design-Bid-Build method is the traditional process utilized in horizontal construction. This is the lowest bidder method. The Design-Build process is a newer process utilized on select projects based on multiple factors from scope of work, to complexity, to cost. Design-Build projects can have many benefits as we will see in this presentation.

**Notes**

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Slide 3 - Design-Bid-Build (DBB)

# Design-Bid-Build (DBB)

- Planning Process (NEPA compliance) (3-5 yrs.)
- Design & Permits, SHA prepares plans, specifications and engineer's estimate. (2-4 yrs.)
- Typically, all Permits are obtained prior to the start of construction
- SHA advertises project, and engages contractors through competitive bidding
- Low bid typically wins the contract
- Construction Phase begins immediately (2-4 yrs.)
- SHA accepts full responsibility for change orders as the result of design errors or omissions.

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graph LR; A[Planning Process] --> B[Design]; B --> C[Advertisement and Bidding]; C --> D[Construction]
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**Slide notes**

Looking in detail at the various steps involved in the process of building a roadway, we can see the amount of time involved. With a Design-Bid-Build project, planning, environmental studies and NEPA compliance can take several years. SHA will then design the plans and put together an invitation for bids. Contractors will bid on the project and generally the lowest bidder will be awarded the work. Construction can then begin.

This entire process can take seven to 13 years.

Note that SHA accepts full responsibility for design errors and change orders since SHA designed the plans.

**Notes**

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Slide 4 - Design-Build (D/B)

# Design-Build (D/B)

- Planning Process (NEPA compliance). (3-5 yrs.)
- SHA prepares D/B Specifications along with concept plans ( $\pm 30\%$  Plans)
- SHA acquires Wetlands permit and SWM Letter of Intent. D/B Team completes wetland permit modifications and acquires SWM/ESC permit and Notice of Intent (NOI).
- SHA advertises project – 2 Step process (1) Reduced Candidates List and 2) Proposal (Price and Technical (Best Value only))
- Award is either Low Bid or Best Value.
- SHA contracts with a single entity to design and construct the project
- Final Design Phase begins immediately with concurrent phased construction as design progresses. Contractor and its engineer work together to design and construct project to contract specifications. (2-4 yrs.)

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graph LR; A[Planning Process] --> B[Advertisement and Bidding]; B --> C[Design & Construction]
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**Slide notes**

For a Design-Build project of the same type, the planning, environmental studies and NEPA compliance will still take about the same amount of time. The difference shows in the design phase. A Design-Build project may be from zero to 30 percent designed by SHA.

The Administration will then create an invitation for proposals and contractors will compete for the contract through a best value review process. Once the contract is awarded to the Design Builder, design and construction can begin concurrently.

The same project built with this method may only take five to seven years from concept to completion.

**Notes**

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Slide 5 - Design-Build (D/B)

# Design-Build (D/B)

- Benefits of Design-Build
  - Eliminates upfront time of design beyond 30%
  - Allows for phased design and construction where phases of each can occur concurrently.
  - Reduces overall time to design and construct (~1yr.)
  - Includes contractor in design development and allows for innovation on part of D/B Team.
  - D/B Team is responsible for design errors or omissions; reduces change orders.

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graph LR; A[Planning Process] --> B[Advertisement and Bidding]; B --> C[Design & Construction]
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**Slide notes**

There are many benefits with the Design-Build process such as, improved design timeframes along with phased design and construction leading to a finished project in a much shorter timeframe. The Design Builder can bring new innovations into the project as the contractor is a part of the DB team.

A key difference to note is that the Design Builder is responsible for design error and changes as they are the team that developed the plan.

**Notes**

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Slide 6 - Design-Build (D/B)

# Design-Build (D/B)

- E&S Control Approvals are usually given for each phase of design submittals with disturbance once SHA has approved the elements of the plans to be constructed.
- SHA identified as Permit Owner retains control over E&S

- 1**
  - Phase 1 under construction
  - Phase 1 permits approved
- 2**
  - Phase 2 design complete
  - Phase 2 in review for permit approval
- 3**
  - Phase 3 currently in design
  - Phase 3 not yet submitted for review

Slide notes

Erosion and Sediment Control Plan approval is given at each phase of the design submittal. SHA is identified as the permit owner and retains control over erosion and sediment control.

Notes

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Slide 7 - Personnel Responsibilities for ESC

# Personnel Responsibilities for ESC

Personnel	Design-Bid-Build (DBB)	Design-Build (DB)
<b>SHA Inspector's Role</b>	When design issue identified, Contact SHA Project Engineer	Same
<b>Contractor's E&amp;S Control Manager (ESCM) Role</b>	Works with SHA Inspector and Construction Project Engineer	Works with SHA Inspector, Construction Project Engineer, their own design engineers
<b>Regional Environmental Coordinator</b>	Conduct bi-weekly QA reviews	Same
<b>Environmental Monitor's Role</b>	May not be assigned unless a sensitive resource is identified on the project	Most likely to have one; Works with SHA Inspector, ESCM, Construction Project Engineer

**Slide notes**

When looking at the responsibilities of the different team members, we can see that there are only a few key differences. The contractor erosion and sediment control manager will have the added responsibility of working with the DB team on any issues that may arise in the field.

An environmental monitor may be assigned to the Design-Build project as a condition of the permits. The role of the environmental monitor will be further discussed in the organization section of the training.

**Notes**

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Slide 8 - E&S Control & Design-Build

# E&S Control & Design-Build

- Contractor bids all work on the project as lump sum (unless otherwise specified)
- No pay items are included for additional installation and/or maintenance of E&S Controls. All the cost of single or redundant controls as well as maintenance should be considered at the time of bidding
- Some projects may include a 'Severe Weather Specification'.



**Slide notes**

The work on a Design-Build contract is bid as a lump sum item and therefore all work associated with the installation and maintenance of E & S Controls are inclusive in the price. Some contracts may include a severe weather specification for additional compensation when a severe weather event occurs during the construction phase of the project.'

**Notes**

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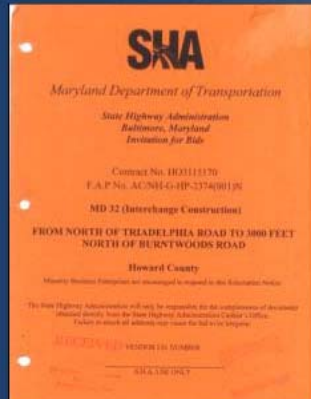
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Slide 9 - E&S Control & Design-Build

# E&S Control & Design-Build

- Contractor is responsible for implementing and maintaining the approved E&S Plan with the requirement that sediment is contained on site and does not discharge off-site.
- Additional controls may be required to contain sediment beyond the approved E&S Control Plans. If necessary, implementation of additional controls are to follow the specifications and appropriate guidelines.
- Each Invitation for Bids (IFB) should be read carefully before bidding since there could be variations in the terms of the DB contracts.



**Slide notes**

The contractor must follow the approved E & S plan on a Design-Build site. If additional controls are necessary in order to meet the permit obligations, additional payment is not considered as all work is bid under a lump sum item. The contract documents should be read carefully and understood by all team members.

**Notes**

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**Slide 10 - End**



**Slide notes**

This concludes the Design-Build portion of the training. Please select the next module to continue the training

**Notes**

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